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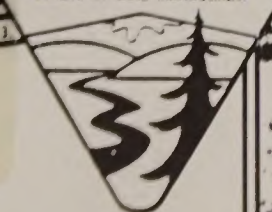
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Utah BLM Statewide Wilderness Final Environmental Impact Statement

Volume III Part A South-West Region



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



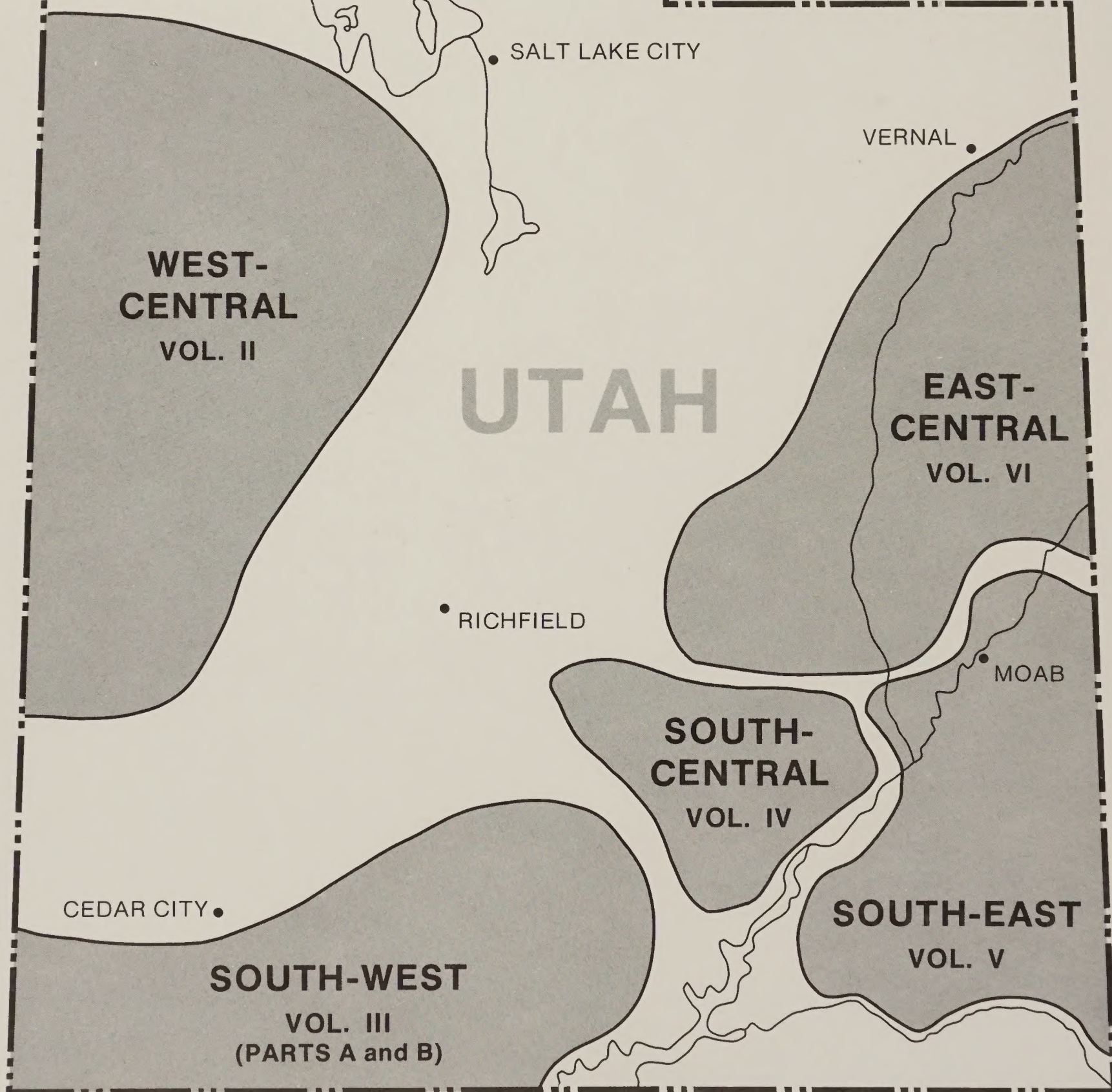
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STUDY AREAS

REGIONAL GROUPS



This is **Volume III A** 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.

INTRODUCTION TO VOLUME III-A: SOUTH-WEST WSAs

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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 III-A is comprised of individual analyses of the following 14 WSAs located in the South-West Region of Utah:

Map

Reference

Number	WSA	Acres
12	Cougar Canyon	15,968
13	Red Mountain	18,290
14	Cottonwood Canyon	11,330
15	LaVerkin Creek Canyon	567
16	Deep Creek	3,320
17	North Fork Virgin River	1,040
18	Orderville Canyon	1,750
19	Parunuweap Canyon	30,800
20	Canaan Mountain	47,170
21	Moquith Mountain	14,830
22	The Blues	19,030
23	Mud Spring Canyon	38,075
24	Paria-Hackberry	136,222
25	The Cockscomb	10,080

The alternatives analyzed for each WSA are: No Action/No Wilderness designation and All Wilderness, which would be designation of the entire WSA to the National Wilderness Preservation System (NWPS). In addition, 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-West WSAs:

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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 the management of water resources, aircraft overflights, cultural resources, noxious weeds, and predators have been added to the Analysis Assumptions and Guidelines for All Alternatives.

3. The sections entitled Affected Environment include new or updated information on wilderness values, geology, water resources, soil reclamation potential, threatened, endangered and other special status 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 III-A. 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 position on the exchange of in-held State lands has changed from requiring exchange of in-holdings, to exchanging only when it is in the best interests of the citizens of Utah. 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 region have been merged into a comprehensive bibliography that is located at the end of Volume III-A.

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 III-A: SOUTH-WEST 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-West 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-West WSAs

1. 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. A PSD Class I area could restrict future industrial developments in southwestern Utah. Since the BLM Wilderness Management Policy (found in 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, impacts on air quality are not analyzed in detail for the South-West WSAs.

2. Geology and Topography: The South-West WSAs contain outstanding examples of faulting, anticlines, and synclines. The public has expressed concern that only wilderness designation can adequately protect these features.

With the No Action/No Wilderness Alternative, development of coal resources is projected for The Blues and Mud Spring Canyon WSAs in the long-term future. As described in the individual WSA analyses, all mining activity would be by underground methods.

No significant changes are anticipated to geology or topography on the areas that would be leased for coal exploration and development. However, an undetermined amount of subsidence would be expected. The surface area that would be susceptible to subsidence would range from 90 to 130 percent of the area actually mined. Subsidence would be greatest at the center of the mined-out area and much less in the peripheral areas. Maximum subsidence would be from 50 to 90 percent of the thickness of the coal removed. Expressions of subsidence reflected at the land

surface would include open and closed fractures, buckled and bulged bedrock, sinkholes, and other depressions (USDI, USGS, 1976). However, thick overburden would limit surface expressions of subsidence. Because impacted areas would tend to subside at a uniform rate, no visual effects to the geology and topography would be noticeable to the casual visitor to the area. Therefore, impacts on geologic features and topography are not significant issues for the South-West WSAs.

3. 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 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 significant issues 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; (c) use of air space over the Cougar Canyon, Red Mountain, and Cottonwood Canyon WSAs by the military; and (d) 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. 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 the BLM Wilderness Study Policy (USDI, BLM, 1981a) require BLM to consider and document

INTRODUCTION TO VOLUME III-A: SOUTH-WEST WSAs

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 from State lands and to reserve its position regarding exchange of in-held State lands (see Chapter 1 in Volume I). Given this position, BLM projects that reasonable access would be provided to in-held State lands in response to proposals for development and use. Therefore, impacts on development of in-held State lands are not analyzed in detail. Likewise, BLM's Wilderness Management Guidelines require that access be provided to in-held private lands, and impacts on the use of private lands is not an issue for detailed analysis.

The Cougar Canyon, Red Mountain, and Cottonwood Canyon WSAs are in the Nellis Air Force Base's Utah test and training range where the United States Air Force (USAF) conducts low level training missions. The policy of the USAF is that low-level flights would continue regardless of wilderness designation (Nellis Air Force Base, 1985). BLM and the Federal Aviation Administration (FAA) do not have authority to control overflights. Nevertheless, if all or part of any WSA were designated as wilderness, the BLM and FAA would recommend a minimum flight elevation of 2,000 feet for protection of wilderness values. Military use of airspace over the designated areas would not be consistent with that recommendation.

Because land use plans generally apply equally to all alternatives, the 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 and Policies, but consistency with land use plans is not analyzed in detail 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 projected 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-West 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 Environmental 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 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 other special status 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.

INTRODUCTION TO VOLUME III-A: SOUTH-WEST WSAs

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.

The 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 the 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.

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 the 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. Appro-

priate measures would be taken to protect endangered, threatened or other special status 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 8560 provisions.

Specific wilderness management plans would be developed that would guide the 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 up to 100 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 FAA.

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

INTRODUCTION TO VOLUME III-A: SOUTH-WEST WSAs

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 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 the 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.

8. Development potential in the WSAs have 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 and 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, Inc. (SAI), the U.S. Geological Survey (USGS), and the U.S. Bureau of Mines (USBM) Mineral Survey Reports, where available, and subsequent evaluations conducted by BLM personnel (SAI, 1982). These estimates are generally based on literature studies and known mining 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 (see Appendix 6 in Volume I for an explanation of the mineral exploration and development projections and Appendix 10 explains the methodology for estimating surface disturbance from projected activities in the WSA.)

10. It is assured 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 determined by scoping and identified in the introductions to the WSA analyses.

Volume III
Part A
South-West
Region

Cougar Canyon WSA

Red Mountain WSA

Cottonwood Canyon WSA

LaVerkin Creek Canyon WSA

Deep Creek WSA

North Fork Virgin River WSA

Orderville Canyon WSA

Parunuweap Canyon WSA

Canaan Mountain WSA

Moquith Mountain WSA

The Blues WSA

Mud Spring Canyon WSA

Paria-Hackberry WSA

The Cockscomb WSA

INTRODUCTION

General Description of the Area
Purpose of the Final EIS

Cougar Canyon WSA



Geological Resources

Cultural Resources

Recreation

Land Use Plans

Biological Resources

ENVIRONMENTAL AND ECONOMIC FACTORS

Geological and Seismicity Resources

Archaeological Resources

Public Resource Assessment (Proposed Action)

COUGAR CANYON WSA

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COUGAR CANYON

(UT-040-123)

INTRODUCTION

General Description of the Area

The Cougar Canyon WSA (UT-040-123 and NV-050-0166) is located in the northwest corner of Washington County, Utah, and the northeastern portion of Lincoln County, Nevada. The WSA contains 15,968 acres (10,568 in Utah and 5,400 in Nevada). There are no State or privately owned lands within the entire WSA.

The Cougar Canyon WSA is characterized by hot summers and relatively short, mild winters. Maximum temperatures in midsummer range from 80 degrees to over 100 degrees Fahrenheit (F). Maximum winter temperatures range from 34 to 44 degrees F, and minimum winter temperatures range from 10 to 28 degrees F. Cold spells in the winter are rare and of short duration. The average annual precipitation varies between 12 and 15 inches in the WSA.

The WSA is at the headwaters of Beaver Dam Wash and is adjacent to Clover Mountain, which extends east-west from Nevada to Utah. The Dixie National Forest and Beaver Dam State Park border the WSA. Portions of the WSA are characterized by steep mountainous canyons, long ridges, and rough drainages.

There are three main vegetation types in the WSA: pinyon-juniper woodland, sagebrush, and riparian.

Changes for the Final EIS

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

1. A 6,408-acre Partial Wilderness Alternative has been added and is the BLM's Proposed Action (refer to Appendix 11 in Volume I). This area is generally located in the north-central portion of the WSA adjacent to the Dixie National Forest in Utah and the Beaver Dam State Park in Nevada as shown on Map 3.

2. The anticipated surface disturbance presented in the Draft EIS (30 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 30 acres reported in the Draft EIS to 8 acres of surface disturbance for the Final EIS.

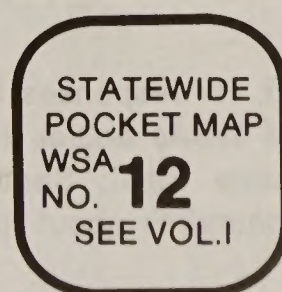
Specific Issues Identified Through Scoping and Public Comment

• Issues Considered But Not Analyzed In Detail

In addition to those issues considered but eliminated from detailed analysis in the Introduction to Volume III-A (i.e., air quality, geology and topography, water rights, and land use plans), the following issues or impacts specific to the Cougar Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below:

1. Soils, Vegetation Including Special Status Species, Water Quality, Forest Resources, Visual Resources, and Cultural Resources: Estimates of surface disturbance without wilderness designation have been revised downward from 30 acres due to minerals activities estimated in the Draft EIS to 8 acres from rangeland developments in the Final EIS. Given this new scenario, the impacts on soils, vegetation, water quality, forest, visual, and cultural resources as discussed in the Draft EIS would not occur. Conversely, there are no proposals for developments, harvests, or other uses which would be precluded by wilderness designation. Therefore, impacts on soils, vegetation, water quality, forest, visual, and cultural resources are not an issue in the Final EIS.

2. Water Resources: The 1,088-acre public water reserve would not be revoked or impacted with or without wilderness designation. Therefore, impacts on water uses are not an issue in the Final EIS and are not analyzed in detail.



COUGAR CANYON WSA

3. Mineral Resources: No mineral exploration or development has been projected for the foreseeable future. There are no existing oil and gas leases or mining claims in the WSA and the area has a low favorability with a low certainty of occurrence for all mineral resources. For these reasons, it is determined that mineral exploration or development would not occur with or without wilderness designation in the foreseeable future. Therefore, impacts to mineral values are not analyzed in detail in the Final EIS.

4. Recreational Use: Existing recreational use is all primitive since no roads or ways exist in the WSA. Therefore, motorized recreational use would not be impacted with or without wilderness designation and it is not analyzed in detail in the Final EIS.

5. Economic Conditions: There are no existing or anticipated proposals for lands and realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected with or without wilderness designation impacts on economic conditions or realty activities are not analyzed in detail in the Final EIS.

• Issues Analyzed in Detail

The significant issues for the Cougar Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on wildlife habitat and populations including special status species.
3. Impacts on livestock management.

Comments made during the public comment period for the Draft EIS addressed a variety of topics, including the accelerated inventory process used for this WSA, apparent false statements relating to topographic and vegetation screening, questions concerning BLM data on locatable and salable minerals, feasibility of developing springs in fair to poor condition, livestock forage areas, and BLM's ratings of special wilderness features.

Refer to Volume VII-B, for responses to general comments applicable to all WSAs and/or the Statewide analysis. Refer to Volume VII-C, Section 12, for responses to specific comments about the Cougar Canyon WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

During the public comment period for the Draft EIS, two alternatives were submitted which would increase the WSA's size to 28,600 acres and 24,920 acres, respectively. These areas were considered during BLM's wilderness inventory process and were eliminated from further study at that time. They will not be analyzed in detail in the Final EIS.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (15,968 acres); and (3) Partial Wilderness (Proposed Action) (6,408 acres). A description of BLM's management practices with each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections. These assumptions are indicated in each case. The assumed BLM management actions presented in the Introduction to Volume III-A are also applicable.

• No Action/No Wilderness Alternative

With this alternative, none of the 15,968-acre Cougar 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 area would continue to be managed for multiple uses in accordance with the Virgin River (Utah) and Caliente (Nevada) Management Framework Plans (MFPs) (USDI, BLM, 1979a and 1979h). There are no State or privately owned lands in the WSA (refer to Map 1). Figures and acreages are for Federal lands only.

• Management Conditions and Constraints

All 15,968 acres would remain open to mineral location, leasing, and sale. There are no existing mining claims in the WSA, but 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 consideration for wilderness values. There are no oil and gas leases in the WSA. New leases could be imposed with stipulations imposed at the time of lease issuance.

The area would be managed as Category 1 (standard stipulations). Although mineral resources

COUGAR CANYON WSA








Map 1

LAND STATUS

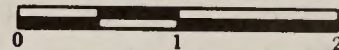
Cougar Canyon WSA

UT-040-123

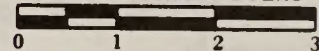
Legend

-  WSA Boundary
-  National Forest Boundary
-  State Boundary
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  Forest Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA

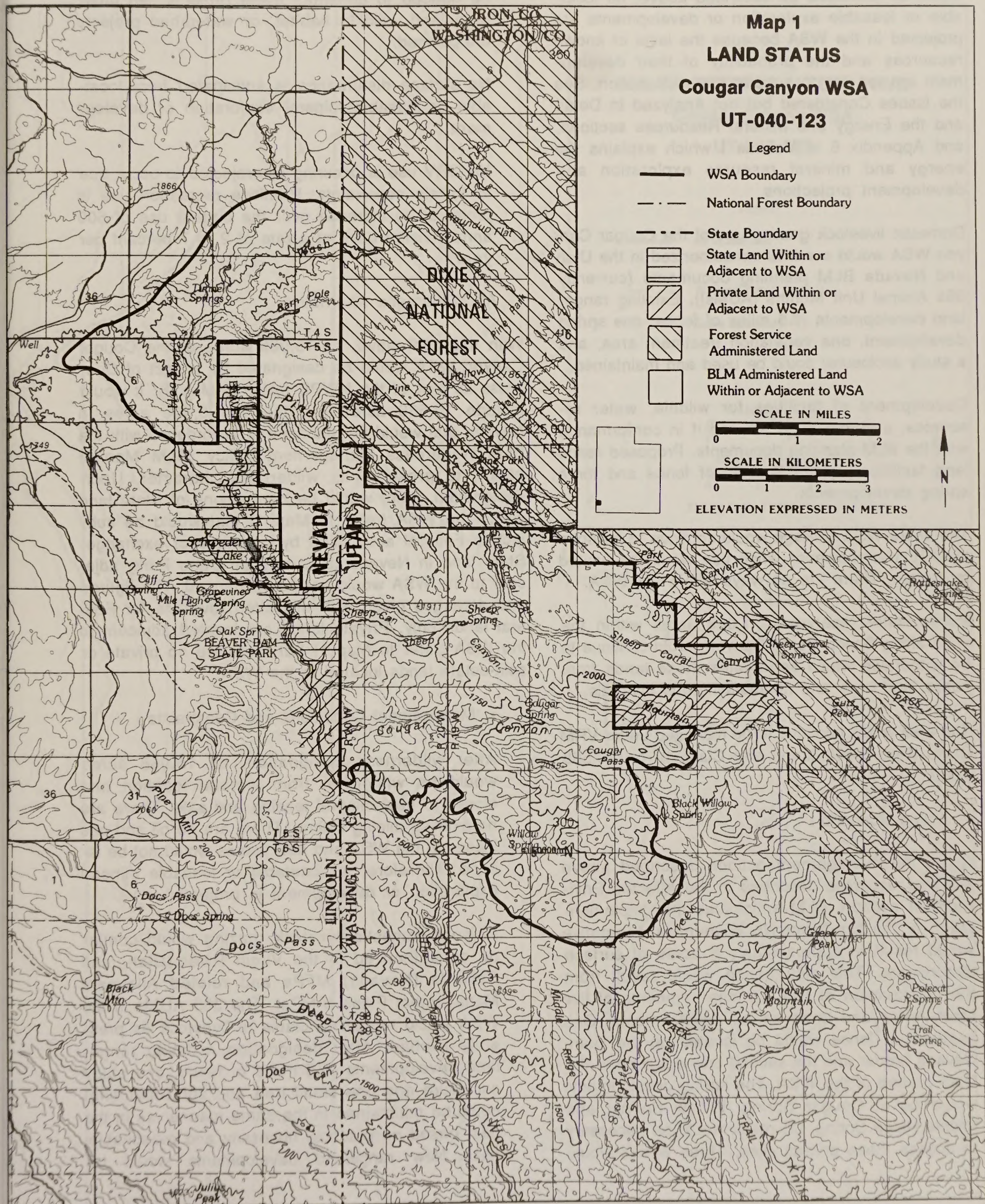
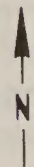
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 38 S.

T. 39 S.

COUGAR CANYON WSA

would be managed as described above, no locatable or leasable exploration or developments are projected in the WSA because the level of known resources and the probability of their development are too low to support that assumption. See the Issues Considered but not Analyzed in Detail and the Energy and Mineral Resources sections, and Appendix 6 in Volume I which explains the energy and mineral resource exploration and development projections.

Domestic livestock grazing use of the Cougar Canyon WSA would continue as authorized in the Utah and Nevada BLM planning documents (currently 365 Animal Unit Months [AUMs]). Existing rangeland developments (6.5 miles of fence, one spring development, one vegetation treatment area, and a study enclosure) could be used and maintained.

Development of facilities for wildlife, water resources, etc., could be allowed if in conformance with the BLM planning documents. Proposed rangeland facilities include 7 miles of fence and three spring developments.

The entire WSA acreage would continue to be open to ORV use; however, such use would be limited by terrain. There are no ways within the WSA.

Public water reserves of 1,088 acres within the WSA along Sheep Corral Canyon would continue to be withdrawn which segregates those lands from public land laws and nonmetalliferous minerals.

The area would continue to be managed under VRM Class II on 5,400 acres and Class IV on 10,568 acres.

- Action Scenario

Given the 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 result in approximately 8 acres of surface disturbance. This disturbance would result from the construction of two 3.5-mile segments of livestock fence and three spring developments. One segment of fence would be located on the Utah-Nevada border and the second one would be in the Utah portion of the WSA. The spring developments would be at Cougar Spring, Willow Spring, and Middle Ridge Spring. No roads would be necessary to access these project sites. Three weeks would

be needed to construct these projects. No other rangeland, wildlife habitat, or watershed projects are planned.

No surface disturbance is anticipated from locatable or leasable mineral exploration or development.

No ORV use is occurring or projected to occur due to terrain constraints. Primitive recreation use is projected to increase over the current use of 500 annual visitor days at a rate of 2 to 7 percent per year.

- All Wilderness Alternative

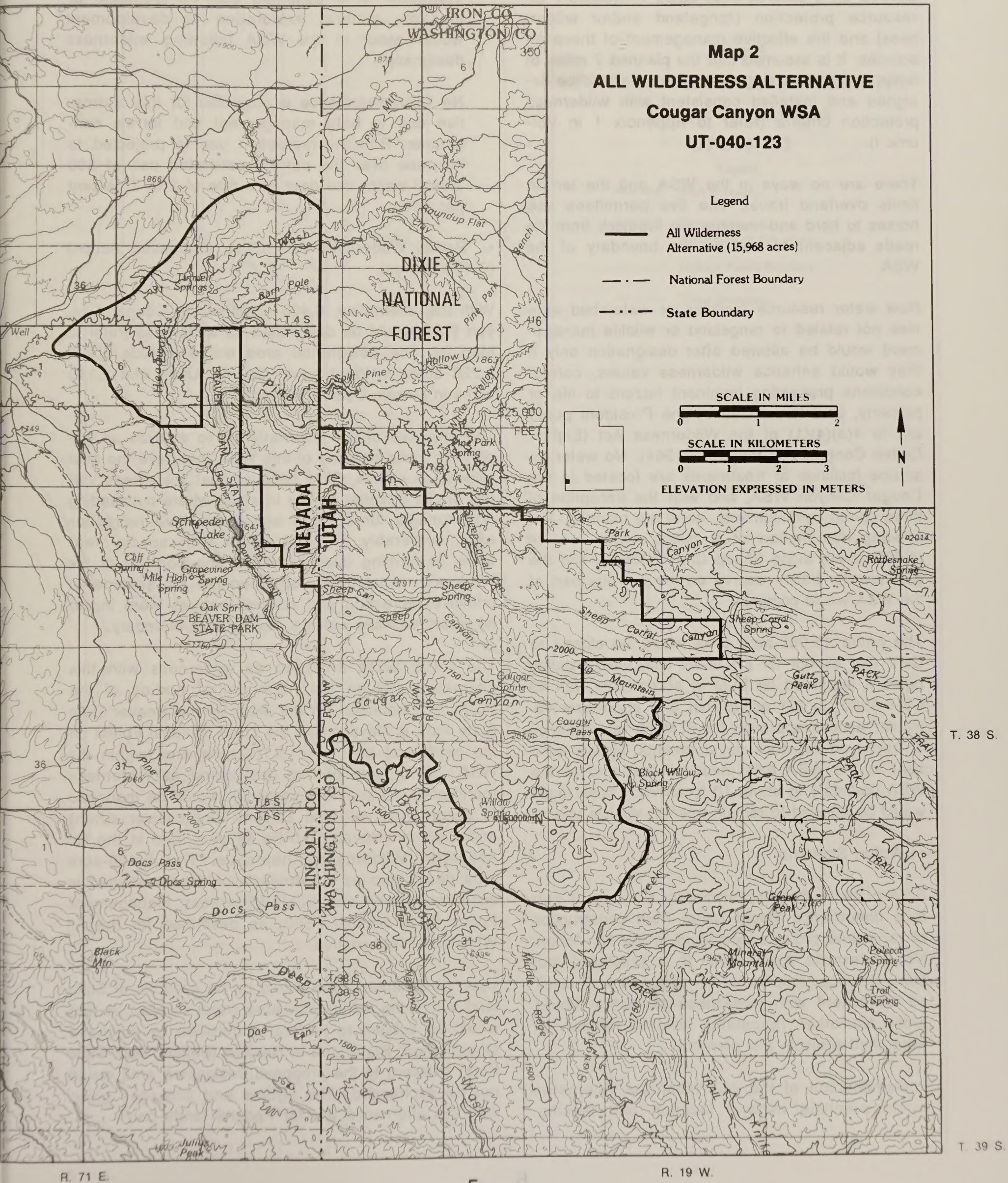
With this alternative, all 15,968 acres of the Cougar Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would include 10,568 acres in Utah and 5,400 acres in Nevada that would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560), to preserve its wilderness character. Upon designation, there would be no sections of State land within the WSA (refer to Map 1) that would be subject to Federal acquisition by purchase or exchange. State land in Nevada (Beaver Dam State Park) adjacent to the WSA would not be exchanged. The figures and acreages given with this alternative are for Federal lands only. Private lands are located adjacent to the WSA (refer to Map 1) but there are no private or split-estate lands located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 15,968 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. There are no existing mining claims. There are no oil and gas leases in the WSA and new leases would not be issued. Therefore, no locatable or leasable mineral exploration or development is projected.

Present domestic livestock grazing would continue as authorized in the Virgin River (Utah) and Caliente (Nevada) MFPs and related Allotment Management Plans (AMPs). The 365 AUMs in the WSA would remain available to livestock as presently allotted. After designation, existing rangeland developments (6.5 miles of fence, one study enclosure and one small tree and shrub planting) could be maintained in the same manner as in the past based on practical necessity and reasonableness. New rangeland developments would be

COUGAR CANYON WSA



COUGAR CANYON WSA

allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources. It is assumed that the planned 7 miles of fence and three spring developments would be designed and installed consistent with wilderness protection criteria (refer to Appendix 1 in Volume I).

There are no ways in the WSA and the terrain limits overland travel. The five permittees use horses to herd and manage the livestock from the roads adjacent to and on the boundary of the WSA.

New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the Wilderness Act (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Cougar Canyon WSA, and with the exception of three spring developments, none are planned. The existing designation of a public water reserve (1,080 acres) along Sheep Corral Canyon and the groundwater basin reserve on the Nevada part of the WSA would continue.

The entire 15,968-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) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. Roads adjacent to the WSA exist near or dead-end at the WSA boundary in about 10 locations. These roads would be allowed to remain open to vehicle use.

- Action Scenario

BLM projects that approximately 6 acres of surface disturbance would result from construction of rangeland projects 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, it is assumed that no locatable or leasable mineral exploration or development would occur in the WSA following wilderness designation.

No ORV disturbance is projected for this alternative due to both management and terrain constraints. Primitive-recreation use is projected to increase over the current estimated use of 500 annual visitor use days at a rate of 2 to 7 percent per year.

- Partial Wilderness Alternative (Proposed Action) (6,408 Acres)

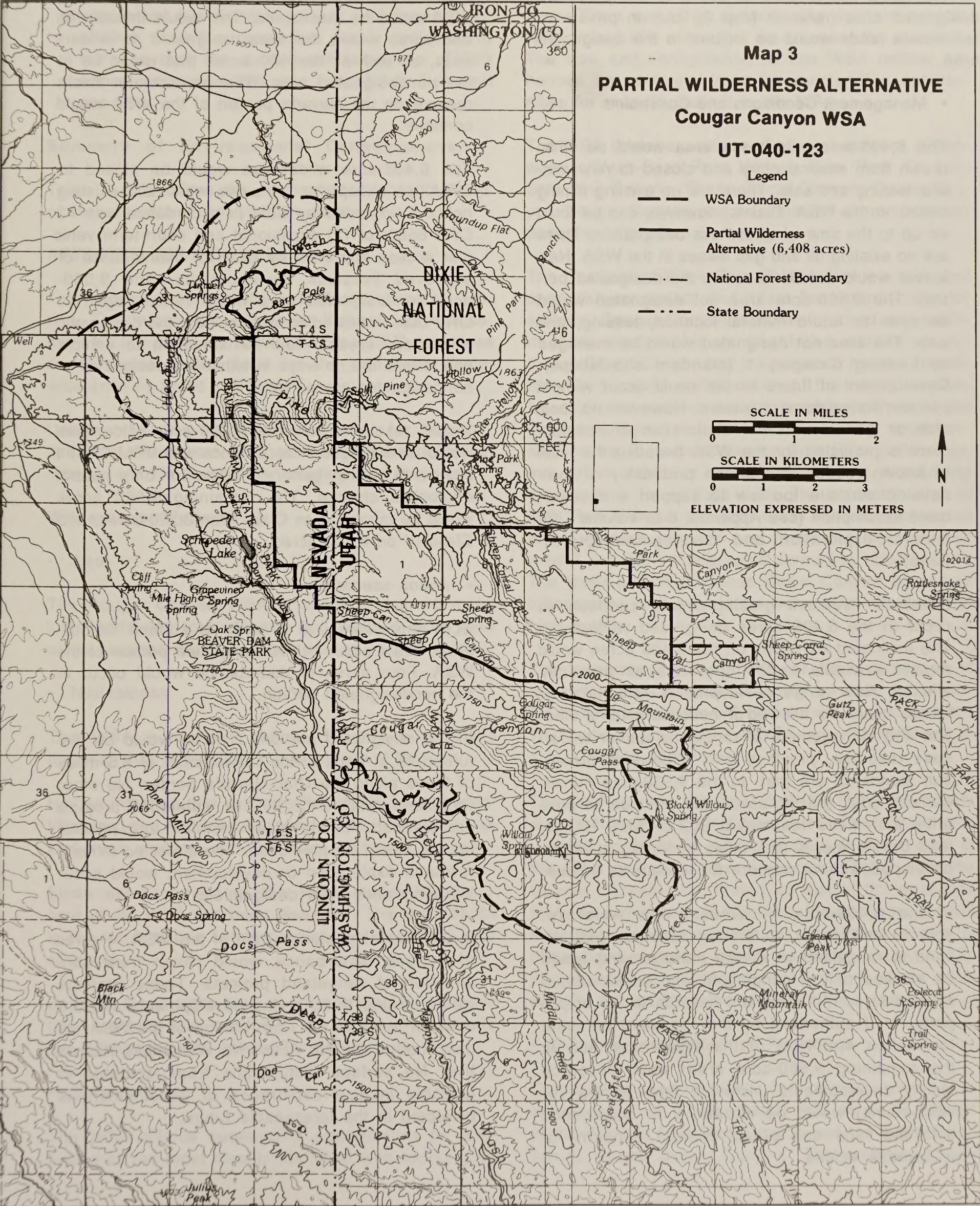
With this alternative, 6,408 acres of the Cougar Canyon WSA would be designated as wilderness (refer to Map 3). The designated area would include about 4,228 acres in Washington County, Utah, and 2,180 acres in Lincoln County, Nevada.

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 or primitive recreation and special features were included where possible within a manageable boundary.

The 6,408 acres analyzed as wilderness with this alternative include the north-central portion of the WSA. It is bounded on the west by the Beaver Dam State Park in Nevada and the Dixie National Forest on the north and east. The 9,164-acre area within the WSA, but outside of that designated as wilderness (northwest and southern portions), would be managed in accordance with the current Virgin River (Utah) and Caliente (Nevada) MFPs as described in the No Action/No Wilderness Alternative. The 6,408-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.

Upon designation, there would be no sections of State land within the wilderness area (refer to Map 3) that would be subject to Federal acquisition by purchase or exchange. State land in Nevada (Beaver Dam State Park) adjacent to the proposed designated area would not be exchanged. The figures and acreages given with this alternative are for Federal lands only.

COUGAR CANYON WSA



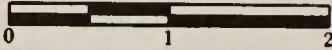
Map 3
PARTIAL WILDERNESS ALTERNATIVE
Cougar Canyon WSA

UT-040-123

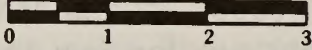
Legend

- WSA Boundary
- Partial Wilderness Alternative (6,408 acres)
- . - National Forest Boundary
- . . State Boundary

SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 38 S.

T. 39 S.

R. 71 E.

R. 19 W.

COUGAR CANYON WSA

Private lands are located adjacent to the proposed designated area (refer to Map 3), but no private or split-estate lands would be located in the designated area.

- Management Conditions and Constraints

The 6,408-acre wilderness area would be withdrawn from mineral entry and closed to new mineral leasing and sale. There are no existing mining claims in the WSA. Claims, however, can be located up to the time of wilderness designation. There are no existing oil and gas leases in the WSA. New leases would not be issued in the designated portion. The 9,560-acre area not designated would be open to future mineral location, leasing, and sale. The area not designated would be managed as Leasing Category 1 (standard stipulations). Development of future leases could occur without concern for wilderness values. However, 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 a development assumption (see Appendix 6 in Volume I for mineral exploration and development projections).

Domestic livestock grazing would continue to occur in the 6,408 acres designated wilderness. The estimated 63 AUMs on the 6,408 acres would remain available to the operators as presently allotted. New range developments (3.5 miles of fence) could be allowed if necessary for protection and management of rangeland and/or wilderness resource, provided that wilderness protection standards are met. In the 9,560-acre nonwilderness area, grazing use would continue as presently authorized (estimated 302 AUMs). Rangeland developments (3.5 miles of fence) could be developed without concern for wilderness values.

In the 6,408-acre wilderness, new water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed only if compatible with wilderness, if needed to correct imminent hazards to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the Wilderness Act. In the remaining 9,560-acre area, water resource facility developments (including three spring developments) would be allowed if in accordance with the land use plans, without concern for wilderness values.

Public water reserves on 1,088 acres within the WSA would be maintained. This would include the 688 acres within the area designated as wilderness, as well as the 400 acres that would be in the nondesignated area. The groundwater basin reserve on the Nevada portion of the WSA would continue.

The 6,408-acre wilderness 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) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. The 9,560-acre nondesignated area would remain open to ORV use. Roads adjacent to or near the designated wilderness areas would remain open to vehicle use. There are no ways in either the designated or nondesignated areas.

Visual resources on the 6,400-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 9,560 acres would be managed as Class II on 3,220 acres, and Class IV on 6,340 acres.

- Action scenario

BLM anticipates that 2 acres of surface disturbance would occur in the designated portion of the WSA. Four acres of disturbance would occur in the nondesignated portion.

In the designated portion, 2 acres would be disturbed as a result of the construction of 3.5 miles of fence along the Utah-Nevada border. No other rangeland, wildlife habitat, or watershed projects are planned. Mining claim location and mineral leasing would be precluded. Therefore, no mineral resource exploration or development would occur following wilderness designation.

In the nondesignated portion of the WSA, 4 acres of surface disturbance would result from construction of rangeland projects. These projects would include three spring developments and 3.5 miles of fence in the Utah portion of the WSA, as described in the No Action/No Wilderness Alternative. No surface disturbance from locatable or leasable mineral exploration or development is projected in the foreseeable future.

COUGAR CANYON WSA

No ORV use or disturbance is expected for this alternative due to management and terrain constraints. Primitive recreation use is projected to increase over the current estimated use of 500 annual visitor use 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.

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

Wilderness Values

- Size

The Cougar Canyon WSA is approximately 10 miles long (northwest to southeast) and about 4 miles wide at its greatest width. It encompasses 15,968 acres.

- Naturalness

This WSA is basically natural. There are few signs that man has spent time in the interior of the unit.

Human intrusion that existed when the WSA was identified included 6 miles of range fences, one small tree and shrub planting, and one study enclosure.

Since establishment of the WSA, approximately 1 acre of the WSA has been disturbed. This disturbance is the result of one spring development and a 0.5 mile of fence.

Because these areas have been reclaimed to a substantially unnoticeable condition, the entire WSA meets the Wilderness Act criteria for naturalness.

- Solitude

The WSA affords outstanding opportunities for solitude that are most closely identified with topographic

and vegetation screening situations in the canyon bottoms. There are 1,300 acres having outstanding solitude and 14,668 acres that do not meet the standard. The size and configuration of this WSA neither enhances nor detracts from the outstanding opportunities for solitude present in the WSA.

The WSA contains portions of several canyons (Headwaters Wash-Barn Pole Hollow, Pine Park Canyon, Split Pine Canyon, Sheep Corral Canyon, Sheep Canyon, Cougar Canyon, and an unnamed canyon between Sheep and Pine Park Canyons).

The Headwaters Wash-Barn Pole Hollow is a wide and open canyon system that offers few opportunities for solitude. Cougar Canyon is not entrenched and exhibits little topographic or vegetative screening. Although Sheep Canyon and the unnamed canyon immediately to the north exhibit some of the natural screening attributes, neither canyon possesses them to the degree sufficient to provide outstanding opportunities. In the Pine Park Canyon-Split Pine Hollow system, these attributes are all present and outstanding opportunities for solitude exist. The south rim area of Pine Park Canyon near the State line also possesses short tributary canyons and rocky outcroppings that exhibit excellent topographic screening opportunities. The lower portion of Sheep Corral Canyon possesses topographic and vegetative screening situations of high quality.

The topography does not provide for a dispersion of recreation uses. Overall, it would be easy for a visitor to find seclusion only in certain canyons of the WSA and vistas from the WSA are not sufficient to give a feeling of vastness.

The WSA is near the flight path for flights of military aircraft from Nellis Air Force Base. The closest major training route is approximately 6 miles east of the WSA near Enterprise Reservoir. Flights near the Cougar Canyon WSA mainly consist of fighter planes flying at a minimum of 100 feet. These flights are subsonic and are made by four aircraft two to three times a week (Nellis Air Force Base, 1985). Engine noise accompanying these flights might occasionally detract from the solitude of the area.

- Primitive and Unconfined Recreation

Outstanding opportunities for primitive recreation are available on approximately 400 acres (3 percent of the WSA) in Pine Park Canyon and the eastern portion of Sheep Corral Canyon. The remaining 15,568

COUGAR CANYON WSA

Table 1
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (15,968 Acres)	Partial Wilderness (6,408 Acres) (Proposed Action)
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 reduced in quality on 8 acres of the WSA. The disturbance would be due to construction of rangeland projects. Wildlife special features would benefit from the spring developments.	Wilderness values would be preserved throughout the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on 6 acres of the WSA. The disturbance would be due to construction of rangeland projects. Wildlife special features would benefit from the spring developments.	Wilderness values would be preserved in the designated area which is about 40 percent of the WSA. Wilderness values would be slightly reduced in quality on 6 acres of the WSA, mostly in the nondesignated portion. The disturbance would be due to construction of rangeland projects. Wildlife special features would benefit from the spring developments.
Impacts on Wildlife Habitat and Populations	Rangeland development on 8 acres would not adversely affect wildlife.	Wildlife would benefit due to solitude.	Effects would be approximately the same as for the All Wilderness Alternative.
Impacts on Livestock Management	Livestock grazing would not be affected because management and access would continue as at present.	Effects on livestock operations would be negligible because there is no use of vehicles in the WSA at present and proposed developments could be carried out.	Effects would be approximately the same as for the All wilderness Alternative.

COUGAR CANYON WSA

acres are not outstanding. The 400-acre strip is considered outstanding because several activities are available in conjunction with excellent hiking (i.e., high quality scenery, fishing, bird watching, wading, picnicking, and photography). This area is too rugged for horses and not conducive to big game hunting because of rough terrain. These canyons have relatively easy access from nearby Pine Park Campground in the National Forest.

- **Special Features**

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features.

The WSA has 5 to 7 miles of perennial streams supporting trout fisheries. These streams are unique to BLM lands because of their trout fishing values. Perennial pools along with the perennial flow in the Upper Beaver Dam Wash are the only native reproducing fisheries in the area. The Virgin River spinedace, a Category 2 candidate species, possibly occurs in the WSA. Cougars, a species associated with wilderness, use the WSA extensively. Golden eagles and 10 other Category 2 candidate species may occur in the WSA (refer to the Wildlife Including Special Status Species section for details). The WSA has 5,400 acres of Class A scenery. The most scenic portions of the WSA include Pine Park Canyon and White Rock Formations adjacent to this canyon.

- **Diversity**

This WSA is in the Intermountain Sagebrush Province Ecoregion and has the Potential Natural Vegetation (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 one standard metropolitan statistical area, Las Vegas, Nevada.

Air Quality

The Cougar Canyon WSA and the surrounding area have been designated Class II under the PSD regulations.

Only limited visibility measurements exist for the area. From airport visibility data, present visibilities in the nonurban areas of the southwestern United States are among the highest in the United States at approximately 65 to 80 miles.

Geology and Topography

The Cougar Canyon WSA is located in the Basin and Range Physiographic Province. Elevations range from 5,000 to 6,700 feet, and the WSA consists of steep canyons, peaks, long ridges, and rough drainages. The portion of the unit in Washington County is composed of three southeast- to northwest-trending ridges separated by Cougar Canyon, Sheep Canyon, and Pine Park Canyon which drain into the Beaver Dam Wash. The portion of the unit in Lincoln County contains southern-trending steep slopes draining into the headwaters of the Beaver Dam Wash. The unit's most dramatic topographic features are Pine Park Canyon, Sheep Corral Canyon, and Big Mountain.

Rocks exposed within the WSA consist almost entirely of Tertiary volcanics. Volcanic tuffs, ignimbrites, and breccias occur within the Cove Mountain, Ox Valley, and Quichapa Formations along the northeastern portion of the WSA. The remainder of the WSA is covered by undifferentiated Tertiary volcanics of unknown thickness. The eastern portion of the tract is dissected by numerous northwest to southeast faults. Very little is known about the structure of this area, but it is likely that Tertiary intrusive rocks and thrust-related faults and folds underlie the volcanic pile.

Soils

Erosion classes are moderate (10,000 acres) and severe (5,968 acres) (refer to Table 2). The soils are formed from coarse-grained acid igneous rocks resulting in coarse-grained, cobbly and gravelly sandy loams and loamy textured soil. The soil depth varies inversely, according to the steepness of slopes, and ranges from 3 to 30 inches over bedrock. Slopes are rolling to very steep (5 to 65 percent or more). Much of the WSA is exposed rock outcrop. The Soil Conservation Service (SCS) capability classes are VII and VIII, which are unsuitable for agriculture uses other than rangeland and wildlife habitat, and are not suitable for mechanical vegetation manipulation practices because of steep slopes, rock outcrops, erosion hazard, and infestation of shrubs such as Gambel's oak.

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Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	5,968	37	32,227
Critical	2.7	0	0	0
Moderate	1.3	10,000	63	13,000
Slight	0.6	0	0	0
Stable	0.3	0	0	0
Total		15,968	100	45,227

Sources: USDI, BLM, 1979a and 1979b; Leifeste, 1978.

The reclamation potential of soils within this WSA would, of course, vary from site to site, but are generally considered to be minimal, due to the steep, rocky nature of the WSA. A few gradual loam sites would support a fair to good seeding.

All soils in the Washington County (Utah) portion of this WSA are classified as nonsaline (USDA, SCS, 1977).

It is estimated that undisturbed soils within this WSA produce 32 lb of salt per acre per year.

The soils in Lincoln County (Nevada) were not included in the SCS report, but are judged to be similar.

Vegetation Including Special Status Species

Existing vegetation in the WSA consists of three major vegetation types: pinyon-juniper woodland on 14,328 acres, sagebrush on 1,600 acres, and riparian on 40 acres. With the exception of portions of the riparian zone, the vegetation aspect is sparse.

Pinyon-juniper woodland makes up about 90 percent of the area. Some of the more common plants of this type are pinyon pine, Utah juniper, Utah serviceberry, live oak, Gambel's oak, cheatgrass, muttongrass, curly grass, lupine, Eriogonum, and Penstemon. A typical vegetation composition would be perennial grasses (5 percent), shrubs and trees (80 percent), and forbs and annuals (15 percent).

The sagebrush type occurs mainly in the northeastern portion of the WSA and makes up about 10 percent of the area. Some of the more common plants of this type are big sagebrush, rubber rabbitbrush, antelope bitterbrush, squirreltail grass, and cheatgrass. A typical vegetation composition would be perennial

grasses (15 percent), shrubs (75 percent), and forbs and annuals (10 percent).

Riparian vegetation occurs in Cougar Canyon, Sheep Corral Canyon, Sheep Canyon, Pine Park Canyon, and Headwaters Wash. This vegetation type makes up less than 1 percent of the area. Some of the more common plants are cottonwood, willow, salt cedar, rushes, and sedges.

Sheep Corral, Sheep, and Cougar Canyons have extremely narrow and dense riparian zones and are practically inaccessible. Headwaters Wash and Pine Park Canyon have much broader riparian areas and are generally accessible via stock trails.

Vegetation condition in terms of livestock forage ranges from fair to poor. Areas of fair condition are located in the northeastern half of the area. The ecological vegetation stage of this WSA is estimated to be at or near climax.

No threatened, endangered Category 1 or 2 candidate species, or other special status species are known to occur in the WSA (see Appendix 4 in Volume I).

The Cougar Canyon WSA lies in the Intermountain Sagebrush Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

Surface waters in the Cougar Canyon WSA include five perennial streams (approximately 5 to 7 miles) and seven perennial springs, one of which has been improved. Headwaters Wash, in Nevada, is fed by Tunnel Springs in the northwest corner of the area and flows south to the West Fork of the Beaver Dam Wash. The Beaver Dam Wash is outside the west boundary of the WSA. Pine Park Canyon runs from east to west on the north end of the WSA. Its headwaters are in Utah, and it also empties into the Beaver Dam Wash in Nevada.

The remaining waters are entirely within the Utah portion of the area. Sheep Corral Canyon flows from the east boundary northwesterly into Pine Park Canyon. Two unnamed springs help feed this stream. The two remaining streams (Sheep Canyon and Cougar Canyon) both flow from east to west into the Beaver Dam Wash. Sheep Spring feeds Sheep Canyon, and Cougar Spring feeds Cougar Canyon. Willow Spring and Middle

COUGAR CANYON WSA

Ridge Spring both lie at the southern extreme of the WSA.

Surface waters are used by livestock and wildlife. In Nevada there are recreational uses for water at the Beaver Dam State Park, downstream from Headwaters Wash and Pine Park Canyon. There is no water quality information available for Nevada waters. Data from other water sources in the Caliente Resource Area indicate there are no nutrient or heavy mineral problems. Coliform bacillus is common and fecal streptococcus is possible.

In Utah, the only available water quality information is from Pine Park Creek. The stream has a moderately soft water and low bicarbonate system compared to other streams in the region. The overall water quality of the area is sufficient for existing uses.

The surface waters within this WSA have a standard classification by the State for 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).

There is one developed spring but there are no existing wells or irrigation systems within the WSA. Three additional springs (Cougar, Willow, and Middle Ridge), with a combined potential of about 20 acre-feet per year, are proposed for development as livestock waters in the Hot Desert Grazing Management EIS (USDI, BLM, 1978b). There are no Bureau of Reclamation withdrawals, but Sheep Corral Canyon has been withdrawn along its length as a public water reserve which segregates these lands from public land laws and nonmetalliferous minerals.

There is danger of flash floods during the summer rainy season (July through September), especially in the steep, narrow canyon bottoms.

The Cougar Canyon WSA is in the Beaver Dam Wash drainage area for water right classification purposes. The area's surface water is fully appropriated. It is open to the appropriation of groundwater. Presently it is unknown whether full development has been made of the underground aquifers.

There are no existing private or State water rights in the Utah portion of the WSA. There are also no existing water rights in the Nevada portion of the WSA, but an old proof of appropriations exists along Headwaters Wash near Tunnel Springs. Its validity is un-

known. The Nevada area is a designated groundwater basin and is not open to applications.

Mineral and Energy Resources

The mineral and energy resource rating summary for this WSA is given in Table 3. Refer to Appendix 5 in Volume I for a detailed description of SAI rating system.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 1	c1	Little or no potential
Uranium	f 2	c1	Less than 500 metric tons of uranium oxide
Geothermal	f 2	c1	Low temperature resource
Hydroelectric	f 1	c4	None
Other locatable minerals	f 1	c1	Little to none

Source: SAI, 1982; USDI, BLM, 1987

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

There are no known deposits of leasable minerals in the WSA. There are no existing oil and gas leases, nor is there any exploration, drilling, or mining activities for leasable minerals occurring in the WSA.

This tract is assigned an (f1), or the lowest favorability rating for oil and gas. Widespread faulting and igneous activity since and during the Tertiary period have probably combined to destroy any previously existing oil and gas deposits. As no direct data exist to either support or refute the occurrence of petroleum, a very low certainty (c1) is assigned.

The entire WSA is in Category 1 (open to leasing with standard stipulations).

• Geothermal

Geothermal resource possibilities have been rated (f2/c1). Although this unit lies in an area

COUGAR CANYON WSA

commonly considered to have a high geothermal potential (crustal instability, high heat flow, young igneous rock, and seismic activity), there are no hot springs or young (less than 1 million years old) igneous rocks to indicate that this WSA is favorable for geothermal resources. Any potential geothermal resources would most likely be associated with the fairly extensively faulted area in the northeast portion of the WSA. However, with known geothermal resource areas east of the WSA, it is unlikely that potential geothermal resources in this area would have much possibility of development.

• Locatable Minerals

There are no known commercial deposits of locatable minerals in the Cougar Canyon WSA. No evidence of uranium occurrence has been reported, but there is a deposit located about 25 miles north of the WSA where uranium is found in veins in Tertiary volcanic rocks. The tract has been assigned a favorability rating of (f2), potential for small deposits of less than 500 metric-tons uranium oxide, with a very low certainty (c1) of occurrence.

Approximately 2 miles southeast of the tract is the Mineral Mountain Stock, a Tertiary intrusive body. Bedded replacement deposits of magnetite (iron) with associated copper and gold mineralization occur on the west side of the stock (Morris, 1980). Since the WSA is covered by volcanic rocks, it is not known if similar intrusive bodies with this type of mineralization occur at depth, but the possibility exists. The tract is, therefore, rated (f1/c1) for miscellaneous locatable minerals (possibility for small deposits with a low certainty of occurrence). Potential for development of any deposits is low. There are currently no mining claims in the WSA.

• Salable Minerals

No significant deposits of salable materials are known to occur in the WSA.

Wildlife Including Special Status Species

The primary big game animal in the WSA is mule deer. The WSA is within the summer range of Deer Herd Unit 61-C (Utah) and 242 (Nevada). A Habitat Management Plan (HMP) has been completed for the Utah portion of this area, with mule deer being the target species. No habitat manipulation practices were recommended in this HMP. However, the WSA has been identified

as an area having potential for prescribed burning to improve forage composition (USDI, BLM, 1979a), but no specific prescribed burn plans have been prepared. No critical range has been identified.

The Nevada portion has a completed HMP which does not identify site-specific projects within the WSA, but does identify practices such as spring development and vegetation treatments which could be applied within the unit.

The Cougar Canyon WSA contains cougar habitat and is within Utah Cougar Management Unit 29, Pine Valley. Cougar populations and harvest by sport hunters and by the Animal Damage Control Program has been the second highest in this management unit, compared to any other location in Utah. During an 11-year period (1977 through 1987), a total of 216 cougars were taken from the Pine Valley management unit. This harvest averaged nearly 20 animals per year (UDNRE, UDWR, 1988). It has not been determined how many of these may have been taken from within the WSA.

A variety of raptors occupy the WSA with most nesting activities centered around the main drainages. The most common raptors are red-tailed hawk, golden eagle (a BLM sensitive species), and Cooper's hawk.

Other game animals found in the WSA are Gambel's quail, mourning dove, and cottontail. Various nongame mammals, birds, and reptiles occur in the WSA.

No threatened or endangered animals are known to occur in the WSA. However, the Virgin River spine-dace, which may occur within the WSA, is a Category 2 candidate species. Ten other Category 2 candidate species also may occur in the WSA. These are the ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, white-faced ibis, and Arizona Bell's vireo (see Appendix 4 in Volume I).

Rainbow trout can be found in Cougar Canyon, Sheep Canyon, Sheep Corral Canyon, Pine Park Canyon, and Headwaters Wash streams. During low flow periods, these fish are generally found only in Pine Park Canyon and Headwaters Wash streams. Approximately 5 to 7 miles of fish habitat are within the WSA. Because speckled dace, desert sucker, and Virgin River spine-dace occur in the Beaver Dam Creek, there is the likelihood that they also inhabit the tributary streams within the WSA.

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Forest Resources

No significant harvestable forest resources occur in the WSA. The dominant tree species are pinyon pine and juniper. Historically, juniper trees may have been cut occasionally to repair fences or other projects. There are approximately 140,000 cords of pinyon-juniper woodland but the terrain is unsuitable for harvest.

The potential use of forest products in this area would be very small due to the ruggedness of the area, sparse tree density (approximately 10 cords per acre), and remote location of the WSA.

Livestock and Wild Horses/Burros

Five livestock permittees utilize forage in Cougar Canyon WSA which lies within the boundaries of three grazing allotments. Big Mountain (one permittee) and Cougar Canyon (one permittee) Allotments are in Utah and the Barclay Allotment (three permittees) is in Nevada (refer to Table 4). Total grazing use on these allotments is currently 2,503 AUMs (532 AUMs in Utah and 1,971 in Nevada). Season of use is generally May 16 to November 15. The livestock are mostly cattle (454) with a few horses (4).

There are 365 AUMs within the WSA boundaries. Most of the Nevada portion of the WSA is considered unsuitable for livestock because of steep rough terrain, low forage production, and lack of livestock water. Thus, Nevada grazing is limited to the extreme western portion of the WSA and that provides less than 1 percent of the allotted forage, approximately 27 AUMs.

About two-thirds of the Utah portion of the WSA is considered suitable for livestock grazing and provide forage for approximately 107 cattle (338 AUMs). The rest of the unit is considered too steep and rough and has low forage production. At the beginning, during, and at the end of the grazing season the five permittees use motorized vehicles on the perimeter roads to distribute livestock, haul in animals, haul out sick or injured animals, and to provide salt during the grazing season. The cattle are gathered by horseback.

There are approximately 6.5 miles of barbed-wire fence in the WSA used to restrict livestock movement. There was a tree and shrub planting done in 1971 in Nevada for erosion control around Tunnel Springs. Current status is unknown. The Middle Ridge enclosure, at the extreme south end of the WSA, is used for grazing studies and one spring development for livestock use.

The Hot Desert Grazing Management EIS (USDI, BLM, 1978b) proposes construction of 3.5 miles of allotment boundary fence from the Dixie National Forest south along the Utah/Nevada State line. An additional 3.5 miles of livestock fencing were proposed for pasture divisions on the two Utah allotments. Three spring developments (Cougar Spring, Willow Spring, and Middle Ridge Spring) are proposed to water livestock. No land treatment potential was identified due to the rough terrain.

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

There are no wild horses or burros in the area.

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Big Mountain	9,126	7,640	412	260	87 Cattle	05/16-10/07	1
Cougar Canyon	9,150	7,243	120	78	20 Cattle 4 Horses	06/01-10/31	1
Barclay	79,621	1,085	1,971	27	347 Cattle	06/16-11/15	3
Total	97,897	15,968	2,503	365			5

Sources: USDI, BLM, file data

COUGAR CANYON WSA

Visual Resources

The BLM visual resource inventory classified approximately 5,400 acres as Class A and 10,568 acres as Class C scenery. VRM Class II includes 5,400 acres and VRM Class IV includes 10,568 acres. (Refer to Appendix 7 in Volume I for a detailed discussion of the BLM VRM system.) Although the WSA displays some unusual landscapes, the most aesthetically appealing landscape is limited to the Pine Park and Pine Park Canyon areas.

Cultural Resources

As of 1988 there are no identified cultural values within the boundaries of the unit. However, it is likely that some significant sites exist because several sites yielding Anasazi and Southern Paiute ceramics have been found in relatively close proximity. Probable affiliation would be Archaic, Fremont, Virgin Anasazi, and Southern Paiute.

Recreation

The recreational use of the WSA is currently estimated at 500 visitor days per year, all of which are attributed to primitive activities such as hiking, rock-hounding, and fishing. No ORV use is attributed to the WSA. The entire WSA is open to ORV use but the rough terrain limits such use. There are no ways within the WSA.

Scout troops sometime hike from the Pine Park Campground down Pine Park Canyon to the Beaver Dam State Park. Most of the hiking, hunting, and nature study use of the WSA is day use originating from Cougar Pass on the east WSA boundary. At Beaver Dam State Park, most of the visitation occurs between June and August.

Visitor use data from Beaver Dam State Park indicate that approximately 7,000 visitors used the park in 1980. This is an increase of 15 percent from 1979. Length of stay at the park averages 2 or 3 days, but State Park employees believe that few of the visitors venture into the WSA.

Land Use Plans

There are no private in-holdings, private subsurface rights, or rights-of-way in the WSA. Both Lincoln County, Nevada (Brisio et al., 1981), and Washington County, Utah (Planning and Research Associates, 1971), have master plans stressing multiple use on

public lands. The BLM manages the area with the Virgin River and Caliente MFPs (USDI, BLM, 1979a and 1979h) which allow multiple use of the area. Wilderness is not addressed in those plans. However, wilderness designation is part of the BLM multiple-use concept. The BLM land use plan is linked to the State-wide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative. There are AMPs in use and wildlife HMPs have been completed or are in progress.

Dixie National Forest's Enterprise Unit Land Use Plan stresses multiple use for the Pine Park area on the northern boundary of the unit.

The Utah State Legislature passed S.C.R. No. 1 in 1986, opposing any additional wilderness designation in Utah. The Washington County commissioners and the Five County Association of Government have endorsed the Consolidated Local Government Response to Wilderness, which opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The U.S. Air Force's position is that low-level military overflights from Nellis Air Force Base would continue with or without wilderness designation (Nellis Air Force Base, 1985).

Socioeconomics

• Demographics

The Cougar Canyon WSA is in both Washington County, Utah, and Lincoln County, Nevada. The Utah Office of Planning and Budget estimated the Washington County population at 26,400 (a 93-percent increase since 1970) and Lincoln County at 3,732. Table 5 shows that 1980 census figures and projects populations to the year 2010 for Washington County. The population of Lincoln County is estimated to increase to 6,680 by the year 2000 (Nevada State Planning Coordinator's Office, 1980). A major portion of the Washington County population is centered in the St. George and Hurricane areas approximately 55 miles south and east of the WSA. Much of the remainder of Washington County is as sparsely populated as Lincoln County. The nearest Nevada community is Caliente which is some 40 miles to the west of the WSA.

• Employment

Table 5 provides the baseline (1980) and projected employment for Washington County to the year 2010. Total employment figures for Lincoln County in 1981

COUGAR CANYON WSA

was 1,918 (USDC, Bureau of Economic Analysis, 1982). Projected employment figures have not been calculated for Lincoln County.

Table 5
Baseline and Projected Population and Employment Growth
Washington County

	1980	1990	2000	2010
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100

Source: Utah Office of Planning and Budget, 1987.

Both Washington County and Lincoln County have similar economic structures. Although there is a large difference in the size of the workforces and economic sectors, the economies of both counties are centered around three sectors: retail trade, services, and government. The retail and government trade sectors are the most important sectors in terms of employment in the Washington County economy. The services and government sectors provide the greatest amount of employment in Lincoln County.

Washington County is part of the Southwest Multi-County District (MCD). Table 6 shows the baseline (1980) and projected employment by sector for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (22.3 percent), trade (20.3 percent), nonfarm proprietors (11.3 percent), and services (10.8 percent). Mining provided 2.4 percent of employment in this MCD.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

In Lincoln County the four main employment sectors in 1981 included services (26 percent), government

(20.7 percent), construction (14.6 percent), and mining (12.67 percent) (USDC, Bureau of Economic Analysis, 1982).

• Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation. Table 7 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

The WSA has no mining claims. If claims were located, regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which would be spent in the local economy.

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.

Table 7
Sales and Revenues

Source	Annual Local Sales ^a	Annual Federal Revenues
Oil and Gas Leases	0	0
Livestock Grazing	\$7,300	\$562
Woodland Products	0	0
Recreational Use	<u>\$2,050</u>	<u>\$ 0</u>
Total	\$9,350	\$562

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Five livestock operators have a total grazing privilege of 365 AUMs within the WSA. If all this forage were utilized, it would account for \$7,300 of livestock sales and \$1,825 of ranchers' returns to labor and investment.

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's nonmotorized recreational use is low. Related local expenditures are also low. These expenditures are insignificant to both the local economy and individual businesses. The WSA has no motorized recreational use. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can

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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 Cougar Canyon WSA is estimated at about 500 visitor days per year.

The WSA only generates Federal revenues from livestock sources (refer to Table 7).

Livestock permittees in the WSA can use up to 365 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$562 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 III-A and the Description of the Alternatives for the Cougar Canyon WSA.

No Action/No Wilderness Alternative

The area would be open to resource use and development without controls for wilderness protection. The projected changes would occur from rangeland developments.

- 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 Wilderness Management Policy (BLM Manual 8560). Wilderness characteristics in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities by VRM Class II management on 5,400 acres.

Disturbance of approximately 8 acres from construction of rangeland projects in the foreseeable future would result in a reduction of naturalness on the directly affected area but not in the WSA as a whole. Opportunities for primitive, unconfined recreation, and solitude would only be affected during the construction phase by visual and audible disturbance. Special features including Class A scenery, perennial streams, special status animal species, and wildlife

associated with wilderness would not be negatively affected because the direct disturbance would be minor involving 0.05 percent (8 acres) of the WSA and would generally not be located in special feature areas. The spring developments would benefit wildlife special features because of increased water sources. Appropriate measures would be taken to protect sensitive species prior to any surface-disturbing activity and it can be assumed that no negative impact would occur to these species. (Refer to the Wildlife Including Special Status Species section for more information.)

Military overflights would continue to detract from opportunities for solitude and primitive recreation.

The degree 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. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be reduced in quality on 8 acres of the WSA. Special features would not be negatively affected.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife could benefit by an increase in the availability of water through the construction of three spring developments. The disturbance of an estimated 8 acres (less than 1 percent of the WSA) through development of rangeland projects would disrupt wildlife for approximately 3 weeks of time. Deer, cougar, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. However, no decrease in wildlife populations is projected.

Although none are presently proposed, habitat manipulation for big game and fish could occur in the future, which would benefit fish and wildlife. No impacts on threatened or endangered species would result because there are none in the WSA. No impact to the Virgin River spinedace or any other Category 2 candidate species is projected. However, before authorizing surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If the special status species could be affected, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. The

COUGAR CANYON WSA

BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I).

Conclusion: Wildlife habitat and populations would not be adversely affected by the surface disturbance of 8 acres in the WSA due to rangeland development.

• Impacts on Livestock Management

Domestic livestock would continue to use 365 AUMs as authorized in the BLM Virgin River and Caliente MFPs. Current management practices would continue. The three proposed spring developments and 7 miles of fence could be completed without regard for wilderness values and the existing 6.5 miles of fence and one spring development could be maintained, which would result in improved livestock distribution.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not effect the current or projected methods and costs of livestock management for the five permittees using the three allotments in the WSA.

All Wilderness Alternative (15,968 Acres)

• Impacts on Wilderness Values

Wilderness designation of all 15,968 acres would preserve the area's wilderness values. The potential for surface-disturbing activities would be reduced through closure of the entire area to ORV use and to future mineral leasing and location, and through management of the area with VRM Class I which generally allows for only natural ecological change. Naturalness would be preserved on all 15,968 acres. Solitude would be preserved on approximately 1,300 acres that meet and 14,668 acres that do not meet the standards for outstanding solitude. The opportunities for primitive recreation would also be preserved, although only 400 acres are considered outstanding. Resources that could be considered special features including Class A scenery, special status animal species, wilderness associated wildlife, and perennial streams would also be preserved.

Development of rangeland projects, disturbing up to 6 acres (less than 1 percent) in the foreseeable future, would reduce naturalness in the directly affected area and opportunities for solitude and primitive recreation in the affected and adjacent areas during the time of construction. After rehabilitation is complete, the projects would meet the Wilderness Management Policy (BLM Manual 8560) criteria and would be sub-

stantially unnoticeable in the WSA as a whole. Special features would not be negatively affected because the disturbance would be minor, involving 0.04 percent (6 acres) of the WSA, and would generally not be located in special features areas. Appropriate measures would be taken to assure that no negative impact would occur to special status species. Wildlife special features would benefit from the spring development because of increased water sources. (Refer to the Wildlife Including Special Status Species section.)

Military overflights would continue to detract from opportunities for solitude and primitive recreation.

Conclusion: Wilderness values would be preserved throughout the WSA. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on 6 acres of the WSA.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, some wildlife could benefit due to the preservation of solitude. This alternative would allow the three spring developments and 7 miles of fence currently planned to be designated and installed comparable with wilderness protection criteria (refer to Appendix 1 in Volume I). The springs would increase the availability of water for wildlife use.

Conclusion: Wilderness designation would provide solitude and additional water for big game and other species of wildlife.

• Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Virgin River and Caliente MFPs. Use of the 365 AUMs currently allocated in the WSA would continue. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland developments would be maintained as in the past, based on practical necessity and reasonableness. New rangeland developments would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. The proposed three spring developments and 7 miles of fence would be

COUGAR CANYON WSA

designed and installed consistent with wilderness protection criteria (refer to Appendix 1 in Volume I).

Conclusion: The overall effect on methods and costs of livestock management would be negligible for the five permittees using the three allotments with the All Wilderness Alternative. The proposed developments could be constructed to meet wilderness protection criteria and still improve livestock management.

Partial Wilderness Alternative (Proposed Action) (6,408 Acres)

The major activities that would occur in the 6,408-acre designation portion of that WSA for this alternative are the same as described for the All Wilderness Alternative. For the 9,560-acre nondesignated portion, management would be as described for the No Action/No Wilderness Alternative.

• Impacts on Wilderness Values

Wilderness designation of 6,408 acres would contribute to the preservation of wilderness values in the manner discussed for the All Wilderness Alternative. Naturalness would be preserved on the entire 6,408 acres. Solitude would be preserved on 1,300 acres that meet and 5,108 acres that do not meet the standards for outstanding solitude. Opportunities for primitive recreation would also be preserved in the designated portion although only 400 acres are considered outstanding. Many of the resource values that could be considered special features, including Class A scenery, perennial streams, special status animal species, and wildlife associated with wilderness; would be protected by wilderness designation.

In the foreseeable future, development of rangeland projects, disturbing up to 6 acres (0.04 percent) of the WSA mostly in the nondesignated area, would reduce naturalness in the disturbed area and opportunities for solitude and primitive recreation in the affected and adjacent areas during the time of construction. After rehabilitation is complete, the projects would be substantially unnoticeable both inside and outside of the designated area. Although wilderness values would be preserved in the designated area, no loss of wilderness values would be expected in the nondesignated area either. Special features would be preserved in the designated area, and would be unaffected in the nondesignated area except that wildlife special features would benefit from the spring developments.

Overflights would continue to detract from opportunities for solitude and primitive recreation.

The degree to which wilderness values would be lost due to disturbance in the nondesignated area 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 about 42 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on 6 acres of the WSA. Wildlife special features would be preserved.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife could be affected by an increase in the availability of water through the construction of three spring developments in the nondesignated area. The disturbance of an estimated 6 acres through development of rangeland projects (2 acres from 3.5 miles of fence in the designated areas and 4 acres from three springs and 3.5 miles of fencing in the nondesignated area) would disrupt wildlife for short periods of time (up to 3 weeks). Deer, cougar, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. However, no loss in wildlife populations is projected.

No impacts on threatened or endangered species would result because there are none in the WSA. The Category 2 candidate species known or thought to occur in the WSA would not be affected.

Conclusion: Wildlife habitat and populations would not be adversely affected by the surface disturbance of 4 acres in the designated area and 2 acres in the nondesignated area due to rangeland developments.

• Impacts on Livestock Management

Wilderness designation of 6,408 acres of the WSA would affect domestic livestock grazing essentially the same as with the All Wilderness Alternative. The 63 AUMs estimated to be in the designated portion of the WSA would continue to be available. Development of the proposed 3.5 miles of pasture division fence for livestock management with the 63 AUMs in the designated portion would be designed to preserve wilderness values.

COUGAR CANYON WSA

Conclusion: The methods and costs of livestock management would not be affected by the Partial Wilderness Alternative.

Red Mountain
WSA



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RED MOUNTAIN/RED MOUNTAIN 202 WSA

(UT-040-132A)

INTRODUCTION

General Description of the Area

The Red Mountain/Red Mountain 202 WSA consists of 18,290 acres of public land located approximately 9 miles northwest of St. George, Utah in Washington County. The WSA also contains 745 acres of in-held State land. It is managed by BLM's Cedar City District, Dixie Resource Area Office.

Red Mountain is a large Navajo Sandstone plateau rising to an elevation of 4,600 feet. The WSA is characterized by very hot summers and relatively short, mild winters. This unit is comprised of two main vegetation types: pinyon-juniper woodland and sagebrush.

The climate in Washington County, Utah, is semiarid and characterized by low precipitation, low humidity, bright sunshine, and daily variations in temperature. The Red Mountain WSA is characterized by very hot summers and relatively short, mild winters. Maximum temperatures in midsummer range from 90 degrees to over 100 degrees Fahrenheit (F). Maximum winter temperatures range from 44 degrees to 54 degrees F, and minimum winter temperatures range from 20 degrees to 28 degrees F. Cold spells in the winter are rare and of short duration.

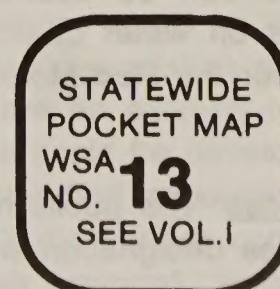
The average annual precipitation varies between 8 and 12 inches in the WSA. Maximum precipitation occurs in winter, associated with storm systems from the Pacific Ocean. A second maximum occurs during July and August, associated with summer thunderstorms. Intense summer thunderstorms occasionally cause local flash floods in mountainous areas and canyons. The driest months are May and June.

Since publication of the Draft EIS, BLM has decided to analyze a 40-acre block of land acquired through a private exchange as a WSA under section 202 of the FLPMA. This 40-acre parcel (NW1/4 SW1/4, sec. 32, T. 40 S., R. 16 W.) is completely within the Red Mountain WSA and for the purpose of this EIS will be included and analyzed with the 18,250-acre Red Mountain WSA as the 18,290-acre Red Mountain/Red Mountain 202 WSA.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, 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. 41 S., R. 16 W., secs. 16, 19, and 30; and T. 41 S., R. 17 W., secs. 9 and 24) 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 boundary of the WSA has been redrawn (SE1/4 NE1/4, sec. 31, T. 41 S., R. 16 W.) to exclude 40 acres where BLM owns the mineral estate but does not own the surface rights.
3. The Draft EIS identified a Partial Wilderness Alternative of 17,450 acres. This alternative was designed to avoid conflicts with possible community expansion on the southwestern edge of the WSA. The Partial Wilderness Alternative has been revised for the Final EIS. This new Partial Wilderness Alternative includes 12,842 acres and excludes additional lands along the northern boundary of the WSA to provide a more manageable wilderness boundary.
4. The anticipated surface disturbance presented in the Draft EIS (1,130 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 1,130 acres reported in the Draft EIS to 500 acres of surface disturbance for the Final EIS. All 500 acres of



RED MOUNTAIN/RED MOUNTAIN 202 WSA

disturbance would result from community expansion activities.

5. The size of the WSA has been enlarged by 40 acres to include a FLPMA Section 202 inventory unit that was formerly a private tract which has been acquired by BLM through a private exchange.

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 III-A (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 Red Mountain/Red Mountain 202 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 without wilderness designation have been revised downward from 1,130 acres (800 acres due to community expansion and 330 acres due to mineral exploration and development) to 500 acres (due to community expansion). Because the community expansion would occur on the Santa Clara Bench which is occupied by sagebrush, it would not cause a significant loss of this vegetation type within the WSA or Statewide. No threatened or endangered species occur in the WSA. In any event, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on special status plant species. Necessary mitigation measures, such as avoidance of sensitive areas, would be implemented. While the possibility exists for the loss of individual plants, population viability would not be affected. Therefore, impacts on vegetation types are not analyzed in detail.

2. Water Resources: Because of the limited presence of surface water within the WSA, the projected community expansion would not significantly impact surface water quality. The groundwater resource in the Navajo Sandstone can be accessed from off-site. Therefore, impacts on water quality or uses are not significant issues for the Red Mountain/Red Mountain 202 WSA.

3. 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 and all but 800 acres have been closed to surface occupancy for future oil and gas leases and operations. The geothermal resource would not likely be developed because it is low temperature and a long distance from large urban areas.

There are no mining claims within the WSA and potential uranium deposits are small and could not be economically developed in the foreseeable future. No deposits of salable minerals exist inside 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 (see Appendix 6 in Volume I).

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 Red Mountain/Red Mountain 202 WSA contains low densities of mule deer and some cougar habitat. No critical or crucial habitats would be impacted by the proposed community expansion or ORV use. No impacts are expected to occur to the endangered bald eagle because it is only an occasional winter visitor to the WSA, prey densities within the WSA are low, and no special use areas are found. Given these conditions, potential impacts on wildlife habitat and populations are not significant issues for the Final EIS.

5. Forest Resources: No harvest of forest resources is presently occurring and none is projected for the foreseeable future from the WSA. There are no commercial forest products located in the WSA. Thus there would be no harvest or loss of the forest resource. Therefore, impacts on forest resources are not significant issues for analysis in the Final EIS.

6. Visual Resources: Visual resources on 500 acres along the southern border of the WSA would be altered if the proposed community expansion area were developed. However, visual resources over the remaining 97 percent of the WSA, including the spectacular Red Cliffs above Snow Canyon and those paralleling

RED MOUNTAIN/RED MOUNTAIN 202 WSA

old U.S. Highway 91, would not be affected. Therefore, impacts on visual resources are not addressed in detail in the Final EIS.

7. Cultural Resources: Disturbance of 500 acres could impact cultural resources if the community expansion proposals are implemented. However, none of the eight known cultural sites in the WSA are located in the proposed development area. In any event, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any future surface disturbance. Given this situation, impacts on cultural resources are not significant issues for the Red Mountain/Red Mountain 202 WSA.

• Issues Analyzed in Detail

The significant issues for the Red Mountain/Red Mountain 202 WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on soils.
3. Impacts on livestock management.
4. Impacts on recreation.
5. 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 need for further inventories of resource values; 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 for responses to specific comments about the Red Mountain/Red Mountain 202 WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

Alternatives that would add acreage, mainly along the northern border of the WSA while deleting other areas along the southern and western borders of the WSA, were suggested by the public during the comment period for the Draft EIS. These two alternatives suggest an 18,000-acre wilderness area.

The suggested deletions are consistent with BLM proposals for the Partial Wilderness Alternative; however, the suggested addition is for State land and cannot be included in the wilderness study (refer to Volume VII-B, General Comment Response 6.4).

Another suggested alternative would limit the wilderness boundary to "the top of the mountain," creating a wilderness area of approximately 5,400 acres. BLM did not identify significant new information or conflict resolution that would result from such an alternative; therefore, it was eliminated from further study.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (18,290 acres); and (3) Partial Wilderness (Proposed Action) (12,842 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections. These assumptions are indicated in each case. The assumed BLM management actions presented in the Introduction to Volume III-A are also applicable.

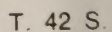
• No Action/No Wilderness Alternative

With this alternative, none of the 18,290-acre Red Mountain/Red Mountain 202 WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Virgin River MFP (USDI, BLM, 1979a) and subsequent BLM multiple-use activity plans. The in-held State lands within the WSA have not been identified in the MFP for special Federal acquisition through exchange or purchase (refer to Map 1). State lands are analyzed as remaining under existing State ownership. There are no private lands within the WSA. The figures and acreages given are for Federal lands only.

• Management Conditions and Constraints

All 18,290 acres would remain open to mineral location, leasing, and sale. There are no existing mining claims in the WSA. Development of any future mining claims would be regulated by unnecessary or undue degradation regulations (43 CFR 3809). There are no existing oil and gas leases, but new leases could be developed under leasing Category 1 (standard stipulations) on 800 acres and Category 3 (no surface occupancy) on 17,490 acres. Although mineral resources would be

R. 16 W.



RED MOUNTAIN/RED MOUNTAIN 202 WSA

managed as described above, no locatable or leasable mineral exploration or development are projected in the WSA because the level of known resources and the probability of their development are too low to support that assumption. Refer to the Issue Identification section and Appendix 6 in Volume I for the explanation of the mineral and energy development projection.

The present domestic livestock grazing use of the 18,290-acre area of the WSA would continue as authorized in the MFP (117 AUMs). No new rangeland developments are proposed. The one existing water trough and 0.5 mile of fence could be maintained in a routine manner with motorized equipment.

A power site classification extends into the WSA (952 acres) and would remain in effect. This withdrawal segregates the lands from all public land laws. Mining location is allowed under this classification.

Vehicle use in the 18,290 acres is limited to existing roads and trails, including the 4 miles of existing vehicular way and 1 mile of road. New access could be developed and future realty actions could be implemented.

A 500-acre area of the Santa Clara Bench could be made available for realty activities, including rights-of-way, exchanges, and other transfer actions that may be associated with future community growth with an amendment to the existing Virgin River MFP.

The entire 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 approximately 500 acres of surface disturbance due to community expansion. The WSA is located near the small community of Ivins, and it is expected that community expansion would extend into the WSA from the south onto the Santa Clara Bench. This expansion would consist of residential subdivisions. No locatable or leasable mineral resource exploration or development is projected. No rangeland, wildlife habitat, or water-

shed projects are planned. No disturbance from ORV use is anticipated. This is because ORV use will be limited to existing roads and trails. It is projected that overall recreation use will increase over the current estimated use of 500 visitor days annually at a rate of 2 to 7 percent per year. Approximately 400 of the 500 current visitor days are associated with vehicular use of the existing way, and 80 percent of the recreation use would continue to be vehicular, involving use of the way.

- All Wilderness Alternative

With this alternative, all 18,290 acres of the Red Mountain/Red Mountain 202 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 Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

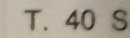
The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that one section of State land (745.1 acres) would remain under existing ownership. There are no private lands within the WSA (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given under this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 18,290 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. There are currently no mining claims in the WSA. Oil and gas leases have been phased out of the WSA and no additional leases would be issued. Therefore, no exploration or development of locatable or leasable minerals would occur.

Present domestic livestock grazing would be allowed to continue as authorized in the Virgin River MFP. The 117 AUMs on four allotments in the WSA would remain available to livestock as presently allotted. After designation, existing developments (0.5 mile of fenceline and a livestock water trough) would be used and maintained in the same manner as in the past based on practical necessity and reasonableness. A power site classification extends into the WSA (952 acres) and would remain in effect.

R. 16 W.



T. 41 S.

T. 42 S.

RED MOUNTAIN/RED MOUNTAIN 202 WSA

The entire 18,290-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. About 4 miles of an existing vehicular way in the northeast part of the WSA would not be available for vehicular use except as indicated above. A 1-mile road leading to the way would remain open to vehicles. Less than 1 mile of the rest of the WSA boundary follows existing gravel and dirt roads that would remain open to vehicular travel.

Visual resources on 18,290 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 will occur in the foreseeable future. Community expansion onto the Santa Clara Bench portion of the WSA would not be allowed. Implementation of the All Wilderness Alternative would preclude mining claim location and mineral leasing. Therefore, no mineral resource exploration or development would occur. No rangeland, wildlife habitat, or watershed projects are planned following wilderness designation. No disturbance from ORV use is projected, as it would not be allowed. It is projected that primitive recreation use would increase over the current estimated use of 100 visitor days annually at a rate of 2 to 7 percent per year.

- Partial Wilderness Alternative (Proposed Action) (12,842 Acres)

With this alternative, 12,842 acres of the Red Mountain/Red Mountain 202 WSA would be designated as wilderness (refer to Map 3).

The objective of this alternative is to avoid conflicts of wilderness designation with vehicular access and potential community expansion while analyzing as wilderness those portions of this WSA that have the best wilderness values. The wilderness boundary of this alternative would be at the base of the Red Cliffs in the southern portions of the WSA. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for

solitude, primitive recreation, and special features were included where possible within a manageable boundary.

The 5,448-acre area within the WSA, but outside of that portion designated as wilderness, would be managed in accordance with the Virgin River MFP as described for the No Action/No Wilderness Alternative. The 12,842-acre area designated as wilderness would be managed in accordance with the Wilderness Management Policy (BLM Manual 8560), as described for the All Wilderness Alternative.

There are no State or private lands in that portion of the WSA that would be designated as wilderness (refer to Map 1). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

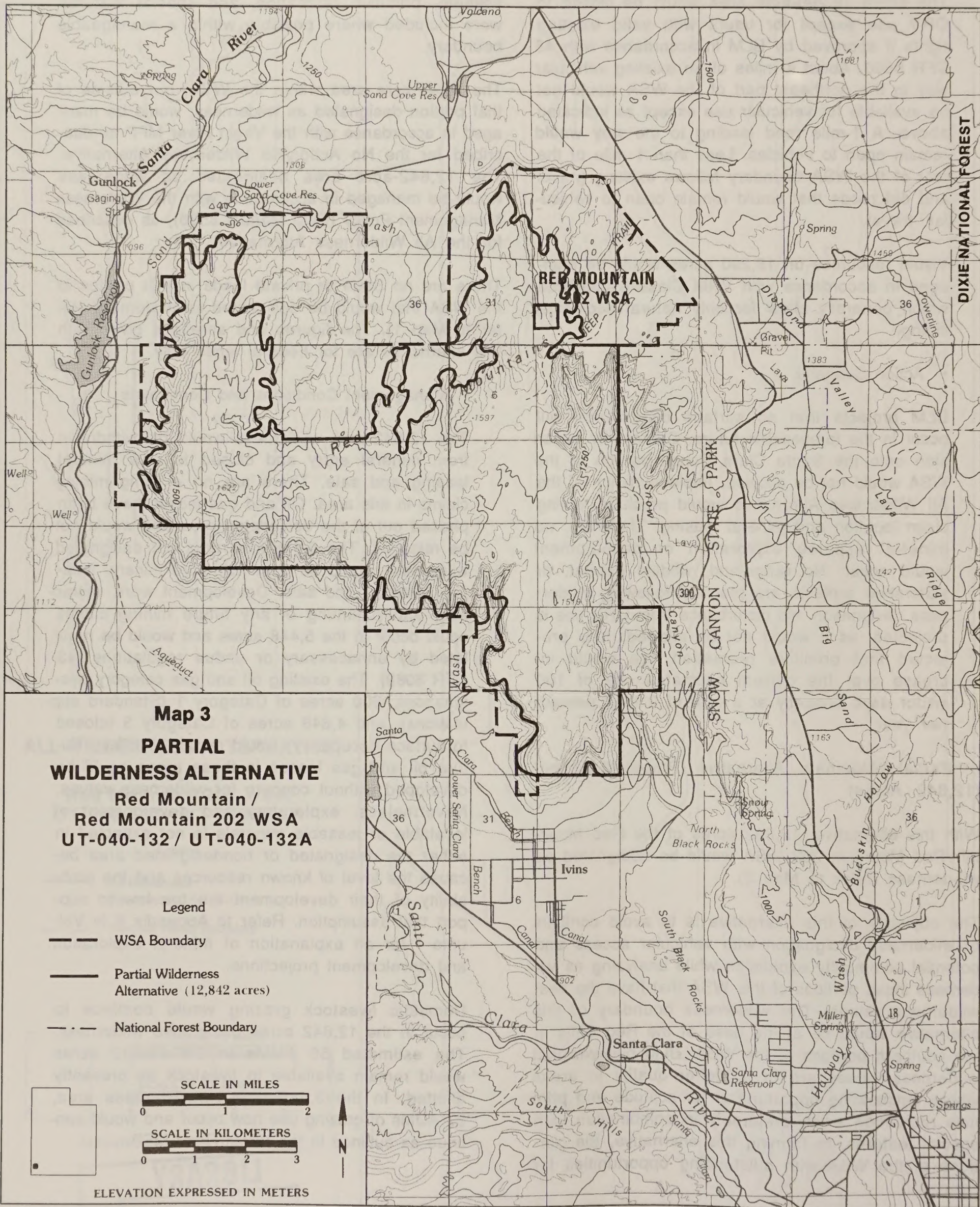
The 12,842-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. There are no existing mining claims in this area. Oil and gas leases have been phased out of the designated area and would not be reissued. The 5,448-acre area not designated wilderness would be open to future mineral location, leasing, and sale. Development work, extraction, and patenting of any future mining claims could occur in the 5,448 acres and would be regulated by unnecessary or undue regulations (43 CFR 3089). The existing oil and gas category designations, 800 acres of Category 1 (Standard stipulations), and 4,648 acres of Category 3 (closed to surface occupancy) would remain in effect. Future oil and gas leases in these areas could be developed without concern for wilderness values. Nevertheless, exploratory and development of locatable or leasable minerals is not expected in either the designated or nondesignated area because the level of known resources and the probability of their development are too low to support that assumption. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

Domestic livestock grazing would continue to occur in the 12,842 acres designated wilderness. The estimated 50 AUMs in the 12,842 acres would remain available to livestock as presently allotted. In the 5,448-acre nonwilderness area, 67 AUMs of grazing use now occur and would continue as outlined in the Virgin River MFP.

RED MOUNTAIN / RED MOUNTAIN 202 WSA

R. 17 W.

R. 16 W.



T. 40 S

T. 41 S.

T. 42 S.

RED MOUNTAIN/RED MOUNTAIN 202 WSA

A power site classification of 120 acres within the designated area and 832 acres in the nondesignated area would remain in effect segregating those lands from public land laws.

The 12,842-acre area designated as wilderness would be closed to ORV use. About 1 mile of the existing way would not be available for vehicular use except in situations described under the All Wilderness Alternative. ORV use would continue to be limited to roads and trails in the remainder of the WSA. About 3 miles of the way, the existing mile of cherry-stemmed road, and other road segments that border the WSA, would remain open to vehicular travel in accordance with the Virgin River MFP.

Visual resources on the 12,842-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 5,448 acres would be managed as VRM Class II.

- **Action Scenario**

BLM anticipates that no surface disturbance will occur for the designated portion of the WSA. Mining claim location and mineral leasing would not be allowed. Therefore, no mineral resource exploration or development would occur. No rangeland, wildlife habitat, watershed, or other developments are planned following wilderness designation.

About 500 acres of surface disturbance are projected for the nondesignated portion of the WSA resulting from the community expansion described for the No Action/No Wilderness Alternative. No locatable or leasable mineral exploration or development is projected for the nondesignated portion of the WSA in the foreseeable future.

No surface disturbance from ORV use is projected in the foreseeable future in either the designated or nondesignated area because of management restrictions. Use would not be allowed in the designated area and would be limited to the existing road and way in the nondesignated area. It is projected that recreation use will increase over the current use of 500 visitor days annually at a rate of 2 to 7 percent per year. Eighty percent of the use would continue to be associated with vehicular use of the existing way.

Summary of Environmental Consequences

Table 1 presents 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 section of 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 Red Mountain/Red Mountain 202 WSA encompasses 18,290 acres of public land and is approximately 6 miles wide and 7 miles long.

- **Naturalness**

The WSA appears natural. Imprints of man that existed in the WSA at the time of the wilderness inventory include 1 mile of road and 4 miles of way, remnants of fencing (0.5 mile), and a livestock watering trough near the pond above Snow Canyon. These imprints combined involve about 5 surface acres, but are not substantially noticeable in the WSA. No surface-disturbing activities have occurred since the wilderness inventory, and naturalness has not been affected.

- **Solitude**

Approximately 4,240 acres (23 percent) of the WSA present opportunities for solitude that meet the outstanding criterion for lands under wilderness review; 14,050 acres do not meet the criterion. The WSA possesses qualities that give visitors a feeling of vastness. These include topographic screening and plateau top isolation in portions of the WSA. The size and configuration of the WSA does not enhance or detract from the outstanding opportunities for solitude present in the WSA.

There are significant outside sights and sounds on the Santa Clara Bench which detract from the solitude

RED MOUNTAIN/RED MOUNTAIN 202 WSA

Table 1
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness	Partial Wilderness (12,842 Acres) (Proposed Action)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation. In the foreseeable future, naturalness, opportunities for solitude and primitive recreation, Class A scenery, and special status species habitat, would be directly lost on 500 acres of the WSA due to community expansion. An indirect reduction in the quality of opportunities for solitude and primitive recreation and scenic quality would occur on an additional 1,000 acres. Continued and increased vehicular use of 4 miles of way would detract from opportunities for solitude and primitive recreation.</p>	<p>Wilderness values would be preserved in the designated area, which is about 70 percent of the WSA. In the nondesignated area, community expansion would result in the direct loss of naturalness, opportunities for solitude and primitive recreation, Class A scenery, and special status species habitat on 500 acres. An indirect reduction in the quality of opportunities for solitude and primitive recreation and scenic quality would occur on an additional 1,000 acres. Continued and increased vehicular use of 3 miles of way would detract from wilderness opportunities in the nondesignated portion of the WSA.</p>
Impacts on Soils	<p>There would be slight increases in soil loss and salinity from the 500 acres disturbed for community expansion. These increases would be temporary and would be expected to decrease after completion of development.</p>	<p>No impacts on soils are anticipated because of limited surface disturbance.</p>
Impacts on Livestock Management	<p>Livestock management and grazing would not be affected because management and access would continue as at present.</p>	<p>Vehicular use restrictions on 4 miles of ways could inconvenience six livestock operators in the area, but the overall effect on methods and costs of livestock management would be negligible.</p>
Impacts on Recreation	<p>The quality of primitive recreational use would be lost or reduced on about 8 percent of the WSA due to community expansion. Such use would be reduced in quality on the northeastern portion due to continued vehicular use of existing roads and ways. Primitive and motorized recreational use would increase.</p>	<p>Impacts on recreational use would be the same as described for the No Action/No Wilderness Alternative.</p>

RED MOUNTAIN/RED MOUNTAIN 202 WSA

found in the WSA. Also, the northwestern corner of the WSA is located approximately 1 mile from a military flight path used by fighter planes from Nellis Air Force Base. The flight path is utilized two to three times per week by flights of four fighters flying at subsonic speeds at minimum 200-foot elevations (Nellis Air Force Base, 1985). Military overflights may occasionally detract from opportunities for solitude in the WSA.

- **Primitive and Unconfined Recreation**

The outstanding opportunity for primitive and unconfined recreation within the WSA is defined by the quality of three types of recreation: hiking, backpacking, and horseback riding. The hiking, backpacking, and horseback riding opportunities in the WSA are of higher quality than the opportunities on surrounding lands. The WSA does not provide the opportunity for a great diversity of primitive and unconfined recreation activities.

Hiking opportunities within the WSA are associated with sightseeing. There are hiking opportunities to observe views into Snow Canyon, to observe the sandstone formations of the plateau top, and to visit the natural slickrock tanks in one branch of Snow Canyon. With the exception of opportunities found in the adjacent Snow Canyon State Park, these opportunities are superior to other hiking opportunities in the immediate vicinity.

The overnight nature of backpacking allows participants to extend their sightseeing range to the remainder of the southern rim and the west rim above the Santa Clara River. The configuration of the WSA makes it possible for backpackers to spend 2 nights on the plateau at different locations and experience different sightseeing objectives. The horseback riding opportunity is associated with sightseeing and hunting. Lack of water limits the use of horses to day rides.

Primitive recreation opportunities on approximately 2,640 acres (14 percent) of the WSA meet the outstanding criterion for lands under wilderness review. The remaining 15,650 acres do not meet the outstanding quality criterion.

- **Special Features**

Scenic values were identified as a special feature during the wilderness inventory. The Snow Canyon portion of the WSA possesses exceptional scenic values.

The WSA also provides spectacular views of the surrounding area. All 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 be considered special features. There is one animal species (bald eagle) listed as endangered. There are 13 other special status animal species that likely occur in the WSA (refer to the Wildlife Including Special Status Species section for more information). The WSA has populations of cougar which is a wilderness associated species.

- **Diversity**

This WSA is in the Intermountain Sagebrush Province Ecoregion and has the PNV type of juniper-pinyon woodland (refer to the Vegetation Including Special Status Species section for further discussion on ecoregions and PNV types). The ecoregion and PNV types represented by this WSA are compared Statewide and nationally with existing and potential NWPS units in the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area: Las Vegas, Nevada.

Air Quality

The WSA and most of the surrounding area have been designated Class II under PSD regulations. This means that air quality deterioration that accompanies moderate, well-controlled growth would not be considered significant. Ambient sulfur dioxide and nitrogen dioxide concentrations are below Ambient Air Quality Standards and applicable State regulations. This is attributed to the lack of any high concentration of fossil-fuel powered industrial sources in the area. Only limited visibility measurements exist for the area. Visibility data from the St. George airport indicate that daily visibilities usually range from 65 to 100 miles. Visibility measurement in Warner Valley, approximately 22 miles from the WSA, during 1977 and 1979 showed mean visual ranges of 80 miles and 76 miles, respectively (USDI, BLM, 1980c).

Geology and Topography

The Red Mountain/Red Mountain 202 WSA is located in the Basin and Range Colorado Plateau Physiographic Province transition zone. Red Mountain is a large Navajo Sandstone plateau abruptly rising 1,400 feet above the Santa Clara Bench to an elevation of 4,600

RED MOUNTAIN/RED MOUNTAIN 202 WSA

feet. The top is weathered, rolling, broken sandstone with peaks up to 5,432 feet. The plateau fades to the north into rolling pinyon-juniper woodland covered hills. On the east it drops sharply into the Snow Canyon State Park.

The majority of the tract is underlain by the Jurassic Navajo Sandstone Formation, which consists almost entirely of ancient desert dunes. These are truncated by topset beds resulting in frequent crossbedding, often producing patterns on the exposed sandstone surfaces. The Kayenta Formation (chiefly sandstone), Quaternary basalts, and alluvial deposits outcrop on the remainder of the tract. The Gunlock Fault runs north to south through the western portion of the WSA.

Soils

The soils of the WSA are almost entirely derived from sandstone. The texture is a fine sand that is easily moved by wind or water. There are no soils of prime or unique farmland quality.

The WSA contains four major soil types: rockland, rock outcrop, mespun fine sand, and rockland stony. The following descriptions are taken from the Washington County Soil Survey (USDA, SCS, 1977).

Nearly the entire area falls into the rockland type. It is found on the mesa tip from Snow Canyon on the east to the cliffs above Gunlock and Ivins on the west and south and to the WSA boundary on the north. Rockland consists of 60 to 80 percent rock outcrop and 20 to 40 percent soils that are very shallow over bedrock. Soils have formed in a few small secluded areas, but the kinds of soils are not identified because of their wide variation.

Rock outcrops occur in the cliffs surrounding the WSA and in the white sandstone buttes and mesas on the southeastern side of the WSA. The rock outcrops consist of exposures of bare bedrock, mostly sandstone, limestone, conglomerate, or basalt. Slopes are variable, ranging from sloping to very steep or nearly vertical.

Mespun fine sand type occurs in the center of the WSA in conjunction with an existing wash. It encompasses less than 1,000 acres. These soils are hummocky eluvium sand deposits derived from sandstone.

Rockland stony type occurs in a small area on top of the mesa just above Snow Canyon and consists of

stony and bouldery soils that have slopes of 30 to 70 percent. Sandstone outcrops and cliffs occur mainly on the upper parts of the slopes in this WSA. The stones and boulders originate from these cliffs and are commonly underlain by sand, shale, or siltstone and weathered, shattered remnants of the rock. Soil development is minor because of continual deposits of material from higher lying positions.

Erosion in the WSA is moderate, and the sediment production is low to medium depending upon the amount and kind of vegetation. Approximately 3,650 acres of the WSA are in moderate erosion condition and 14,600 acres are in a slight condition. Total estimated sediment yield at 1.3 cubic-yards per acre for soils in moderate erosion condition and 0.6 cubic-yards per acre for soils in slight erosion condition is 13,505 cubic yards (USDI, BLM, 1979a; Leifeste, 1978).

Soils in this WSA fall in three salinary classes: 210 acres of moderately saline, 190 acres of slightly saline, and 17,890 acres of nonsaline. When undisturbed, it is estimated that they produce 23 lb of salt per acre per year.

The reclamation potential of disturbed soils is limited due to soil and climatic factors.

Vegetation Including Special Status Species

The WSA, due to its closeness to both the Hot Desert and the high Great Basin and mountainous areas to the north, comprises a variety of plant species. This ecotone area includes Ponderosa pine, Utah agave, pinyon pine, manzanita, and yucca growing in close proximity. Other species such as Gambel's oak and cliffrose may be found along the high rocky ridges. Typical grass species occurring in the area are curly grass, sand dropseed, Indian ricegrass, and cheatgrass.

There are approximately 17,400 acres of pinyon-juniper woodland sage, 889 acres of sagebrush, and 1 acre of riparian vegetation inside the WSA boundaries.

No special status plant species are known to occur in the WSA (see Appendix 4 in Volume I).

The WSA is in the Intermountain Sagebrush Province Ecoregion, as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

RED MOUNTAIN/RED MOUNTAIN 202 WSA

Water Resources

The WSA is located within the Santa Clara drainage, a subbasin of the Virgin River which lies within the Lower Colorado River hydrologic subregion.

The presence of surface water in the WSA is limited. There are no springs or creeks. Small amounts of surface water are available in potholes in sandstone areas. Two potholes probably maintain water throughout the season. The remaining holes contain water only during and immediately following precipitation.

Since the waters from this WSA drain into the Santa Clara River, the water quality standards for it apply to this area. The State water quality standards for the Santa Clara River and tributaries from Gunlock reservoir to headwaters are: Class 1C (protected for domestic purposes with prior treatment by treatment processes as required by the Utah State Department of Health), 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 is good following a storm but deteriorates as the water stagnates. Water quality data are available on one of these sources indicating the water is soft and has low alkalinity, neutral PH, low total dissolved solids (TDS), moderately low nutrients, and low fecal coliform count (USDI, BLM, 1978b). Past use of this water has been for stock purposes. There are no present uses of the water except for livestock and wildlife.

There are small seeps occurring within the canyon areas. These are probably reliable only following a storm and decrease as the water held in the soils and rocks is exhausted.

The entire WSA is underlain by an aquifer contained within the Navajo Sandstone. The depth, productivity, and economic feasibility of developing this unit is uncertain, but successful wells supplying St. George have been drilled in the adjacent Snow Canyon in the same aquifer.

The water rights for the Red Mountain area are fully appropriated. The Santa Clara River and tributaries are closed to the appropriation of water, both surface and underground. Some consideration has been given to bedrock development. Washington County is interested in keeping all potential water supplies open to exploration and development.

Mineral and Energy Resources

The mineral and energy resource rating is given in Table 2. Refer to Appendix 5 in Volume I for a detailed description of the SAI rating system.

Table 2
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 3	c1	10 to 50 million barrels of oil; 60 to 300 billion cubic feet of gas
Uranium	f 2	c2	Less than 500 metric tons of uranium oxide
Coal	f 1	c4	None
Geothermal	f 2	c3	Low temperature resource

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

The oil and gas potential for Red Mountain is rated as (f3) (moderately favorable), (c1) (lowest degree of certainty). This is based on correlations with parts of Arizona, which suggest that the tract has a reasonable possibility of oil and gas accumulations related to large displacement thrust faults. There are, however, no specific data on the deep structure of this WSA. It has been estimated that there could be up to 50 million barrels of oil and 300 billion cubic feet of gas in-place.

The Virgin River MFP closed Red Mountain to oil and gas leasing (USDI, BLM, 1979a). The closure (Category 4) was later amended to no surface occupancy (Category 3) on about 17,490 acres and leasing with standard stipulations (Category 1) on 800 acres.

There are no oil and gas leases within the WSA.

RED MOUNTAIN/RED MOUNTAIN 202 WSA

- Coal

Because there are no coal-bearing formations anywhere in the vicinity, Red Mountain has been assigned a coal favorability of (f1) (lowest favorability) and (c4) (highest certainty of knowledge).

- Geothermal

The unit has been assigned a relatively high certainty (c3) for the occurrence (f2) of low temperature geothermal resources (less than 90 degrees Centigrade [C] at depths generally less than 1 kilometer).

- Locatable Minerals

- Uranium

The WSA is within the area identified as the Southwest Utah Favorable Area (USDOE, 1983). This is defined as an area where available data indicate that the geologic environments are favorable for concentrations of uranium. The tract has been rated (f2) (potentially favorable for small deposits of less than 500 metric tons of uranium oxide) with a low certainty (c2) of occurrence. Favorable host rocks occur at depths between 1,000 and 4,000 feet. It is unlikely that deposits of this limited size at these depths represent potentially economic deposits.

- Other Locatables

This tract is not known to be valuable for other locatable minerals and there presently are no mining claims in the WSA.

- Salable Minerals

Significant deposits of salable minerals are not known to occur in the WSA.

Wildlife Including Special Status Species

The primary big game animal in the WSA is mule deer, although deer numbers are low. The WSA lies within the boundaries of Deer Herd Unit 61B. Severe declines occurred during 1973 and 1974 in this unit, and little recovery has occurred since then. Much of the area is used as winter range by mule deer, with light use occurring yearlong, depending on water availability. Habitat in this area is in poor to fair condition, rabbitbrush and bitterbrush being the key for-

age species for deer during the winter (USDI, BLM, 1978b).

Hunting pressure in the area is very light due to the ruggedness of the area and low wildlife population densities.

Other game animals that may be found in the WSA are mourning dove and possibly Gambel's quail (USDI, BLM, 1978b).

Various nongame mammals, birds, and reptiles occur in the WSA. This diversity is due primarily to the variety of habitats in the area. However, populations are low due to the scarcity of a primary food chain. Falcons have been seen hunting on Red Mountain, but the degree of use is believed to be light because of low prey densities.

In the WSA there are no existing wildlife improvements, critical habitat, or crucial habitat. There are no plans to initiate wildlife improvement projects within the WSA.

The bald eagle is a listed endangered species known to use the WSA. Primarily a winter visitor, the bald eagle utilizes the area periodically for hunting. No roosting areas or special use areas have been identified, and bald eagle use of the area is believed to be light (USDI, BLM, 1978b). The golden eagle, a BLM sensitive species, is an occasional visitor to the WSA.

In addition, 12 Category 2 candidate species may occur in the WSA. These are the desert tortoise, ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, Great Basin Silverspot butterfly, gila monster, and Virgin River montane vole (see Appendix 4 in Volume I).

The WSA contains cougar habitat and is within Utah Cougar Management Unit 29, Pine Valley. Cougar populations and harvest by sport hunters and by the Animal Damage Control Program has been the second highest in this management unit, compared to any other location in Utah. During an 11-year period (1977 through 1987), a total of 216 cougars were taken from the Pine Valley Management Unit. This harvest averaged nearly 20 animals per year (UDNRE, UDWR, 1988). It cannot be determined how many of these may have been taken from within the WSA.

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Forest Resources

About 17,400 acres of pinyon-juniper woodland are found in the WSA. No significant harvestable forest resources occur in the WSA. Historically, juniper trees may have been cut occasionally. The potential use of forest products in this area is very small due to sparse tree density.

Livestock and Wild Horses/Burros

Under present land management practices (AMPs), portions of four allotments are found in the WSA. The Sand Wash Custodial Allotment (one permittee) grazes four cattle from November 16 to May 31. The Veyo Allotment (two permittees) has 100 cattle from October 16 to May 28. The Sand Cove Reservoir Custodial Allotment (one permittee) has two cattle from October 16 to May 31, and the Gunlock Allotment (two permittees) runs 65 cattle from October 16 to May 31. Grazing on the four allotments is currently licensed at 1,277 AUMs. One-hundred and seventeen or less than 10 percent of these AUMs come from within the WSA. Table 3 shows the grazing status on Red Mountain.

Because of steep terrain, low forage production, and lack of water, approximately 85 percent of the WSA is unsuitable for livestock grazing. The remaining 15 percent of the area has forage in only poor to fair condition for livestock grazing. Approximately 9,112 acres or 50 percent of the area is unallotted.

Most of the area has low treatment potential due to the rough terrain, making the area marginal for a livestock operation. The only existing range improvements within the WSA is a 0.5 mile of livestock fence

and a water trough. Under existing planning efforts, no developments are proposed for the area. There are 4 miles of way and a 1-mile road that are used a few times during the grazing season by permittees to check on their livestock.

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 Red Mountain WSA (USDA, APHIS, 1988).

Visual Resources

The BLM visual resource inventory classified all 18,290 acres as Class A and rated the entire WSA a VRM Class II. Refer to Appendix 7 in Volume I for a detailed discussion of the BLM VRM rating system.) The mountain top is not unusual scenery, but approximately 5,000 acres along the south side and above Snow Canyon are spectacular. The red cliffs paralleling the old Highway 91 are the dominant landscape features in the WSA because they provide striking contrast against the blue sky.

Cultural Resources

Cultural resource data for Washington County, where Red Mountain is located, were derived from existing publications and site forms and a 1-percent random stratified sample of the project area conducted by BLM personnel in 1976. The projected archaeological site density for the Red Mountain area, based on the 1-percent random stratified sample, varies between 4 to 40 sites per square mile depending on the location (USDI, BLM, 1978b).

Table 3
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Gunlock	7,892	1,670	494	16	65 Cattle	10/16-05/31	2
Sand Cove Reservoir	1,810	480	15	10	2 Cattle	10/16-05/31	1
Sand Wash	5,360	3,528	26	18	4 Cattle	11/16-05/31	1
Veyo	20,404	3,500	742	73	100 Cattle	10/16-05/28	2
Total	35,466	9,178	1,277	117			6

Sources: BLM File Data

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According to BLM cultural resource site maps (USDI, BLM, 1988a), there are eight recorded Southern Piute archaeological sites in the WSA. These sites are generally in good to fair condition; however, two sites have apparently been picked over by relic hunters.

None of the known sites are on or have been nominated to the National Register of Historic Places. One site is composed of an extensive surface scatter of lithics and represents significant archaeological data.

Recreation

Although the WSA offers opportunities for both primitive and nonprimitive types of recreation use, present use of Red Mountain is very light. Probably less than 500 visitor days per year occur within the WSA. Under the existing MFP, the WSA is a limited ORV use area and vehicles are restricted to the single access trail leading in from the northeast, approximately 5 miles. The first mile of the access route is a road and the remaining 4 miles are considered a vehicular way. About 400 of the 500 annual visitor days involve recreationists using motorbikes or jeeps for access to the end of the trail from which they hike to view the scenery from the rims overlooking Snow Canyon State Park and the St. George Basin. Red Mountain also provides opportunities for nonmotorized, more primitive forms of recreation such as hiking, backpacking, and horseback riding. A hiking trail leading up the south face behind Ivins is a popular dayhike increasingly used by youth groups. Use of the trail is estimated at 100 visitor days per year. The town of Ivins has erected a large wooden sign on the edge of town engraved with "Ivins, the Home of Red Mountain." The scarcity of drinkable water, extreme summer temperatures, and sand flies deter use from June to November.

Land Use Plans

The WSA is BLM-administered public land except for one State section (745.1 acres). 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 only current activity on these lands is livestock grazing. One quarter section (160 acres) is split-estate land with Federal surface and State mineral rights.

The Red Mountain/Red Mountain 202 WSA is within 10 miles of the most populated portion of Washington County, Utah, and also adjacent to the Snow Canyon State Park on the east and the Gunlock State Beach on the west. These recreational areas are operated by the State of Utah. Snow Canyon State Park is oriented toward sightseeing, while Gunlock State Beach provides water-based recreational activities. There is no established access from these areas into the WSA.

The public lands in the WSA are located in the BLM Virgin River Planning Unit. According to the Virgin River MFP, Red Mountain was recommended to be designated as recreational lands to protect primitive and natural values (USDI, BLM, 1979a). Vehicle use is currently limited to existing roads and trails. A power site classification (C1 259) extends into the WSA in the northwest portion (T. 40 S., R. 17 W., secs. 33, 34, and 35). It segregates the lands from all public land laws, although mineral locations are allowed. This classification is currently undergoing review.

Wilderness is not addressed in the Virgin River MFP. 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 plan as the No Action/No Wilderness Alternative.

The WSA is zoned open space by the Washington County Master Plan which states: "It is the recommendation of the Master Plan that most of the State school land, as well as the BLM land, can best serve this generation and the period of this plan by continuing to be used for open space" (Planning and Research Associates, 1971).

The Washington County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) which opposes wilderness designation of BLM lands in Utah.

The west subdivision (under development) is located north of the town of Ivins and adjacent to the southern boundary of the WSA (T. 41 S., R. 17 W., sec. 29; and T. 41 S., R. 17 W., secs. 19, 30, and 31). This development is south of the cliffline in the above-mentioned areas. Completion of the residential development would allow individual residential units to border the WSA boundary.

It has been projected that the town of Ivins could expand onto approximately 500 acres between the

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WSA boundary and the cliffline in these sections in the foreseeable future.

It is the position of the USAF that military overflights would continue with or without wilderness designation (Nellis Air Force Base, 1985).

Socioeconomics

• Demographics

The WSA is located in Washington County, Utah. From 1970 to 1980, the population of Washington County grew from 13,669 to 26,400, an overall increase of about 93 percent. Table 4 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987, population increased to about 39,770. Population projections for the county indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 148-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 4
Baseline and Projected Population and Employment Growth
Washington County

	1980	1990	2000	2010
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100

Source: Utah Office of Planning and Budget, 1987.

The communities of Santa Clara and Ivins showed the greatest relative growth between the 1970 and 1980 censuses; both grew approximately 300 percent (USDC, Bureau of the Census, 1981). Much of the growth in these two communities is apparently attributable to the growing popularity of Washington County for retirement and winter homes. Both of these communities lie in close proximity to the WSA.

• Employment

Table 4 shows the baseline and projected total employment for Washington County to the year 2010.

Washington County is part of the Southwest MCD. Table 5 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980, the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 5
Wasatch Front Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	8,100
Nonfarm Proprietors	2,386	3,100	3,500	4,700
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

^aincludes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected, that by the year 2010, employment in the MCD will more than double and that services will increase to 20 percent and trade to 25 percent, while agriculture will decline to 3 percent and government to 18 percent. Mining will decline to less than 1 percent of the total direct employment.

Washington County is located near or along routes leading to many major recreation areas. Some of the larger tourist attractions include Zion National Park, the Glen Canyon NRA, and Bryce Canyon National Park. Much of the county's economy is based on the tourism industry, as indicated by the high levels of employment and income in the trade and services sectors.

• Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

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.

Six livestock operators have a total grazing privilege of 117 AUMs within the WSA. If all this forage were utilized, it would account for \$2,340 of livestock sales and \$585 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are

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insignificant to both the local economy and individual businesses. The WSA's motorized recreational use and related local expenditures are low. They are also 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 the Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the Red Mountain/Red Mountain 202 WSA is estimated to be about 500 visitor days per year.

The WSA generates Federal revenues from livestock and recreation sources (refer to Table 6).

Table 6
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Livestock Grazing	\$2,340	\$180
Recreational Use	<u>\$ 2,050</u>	<u>0</u>
Total	\$ 4,390	\$ 180

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Permittees in the WSA can use up to 117 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$180 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 III-A and the Description of the Alternatives for the Red Mountain/Red Mountain 202 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 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 18,290 acres, management under oil and gas leasing Category 3 (no surface occupancy) on 17,490 acres, and ORV limitations on 18,290 acres).

Disturbance of approximately 500 acres from community expansion in the southern portion of the WSA is likely in the foreseeable future and would result in a loss of naturalness, solitude, and opportunities for primitive, unconfined recreation in the disturbed areas.

Another conflict with wilderness values in the foreseeable future is ORV activity. ORV activity is currently popular in one State section (T. 40 S., R. 16 W., sec. 36) adjacent to the WSA. Much of the northern portion of the WSA can be accessed by vehicles and currently there are 4 miles of ways. Although ORV use in the WSA is currently light and restricted by management objectives to roads and trails, the accessibility of the terrain in the northern portion of the unit could make enforcement of the restriction difficult as ORV use increases in the foreseeable future.

Community expansion would result in loss of opportunities for naturalness and solitude and primitive recreation, where direct disturbance occurs on about 4 percent (500 acres) of the WSA. In addition, the visual and audible disturbance would result in indirect reduction of solitude and primitive recreation opportunities on adjacent portions of the WSA. An additional 6 percent (1,000 acres) of the WSA would be indirectly affected. The areas that would be affected are not considered by BLM to have outstanding opportunities for solitude or primitive recreation. The Class A scenic values would be reduced in quality in both directly and indirectly affected areas. Appropriate measures would be taken to assure that endangered or other special status species would not be significantly affected by the community expansion. No impact that would negatively affect the existence of these species would be allowed (see the Issues Considered but not Analyzed in Detail section). Where ORV restrictions are difficult to enforce, ORV use could cause some inadvertent damage to the habitat and life cycle functions of some of the special status species which would occur in the WSA, including the desert tortoise and gila monster. However, overall population viability would not be affected.

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

The increased visitor use that would occur over time would be expected to detract from wilderness values because it would be largely vehicle-oriented. Even if restricted to existing roads and ways, vehicular activity would detract from opportunities for solitude and primitive recreation.

In addition to impacts to wilderness values in the foreseeable future, an undetermined loss of wilderness values would occur as intrusions increase over the long term.

Conclusion: Wilderness values would not be protected by Wilderness designation. In the foreseeable future, naturalness, opportunities for solitude and primitive recreation, and such special features as Class A scenery and sensitive wildlife habitat, would be directly lost on 500 acres of the WSA. Opportunities for solitude and primitive recreation and scenic quality would be indirectly reduced in quality on an additional 1,000 acres of the WSA. Continued vehicular use of 4 miles of ways would detract from opportunities for solitude and primitive recreation.

• Impacts on Soils

It is estimated that up to 500 acres of soil could be disturbed by community expansion. Assuming that all disturbance would occur on areas with a moderate erosion class and erosion condition would increase one class, soil loss on the 500 acres would increase from 650 cubic-yards per year to 1,350 cubic-yards per year until developments were established and rehabilitation was complete. This represents an approximate 5-percent increase over the 13,514 cubic-yards per year soil loss which now occurs from the WSA. In addition, assuming that salinity production would double from the 500 acres during the 2- to 3-year period between disturbance and rehabilitation, there would be an approximate 3-percent increase in salinity production from that now occurring from the WSA. These increases would be temporary and, after completion of development and rehabilitation activities, such losses would be expected to decrease from current levels due to pavement, structures, lawns, etc.

Conclusion: There would be slight temporary increases in soil loss and salinity production from the 500 acres disturbed for community expansion.

• Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Virgin River MFP (117 AUMs to six permits). There would be no changes in or effect on current livestock use and management with this alternative. Some motorized vehicle use is made to manage livestock in the WSA. However, no livestock management facilities are proposed and few, if any, changes in livestock management techniques are expected.

Conclusion: Current livestock management and grazing levels would not be affected.

• Impacts on Recreation

The future trends in the recreational use of the WSA are unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, SCORP, 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 between 2 to 7 percent per year in the foreseeable future. At this rate, overall recreational use is expected to increase from 500 current visitor days per year to between 940 and 4,360 visitor days by the year 2020. 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 100 visitor days per year to between 190 and 870 visitor days per year in the foreseeable future. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, etc.) would increase from 400 visitor days per year to between 750 and 3,490 visitor days.

The quality of a user's primitive recreational experience would be reduced by sights and sounds involved in residential development of the Santa Clara Bench area. Recreational uses would be lost on 500 acres where direct disturbance occurs, and reduced in quality on the adjacent 1,000 acres. Additionally, the continued vehicle use of the existing 4 miles of way in the northeast portion of the WSA would detract from the quality of the primitive recreation opportunities.

Conclusion: The quality of primitive recreational use would be lost or reduced on about 8 percent (1,500 acres) of the WSA. Both primitive and motorized recreational use would increase, although use of vehicles would continue to be restricted to the existing roads and ways.

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- Impacts on Economic conditions

Five hundred acres on the Santa Clara Bench below the cliffs is prime development property valued at \$3,000 to \$5,000 per acre or \$1.5 to \$2.5 million. If these acres were transferred from Federal to private ownership and development occurred, the amount of revenue that would reach the local economy is unknown.

Conclusion: Implementation of the No Action/No Wilderness Alternative would allow for community expansion onto the Santa Clara Bench.

All Wilderness Alternative (18,290 Acres)

- Impacts on Wilderness Values

Designation and management of all 18,290 acres as wilderness would preserve the wilderness values in the 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 18,290 acres. Solitude would be protected on approximately 4,240 acres that meet and 14,050 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be preserved on approximately 2,640 acres that meet and 15,650 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including special status wildlife and plant species, Class A scenery, and wildlife associated with wilderness, would also be preserved.

With this alternative no disturbance that would impact wilderness values is projected. Vehicular use of existing ways would generally cease, improving opportunities for solitude and primitive recreation and reducing the potential for disturbance to special status species. It would be administratively difficult to totally eliminate ORV use from the area, even with signing and patrol, due to the expected increase in ORV use in the general area. Military overflights would continue to be an occasional annoyance detracting from opportunities for solitude and primitive recreation in the WSA. Increased visitor use would be managed so as not to result in the loss of wilderness values.

Conclusion: Wilderness designation would preserve wilderness values where found throughout the WSA.

- Impacts on Soils

Since the community expansion would not occur on Santa Clara Bench, no impacts to soils are projected with the All Wilderness Alternative.

Conclusion: No impact on soils is projected.

- Impacts on Livestock Management

Implementation of the All Wilderness Alternative would only slightly effect livestock management. Present domestic livestock grazing (117 AUMs currently controlled by six permittees) would continue as authorized in the Virgin River MFP. Rangeland developments would be maintained as in the past. New range improvements are not proposed. Since 4 miles of way would be closed to vehicles, the operators would be required to use horses more extensively during the grazing season for livestock management. Predator control would not be affected because there has not been any predator control in the WSA for several years.

Conclusion: Restrictions on vehicle use on 4 miles of way would be a minor inconvenience to the six permittees who manage livestock in the WSA. The overall effect on the methods and costs of livestock management would be slight.

- Impacts on Recreation

As discussed for the No Action/No Wilderness Alternative, primitive recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the foreseeable future in relation to population increases and current trends of recreational use. At this rate, by the year 2020, primitive recreational use would be somewhere between 190 and 870 visitor days per year. Management provided through a Wilderness Management Plan would control future primitive recreational use to assure that the quality of the primitive recreation experience would be maintained. Primitive use would be enhanced because the existing 400 visitor days and potential 750 to 3,490 visitor days of vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA through closure of the 4 miles of vehicular way. Because there are other suitable ORV use areas in the vicinity of the WSA, ORV

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use would probably not experience an overall decline in the vicinity of the WSA.

Conclusion: Opportunities for primitive recreational use would be enhanced by this alternative, although opportunities for motorized recreational use would be foregone. ORV use would not be reduced on a regional basis.

- Impacts on Economic Conditions

To the State of Utah there would be a loss of potential sales values of 500 acres on the Santa Clara Bench (present estimated value of \$3,000 to \$5,000 per acre) and an undetermined amount of revenues to the local economy.

Conclusion: State local revenues would not be realized from the Santa Clara Bench area as no development would be allowed with this alternative.

Partial Wilderness Alternative (Proposed Action) (12,842 Acres)

- Impacts on Wilderness Values

Wilderness designation of 12,842 acres would contribute to preservation of the area's wilderness values. Although impacts in the nondesignated area would be the same as identified for the No Action/No Wilderness Alternative, 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 1 mile of way, and closure to future mineral leasing and location. Naturalness, outstanding opportunities for solitude (including 4,240 acres that meet and 8,602 acres that do not meet the standards for outstanding), and primitive recreation (including 2,640 acres that meet and 10,202 acres that do not meet the standards of outstanding), and special features (including Class A scenery, special status species, and wildlife associated with wilderness in the designated area) would be preserved.

In the foreseeable future, loss of naturalness and opportunities for solitude and primitive recreation due to surface disturbance from community expansion would occur on up to 500 acres within the nondesignated portion. Special features would be largely preserved. Some Class A scenery would be disturbed but mitigation would protect other special features. In addition, appropriate measures would be taken to pro-

tect special status species prior to any surface-disturbing activity.

Sights and sounds from foreseeable development would reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas including an additional 1,000 acres (6 percent) of the WSA. Most of this type of impact would be in the nondesignated area.

Elimination of vehicular use in the designated area would improve opportunities for solitude and primitive recreation in the designated area, although vehicular use of 3 miles of way in the nondesignated area would continue to detract from these opportunities during the period of activity. Limiting ORV access to roads and trails would be difficult in portions of the nondesignated area, but it would be easier to eliminate ORV use in the designated area due to terrain restrictions.

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

In addition to the loss of wilderness values in the foreseeable future, an undetermined loss of wilderness values would occur as intrusions increase over the long term in the nondesignated area.

Conclusion: Wilderness values would be preserved in the designated area, which is approximately 70 percent of the WSA. In the nondesignated area, naturalness and opportunities for solitude and primitive recreation would be directly lost on 500 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on an additional 1,000 acres. Some Class A scenery and special status species habitat would be reduced by direct and indirect disturbance in the nondesignated area.

- Impacts on Soils

It is estimated that up to 500 acres of soil could be disturbed by community expansion. Assuming that all disturbance would occur with a moderate erosion class and erosion condition would increase one class, soil loss on the 500 acres would increase from 650 cubic-yards per year to 1,350 cubic-yards per year until developments were established and rehabilitation was complete. This represents an approximated 5-percent increase over the 13,514 cubic-yards per year soil loss which now occurs from the WSA. In

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addition, assuming that salinity production would double from the 500 acres during the 2- to 3-year period between disturbance and rehabilitation, there would be an approximate 3-percent increase in salinity production from that now occurring from the WSA. These increases would be temporary and, after completion of development and rehabilitation activities, such losses would be expected to decrease from current levels.

Conclusion: There would be slight temporary increases in soil loss and salinity production from the 500 acres disturbed for community expansion.

• Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Virgin River MFP. The estimated 50 AUMs allocated in the designated portion of the WSA are controlled by six permittees. Rangeland developments would be maintained as in the past. No new range developments are proposed. Four miles of roads and ways are in the nondesignated portion. Access would be precluded on 1 mile of vehicular way. Predator control efforts would not be affected because there has not been any predator control in the allotments for several years.

Conclusion: Restrictions on vehicle use on 1 mile of way would be a minor inconvenience to the six permittees who manage livestock in the WSA. The overall effect on methods and costs of livestock management would be negligible.

• Impacts on Recreation

Impacts on recreational use and increases in recreation would be approximately the same as described for the No Action/No Wilderness Alternative because access and types or recreational opportunities would remain the same.

Conclusion: Impacts on recreational use and increases in recreation would be the same as described for the No Action/No Wilderness Alternative.

• Impacts on Economic Conditions

Five hundred acres on the Santa Clara Bench below the cliffs is prime development property valued at \$3,000 to \$5,000 per acre or \$1.5 to \$2.5 million. If these acres were transferred from Federal to private ownership, the amount of revenue that would reach the local economy is unknown.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not affect potential State and local economic conditions because community expansion onto the Santa Clara Bench would be possible.

SYNOPSIS

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Changes to the Final EIS

Cottonwood Canyon WSA



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COTTONWOOD CANYON WSA

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COTTONWOOD CANYON WSA

(UT-040-046)

INTRODUCTION

General Description of the Area

The Cottonwood Canyon WSA is located in Washington County, Utah, approximately 3 miles north of the town of Washington and 5 miles northeast of St. George. The WSA contains 11,330 acres of land administered by the BLM Cedar City District, Dixie Resource Area Office.

The WSA is characterized by hot summers and relatively short, mild winters. Maximum summer temperatures range from 90 to 100 degrees Fahrenheit (F). Maximum winter temperatures range from 44 to 54 degrees F, and minimum winter temperatures range from 20 to 28 degrees F.

Cold spells in the winter are rare and of short duration because of the protection from cold air masses offered by the high mountains to the north and east. The average date of the last frost in spring is March 31, and the average date of the first frost is October 30, with an average frost-free period of 213 days.

The average annual precipitation varies between 8 and 16 inches. At Leeds, Utah, approximately 2 miles from the WSA, rainfall averaged 12.69 inches per year over a 27-year period. Maximum precipitation occurs in the winter, resulting from storm systems from the Pacific Ocean. A second maximum occurs during July and August from summer thunderstorms. These intense storms occasionally cause flashfloods in mountainous areas and canyons. The driest months are May and June.

The WSA is in a transition zone between the Basin and Range Physiographic Province on the west and the Colorado Plateau on the east. Elevations range from 3,200 feet to 4,870 feet, and the WSA is characterized by sharp, steep, jagged relief features.

No designated wilderness or WSAs are adjacent to the Cottonwood Canyon WSA. The Pine Valley Mountain wilderness, located in the Dixie National Forest, is about 6 miles north of the WSA. The Red Mountain WSA is located 7 miles to the west.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A the following changes specific to the Cottonwood Canyon WSA have been made since publication of the Draft EIS.

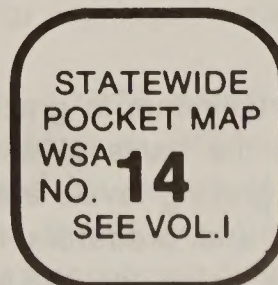
1. The anticipated surface disturbance presented in the Draft EIS (900 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments 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 900 acres reported in the Draft EIS to 25 acres of surface disturbance for the Final EIS.

2. As a portion of the projected 25 acres of surface disturbance, the Final EIS projects 5 acres of surface disturbance resulting from water development projects for the city of St. George in the southern portion of the WSA. The Final EIS also projects 1 acre of surface disturbance due to the construction of a gap fence for livestock management purposes. The surface disturbance associated with these two actions was not considered in the Draft 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 III-A (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 Cottonwood Canyon WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.



COTTONWOOD CANYON WSA

1. Soils: Soil disturbance estimates have been revised downward from 900 acres analyzed in the Draft EIS to 25 acres in the Final EIS. About 19 acres of the projected disturbance would result from uranium exploration activities which would be reclaimed following abandonment. The remaining 6 acres of disturbance would result from water development and livestock-related actions. These disturbances would also be reclaimed. Further, the impacts of direct disturbance of soil would affect less than 1 percent (25 acres) of the WSA. Therefore, impacts on soils are not significant issues for analysis in the Final EIS.

2. Vegetation Including Special Status Species: Less than 1 percent (25 acres) of the vegetation in the WSA would be affected as a result of implementation of any of the alternatives. Disturbed areas would be reclaimed. No threatened, endangered, or other special status plant species would be impacted as areas projected for disturbance would be restricted to wash bottoms where these species are not known to occur. At any rate, site-specific clearances would be required prior to allowing any surface-disturbance activities to occur. If necessary, proper mitigation measures such as site avoidance would be implemented. Therefore, impacts on vegetation are not significant issues for analysis in the Final EIS.

3. Wildlife Including Special Status Species: No crucial or critical wildlife habitat is located in the WSA and no management facilities exist or are planned in the WSA. Anticipated surface disturbance would affect less than 1 percent (25 acres) of the WSA. No threatened, endangered, or other special status wildlife species would be affected. Therefore, impacts on wildlife are not considered to be significant issues for analysis in the Final EIS.

4. Forest Resources: The forest resources in the WSA are limited to 2,000 acres of sparse pinyon-juniper woodland and some small, isolated stands of Ponderosa pine. Therefore, opportunities for forest resource harvest in the WSA are limited. Demand for forest resources in the WSA would continue to be very low due mainly to more accessible and higher quality areas located elsewhere. Therefore, impacts on forest resources are not significant issues for analysis in the Final EIS.

5. Livestock. No curtailments in grazing would be implemented solely on the basis of wilderness designation. No changes in grazing levels are proposed in the planning documents and predators have not been a problem for livestock using the WSA. One rangeland

development (1 mile of gap fence) is projected in the WSA. This structure could be constructed regardless of which alternative is selected. No other rangeland-related activities are projected with or without designation. Therefore, existing grazing management practices and grazing levels would not be affected.

6. Visual Resources: As previously discussed, estimates of surface disturbance have been substantially reduced for the Final EIS. The 25 acres of surface disturbance projected to occur in the short term (down from 900 acres analyzed in the Draft EIS) would affect less than 1 percent (25 acres) of the WSA. Impacts on visual resources are considered in the Final EIS as part of the discussion of naturalness and special features in the Wilderness Values section.

7. Cultural Resources: Only two archaeological or historical sites are known to occur in the WSA. Both sites have been heavily vandalized. The potential for additional sites is unknown. Inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance. Given these conditions, impacts on cultural resources are not significant issues for the Cottonwood Canyon WSA.

8. Recreation: Because surface disturbance would be limited to approximately 25 acres (less than 1 percent of the WSA), it is assumed that existing recreational uses in the WSA would not be affected. The major recreational use in the WSA is hiking associated with hunting or sightseeing. Recreational changes due to designation or nondesignation would not be significant due to limited use now occurring and projected to occur in the future in the WSA.

9. Economic Conditions: No mineral development, proposals for development, or other land or realty actions are projected for the WSA. Because no economic developments are projected, present and projected revenues from the WSA would continue to be small regardless of designation or nondesignation. Therefore, impacts on economic conditions are not significant issues for analysis in the Final EIS.

• Issues Analyzed in Detail

The significant issues for the Cottonwood Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

COTTONWOOD CANYON WSA

2. Impacts on water resources including development of water for the city of St. George municipal system.

3. Impacts on mineral exploration and production.

Comments made during the public comment period for the Draft EIS centered on the inventory phase of the wilderness review, adjacent wilderness areas, intrusions in the WSA, partial wilderness alternatives, water resource development, threatened and endangered species, minerals, special features, visual resources, cultural resources, wilderness-related activities, views of local government, and questions on BLM's assessment of the value of wilderness versus other resource values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 14, for responses to specific comments about the Cottonwood Canyon WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add up to approximately 7,720 acres along the north and south borders of the WSA while deleting about 960 acres along the west border (a net addition of about 6,760 acres) were suggested by the public during the public comment period for the Draft EIS. About 6,750 acres of these proposed additions are Forest Service (FS) and State-administered lands which 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.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (11,330 acres); and (3) Partial Wilderness (Proposed Action) (9,853 acres). 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 III-A are also applicable.

• No Action/No Wilderness Alternative

None of the 11,330-acre Cottonwood 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 area would continue to be managed in accordance with the Virgin River MFP (USDI, BLM, 1979a). No State or private land is located within the WSA (refer to Map 1), and adjacent State lands have not been identified in the MFP for Federal acquisition through exchange or purchase.

• Management Conditions and Constraints

All 11,330 acres would remain open to mineral location, leasing (with standard and special lease stipulations), and sale. Development work, extraction, and patenting would be allowed on the existing 76 mining claims (1,520 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809). An existing oil and gas lease (80 acres) and future leases could be developed with standard and/or special stipulations under Category 1 (standard stipulations) on about 10,330 acres and Category 3 (open with no surface occupancy) on about 1,000 acres. Uranium exploration is likely in the foreseeable future; however, no leasable mineral exploration is projected 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 exploration and development projections.

The present domestic livestock grazing use of the WSA would continue as authorized in the MFP (70 AUMs). A proposed 1-mile gap fence could be constructed without wilderness considerations. Use and maintenance of existing rangeland developments (one small reservoir and 0.5 mile of fence) would continue. There are no other existing or proposed livestock developments within the WSA.

The city of St. George has a rights-of-way to a functioning water well in the WSA. Additional test wells and development applications are projected in the WSA for municipal water purposes.

Approximately 10,325 acres would remain open for ORV use. However, ORV use in the WSA is generally restricted by terrain to wash bottoms and drainages and is not expected to significantly increase in the foreseeable future due to terrain.

COTTONWOOD CANYON WSA

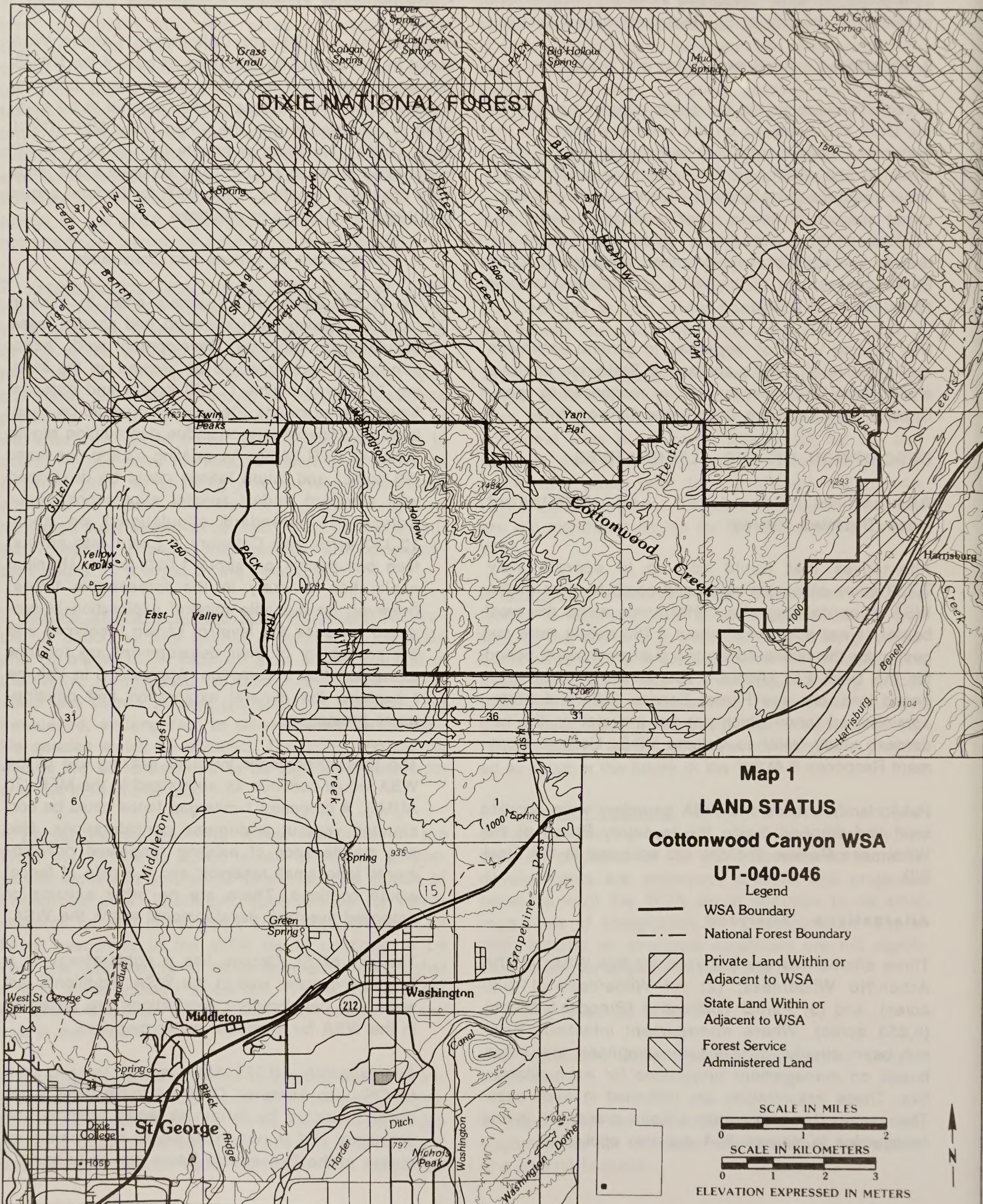
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




Map 1

LAND STATUS

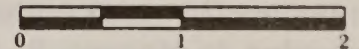
Cottonwood Canyon WSA

UT-040-046

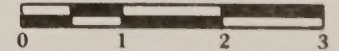
Legend

-  WSA Boundary
-  National Forest Boundary
-  Private Land Within or Adjacent to WSA
-  State Land Within or Adjacent to WSA
-  Forest Service Administered Land

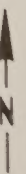
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



COTTONWOOD CANYON WSA

The 1,005 acres in the Red Cliffs Recreation Area would remain closed to vehicular access.

The entire area would continue to be open to dead-and-down woodland product harvest. There is no harvest of forest products at the present time, nor is any projected due to the presence of only a marginal woodland resource.

The entire WSA 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 approximately 25 acres of surface disturbance in the foreseeable future. About 19 acres of surface disturbance would result from locatable mineral (uranium) exploration in the drainages in the WSA near access roads. Construction of up to 6 miles of access roads are projected. If uranium mineralization is encountered, additional holes would be drilled as step-outs from the initial holes. Approximately 16 employees would be used for up to 40 days to complete the exploration program. However, the 40 days of actual on-the-ground activity would extend over a several year period of time. Exploration would be under the unnecessary and undue degradation guidelines of 43 CFR 3809. It is further assumed that each drill site would be reclaimed following abandonment. Three to five years would be necessary to determine successful reclamation. No development of the uranium resource is projected in the foreseeable future.

It is projected that 5 acres would be disturbed for a rights-of-way for the city of St. George water development projects in the southern end of the WSA. Development would include the reestablishment of an existing municipal water well which will be abandoned and the site reclaimed as specified in the current rights-of-way grant.

One acre would be disturbed due to the construction of a 1-mile gap fence to aid in livestock management. The fence would take about 3 days to build and require only limited maintenance over time.

No surface disturbance is projected to occur from ORV activity due to management and terrain constraints. Recreation use is projected to increase over the current estimated use of 3,150 annual visitor use days at a rate of 2 to 7 percent per year. Approximately 78 percent of the use would continue to be attributed to primitive recreational activities.

- All Wilderness Alternative

All 11,330 acres of the Cottonwood 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 found in the WSA (refer to Map 1). The figures and acreages given under this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 11,330 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 1,520 acres of 76 existing mining claims (for uranium) that may be determined valid. Development would be regulated by the unnecessary or undue degradation guidelines (43 CFR 3809) with concern for wilderness values. The existing post-FLPMA oil and gas leases (80 acres) would not be reissued upon expiration unless a find of oil or gas re-sources in commercial quantities is shown. No oil or gas exploration or development is projected. However, uranium exploration is likely to occur on valid claims following designation because potentials are high enough to support the assumption of valid mining claims in the WSA (see Appendix 6 in Volume I). Due to more favorable resources being located elsewhere, development is not projected in the foreseeable future.

Present domestic livestock grazing would be allowed to continue as authorized in the Virgin River MFP. The 70 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of one reservoir and a 0.5 mile of fence would continue in the same manner as in the past based on practical necessity and reasonableness. It is projected that the 1 mile

COTTONWOOD CANYON WSA

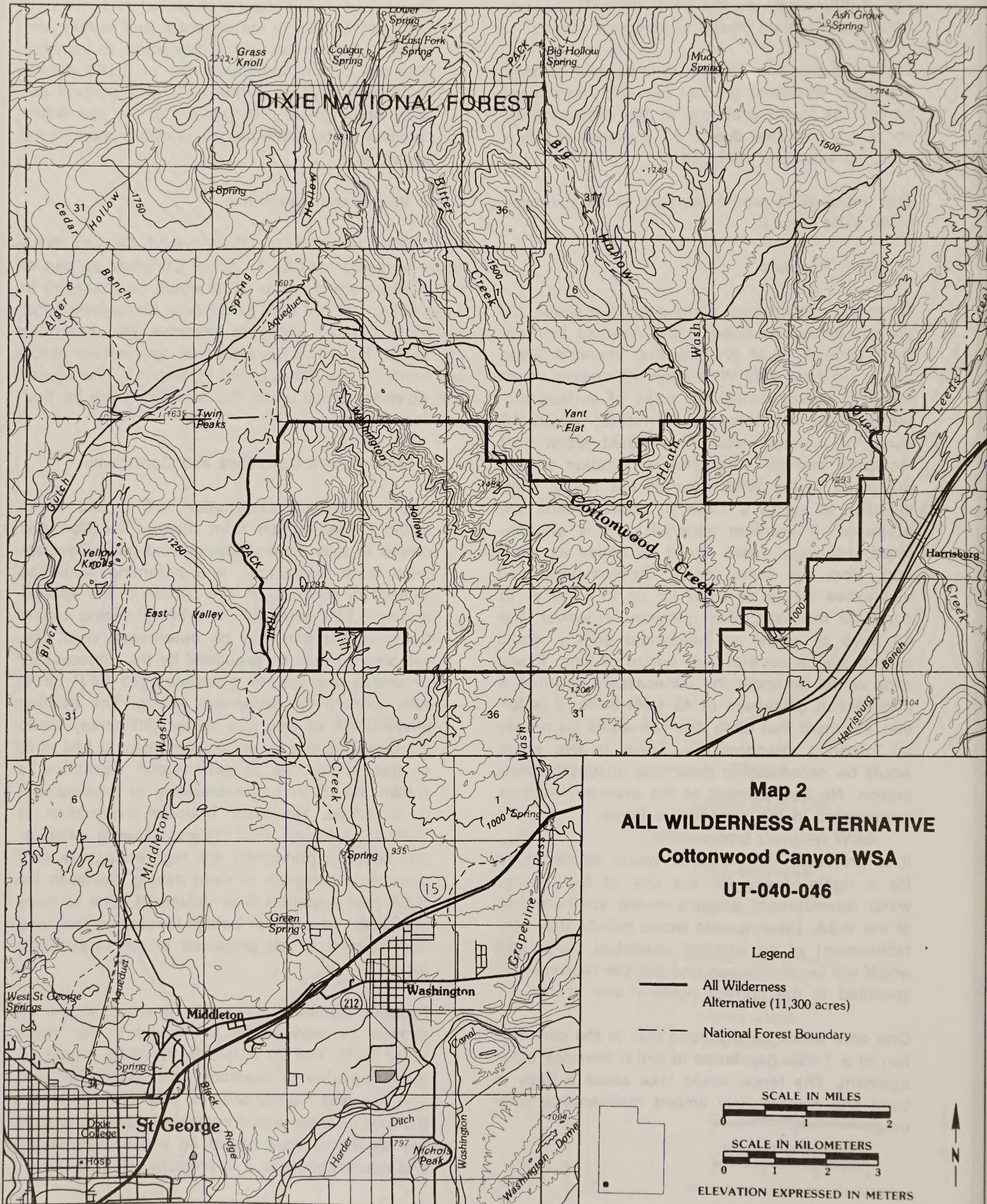
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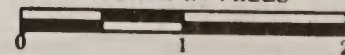


Map 2
ALL WILDERNESS ALTERNATIVE
Cottonwood Canyon WSA
UT-040-046

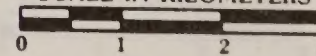
Legend

- All Wilderness Alternative (11,300 acres)
- National Forest Boundary

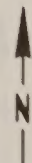
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



COTTONWOOD CANYON WSA

of gap fence planned in this WSA would be designed and constructed consistent with wilderness protection criteria (refer to Appendix 1 in Volume I).

The entire 11,330-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. About 1 mile of the WSA boundary follows an existing unpaved road that would remain open to vehicular travel. There are no ways located in the WSA.

- Action Scenario

BLM projects that surface disturbance would be limited to a total of 6 acres in the foreseeable future. Locatable mineral exploration and development work would be restricted to existing, valid claims at the time of wilderness designation. Such claims are assumed in the WSA, therefore, it is projected that 5 acres of surface disturbance (including up to 2 miles of access roads), would result from locatable mineral-related activities as discussed in the No Action/ No Wilderness Alternative. It is projected that four employees and 10 days would be used for exploration activities in the foreseeable future. Exploration operations would be developed under the unnecessary and undue degradation guidelines of 43 CFR 3809. One acre would be disturbed resulting from construction of a gap fence.

Areas not under valid mining claim at the time of wilderness designation would be closed to further mineral location. The WSA would also be closed to mineral leasing. No rangeland, wildlife habitat, watershed projects, or other developments are projected following wilderness designation.

The existing water well, which would be shut down and the area reclaimed, would not be reestablished. New municipal water developments would not be allowed.

No surface disturbance would occur from ORV activity due to management and terrain constraints. Primitive-type recreation is projected to increase over the current estimated primitive recreational use of about 2,457 annual visitor days at a rate of 2 to 7 percent per year. Vehicular use would be eliminated.

- Partial Wilderness Alternative (Proposed Action) (9,853 Acres)

With this alternative, 9,853 acres of the Cottonwood Canyon WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA which has the most outstanding wilderness characteristics and is free from potential municipal water development conflicts. 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, primitive recreation, and special features were included where possible within a manageable boundary.

The 9,853 acres analyzed as wilderness under this alternative include the most rugged portion of the WSA. The 1,477 acres within the WSA but outside of that designated as wilderness would be managed in accordance with the Virgin River MFP as described for the No Action/No Wilderness Alternative. The 9,853-acre area designated as wilderness would be managed in accordance with the Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative. There are no State, private, or split-estate lands involved in the Partial Wilderness Alternative. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 9,853-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 1,140 acres of 57 existing mining claims, provided they are valid. Five acres of surface disturbance is projected in the foreseeable future. No oil and gas leases are located in the designated portion of the WSA. The 1,477-acre area not designated wilderness would be open to future mineral location, leasing, and sale. Development work, extraction, and patenting on 19 existing mining claims (380 acres) and future mining claims in the nondesignated area could occur as discussed in the No Action/No Wilderness Alternative. The area not designated would be managed as leasing Category 1 (open with standard stipulations). Development of the existing 80 acres post- FLPMA oil and gas and future leases in this area could be developed without concern for wilderness values.

COTTONWOOD CANYON WSA

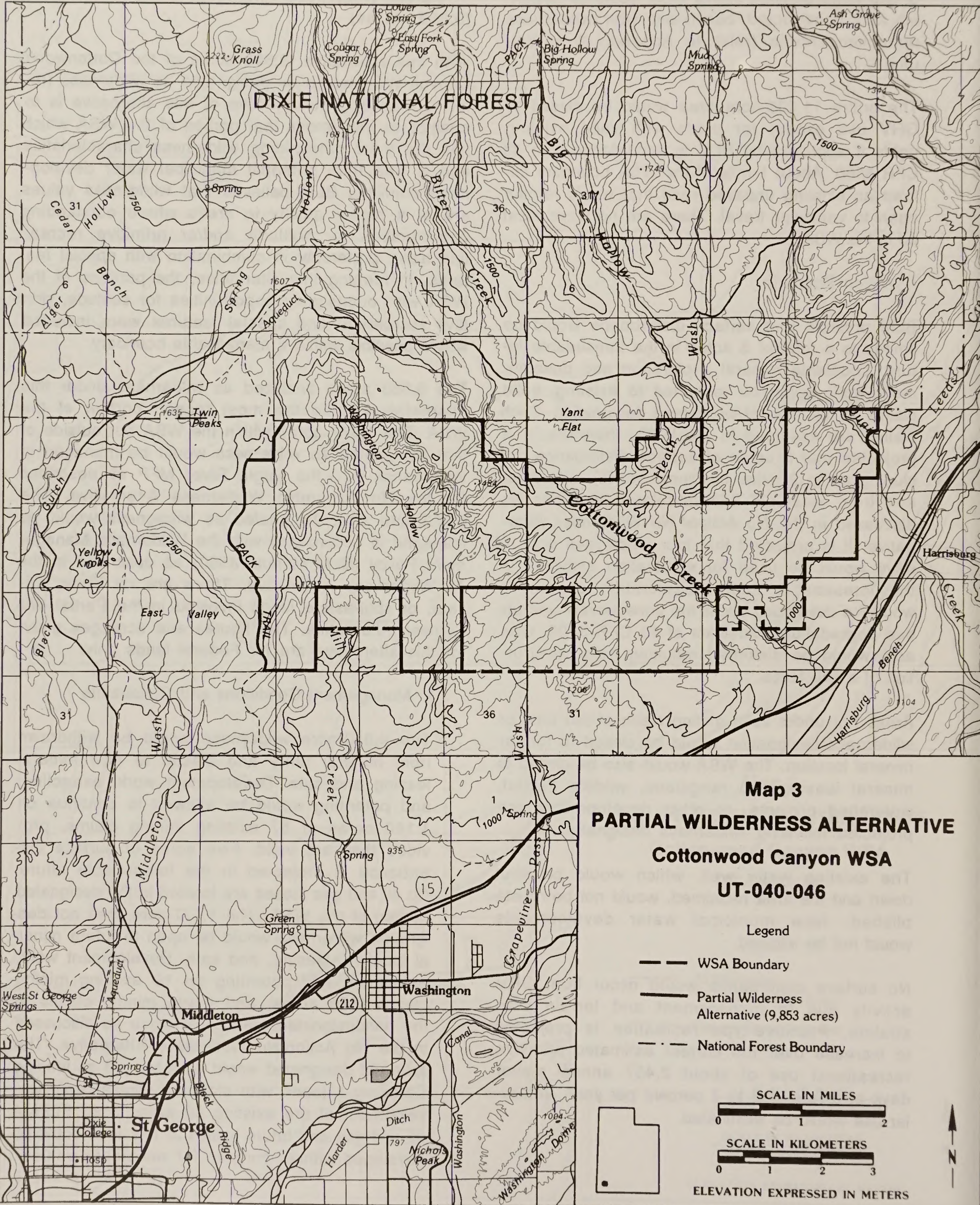
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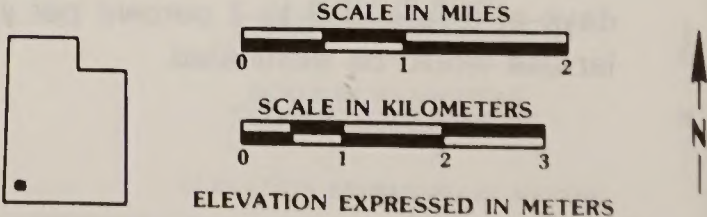
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Map 3
PARTIAL WILDERNESS ALTERNATIVE
Cottonwood Canyon WSA
UT-040-046

- Legend
- WSA Boundary
 - Partial Wilderness Alternative (9,853 acres)
 - - - National Forest Boundary



COTTONWOOD CANYON WSA

Uranium exploration is likely in the nondesignated portion. Two acres of surface disturbance is projected in the foreseeable future.

Domestic livestock grazing would continue to occur in the 9,853-acre wilderness area. The 60 AUMs would remain available to livestock as presently allotted. The planned gap fence would be developed (1 acre of surface disturbance) consistent with wilderness protection criteria (refer to Appendix 1 in Volume I). In the 1,477-acre nonwilderness area, grazing use (10 AUMs) would continue as authorized in the MFP. No additional developments are planned or expected in the foreseeable future.

In the 1,477-acre nonwilderness area, water resource facility developments would be allowed if in accordance with the MFP without concern for wilderness values. The rights-of-way to develop a water well filed by the city of St. George described in the No Action/No Wilderness Alternative would be located in this area. Five acres of surface disturbance is projected as a result of development of the rights-of-way for culinary water purposes.

The 9,853-acre wilderness would be closed to ORV use. The remainder of the WSA, including the existing unpaved road which borders the WSA, would remain open to vehicular travel.

Visual resources in the wilderness 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 Class II as outlined in the Virgin River MFP.

- **Action Scenario**

Implementation of the Partial Wilderness Alternative would result in a total of 13 acres of surface disturbance. It is projected that 6 acres of disturbance would occur in the designated portion of the WSA and that 7 acres would be disturbed in the nondesignated portion.

In the designated portion, 6 acres would be disturbed as a result of locatable mineral exploration (uranium) (including up to 2 miles of access roads) in the drainage areas and construction of a gap fence as discussed for the All Wilderness Alternative.

About 7 acres of surface disturbance is projected for the nondesignated portion of the WSA. Two acres of disturbance would result from locatable mineral exploration (including 1 mile of access road) and 5 acres would result from construction of water development projects for the city of St. George as discussed for the No Action/No Wilderness Alternative. No leasable mineral exploration is projected in the foreseeable future. No rangeland, wildlife habitat, watershed projects, or other developments are projected.

No surface disturbance from ORV activity is projected due to management restrictions and terrain constraints. Recreation use is projected to increase over the current estimated use of 3,150 annual visitor use days at a rate of 2 to 7 percent per year. About 90 percent of the use would be primitive in nature due to constraints on ORV access.

Summary of Environmental Consequences

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

AFFECTED ENVIRONMENT

This section describes the overall environmental setting for the Cottonwood Canyon WSA. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative 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 size of the WSA is 11,330 acres. It is approximately 7 miles long (east to west) by 3 miles wide (north to south).

- **Naturalness**

The high quality of naturalness in the WSA (11,330 acres) has not changed since the BLM Intensive Wilderness Inventory decision (USDI, BLM, 1980b). The BLM authorized a water well in the SW1/4 NW1/4,

COTTONWOOD CANYON WSA

Table 1
Summary of Environmental Consequences

		Alternatives	
Resource	No Action/No Wilderness	All Wilderness (11,330 Acres)	Partial Wilderness (9,853 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 25 acres of the WSA. Opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 1,133 acres of the WSA. The disturbance would result from uranium exploration and development of rights-of-way. Special features would not be significantly affected except for direct loss of scenic quality on 25 acres and a perceived loss of scenic quality on as much as 1,133 acres surrounding the disturbance.	Wilderness values would be preserved overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 5 acres of the WSA in spite of wilderness designation, due to valid existing rights. The disturbance would result from uranium exploration. Opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 340 acres of the WSA. Special features would be preserved except where scenic values would be directly reduced in quality on 5 acres with a perceived loss of quality on as much as 340 acres surrounding the disturbance.	Wilderness values would be preserved overall in the designated area which is about 87 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 13 acres of the WSA. Opportunities for solitude and primitive recreation would be indirectly reduced in quality on as much as 567 acres. Special features will be preserved except where scenic values would be directly lost on 13 acres with a perceived loss of scenic quality on as much as 567 acres surrounding the disturbance.
Impacts on Water Resources	Existing and future use of the water resource in the WSA by the City of St. George would not be affected by implementation of the No Action/No Wilderness Alternative.	Implementation of this alternative would remove 460 acre-feet of water from the City of St George municipal water system annually. Additional potential water sources located in the WSA would also be foregone.	The most favorable area for development of the aquifer would be in the nondesignated portion of the WSA and therefore, available as a municipal water source.
Impacts on Mineral and Energy Exploration and Production	Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.	Wilderness designation would eliminate or severely constrain potential exploration opportunities for uranium in the WSA. Loss of exploration and development opportunities for other mineral and energy resources would not be significant.	Due to the small size of potential leasable and locatable mineral deposits in the designated portion of the WSA, it is concluded that implementation of this alternative would not result in a significant mineral resource loss. Leasable and locatable mineral resources could be explored and developed in the nondesignated portion of the WSA.

COTTONWOOD CANYON WSA

Sec. 26, T. 41 S., R. 15 W., approximately 200 feet within the WSA boundary. The well is currently in production and providing municipal water to the St. George area. The decision to authorize this well was made after a finding of no significant impact through the environmental assessment process. This authorization was not considered impairing and does not change the naturalness values. The well and all associated structures must be removed and the disturbed area reclaimed to be substantially unnoticeable by the time the President receives a recommendation on the WSA from the Secretary of the Interior. No additional imprints have occurred in the WSA as a result of unauthorized uses or activities allowed under the Interim Management Policy (USDI, BLM, 1979c).

- Solitude

Topographic screening makes the opportunity for solitude outstanding in this WSA. About 5,200 acres meet the criteria for outstanding solitude and 6,130 acres do not meet the standard.

Superior topographic screening is invariably associated with the exposures of Navajo Sandstone. In most instances, high relief and dissection are characteristic of the Navajo Sandstone occurring within the WSA. An exception is the sandstone exposure on the west side of Mill Creek below lower Washington Flat. The trees are scattered over very rugged terrain. Because vegetation is rather sparse, it is not considered an important individual screening factor.

The sights and sounds of human activities are not present from most places within the WSA. From the higher points of the WSA, traffic on I-15 can be observed. Views of this activity could lend to the feeling of isolation and remoteness or detract from the wilderness experience. The experience is dependent on the feelings of each visitor. Noise from aircraft is not considered significant or impairing to wilderness values since fewer than 10 small planes per day fly over the area.

Most of the heads of drainages in Mill Creek and Washington Hollow provide solitude. The sandstone divide between Cottonwood Canyon and Washington Hollow is the major area in the WSA exhibiting this characteristic. Outstanding opportunities are also found in the upper Heath Wash, in the rim areas in the lower Cottonwood Canyon area, and in the cliff area south of Quail Creek.

- Primitive and Unconfined Recreation

The opportunity for primitive recreation is outstanding in portions of the WSA because the canyon hiking activity is of outstanding quality. Diversity in the number of primitive and unconfined recreational activities is not a factor contributing to the opportunity. About 1,800 acres meet the outstanding standard for opportunities for recreation and 9,530 acres do not meet the standard.

The opportunity for primitive and unconfined recreation is found in three distinct areas within the WSA. The Cottonwood Canyon-Heath Canyon complex contains approximately 1,240 acres of superior hiking opportunities. This activity is more limited in the Washington Hollow-Mill Creek complex (500 acres). Quail Creek Canyon exhibits only 60 acres of outstanding opportunity for primitive recreation.

- Special Features

Portions of the WSA exhibit a red Navajo Sandstone of rounded form with a tendency to alcove. Navajo Sandstone of this color and form has long been recognized as possessing aesthetic value. The Navajo Sandstone in the WSA is part of a larger 30,000-acre exposure west of Leeds and north of Interstate 15. The aesthetic value occurs wherever the sandstone is completely exposed and stripped of any overburden alluvium. Approximately 5,300 acres of the WSA exhibit this scenic value. The red rock and alluvium provide contrast to the black coloration of the nearby Pine Valley Mountains.

The WSA has other resource values that, although not identified as such during the wilderness inventory, could be considered as special features. There are two animal species (bald eagle and peregrine falcon) listed as endangered which may occur in the WSA. Fifteen animal species (refer to the Wildlife Including Special Status Species section for details) that are considered sensitive (including Category 2 candidate species) may also occur in the WSA. The WSA also has populations of cougar and bobcat which are wildlife species commonly associated with wilderness. All of the WSA is rated Class A for scenic quality.

- Diversity

Cottonwood Canyon is in the transition zone between the American Desert, Intermountain Sagebrush, and the Colorado Plateau Province Ecoregions, with the PNV types of blackbrush and juniper-pinyon woodland

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(refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types). To see how the ecoregion and PNV types represented by this WSA compare nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area, Las Vegas, Nevada.

Air Quality

The Cottonwood Canyon WSA and most of the surrounding area have been designated Class II under the PSD regulations. Ambient sulfur dioxide and nitrogen dioxide concentrations are below ambient air quality standards and applicable State regulations. This is attributed to the lack of any high concentrations of fossil-fuel powered industrial sources in the area (USDI, BLM 1980c). Zion National Park, located approximately 17 miles to the east of the WSA, has been designated as a Class I area under the PSD regulations.

Only limited visibility measurements exist for the area. St. George airport visibility data indicate that visibilities in the nonurban areas of the southwestern United States are approximately 65 to 80 miles. Visibility measurements in Warner Valley, approximately 15 miles from the WSA, during 1977 and 1978 showed mean visual ranges of 80 miles and 76 miles, respectively (USDI, BLM, 1980c).

However, windblown dust due to strong winds can cause as much as a 70-percent reduction in visual range on winter mornings and late afternoons, and as much as an 80-percent reduction in visual range on summer mornings (USDI, BLM, 1980c).

Geology and Topography

The WSA is along the transition zone between the Basin and Range Physiographic Province on the west and the Colorado Plateau on the east. Exposed bedrock consists largely of flat-lying to gently dipping sandstone of Triassic and Jurassic age and minor exposures of Quaternary basalt. From a structural standpoint, the tract lies along the west limb of the Virgin anticline.

The elevations of the Cottonwood Canyon WSA range from 3,200 feet to 4,870 feet in a mosaic of sharp,

steep, jagged relief features. The Navajo Sandstone ridges trend southwest to northeast dissected by Washington Hollow, Mill Creek, Quail Canyon, Heath Canyon, Cottonwood Canyon, and smaller unnamed tributary channels.

The terrain features are being carved through the weathering processes into a slashed, ragged appearing landscape interspersed with soft, swirling rock sculptures.

Soils

About 80 percent of the WSA is rock outcrop, stony colluvial land, and badland. These land types are highly dissected and slopes are dominantly very steep to vertical. Runoff is rapid and erosion and sediment yields are variable. Vegetation is sparse with shrubs and trees growing in crevices or pockets of soil.

The soils on the mesa, ridge tops, valley fans, and bottoms are sandy and gravelly and cobbly sandy loams of various depths. Slopes are nearly level to rolling. Runoff is very slow to medium, and erosion hazard is slight to severe.

The soils and land types are mapped and more fully described in the Washington County Area Soil Survey (USDA, SCS, 1977).

Rock outcrop and rockland cover most of the WSA. A few acres contain soils of 10 to 19 inches over indurated hardpan with numerous rocks. Annual precipitation varies from 8 to 16 inches. Seeding this acreage would generally result in failure to very poor seeding establishment.

It is estimated that undisturbed soils within this WSA produce 12 lb of salt per acre per year. This is considered slight when compared to Mancos shale sites in the Price River Basin which are estimated to have annual salt yields of up to 94 lb per acre.

Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the Glossary).

Reclamation efforts in those areas covered by rock outcrop and rockland would likely not be successful. Scattered areas with deeper, more established soils could be successfully reclaimed.

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Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	1,430
Moderate	1.3	1,100	10	1,158
Slight	0.6	1,930	17	2,559
Stable	0.3	8,300	73	5,147
Total		11,330	100	10,294

Sources: USDI, BLM, 1978c and 1979b; Leifeste, 1978.

Vegetation Including Special Status Species

Three major vegetation types, pinyon-juniper woodland, blackbrush-desert shrub, and riparian, are found in the WSA. The pinyon-juniper woodland type comprises approximately 18 percent of the WSA (2,000 acres) and occurs above elevations of 4,000 feet. The trees are scattered over very rugged terrain. Associated species are generally low-growing shrubs such as desert ceanothus and blackbrush. The higher regions of the woodland near Dixie National Forest have an understory of big sagebrush, antelope bitterbrush, Utah serviceberry, and mountain mahogany. Perennial grasses such as muttongrass and Indian ricegrass are found throughout the type. Vegetation is not scattered evenly throughout the landscape. Large areas of slickrock occur which limits vegetation to where pockets of soil have formed. Vegetation density in this area is less than 5 percent of the land surface.

The blackbrush-desert shrub vegetation type covers approximately 80 percent of the WSA (9,000 acres) and occurs in the lower elevation areas. Blackbrush is the most dominant species in this type. Other species such as bursage, Brigham tea, and desert bitterbrush are often found intermixed with the blackbrush. Grass species such as cheatgrass and curly grass are found but are usually not abundant. This type is also broken up by slickrock and rock outcrops where vegetation density is from 10 to 15 percent of the land surface.

Riparian vegetation covers about 2 percent (330 acres) of the WSA. Major species include Fremont cottonwood, velvet ash, singleleaf ash, screwbean mesquite, and various forbs and grasses. Desert plants such as desert almond and live oak are also found in the drainage where the riparian areas are located. Due to additional moisture, these plants are much larger and more robust than those that occur in

the upland areas. Vegetation density in the drainages is quite variable depending on moisture pockets.

No threatened, endangered, or special status plant species are known to occur in the WSA, (see Appendix 4 in Volume I).

The Cottonwood Canyon WSA is in the transition zone separating the American Desert, Colorado Plateau, and the Intermountain Sagebrush Province Ecoregions as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV types of the WSA are blackbrush (6,000 acres) and juniper-pinyon woodland (5,330 acres).

Water Resources

Surface water in the WSA is intermittently present in Mill Creek, Quail Creek, and Heath Wash. These streams enter the WSA from FS-administered lands to the north, crossing the WSA and eventually merging with the Virgin River a few miles south of the WSA. Flows vary from nothing in late summer to very high during flashfloods. The State of Utah water quality standards for the Virgin River and tributaries from the State line to the Quail Creek diversion are: 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).

The Virgin River is presently under proceeding for water right adjudication of the drainage. Water rights in this WSA are fully appropriated. There are no known plans for flood control structures on these drainages. A small stockwatering pond is located in the southeast portion of the WSA. No springs or seeps have been found in the WSA.

The WSA is underlain with a large groundwater aquifer contained within an approximate 2,000-foot layer of Navajo Sandstone. Depth to the aquifer varies greatly depending on location. Both St. George and Washington cities have drilled water wells in this formation 2 miles southwest and 6 miles south of the WSA. The wells drilled by St. George struck water at approximately 335 feet, some 50 feet deeper than that encountered by the Washington city well. This northerly trend of increased depth to the groundwater is likely caused by the increased depth of overlying landforms and a northerly tilt of the waterbearing strata. Exploration of the aquifer has not occurred

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to the point that it is possible to determine the extent of feasible development within the WSA. The city of St. George has a water right for 1,500 acre-feet of water from this aquifer. A test well was drilled in the WSA in 1982. The well was successful, and a good potable water source was found. A rights-of-way application to develop the water was filed, and the well is now in place and producing water for the St. George system. The well is producing about 460 acre-feet per year which represents about 7.5 percent of water for the St. George system. However, under the terms of the rights-of-way grant, the well and any associated structures must be removed and the area reclaimed to a condition of being substantially unnoticeable before the Secretary of the Interior is scheduled to send a recommendation on the Cottonwood Canyon WSA to the President. Additional proposals to drill this aquifer are projected. The St. George water system contributes water to six local communities: Ivins, Santa Clara, St. George, Bloomington, Bloomington Hills, and Washington.

Mineral and Energy Resources

The mineral and energy resource rating summary for the Cottonwood Canyon WSA is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c2	Less than 500 metric tons of uranium oxide
Silver	f2	c2	Small deposits
Coal	f1	c4	None
Geothermal	f2	c3	Low temperature resource
Hydroelectric	f2	c4	.05 to 15 megawatts

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe 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 silver, currently listed as a strategic and critical material (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

This WSA has a low certainty (c1) for the occurrence of small (less than 10 million barrels of oil and less than 60 billion cubic-feet of gas) oil and gas fields (f2). There are no known structures within or near the WSA that might represent potential exploration targets.

There is one post-FLPMA oil and gas lease (80 acres) within the WSA. There have been no on-the-ground activities associated with this lease.

• Coal

Because there are no known coal-bearing formations in the Cottonwood Canyon area, the lowest level of favorability (f1) is assigned with a high degree of certainty (c4).

• Geothermal

This WSA has been assigned a relatively high certainty (c3) for the occurrence of low temperature (less than 90 degrees Centigrade at depths generally less than 1 kilometer) geothermal resources (f2). With other known high temperature geothermal resource areas in the region, it is unlikely that low temperature resources would represent any potential energy source. The potential for their utilization, if they did exist, would have to be considered as extremely low.

• Hydroelectric

Development of a small-scale hydroelectric facility on Leeds Creek along the east side of the tract may be possible, but a cost-benefit analysis, a market availability study, and an engineering study would be required to determine the feasibility of such a project. Thus, the potential for the hydroelectric resource is relatively low (f2) with a high degree of certainty (c4).

• Locatable Minerals

• Uranium

The favorability for uranium in the Cottonwood Canyon WSA is rated as (f2), potential for containing small deposits of uranium oxide (less than 500 metric-tons). The tract is given a low

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certainty (c2) for occurrence, because it is located just west of the Silver Reef Mining District (also known as the Leeds or Harrisburg District). Although the primary ore mineral from this district was silver, approximately 1,600 tons of uranium ore were mined during the 1950s (Dasch, 1967). These uranium ratings were lowered from the Draft EIS because of a misapplication of information obtained from the Department of Energy. The original study assumed large quantities of uranium in the southwestern Utah WSAs, when in fact there may be small accumulations possible in each WSA which cumulatively may add up to a large (f4) deposit. There are currently 76 mining claims in the WSA comprising 1,520 acres. Two of the claims are pre-FLPMA.

- Silver

Silver was not rated by SAI (1982). The Cottonwood Canyon WSA is located just west of the Silver Reef Mining District. Silver, uranium, and copper mineralization is found in the Springdale Sandstone Member of the Jurassic Moenave Formation (Proctor and Brimhall, 1986). The district had a recorded production of more than 7 million oz of silver prior to 1900 (James and Newman, 1986). Rocks of the Moenave Formation probably occur under the WSA at depths of approximately 500 to several thousand feet, giving the tract potential for small deposits (f2) with a low degree of certainty (c2).

- Salable Minerals

No commercial deposits of salable minerals are known to occur in the WSA.

Wildlife Including Special Status Species

Several species of mammals, birds, and reptiles occur in the WSA. This diversity exists because the WSA is located in the transition between the Colorado Plateau and the Basin and Range Physiographic Provinces, with species from both these regions represented.

Mule deer is the primary big game animal in the WSA. The mule deer occur mainly in the northern portions of the area, with the highest concentration in the northeast. Most use occurs during the winter months. Habitat condition in the area is poor to fair with cliff-rose and antelope bitterbrush being the key forage species (USDI, BLM, 1979b). Hunting pressure is light

due to the lack of accessibility and the presence of better hunting areas in the immediate vicinity.

Cougar, bobcat, and coyote also occur throughout the WSA. Habitat for these species is generally in fair to poor condition. Neither population estimates nor information on the use of the area is available, but both are expected to be light.

Gambel's quail and mourning dove, important game birds in Washington County, occupy the WSA. Gambel's quail are found in a variety of habitats within the area, but the heaviest densities occur along the main drainages where greater cover exists. Population estimates in the WSA are not known, but several trappings of quail for transplant to other areas have been conducted by the UDWR. Mourning dove are also found in a variety of habitats in the area. Most nesting occurs along the main drainages and northern portion of the WSA where pinyon pine and juniper trees are found. Quail and mourning dove hunting in the area is light, mainly due to accessibility.

The bald eagle and peregrine falcon are two endangered species that may use the WSA. The bald eagle is primarily a winter visitor. No roosting or special use areas have been identified. The bald eagle currently utilizes the area periodically for hunting, but use is not believed to be extensive (USDI, BLM, 1979b). Several sightings of peregrine falcons have been reported in the St. George area. Cliff areas in the WSA are suitable for nesting and could be used by peregrine falcons; however, none have been found.

A number of other raptors use the WSA, including two special status species, the prairie falcon and golden eagle. Nesting sites of these two species have been reported in the extreme northern portion of the WSA. Other species commonly using the area include the red-tailed hawk, Cooper's hawk, and sharp-shinned hawk.

The gila monster and chuckwalla are found along the rocky shelves and canyons of the WSA. Because of the restricted habitat of these two large lizards, they are included on the Utah State Sensitive List. The gila monster is also a Category 2 candidate species (see Appendix 4 in Volume I). Southern Utah is the northernmost extent of their range. Concentration areas or special use areas have not been identified.

Eleven other Category 2 candidate species may occur in the WSA. These are the desert tortoise, ferruginous hawk, long-billed curlew, Merriam's kangaroo

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rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, Great Basin Silverspot butterfly, and Virgin River montane vole (see Appendix 4 in Volume I).

The WSA does not contain crucial or critical habitat for threatened, endangered, or other special status species. Also, no management facilities exist or are planned within the WSA.

Forest Resources

Forest resources in the WSA are limited to the sparse pinyon-juniper woodland on approximately 2,000 acres. No harvest of forest resources is known to occur in the WSA.

Livestock and Wild Horses/Burros

The Cottonwood Canyon WSA is included within two grazing allotments (Red Cliffs and Washington). The Red Cliffs permittees graze 76 cattle from December 16 through May 15, and the Washington permittee runs 45 cattle from November 16 to April 30. Total annual grazing use on the two allotments is authorized at 625 AUMs. About 11 percent of the AUMs (70 AUMs) on these allotments comes from within the WSA.

Approximately 8,990 acres in the WSA are classified as unsuitable for livestock grazing due to steep,

rough terrain and low forage production. The remainder of the area is potentially suitable, depending on the availability of water for livestock use. Thus, grazing is sporadic. There are no sources of permanent livestock water in the WSA. At the present time, the Washington Allotment grazing use is totally dependent on hauling water to the potentially suitable areas. Watering locations are outside the WSA boundary.

The only range developments in the WSA are one small livestock reservoir (less than 1 surface acre) and about a 0.5 mile of allotment division fence between the Red Cliffs and Washington allotments. Both projects are in the southeastern part of the WSA. The only proposed development is 1 mile of gap fences along the western side of the WSA to control livestock movement. The Hot Desert Grazing EIS (USDI, BLM, 1978b) proposes continued water hauling or water development by the permittee on the Washington Allotment. Without water, there can be no grazing on the allotment.

The WSA does not contain lands with treatment potential for range management or other agricultural uses. Table 4 gives livestock grazing use data, while Table 5 identifies existing and proposed range developments in the WSA.

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

There are no wild horses or burros in the WSA.

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Red Cliffs	14,330	3,330	380	20	76 Cattle	12/16-05/15	2
Washington	10,085	8,000	245	50	45 Cattle	11/16-04/30	1
Totals	24,415	11,330	625	70			3

Sources: BLM File Data

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Table 5
Existing and Proposed Livestock Management Improvements

Allotment	Existing Improvement	Proposed Improvement
Red Cliffs	Reservoir (1) Fence (0.5 mile)	None
Washington	None	Fence (1 mile)

Source: USDI, BLM, 1979b

Visual Resources

A recent visual resource inventory classified the entire WSA as Class A scenery. Visual sensitivity is rated as high and distance zone is foreground-middle ground for the entire WSA (refer to Appendix 7 in Volume I for a detailed description of the BLM VRM rating system). Much of the WSA exhibits a red-colored Navajo Sandstone landscape with recognized aesthetic value. The VRM class rating based on the new VRM manual is proposed to be Class II.

Cultural Resources

As of 1988, only two archaeological sites are known to occur in the WSA (USDI, BLM, 1988a). Both sites are located along Quail Creek. Cultural affiliation is unknown. One site is adjacent to the major hiking trail in Quail Creek and has been heavily vandalized, with the stratigraphy likely destroyed. The other site has also been heavily vandalized. These sites are not of National Register potential. The potential for the occurrence of other sites in the WSA is unknown.

Recreation

The Cottonwood Canyon WSA offers opportunities for both primitive and nonprimitive types of recreation use. BLM personnel in the area estimate that the major recreational uses of the WSA occur in the vicinity of the Red Cliffs Recreation Area. The developed portion of the recreation area contains camping facilities, restrooms, and a culinary water development. Although the developed site is outside of the WSA, visitors use the adjacent Quail Creek Canyon portion of the WSA for many types of recreation. According to traffic counter data, there is about 9,000 visitor days of annual use in the Red Cliffs Recreation Area. It is estimated that 25 percent of these visitors hike in the adjacent WSA. Therefore, the WSA receives an estimated 2,250 primitive visitor days in the Quail Creek area. The visitor use season extends from the fall through the spring. Excessive heat deters visitor use during the summer months.

Recreation use in the remainder of the WSA probably does not exceed 900 visitor days per year. ORV use in Washington Hollow is estimated to be less than 500 visitor days. Terrain limits ORV use in other areas of the WSA. There are no ways located in the WSA. Hunting associated with vehicle access along the western boundary of the WSA is estimated at less than 200 visitor days per year. Although approximately 13 miles of hiking opportunity are available, hiking accounts for less than 200 visitor days outside of Quail Creek Canyon.

The major recreational use of the WSA is sightseeing by tourists traveling I-15. Much of the view of the WSA is blocked by foreground terrain features on State and private land. However, much of the WSA is visible from several points along I-15. Travelers along I-15 commonly stop during morning and evening hours to photograph the WSA and its Pine Valley Mountains backdrop. Traffic volumes along this section of I-15 are approximately 5,560 vehicles per day (UDoT, 1982). A conservative estimate of the sightseeing use would be 0.5 to 1 million recreational experiences per year. Even though the WSA provides sightseeing opportunities for large numbers of people, the WSA is not considered the primary destination for recreationists. Therefore, the WSA is not responsible for recreational income attributable to these sightseers, nor is outside viewing of the WSA included in the visitor day use estimated for the WSA.

In summary, the recreational use within the WSA is currently estimated at 3,150 visitor days annually. Approximately 78 percent of the use is attributed to primitive activities and approximately 6 percent is attributed to recreational activities (such as hunting and sightseeing) that currently utilize vehicular access along the boundaries of the unit. There is approximately 16 percent attributed to use solely for ORV play activities in wash bottoms in Washington Hollow.

Land Use Plans

The Cottonwood Canyon WSA is located about 5 miles northeast of the St. George metropolitan area. The BLM land use planning document for the area is the Virgin River MFP (USDI, BLM, 1979a). The WSA is utilized for wildlife habitat, recreational activities such as hiking and sightseeing, municipal water source, mineral location, and livestock grazing.

The WSA is BLM-administered public land. There are no State, private, or split-estate lands in the WSA.

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The Washington County Master Plan (Planning and Research Associates, 1971) has identified the WSA as either a "park and recreation" zone (Red Cliffs Recreation Area) or as an "open space" zone. The City of St. George has one rights-of-way grant for a water well that is presently supplying water to the municipal system. Other applications could be expected for municipal water purposes. The City of St. George plans to develop the aquifer for domestic uses. Several successful wells have already been developed in this aquifer. Because of the conflict with potential water development, Washington County policy states that the entire WSA should not be designated as a wilderness area. The Washington County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The BLM Red Cliffs Management Plan encompasses the northeast portion of the WSA in Section 15 and is compatible with wilderness.

The FS Pine Valley Mountain Wilderness Area is 6 miles north of the Cottonwood Canyon WSA.

Socioeconomics

• Demographics

The Cottonwood Canyon WSA is in Washington County, Utah. Most of the socioeconomic impacts resulting from wilderness designation or nondesignation are expected to occur within this county.

The 1980 population of Washington County was estimated to be 26,400 (USDC, Bureau of the Census, 1981). Approximately 96 percent of this population is concentrated in the Hurricane and St. George areas; both cities are within a 30-minute drive of the WSA.

From 1970 to 1980, the population of Washington County grew from 13,699 to 26,400, an overall increase of about 93 percent.

Table 6 presents the baseline and projected population and employment data for Washington County. It is estimated that between 1980 and 1987, the population increased to about 39,720. Population projections for the county indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 14.8-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

• Employment

Table 6 shows the baseline and projected total employment for Washington County to the year 2010.

Table 6
Baseline and Projected Population and Employment Growth
Washington County

	1980	1990	2000	2010
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100

Source: Utah Office of Planning and Budget, 1987.

Washington County is located near or along routes leading to many major recreation areas. Some of the larger tourist attractions include the Zion National Park, Glen Canyon NRA, and Bryce Canyon National Park. Much of the county's economy is based on the tourism industry, as indicated by the high levels of employment and income in the trade and services sectors.

Table 7
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

Washington County is part of the Southwest 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 Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010 employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, mining to less

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than 1 percent, and government to 18 percent of the total direct employment.

• Sales and Revenues

Economic-related activities in the WSA include mineral exploration and production, livestock production, woodland 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
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$160
Mineral Production	0	0
Mining Claim Assessment	\$7,600	0
Livestock Grazing	\$1,400	\$108
Recreational Use	<u>\$12,915</u>	<u>0</u>
Total	\$21,315	\$268

Sources: USDI, BLM, file data; Appendix 9 in Volume I.

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 76 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.

No oil and gas or minerals have been produced in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Three livestock operators have a total grazing privilege of 70 AUMs within the WSA. If all this forage were utilized, it would account for \$1,400 of livestock sales and \$350 of ranchers' returns to labor and investment.

The WSA's motorized recreational use and related local expenditures are low. 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. 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

the Cottonwood Canyon WSA is estimated to be about 3,150 visitor days per year.

The WSA generates Federal revenues from oil and gas leases and livestock sources (refer to Table 8).

An oil and gas lease in the WSA covers approximately 80 acres. At up to \$2 an acre, lease rental fees generate up to \$160 of Federal revenues annually. Half of these monies are allocated to the State which, in turn, 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 70 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$108 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

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 III-A and the Description of the Alternatives for the Cottonwood Canyon 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 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 11,330 acres; management under oil and gas leasing Category 3 [no surface occupancy] on 1,000 acres; and ORV closure on 1,005 acres).

Disturbance of approximately 19 acres from uranium exploration mainly in the periphery of the WSA and in drainages, and disturbance of 5 acres for development of rights-of-way in the southern portion of the

COTTONWOOD CANYON WSA

WSA, is likely in the foreseeable future and would result in a direct loss of naturalness, solitude, and opportunities for primitive, unconfined recreation in the disturbed areas, but not in the area as a whole. Disturbance of 1 acre for development of a gap fence would have little affect on wilderness values. ORV use would continue to be restricted by terrain to areas where it is currently occurring and no increase in loss of wilderness values is anticipated from this activity. During the period of activity, the visual and audible disturbance from mineral exploration, rights-of-way development and continued and increased vehicular use would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA during the period of activity. As much as 10 percent (1,133 acres) of the WSA could be so affected in the foreseeable future. The areas that would be affected are generally not considered by BLM to have outstanding opportunities for solitude and primitive recreation.

The only special feature that would be affected is the area's high quality scenery which would be directly disturbed on 0.2 percent (25 acres) of the WSA. There would be a perceived loss in visual quality on as much as 1,133 acres surrounding the disturbances. Appropriate measures would be taken to protect endangered and other special status species prior to any surface-disturbing activity, and it can be assumed that no negative impact would occur to these species.

The 2 to 7 percent annual increase in visitor use that would occur, would not be expected to reduce wilderness values because the use would continue to be 78 percent 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 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, opportunities for solitude and primitive recreation, and scenic quality would be directly lost on 25 acres of the WSA. Opportunities for solitude and primitive recreation and scenic values would be indirectly reduced in quality on up to an additional 1,133 acres of the WSA.

• Impacts on Water Resources

It is projected that the southern portion of the WSA would continue to be used as a municipal water resource. The well that currently exists in the WSA, and which would have to be removed under the terms of the rights-of-way grant, would likely be reestablished and continue to provide water to the city of St. George municipal system. Additional wells would also likely be drilled in this area. It is projected that water resource development activities would result in about 5 acres of surface disturbance.

Mineral exploration in the WSA would be confined to structures above the water-bearing aquifers; therefore, no impacts to groundwater from mineral exploration are expected.

Conclusion: Existing and future use of the water resource in the WSA by the city of St. George would not be affected by implementation of the No Action/ No Wilderness Alternative.

• 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.

All Wilderness Alternative (11,330 Acres)

• Impacts on Wilderness Values

Designation and management of all 11,330 acres as wilderness would contribute to the preservation of the wilderness values in the Cottonwood 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 protected on all 11,330 acres. Solitude would be protected on approximately 5,200 acres that meet and 6,130 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 1,800 acres that meet and 9,530 acres that do not meet the

COTTONWOOD CANYON WSA

standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including scenic values, special status species, and other animal species commonly 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 5 acres is anticipated from exploration of uranium mining claims. As with the No Action/No Wilderness Alternative, this disturbance would occur in the periphery of the southern portion of the WSA. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if mineral exploration involving valid existing rights could not be otherwise achieved. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas, but wilderness values in the WSA as a whole would not be affected. Opportunities for solitude and primitive recreation would also be indirectly reduced during the period of activity on adjacent portions of the WSA, involving up to 3 percent (340 acres) of the WSA. The areas that would be affected are generally not considered to have outstanding opportunities for solitude and primitive recreation. Overall, special features (including scenic values, special status species, and wilderness-associated species) would be preserved except where scenic values would be directly lost on less than 1 percent (5 acres) of the WSA due to mineral exploration involving valid existing rights. There would be a perceived loss in scenic quality on as much as 340 acres surrounding the area of disturbance.

Over the long term, there would be no potential for loss of wilderness values due to the development of new leases and mining claims. The potential for long-term development of existing mining claims and, therefore, disturbance to wilderness values 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 and due to the development being subject to valid existing rights.

The 2 to 7 percent annual 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. All disturbance to wilderness values, that is presently occurring with ORV use, would be eliminated.

Conclusion: Wilderness values would be preserved overall in the WSA. In the foreseeable future, naturalness, opportunities for solitude and primitive recreation, and scenic quality would be directly lost on 5 acres of the WSA. Opportunities for solitude and primitive recreation and scenic values would be indirectly reduced in quality on up to 340 acres of the WSA.

• Impacts on Water Resources

The municipal water well that currently exists in the WSA, and would be removed under the terms of the rights-of-way grant, could not be reestablished. Use of approximately 460 acre-feet of water per year (7.5 percent of the total municipal water system) from the WSA would be lost. Wilderness designation would preclude additional exploration and development of the aquifer in the WSA as a municipal water source for nearby communities. The Washington County Water Conservancy District is actively searching for alternative water sources (e.g., Quail Creek Reservoir). However, the loss of this water source could be potentially significant as the area served by the municipal water system is experiencing rapid population growth.

Conclusion: Implementation of this alternative would remove 460-acre feet of water from the city of St. George municipal water system annually. Additional potential water sources located in the WSA would also be foregone.

• Impacts on Mineral and Energy Exploration and Production

• Leasable Minerals

Approximately 80 acres are under (post-FLPMA) oil and gas leases in the WSA. However, no exploration or development of oil and gas is presently occurring on the leases and none is expected prior to designation (see Appendix 6 in Volume I). Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, this alternative would not result in a significant loss of oil and gas production.

• Locatable Minerals

Approximately 1,520 acres are under mining claim within the WSA, principally for uranium and silver. Less than 500 metric-tons of uranium oxide are thought to occur within the WSA.

COTTONWOOD CANYON WSA

Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. About 5 acres of surface disturbance resulting from exploration activities is projected to occur on valid mining claims following wilderness designation. Disturbed areas would be reclaimed upon abandonment. No development of locatable minerals is projected in the foreseeable future. Therefore, up to 500 metric tons of uranium oxide could be foregone, but the loss would not be significant in the foreseeable future.

- **Salable Minerals**

No impacts are projected for salable minerals as no deposits are known to occur in the WSA.

Conclusion: Wilderness designation would eliminate potential exploration opportunities for uranium in the WSA. Loss of exploration and development opportunities for other mineral and energy resources would not be significant.

Partial Wilderness Alternative (Proposed Action) (9,853 Acres)

- **Impacts on Wilderness Values**

Designation and management of 9,853 acres as wilderness would contribute to the preservation of wilderness values in the Cottonwood Canyon WSA. The potential for surface-disturbing activities would be reduced through closure of the designated area to future mineral leasing and location and to ORV use, and through management of the designated area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 9,853 designated acres. Solitude would be protected on approximately 4,800 acres that meet and 5,053 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 1,600 acres that meet and 8,253 acres that do not meet the standards for outstanding opportunities. Most resources that could be considered as special features in the WSA including scenic, biological, and botanical would also be protected.

Although protected, complete preservation of wilderness values in the designated area would not be assured because of the existence of valid existing rights. In the foreseeable future, direct disturbance

of up to 6 acres in the designated portion of the WSA is anticipated from exploration of existing mining claims and development of a gap fence, and an additional 7 acres of disturbance is anticipated in the non-designated portion of the WSA from mineral exploration and rights-of-way development. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas involving 0.12 percent (13 acres) of the WSA. The WSA as a whole would not be affected. Opportunities for solitude and primitive recreation would also be indirectly reduced on adjacent portions of the WSA from noise and visual intrusion during the period of activity. As much as 5 percent (567 acres) of the WSA would be indirectly affected. The areas that would be affected are generally not considered to have outstanding opportunities for solitude and primitive recreation. Mitigation to protect wilderness values would be applied in the designated portion, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. Overall, special features (including scenic values, special status species, and wildlife commonly associated with wilderness) would be preserved except where scenic values would be reduced in quality on much less than 1 percent (13 acres) of the WSA due to mineral exploration involving valid existing rights. There would be an additional perceived loss of scenic quality on as much as 567 acres adjacent to the area of disturbance.

Increased visitor use that would occur would mostly be primitive in nature, and in the wilderness area visitor use would be managed so as to not result in loss of wilderness values. Because of this and because ORV use would be eliminated in the designated area and restricted by terrain in the nondesignated area, no loss of wilderness values from visitor use is anticipated.

The potential for loss of wilderness values in the WSA over the long term due to long-term development is not accurately known, but loss would occur as intrusions increase.

Conclusion: Wilderness values would be preserved overall in the designated area which is about 87 percent of the WSA. In the foreseeable future naturalness, opportunities for solitude and primitive recreation and scenic quality would be directly lost 13 acres of the WSA. Opportunities for solitude and primitive recreation and scenic values would be indirectly reduced in quality on up to 567 acres.

COTTONWOOD CANYON WSA

- Impacts on Water Resources

Because the Navajo Sandstone aquifer is shallower in the southern portion of the WSA, the most feasible area for water development would be in the nondesignated area and could be developed as discussed for the No Action/No Wilderness Alternative. The existing municipal water well, which will be abandoned and the site reclaimed, is located in the nondesignated portion. Therefore, it could be re-established. It is projected that additional rights-of-way applications would be filed by the city of St. George for municipal water purposes. These actions would result in about 2 acres of surface disturbance. No exploration or development of water resources would occur in the designated portion of the WSA.

Mineral exploration in the WSA would be confined to structures above the water-bearing aquifers; therefore, no impacts to groundwater are expected.

Conclusion: The most favorable area for development of the aquifer would be in the nondesignated portion of the WSA and, therefore, available as a municipal water source.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

It cannot be determined how much of the existing potential resource of 10 million barrels of oil and less than 60 billion cubic-feet of natural gas is within the area that would be designated as wilderness with this alternative. No new leasing would be allowed in the designated portion following wilderness designation. The nondesignated portion would remain open to leasable mineral exploration and development. However, due to the small size of the deposits, no exploration or development is projected in the foreseeable future in either the designated or nondesignated portions of the WSA.

Therefore, it is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in a significant loss in recovery of the oil and gas resource.

- Locatable Minerals

Approximately 1,140 acres of mining claims are located in the portion of the WSA that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981a). Five acres of surface disturbance is projected as a result of locatable mineral exploration activities.

Approximately 380 acres of mining claims are located in the nondesignated portion of the WSA. These could be developed as well as any new claims that are located in this part of the WSA. It is assumed that 2 acres could be disturbed as a result of locatable mineral exploration activity in the nondesignated portion of the WSA.

Conclusion: Due to the small size of potential leasable and locatable mineral deposits in the designated portion of the WSA, this alternative would not result in a significant mineral resource loss. Leasable and locatable mineral resources could be explored and developed in the nondesignated portion of the WSA.

LaVerkin Creek Canyon WSA



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LAVERKIN CREEK CANYON WSA

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LAVERKIN CREEK CANYON WSA

(UT-040-153)

INTRODUCTION

General Description of the Area

The LaVerkin Creek Canyon WSA contains 567 acres. The LaVerkin Creek Canyon is located along the boundary of Zion National Park in the northeast corner of Washington County. It is adjacent to a NPS-administratively endorsed wilderness proposal encompassing 120,620 acres. It is administered by BLM's Cedar City District, Dixie Resource Area Office.

The WSA's topography is dominated by the LaVerkin Creek drainage. The canyon rims are 700 to 900 feet above the creek exposing various rock formations. The climate within the WSA is considered mild with average temperatures ranging from the low 40s during the winter months to the high 80s during mid-summer. Temperature extremes can vary from 0 degrees Fahrenheit (F) in the winter to 105 degrees F in the summer. Average annual precipitation in Zion National Park is 14.5 inches with about half occurring in the form of winter snow and half in the form of rain during summer thunderstorms. Winds usually prevail from the southwest with the strongest winds occurring in March and April.

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 for analysis in this EIS in accordance with the general land use planning provisions of Section 202 of the FLPMA and 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 III-A, 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 (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 no 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 III-A (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 LaVerkin Creek WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils, Vegetation and Wildlife Including Special Status Species, and Forest, Visual and Cultural Resources: Estimates of surface disturbance without wilderness designation have been revised downward from the 180 acres reported in the Draft EIS to none in the Final EIS. Given this new scenario, the impacts on soil, vegetation, water use, wildlife; and forest, visual, and cultural resources would not occur in the foreseeable future. Conversely, there are no proposals for developments, harvests, or other uses which would be precluded for these resource values by wilderness designation. Therefore, impacts on soils, vegetation, wildlife, forest, visual, and cultural resources are not issues in this Final EIS.

2. Water Resources: The only surface waters in the WSA are intermittent. There is little or no potential for upstream uses and no identified water project proposals. Therefore, impacts on water resources are not significant issues.

STATEWIDE
POCKET MAP
WSA
NO. **15**
SEE VOL. I

LAVERKIN CREEK CANYON WSA

3. Mineral Exploration and Production: 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 low certainty that they exist. There are no mining claims inside the WSA and projected uranium and other locatable mineral deposits are thought to be small with a low certainty of occurrence. More accessible deposits of salable minerals (sandstone and limestone) 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.

4. Livestock Management: Concerns were raised that wilderness designation would cause prohibitions in grazing or reduce the levels of grazing permitted under the Wilderness Management Policy (BLM Manual 8560). There will be no curtailments in grazing simply because the area is wilderness. No changes in grazing levels are proposed in the planning documents. No roads or ways exist in the WSA that are used for livestock management and no rangeland developments are proposed. The WSA is currently grazed by sheep, but predator control has not been conducted in the area during the 1986 to 1987 period. If the area were designated as wilderness, the only prohibition against predator control would be cyanide guns (M-44's). Therefore, existing grazing management practices and grazing levels would not be affected by wilderness designation and are not analyzed in the Final EIS.

5. 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 LaVerkin Creek WSA is estimated to be only 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 would not be significant and they are not analyzed in detail in the Final EIS.

6. 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 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 100 visitor days per year and would remain primitive with or without wilderness designation due to the terrain of the WSA and limited access, impacts on economic conditions are not analyzed in detail in this Final EIS.

• Issues Analyzed in Detail

The significant issue for the LaVerkin 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 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, 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 15, for responses to specific comments about the LaVerkin Creek Canyon WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

No additional alternatives were suggested during the public comment period.

Transfer of several WSAs, including the LaVerkin Creek Canyon WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from BLM to NPS, the EIS could analyze both BLM and NPS management with or without wilderness designation of the WSA. However, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS because: (1) BLM could continue to manage

LAVERKIN CREEK CANYON WSA

the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness; and (2) the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review. The EIS addresses the basic question of wilderness designation of BLM-administered land and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate action 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 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, 1982b). BLM has determined that the LaVerkin Creek 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 administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar nonenvironmental 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 impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (567 acres). A description of BLM's management practices under 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 BLM management actions presented in the Introduction to Volume III-A are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 567-acre LaVerkin Creek Canyon WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Virgin River MFP (USDI, BLM, 1979a). No State or private lands are within the WSA (refer to Map 1).

- Management Conditions and Constraints

All 567 acres would remain open to mineral location, leasing, and sale. There are no mining claims in the WSA at the present time. 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). There are no oil and gas leases in the WSA, but future leases could be developed under standard stipulations (Category 1) on the 567-acre area. Even though mineral resources could be managed as described above, no locatable or leasable mineral exploration or development are projected in the WSA because the level of known resources and probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present domestic livestock grazing use of 20 AUMs would continue as authorized in the Virgin River MFP. There are no existing range developments in the WSA. No rangeland developments are planned.

The entire WSA acreage would be open to vehicular use, however, off-road use of vehicles over most of the WSA is not possible because of steep terrain and rugged surface features.

The entire area would continue to be managed under VRM Class II.

- Action Scenario

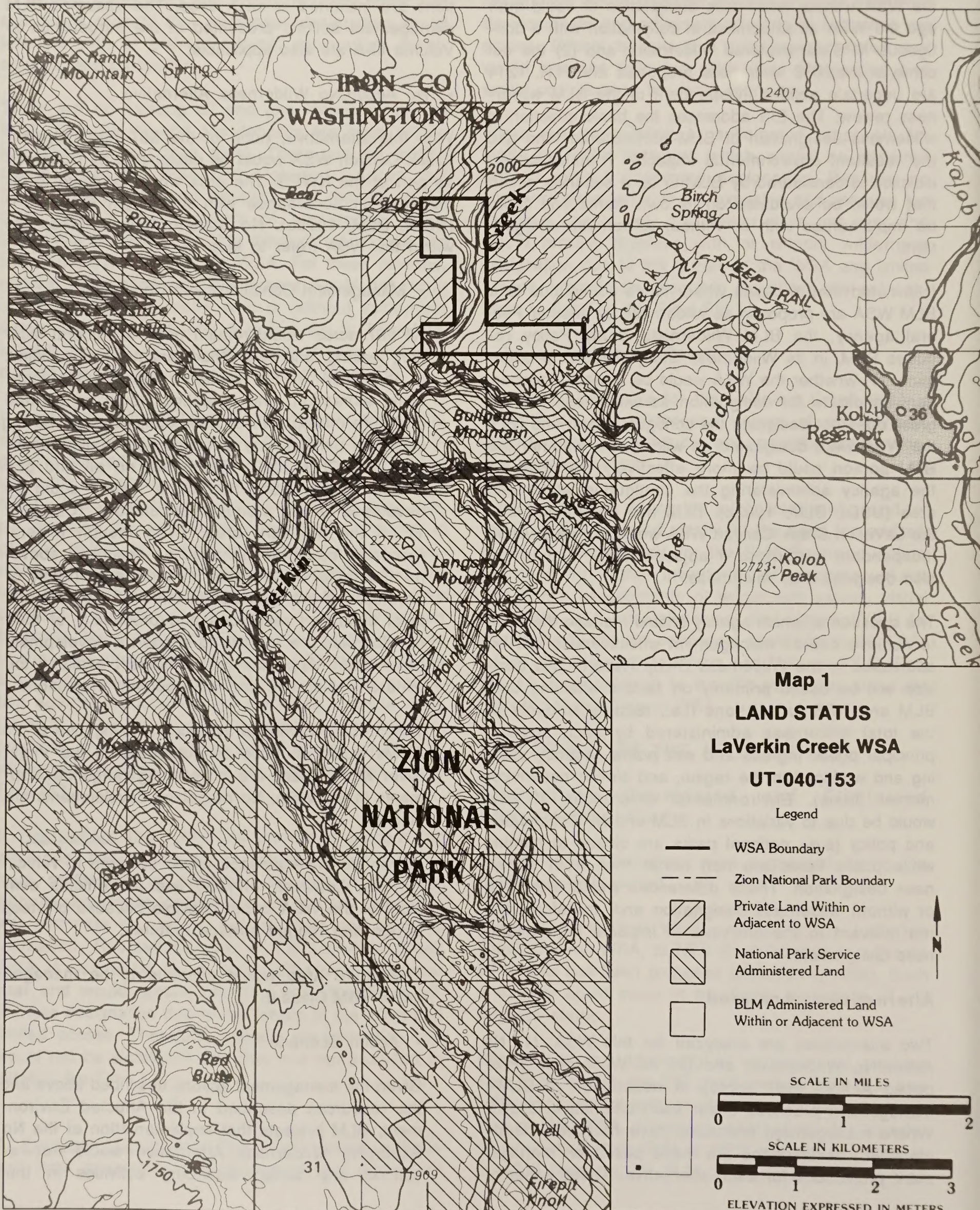
Given the management actions described above and the resources described in the Affected Environment, BLM projects that implementation of the No Action/No Wilderness Alternative would not result in any surface-disturbing activities in the

LAVERKIN CREEK CANYON WSA

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T. 38 S.

T. 39 S.








Map 1

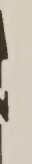
LAND STATUS

LaVerkin Creek WSA

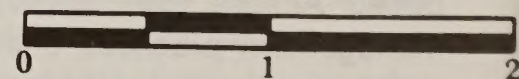
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Legend

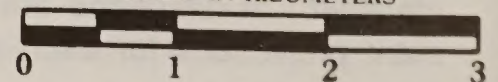
-  WSA Boundary
-  Zion National Park Boundary
-  Private Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA



SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS

LAVERKIN CREEK CANYON WSA

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 ORV use is projected. Recreation use in the foreseeable future would be primitive in nature and would increase over the current estimated use of 100 visitor days annually at a rate of 2 to 7 percent per year.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 567 acres of the LaVerkin Creek Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA is adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed as part of the NPS-proposed wilderness. As a result, the LaVerkin Creek Canyon WSA could be retained by BLM or transferred (along with nine other small WSAs) (refer to Map 3) to the NPS, who would then assume management responsibilities. For the purposes of this analysis, it is assumed that BLM would retain management of the LaVerkin Creek Canyon WSA and would manage it in part with the contiguous NPS-proposed wilderness in accordance with the Wilderness Management Policy (BLM Manual 8560), to preserve its wilderness character.

No State, private or split-estate lands are located in the WSA (refer to Map 1). The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 567 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims are located in the WSA. There are no oil and gas leases within the WSA and no leases would be issued in the future.

Present domestic livestock grazing would be allowed to continue as authorized in the Virgin River MFP. The 20 AUMs in the WSA would remain available to livestock as presently allotted.

The entire 567-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. There are no ways in the WSA nor are there any roads along the boundary 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.

- Action Scenario

No surface disturbance would occur. Implementation of the All Wilderness Alternative would preclude mining claim location and 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. Recreation use would be primitive in nature and would increase over the current estimated use of 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.

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 section of this WSA.

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

Wilderness Values

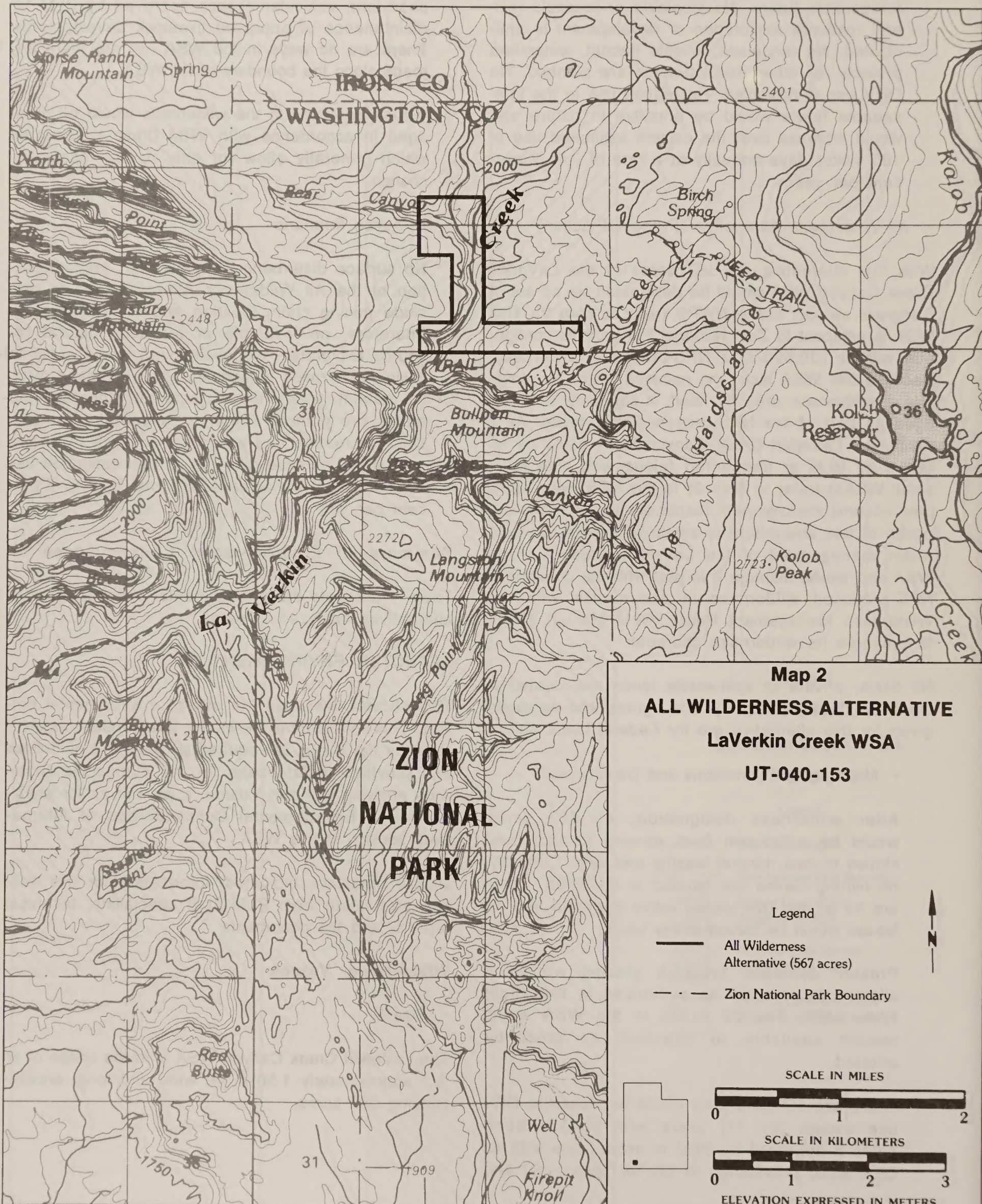
- Size

The LaVerkin Creek Canyon WSA is in the shape of an "L," approximately 1.50 miles wide and long, encompassing 567 acres.

LAVERKIN CREEK CANYON WSA

R. 11 W.

T. 38 S.

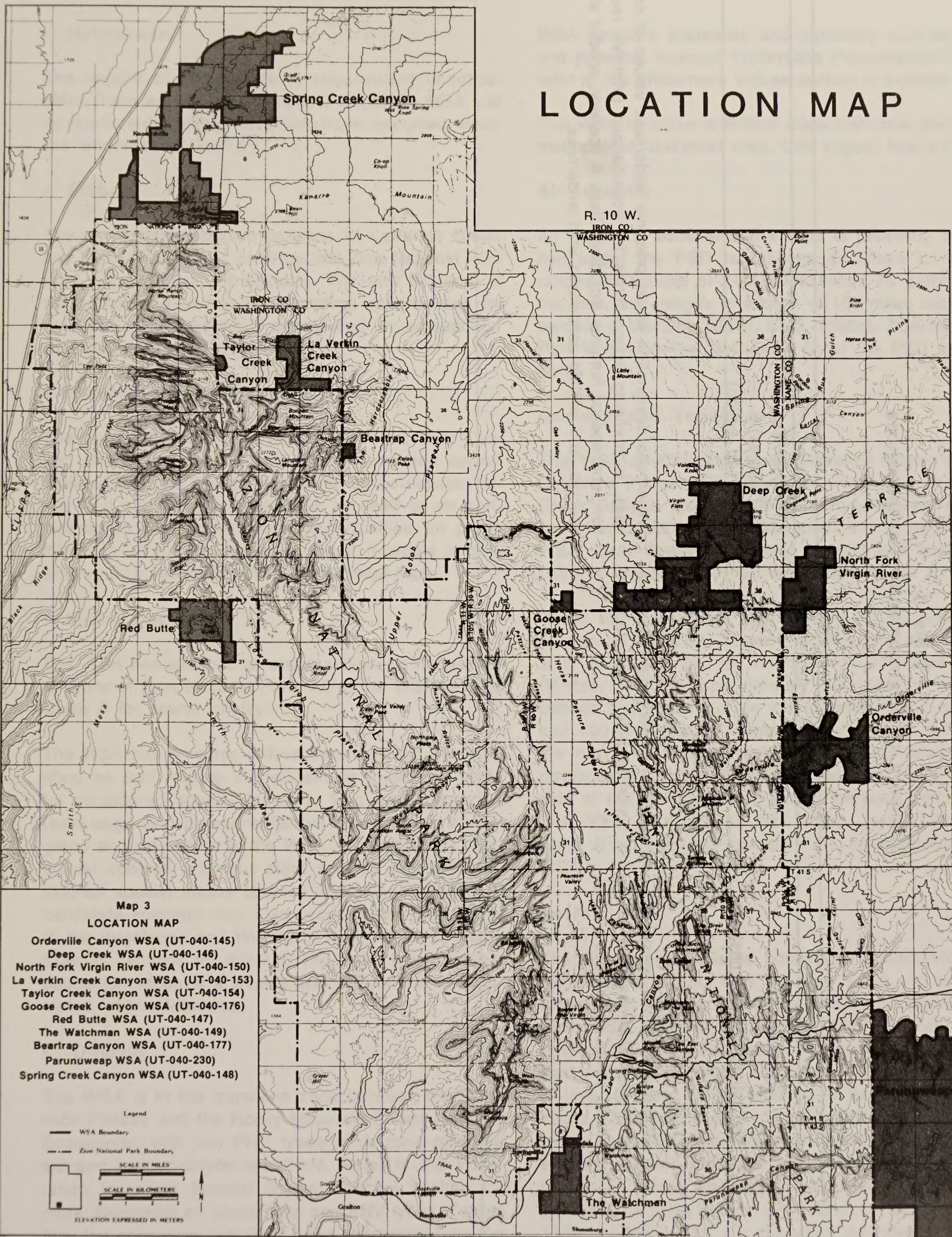


LAVERKIN CREEK CANYON WSA

R. 12 W.

R. 11 W.

LOCATION MAP



LAVERKIN CREEK CANYON WSA

Table 1
Summary of Environmental Consequences

Resource	Alternatives	
	No Action/No Wilderness	All Wilderness (567 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation. In the foreseeable future, no disturbance is anticipated that would affect wilderness values.	Wilderness designation would preserve wilderness values of naturalness, outstanding opportunities for solitude and primitive recreation, and special features including Class A scenery, special status species, and wildlife associated with wilderness.

LAVERKIN CREEK CANYON WSA

- **Naturalness**

The imprint of man's work is substantially unnoticeable. There are no known imprints within the WSA and no surface-disturbing activities have occurred since the wilderness inventory.

- **Solitude**

The narrow sheer-walled canyons of LaVerkin Creek and Bear Canyon that continue into Zion National Park offer opportunities for solitude. The unit by itself is not considered to have outstanding opportunities for solitude, but it would if considered in conjunction with Zion National Park.

- **Primitive and Unconfined Recreation**

The canyon bottoms of LaVerkin Creek and Bear Canyon offer primitive and unconfined recreation opportunities such as hiking, backpacking, horseback riding, and photography. The WSA by itself is not considered to have outstanding opportunities for primitive and unconfined recreation, but it would if considered in conjunction with Zion National Park.

- **Special Features**

The WSA has exceptional scenic values as natural extensions of Zion National Park. All 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 be considered special features. Two animal species (bald eagle and peregrine falcon) are listed as endangered and may occur in the WSA. In addition, 13 other animal species and four plant species that are considered special status species (including Category 2 candidate species) may also occur in the WSA (refer to the Vegetation and Wildlife Including Special Status Species sections for details). The WSA has a cougar population which is a wildlife species commonly associated with wilderness.

- **Diversity**

The WSA is in the transition zone between the Colorado Plateau and the Rocky Mountain Forest Province Ecoregions, with two PNV types of Arizona pine forest and juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this

WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

The WSA is within a 5-hour drive from one standard metropolitan statistical area, Las Vegas, Nevada.

Air Quality

Air quality is excellent. The area is presently classified under the PSD regulations as Class II. Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM, 1980c). Zion National Park is designated as Class I under the PSD regulations.

Geology and Topography

This WSA is within the Grand Staircase section of the Colorado Plateau Physiographic Province. LaVerkin Creek Canyon drops 1,000 feet from its east rim to LaVerkin Creek which flows south the length of the WSA. Bear Creek flows west to east and intersects LaVerkin Creek in the northern portion of the WSA.

Rocks of Jurassic age approximately 1,000 feet thick outcrop in the WSA. Underlying Mesozoic and Paleozoic rock may be as much as 10,000 feet thick (Hintze, 1973). Approximately 500 feet of cross-bedded Navajo Sandstone are exposed in the canyon and 400 feet of the Carmel Formation crop out near the rim. A northeast trending fault of undetermined displacement occurs a few hundred feet to the southeast of the unit and could extend beneath portions of this WSA. The canyon has steep, nearly 900-foot walls. It extends approximately 1.5 miles through the WSA.

Soils

There are some isolated pockets of productive soils within this WSA, but they are very small and undelineated. Most of the soils are mapped by the Washington County Soil Survey (USDA, SCS, 1977) as Paunsaugunt/Kolob/Dalcan association or rock outcrop/rockland association. These are excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is moderate to severe, and the erosion condition classification is moderate with total annual soil loss of about 737 cubic-yards per year (USDI, BLM, 1978c and 1979a; Leifeste, 1978.). These soils are classified as nonsaline with

LAVERKIN CREEK CANYON WSA

an annual salt production estimated at 15 lb per acre from undisturbed sites (unpublished soil survey for the Iron/Washington area).

The rehabilitation potential for sites within the WSA are from good to unsuited. The unsuited areas include rockland, rock outcrop, and steep slopes. There are areas of soils which are highly suited for rehabilitation treatment, including good seeding establishment.

Soils are used for range, wildlife, and recreation and are unsuitable for agriculture.

Vegetation Including Special Status Species

The LaVerkin Creek Canyon WSA is located in a botanically rich area. Over 500 species of plants are known to occur in adjacent Zion National Park. Vegetation in the WSA is comprised of three major types, as shown in Table 2. At the highest elevations in the WSA (from a 5,500-foot to a 7,500-foot elevation) is the coniferous forest type which occupies about 167 acres. It is characterized by Ponderosa pine, Douglas fir, white fir, aspen, and Rocky Mountain juniper. Understory shrub include mountain mahogany, snowberry, choke-cherry, manzanita, current, and elderberry. Grasses include bluebunch wheatgrass, slender wheatgrass, needle-and-thread grass, and mountain bronze.

Table 2
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Coniferous Forest	167	30
Pinyon-juniper woodland	150	26
Riparian	50	9
Barren (rock outcrop, badlands)	200	35
Total	567	100

Source: USDI, BLM, 1982a

Between the 4,000-foot and 5,500-foot elevation, are approximately 150 acres of pinyon-juniper woodland. Associated species include yucca, Gambel's oak, big tooth maple, Utah serviceberry, singleleaf ash, little leaf mountain mahogany, and prince's plume. On the more exposed benches and gentle slopes at the edge of the pinyon-juniper woodland are areas of sagebrush and rabbitbrush. Grasses are found throughout the type and include Indian ricegrass, galleta grass, needle-and-thread grass, and muttongrass.

Riparian plant communities are located in drainages around springs and seeps. There are about 50 acres of riparian vegetation in the WSA. The seeps usually develop under protective overhanging rock strata. These hanging gardens generally have luxuriant plant life, such as maidenhair fern, pink-flowered shooting star, and scarlet monkey flower.

Approximately 200 acres of the WSA are rock cliff faces. No significant amount of vegetation is found in this area.

No threatened or endangered plant species are known to occur in the WSA. However, four Category 2 candidate plant species (50 CFR 17) may occur in the WSA. These are Asplenium andrewsii, Erigeron sionis, Heterotheca jonesii, and Sphaeromeria ruthiae (See Appendix 4 in Volume I).

This WSA is in the transition zone of the Colorado Plateau and Rocky Mountain Forest Province Ecoregions, as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). This transition has diverse vegetation, with plant species from each of these ecoregions being represented. The PNV types of the WSA are Arizona pine forest (207 acres) and juniper-pinyon woodland (360 acres) (USDI, USGS, 1978a).

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. LaVerkin Canyon drains into the Virgin River through Zion National Park.

The State has declared the WSA water right status as fully appropriated (UDNRE, DWR, 1988). Surface and groundwater sources are closed to further water right applications. There is an ongoing water right adjudication being conducted by the Fifth Judicial District Court for the Virgin River Drainage for the general determination of rights to the use of both surface and underground water. The NPS is asserting Federal reserved rights for park values in this adjudication.

The WSA contains only ephemeral and intermittent stream channels. There are no perennial waters.

The only surface waters in the LaVerkin Creek Canyon WSA are intermittent streams in LaVerkin Creek and Bear Canyons which flow north to south for about 1.5 miles through the west side of the WSA.

LAVERKIN CREEK CANYON WSA

Wildlife and livestock are the major water users. There is some human consumption of water in Zion National Park south of the area, but potability is questionable due to livestock use in the headwaters. There is well development potential (but no current demand) due to the Navajo Sandstone Formation in the WSA. This formation is known to be a good water producer. Flash flooding, particularly during the summer rainy season (July through September), may create a hazard in the steep, narrow canyon bottoms.

No seeps, springs, or water developments are known to exist within the WSA boundaries. There are no withdrawals present in the WSA.

Since the waters from this WSA drain into the Virgin River, the water quality standard for it applies to Laverkin Creek. The State water quality standards for the Virgin River and tributaries from the State line to the Quail Creek diversion are: 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 is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c1	Less than 500 metric tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f1	c4	None

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

Oil and gas favorability is rated as (f2) (potential for small accommodations of hydrocarbons). No specific data exist near the WSA, so the certainty of occurrence is low (c1).

All 567 acres in this WSA are open to oil and gas leasing (Category 1). There are no existing oil and gas leases within the WSA.

• Coal

The WSA is underlain by pre-Cretaceous rock not known to contain any coal.

• Geothermal

No evidence is present to indicate that geothermal resources occur within the WSA.

• Locatable Minerals

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA. There are presently no mining claims within the WSA.

• Uranium

No uranium deposits are known to occur within the WSA. The Moenave and Chinle Formations are the only rock units in this area considered favorable for uranium. SAI speculates that the Moenave and Chinle Formations within the WSA have a very low certainty for occurrence of uranium (SAI, 1982). It is estimated that the WSA would have less than 500 metric-tons of uranium oxide.

• Salable Minerals

Construction-grade sandstone and limestone suitable for agricultural use occur in the WSA (USDI, USBM, 1987c). This is probably not significant, as ample supplies occur outside the WSA.

LAVERKIN CREEK CANYON WSA

Wildlife Including Special Status Species

Because this WSA occurs in the transition zone of two vegetation ecoregions, it supports a variety of animal species. The Virgin River Unit Resource Analysis indicates approximately 300 vertebrate animal species could inhabit the WSA (USDI, BLM, 1979b). These include 60 species of mammals, 208 species of birds, 20 species of reptiles, six species of amphibians, and three species of fish. No critical wildlife habitat areas have been identified within the WSA.

Raptors may include the bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco peregrinus), which are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony valleys west of the WSA. Occasional sightings of these birds have been made, with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur in the vicinity. Other raptors may include the golden eagle (BLM sensitive species), prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common.

In addition, 12 Category 2 candidate species may occur in the WSA these are: the ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, yellow-billed cuckoo, Great Basin Silverspot butterfly, Virgin River montane vole, white-faced ibis, and Arizona Bell's viero (see Appendix 4 in Volume I).

The LaVerkin Creek Canyon WSA contains cougar habitat and is within Utah Cougar Management Unit 30, Cedar Mountain. Cougar populations and harvest by sport hunters and by the Animal Damage Control Program has been higher in this management unit than in any other location in Utah. During the 11 year period (1977 through 1987), a total of 217 cougars were taken from the Cedar Mountain Management Unit. This harvest averaged nearly 20 animals per year (UDNRE, UDWR, 1988). It has not been determined how many of these may have been taken from within the WSA. No acres are planned for vegetation treatment nor are any wildlife facilities proposed.

Forest Resources

A small conifer forest and pinyon-juniper woodland are located in the WSA. However, this resource does not contain commercial values due to access problems, size of resource, etc. There is presently no forest product use and none is projected.

Livestock and Wild Horses/Burros

The LaVerkin Creek Canyon WSA is within the Cedar Mountain Allotment which is grazed by 800 sheep from June 16 to October 15. Only 3 percent of this allotment is Federal range (20 AUMs). One permittee uses the allotment. About 45 percent of the WSA is unsuitable for livestock use due to steep terrain. The remaining area provides about 80 percent of the Federal grazing use. There are no other agricultural uses. There are no existing range developments and none are proposed. There is no potential for land treatment. Table 4 gives livestock grazing use data for the WSA.

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Cedar Mountain	567*	567	255 ^a	20	800 Sheep	06/16-10/15	1

Sources: USDI, BLM, file data

* The original draft listed 13,000 acres in the allotment. The allotment has 567 acres of BLM land and the remainder is private and State lands.

^aThe suitability of an area for grazing is determined by a number of factors including steepness of the terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing and any available feed is not allocated for domestic livestock grazing.

LAVERKIN CREEK CANYON WSA

Wild horses and burros do not use the WSA.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotment in the LaVerkin Creek Canyon WSA (USDA, APHIS, 1988).

Visual Resources

This WSA was judged to be Scenic Class A, exceptional, during preparation of the Virgin River Unit Resource Analysis (USDI, BLM, 1979b). The WSA shares the same features as Zion National Park, one of the nation's most important tourist attractions with a worldwide reputation for scenic splendor. The VRM rating for the WSA is Class II. (Refer to Appendix 7 in Volume I for a description of the BLM VRM system.)

Cultural Resources

Petroglyphs, stone granaries, and rock shelters are known to exist in Zion National Park and the general vicinity. However, no archaeological inventory exists on this specific WSA and no cultural values have been identified.

Recreation

Recreational use of the WSA is primitive in nature and includes hiking, rock climbing, backpacking, horse-back riding, and photography. The size of this WSA is not sufficient to attract recreationists except as an addition to the Zion National Park experience.

Visitor use data are sketchy but Zion National Park files unofficially indicate approximately 75 hikers pass through LaVerkin Creek Canyon each year. Assuming 6 hours to hike through the WSA, this use represents 38 visitor days. Since these data are incomplete (not everyone registers) it is assumed that recreation visitor days to the area would be about 100. Motorized-recreational use does not occur in this WSA.

Land Use Plans

The WSA is BLM-administered public land. There are no State-owned, private, or split-estate lands in the WSA. The land is presently used for unconfined and primitive forms of outdoor recreation, wildlife habitat, and livestock grazing. The NPS land adjacent to the WSA has been administratively endorsed for wilderness.

The Statement of Management for Zion National Park is "to maintain the quality and flow of water from all natural water sources that have been traditionally important in serving domestic needs and in perpetuating the Park's ecological communities." (USDI, NPS, 1976). In this light, the NPS prefers nondevelopment of adjacent lands in order that the park's watershed remain unimpaired.

The House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214 (1984), a bill designed to transfer jurisdiction of certain lands, including the LaVerkin Creek Canyon WSA, from BLM to NPS. In response to the hearing, the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984c). The NPS found the WSA suitable for addition to the NPS unit.

In a February 6, 1985; letter from the Secretary of the Interior to the Honorable John F. Seiberling (Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs), the LaVerkin Creek Canyon WSA was identified as suitable for inclusion into the adjacent unit of the National Park System (U.S. Secretary of the Interior, 1985f). No Congressional action has been taken on that recommendation.

The Washington County Master Plan (Planning and Research Associates, 1971) identifies the WSA as an open space zone, and the Washington County Commission has indicated they do not support wilderness designation for this WSA. The County Commission has endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The WSA is managed by the BLM Virgin River MFP (USDI, BLM, 1979a) which allows multiple uses as noted in the description of the No Action/No Wilderness Alternative. Wilderness is not addressed in the Virgin River MFP. Wilderness designation is part of the BLM multiple-use concept. The BLM land use plans are linked to the Statewide Wilderness EIS through inclusion of the present plans as the No Action/No Wilderness Alternative.

Socioeconomics

The LaVerkin Creek Canyon WSA is in Washington County, Utah. Most of the socioeconomic impacts resulting from wilderness designation are expected to occur within this county.

LAVERKIN CREEK CANYON WSA

• Demographics

From 1970 to 1980, the population of Washington County grew from 13,699 to 26,400, an overall increase of about 93 percent. Table 5 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987, the population increased to about 39,720. Population projections indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 148-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). Washington County is basically a rural county except for the population centers near the city of St. George.

Table 5
Baseline and Projected Population and Employment Growth
Washington County

	1980	1990	2000	2010
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100

Source: Utah Office of Planning and Budget, 1987.

• Employment

Table 5 shows the baseline and projected total employment for Washington County to the year 2010.

Washington County is part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	11,200
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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Min-

ing provided less than 3 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent and government to 18 percent, while mining will decline to less than 1 percent of the total MCD employment.

• Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation. Table 7 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 7
Sales and Revenues^a

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Livestock Grazing	\$400	\$31
Recreational Use	<u>\$410</u>	<u>0</u>
Total	\$810	\$31

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

One livestock operator has total grazing privileges of 20 AUMs within the WSA. If all this forage were utilized, it would account for \$400 of livestock sales and \$100 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. 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. 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 LaVerkin Creek Canyon WSA is estimated to be about 100 visitor days per year.

LAVERKIN CREEK CANYON WSA

Since there are currently no oil and gas leases in the WSA, no Federal mineral revenues are generated.

The one permittee in the WSA can use up to 20 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$31 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 III-A and the Description of the Alternatives for the LaVerkin Creek Canyon 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 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 567 acres).

No development would be expected in the foreseeable future that would affect wilderness values. Any increased visitor use that would occur over time would not be expected to reduce wilderness values because it would be primitive in nature and absorbed by the contiguous NPS lands. This alternative would not complement the potential wilderness proposal for adjacent NPS lands. No disturbance from ORV use would be anticipated.

Conclusion: Wilderness values would not be protected by wilderness designation. No disturbance that would affect wilderness values would be expected in the foreseeable future.

All Wilderness Alternative (Proposed Action) (567 Acres)

• Impacts on Wilderness Values

Designation and management of all 567 acres as wilderness would preserve the wilderness values in the LaVerkin 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 would be preserved on all 567 acres. Outstanding opportunities for solitude and for primitive and unconfined recreation would also be preserved on 567 acres that meet these criteria when considered with contiguous NPS lands. Resources considered as special features in the WSA including scenic values, endangered or other special status plant and animal species, and other wildlife commonly associated with wilderness would also be preserved.

Designation would complement wilderness values and uses in the contiguous Zion National Park. LaVerkin Creek provides extensions of the hiking opportunities in the national park. Increased visitor use that would occur with time would not reduce wilderness values because it would be primitive in nature, absorbed by the adjacent national park, and would be managed to protect wilderness values.

Conclusion: Wilderness values would be preserved.

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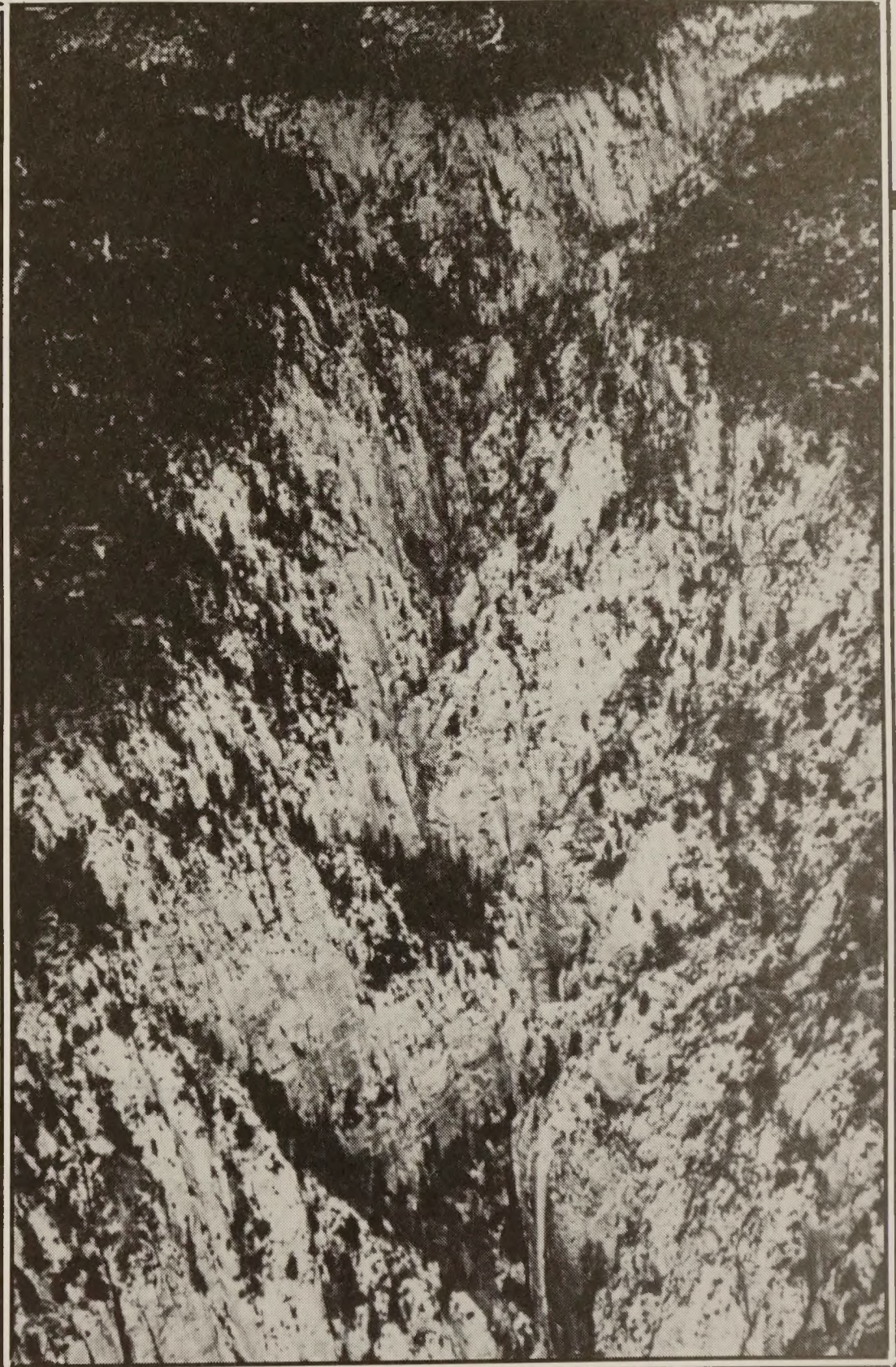
Scenic Quality

ENVIRONMENTAL CONSEQUENCES

No Action Alternative (NAA)

All Wilderness Alternative (AWA)

Deep Creek WSA



DEEP CREEK WSA

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DEEP CREEK WSA

(UT-040-146)

INTRODUCTION

General Description of the Area

The Deep Creek WSA is located in Washington County along the boundary of Zion National Park with its administratively endorsed wilderness proposal encompassing 120,620 acres. The unit contains only 3,320 acres but adjoins the park for approximately 3 miles. It is being considered for wilderness designation under Section 202 of the FLPMA.

The WSA consists of a section of the Deep Creek Canyon and is within the Canyonlands and High Plateau sections of the Colorado Plateau Physiographic Province. Near Zion National Park, the canyon walls are nearly sheer, dropping 2,000 feet from the rims to the canyon bottom. The climate is considered mild with temperatures averaging 40 degrees Fahrenheit (F) during the winter months and 80 degrees F during the summer months. Temperature extremes can vary from 0 degrees F in the winter to 105 degrees F in the summer. Average annual precipitation in Zion National Park is 14.5 inches with about half in the form of winter snow and half in the form of rain during summer thunderstorms. Winds usually prevail from the southwest with the strongest winds occurring in March and April.

There are no private, State, or split-estate lands located within the WSA.

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, it is included for EIS analysis in line with general land use planning provisions of Section 202 of the FLPMA and in accordance with policies that allow 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.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, 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 (20 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 20 acres reported in the Draft EIS to no surface disturbance for the Final EIS.

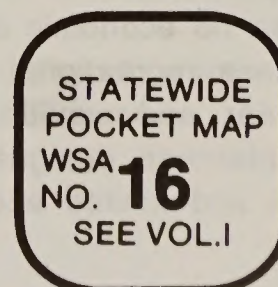
Specific Issues Identified Through Scoping and Public Comment

• Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume III-A (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 Deep Creek WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils, Vegetation and Wildlife Including Special Status Species, Water Quality; and Forest, Visual and Cultural Resources: Estimates of surface disturbance without wilderness designation have been revised downward from the 20 acres reported in the Draft EIS to none in the Final EIS. Given this new scenario, the impacts on soils, vegetation, wildlife; and forest, visual resources, and cultural resources would not occur in the time period analyzed in the Final EIS. Conversely, there are no proposals for developments, harvests, or other uses which would be precluded for these resource values by wilderness designation. Therefore, impacts on soils, vegetation, water quality, wildlife, forest, visual, and cultural resources are not issues in this Final EIS.

2. Water Uses: Three perennial streams (Kolob Creek, North Fork of the Virgin River, and Deep



DEEP CREEK WSA

Creek) flow through the WSA for a total of about 5 miles. None of these streams headwater in the WSA but begin on private lands and in the Dixie National Forest to the east and north. BLM is not aware of any proposals to use any of the water in any of these streams upstream of the WSA and no uses are projected in the foreseeable future. Therefore, water use is not an issue for analysis in the Final EIS.

3. Livestock Management: Concerns were raised that wilderness designation would cause prohibitions in grazing or reduce the levels of grazing permitted under the Wilderness Management Policy (BLM Manual 8560). There will be no curtailments in grazing simply because the area is wilderness. No changes in grazing levels are proposed in the planning documents, no roads or ways exist in the WSA that are used for livestock management, predators have not been a problem in these cattle allotments, 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.

4. Mineral and Energy Exploration and Production: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no existing coal or oil and gas leases within the WSA. Potential oil and gas deposits are small with a low certainty that they exist. Only a small outcrop of coal exists just inside the eastern boundary of the WSA. There are no mining claims inside the WSA and projected uranium and other locatable mineral deposits are thought to be small with a low certainty of occurrence. More accessible deposits of salable minerals (limestone and sandstone) exist outside the WSA. For these reasons, no 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. Economic Conditions: There are no existing or anticipated 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 300 visitor days per year and would remain primitive with or without wilderness designation due to the terrain of the WSA and limited access, impacts on

recreational use and economic conditions are not analyzed in detail in this Final EIS.

• Issues Analyzed in Detail

The significant issue for the Deep Creek WSA is the 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, 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 16, for responses to specific comments about the Deep Creek WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add 3,750 acres of Federal land north of the WSA were suggested by the public during the public comment period for the Draft EIS.

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).

Transfer of several WSAs, including the Deep Creek WSA, to NPS administration in adjacent NPS units has been proposed (U.S. Secretary of the Interior, 1985g). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of transfer of management from BLM to 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 (Ninety Eighth Congress, 1983) are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not

DEEP CREEK WSA

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 considered by BLM 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 BLM in its Wilderness Study Report to determine whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land and, if the WSA was designated as wilderness, whether the BLM portion could be more effectively managed by the agency which administers the contiguous wilderness area (USDI, BLM, 1982b).

BLM has determined that the Deep Creek 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, but it will be based primarily on factors affecting both BLM and NPS jurisdictions, such as 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 nonenvironmental 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 this WSA: (1) No Action/No Wilderness and (2) All Wilderness (Proposed Action) (3,320 acres). A description of BLM's management practices with 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 BLM management actions presented in the Introduction to Volume III-A are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 3,320-acre Deep Creek WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Virgin River MFP (USDI, BLM, 1979a). No State, private, or split-estate lands are located within the WSA (refer to Map 1).

- Management Conditions and Constraints

All 3,320 acres would remain open to mineral location and sale. Mineral leasing would be subject to the restrictions described below. There are no mining claims in the WSA at the present time. 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). There are no existing oil and gas leases in the WSA at the present time. Future leases could be developed without concern for wilderness values. However, about 1,120 acres are restricted under leasing Category 3 (no surface occupancy). The remainder of the WSA (2,200 acres) would remain closed to leasing (Category 4). Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development are projected in 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 exploration and development projections.

The present domestic livestock grazing use of 201 AUMs would continue as authorized in the Virgin River MFP. There are no existing or proposed range developments in the WSA.

The entire WSA acreage would be open to ORV use and new access routes would be allowed. However, the potential for ORV use within the WSA is limited because of terrain restrictions.

The entire 3,320-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.




The area would continue to be managed under VRM Class II on 3,320 acres.

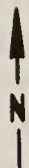
DEEP CREEK WSA

Map 1 LAND STATUS Deep Creek WSA UT-040-146

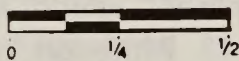
Legend

- WSA Boundary
- - - Zion National Park Boundary

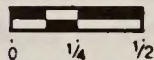
-  Private Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA



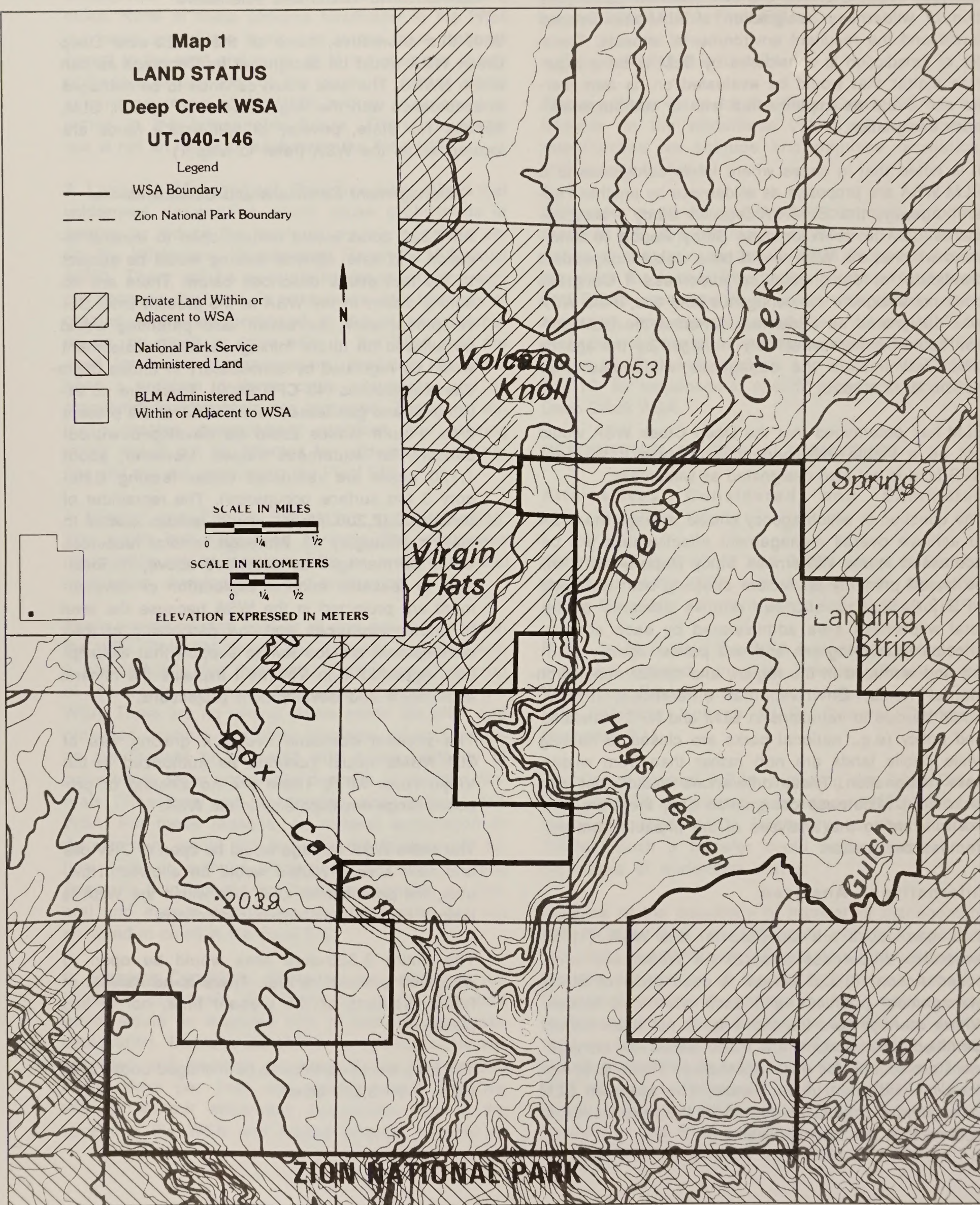
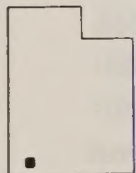
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 39 S.

DEEP CREEK WSA

- 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 not result in any surface-disturbing activities in the foreseeable future. No locatable or leasable mineral resource exploration or development is projected. No rangeland, wildlife habitat, watershed projects, or other developments are planned, nor is any ORV use projected. Recreation use in the foreseeable future would be primitive in nature and would increase over the current estimated use of 300 visitor days annually at a rate of 2 to 7 percent per year.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 3,320 acres of the Deep Creek WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA is adjacent to Zion National Park and is contiguous with a NPS 120,620-acre proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed as part of the NPS-proposed wilderness. As a result, the Deep Creek WSA could be retained by BLM or transferred along with nine other small WSAs (refer to Map 3) to the NPS who would then assume management responsibilities. For purposes of this analysis, it is assumed that BLM would retain management of the Deep Creek WSA. It would be managed in part with the contiguous NPS-proposed wilderness in accordance with the Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

- Management Conditions and Constraints

After wilderness designation, all 3,320 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims are located in the WSA. Oil and gas leases have been phased out and new leases would not be issued. Therefore, no locatable or leasable mineral exploration or development is projected for the WSA.

Present domestic livestock grazing would be allowed to continue as authorized in the Virgin River MFP. The 201 AUMs in the WSA would remain available to livestock as presently allotted.

The entire 3,320-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. There are no ways in the WSA. About 1 mile of the WSA boundary follows existing unpaved roads that would remain open to vehicular travel.

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

BLM projects that no surface disturbance would occur within the WSA. Implementation of the All Wilderness Alternative would preclude mining claim location and mineral leasing. Therefore, locatable or leasable mineral resource exploration or development would not occur following wilderness designation. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation. Recreation use in the foreseeable future would be primitive in nature and would increase over the current estimated use of 300 visitor days annually at a rate of 2 to 7 percent.

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 section in this WSA analysis.

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

DEEP CREEK WSA

Map 2

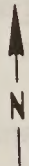
ALL WILDERNESS ALTERNATIVE

Deep Creek WSA

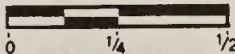
UT-040-146

Legend

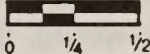
- All Wilderness Alternative (3,320 acres)
- - - Zion National Park Boundary



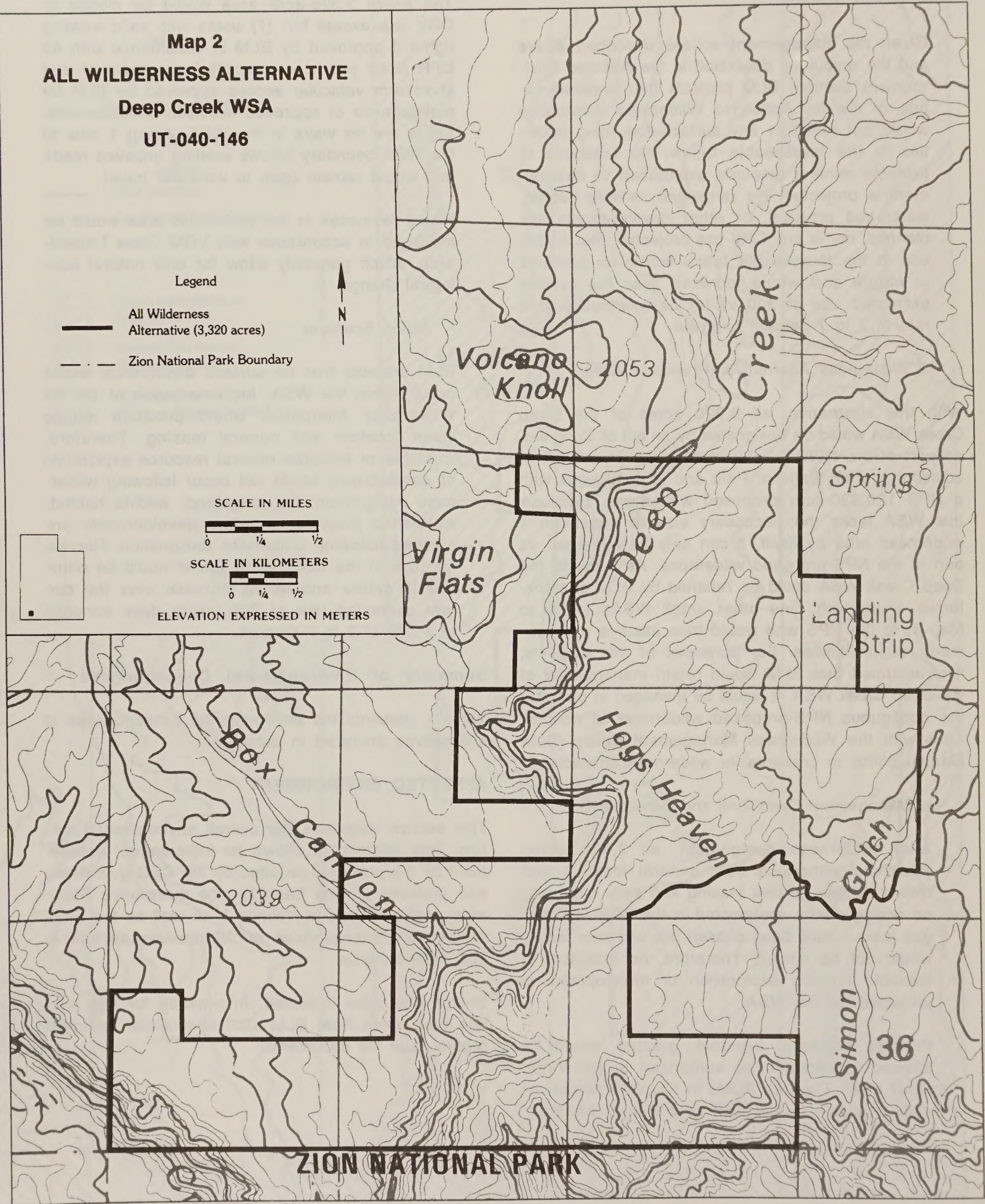
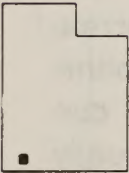
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 39 S.

R. 10 W.

DEEP CREEK WSA

R. 12 W.

R. 11 W.

LOCATION MAP

R. 10 W.

IRON CO.
WASHINGTON CO.

T. 39 S.

T. 40 S.

T. 41 S.

Map 3

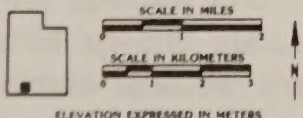
LOCATION MAP

- Orderville Canyon WSA (UT-040-145)
- Deep Creek WSA (UT-040-146)
- North Fork Virgin River WSA (UT-040-150)
- La Verkin Creek Canyon WSA (UT-040-153)
- Taylor Creek Canyon WSA (UT-040-154)
- Goose Creek Canyon WSA (UT-040-176)
- Red Butte WSA (UT-040-147)
- The Watchman WSA (UT-040-149)
- Beartrap Canyon WSA (UT-040-177)
- Parunuweap WSA (UT-040-230)
- Spring Creek Canyon WSA (UT-040-148)

Legend

— WSA Boundary

- - - Zion National Park Boundary



DEEP CREEK WSA

Table 1
Summary of Environmental Consequences

Alternatives	
All Wilderness (3,320 Acres) (Proposed Action)	
Resource	No Action/No Wilderness
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation. In the foreseeable future, no disturbance is anticipated that would affect wilderness values. This alternative would not complement wilderness management goals of the NPS on contiguous lands. Wild and scenic river values of two river segments would not receive additional protection.</p> <p>Wilderness designation would preserve the wilderness values including naturalness, outstanding opportunities for solitude and primitive recreation, and special features including Class A scenery, special status species, wildlife associated with wilderness, and perennial streams including two wild and scenic river inventory segments. This alternative would complement wilderness management goals of the NPS on contiguous lands.</p>

DEEP CREEK WSA

Wilderness Values

- Size

The Deep Creek WSA is approximately 3 miles long (north to south) and 2 miles wide (east to west) and encompasses 3,320 acres.

- Naturalness

The unit has primarily been affected by the forces of nature. No surface-disturbing activities have occurred since the wilderness inventory.

- Solitude

The opportunity to experience solitude is inherent in the deeply entrenched Deep Creek, North Fork, and Kolob Canyons. The thickly vegetated, serpentine canyon offers topographic and vegetation screening. The flowing water in the narrow canyon of Deep Creek adds to the feeling of solitude. When combined with the opportunities in the adjacent national park, the opportunity to seek out and experience solitude is outstanding.

- Primitive and Unconfined Recreation

The canyon bottoms of North Fork, Deep Creek, and Kolob Creek offer primitive and unconfined recreation opportunities such as backpacking, bird watching, photography, and sightseeing. Deep Creek often flows from wall to wall in the canyon bottom and excludes any motorized activity. Deep Creek and the North Fork provide access to the Zion Narrows Canyon system. The hiking experience in this unit represents 5.2 miles of a possible 18-mile hike to the Zion Narrows trailhead. An additional 0.63 mile on the North Fork of the Virgin River is also contained in this unit. When combined with the primitive unconfined recreation experience of the adjacent national park, the opportunities within the Deep Creek WSA are outstanding.

- 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 (bald eagle and peregrine falcon) listed as endangered which may occur in the WSA. In addition, 13 animal species and four plant species that are considered special status species (including Category 2 candidate species) may also occur in the WSA. Refer to the Vegetation and Wildlife Including Special Status

Species sections for details. The WSA has populations of cougar and elk which are wildlife species commonly associated with wilderness. All of the WSA is rated Class A for scenic quality. It has 5 miles of perennial streams, including two wild and scenic river inventory segments (refer to the Land Use Plans section for more information).

- Diversity

The WSA is in the transition zone between the Colorado Plateau and Rocky Mountain Forest Province Ecoregions, and has two PNV types: Arizona pine forest and mountain mahogany-oak scrub. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area, Las Vegas, Nevada.

Air Quality

Air quality is excellent. The area is presently classified under the PSD regulations as Class II. Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM, 1980c). Under the PSD regulations, Zion National Park has been designated as Class I.

Geology and Topography

The WSA is within the Grand Staircase portion of the Colorado Plateau Physiographic Province Ecoregion. Elevations range from 5,200 feet in the canyon bottoms to just over 7,000 feet on the rims.

The Deep Creek WSA consists of a section of Deep Creek Canyon. Small portions of the North Fork Canyon and Kolob Canyon cut diagonally through the southeast and southwest corners. Near the Zion National Park boundary, canyon walls are nearly sheer, dropping 2,000 feet from the east rim to the canyon bottom. Deep Creek flows from north to south through the WSA and is intersected by the North Fork of the Virgin River and Kolob Creek at their respective junctions in Zion National Park. Most exposed rock is Navajo Sandstone and Carmel Formation.

DEEP CREEK WSA

Rocks are of Jurassic and Cretaceous ages, totaling about 2,000 feet in thickness. Thin Quaternary basalt flows outcrop in the WSA. The Jurassic Navajo and Carmel Formations form the most extensive outcrops, with smaller areas of Jurassic Windsor, Cretaceous Tropic, and Dakota Formations outcropping in the extreme northeastern portion of the WSA.

Soils

There are some isolated pockets of productive soils within this WSA, but they are very small and undelineated. Most of the soils are mapped by the Washington County Soil Survey (USDA, SCS, 1977) as Paunsaugunt/Kolob/Dalcan association or rock outcrop/rockland association. These are excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is slight to moderate. Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the Glossary).

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	1,320	40	1,720
Slight	0.6	2,000	60	1,200
Stable	0.3	0	0	0
Total		3,320	100	2,920

Sources: USDI, BLM, 1978c and 1979c; Leifste, 1978.

The soils in this WSA are classed as nonsaline. The annual salt production from undisturbed soils from within the WSA is estimated to be 10 lb per acre as calculated from an unpublished soil survey for the Iron/Washington County area. Much of the area is covered by rockland and rock outcrops with very steep slopes or ledges. Rehabilitation for these areas are rated as unsuitable. Soils on a minor part of the WSA are suitable for rehabilitation and seeding establishment on these soils is rated as good. These soils are used for range, wildlife, and recreation, and are unsuitable for agriculture.

Vegetation Including Special Status Species

The Deep Creek WSA is located in a botanically rich area. Over 500 species of plants are known to occur in the adjacent Zion National Park.

At the highest elevations in the WSA, from 5,500 to 7,000 feet on the northern exposures, is the coniferous forest type which occupies about 2,320 acres. It is characterized by Ponderosa pine, Douglas fir, white fir, aspen, and Rocky Mountain juniper. Understory shrubs include mountain mahogany, snowberry, chokecherry, manzanita, currant, and elderberry. Associated grasses include bluebunch wheatgrass, slender wheatgrass, needle-and-thread grass, and mountain brome.

Between the 4,000 to 5,500-foot elevation are approximately 400 acres of pinyon-juniper woodland type. Associated species include yucca, Gambel's oak, Utah serviceberry, singleleaf ash, littleleaf mountain mahogany, Ponderosa pine, and princess plume. On the more exposed benches and gentle slopes at the edge of the pinyon pine and juniper forest are areas of sagebrush and rabbitbrush. Grasses are found throughout the type and include Indian ricegrass, galleta grass, needle-and-thread grass, and mutton-grass. Oaks, bigtooth maple, and numerous wildflowers also occur there.

Riparian plant communities are located in drainages around springs and seeps. There are about 600 acres of riparian vegetation in the WSA. The communities usually develop under protective overhanging rock strata. These hanging gardens generally have luxuriant plant life, such as maidenhair fern, pink-flowered shooting star, and scarlet monkey flower. Also, in this type are perennial drainages with areas of riparian vegetation flourishing in contrast to the drier slopes. Vegetation includes sedges, rushes, willows, cottonwood, velvet ash, maple, blackberry, chokecherry, birch, and a variety of grasses and forbs.

No threatened or endangered plant species are known to occur in the WSA. Four Category 2 candidate plant species (50 CFR 17) may occur in the WSA. These are Asplenium andrewsii, Erigeron sionis, Heterotheca jonesii, and Sphaeromeria ruthiae (see Appendix 4 in Volume I).

The Deep Creek WSA lies in the transition zone between the Colorado Plateau and the Rocky Mountain Forest Province Ecoregions as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are Arizona pine forest (1,000 acres) and mountain mahogany-oak scrub (2,320 acres).

DEEP CREEK WSA

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region.

The perennial water sources within the WSA are fully appropriated and both surface and groundwater are presently closed to further applications (UDNRE, DWR, 1988). There are no withdrawals present in the unit.

Zion National Park is adjacent to and downstream of the Deep Creek WSA. The NPS is asserting Federal reserved rights for park values with the State of Utah. Another Federal reserved right being assessed is the instream flow necessary for protection of the Woundfin minnow by the FWS.

Three perennial streams flow through the Deep Creek WSA. Kolob Creek runs for a 0.50 mile through the southwest corner of the unit. The North Fork of the Virgin River flows through the southeast corner for a 0.5 mile, and Deep Creek bisects the area for about 4 miles from north to south. Both Kolob Creek and Deep Creek empty into the North Fork of the Virgin River south of the unit in Zion National Park. The major water users are wildlife, livestock, and recreation. Water quality standards for the North Fork of the Virgin River and tributaries are: Class 1C (protected for domestic purposes with treatment), Class 2B (protected for recreational uses excluding swimming), Class 3A (protected for cold water fish), and Class 4 (protected for agricultural uses including irrigation and stockwatering). Water quality and quantity are considered sufficient for livestock and wildlife uses. Potability is questionable for humans due to livestock use. There is a well developed water potential in the Navajo Sandstone but no current demand.

Mineral and Energy Resources

The energy and mineral resource rating summary is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system. There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

This unit has 1,120 acres open to leasing under Category 3 (no surface occupancy) and 2,200 acres presently closed (Category 4) to leasing.

There are currently no oil and gas leases located within the WSA.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas.
Uranium	f2	c2	Less than 150 metric tons of uranium oxide.
Coal	f1	c4	None
Geothermal	f2	c3	None
Hydroelectric	f2	c4	None
Gold	f2	c2	Less than 25 metric tone

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

Based on similarities between the Virgin oil field (which is located approximately 17 miles southwest of the WSA) and this WSA, the unit has a low certainty (c1) for the occurrence of small (less than 10 million barrels of oil) oil and gas fields (f2). There are no known structures within or near the WSA that might represent potential exploration targets.

• Coal

The unit is primarily underlain by pre-Cretaceous rock not known to contain any coal. A seam in the Cretaceous Dakota or Tropic Formations may outcrop just inside the eastern WSA boundary, but the bulk of any coal deposit would be outside the WSA.

• Geothermal

No evidence is available to indicate that geothermal resources occur within the WSA.

• Locatable Minerals

• Uranium

No uranium deposits are known to occur within the WSA. The Moenave and Chinle Formations are the only rock units in the area considered favorable for uranium. SAI speculates that the Moenave Formation within the WSA may contain less than 500

DEEP CREEK WSA

metric-tons of uranium oxide (SAI, 1982). There are no mining claims within the WSA.

- Salable Minerals

Construction grade sandstone and limestone for agricultural uses occur in the WSA (USDI, USBM, 1987c). It is probably not significant, due to an ample supply outside the WSA.

Wildlife Including Special Status Species

Because this WSA occurs in the transition zone of two vegetation ecoregions, it supports a variety of animal species. The Virgin River Unit Resource Analysis indicates approximately 300 vertebrate animal species could inhabit this WSA (USDI, BLM, 1979b). These include 60 species of mammals, 208 species of birds, 20 species of reptiles, six species of amphibians, and three species of fish.

Raptors may include golden eagle, bald eagle, peregrine falcon, prairie falcon, ferruginous hawk, Swainson's hawk, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common. The golden eagle is a BLM sensitive species, the ferruginous hawk and Swainson's hawk are Category 2 candidate species. The bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco peregrinus) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanaraville and New Harmony Valleys west of the WSA. Occasional sightings of these birds have been made with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur. An active peregrine falcon nest is located in Zion National Park south of the WSA.

All of the WSA has an adequate prey base and excellent nesting habitat for the peregrine falcon. Ten other Category 2 candidate species may occur in the WSA. These are the long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, western snowy plover, western yellow-billed cuckoo, Great Basin Silverspot butterfly, Virgin River montane vole, Arizona Bells viero, and the white-faced ibis (see Appendix 4 in Volume I).

Big game animals include mule deer and elk. The WSA is within the boundaries of Deer Herd Unit 58 and provides summer range. Hunting pressure is light because access is blocked by private and NPS land. The WSA is included in Elk Herd Unit 19 and is used by

elk year-round, with Deep Creek WSA being a winter concentration area. This elk herd is relatively small (less than 100) with the bulk of their habitat on private lands. No critical habitat for big game is found on the WSA.

The Deep Creek WSA contains cougar habitat and is within Utah Cougar Management Unit 30, Cedar Mountain. Cougar populations and harvest by sport hunters and by the Animal Damage Control Program has been higher in this management unit than in any other location in Utah. During the 11-year period, 1977 through 1987, a total of 217 cougars were taken from the Cedar Mountain Management Unit. This harvest averaged nearly 20 animals per year (UDNRE, DWR, 1988). It has not been determined how many of these may have been taken from within the WSA.

Bear are sometimes found on the plateaus in the area in the WSA.

Rainbow and brown trout occur in the unit's perennial streams. The WSA contains approximately 5 miles of fish habitat. There are no existing or proposed wildlife developments in this WSA.

Forest Resources

A small conifer forest and pinyon-juniper woodland are located in the WSA. However, this resource does not contain commercial values due to access problems, size of resource, etc. There is presently no forest product use in the WSA and none is anticipated in the foreseeable future.

Livestock and Wild Horses/Burros

The Deep Creek WSA is within the boundaries of three grazing allotments (East Deep Creek, West Deep Creek, and Hog's Heaven). There is a single permittee per allotment (refer to Table 4). East Deep Creek is licensed annually to graze 45 cattle from June 1 to October 15 (203 AUMs); Hog's Heaven has 10 cattle on the allotment from May 16 to October 15, with 50 percent Federal range (50 AUMs); West Deep Creek runs up to 500 cattle from June 10 to September 30. It is licensed with 9 percent Federal range and 180 Federal AUMs available. There are approximately 201 AUMs on the three allotments within the WSA (East Deep Creek has 120, West Deep Creek has 36, and Hogs Heaven has 45). Approximately two-thirds of the WSA is suitable for grazing. The remainder of the area is unsuitable due to steep slopes and rough

DEEP CREEK WSA

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
East Deep Creek	2,240	1,745	203	120	45 Cattle	06/01-10/15	1
West Deep Creek	2,260	1,025	180	36	500 Cattle 4 Horses	06/10-09/30	1
Hogs Heaven	570	550	50	45	10 Cattle	05/16-10/15	1
Total	5,070	3,320	433	201			3

Sources: BLM File Data

terrain. There are no existing or proposed range developments or land treatment potential.

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

There are no wild horses or burros in the WSA. There are no ways within the WSA that are used for livestock management.

Visual Resources

This WSA was judged to be scenic Class A, exceptional, during the Virgin River Planning Unit Resource Analysis (USDI, BLM, 1979b). The unit contains the same features as Zion National Park, one of the nation's most important tourist attractions with a worldwide reputation for scenic splendor. The VRM Class is II. Refer to Appendix 7 in Volume I for more detail on the BLM VRM rating system.

Cultural Resources

Petroglyphs, stone granaries, and rock shelters are known to exist in Zion National Park and the general vicinity. No formal archaeological inventory has occurred on this specific WSA, but some lithic scatters have been reported to exist on one upland area within the boundaries of the unit. The trail from Virgin Flats into Deep Creek Canyon is assumed to have been made and used by Indians for hunting and water access.

Recreation

Recreation use of the WSA includes primitive uses such as hiking, rock climbing, backpacking, fishing,

and photography. Although open to ORV use, most of the area is extremely rough. Therefore, the area is not used by ORVs.

Visitor use data are sketchy but Zion National Park files unofficially indicate 162 hikers passed through the Deep Creek Canyon annually. Several hikers entered the unit specifically for fishing. The unit probably receives about 300 primitive use visitor days per year.

Land Use Plans

The WSA is BLM-administered public land. There are no State-owned, private, or split-estate lands in the WSA.

The land is presently used for unconfined and primitive forms of outdoor recreation, wildlife habitat, and livestock grazing. The Virgin River MFP decision was to develop a program of land acquisition for blocking purposes and multiple use management in the vicinity of the Deep Creek WSA. To date there has been one substantial land exchange completed and another in progress to meet this goal. The BLM Cedar City District has acquired or is in the process of acquiring three easements across private land which will allow public access to the west side of the WSA.

Zion National Park is contiguous to the WSA on its northern boundary. The NPS has proposed this area for wilderness designation. In the past, NPS has expressed concern and interest over management of drainages that originate outside the park boundaries. Although the headwaters of Deep Creek, Kolob Creek, and North Fork of the Virgin River are located outside the WSA boundary, NPS believes that portions of the

DEEP CREEK WSA

drainages within the WSA are important to the well being of the park.

The Zion Park Master Plan recommends: "Other outstanding areas that should be studied for possible inclusion within the park are the Kolob Creek, Deep Creek, and Orderville Canyon areas adjacent to the north and east boundaries" (USDI, NPS, 1976). However, present policy prohibits further expansion of Zion National Park (USDI, NPS, 1984c).

The House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214 (Ninety Eighth Congress, 1983), a bill designed to transfer jurisdiction of certain lands, including the Deep Creek WSA, from BLM to NPS. In response, NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984). The NPS found the WSA suitable for addition to the NPS unit.

In a February 6, 1985, letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the Deep Creek WSA was identified as suitable for inclusion into the adjacent unit of the National Park System (US Secretary of the Interior, 1985g). However, the letter also indicated the WSA had multiple-use values and would prefer the WSA not be transferred to NPS until FLPMA Section 202 studies are completed. No congressional action has been taken on the recommendation.

The Washington County Master Plan does not specifically address wilderness (Planning and Research Associates, 1971). However, the County Commission indicated in a policy statement that they were opposed to the unit being designated wilderness. The Washington County Commission has also endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The WSA is managed by the BLM Virgin River MFP (USDI, BLM, 1979a). Wilderness is not addressed in the Virgin River MFP. 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 North Fork of the Virgin River and Deep Creek, from its confluence with the North Fork to its source, have been listed as Nationwide Rivers Inventory Seg-

ments (USDI, NPS, 1982). Thus they are eligible for study for addition to the Nationwide Wild and Scenic Rivers System. The inventory found that these segments possess unique rock formations and an extremely narrow canyon with vertical walls. About 4 miles of Deep Creek is within the WSA. About 0.5 mile of the North Fork of the Virgin River is located in the WSA. Since they are inventory-listed segments, BLM must, as part of its environmental review process, avoid or mitigate adverse impacts to the creeks and consult with the NPS before taking any action that could foreclose wild, scenic, or recreational river status (CEQ, 1980).

There are no rights-of-way or other facilities within the WSA and none are proposed.

Socioeconomics

The Deep Creek WSA is located in the northeastern portion of Washington County which is expected to receive most of the social and economic impacts resulting from wilderness designation.

• Demographics

From 1970 to 1980, the population of Washington County grew from 13,699 to 26,400, an overall increase of about 93 percent. Table 5 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987 the population increased to about 39,720. Population projections indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 148-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). Washington County is also basically a rural county except for the population centers near the city of St. George.

Table 5
Baseline and Projected Population and Employment Growth
Washington County

	1980	1990	2000	2010
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100

Source: Utah Office of Planning and Budget, 1987.

• Employment

Table 5 shows the baseline and projected total employment for Washington County to the year 2010.

DEEP CREEK WSA

Washington County is part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided less than 3 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	11,200
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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

• Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation. Table 7 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Livestock Grazing	\$4,020	\$310
Recreational Use	<u>\$1,230</u>	0
Total	\$5,250	\$310

Sources: USDI, BLM, file data; Appendix 9 in Volume I.

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Three livestock operators have a total grazing privilege of 201 AUMs within the WSA. If all this forage were utilized, it would account for \$4,020 of livestock sales and \$1,005 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. 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. 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 the Deep Creek WSA is estimated at about 300 visitor days per year.

The WSA generates Federal revenues from livestock sources (refer to Table 7). The three permittees in the WSA can use up to 201 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$310 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 consequence of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume III-A and the Description of the Alternatives section for the Deep Creek 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 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

DEEP CREEK WSA

Class II management on 3,320 acres, management under oil and gas leasing Category 4 [closed to leasing] on 2,200 acres, and Category 3 [no surface occupancy] on 1,120 acres].

No development would be expected in the foreseeable future that would affect wilderness values.

The increased visitor use that would occur over time would not be expected to reduce the quality of wilderness values because use would be primitive in nature and would be absorbed by the contiguous NPS lands. No ORV activity is expected due to terrain limitations.

Nondesignation of the area would not complement the proposal of the NPS for wilderness designation of the adjacent portion of Zion National Park.

Although special features, such as the wild and scenic values of Deep Creek and North Fork of the Virgin River, would not receive additional wilderness protection, no disturbance that would affect these features is anticipated in the foreseeable future.

Conclusion: Wilderness values would not be protected by wilderness designation. In the foreseeable future, no disturbance that would affect it is anticipated.

All Wilderness Alternative (Proposed Action) (3,320 Acres)

• Impacts on Wilderness Values

Designation and management of all 3,320 acres as wilderness would preserve the wilderness values in the Deep 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 would be preserved on all 3,320 acres. Outstanding opportunities for solitude and primitive and unconfined recreation would be preserved on all 3,320 acres. Resources that could be considered as special features in the WSA including Class A scenery, wildlife associated with wilderness, and perennial streams would be preserved.

Increased visitor use that would occur over time would be managed so as to not result in loss of wilderness values.

Designation would benefit the values and uses of the contiguous NPS wilderness proposal. This unit provides access to Zion Narrows and designation could help achieve the management objective of the NPS.

Wilderness designation would be consistent with and impose additional protection for 5 miles of the Deep Creek and North Fork of the Virgin River included in the NPS inventory of wild and scenic rivers.

Conclusion: Wilderness values would be preserved throughout the WSA.

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North Fork Virgin River WSA

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Water Resources
Mineral and Energy Resources
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Fish and Fisheries
Landscape and Wild Visual Quality
Visual Resources
Cultural Resources
Recreation
Land Use Plans
Socioeconomics

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NORTH FORK VIRGIN RIVER WSA

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NORTH FORK VIRGIN RIVER WSA

(UT-040-150)

INTRODUCTION

General Description of the Area

The North Fork Virgin River WSA is located in Kane County along the eastern boundary of Zion National Park and its administratively endorsed proposed wilderness of 120,620 acres. The WSA is approximately 45 road miles from Kanab, Utah, and is administered by BLM's Cedar City District, Kanab Resource Area Office. The WSA is 1,040 acres in size and adjoins the park for approximately a 0.50 mile.

The WSA's topography is dominated by the North Fork of the Virgin River that traverses the area from east to west. Elevation varies from 5,400 feet to 6,900 feet above sea level.

Average annual precipitation ranges from 16 to 20 inches. Approximately half of the precipitation falls from December through March, much in the form of snow (approximately 70 inches of snow annually). Intense thunderstorms from the southwest are common during the summer months.

Temperatures vary greatly with aspect and altitude, but are generally indicative of cold winters and cool summers. July and January are the warmest and coldest months, respectively. July temperatures range from extremes of 35 degrees Fahrenheit (F) to 100 degrees F, with an average range of 50 to 70 degrees F, while the January extremes are from -15 to 60 degrees F, with an average range being from 15 to 40 degrees F. (The weather data used are from Alton, Utah, located approximately 20 miles east of the WSA, but at approximately the same elevation.)

This WSA was dropped from wilderness study status by the Secretary of the Interior on December 30, 1987, 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. No private, State, or split-estate lands are located within the WSA.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, 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 (190 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 190 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 III-A (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 North Fork Virgin River WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils, Vegetation and Wildlife Including Special Status Species, Water Quality, and Forest Resources: Estimates of surface disturbance without wilderness designation have been revised downward from the 190 acres reported in the Draft EIS to none in the Final EIS. Given this new scenario, the impacts on soil, vegetation, water quality, wildlife, and forest resources would not occur in the time period analyzed in the Final EIS. Conversely, there are no proposals

STATEWIDE
POCKET MAP
WSA
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for developments, harvests, or other uses which would be precluded for these resource values by wilderness designation. Therefore, impacts on soils, vegetation, wildlife, water quality, and forest resources are not issues in this Final EIS.

2. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no existing coal or oil and gas leases within the WSA. The geologic history of the WSA indicates that large structural traps for oil and gas are unlikely to occur. Potential oil and gas deposits are small with a low certainty that they exist. The quality of coal is poor with moderate to high sulfur content.

Even though there are eight mining claims inside the WSA, projected uranium and other locatable mineral deposits are small with a low certainty of occurrence. More accessible deposits of gypsum and salable minerals exist outside the WSA. For these reasons mineral exploration or development would not occur in the WSA with or without wilderness designation in the foreseeable future. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

3. Water Uses: The main drainage in the WSA is the North Fork of the Virgin River as it flows west through the WSA for 1.5 miles into private lands and Zion National Park. The UDWR has completed reconnaissance surveys for potential reservoir sites on the North Fork of the Virgin River. One of these sites, known as the Bullock Reservoir, is located on private land just east of the WSA. Water in the North Fork of the Virgin River is already fully appropriated. NPS is asserting Federal reserved rights for park values. BLM believes that wilderness designation would not significantly add to the constraints already placed on the river and that there would be no difference in impacts regardless of the alternative selected. Therefore, potential impacts from the Bullock Reservoir are not addressed as an issue in the Final EIS.

4. Livestock: Concerns were raised that wilderness designation would cause prohibitions in grazing or reduce the levels of grazing permitted. Under the Wilderness Management Policy (BLM Manual 8560), there will be no curtailments in grazing simply because an area is wilderness. No changes in grazing levels are proposed in the planning documents. There is only a 0.25 mile of way in the WSA. No rangeland develop-

ments are proposed, and predators have not been a problem in the two cattle allotments. Therefore, livestock management would not be affected with or without wilderness designation and impacts on livestock are not significant issues for the Final EIS.

5. Visual Resources: As discussed above, 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. 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 in the Wilderness Values section.

6. Cultural Resources: As discussed in the Draft EIS, cultural resources could be destroyed by surface-disturbing activities. However, there are no recorded sites in the North Fork Virgin River WSA and surface disturbance estimates for the No Action/No Wilderness Alternative have been reduced from 190 acres to none for the Final EIS. Dispersed disturbance from ORVs is prevented by the steep terrain in 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.

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 would eliminate or reduce opportunities for primitive recreation. Recreational use of the North Fork Virgin River WSA is estimated to exceed 4,000 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 would not be significant and they are not analyzed in detail in the Final EIS.

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.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness

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designation. Because no economic developments are expected, impacts on economic conditions are not significant issues for the Final EIS.

• Issues Analyzed in Detail

The significant issue for the North Fork Virgin River 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 on recreation use in the WSA, potential reservoir sites, threatened, endangered, or other special status species, visual resources, fire management, and revenues from mineral resource development. See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 17, for responses to specific comments about the North Fork Virgin River WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

No additional alternatives were suggested during the public comment period.

Transfer of several WSAs, including the North Fork Virgin River WSA, to NPS administration in adjacent NPS units has been proposed (Ninety Eighth Congress, 1983). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of transfer of management from BLM to 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 (Ninety Eighth Congress, 1983) 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 considered by BLM to be a separate matter that would be evaluated on its own merits

and would 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 (USDI, BLM 1982b) requires the BLM in its Wilderness Study Report to determine whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land and, if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency which administers the contiguous wilderness area. BLM has determined that the North Fork Virgin River 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, but it will be based primarily on factors affecting both BLM and NPS jurisdictions, such as 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 nonenvironmental 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 analysis of impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (1,040 acres). A description of BLM's management practices for each alternative follows. Where management actions have not been clearly identified, assumptions are made based on management projections with each alternative. These assumptions are indicated in each case. The assumed BLM management actions presented in the Introduction to Volume III-A are also applicable.

• No Action/No Wilderness Alternative

With this alternative, none of the 1,040-acre North Fork Virgin River WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Zion MFP (USDI,

NORTH FORK VIRGIN RIVER WSA

BLM, 1979d). There are no State lands in the WSA (refer to Map 1). Figures and acreages in this analysis are for Federal lands only.

- Management Conditions and Constraints

All 1,040 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on the eight existing mining claims (160 acres) and any future mining claims. Development would be regulated by undue or unnecessary degradation guidelines (43 CFR 3809). Future oil and gas leases could be developed under standard stipulations (Category 1) on 320 acres and under no surface occupancy stipulations (Category 3) on the remaining 720 acres. Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development are projected for this WSA because the level of known resources and the probability of their development are too small to support that assumption. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present domestic livestock grazing use of 17 AUMs would continue as authorized in the Zion MFP and Kanab-Escalante Grazing Management EIS (USDI, BLM, 1980a). There are no existing range developments in the WSA. However, a 0.25 mile long way would continue to be used for livestock management.

The WSA would be open to vehicular use with the exception of the canyon area where ORV use would continue to be limited to existing roads and trails as directed by the MFP.

The area would continue to be managed under VRM Class II on 1,040 acres.

- 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 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 from ORV activity is anti-

cipated because of the management and terrain restrictions.

Primitive-type visitor use is projected to increase at a rate of 2 to 7 percent annually over the current estimated use of 4,000 visitor days per year.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 1,040 acres of the North Fork Virgin River WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). The WSA is adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it could only be managed in part with the NPS-proposed wilderness. As a result, the North Fork Virgin River WSA could be retained by BLM or transferred to the NPS along with nine other small WSAs (refer to Map 3). NPS would assume management responsibilities in this case. For the purposes of this analysis, it is assumed that BLM would retain management of the North Fork Virgin River WSA, and it would be managed in part with the contiguous NPS-proposed Wilderness and in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State, private, or split-state 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 1,040 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, eight mining claims (160 acres) are located in the WSA. No oil and gas leases are located in the WSA. No exploration or development of locatable or leasable minerals is projected.

Present domestic livestock grazing would be allowed to continue as authorized in the Zion MFP and Kanab-Escalante Grazing Management EIS. The 17 AUMs in the WSA would remain available to livestock as presently allotted.

The entire 1,040-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

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





Map 1

LAND STATUS

North Fork Virgin River WSA

UT-040-150

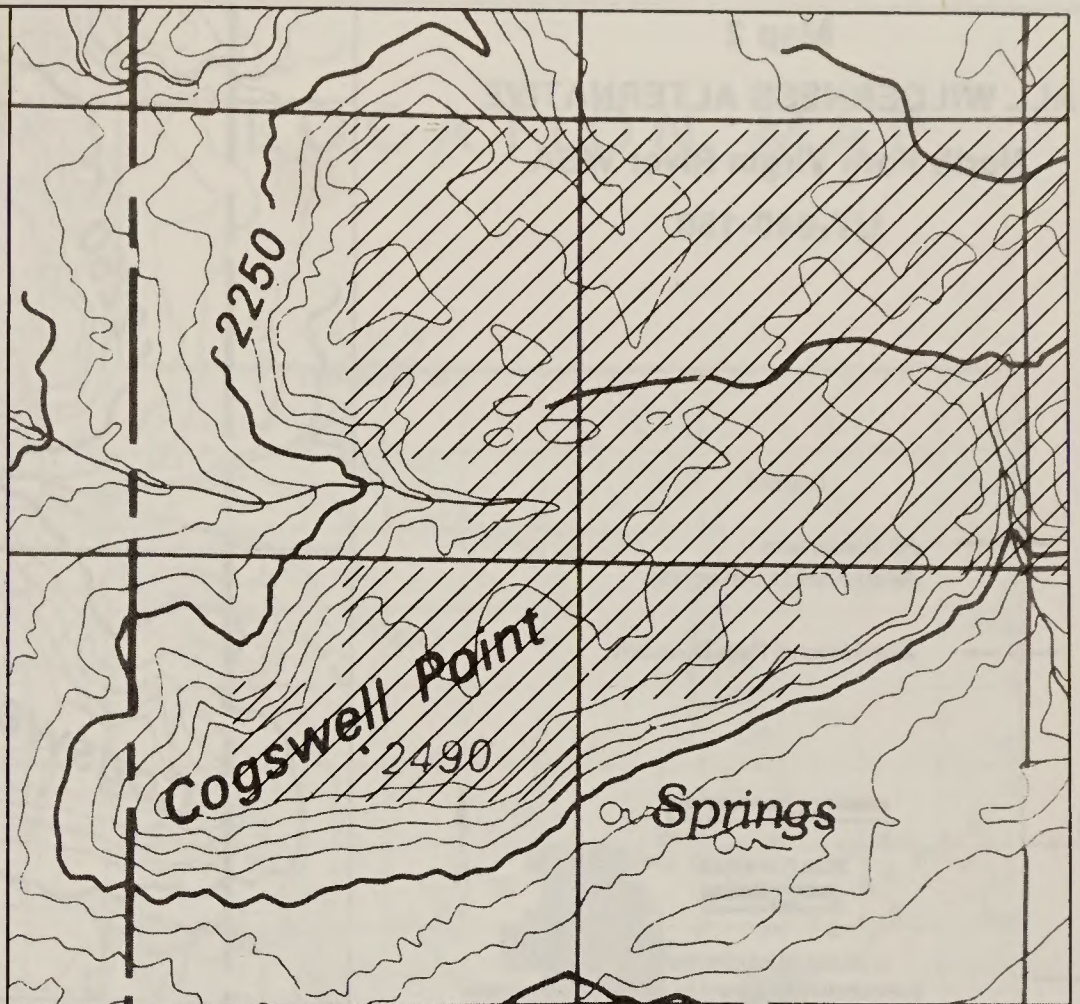
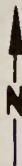
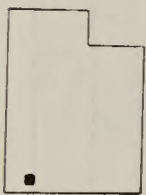
Legend

-  WSA Boundary
-  Zion National Park Boundary
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA

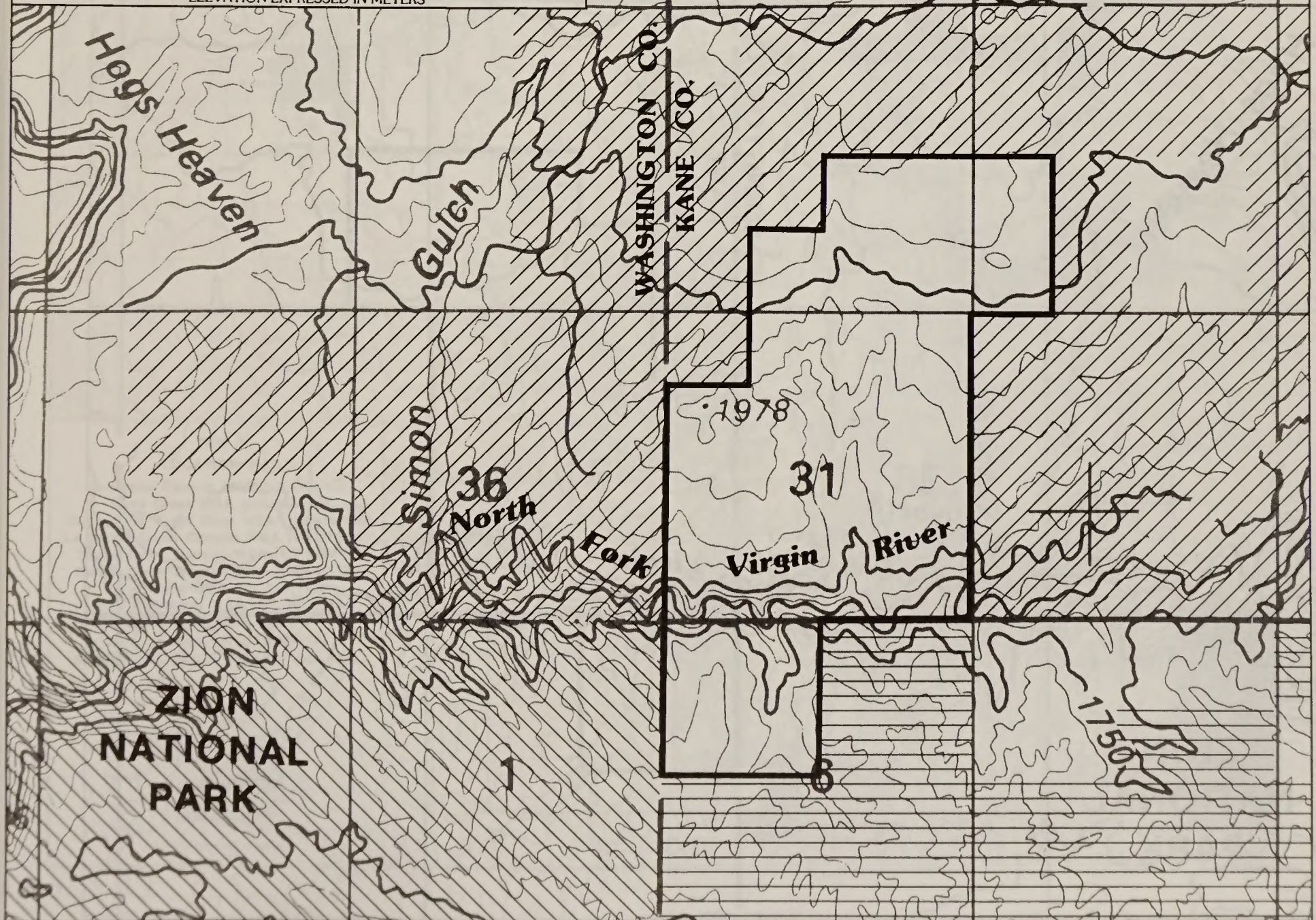
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SCALE IN MILES

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SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS



T. 39 S.

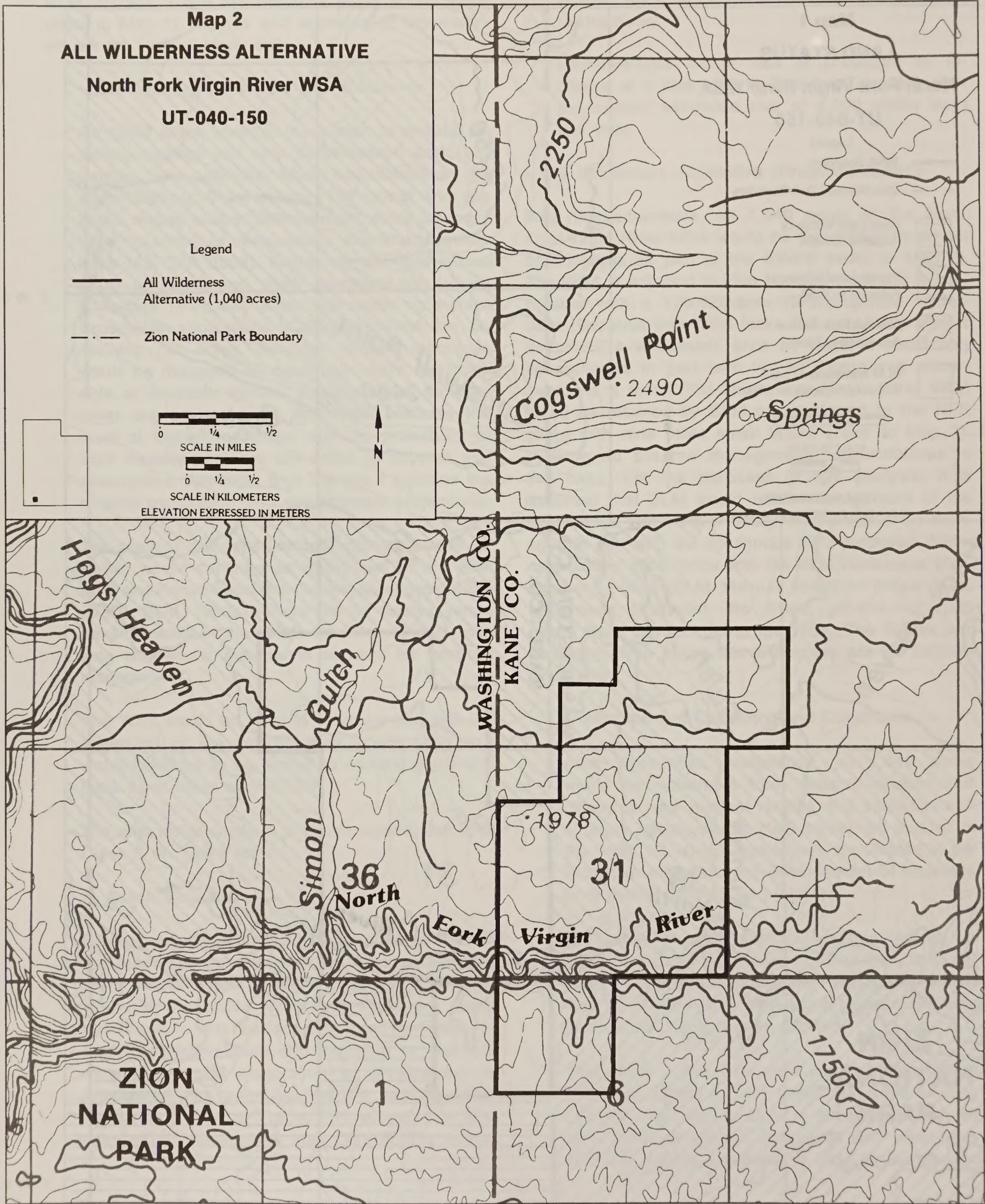


T. 40 S.

R. 10 W.

R. 9 W.

NORTH FORK VIRGIN RIVER WSA

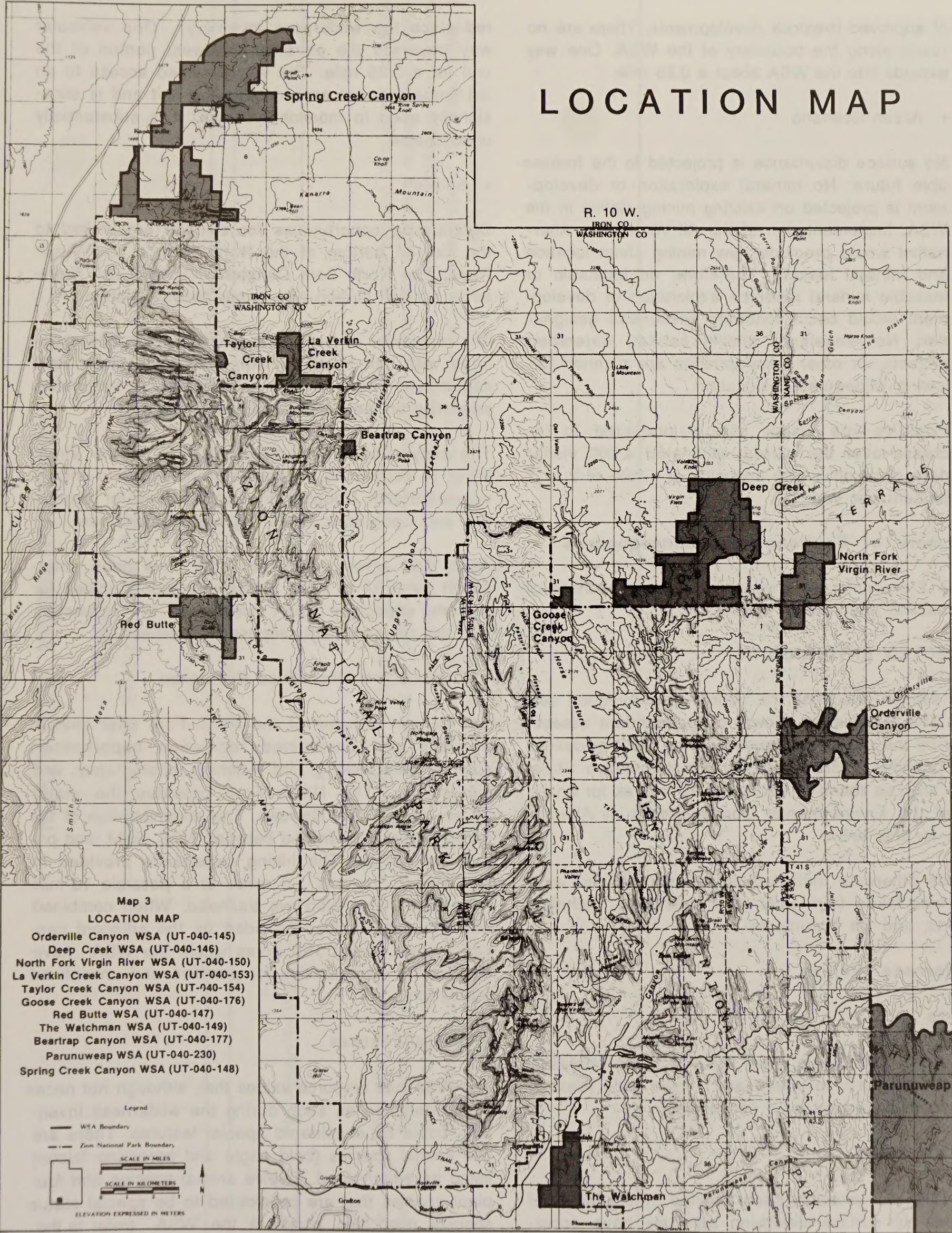


NORTH FORK VIRGIN RIVER WSA

R. 12 W.

R. 11 W.

LOCATION MAP



NORTH FORK VIRGIN RIVER WSA

of approved livestock developments. There are no roads along the boundary of the WSA. One way extends into the WSA about a 0.25 mile.

- Action Scenario

No surface disturbance is projected in the foreseeable future. No mineral exploration or development is projected on existing mining claims in the WSA. Implementation of the All Wilderness Alternative would preclude new mining claim location and 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.

Primitive-type visitor use is projected to increase over the current estimated 4,000 visitor days of primitive use annually, 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 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 North Fork Virgin River WSA is approximately 2 miles long (north to south) and 1 mile wide (east to west) and encompasses 1,040 acres.

- Naturalness

The WSA has primarily been affected by the forces of nature. No surface-disturbing activities have occurred

since the wilderness inventory. One vehicular way traverses the extreme northwest portion of the unit for a 0.25 mile. The way provided access to an old timber harvest area outside the unit and is occasionally used to monitor livestock. It is substantially unnoticeable.

- Solitude

Outstanding opportunities for solitude are limited to the canyon bottom of the North Fork of the Virgin River. The North Fork Canyon within the unit represents a small portion of a larger canyon system.

The remainder of the unit is gently sloping and vegetated with oak brush, pinyon-juniper woodland, and sagebrush. There is little topographic or vegetation screening on the benchlands above the river.

The canyon bottom of the North Fork of the Virgin River is serpentine, deeply entrenched, and thickly vegetated with Douglas fir. Opportunities for vegetation and topographic screening are excellent here.

About 150 acres within the WSA have been determined by BLM to have outstanding opportunities for solitude especially when considered in conjunction with the adjacent NPS proposed wilderness.

- Primitive and Unconfined Recreation

The canyon bottoms of the North Fork offer several primitive and unconfined recreation opportunities such as backpacking, bird watching, photography, and sightseeing. The North Fork provides the major access to the Zion Narrows. The administration of the canyon system is divided between NPS, BLM, and private individuals. The hiking experience provided in the WSA represents 1.6 miles of a possible 13-mile hike to the Zion Narrows trailhead. When combined with the opportunities provided by the adjacent canyon system, about 150 acres within the WSA have outstanding opportunities for primitive and unconfined recreation.

- Special Features

The WSA has resource values that, although not necessarily identified as such during the wilderness inventory, could be considered special features. There are two animal species (bald eagle and peregrine falcon) listed as endangered. Twelve animal species and four plant species that are considered to be special status species may also occur in the WSA (refer to the

NORTH FORK VIRGIN RIVER WSA

Table 1
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness	All Wilderness (1,040 Acres) (Proposed Action)
Impacts on Wilderness Values	<p>The WSA would not be protected by wilderness designation. No disturbance that would affect wilderness values would be expected in the foreseeable future. This alternative would not complement the NPS wilderness proposal on adjacent lands. Wild and scenic values of the North Fork of the Virgin River would not be provided additional protection. Vehicular use of a 0.25 mile of way would continue to occasionally detract from opportunities for solitude and primitive recreation.</p>	<p>Wilderness values would be preserved throughout the WSA. This alternative would complement wilderness management goals of the NPS on contiguous lands. Designation would provide additional protection for 1.5 miles of the North Fork of the Virgin River, a segment of the National Wild and Scenic River Inventory.</p>

NORTH FORK VIRGIN RIVER WSA

Vegetation and Wildlife Including Special Status Species sections for more information). The WSA has populations of elk and cougar which are wildlife species commonly associated with wilderness. All of the WSA is rated Class A for scenic quality. The North Fork of the Virgin River flows west through the WSA for 1.5 miles into private lands and Zion National Park. This river segment has been identified by the NPS as a National Rivers Inventory Segment (refer to the Recreations section for more 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. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area; Las Vegas, Nevada.

Air Quality

Air quality data for the WSA were obtained from the automated visibility measuring station at Lava Point in Zion National Park. This station scans across the WSA, focusing on the Kaibab Plateau in Arizona. The preliminary figures from this system give an average visibility of 155 miles. This indicates extremely clean air in the area. The WSA is presently classified as Class II air under the PSD regulations. This means that air quality deterioration that accompanies moderate well-controlled growth would not be considered significant. Adjacent Zion National Park has a PSD Class I designation under existing regulations.

Geology and Topography

The North Fork of the Virgin River WSA is located within the Grand Staircase section of the Colorado Plateau Physiographic Province.

Elevations vary from a little more than 6,900 feet above sea level on the north side of the canyon at the northern boundary of the WSA, to about 5,400 feet above sea level in the canyon bottom at the western boundary of the WSA.

The main drainage in the WSA is the North Fork of the Virgin River which drains from east to west.

Rocks of Jurassic and Cretaceous age totaling about 1,500 feet crop out in the WSA. Marine sediments of the Jurassic Carmel Formation form the most extensive outcrops in the southern portion of the WSA. Cretaceous Dakota and Tropic Formations crop out in the extreme northern portion of the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 11,000 feet thick in the vicinity of the WSA (Hintze, 1973).

Soils

The soils within this WSA are of one soil association, Typic Argiborolls/Lithic Argiborolls/Typic Haploborolls. These are gravelly, gravelly sandy, cobbly, and silty clay loam soils, which are shallow to deep on steep to very steep slopes.

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	880	85	4,752
Critical	2.7	0	0	0
Moderate	1.3	160	15	208
Slight	0.6	0	0	0
Stable	0.3	0	0	0
Total		1,040	100	4,960

Sources: USDI, BLM, 1979d and 1979e; Leifeste, 1978.

Approximately 85 percent of the WSA is considered to have a severe susceptibility to erosion, primarily due to the steepness of the terrain. The remaining 15 percent is fairly level and, therefore, is only moderately susceptible to erosion. Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the Glossary). These soils are classified as nonsaline with an annual salt production estimated at 10 lb per acre on undisturbed sites (unpublished soil survey data).

Reclamation potential is limited due to steepness of slopes and rockland/rock outcrops. Small areas of well developed soils in the WSA have good reclamation potential.

Vegetation Including Special Status Species

The major portion of the WSA is composed of the mountain shrub vegetation type which covers

NORTH FORK VIRGIN RIVER WSA

approximately 79 percent (820 acres) of the area. The dominant species in this type are oak, big sagebrush, serviceberry, pinyon pine, juniper, and manzanita. The understory consists of bitterbrush, rabbitbrush, and bunch grasses.

Twenty-one percent (218 acres) of the WSA is covered by the pinyon-juniper woodland type. Dominant species include pinyon pine, juniper, bigtooth maple, and some Ponderosa pine in suitable habitat composing the overstory. The sparse understory includes mountain mahogany, serviceberry, Gambel's oak, cliff-rose, silver buffaloberry, and numerous forbs.

On the more exposed benches and gentle slopes at the edge of the pinyon-juniper woodland are areas of sagebrush and rabbitbrush. Grasses are found throughout the type and include Indian ricegrass, galleta, needle-and-thread grass, and muttongrass.

About 2 acres (less than 1 percent of the WSA) of riparian plant communities occur in drainages around springs and seeps. These plant communities usually develop under protective overhanging lips of hard rock strata and contain hanging gardens that generally have luxuriant plant life, such as maidenhair fern, pink-flowered shooting star, and scarlet monkey flower.

No threatened or endangered plant species are known to occur in the WSA. Four Category 2 candidate plant species (50 CFR 17) may occur in the WSA. These are Asplenium andrewsii, Erigeron sionis, Heterotheca jonesii, and Sphaeromeria ruthiae (see Appendix 4 in Volume I).

The North Fork Virgin River WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

The WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. The main drainage in the WSA is the North Fork of the Virgin River as it flows west through the WSA for 1.5 miles into private lands and Zion National Park. A stream flow gauge in the river (located in the park) has recorded a mean annual discharge of 71,360 acre-feet over a 50-year period. There are no lakes or reservoirs in the WSA.

Perennial water sources in the WSA are fully appropriated. Surface and groundwater sources are closed to further water right applications (UDNRE, DWR, 1988). No withdrawals are located in the WSA. There is an ongoing water right adjudication being conducted by the Fifth Judicial District Court for the Virgin River Drainage. The purpose of this adjudication is to establish a general determination of rights to the use of both surface and underground water. The NPS is asserting Federal reserved rights for park values in this adjudication.

Water rights have been acquired by the Washington County Water District which would allow for construction of a reservoir (referred to as the Bullock Reservoir) on private property adjacent to and upstream from the WSA. The Utah State Water Engineer has stated that a change of diversion and location of storage rights could be granted depending upon water use and its location.

Water quality standards for the North Fork of the Virgin River as established by the State of Utah are: Class 1C (protected for domestic purposes with treatment), Class 2B (protected for recreational uses excluding swimming), Class 3A (protected for cold water fisheries), and Class 4 (protected for agriculture uses both irrigation and livestock). Water quality within this drainage is mostly affected by the natural geology of the area. Sedimentary sandstones and limestones contribute to dissolved and suspended solids primarily during runoff periods and storm events. Utah's 1986 305(b) Water Quality Assessment Report shows the North Fork of the Virgin River to have water quality problems for public water supply, secondary contact, and cold water fishery.

Mineral and Energy Resources

Table 3 provides an energy and mineral resource rating summary for the WSA. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

No minerals currently listed as strategic and critical are known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

The oil and gas capabilities of the region have been reviewed (SAI, 1982). There is no evidence indicating the existence of commercially recoverable oil and gas resources within the WSA. The only

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tests for oil and gas in the region have been three holes drilled in western Kane County, near the eastern edge of the downthrown block of the Sevier fault and about 15 miles southeast of the WSA. Oil shows were reported in these wells from Moen-kopi, Kaibab, and Queantoweap rock units (Kunkel, 1965). These wells were located on what appears to be an obscure dome in the Carmel Limestone (SAI, 1982). No such structure is known to underlie the WSA.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 2	c 1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f 2	c 2	Less than 500 metric tons of uranium oxide
Coal	f 2	c 4	Less than 1.4 metric tons
Geothermal	f 1	c 4	None
Hydroelectric	f 2	c 4	.05 to 15 megawatts

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

This unit has a low certainty (c1) for the occurrence of small (less than 10 million barrels of oil and 60 billion cubic-feet of natural gas) oil and gas fields (f2). There are no known structures within or near the WSA that might represent potential exploration targets.

Under the current land use plan, 720 acres within the North Fork Virgin River WSA are open to oil and gas leasing with a no surface occupancy stipulation. The remaining 320 acres are open to leasing with standard stipulations (Category 1).

There are presently no oil and gas leases in the WSA.

- Coal

Approximately 220 acres of the northern part of the WSA lie within the Kolob coal field. Coalbeds occur in the WSA in a zone 3 to 5 feet thick within the basal part of the Dakota Sandstone at depths less than 2,000 feet (Doelling and Graham 1972). Based on these figures it is estimated that such

coalbeds contain between 0.85 and 1.4 million tons of coal, of which one-third to one-half would be recoverable by underground mining methods. Coal in the Kolob field varies in quality from one area to another, but in general the coal is of poor quality and of moderate to high sulfur content.

The northern boundary of the WSA is less than 1 mile outside the southern boundary of the Kolob Known Recoverable Coal Resource Area (KRCRA). Since the coal unsuitability criteria was applied only to the KRCRA, it is not known whether the portion of the WSA underlain by coal is suitable or unsuitable for coal mining. However, the Kolob KRCRA in the vicinity of the WSA was identified as acceptable for further consideration for coal leasing. At the present time no coal leases exist within the WSA.

- Geothermal

No evidence is available to indicate that geothermal resources may occur within or near the WSA (SAI, 1982).

- Locatable Minerals

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA even though eight claims have been located within the WSA, covering 160 acres.

- Uranium

No uranium deposits are known to occur within the WSA. The Triassic Chinle and the Jurassic Moenave Formations are the only rock units within the WSA considered favorable for uranium in south-central Utah (USDOE, 1979). Only the Moenave Formation in the region is considered favorable for the occurrence of economic deposits of uranium. It is speculated that the Moenave Formation within the WSA contains less than 500 metric tons of uranium oxide (USDOE, 1983).

The Silver Reef District, approximately 30 miles to the southwest, is the closest uranium producing area to the WSA. This district is known primarily for its past silver production although minor amounts of uranium were obtained from the Springdale Sandstone Member of the Moenave Formation. The Springdale Sandstone Member is estimated to lie at a depth of at least 3,000 feet below the surface of the WSA (Hintze, 1973).

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Other favorable rock units in the vicinity are included in the Chinle Formation (Shinarump Conglomerate Member), but these rocks lie at a depth of about 4,000 feet below the WSA (Hintze, 1973) and it is doubtful if such deposits could be extracted economically (SAI, 1982).

Surface mineral deposits of gypsum, occur in the northern part of the WSA, of up to 20 million tons (USDI, USBM, 1987c). However, larger, more accessible deposits occur outside the study area.

- Hydroelectric

Because the North Fork of the Virgin River is a perennial stream in the study area, the WSA may be favorable for small scale hydroelectric resources (up to 15 megawatts) (SAI, 1982).

FERC has identified potential small scale hydroelectric sites in the vicinity of the WSA, as well as existing dams that could be retrofitted to produce electricity. However, according to FERC no potential hydroelectric sites occur within the WSA itself (SAI, 1982).

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. Construction-grade sandstone and limestone suitable for agriculture uses also occur (USDI, BLM, 1987). These deposits are not unique or economically significant due to the presence of ample similar materials nearby outside the WSA.

Wildlife Including Special Status Species

The North Fork Virgin River WSA occurs in a vegetation transition zone; therefore, it supports a variety of animal species. There are approximately 300 vertebrate animal species that could inhabit the WSA. These include 60 species of mammals, 210 species of birds, 20 species of reptiles, seven species of amphibians, and three species of fish (USDI, BLM, 1979d).

Raptors may include golden eagle (a BLM sensitive species), bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common species. The bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco pere-

grinus) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony Valleys west of the WSA. Occasional sightings of these birds have been made with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur in the WSA.

An active peregrine falcon nest occurs in Zion National Park south of the WSA. Peregrine falcons have been reported in the Deep Creek-Goose Creek area and in Taylor Creek Canyon, but nesting is not confirmed. All of the WSA has an adequate prey base and excellent nesting habitat for the peregrine falcon. No other threatened or endangered wildlife species are known to occur in the WSA.

In addition to the two endangered species, the golden eagle (a BLM sensitive species) and 11 Category 2 candidate species may occur in the WSA. They are golden eagle, ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, white-faced ibis, Great Basin Silverspot butterfly, and Virgin River montane vole (see Appendix 4 in Volume I).

Big game animals include mule deer, elk, and cougar. The WSA is within the boundaries of Deer Herd Unit 58 providing summer range. No critical range is found within the WSA. Hunting pressure is light because access is blocked by private and NPS lands. There are no existing or proposed developments for wildlife for this area. The North Fork Virgin River WSA contains cougar habitat and is within Utah Cougar Management Unit 30, Cedar Mountain. Cougar populations and harvest by sport hunters and by the Animal Damage Control program has been higher in this management unit than in any other location in Utah. During the 11-year period (1977 through 1987), a total of 217 cougars were taken from the Cedar Mountain Management Unit. This harvest averaged nearly 20 animals per year (UDNRE, DWR, 1988). It has not been determined how many of these may have been taken from within the WSA.

Trout have been stocked in the North Fork of the Virgin River but their present status is not known. The WSA contains approximately 1.5 miles of fish habitat.

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Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Hogs Heaven	1,771	765	50	17	10 Cattle	05/16-10/15	1
Lower North Fork	840	225	10	0	2 Cattle	05/01-09/30	1
Total	2,611	990	60	17			2

Sources: USDI, BLM, file data

Forest Resources

The major forest resource found in the WSA is the pinyon-juniper woodland. Some small stands of Ponderosa pine, Douglas fir, and cottonwood trees are also found in the WSA. The WSA woodland is suitable for firewood, posts, pine nuts, and Christmas tree cutting. However, the WSA has no access and extensive woodlands are available elsewhere. Therefore, there is no current use or projected demand in the foreseeable future for this resource.

Livestock and Wild Horses/Burros

The North Fork Virgin River WSA covers parts of two allotments (Hogs Heaven and Lower North Fork).

The Hogs Heaven Allotment has 765 acres within the WSA and includes 17 AUMs. The Lower North Fork Allotment has 225 acres in the WSA with no suitable public grazing land included. Two permittees are allowed to graze cattle on these allotments. Approximately 50 acres of public land are unallotted in the WSA. Refer to Table 4 for livestock grazing use data.

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

There are no existing or proposed range developments in the WSA, and there are no wild horses or burros in the WSA.

Visual Resources

Under the BLM VRM system, the entire WSA is rated as Class II. This means that changes in any of the four basic visual elements (form, line, color, texture) should not be evident. Refer to Appendix 7 in Volume I for an explanation of the BLM VRM system.

The scenery quality rating for the North Fork Canyon is Class A. This designation means that it contains outstanding or dominating features. This drainage is cut with numerous small side canyons that are covered with Ponderosa pine, pinyon pine, and cottonwood. The color contrast is excellent.

Cultural Resources

No sampling inventory for archaeological and other cultural resources has been conducted in the WSA. No sites are known to be located in the WSA.

Recreation

Recreation use of the North Fork of the Virgin River is limited primarily by the necessity to obtain access across private land. There are no developed recreation facilities in the WSA.

The majority of the WSA is open to ORV use. Only one way, approximately 0.25 mile long, occurs in the WSA. In the Virgin River Canyon (130 acres), ORV use is limited to existing roads and trails. Since there are no roads or trails in the canyon, the canyon is essentially closed to ORV use.

Hunting opportunities are generally poor throughout the unit.

The primary sightseeing opportunity in the WSA is geologic in nature. The canyons of the North Fork of the Virgin River and the Zion Narrows headwaters' erosional features vary from 300 to 800 feet deep.

Presently the WSA is the primary access route for people hiking down the Zion Narrows in Zion National Park. The NPS issued permits for 3,278 people to enter the park through the North Fork Canyon in 1981. It is believed that many more entered via the North Fork Canyon without obtaining permits. The unit

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probably receives over 4,000 visitor days per year, all of which are attributed to primitive activities.

The North Fork of the Virgin River has been identified by the NPS in the National Rivers Inventory. This signifies that the North Fork of the Virgin River, from the road head in Zion National Park to its source, possesses values that may be of national significance and, therefore, have the potential to be included in the National Wild and Scenic Rivers System. Approximately 1.5 miles of the 25-mile long river is located within the WSA.

Land Use Plans

BLM manages the WSA through general guidance of the Zion MFP (USDI, BLM, 1979e). 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.

Zion National Park is contiguous with the western boundary of the WSA. The NPS has proposed this area for wilderness designation. In the past, the NPS has expressed interest in some of the drainages that flow through the park but which originate outside the park boundaries. Although the headwaters of the North Fork of the Virgin River are located outside the WSA boundary, the NPS believes that the portion of the drainage within the WSA is important to the well-being of the park as a whole (USDI, NPS, 1976). This WSA also provides major visitor access to the Zion Narrows.

The House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214, a bill designed to transfer jurisdiction of certain lands, including the North Fork Virgin River WSA, from BLM to NPS (Ninety-eighth Congress, 1983).

In response, the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984c). The NPS found the WSA suitable for addition to the park.

In a February 6, 1985, letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the North Fork Virgin River WSA was identified as suitable for inclusion into the adjacent national park system. However, the letter also indicated the WSA had multiple-use values and would prefer the WSA not be

transferred to NPS until Section 202 studies are completed (Secretary of the Interior, 1985h). No congressional action has been taken on that recommendation.

The Kane County Master Plan states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept" (Kane County Board of Commissioners, 1982).

The UDWR has completed reconnaissance surveys for nine reservoir sites on the North Fork of the Virgin River. One of these sites, known as the Bullock Reservoir site, is located on private land just east of the WSA.

The WSA is BLM-administered public land. There are no State of Utah, private, or split-estate lands in the WSA.

The Kane County Commission 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 Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987, the population increased to about 4,890.

Table 5
Baseline and Projected Population and Employment Growth
Washington and Kane Counties

	1980	1990	2000	2010
<u>Washington County</u>				
Population	26,400	45,500	51,500	65,600
Employment	8,100	14,400	18,400	24,100
<u>Kane County</u>				
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

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Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

From 1970 to 1980, the population of Washington County grew from 13,699 to 26,400, an overall increase of about 93 percent. Table 5 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987, the population increased to about 39,720. Population projections indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 14-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

• Employment

The Washington and Kane Counties are part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2.5 percent of the employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent and government to 18 percent of the total. Mining will decline to less than 1 percent of the total MCD employment.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

• Sales and Revenues

Economic-related activities in the WSA are minimal but include livestock production and recreation. Table 7 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	0
Mineral Production	0	0
Mining Claim Assessment	\$800	0
Livestock Grazing	\$340	\$26
Woodland Products	0	0
Recreational Use	\$16,400	0
Total	\$17,540	\$26

Sources: USDI, BLM, file data, Appendix 9 in Volume I.

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has eight 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.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Two livestock operators have a total grazing privilege of 17 AUMs within the WSA. If all this forage were utilized, it would account for \$340 of livestock sales and \$85 of ranchers' returns to labor and investment.

Nonmotorized recreational-related local expenditures are insignificant to both the local economy and individual businesses. The WSA's motorized recreational use is very 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 the Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the North Fork Virgin River WSA is estimated at about 4,000 visitor days per year. Only a portion of the expenditures for recreational use of

NORTH FORK VIRGIN RIVER WSA

the WSA contribute to the local economy of Kane and Washington Counties.

The WSA does not generate any Federal revenues from leasable minerals at the present time. The live-stock permittees in the WSA can use up to 17 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$26 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

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 III-A and the Description of the Alternatives section for the North Fork Virgin River 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., VRM Class II management on all 1,040 acres, management under oil and gas leasing Category 3 [no surface occupancy] on 720 acres, and ORV limitations in the canyon area).

No development would be expected in the foreseeable future that would affect wilderness values. Because future vehicular use would be limited by terrain or management to existing vehicular ways, no additional disturbance from ORV activity is anticipated. The continued vehicular use of a 0.25 mile of way would occasionally detract from opportunities for solitude and primitive recreation.

This alternative would not complement the management policies for the proposed wilderness in adjacent Zion National Park.

The wild and scenic values of the North Fork of the Virgin River inventory segment would not receive

additional protection provided by wilderness, but no disturbance is anticipated.

The 2 to 7 percent annual increase in visitor use that would occur would not be expected to reduce wilderness values because the use would be in conjunction with use of the contiguous NPS lands where it would be absorbed, and it would be primitive in nature.

The degree to which wilderness values would be lost 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. No disturbance that would affect wilderness values would be expected in the foreseeable future.

All Wilderness Alternative (Proposed Action) (1,040 Acres)

- Impacts on Wilderness Values

Designation and management of all 1,040 acres as wilderness would preserve the wilderness values in the North Fork Virgin River 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 1,040 acres. Solitude would be preserved on approximately 150 acres that meet and 890 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be preserved on 890 acres that meet and 150 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 or other special status plant and animal species, wildlife commonly associated with wilderness, and perennial water features) would also be preserved.

Designation would complement the management and uses of the contiguous NPS wilderness proposal. This unit provides access to Zion Narrows, and designation could help achieve the management objectives of the NPS.

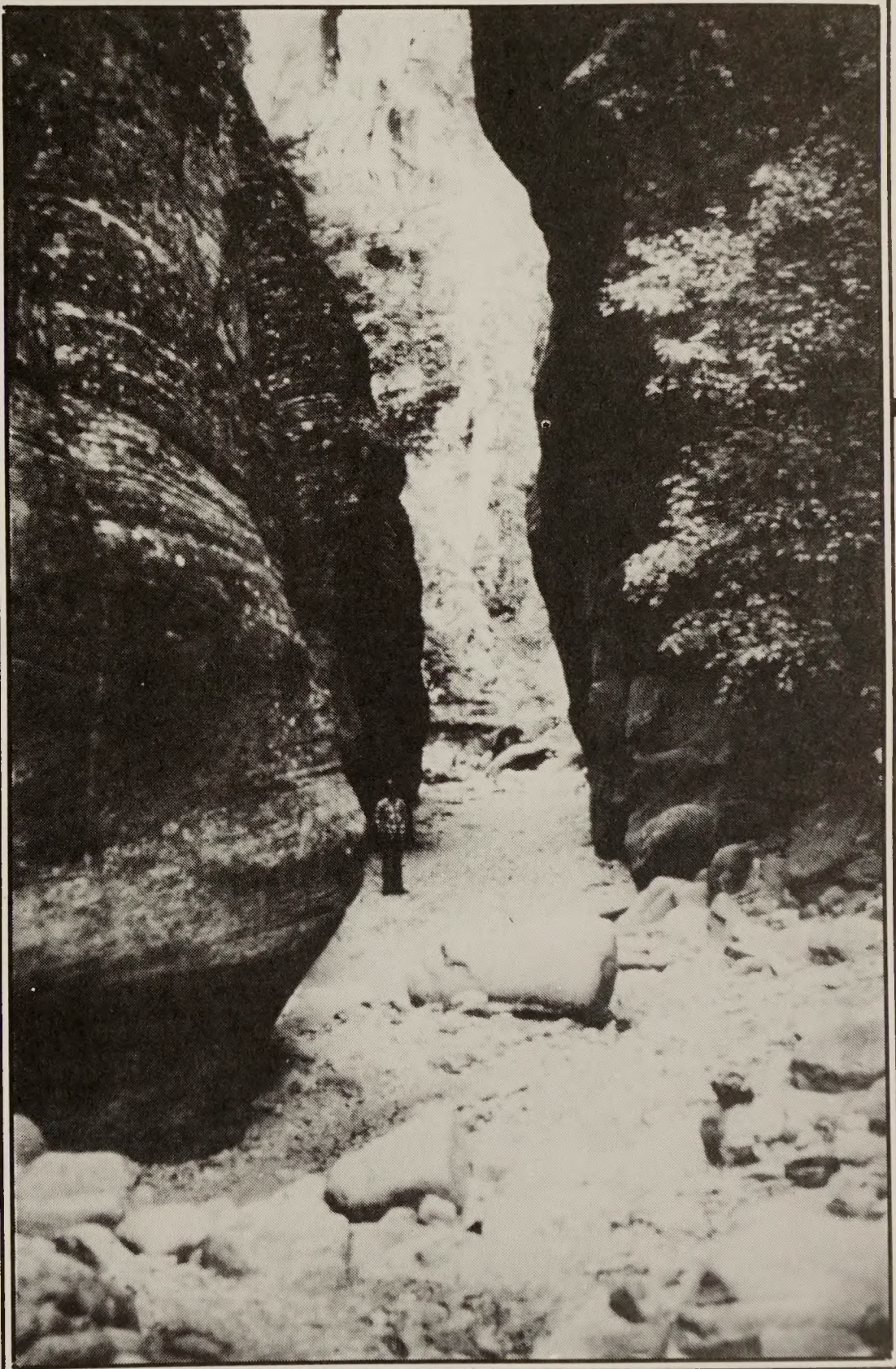
Wilderness designation would provide additional protection for 1.5 miles of the North Fork of the Virgin River included in the NPS Inventory of Wild and Scenic Rivers.

NORTH FORK VIRGIN RIVER WSA

Increased visitor use that would occur would be primitive in nature and managed so as to not result in loss of wilderness values. Vehicular use of a 0.25 mile of way would not be allowed, improving opportunities for solitude and primitive recreation.

Conclusion: Wilderness values would be preserved.

Orderville Canyon WSA



ORDERVILLE CANYON WSA

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ORDERVILLE CANYON WSA

(UT-040-145)

INTRODUCTION

General Description of the Area

The Orderville Canyon WSA is in Kane County along the boundary of Zion National Park including a NPS administratively endorsed wilderness proposal of 120,620 acres. The WSA contains 1,750 acres and adjoins the park for approximately 1.5 miles. It is approximately 40 road miles from Kanab, Utah.

The WSA is characterized by a deep canyon and side drainages. Elevations range from 5,100 feet above sea level to 6,600 feet. The temperature range is dependent on the aspect and altitude, but is generally indicative of warm summers and cold winters. July and January are the warmest and coldest months, respectively. July temperatures range from extremes of 50 degrees Fahrenheit (F) to 115 degrees F, with an average range of 68 to 84 degrees F. January extremes are from -20 to 70 degrees F, with the average range being 15 to 30 degrees F. (The weather data used are from Orderville, Utah, which is approximately the same elevation as the WSA.)

Average annual precipitation ranges from 12 to 16 inches. Approximately 50 percent of this precipitation falls from December through March, much in the form of snow in the higher elevations (approximately 40 inches of snow per year). Intense thunderstorms from the southwest are common during the summer months.

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 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 III-A, the following change specific to the WSA has been made since publication of the Draft EIS.

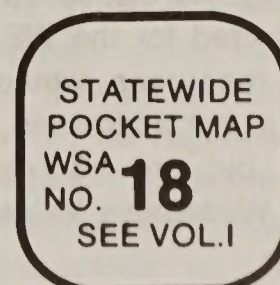
The anticipated surface disturbance presented in the Draft EIS (180 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative 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 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 III-A (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 Orderville Canyon WSA were considered, but are not analyzed in detail in the Final EIS for the reasons described below.

1. Soils, Vegetation and Wildlife Including Special Status Species, Water Quality, and Forest Resources: Estimates of surface disturbance without wilderness designation have been revised downward from the 180 acres reported in the Draft EIS to none in the Final EIS. Given this new scenario, the impacts on soils, vegetation, wildlife, water quality, and forest resources would not occur in the time period analyzed in the Final EIS. Conversely, there are no proposals for developments, harvests, or other uses which



ORDERVILLE CANYON WSA

would be precluded for these resource values by wilderness designation. Therefore, impacts on soils, vegetation, water quality, wildlife, and forest resources are not issues in this Final EIS.

2. Water Uses: There are no perennial streams or proposed water developments in the Orderville Canyon WSA. Existing water developments could be maintained as in the past and would not be affected. Therefore, the impacts of wilderness designation on water uses are not discussed in detail.

3. Mineral and Energy 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 low certainty that they exist. Even though there is one mining claim inside the WSA, uranium and other locatable mineral deposits are thought to be small with a low certainty of occurrence. More accessible deposits of sandstone and limestone and other 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 (see Appendix 6 in Volume I). Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

4. Livestock: Concerns were raised that wilderness designation would cause prohibitions in grazing or reduce the levels of grazing permitted. Under the Wilderness Management Policy (BLM Manual 8560), there will be no curtailments in grazing simply because an area is designated as wilderness. No changes in grazing levels are proposed in the planning documents. There are no ways where vehicle use would be precluded by wilderness designation and there are no present or proposed range developments. Predators have not been controlled in the area for several years. For these reasons, net impacts on livestock management are a significant issue for the Orderville Canyon WSA.

5. Visual Resources: As discussed above, 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.

6. Cultural Resources: No cultural resource sites have been recorded in the Orderville Canyon WSA. No surface disturbance is projected. Recreation 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 Orderville Canyon WSA.

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. Ninety percent of the recreational use occurring in the Orderville Canyon WSA would remain primitive with or without wilderness designation due to the terrain of the WSA and limited access. Therefore, impacts on recreation use would not be significant and are not analyzed in detail in the Final EIS.

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.

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 remain primitive, potential impacts on economic conditions are not significant issues for analysis in the Final EIS.

• Issues Analyzed in Detail

The significant issue for the Orderville Canyon 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 inventory phase of the wilderness review, BLM's assessment of the value of wilderness vs. other resource values, geology, threatened and endangered species, livestock management, recreation, and economics.

ORDERVILLE CANYON WSA

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and see Volume VII-C, Section 18, for responses to specific comments about the Orderville Canyon WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

An alternative that would add Federal lands to the WSA was suggested in the public comments. This alternative is not analyzed because these lands were dropped from study during the inventory phase. See the response to General Comment 3.1 for further explanation.

Transfer of several WSAs, including the Orderville Canyon WSA to NPS administration in adjacent NPS units, has been proposed in H.R. 1214 (Ninety-eighth Congress, 1983). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of transfer of management from BLM to NPS, the EIS could analyze 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 considered by BLM to be a separate action 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 (USDI, BLM 1982b) requires BLM in its Wilderness Study Report to determine whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land and, if the WSA was designated as wilderness, whether the BLM portion could be more effectively managed by the agency which administers the contiguous wilderness area.

BLM has determined that the Orderville 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. It will be based primarily on factors affecting both BLM and NPS jurisdictions, such as 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 nonenvironmental 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 this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (1,750 acres). A description of BLM's management practices for 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 BLM management actions presented in the Introduction to Volume III-A are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 1,750-acre WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Zion MFP (USDI, BLM, 1979e). No State lands are within the WSA (refer to Map 1). Figures and acreages in this analysis are for Federal lands only.

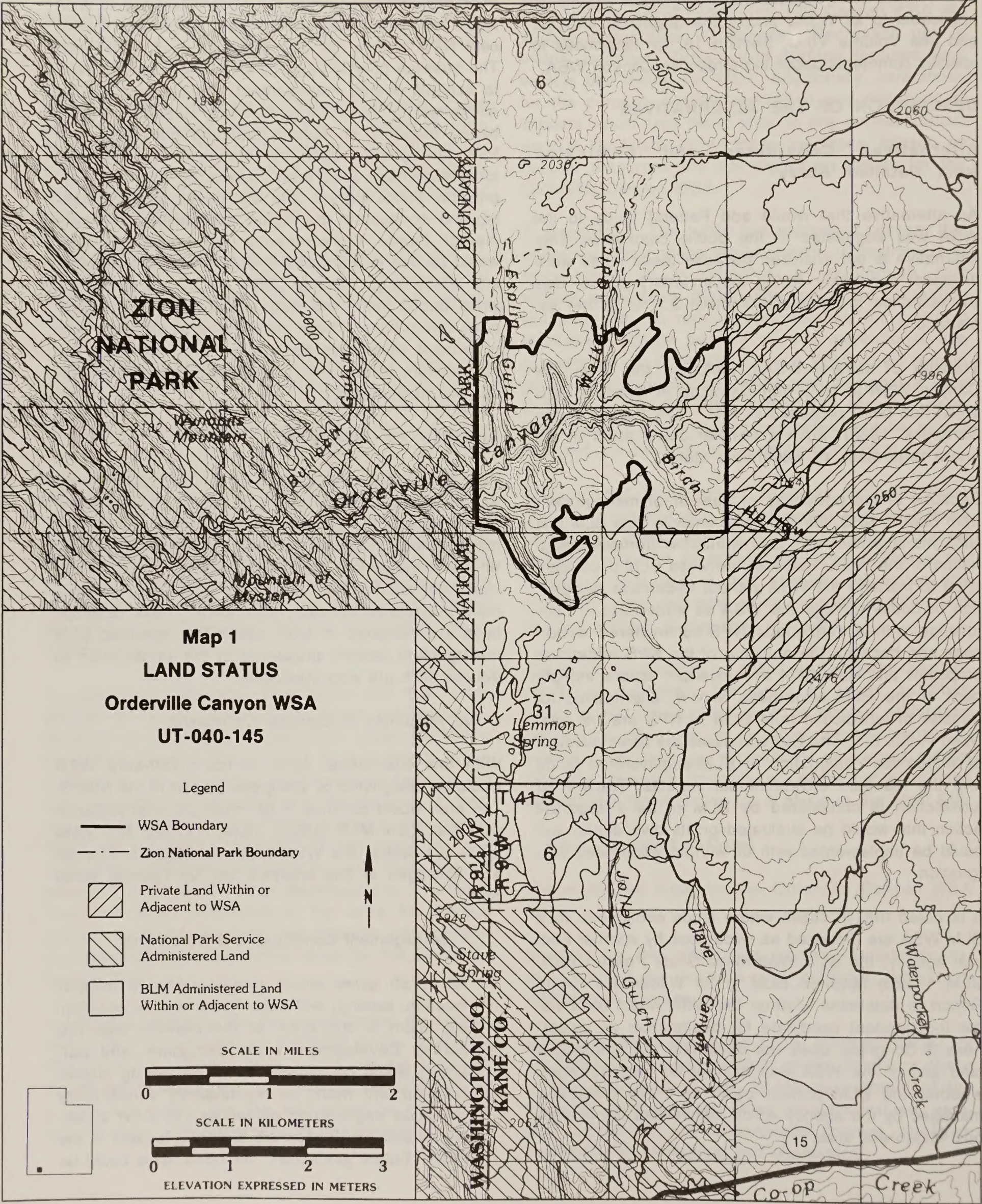
- Management Conditions and Constraints

All 1,750 acres would remain open to mineral location, leasing, and sale. There is only one mining claim in the WSA at the present time (20 acres). 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). No oil and gas leases are currently located in the WSA. Future gas leases on 1,550 acres could be

ORDERVILLE CANYON WSA

R. 10 W.

R. 9 W.



T. 40

T. 41

ORDERVILLE CANYON WSA

developed under Category 1 (standard stipulations) and 200 acres under Category 3 (closed to surface occupancy). Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development are projected in 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 exploration and development projections.

The present domestic livestock grazing use of 24 AUMs would continue as authorized in the BLM Zion MFP and Kanab-Escalante Grazing Management EIS (USDI, BLM, 1980a). There are no existing or proposed range developments in the WSA.

Approximately 50 percent of the WSA, located primarily above the canyon rim, would continue to remain open to ORV use. In the remaining area, within the canyon itself, ORV use would be limited to existing roads and trails. Use of vehicles (even in the area that would be open to ORV's) is not possible because of the rugged terrain and absence of vehicular ways in the WSA.

The WSA would continue to be managed as VRM Class II on 1,750 acres.

- Action Scenario

Given the management plan described above and the resources described in the Affected Environment Section. 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 ORV disturbance is projected. Recreation use is projected to increase over the current estimated use of up to 1,000 visitor days annually at a rate of 2 to 7 percent per year. Over 90 percent of the use would continue to be primitive in nature.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 1,750 acres of the WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA is adjacent to

Zion National Park and is contiguous with a NPS 120,620-acre proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it could only be managed in part with the NPS-proposed wilderness. As a result, the Orderville Canyon WSA could be retained by BLM or transferred along with nine other small WSAs (refer to Map 3). NPS would assume management responsibilities in this case. However, for the purposes of this analysis, it is assumed that BLM would retain management of the Orderville Canyon WSA and that 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 or adjacent to the WSA (refer to Map 1). No private or split-estate lands are located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 1,750 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 the one mining claim (20 acres) in the WSA if it is determined valid. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) with wilderness as a consideration. No oil and gas leases are located in the WSA. BLM does not project any locatable or leasable mineral exploration or development in the foreseeable future.

Present domestic livestock grazing would be allowed to continue as authorized in the Zion MFP and Kanab-Escalante Grazing Management EIS. The 24 AUMs in the WSA would remain available to livestock as presently allotted.

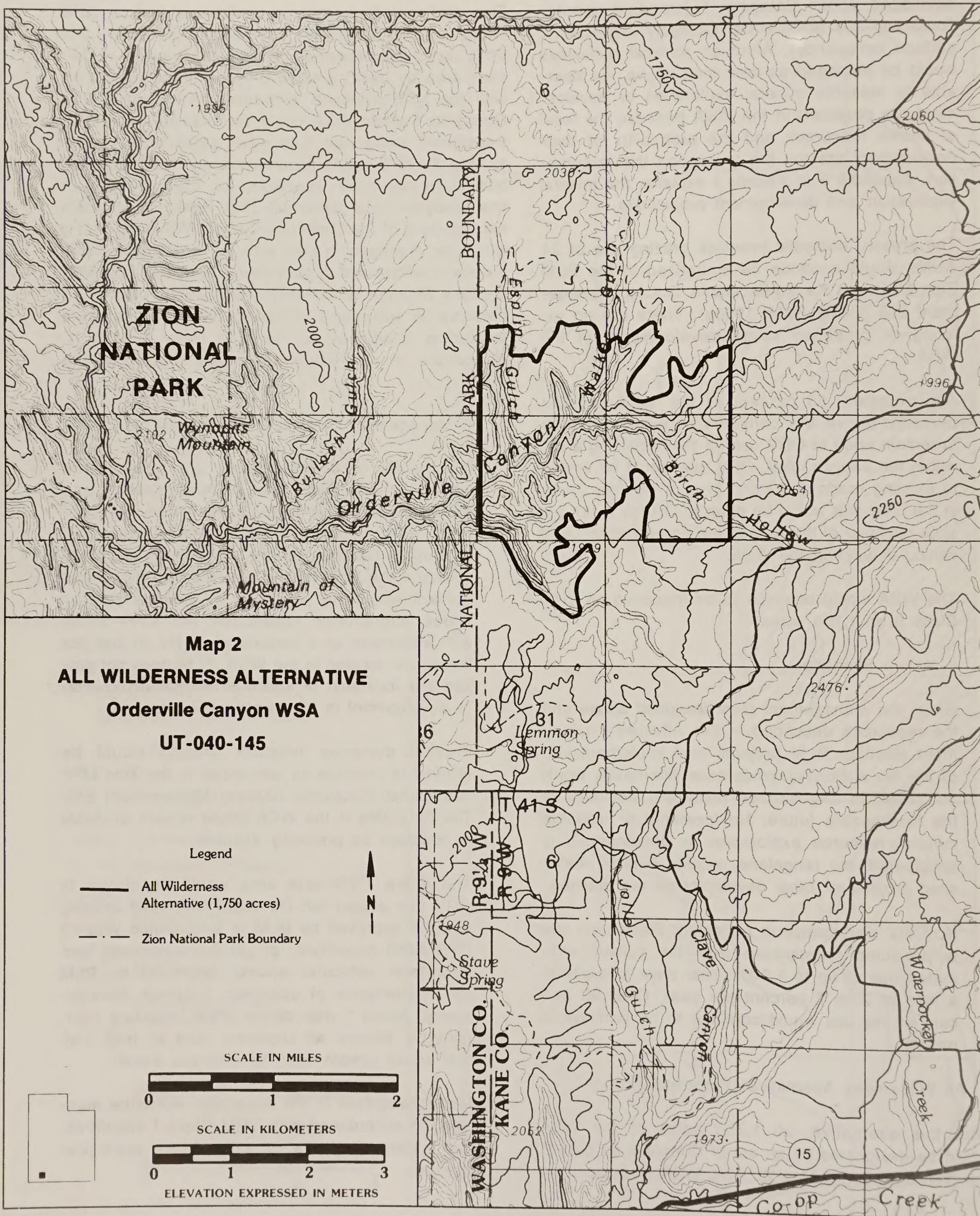
The entire 1,750-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 1 mile of the WSA boundary intermittently follows an unpaved road or jeep trail that would remain open to vehicular travel.

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

ORDERVILLE CANYON WSA

R. 10 W.

R. 9 W.



T. 40 S.

T. 41 S.

ORDERVILLE CANYON WSA

R. 12 W.

R. 11 W.

LOCATION MAP

R. 10 W.

IRON CO.
WASHINGTON CO.

T. 39 S.

T. 40 S.

T. 41 S.

Map 3

LOCATION MAP

- Orderville Canyon WSA (UT-040-145)
- Deep Creek WSA (UT-040-146)
- North Fork Virgin River WSA (UT-040-150)
- La Verkin Creek Canyon WSA (UT-040-153)
- Taylor Creek Canyon WSA (UT-040-154)
- Goose Creek Canyon WSA (UT-040-176)
- Red Butte WSA (UT-040-147)
- The Watchman WSA (UT-040-149)
- Beartrap Canyon WSA (UT-040-177)
- Parunuweap WSA (UT-040-230)
- Spring Creek Canyon WSA (UT-040-148)

Legend

- WSA Boundary
- - - - - Zion National Park Boundary

SCALE IN MILES

SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS

ORDERVILLE CANYON WSA

- Action Scenario

BLM does not project any surface disturbance in the foreseeable future. No mineral exploration or development is projected for the single existing mining claim in the WSA. Implementation of the All Wilderness Alternative would preclude new mining claim location and 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 ORV disturbance would occur. Primitive recreation use would increase over the current primitive use of up to 900 visitor days annually 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 section of this WSA.

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

Wilderness Values

- Size

The Orderville Canyon WSA is approximately 2 miles wide (east to west), 1.50 miles long (north to south), and encompasses 1,750 acres. The WSA is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous NPS-proposed wilderness area in Zion National Park. With the contiguous NPS unit, the WSA would be a viable wilderness area.

- Naturalness

The WSA is in a natural condition. There are no known intrusions. No surface-disturbing activities have occurred since the wilderness inventory and naturalness has not been affected.

- Solitude

The opportunity to experience outstanding solitude is available in the deeply entrenched Orderville Canyon WSA on 1,167 acres, especially when considered in conjunction with the adjacent NPS proposed wilderness. Some canyons are very narrow and moderately vegetated with oak brush, Ponderosa pine, and pinyon-juniper woodland. The bench areas would not offer an outstanding opportunity for solitude.

- Primitive and Unconfined Recreation

The WSA offers outstanding opportunities for unconfined recreation activities such as backpacking, rock climbing, and sightseeing on approximately 1,167 acres when considered in conjunction with the adjacent NPS-proposed wilderness. The terrain in the canyon system is very steep with boulders and dead fall timber. The canyon presently provides access to the Virgin River Canyon system in Zion National Park. The bench areas would not offer an outstanding opportunity for primitive recreation.

- Special Features

The WSA has resource values that, although all were not identified as such during the wilderness inventory, could be considered special features. Two animal species (bald eagle and peregrine falcon) listed as endangered may occur in the WSA. There are 13 animal species and four plant species that are considered special status species. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information. The WSA also has a cougar population which is a wildlife species commonly associated with wilderness. Approximately 80 percent of the WSA (1,400 acres) 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. To see how the ecoregion and PNV types

ORDERVILLE CANYON WSA

Table 1
Summary of Environmental Consequences

Alternatives		
All Wilderness (1,750 Acres) (Proposed Action)		
Resource	No Action/No Wilderness	
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation. No disturbance that would significantly affect wilderness values is projected in the foreseeable future. This alternative would not complement the NPS wilderness proposal for the contiguous portion of Zion National Park.	Wilderness values would be preserved. Designation would complement and enhance the NPS wilderness proposal for the contiguous portion of Zion National Park.

ORDERVILLE CANYON WSA

represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area, Las Vegas, Nevada.

Air Quality

The Orderville Canyon WSA is located in a PSD Class II area as defined in the Clean Air Act, as amended. Air quality is considered excellent. The adjacent Zion National Park is designated as PSD Class I. Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM 1980c).

Geology and Topography

The Orderville Canyon WSA is located within the Grand Staircase section of the Colorado Plateau Physiographic Province.

Elevations range from approximately 5,100 feet above sea level in the canyon bottom at the west boundary to a little less than 6,600 feet above sea level on the canyon rims. Drainage is east to west through Orderville Canyon.

Rocks of Jurassic age, with a total thickness of 1,500 feet, are exposed in the WSA. Cross-bedded eolian sandstone of the Navajo Formation forms the canyon walls, and marine sediments of the Carmel Formation cap the canyon rims. Minor outcrops of undifferentiated Jurassic sediments are exposed in the southeast corner of the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 11,000 feet thick in the vicinity (Hintze, 1973).

Soils

Erosion classes are slight, 200 acres (11 percent), and moderate, 1,550 acres (89 percent). Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

The bulk of the soils in this WSA (approximately 90 percent) are of the Typic Argiborolls/Lithic Argiborolls/Typic Haploborolls soil association. These are shallow to deep, gravelly, gravelly sand, cobbly, and silty clay loam soils on steep to very steep slopes. Another 9 percent of the WSA is rockland with sand-

stone bedrock exposed from 50 to 70 percent of the area; the existing soil being very shallow to shallow on nearly level to steep slopes. The remaining 1 percent of the WSA is in the Aridic Argiustolls/Typic Argiustolls soil association. These are moderately deep to deep, fine sandy loam soils on nearly level to steep slopes.

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	1,550	89	2,015
Slight	0.6	200	11	120
Stable	0.3	0	0	0
Total		1,750	100	2,135

Sources: USDI, BLM, 1979d and 1979e; Leifeste, 1978.

The soils in the WSA are classified as nonsaline with an annual salt production estimated at 10 lb per acre as undisturbed sites (unpublished soil survey data).

Much of the WSA is unsuitable for rehabilitation due to steep slopes, rocklands/rock outcrops, and shallow soils. Where soils are deeper and less rocky, seeding establishment is considered good.

Vegetation Including Special Status Species

A juniper-pinyon woodland covers about 78 percent (1,365 acres) of the WSA. This type has an overstory of pinyon pine, juniper, and some Ponderosa pine in suitable habitat. The sparse understory consists of mountain mahogany, serviceberry, Gambel's oak, cliffrose, silver buffaloberry, and various forbs and grasses.

The remaining 22 percent (385 acres) of the WSA is covered by a mountain shrub type, with dominant species being oak, big sagebrush, serviceberry, pinyon pine, juniper, and manzanita, along with some bitterbrush, rabbitbrush, forbs, and bunchgrasses.

Riparian vegetation occupies less than 1 percent of the WSA.

No threatened or endangered plant species are known to occur in the WSA. Four Category 2 candidate plant species may occur in the WSA. These are Asplenium andrewsii, Erigeron sionis, Heterotheca jonesii, and Sphaeromeria ruthiae (see Appendix 4 in Volume I).

ORDERVILLE CANYON WSA

The Orderville Canyon WSA is located in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. It comprises a portion of the East Virgin River watershed. Orderville Canyon drains into the North Fork of the Virgin River inside of Zion National Park. The WSA itself contains only ephemeral and intermittent stream channels. There are no perennial waters. No seeps, springs, or water developments are known to exist within the WSA boundaries.

The State has declared the WSA water right status as fully appropriated (UDNRE, DWR, 1988). Surface and groundwater sources are closed to further water right applications. There are no withdrawals present in the WSA. An ongoing water right adjudication is being conducted by the Fifth Judicial District Court for the Virgin River drainage for the general determination of rights to the use of underground and surface water. The NPS is asserting Federal reserved rights for park values in this adjudication.

Water quality standards for the North Fork of the Virgin River as established by the State of Utah are: Class 1C (protected for domestic purposes with treatment), Class 2B (protected for recreational uses excluding swimming), Class 3A (protected for cold water fisheries), and Class 4 (protected for agriculture uses both irrigation and livestock). In addition to assigned use classes, an anti-degradation segment has been assigned to the East Fork of the Virgin River to its headwaters. Water quality within this drainage is mostly affected by the natural geology of the area. Sedimentary sandstones and limestones contribute to dissolved and suspended solids primarily during run-off periods and storm events. Utah's 1986 305(b) Water Quality Assessment Report shows the North Fork Virgin River to have water quality problems for public water supply, secondary contact, and cold water fishery.

Mineral and Energy Resources

The energy and mineral resource rationale summary is given in Table 3. Refer to Appendix 5 in Volume I for a detailed description of the SAI rating system.

There are no known deposits of leasable or locatable minerals in the WSA. No exploration, drilling, or mining activities for minerals is currently occurring in the WSA.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c2	Less than 500 metric tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c4	None
Hydroelectric	f2	c4	.05 to 15 megawatts

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

No minerals currently listed as strategic and critical are known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

This WSA has a low certainty (c1) for the occurrence of small (less than 10 million barrels of oil) oil and gas fields (f2). There are no known structures within or near the WSA that might represent potential exploration targets (SAI, 1982).

No oil and gas leases are presently located in the WSA. Under the current land use plan, all of the 1,750 acres within the WSA are open to oil and gas leasing, although 200 acres are closed to surface occupancy.

• Coal

No coal resources are known to occur within the WSA (Doelling and Graham, 1972). The WSA is 2 miles west of the Kolob coal field. Coal-bearing rocks in the Kolob field, as well as all other fields in southern Utah, are of Cretaceous age and no other coal-bearing rocks with commercial potential are known from this region (Doelling and Graham, 1972). All bedrock of sedimentary origin within the WSA is pre-Cretaceous. Because these rocks are not known to be coal-bearing

ORDERVILLE CANYON WSA

anywhere in the region, SAI (1982) considers the WSA to have no potential for the occurrence of economic deposits of coal.

- Geothermal

No geothermal resources are known to occur within or near the WSA (SAI, 1982). The nearest thermal springs to the WSA are approximately 40 miles to the southwest, and they discharge at temperatures between 20 degrees Centigrade (C) and 42 degrees C (NOAA, 1979).

- Locatable Minerals

No uranium deposits are known to occur within the WSA. The Triassic Chinle and the Jurassic Moenave Formations are the only rock units within the WSA considered favorable for uranium in south-central Utah (USDOE, 1979). According to SAI (1982) only the Moenave Formation in the region is considered favorable for the occurrence of economic deposits of uranium. SAI (1982) speculates that the Moenave Formation within the WSA may contain less than 500 metric tons of uranium oxide. This amount is not considered to be of economic significance.

The Silver Reef District, approximately 30 miles to the southwest, is the closest uranium-producing area to the WSA. This district is known primarily for its past silver production although minor amounts of uranium were obtained from the Springdale Sandstone Member of the Moenave Formation. The Springdale Sandstone Member is estimated to lie at a depth of at least 3,000 feet below the surface of the WSA (Hintze, 1973). Other favorable rock units in the vicinity are included in the Chinle Formation (Shinarump Conglomerate Member), but these rocks lie at a depth of about 4,000 feet below the WSA (Hintze, 1973) and it is doubtful if such deposits could be extracted economically (SAI, 1982).

Several abandoned uranium mines and prospects occur in the basal conglomerate unit of the Dakota sandstone, about a 0.5 mile east of the WSA. No evidence was found to indicate similar deposits occur inside the study area (USDI, USBM, 1987c).

USBM also reported that up to 20 million tons of surface minable deposits of gypsum may occur in the WSA. More accessible deposits occur south and east of the study area.

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. Construction grade sandstone and limestone suitable for agriculture uses also occur in the WSA (USBM, 1987c). These deposits are not unique or economically significant due to the presence of ample similar materials nearby outside the WSA.

Wildlife Including Special Status Species

No crucial or critical habitat is located in the WSA. The WSA occurs in a vegetation transition zone, therefore, it supports a variety of animal species. Approximately 300 vertebrate animal species could inhabit this WSA (USDI, BLM, 1979d). These include 60 species of mammals, 210 species of birds, 20 species of reptiles, seven species of amphibians, and three species of fish.

Raptors may include golden eagle (a BLM sensitive species), bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common species. The bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falcon peregrinus) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony Valleys west of the WSA. Occasional sightings of these birds have been made with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur in the WSA.

An active peregrine falcon nest occurs in Zion National Park east of the WSA. Peregrine falcons have also been reported in the Deep Creek-Goose Creek area and in Taylor Creek Canyon, but nesting is not confirmed. The WSA has an adequate prey base and excellent nesting habitat for the peregrine falcon. No other threatened or endangered species are found in the WSA.

In addition to the two endangered species, 11 Category 2 candidate species may occur in the WSA. These are golden eagle, ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, white-faced ibis, Great Basin Silverspot butterfly, Virgin River montane vole, and Zion snail.

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Big game animals include mule deer, cougar, and perhaps black bear. The WSA is within the boundaries of Deer Herd Unit 58 and provides summer range. Deer hunting pressure is light because access is blocked by private and NPS-administered land.

Cougar activity in the vicinity of the WSA is heavy compared to other areas in Utah. The Orderville Canyon WSA contains cougar habitat and is within Utah Cougar Management Unit 30, Cedar Mountain. Cougar populations and harvest by sport hunters and by the Animal Damage Control program has been higher in this management unit than in any other location in Utah. During the 11-year period, 1977 through 1987, a total of 217 cougars were taken from the Cedar Mountain management unit. This harvest averaged nearly 20 animals per year (UDNRE, DWR, 1988). It has not been determined how many of these may have been taken from within the WSA.

Other game species present in the WSA include moderate populations of cottontail rabbit and moderate populations of mourning dove nesting along riparian areas.

No management facilities or treatments for wildlife have been proposed for the WSA.

Forest Resources

About 78 percent (1,365 acres) of the WSA is composed of the pinyon-juniper woodland. It is characterized by an overstory of pinyon pine, Utah juniper, scattered Gambel's oak, and some Ponderosa pine in suitable habitats. The remainder of the WSA is of a mountain shrub type, with scattered pinyon pine, juniper, Douglas fir, and cottonwood trees.

No commercial forest resources exist in the WSA. Difficulty of access, rugged terrain, and the availa-

bility of more favorable areas nearby have precluded use of forest resources.

Livestock and Wild Horses/Burros

The Orderville Canyon WSA covers parts of two allotments (Zion Park and Orderville Gulch). Neither allotment has any proposed or existing developments. The Zion Park Allotment has 450 acres within the WSA but this acreage is not suitable for livestock grazing. The Orderville Gulch Allotment has 1,300 acres included in the WSA with 24 AUMs available for grazing. Two permittees run cattle on these allotments. Table 4 shows the status of livestock grazing in the WSA.

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 Orderville Canyon WSA (USDA, APHIS, 1988).

Visual Resources

Under BLM's VRM system, the entire Orderville Canyon WSA is rated Class II. This means that changes in any of the four basic elements (form, line, color, and texture) should not be evident. The scenery quality rating for the WSA is Class A. This designation means that it contains outstanding or dominating features. The topography here is steep and rugged with cliffs and deep canyon drainages. Color variations are extreme, with vegetation cover composed of scattered Ponderosa pine and pinyon-juniper woodland with cottonwoods and mountain brush in the bottoms. Refer to Appendix 7 in Volume I for an explanation of the BLM VRM system.

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Zion Park	1,298	450	0	0	None	None	1
Orderville Gulch	4,857	1,300	200	24	40 Cattle	05/16-10/15	1
Total	6,155	1,750	200	24			2

Sources: USDI, BLM, file data

ORDERVILLE CANYON WSA

Cultural Resources

No archaeological, paleontological, or cultural resources have been recorded in the Orderville Canyon WSA. No inventories have been conducted within the WSA, thus, the cultural resource potential of Orderville Canyon is unknown.

Recreation

Recreation use of the Orderville Canyon WSA is limited both by the rugged terrain and the necessity of obtaining access across private land. There are no developed recreation facilities within the WSA.

Approximately 50 percent of the WSA (875 acres) in the tributary canyons and lands above the rim, is open to ORV use. Vehicle use is limited to existing roads and trails in the remainder of the WSA including the Orderville Canyon area. The bulk of the WSA is not accessible to ORVs due to the rugged terrain.

Hunting opportunities are generally poor throughout the WSA. Big game, primarily mule deer, are low in numbers. Upland game species (blue grouse, turkey, band-tailed pigeon, and mourning dove) may be found in the WSA, particularly along riparian areas. The major drawbacks of hunting in the WSA are lack of public access and equal or superior opportunities elsewhere in the region.

The primary sightseeing opportunity in the WSA is geologic in nature. The Orderville Canyon itself is an erosional feature, varying from 300 to 800 feet deep.

Presently the major use of the WSA is an access point into the Zion Canyon system in the adjoining Zion National Park. The NPS at Zion National Park issued permits for 455 people to enter the park through Orderville Canyon in 1981. It is believed that many more enter Zion National Park via Orderville Canyon without bothering to obtain permits. There are probably between 500 to 1,000 visitor days per year. At least 90 percent of this use is attributed to primitive-type recreation and the remaining 10 percent to recreational activities that involve vehicular use such as hunting in the bench area. There are no vehicular ways and the terrain is generally restrictive to vehicular use so this type of activity is very limited.

Land Use Plans

The WSA is managed under the BLM Zion MFP which allows multiple use as discussed in the Description of the No Action/No Wilderness Alternative. 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.

A 120,620-acre proposed wilderness in Zion National Park is contiguous to the WSA on the western border. In the past the NPS has expressed interest in some of the drainages that flow through the park but which originate outside park boundaries. Although the headwaters of Orderville Canyon are located outside the WSA boundary, the NPS believes that the portion of the drainage within the WSA is important to the well-being of the park as a whole. The Statement of Management for Zion National Park is "to maintain the quality and flow of water from all natural water sources that have been traditionally important in serving domestic needs and in perpetuating the Park's ecological communities" (USDI, NPS, 1976). In this light, the NPS has shown interest in the nondevelopment of adjacent lands in order to not impair the park's watershed.

The House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214 (1984), a bill designed to transfer jurisdiction of certain lands, including the Orderville Canyon WSA, from the BLM to the NPS.

In response to the hearing, the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984c). The NPS recommended transfer of 2,080 acres, including the Orderville Canyon WSA to Zion National Park. The rationale for adding 330 acres is to include most of the hollows and gulches in the Orderville Canyon system. In a February 6, 1986, letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the Orderville Canyon WSA was recommended as suitable for inclusion into the adjacent unit of the National Park System. No congressional action has been taken on that recommendation. There are no existing or proposed rights-of-way within this WSA.

The Kane County Master Plan (Kane County Board of Commissioners, 1982) states: "Kane County supports the total concept of multiple-use of lands. We reject

ORDERVILLE CANYON WSA

exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept."

The WSA is BLM-administered public land. There are no State-of-Utah 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 and urging that State lands not be exchanged out of WSAs or wilderness areas. There are no private lands in the WSA.

The Kane County Commission 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 Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987, the population increased to about 4,890. Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 5
Baseline and Projected Population and Employment Growth
Washington and Kane Counties

	1980	1990	2000	2010
<u>Washington County</u>				
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100
<u>Kane County</u>				
Population	4,050	5,2550	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

From 1970 to 1980, the population of Washington County grew from 13,699 to 24,600, an overall increase of about 93 percent. Table 5 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987 the population increased to about 39,720. Population projections indicate that the number of people living

in Washington County in the year 2010 will be about 65,600 for about a 148-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

• Employment

Table 5 shows the baseline and projected total employment for Kane and Washington counties to the year 2010.

Washington and Kane Counties are part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for each MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron Kane, and Washington Counties.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total, while agriculture will decline to 3 percent, mining to less than 1 percent, and government will decline to 18 percent of the total.

• Sales and Revenues

Economic-related activities in the WSA include live-stock production and recreation. Table 7 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

The WSA has one mining claim. Regulations require a \$100 annual expenditure per claim for labor and

ORDERVILLE CANYON WSA

improvements, an undetermined part of which is spent in the local economy. 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.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	0
Mineral Production	0	0
Mining Claim Assessment	100	0
Livestock Grazing	\$480	\$37
Woodland Products	0	0
Recreational Use	\$4,100	0
Total	\$4,680	\$37

Sources: BLM File data and Appendix 9 in Volume I.

^aLocal 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 24 AUMs within the WSA. If all this forage were utilized, it would account for \$480 of livestock sales and \$120 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to the local economy. The WSA's motorized recreational use and related local expenditures are low. They 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. 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 Orderville Canyon WSA is estimated at about 1,000 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Kane and Washington Counties.

The WSA does not generate any Federal revenues from leasable minerals at the present time. Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown. How-

ever, the permittee in the WSA can use up to 24 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$37 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

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 III-A and the Description of the Alternatives section for the Orderville Canyon WSA.

No Action/No Wilderness Alternative

• Impacts on Wilderness Values

Since 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, such as VRM Class II management on all 1,750 acres, 200 acres of oil and gas Category 3, (no surface occupancy), and ORV limitations on 50 percent of the WSA in the canyon areas.

No development or disturbance would be expected that would affect wilderness values.

The 2 to 7 percent increase in visitor use that would occur would not be expected to significantly reduce wilderness values because use would be mostly primitive in nature and would be done in conjunction with the contiguous NPS lands. Any ORV use would be restricted to the bench areas, and terrain would further restrict it, so that little conflict with wilderness values is anticipated. This alternative would not complement the NPS proposal of wilderness designation for the adjacent Zion National Park.

Conclusion: Wilderness values would not be protected by wilderness designation. No disturbances that would affect wilderness values are anticipated in the foreseeable future.

ORDERVILLE CANYON WSA

All Wilderness Alternative (Proposed Action) (1,750 Acres)

• Impacts on Wilderness Values

Designation and management of all 1,750 acres as wilderness would preserve the wilderness values in the 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 protected on all 1,750 acres. Solitude would be protected on approximately 1,167 acres that meet and 583 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 1,167 acres that meet and 583 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 plant and animal species, and other wildlife commonly associated with wilderness) would also be protected.

There are no valid existing rights which if developed could result in disturbance and loss of wilderness values. Wilderness designation of this WSA would complement the NPS wilderness proposal for the adjacent portion of Zion National Park.

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

Conclusion: Wilderness values would be preserved throughout the WSA.

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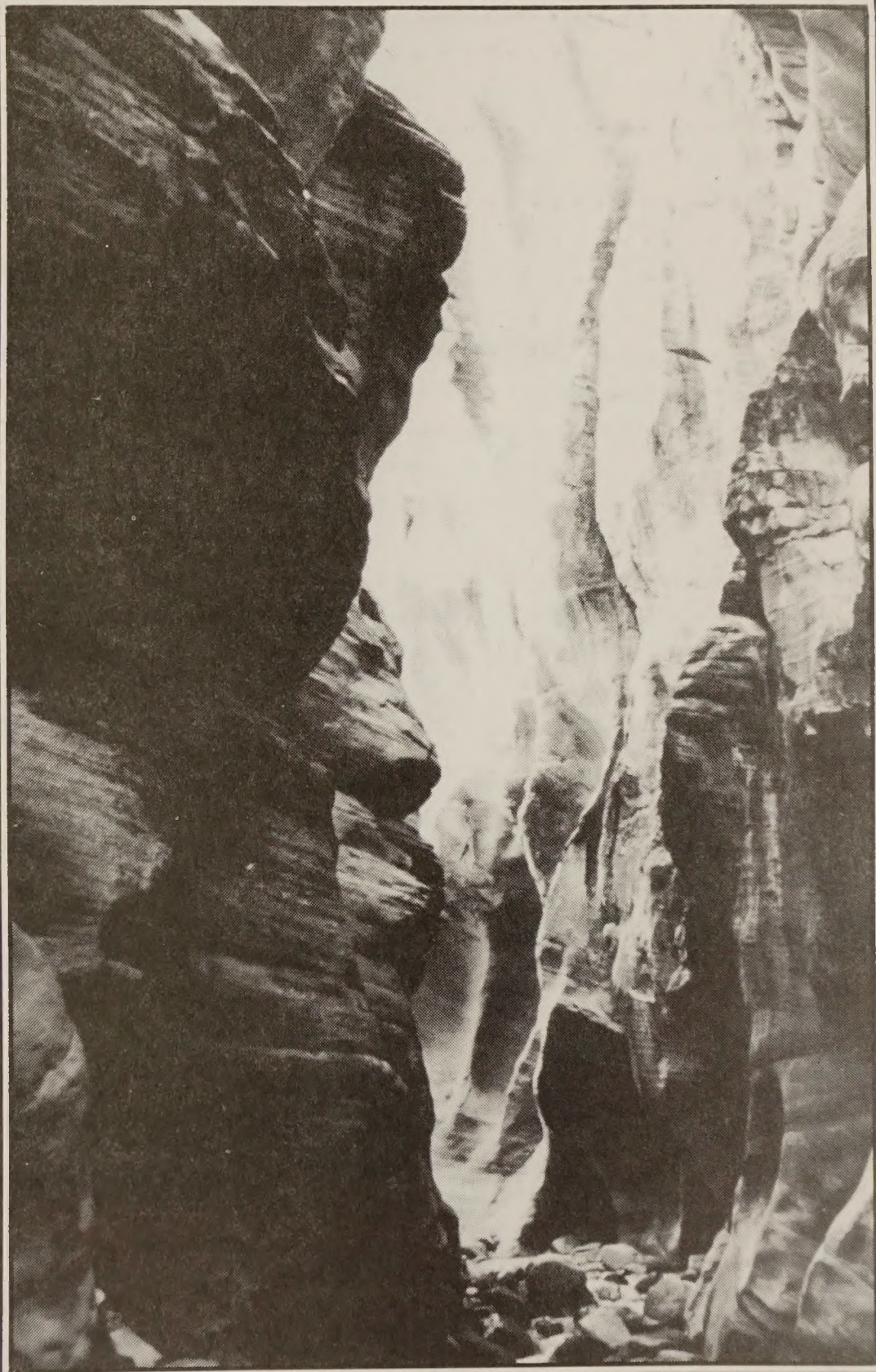
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Parunuweap Canyon WSA



PARUNUWEAP CANYON WSA

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PARUNUWEAP CANYON WSA

(UT-040-230)

INTRODUCTION

General Description of the Area

The Parunuweap Canyon WSA includes a portion of the East Fork of the Virgin River between Mt. Carmel Junction and Zion National Park. The western boundary of the WSA is contiguous with the park. The northern boundary is adjacent to private lands south of Utah State Highway 15 above the White Cliffs. The southern boundary generally follows improved roads in Elephant Cove and on Block Mesa. The WSA is approximately 25 miles northwest of Kanab, Utah, in Kane County. There are approximately 30,800 acres of public land and 1,253 acres of State land located within the WSA boundary. The WSA is managed by the BLM Cedar City District Kanab Resource Area.

The topography of the WSA is dominated by the East Fork of the Virgin River and its side drainages which flow from east to west through the WSA. The dominant vegetation is pinyon-juniper woodland.

Average annual precipitation in the Parunuweap Canyon WSA is approximately 12 to 14 inches. Highest monthly precipitation occurs from July through December, during which time two-thirds of the yearly total falls. Intensive thunderstorms are common during the summer months. Temperatures vary greatly with aspect and altitude. July and January are the warmest and coldest months, respectively. July temperatures range from 50 to 100 degrees Fahrenheit (F), while the January range is from 0 to 50 degrees F. The weather data used are from the U.S. Weather Bureau recording station in Kanab, Utah.

Changes for the Final EIS

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

1. A small portion of the boundary of the WSA (T. 42 S., R. 9 W., sec. 2) has 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 Large Partial Wilderness Alternative (Proposed Action) analyzed in the Final EIS would designate 3,788 acres more than the Partial Wilderness Alternative presented in the Draft EIS. The partial is being expanded in the southeast portion of the WSA to include additional areas which contain outstanding wilderness characteristics.

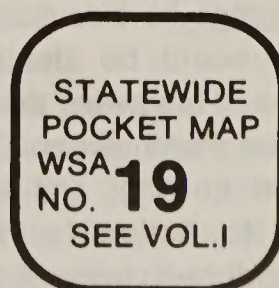
3. The anticipated surface disturbance presented in the Draft EIS (2,500 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments 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 2,500 acres reported in the Draft EIS to 307 acres of surface disturbance for the Final EIS.

4. As part of the 2,500 acres of disturbance identified in the Draft EIS, a 1,800-acre pinyon-juniper woodland chaining and seeding within the WSA was projected to restore depleted browse species for mule deer. However, BLM does not anticipate receiving funding levels to accomplish 1,800 acres of chaining in this area. As a result, the land treatment proposal has been revised to 300 acres in the Final EIS to reflect realistic funding projections.

Specific Issues Identified Through Scoping and Public Comment

• Issues Considered But Not Analyzed In Detail

In addition to those issues considered but eliminated from detailed analysis in the Introduction to Volume III-A (i.e., air quality, geology and topography, water rights, and land use plans and policies), the following issues or impacts were considered but are not analyzed in detail in the Final EIS for the reasons described below.



PARUNUWEAP CANYON WSA

1. Soils: The 300-acre pinyon-juniper woodland chaining and seeding would cause a temporary (2 to 3 year) increase in soil loss. It is projected that all disturbance would occur in areas with a moderate erosion class and that erosion conditions would increase from 390 cubic-yards per year to 810 cubic-yards per year. Therefore, if the proposed chaining and seeding were completed, soil loss would increase by 420 cubic-yards (1 percent) over current annual soil loss until new seedlings were established in 2 to 3 years. Then a reduction in soil loss from current levels could be expected. Therefore, impacts to soils are not considered significant issues for analysis in the Final EIS.

2. Reservoir Proposal: Even though the East Fork of the Virgin River Dam has been proposed and may be considered in the future, BLM projects that it would not be constructed in the foreseeable future due to its close proximity to Zion National Park and because Federal reserved water rights are being asserted by the NPS downstream of the proposed reservoir site which would likely preclude development. In addition, the Virgin River downstream of the WSA is critical habitat for endangered fish that must be protected under the Endangered Species Act.

3. Forest Resources: The pinyon-juniper woodland vegetation type covers almost 98 percent of the WSA. If the 300-acre pinyon-juniper woodland chaining and seeding were completed, it would affect less than 1 percent of the pinyon-juniper woodland within the WSA. Demand for pinyon pine and juniper fuelwood within the WSA would continue at present rates. There are large areas suitable for commercial or non-commercial pinyon-juniper woodland harvest outside the WSA that absorb the majority of demand due to better access. Therefore, impacts on forest resources are not analyzed further in the Final EIS.

4. Visual Resources: As discussed above, 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. In the Final EIS, impacts on visual resources are addressed as part of the Wilderness Values section.

5. 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 Parunuweap Canyon WSA (none of National Register quality), and surface disturbance estimates for the No Action/No Wilderness Alternative have been reduced from 2,500 acres to 307

acres for the Final EIS. In addition, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance. Given these conditions, impacts on cultural resources are not significant issues for the Parunuweap Canyon WSA.

6. Minerals: No mineral exploration or development has been projected in the foreseeable future. Refer to Appendix 6 in Volume I for mineral exploration and development projections. There are no existing coal or oil and gas leases nor mining claims within the WSA. Potential oil and gas deposits are small with a low certainty that they exist. The quality of the coal is poor with moderate to high sulfur content. Projected uranium deposits are small with a very low certainty of occurrence and more accessible deposits of gypsum and salable minerals exist outside the WSA. For these reasons, it is projected that mineral exploration or production would not occur in the WSA with or without wilderness designation. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

7. Access Across Elephant Cove: BLM has cherry-stemmed 4.5 miles of an existing route in the vicinity of Elephant Cove. The remaining 4 miles of the route is identified by BLM as a vehicular way. Kane County asserts that the entire route from Elephant Cove to Foote Ranch is a "public highway." This is based on a 1959 State Court decree: Complaint No. 705 and Civil No. 22X in Kane County, which declares the route to be a "public highway" across private property and infers that the "public highway" does not end on the private land but continues onto public lands. The Interior Board of Lands Appeals' (IBLA) Decision No. 81-648 affirmed BLM's decision to cherry-stem 4.5 miles of the route, not on the basis of the court decree, but because that portion of the route is substantially noticeable. According to IBLA, the extent to which the State Court decree may have established a "public highway" on the other 4 miles of the route should be addressed by BLM during the study phase of wilderness review. However, the legal status of the "public highway" and its implications for the public lands is yet to be determined through challenges to the court decree. Therefore, the travel route and its status as a "public highway" remains an issue to be resolved. This issue is identified here, but is not discussed in greater detail in the Final EIS. Because the 4-mile route is substantially unnoticeable on the ground, BLM assumes that it is a "way" or trail that would be available only to foot or horseback travel

PARUNUWEAP CANYON WSA

should the area be designated as wilderness, unless determined otherwise through future legal action.

8. Lands and Economic Conditions: There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impacted with or without wilderness designation. Refer to the No Action/No Wilderness Alternative and the Water Resources section for a discussion of the East Fork of the Virgin River Dam proposal.) Because no economic developments are projected with or without wilderness designation, impacts on economic conditions or activities are not analyzed in detail in the Final EIS.

• Issues Analyzed in Detail

The significant issues for the Parunuweap 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 water resources.
4. Impacts on wildlife habitat and populations including special status species.
5. Impacts on livestock management.
6. Impacts on recreation

Comments made during the public comment period for the Draft EIS centered mainly on the need for and adequacy of:

1. Rationale for the BLM proposed action.
2. The need for further inventories of resource values and inconsistencies in baseline data.
3. BLM's assessment of wilderness values, visual resources, and mineral values.
4. BLM's analysis of impacts and the Washington County Conservancy District reservoir proposal.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis

and Volume VII-C, Section 19, for responses to specific comments about the Parunuweap Canyon WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add approximately 2,240 acres along the southern, southwestern, and eastern borders of the WSA while deleting 320 acres in the Harris Mountain and Elephant Cove areas were suggested by the public during the public comment period for the Draft EIS.

About 1,440 acres of the added area is State land and is not included in the wilderness study (refer to Volume VII-B, General Comment Response 6.4). The 800 acres of public lands outside the WSA boundary were considered and found ineligible for study 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). The proposed deletions would not result in impacts appreciably different from BLM's Large Partial Wilderness Alternative and, therefore, offer no major distinctions beyond the alternatives analyzed in the Final EIS.

Alternatives Analyzed

Four alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (30,800 acres); (3) Large Partial Wilderness (Proposed Action) (17,888 acres); and (4) Small Partial Wilderness (7,400 acres). A description of BLM's management practices 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 III-A are also applicable.







• No Action/No Wilderness Alternative

With this alternative, none of the 30,800-acre Parunuweap 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 area would continue to be managed in accordance with the Kanab-Escalante Grazing Management EIS and the Vermillion MFP (USDI, BLM, 1980a and 1981b). The 1,253 acres of State land within the WSA (refer to Map 1) have not been identified in the MFP for special

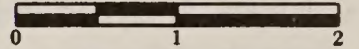
PARUNUWEAP CANYON WSA

Map 1 LAND STATUS Parunuweap Canyon WSA UT-040-230

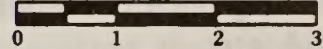
Legend

-  WSA Boundary
-  Zion National Park Boundary
-  State Land Within or Adjacent to WSA
-  National 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

T. 41 S.

T. 42 S.

T. 43 S.

R. 9 W.

R. 8 W.

PARUNUWEAP CANYON WSA

Federal acquisition through exchange or purchase. No private or split-estate lands are located in the WSA. The figures and acreages given are for Federal lands only.

- Management Conditions and Constraints

All 30,800 acres would remain open to mineral location and sale. Although no mining claims now exist in the WSA, development work, extraction, and patenting would be allowed on any potential future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) without concern for wilderness values. Oil and gas leases have been phased out of the WSA, and no leases currently exist. About 27,769 acres would be open to future leases and they could be developed under leasing Category 1 (standard stipulations) on 20,186 acres and Category 3 (no surface occupancy) on 7,583 acres. The remaining 3,031 acres in the WSA would be closed to oil and gas leasing (Category 4). Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development are projected in 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 exploration and development projections.

The present domestic livestock grazing use in the WSA would continue as authorized in the Vermilion MFP and Kanab-Escalante Grazing Management EIS (currently 331 AUMs). Use of the existing range developments (5.6 miles of fences, one cattleguard, four reservoirs, and one corral) would continue. New rangeland developments could be implemented without wilderness considerations. Proposed developments include one spring development, one catchment, one reservoir, nine troughs, and 3.75 miles of pipeline. There are no existing or proposed vegetation treatment projects for the benefit of livestock within the WSA. The 16 miles of ways would remain open for livestock management purposes.

Use, maintenance, and development of facilities and developments for wildlife, water resources, etc., could be allowed if in conformance with the MFP. It is proposed to chain and seed 300 acres of pinyon-juniper woodland in the WSA to improve mule deer habitat.

Approximately 23,700 acres in the WSA would remain open to ORV use while on 7,100 acres ORV use would be limited to designated roads and trails. The 16 miles of ways and 5 miles of cherry-stemmed roads would be available for vehicular access. As a matter of practice, ORV use is not possible in the WSA north of the Virgin River due to terrain and surface features. Therefore, vehicles would continue to be restricted to existing access routes and to the flat areas south of the Virgin River in the vicinity of Elephant Cove.

The entire WSA would remain open to woodland product harvest. It is known that the Elephant Cove and Block Mesa areas are used for woodland harvest consisting of selective removal of dead-and-down wood for private use. It is projected that this use would continue, but no commercial harvest is anticipated because historical use has been noncommercial and is not expected to change.

The WSA would continue to be managed under VRM Class II on 17,200 acres and Class IV on 13,600 acres as directed in the MFP.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment section, implementation of the No Action/No Wilderness Alternative would result in approximately 307 acres of surface disturbance. About 300 acres of the projected disturbance would result from a pinyon-juniper woodland chaining and seeding project in the Elephant Cove area. The remaining 7 acres of disturbance would result from the construction of rangeland projects including one spring development, one catchment, one reservoir, nine troughs, and 3.75 miles of pipeline. These projects would be located on the flatlands south of Parunuweap Canyon. About 2 months would be required to complete these projects including the chaining and seeding. The chaining would be maintained over the foreseeable future to provide browse species for mule deer. All rangeland developments would be in VRM Class IV areas. No other rangeland, wildlife habitat, watershed projects, or other developments are planned. No locatable or leasable mineral resource exploration or development is projected. ORV disturbance would occur in the foreseeable future in the

PARUNUWEAP CANYON WSA

vicinity of Elephant Cove. As much as 10 percent of the WSA would be disturbed.

Recreation use would increase over the current estimated annual use of 1,400 visitor days at a rate of 2 to 7 percent per year. As much as 75 percent of the increased use would involve vehicles on existing access routes and in the vicinity of Elephant Cove.

- All Wilderness Alternative

With this alternative, all 30,800 acres of the Parunuweap 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 two State sections (1,253 acres) within the WSA which would remain in State ownership (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for 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 valid 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 for wilderness values. BLM does not anticipate location or development of mining claims with this alternative. 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.

Present domestic livestock grazing would continue as authorized in the Vermillion MFP. The 331 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of range developments existing at the time of designation (presently 5.6 miles of fence, one cattleguard, four reservoirs, and one corral) could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for range and/or wilderness resource protection and management, and if consistent with wilderness protection standards (refer to Appendix 1 in Vol-

ume I). These include 3.75 miles of pipelines, one spring development, nine troughs, and one water catchment. Construction of the livestock reservoir would not be allowed.

The planned 300-acre chaining and seeding to improve mule deer habitat would not be allowed.

The entire 30,800-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 16 miles of existing vehicular ways in the WSA would not be available for vehicular use except as indicated above. Approximately 5 miles of cherry-stemmed road would remain open to vehicular traffic. About 5 miles of the WSA boundary follow existing paved and dirt roads and would also remain open to vehicular travel.

- Action Scenario

BLM projects that surface disturbance would be limited to 5 acres associated with the construction of the rangeland projects described above. The livestock reservoir and chaining and seeding for wildlife would not be allowed. The developments would be designated and installed consistent with wilderness protection standards. No other rangeland, wildlife habitat, watershed, or other projects are planned following wilderness designation. No disturbance would be projected to result from ORV use because vehicular use would not be allowed with this alternative.

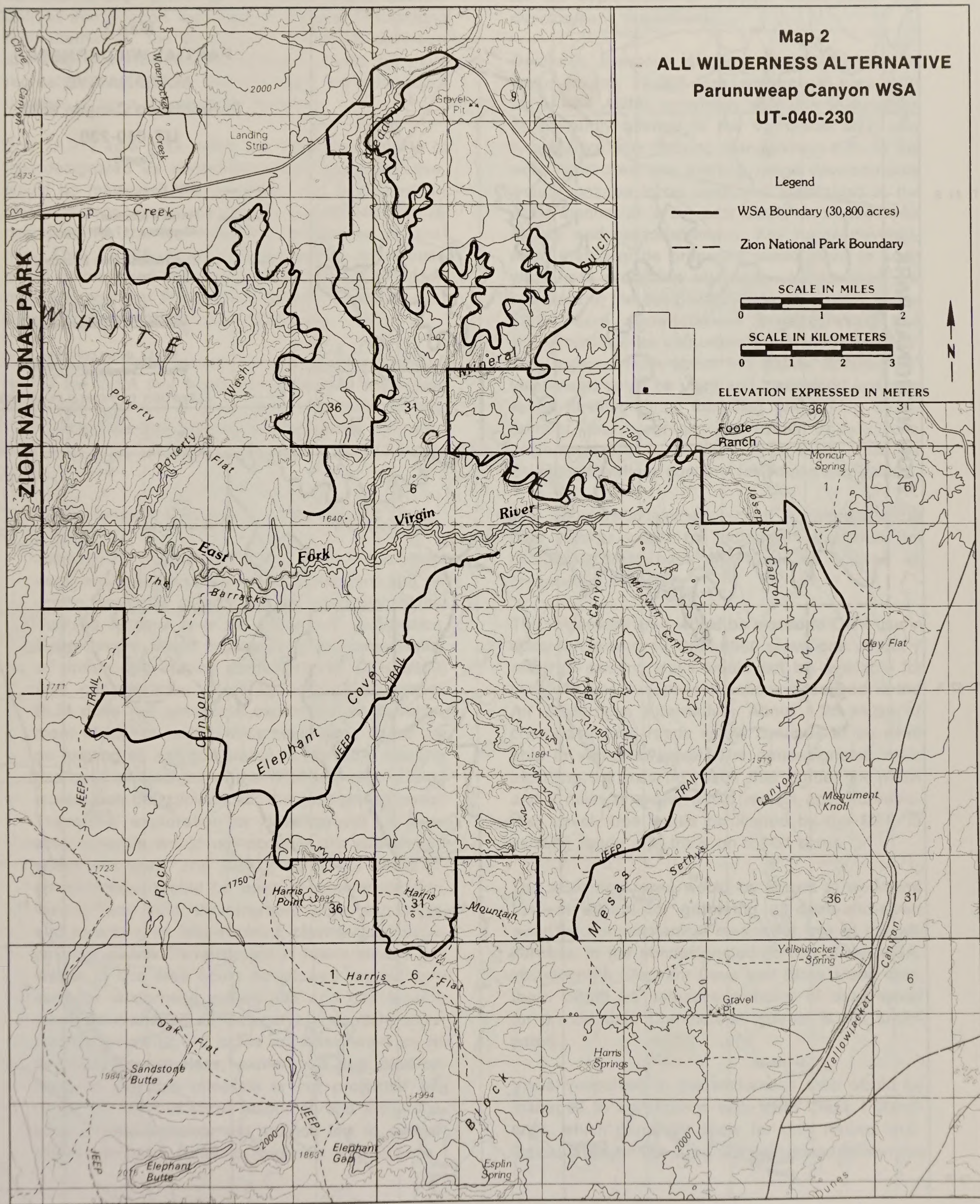
Primitive-type recreation use would be projected to increase over the estimated 350 visitor days of annual primitive recreation use currently occurring at a rate of 2 to 7 percent per year.

- Large Partial Wilderness Alternative (Proposed Action) (17,888 Acres)

For this alternative, 17,888 acres of the Parunuweap Canyon WSA would be designated as wilderness (refer to Map 3).

The objective of this alternative is to analyze as wilderness those portions of the WSA that have the best wilderness values. Wilderness values are of a higher quality in areas where outstanding opportunities for

PARUNUWEAP CANYON WSA



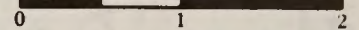
PARUNUWEAP CANYON WSA

Map 3
PARTIAL WILDERNESS
ALTERNATIVE
Parunuweap Canyon WSA
UT-040-230

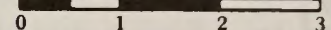
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- WSA Boundary
 Partial Wilderness
 Alternative (17,888 acres)
 Zion National Park Boundary

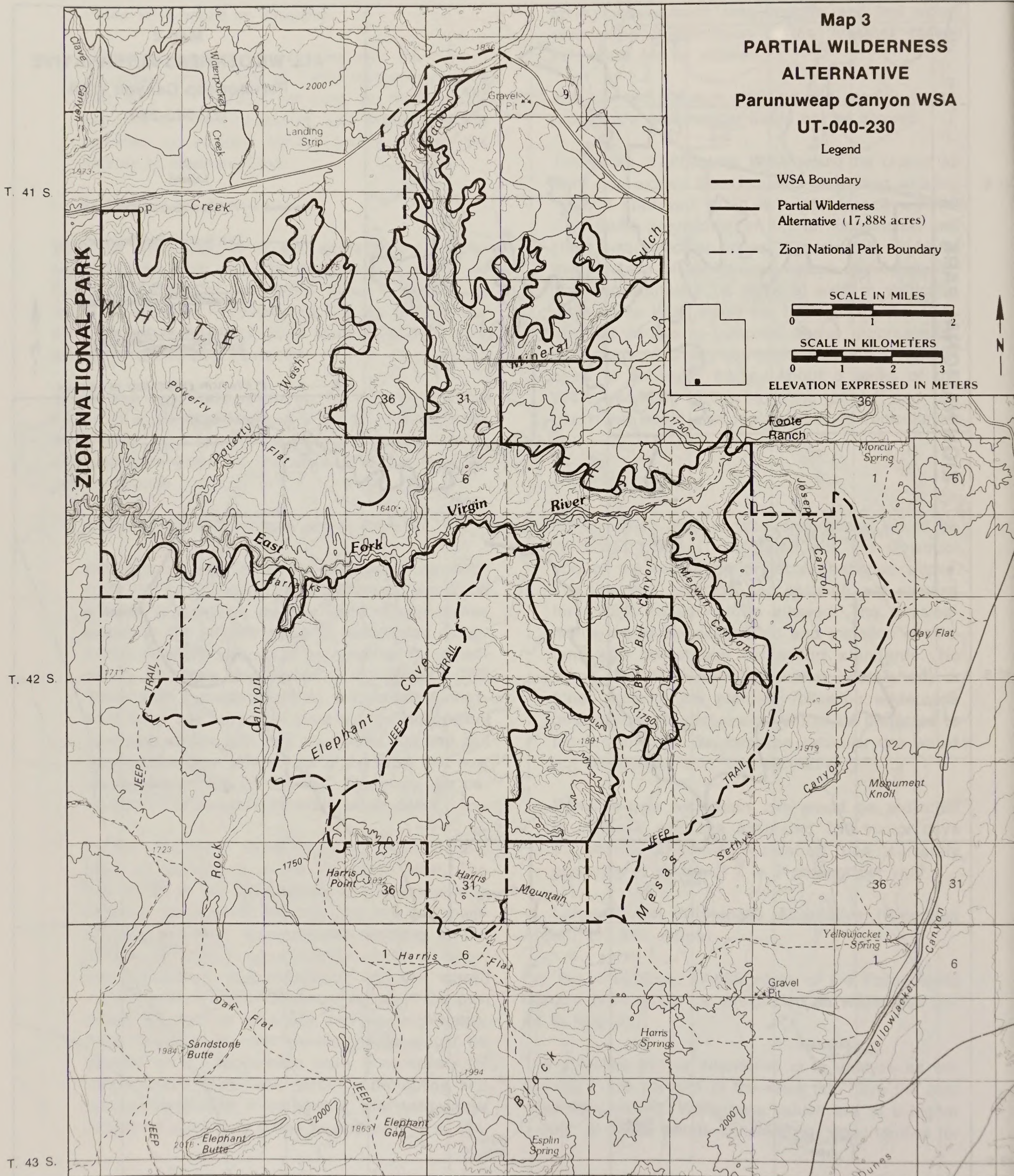
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 9 W.

R. 8 W.

PARUNUWEAP CANYON WSA

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/or primitive recreation, and special features were included where possible within a manageable boundary.

The 12,912-acre area within the WSA, but outside of that designated as wilderness under this alternative, would be managed in accordance with the Vermillion MFP and Kanab-Escalante Grazing Management EIS as described for the No Action/No Wilderness Alternative. The 17,888 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.

There is one State section (613.2 acres) in the portion of the WSA that would be designated wilderness which would remain in State ownership (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands only.

• Management Conditions and Constraints

Although no mining claims now exist in the wilderness area, development work, extraction, and patenting would be allowed on any valid 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. BLM does not anticipate exploration or development of claims in the wilderness area. There are no existing oil and gas leases in the WSA. Leasing has been phased out of the WSA and new leasing would not be allowed in the wilderness area. Therefore, exploration or development of leasable minerals would not occur in the designated wilderness area. The 12,912 acres not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of future mining claims could occur on valid claims. Development of future oil and gas leases in this area could be allowed without concern for wilderness values. Oil and gas leasing would be managed as Category 1 (standard stipulations) on all 12,912 acres not designated as wilderness. Nevertheless, exploration and development of leasable minerals is not projected because the level of known resources and the probability of their development are too low to support that assumption. Refer to Appendix 6 in Volume I

for an explanation of mineral exploration and development projections.

Domestic livestock grazing would continue to occur in the 17,888-acre wilderness area with about 184 AUMs remaining available to livestock as presently allotted in the Vermillion MFP and Kanab-Escalante Grazing Management EIS. In the wilderness area, the existing range developments would continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. Any future development that may be proposed would have to meet wilderness protection standards. No facilities are proposed in the designated wilderness area. In the 12,912-acre nonwilderness area, grazing use would continue as authorized in the MFP and EIS. This area contains about 147 AUMs. Existing developments could be used and maintained and new range developments, including one spring development, one reservoir, nine water troughs, one catchment, and 3.75 miles of pipeline, could be developed without concern for wilderness values.

The 300-acre chaining planned to improve mule deer habitat would be located in the area not designated wilderness and would be allowed as proposed in the MFP.

The wilderness area would be closed to ORV use in accordance with 43 CFR 8560 provisions. About 7 miles of existing ways would not be available for vehicular use except in situations described in the All Wilderness Alternative. About 1.25 miles of cherry-stemmed roads would continue to be available to vehicular travel. The nondesignated area, including the existing roads that border the WSA and 9 miles of ways, would remain open to vehicular travel. Use would be limited by the MFP to existing roads and trails on 7,100 acres.

The wilderness area would be closed to woodland harvest except for gathering of dead-and-down wood by nonmechanical means for use in the wilderness. In the nondesignated portion of the WSA, including the Elephant Cove and Block Mesa area, there would be selective removal of dead wood for private use. Commercial harvest is not anticipated.

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

PARUNUWEAP CANYON WSA

would be managed as VRM Class II on 3,050 acres and Class IV on 9,862 acres.

- Action Scenario

No surface disturbance is projected for the designated portion of the WSA. Mineral location and leasing would not be allowed and no mineral resource exploration or development would occur following wilderness designation. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

It is projected that 307 acres of surface disturbance would occur in the nondesignated portion of the WSA. This disturbance would result from the wildlife and rangeland projects, including the 300-acre chaining and seeding described in the No Action/No Wilderness Alternative. No other rangeland, wildlife habitat, watershed projects, or other developments are planned. No locatable or leasable mineral exploration or development is expected. ORV disturbance would occur in the foreseeable future in the vicinity of Elephant Cove. As much as 10 percent of the WSA would be disturbed.

Recreation use would increase over the current estimated annual use of 1,400 visitor days at a rate of 2 to 7 percent per year. As much as 75 percent of the use would involve vehicles on existing access routes and in the vicinity of Elephant Cove.

- Small Partial Wilderness Alternative (7,400 Acres)

For this alternative, 7,400 acres of the Parunuweap Canyon WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to identify and analyze those outstanding wilderness characteristics which are located closest to Zion National Park. The 23,400-acre area within the WSA, but outside of that designated as wilderness, would be managed in accordance with the Vermillion MFP and Kanab-Escalante Grazing Management EIS 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 for the All Wilderness Alternative.

There are no State, private, or split-estate lands involved in the area that would be designated with the Small Partial Wilderness Alternative. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

Although no mining claims now exist in the wilderness area, development work, extraction, and patenting would be allowed on any valid claims that may be located prior to wilderness designation. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) with consideration of wilderness values. BLM does not anticipate locatable mineral exploration or development in this area. There are no existing oil and gas leases within the designated area and none would be issued. Exploration or development of leasable minerals would not occur in the designated area. The 23,400-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of future mining claims could occur in the area if claims are valid. None are expected. There are no existing oil and gas leases, but development of future leases could be developed without concern for wilderness values. The area not designated wilderness would be managed as oil and gas leasing Category 1 (standard stipulations) on 17,517 acres and Category 3 (no surface occupancy) on 5,883 acres. Nevertheless, BLM does not anticipate exploration or development of leasable minerals in the WSA. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

Domestic livestock grazing would continue to occur in the 7,400-acre wilderness area. About 80 AUMs in the designated area would remain available to livestock as presently allotted. The use and maintenance of range developments located in the wilderness area could continue in the same manner as in the past, based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for range and/or wilderness resource protection and management, and if consistent with wilderness protection standards. None of the proposed range developments would be in the designated area. In the 23,400-acre non-wilderness area, grazing use would continue as authorized in the MFP and grazing EIS (251 AUMs).

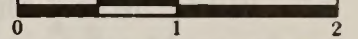
PARUNUWEAP CANYON WSA

Map 4 PARTIAL WILDERNESS ALTERNATIVE UT-040-230

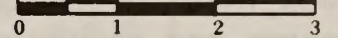
Legend

- WSA Boundary
- Partial Wilderness Alternative (7,400 acres)
- Zion National Park Boundary

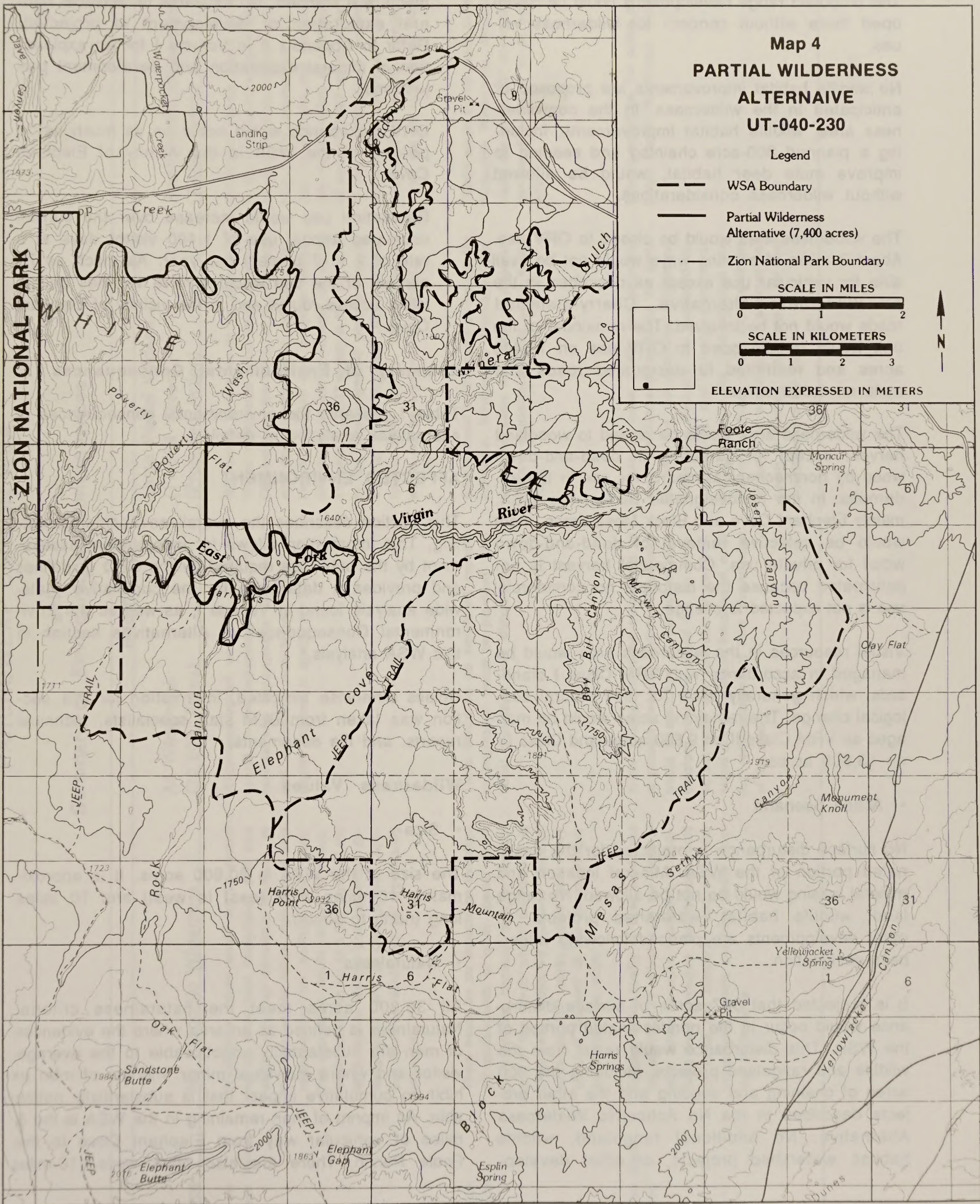
SCALE IN MILES



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ELEVATION EXPRESSED IN METERS



R. 9 W.

R. 8 W.

PARUNUWEAP CANYON WSA

The proposed range developments could be developed there without concern for wilderness values.

No wildlife habitat improvements are proposed or anticipated in the wilderness. In the nonwilderness area, wildlife habitat improvements, including a planned 300-acre chaining and seeding to improve mule deer habitat, would be allowed without wilderness considerations.

The wilderness area would be closed to ORV use. About 2 miles of existing ways would not be available for vehicular use except as described in the All Wilderness Alternative. Cherry-stemmed roads would not be involved. The remainder of the unit would remain open to ORV use on 18,400 acres and restricted to designated roads and trails on 5,000 acres.

The wilderness area would be closed to woodland harvest except for gathering of dead-and-down wood by nonmechanical means for use in the wilderness. In the nondesignated part of the WSA, mainly Elephant Cove and Block Mesa areas, there would be selective removal of dead-and-down wood for private use. Commercial harvest is not anticipated because the historical noncommercial use is not expected to change.

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 on 9,800 acres and Class IV on 13,600 acres.

- **Action Scenario**

No surface disturbance is projected for the designated portion of the WSA. Mineral location and mineral leasing would not be allowed. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

It is projected that 307 acres of surface disturbance would occur in the nondesignated portion of the WSA. This disturbance would result from the wildlife and rangeland projects, including the 300 acres of chaining and seeding and the other projects described in the No Action/No Wilderness Alternative. No additional rangeland, wildlife habitat, watershed projects, or other develop-

ments are planned. No locatable or leasable mineral exploration or development is projected. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

ORV disturbance would occur on as much as 10 percent of the WSA in the vicinity of Elephant Cove.

Recreation use would increase over the current estimated annual use of 1,400 visitor days at a rate of 2 to 7 percent per year. As much as 75 percent of the use would involve vehicles on existing access routes and in the vicinity of Elephant Cove.

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 section 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 is 30,800 acres. It is approximately 10 miles wide (east to west) and 10 miles long (north to south).

- **Naturalness**

All 30,800 acres meet the naturalness criteria. Naturalness is defined as an area where the evidences of man are substantially unnoticeable to the average visitor and where individual minor imprints of man exhibit no cumulative impact that is substantially noticeable. An imprint of man remaining in the WSA is the 3 miles of vehicular way from Elephant Cove to the Foote Ranch. There are also other ways (16 miles

PARUNUWEAP CANYON WSA

Table 1
Summary of Environmental Consequences

Alternatives				
Resource	No Action/No Wilderness	All Wilderness (30,800 Acres)	Large Partial Wilderness (17,888 Acres) (Proposed Action)	Small Partial Wilderness (7,400 Acres)
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 lost or reduced in quality on up to 3,387 acres of the WSA due to wildlife and rangeland developments, and to ORV activity. Special features would not be significantly affected.	Wilderness values would be preserved overall. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on 5 acres.	Wilderness values would be preserved in the designated area which is about 58 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be lost or reduced on up to 11 percent (3,387 acres) of the WSA, all in the nondesignated portion due to wildlife and rangeland developments and to ORV activity. Special features would not be significantly affected.	Wilderness values would be preserved in the designated area, which is about 25 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be lost or reduced on up to 11 percent (3,387 acres) of the WSA, all in the nondesignated portion, due to wildlife and rangeland developments and to ORV activity. Special features would not be significantly affected.
Impacts on Vegetation	There would be no impacts on threatened, endangered, or other special status plant species because they do not occur in the areas where disturbance is projected. Projected surface disturbance on 307 acres would alter only about 1 percent of the pinyon-juniper woodland in the WSA.	There would be no significant impacts as vegetation would be provided additional protection from disturbance.	Effects would be the same as for the No Action/No Wilderness Alternative because the same 307 acres of projected surface disturbance would occur in the WSA.	Effects would be the same as for the No Action/No Wilderness Alternative because the same 307 acres of projected surface disturbance would occur in the WSA.
Impacts on Water Resources	Present water quality or uses would not be significantly affected in the foreseeable future because increases in sediment from projected disturbance would be small and temporary and water developments would continue under existing constraints.	Water quality would be maintained as at present because surface disturbance would be reduced. Construction of a livestock reservoir would not be allowed but water use upstream of the WSA would not be affected because of existing requirements for flow downstream of the area.	Effects on water quality and proposed water developments would be the same as with the No Action/No Wilderness Alternative because the proposed developments and related disturbance would occur in the nondesignated portion of the WSA. Water uses upstream of the WSA would not be affected because of existing requirements for flow downstream of the area.	Effects would be the same as for the Large Partial Wilderness Alternative.

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Table 1 (Continued)
Summary of Environmental Consequences

Alternatives				
Resource	No Action/No Wilderness	All Wilderness (30,800 Acres)	Large Partial Wilderness (17,888 Acres) (Proposed Action)	Small Partial Wilderness (7,400 Acres)
Impacts on Wildlife Habitat and Populations	Disturbance of 307 acres would temporarily disturb wildlife. However, the 300-acre vegetation treatment would provide additional browse for mule deer and ecotones for other species. Development of water sources would also benefit wildlife.	Designation would provide all species with additional protection from habitat disturbance and opportunities for solitude but would preclude benefits to big game from 300 acres of proposed habitat improvement.	Impacts would be the same as with the No Action/No Wilderness Alternative.	Impacts would be the same as with the No Action/No Wilderness Alternative.
	Livestock management and grazing levels would not be affected. Livestock distribution would be improved by range-land development.	Restrictions on access to 16 miles of ways would change livestock management and supervision and would inconvenience eight livestock permittees. A proposed reservoir that would improve livestock distribution would be foregone.	Impacts would be about the same as with the All Wilderness Alternative because access would be restricted on 7 of the 16 miles of existing ways. However, all proposed developments would be in the nondesignated area.	Impacts would be the same as with the No Action/No Wilderness Alternative because access would be restricted on only 2 of the 16 miles of existing ways and all proposed developments would be in the nondesignated area.
Impacts on Recreation	The quality of primitive recreation opportunities would be reduced on 11 percent (3,387 acres) by continued use of ORVs on existing routes and in the vicinity of Elephant Cove. Both primitive and motorized recreational use would increase but the quality of the primitive opportunity would decrease.	The quality of primitive recreation opportunities would be protected and enhanced. However, recreational use of motorized vehicles would be eliminated. This use presently accounts for 50 to 75 percent of recreation use in the WSA. Overall visitation would decline initially.	The quality of primitive recreation opportunities would be protected and enhanced in the designated area, but adversely impacted in the nondesignated area due to continued ORV use. There would be some adverse impact to ORV use through closure of 7 miles of vehicular way. However, the Elephant Cove area would be available for ORV use. Both primitive and motorized recreational use would increase.	The quality of primitive recreation opportunities would be protected and enhanced in the designated area but would be adversely impacted in the nondesignated area due to continued ORV use. There would be a slight adverse impact to ORV use with the closure of 2 miles of vehicular way. The Elephant Cove area would continue to be available for ORV use. Both primitive and motorized recreational use would increase.

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total), fences, reservoirs, corrals, etc., found within the WSA. These imprints involve less than 1 percent (308 acres) of the WSA.

In the Parunuweap Canyon WSA, the overall high quality of naturalness has not changed since the BLM Intensive Wilderness Inventory (USDI, BLM, 1980b) decision. BLM has not authorized any impairing uses or activities under the BLM's Interim Management Policy (USDI, BLM, 1979c). However, in 1987 10 to 12 acres of pinyon-juniper trees were cleared and the area reclaimed. This trespass activity occurred in the NE1/4 NE1/4 sec. 3, T. 42 S., R. 8 W. by an owner of adjacent private land.

- Solitude

The WSA affords outstanding opportunities for solitude that are most closely identified with both topographic and vegetation screening situations. Neither the size nor the configuration of this WSA enhance or detract from the outstanding opportunities for solitude that are present.

The major screening elements contributing to the outstanding solitude opportunity are the numerous canyons cutting into benches, cliffs, and mesas and the vegetation screening resulting from the dense riparian growth in the canyons. The presence of these elements varies throughout the WSA. The WSA contains four distinct topographic features: White Cliffs-Poverty Flat, The Barracks or Parunuweap Canyon, Elephant Cove, and the Block Mesas. Each area provides opportunities for solitude to a different degree.

The White Cliffs-Poverty Flat area includes that portion of the WSA north of the East Fork of the Virgin River Canyon. The White Cliffs are an extension of the cliffline above the river in Zion National Park. In the WSA, however, the White Cliffs are set back from the canyon of the East Fork (The Barracks) by the intervening Poverty Flat bench. Where it consists of unbroken canyons, the White Cliffs escarpment is very irregular and characterized by points, outlying buttes, and short penetrating canyons. In the upper Mineral Gulch (Burnt Flat Gulch) drainage, the escarpment ends and the Navajo Sandstone is replaced by the Carmel Formation. The area below the cliffs is tilted toward the river canyon with elevations at the base of the White Cliffs averaging 800 feet higher than the rim at The Barracks. In general, the Poverty Flat bench is an extremely rugged and broken area with sandstone exposures and outcropping extending

between canyons. Ponderosa pine predominates on the rocky areas.

In the western portion of this area, a large unnamed canyon with several branches extends northward to the base of the White Cliffs. The Poverty Wash Canyon bisects Poverty Flat in a northeasterly direction and then breaks through the White Cliffs. The eastern edge of this area is delineated by the Mineral Gulch and Meadow Creek Canyon system which cuts completely through the eastern end of the White Cliffs escarpment. Although these canyons do not possess perennial streams, the bottoms often exhibit dense riparian growth. The canyons are also meandering and most of them possess narrows. Meadow Creek Canyon and Mineral Gulch are large deep canyons. At its confluence with Meadow Creek, Mineral Gulch is almost 1 mile wide and 600 feet in depth. The opportunity for solitude in the White Cliffs-Poverty Flat section is outstanding because of these superior topographic screening situations. Vegetation screening also contributes to the opportunity in certain canyon situations. On either side of the lower Poverty Wash Canyon, several flat isolated benches exist with a moderate cover of pinyon-juniper woodland. The opportunity is not outstanding in these areas. Outstanding opportunities for solitude are present on approximately 8,600 acres of this portion of the WSA.

The eastern part of the WSA includes a portion of the Block Mesa landform. The Block Mesas are an elevated platform of Navajo Sandstone capped with the Carmel Formation. Elevations in this portion of the WSA range from 5,800 feet to a high point on Harris Mountain of 6,500 feet. The perimeter of the Block Mesas is a 250 to 350 foot high Navajo Sandstone cliff, an extension of the White Cliffs. Although the upper Carmel Formation does not form abrupt cliffs, the mesa top generally rises another 100 feet above the sandstone cliffs. The Block Mesas are deeply cut by canyons and coves. Peninsulas, such as Harris Mountain and isolated buttes such as the Elephant Buttes, are the characteristic result. The WSA includes approximately 9,000 acres of this landform east and north of Sathy's Canyon and Clay Flat. A portion of Harris Mountain is within the WSA. Elephant Cove borders the area on the west. On the north, the East Fork Canyon is considered part of the landform and it is here that the greatest amount of canyon dissection occurs. Bay Bill and Merwin Canyons are the other major named canyons in this area.

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In general, the mesa top is moderately vegetated with shrubs, pinyon-juniper woodland, and occasional open stands of Ponderosa pine and would not offer an outstanding opportunity. However, above the upper ends of several canyons, some heavily vegetated areas exist in the more broken ravine or rimrock areas. These pockets offer outstanding opportunities for solitude. Outstanding solitude is present on approximately 4,440 acres of the Block Mesas section. Important areas include the East Fork Canyon above the Barracks, Bay Bill Canyon, Merwin Canyon, and a point extending into Elephant Cove. Large areas lacking outstanding solitude include the Joseph Canyon area east of Clay Flat and the area adjacent to the road above Sethy's Canyon.

The 9,100-acre Elephant Cove area in the southwestern portion of the WSA is bounded by the Barracks section on the north and the Block Mesas on the east and southeast. Elephant Cove can be characterized as a large, sandy area with an extensive pinyon-juniper woodland of moderate density and little topographic relief. Most of Elephant Cove does not exhibit the topographic or vegetation screening necessary to provide outstanding opportunities for solitude. There are areas, however, where outstanding opportunities are present. Rock Canyon and several other canyons extend southward from the Barracks. Although these canyons are not as entrenched in Elephant Cove as they are in the Barracks, they do offer opportunities for solitude not found elsewhere in Elephant Cove. Rimrock, slots, and other types of sandstone exposures are typical of the canyons. Ponderosa pine is the most common tree in the canyons. In those canyons where the sandstone is sufficiently dissected, the opportunity for solitude is outstanding. Approximately 900 acres of canyons in the Elephant Cove area possess outstanding solitude. Much of the terrain at the base of the White Cliffs in the eastern and southern portion of Elephant Cove consists of ravines or sand dunes. Sand dunes completely cover the White Cliffs on the north face of Harris Mountain. Here visitors could easily screen themselves from one another and the opportunity for solitude is outstanding on approximately 1,500 acres in this portion of the Elephant Cove area.

The Barracks is a section of the Parunuweap Canyon that begins about 3 miles below the Foote Ranch. The Barracks extends across the WSA and then terminates less than 1 mile inside Zion National Park. Approximately 2,200 acres of the WSA are occupied by the Barracks. The Barracks is a canyon consisting of a number of entrenched meanders and narrows.

Side canyons are numerous. Riparian vegetation is abundant in both the main canyon and the side canyons. In places, the river occupies the entire floor of the canyon. The topographic and vegetation screening is exceptional and all of The Barracks possesses an outstanding opportunity for solitude.

The sites and sounds of human activities are not present from places within the WSA, with the exception of the travel route between Foote Ranch and Elephant Cove which traverses the unit. Travel along this road can, during certain times of the year, be apparent and would detract from the unit's solitude.

It would be easy for a visitor to find seclusion in The Barracks and White Cliffs areas of the WSA. Seclusion would be much more difficult to find in areas such as Elephant Cove.

Overall, approximately 57 percent of the WSA (17,600 acres) displays outstanding opportunities for solitude.

• Primitive and Unconfined Recreation

Opportunities for backpacking within the WSA are outstanding. The trip through Parunuweap Canyon and the Barracks into Zion National Park is the focus for backpacking within the WSA. In addition to the usual access through the Foote Ranch (private land), several route variations are possible. Access to The Barracks can be gained via Mineral Gulch and Meadow Creek Canyons. The Poverty Wash Canyon route offers excellent backpacking opportunities. It is possible to enter Parunuweap Canyon from the head of Merwin Canyon. There are also tributary canyons that provide side trips during an extended visit to Parunuweap Canyon. Bay Bill Canyon, lower Rock Canyon, and all of the short canyons in The Barracks section add to the backpacking possibilities within the WSA. The canyon system between Poverty Wash and Zion National Park is an additional backpacking objective. This area beneath the White Cliffs is drained by numerous canyons tributary to the unnamed canyon entering the Parunuweap Canyon immediately east of the park boundary. In summary, the entire Barracks section, the remainder of the East Fork Canyon, Mineral Gulch, Meadow Creek Canyon, Poverty Wash Canyon, Merwin Canyon, Bay Bill Canyon, and the canyon area east of Zion National Park all contribute to the backpacking activity. Outstanding opportunities for backpacking can be found on approximately 11,800 acres.

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In addition to the backpacking opportunities available in the canyons, certain other areas provide opportunities for primitive and unconfined recreation. These are areas where a diversity of recreation activities, including hunting, rock climbing, bird watching, photography, and sightseeing activities, can occur. The rock climbing activity is limited within the WSA to the White Cliffs and the Barracks. Much of the Parunuweap Canyon WSA contains exceptional scenery, providing photography and sightseeing opportunities. Areas of important scenic value include the entire Parunuweap Canyon, Mineral Gulch, and Meadow Creek Canyons, the slickrock country adjacent to the park, the White Cliffs, and the Bay Bill Canyon system. Areas above Elephant Cove and the Bay Bill and East Fork Canyons also provide sightseeing and photographic opportunities.

Overall, the primitive recreation opportunities on 17,500 acres or 57 percent of the WSA meet the outstanding criterion for lands under wilderness review.

The NPS has recommended that the portion of Zion National Park adjacent to Parunuweap Canyon WSA be designated wilderness. The NPS has recommended that adjacent lands be managed in a manner that would complement and enhance primitive-type recreation use in the park. Backpacking opportunities include BLM-NPS routes.

• Special Features

Two special features identified during the wilderness inventory were: scenic and historic values.

Several distinctive landscapes are present within the boundaries of the Parunuweap Canyon WSA. Important scenic values are associated with some of these landscapes. In the western portion of the WSA, the Parunuweap Canyon and the White Cliffs landscapes are shared with Zion National Park. The scenic values here are equivalent to those present in the park. This portion of the WSA possesses the highest quality scenery to be found in the WSA. Scenic values of less quality are found in other areas of the WSA. These areas include the Mineral Gulch/Meadow Creek Canyons, the Bay Bill Canyon system, and the White Cliffs on the east side of Elephant Cove. Scenic values are highest on approximately 12,600 acres of the WSA, but 17,800 acres (58 percent) of the WSA are rated Class A for scenic quality (refer to the Visual Resources section).

The major historical feature is the Elephant Gap Road (Foote Ranch Road) which is believed to follow the route of the pioneer road from Pipe Spring, Arizona; to Long Valley, Utah. Approximately 4.5 miles of this route is a cherry-stemmed road, and 4 miles is considered to be a vehicular way.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. Two animal species, bald eagle and peregrine falcon, listed as endangered, may occur in the WSA. In addition, 12 animal species and four plant species currently listed as Category 2 candidate species also may occur in the WSA. The golden eagle (BLM sensitive species) is an occasional visitor to the Parunuweap WSA. The WSA has populations of cougar which is a wildlife species commonly associated with wilderness. The East Fork of the Virgin River flows through the WSA.

It has been reported that John Wesley Powell was the first person to traverse the canyon, and a plaque commemorating his passage through the canyon is found near the boundary of Zion National Park.

• 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. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Provo-Orem, Utah; and Las Vegas, Nevada.

Air Quality

The Parunuweap Canyon WSA and surrounding area have been designated Class II under the PSD regulations. BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of BLM (USDI, BLM, 1982b). Zion National Park, a Class I air quality area, is adjacent to the WSA.

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Air quality estimates for the WSA are based on readings made in nearby Zion National Park. Telephoto-meter readings made over a 2-year period indicate an average visibility of 120 miles. The area is well known for its excellent air quality.

Geology and Topography

The Parunuweap Canyon WSA is located within the Grand Staircase section of the Colorado Plateau Physiographic Province. The area is composed mainly of steep canyons and cliffs surrounded by buttes and mesas.

Rocks of Jurassic age, totaling about 2,000 feet in thickness, and thin deposits of Quaternary age outcrop in the WSA. The Navajo and Carmel Formations form the most extensive outcrops in the unit. Underlying Mesozoic and Paleozoic rocks may be as much as 8,000 feet thick. Immediately to the east, the north-trending Sevier fault is downthrown on the west side.

Elevation ranges from about 6,600 feet above sea level in the Harris Mountains at the extreme southern portion of the WSA to about 4,800 feet above sea level in the East Fork of the Virgin River Canyon at the western edge of the WSA. The dominant drainage is the East Fork of the Virgin River which flows east to west through the central portion of the unit. Other drainages flow either north or south into the Virgin River.

Soils

Slightly over 72 percent of the WSA consists of rock outcrops, predominantly sandstone, with some shale and siltstone. The largest percentage of the WSA is considered to have soils moderately susceptible to erosion.

Erosion classes are slight (4,000 acres [13 percent]) and moderate (26,800 acres [87 percent]). Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

According to an unpublished Kane County soil survey conducted by BLM, 60 percent of the soils within the WSA are classified as moderately saline. The remaining 40 percent are classified as slightly saline. The estimated annual salt yield from undisturbed soils within the WSA is 60 lb per acre.

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	26,800	87	34,840
Slight	0.6	4,000	13	2,400
Stable	0.3	0	0	0
Total		30,800	100	37,240

Sources: USDI, BLM, 1978c and 1979g; Leifeste, 1978.

Reclamation potential is low on the majority of the area which contains rock outcrops and sandy soils. Potentials for seeding establishment are considered fair on loamy soil sites scattered throughout the WSA.

Vegetation Including Special Status Species

The pinyon-juniper woodland type covers almost 98 percent (30,184 acres) of the WSA. It has a sparse understory of shrubs, including big sagebrush, mountain mahogany, manzanita, serviceberry, Gambel's oak, cliffrose, buffaloberry, snakeweed, bitterbrush, rabbitbrush, green ephedra, and sandsage. Some small stands of Ponderosa pine are also included in this type.

About 1 percent (308 acres) of the WSA is bunch grass-sagebrush vegetation type. Associated species include big sagebrush, Indian ricegrass, galleta grass, and squirreltail grass.

Riparian vegetation typical of southern Utah occurs along the East Fork of the Virgin River as it flows through the WSA for approximately 10 miles. Some of the major tributaries also support riparian vegetation. Riparian vegetation covers approximately 1 percent (308 acres) of the WSA.

No threatened or endangered plants are known to occur in the WSA. Four Category 2 candidate plant species (50 CFR 17) may occur in the WSA. These are Asplenium andrewsii, Erigeron sionis, Heterotheca jonesii, and Sphaeromeria ruthiae (see Appendix 4 in Volume I). It is BLM policy to extend the same type of protection to all special status plant species that is afforded to threatened or endangered plant species.

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The Parunuweap Canyon WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

The WSA is primarily comprised of the East Fork of the Virgin River within Parunuweap Canyon and its tributaries. The East Fork of the Virgin River is one of the few perennially flowing streams in the area. It headwaters near Long Valley Junction and flows across 30 miles of Federal, State, and private lands upstream of the WSA. The major upstream use is irrigation. It flows approximately 10 miles through the WSA and then enters Zion National Park. A 1964 estimate made at Mt. Carmel Junction (several miles upstream from the WSA) places the average annual flow at 12,000 to 13,000 acre-feet. Many of the tributary canyons to Parunuweap flow at some time during the year, notably Rock Canyon to the south and Poverty Flat Canyon to the north. The State water quality standards for the East Fork of the Virgin River are: 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). In addition to assigned use classes, the East Fork of the Virgin River and tributaries from confluence with North Fork of the Virgin River to headwaters is designated as an anti-degradation segment. Water quality within this drainage is mostly affected by the natural geology of the area. Sedimentary sandstones and limestones contribute to dissolved and suspended solids primarily during runoff periods and storm events. Utah's 1986 305(b) Water Quality Assessment Report shows the East Fork of the Virgin River to have water quality problems for public water supply, secondary contact, and cold water fishery. Water quality is poor due to the high sediment loads.

The perennial water sources within the WSA are fully appropriated. Surface and groundwater sources are closed to further water right applications (UDNRE, DWR, 1988). There is an ongoing water right adjudication being conducted by the Fifth Judicial District Court for the Virgin River drainage for the general determination of rights to the use of both surface and underground water. The NPS is asserting Federal reserved rights for park values in this adjudication.

The Washington County Water Conservancy District has proposed to construct a reservoir within the WSA on the East Fork of the Virgin River with a dam site

upstream from the boundary of Zion National Park. The Conservancy District provided BLM with additional information in their comments on the Draft EIS. These data included a preliminary investigation of East Fork of the Virgin River Dam sites prepared by Creamer and Noble, Inc., of St. George, Utah, and a preliminary geological investigation of the East Fork of the Virgin River Dam sites prepared by Rallins, Brown, and Gunnell, Inc., of Provo, Utah. These reports indicate that the Navajo Sandstone in the area is similar to that of Glen Canyon and is suitable for construction of a dam and reservoir basin. It was estimated that the total storage of the reservoir for both sediment depository and water storage would approximate more than 40,000 acre-feet. Seven potential alternative dam sites, all within the Parunuweap Canyon WSA, were identified. The structure could be either rockfill or concrete and be from 240 to 280 feet in height.

The Conservancy District indicated in their comments to the Draft EIS that the site has potential for new hydroelectric power generation and would also augment hydropower production at Quail Creek Reservoir. The proposed dam would also be used for flood control and water storage. Stored water would then be used for downstream municipal or agricultural purposes. They also stated that once the water in the Quail Creek Reservoir is fully used, currently projected to occur in the 1990s, Washington County would have to issue building moratoriums or have additional developed water from the Virgin River. The Conservancy District has applied to the State of Utah to change existing diversion and storage sites on the Virgin River to the area of the WSA.

Detailed feasibility and engineering investigations have not been explored for the East Fork of the Virgin River Dam. There are major constraints associated with this proposal. These include the fact that all seven potential alternative locations are upstream and in close proximity to Zion National Park. The NPS is asserting a Federal reserved water right for national park purposes for the endangered Woundfin minnow downstream of the WSA on the main stem of the Virgin River.

There are three undeveloped springs known in the WSA: one in Rock Canyon, one along the Virgin River, and the third in Elephant Cove. Two stock reservoirs are found on the east side of the Parunuweap Canyon WSA, one on the Block Mesa, the other in Joseph Canyon, a Parunuweap tributary. Two other livestock reservoirs are located north of the Virgin River.

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Except for the springs, the water quality is poor and not potable.

There are no known private water rights located on public lands within the WSA.

Mineral and Energy Resources

The energy and mineral resource rating summary for the Parunuweap Canyon WSA is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f 2	c1	Less than 500 metric tons of uranium oxide
Coal	f 2	c4	1 million metric tons
Geothermal	f 1	c2	None
Hydroelectric	f 2	c4	.05 to 15 megawatts

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

The WSA is considered to have potential for small, widely scattered oil and gas pools, similar perhaps to the Virgin oil field, 15 miles to the west (SAI, 1982). This is largely due to the relatively thin stratigraphic sequence which generally limits the volume of both favorable source and reservoir rocks, and to the tendency for medium-sized or larger accumulations to have been destroyed or reduced in size by recent tectonic events, deep erosion, or water flushing. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic-feet of gas (f2).

To date, there is no evidence indicating the existence of commercially recoverable oil and gas resources within the WSA. Two wells have tested the oil and gas favorability near the Sevier fault along the eastern side of the WSA. One well is located approximately 2 miles east of the WSA along the upthrown portion of the fault, and the other is about 4 miles to the south, along the downthrown portion of the fault. The well on the downthrown side reached a total depth of 10,503 feet and bottomed in Precambrian rocks. Oil shows were reported from Cambrian, Mississippian, and Triassic rocks. The well on the upthrown side was dry and penetrated Cambrian rocks at a total depth of 9,119 feet. Based on the available information and the nearby wells, the certainty of occurrence for oil and gas is low (c2).

Under the current land use plan, 3,031 acres are closed to oil and gas leasing (Category 4). An additional 7,583 acres are open to leasing with no surface occupancy stipulations (Category 3), but may be explored by directional drilling from outside areas allowing surface occupancy. The remaining 20,186 acres are open to oil and gas leasing subject to the standard stipulations (Category 1). Presently there are no oil and gas leases within the WSA.

• Coal

Most of the Parunuweap Canyon WSA lies south of the Kolob coal field and the sedimentary bedrock is of pre-Cretaceous age (noncoal bearing). However, the extreme northern tip of the WSA (approximately 500 acres) includes the lower part of the Tropic Formation of Cretaceous age. The lower coal zone of the Tropic-Dakota Sandstone occurs within the WSA and individual coalbeds range from 1 to 5 feet thick. Total tonnage is estimated to be about 1 million tons of in-place coal (f2). Maximum overburden in the WSA is about 300 feet (Doelling and Graham, 1972).

The coal in the Kolob field varies in quality from one area to another but that, in general, the coal is of poor quality and of moderate to high sulfur content. In the immediate area of the WSA, the coal has an average moisture content of 14.4 percent, an ash content of 6.5 percent, a sulfur content of 1.67 percent, and a heat value of 10,942 British thermal units (Btu) per lb (Doelling and Graham, 1972). Part of the coal within the WSA has been subjected to coal fires, and it is not

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known how much of the 1 million tons would be recoverable. Since the coal is relatively close to the surface (less than 300 feet in depth), any mining would probably be by surface methods. Based on available information, the certainty of occurrence is high (c4). There are no existing coal leases in the WSA.

- Geothermal

The WSA is within the Colorado Plateau Physiographic Province, which is characterized by a low heat flow, a long history of relative tectonic stability, and a general lack of thermal springs. The scarcity of hot springs may be due, in part, to a lowered regional water table caused by deep stream incision. If thermal waters do exist, they occur only at considerable depth (Muffler, 1978).

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks are known to occur within or near the vicinity of the WSA. The nearest thermal springs to the WSA are approximately 15 miles to the west, where a cluster of springs discharge at temperatures ranging from 20 to 42 degrees Centigrade (C) (NOAA, 1979). Therefore, this WSA is rated (f1) with a low certainty of occurrence (c2) for geothermal resources.

- Hydroelectric

Based solely on the flow of the East Fork of the Virgin River, the WSA is estimated to have a potential only for the development of small-scale (0.05 to 15 MW) hydroelectric capacity (f2/c4) (SAI, 1982). The Washington County Conservancy District has indicated that their proposal for a dam on the East Fork of the Virgin River would include hydroelectric generation.

- Locatable Minerals

- Uranium

The favorability for uranium in the Parunuweap Canyon WSA is rated as (f2), indicating potential for small deposits of uranium oxide (less than 500 metric-tons). This is based on the likely presence of favorable host rocks at depth. The tract has a very low certainty of occurrence (c1) due primar-

ily to the lack of site-specific information. These uranium ratings were lowered from the Draft EIS based on a reevaluation of existing data.

Surface minable deposits of gypsum, with at least 6 million tons, may occur inside the WSA (USDI, USBM, 1987c). More accessible deposits lie outside the WSA boundary.

No claims, prospects, or any evidence of other mineralization are known to exist within the WSA.

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. Construction grade sandstone and agricultural grade limestone could also occur (USDI, USBM, 1987c). These deposits are not unique or economically significant due to the presence of ample similar materials near the WSA.

Wildlife Including Special Status Species

The Parunuweap Canyon WSA provides four different major habitat types for wildlife. These are pinyon-juniper woodland, cliff, riparian, and sagebrush. The riparian habitat is located along the East Fork of the Virgin River and its tributaries and provides for the greatest diversity of wildlife species.

The habitat types support 52 species of mammals, 156 species of birds, 23 species of reptiles, seven species of amphibians, and one species of fish. A detailed wildlife inventory has not been conducted in the area. The only fish species in the East Fork of the Virgin River is the speckled dace.

There are no wildlife management facilities within the WSA.

Game species in the WSA are mule deer, cougar, cottontail rabbit, mourning dove, and bandtailed pigeon. Mule deer are yearlong residents in the WSA. The area north of the East Fork of the Virgin River is critical deer winter range. Small numbers of cougar are also yearlong residents of the WSA, and it is within Utah Cougar Management Unit 30, Cedar Mountain. Cougar populations and harvest by sport hunters and by the Animal Damage Control program has been higher in this management unit than in any other location in Utah. During the 11-year period, 1977 through 1987, a total of 217 cougars were taken from the Cedar Mountain management unit. This harvest

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averaged nearly 20 animals per year (UDNRE, DWR, 1988). It has not been determined how many of these may have been taken from within the WSA.

Cottontail rabbits occur throughout the WSA but are more concentrated in the Block Mesa area. Mourning doves are fairly common throughout the WSA from May to September. Bandtailed pigeons roost mainly around the East Fork of the Virgin River. The river also provides a resting area for migrating waterfowl in the spring and fall.

One Federal endangered species, the bald eagle, occasionally uses the lands north of the river as a winter roosting area. They do not, however, use the area for nesting. A second Federal listed endangered species, the peregrine falcon, may also occur in the WSA. In addition, the golden eagle (BLM sensitive species) and twelve Category 2 candidate species may occur in the WSA (Arizona Bell's vireo, ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, Great Basin Silverspot butterfly, Virgin River montane vole, and white-faced ibis) (see Appendix 4 in Volume I). If present, most of these species would be associated with riparian and wet meadow areas or cliff faces and deep canyons. Exceptions are the ferruginous hawk and Merriam's kangaroo rat. The ferruginous hawk inhabits the pinyon-juniper woodland where there are ecotones or edges that provide opportunities for nesting, cover, and hunting activities. The Merriam's kangaroo rat would most likely be associated with sandy areas in sagebrush vegetation.

The Parunuweap Canyon WSA is located within the East Zion Habitat Management Plan Area and a 300-acre pinyon-juniper woodland chaining and seeding is proposed within the WSA to restore depleted browse species for mule deer. This vegetation treatment is proposed in an area which has very little winter forage.

Forest Resources

Nearly all of the WSA is composed of pinyon-juniper woodland type vegetation. This type is characterized by a dominant tree overstory of pinyon pine, Utah juniper, scattered Gambel's oak, and some Ponderosa pine in favorable habitat.

These resources are considered suitable for firewood, post, and Christmas tree cutting. Elephant Cove and Block Mesa have been used for these pur-

poses. Noncommercial harvest of these resources has been occurring on a regular basis for several years. Quantitative data on the amount of forest resources in this area or past harvests are not available.

Livestock and Wild Horses/Burros

Livestock grazing values within this WSA are limited because of the rough broken terrain and large rock outcrop areas. There are nine allotments wholly or partially within the WSA. Eleven operators graze cattle within these allotments. However, portions of three allotments within the WSA are completely unsuitable for livestock grazing due to the rough broken terrain. Forage has not been allocated in these areas. The remaining area supports an estimated 331 AUMs of livestock use annually. Table 4 summarizes livestock use in the Parunuweap Canyon WSA. There are no existing vegetation treatment projects for the benefit of livestock and none are proposed. Other developments have been installed and additional ones are proposed. Table 5 lists existing and proposed developments. The eight permittees use vehicles on the 16 miles of ways in the WSA for hauling salt and livestock in and out of the area and other livestock management activities. BLM personnel use the ways for compliance checking, collecting rangeland study data, and monitoring vegetation trends.

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

There are no wild horses or burros in the WSA.

Visual Resources

Approximately 17,800 acres, or about 58 percent of the WSA, are within the scenic quality A classification. Another 4,300 acres, or 14 percent of the WSA, are within Class B. The remainder of the unit, 8,700 acres (28 percent), is Class C.

Over half of the Parunuweap Canyon WSA, 17,200 acres (56 percent), is assigned to VRM Class II, with the remaining 13,600 acres (44 percent) in Class IV. (Refer to Appendix 7 in Volume I for more information on the BLM VRM system.)

The Parunuweap Canyon WSA is adjacent to Zion National Park. The area immediately adjacent to the park possesses scenic values comparable to those found in the national park.

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Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators ^b
Sethy's Canyon	7,630	4,100	262	8	52 Cattle	6/1-10/31	1
Clay Flat	5,420	2,100	210	0 ^a	26 Cattle	6/1-11/15	1
Virgin River	3,800	3,800	230	145	41 Cattle 5 Horses	12/1-4/30	1
Barracks Point	7,915	2,700	159	0 ^a	100 Cattle	8/16-10/6	1
Flume Hollow	775	200	7	0 ^a	1 Cattle	5/1-11/30	1
Poverty Flat	9,651	8,600	469	47	123 Cattle	11/1-3/31	2
Rock Springs	6,732	2,300	469	37	94 Cattle	6/16-11/15	1
Elephant Cove	7,604	6,500	432	87	85 Cattle	5/16-10/31	2
Yellow Jacket	10,036	500	280	7	40 Cattle	6/1-12/30	1
Total	59,563	30,800	2,518	331			11

Sources: BLM File Data.

^aThe allotment acreage within the WSA is considered unsuitable for livestock grazing and no AUMs are attached to this portion. The suitability for an area for grazing is determined by a number of factors including steepness of the terrain, distance of forage from water, production of vegetation, etc.

^bEight of the 11 operators are allowed to graze livestock within the WSA. Three operators do not graze livestock within the WSA because the portions of their allotments within the WSA are unsuitable for livestock grazing.

Table 5
Existing and Proposed Livestock Management Improvements

Allotment	Existing Improvement	Proposed Improvement
Sethy's Canyon	0.6 mile of fence, 1 cattleguard, 1 reservoir	None
Clay Flat	1.5 miles of fence 1 reservoir	None
Virgin River	1 corral, 1.75 miles of fence	1 mile of pipeline and trough
Rock Springs	1 mile of fence, 1 reservoir	1 reservoir
Elephant Cove	0.75 mile of fence	2.5 miles of pipeline and 8 troughs, 1 water catchment
Yellow Jacket	None	1 spring development and 0.25 mile of pipeline
Poverty Flat	1 reservoir	None

Source: USDI, BLM, 1980a and 1981b.

Cultural Resources

No sampling inventory for archaeological and other cultural resources has been conducted in the Parunuweap Canyon WSA, and there is only a negligible amount of intensive inventory work within the unit. According to BLM cultural resource site maps (USDI, BLM, 1988a), there are three known sites, petroglyphs, and an alcove architectural site along the East Fork of the Virgin River and a fourth site in Meadow Canyon.

Eighty-eight inventoried archaeological sites are found in the portion of Parunuweap Canyon within Zion National Park. However, all of the significant sites occur below the narrows portion of the canyon. Consequently, the canyons of the WSA may not be equal in archaeological significance to the canyons of the park. However, the WSA is considered to have good potential for cultural resources.

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Recreation

Although the Parunuweap Canyon WSA offers opportunities for both primitive and nonprimitive types of recreation use, very little data on existing visitor use are available. The recreational use of the WSA is currently estimated by BLM at 1,400 visitor days annually. No visitor days are related to commercial outfitting. Approximately 25 percent of the use is attributed to primitive activities and approximately 25 percent is attributed to recreational activities (such as hunting and sightseeing) that currently utilize vehicular access on existing ways. Approximately 50 percent is attributed to use solely for ORV play activities that occur on flat areas in the southern portion of the WSA in the vicinity of Elephant Cove. ORV use is physically restricted by steep terrain north of the Virgin River and in the eastern portions of the WSA.

Approximately 23,700 acres (77 percent of the WSA) are designated as open to ORV use. On 7,100 acres ORV use is limited to existing roads and trails. This latter category includes the Parunuweap Canyon and all or portions of major tributary canyons such as Rock Canyon, Meadow Canyon, Burnt Flat Gulch, and Poverty Wash.

Big game hunting success is generally poor to fair throughout the WSA because of low game populations and dense cover in portions of the WSA.

Land Use Plans

The WSA is within the BLM Vermillion Planning Unit which is being managed under the land use decisions of the Vermillion MFP (USDI, BLM, 1981b). Principal uses within the WSA are livestock grazing, wood-cutting, and recreation (both hiking and ORV use).

Wilderness is not addressed in the Vermillion MFP. 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 BLM-administered public land except for two State sections (1,253.2 acres). 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 1,253.2 acres of in-held State land are under lease for grazing and are used for that purpose (UDNRE, DSLF, 1988).

The Parunuweap Canyon WSA borders Zion National Park on the west. The NPS has recommended the area adjacent to the WSA be designated wilderness. In the past the NPS has expressed a desire that areas adjacent to Zion National Park be managed in a manner that would complement the management established within the park itself (USDI, NPS, 1976).

Although some recreation use is made of the East Fork of the Virgin River, this is not one of the more significant use areas in or out of the park. There is no legal public access across private land at the mouth of Parunuweap Canyon (west of Zion National Park) or at the Foote Ranch on the east side of the WSA. It is possible to stay entirely upon public or NPS lands, but it is an inconvenience to hikers to do so.

The Kane County Master Plan (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple-use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept."

In addition, the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) indicates that Kane County opposes wilderness designation of BLM lands in Utah.

The WSA is zoned for multiple-use by the county except for approximately 500 acres in the northern portion of the WSA which are zoned for agriculture. There are no recorded rights-of-way, easements, or grants of any type within the WSA's boundary. Kane County asserts that about 7.5 miles of travel route across the Elephant Cove area to the Foote Ranch is a "public highway." BLM cherry-stemmed 4.5 miles of the route and identified the remaining 3 miles as a vehicular way (refer to the Issues section for more information).

Socioeconomics

• Demographics

The Parunuweap Canyon WSA is located in Kane County and near Washington County. Both counties are

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expected to receive the social and economic impacts from wilderness designation or nondesignation.

From 1970 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 6 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987, the population increased to about 4,890. Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 6
Baseline and Projected Population and Employment Growth
Washington and Kane Counties

	1980	1990	2000	2010
<u>Washington County</u>				
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100
<u>Kane County</u>				
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

The major population center of Kane County is the City of Kanab, the county seat. Kanab is located along the major access route approximately 20 miles from the eastern boundary of the WSA via State Highway 89.

From 1970 to 1980, the population of Washington County grew from 13,699 to 26,400, an overall increase of about 93 percent. Table 6 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987, the population increased to about 39,750. Population projections indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 140-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

The major population center of Washington County is St. George, the county seat. St. George is located approximately 50 miles west of the WSA, via State Highway 15.

• Employment

Table 6 shows the baseline and projected total employment for Kane and Washington Counties to the year 2010.

Kane and Washington Counties are part of the Southwest 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 Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 7
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 5 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

• Sales and Revenues

Economic-related activities in the WSA include livestock production, woodland 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.

No oil and gas or minerals have been produced in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Eight livestock operators have a total grazing privilege of 331 AUMs within the WSA. If all this forage were utilized, it would account for \$6,620 of livestock sales and \$1,655 of ranchers' returns to labor and investment.

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Some woodland products are harvested from the WSA; however, the harvests have been relatively small and are not significant to the local economy and only of minor significance to those involved in the harvest.

Table 8
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	0
Mineral Production	0	0
Livestock Grazing	\$6,620	\$510
Woodland Products	Unknown	Unknown
Recreational Use	<u>\$5,740</u>	<u>0</u>
Total	\$12,360	\$510

Sources: BLM File Data and Appendix 9 in Volume I.

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA's nonmotorized recreational use is moderate and related local expenditures are low. The WSA's motorized recreational use is moderate. Related local expenditures are well distributed and cannot be measured. 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 Parunuweap Canyon WSA is estimated at about 1,400 visitor days per year.

The WSA generates Federal revenues from livestock grazing fees. The livestock permittees in the WSA can use up to 331 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$510 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume III-A. The following analysis is based on implementation of the Action Scenarios presented in the Description of the Alternatives section.

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., VRM Class II management on 17,200 acres, management under oil and gas leasing Category 4 [closed to leasing] on 3,031 acres and Category 3 [no surface occupancy] on 7,583 acres, and ORV limitations on 7,100 acres).

Disturbance of approximately 307 acres from development of wildlife and rangeland projects mainly in the southern portion of the WSA is likely in the foreseeable future. This result would be a direct loss of naturalness, solitude, and opportunities for primitive, unconfined recreation in the disturbed areas (about 1 percent of the WSA) at least until rehabilitation is complete, and a indirect reduction in the quality of opportunities for solitude and primitive recreation in adjacent areas during the period of activity. Wilderness values would be lost in the chained areas over a long-term period of time. Another conflict with wilderness values in the foreseeable future is ORV activity. ORV activity is currently occurring in the WSA and comprises 50 to 75 percent of its recreational use. Much of the flat lands in the southern portion of the WSA in the vicinity of Elephant Cove can be accessed by vehicles, and currently there are 16 miles of ways. ORV disturbance would result in loss of naturalness. During the period of activity, the visual and audible disturbance from ORV use would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA. Overall, as much as 10 percent (3,080 acres) of the WSA, in the vicinity of Elephant Cove, could be directly or indirectly affected. The areas that would be affected are generally considered by BLM to not have outstanding opportunities for solitude or primitive recreation. Increased visitor use that would occur over time would be expected to reduce wilderness values because about 50 to 75 percent of the increase would probably be ORV-oriented (refer to the Recreation section). The 25 percent that would be oriented to primitive-type recreation would be largely confined to the canyon areas.

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Continued or increased ORV use that would occur in the vicinity of Elephant Cove would cause inadvertent damage to an unknown number of cultural resource sites that are historic special features. The overall affect would probably be small because the known sites in the WSA are in the canyon areas north of the Virgin River where ORV use does not occur. As described in the Vegetation and Wildlife Including Special Status Species sections, there would be little affect on the biological special features of special status plant and animal species. Scenic special features would not be significantly affected because disturbance and activity would be in Scenic Class B and C areas. Disturbance would be in dry areas south of the Virgin River and would not affect the water special feature.

This alternative would not complement the NPS proposal of wilderness designation for the adjacent Zion National Park lands.

The extent to which disturbance over the long term would result in the loss of wilderness values 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. Naturalness and opportunities for solitude and primitive recreation would be lost or reduced in quality on up to 3,387 acres of the WSA. Inadvertent and probably insignificant disturbance of cultural and biological resource special features would occur.

• Impacts on Vegetation Including Special Status Species

The 307 acres of surface disturbance projected for the No Action/No Wilderness Alternative would occur in the pinyon-juniper woodland. On the 300-acre chaining and seeding, vegetation composition would change from woodland to grass-shrub. It is projected that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland. There would also be a loss of naturalness in the disturbed area. However, due to the small size of the disturbance (less than 1 percent of the WSA), the overall impact would not be significant. The 7 acres of surface disturbance due to the construction of rangeland projects would be reclaimed within a 3 to 5 year period.

The four Category 2 candidate species that may occur in the WSA are restricted to moist areas in canyons such as hanging gardens or the small Ponderosa pine stands. No surface disturbance or ORV use is projected to occur in these areas; therefore, no impacts to these species are anticipated. However, before authorizing any surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened, endangered, candidate, or any other special status 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, it is concluded that the viability of populations of threatened, endangered, or other special status 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. About 1 percent (300 acres) of the pinyon-juniper woodland type in the WSA would be converted to a grass-shrub type.

• Impacts on Water Resources

Since precipitation is low and existing streams are heavy carriers of silt, no significant long-term sedimentation or change in TDS is expected to occur from the temporary disturbance of 307 acres due to wildlife and livestock projects. However, the chaining and reseeding of 300 acres of pinyon-juniper woodland could cause a temporary (2 to 3 year) increase in TDS including salt. After the new seedings were established, water quality could be expected to improve. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current Vermillion MFP. Water uses upstream of the WSA would continue to be constrained by flow requirements for Zion National Park and endangered fish in the Virgin River.

Conclusion: The No Action/No Wilderness Alternative would not alter present water quality or uses in the foreseeable future.

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- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife could be affected by an increase in the availability of water through the construction of one water catchment, one livestock reservoir, and the improvement and maintenance of springs.

Big game habitat would be improved by chaining and seeding 300 acres of deer habitat resulting in an undetermined increase in mule deer populations.

The bald eagle, that uses the northern part of the WSA for winter roosting, would not be impacted by disturbance of 307 acres of pinyon-juniper woodland chaining and seeding and rangeland projects as they would be south of the Virgin River and would not be developed during winter months.

The extent and use of the WSA by the peregrine falcon, an endangered species, or the 12 Category 2 candidate species that may occur there, is unknown. Chaining and continued or increased ORV use in the Elephant Cove area would not affect most of these species because activities would be in flat pinyon-juniper woodland covered areas and, if present, these species would inhabit the riparian and cliff face areas in the canyons. The ferruginous hawk and Merriam's kangaroo rat could inhabit the pinyon-juniper woodland and sandy areas in the vicinity of Elephant Cove. The ferruginous hawk could be disrupted by ORV use during the nesting season. However, chaining would create ecotones or edges and improve ferruginous hawk habitat. The overall effect on populations is unknown. The Merriam's kangaroo rat would not be significantly affected because it is a burrowing, nocturnal animal.

BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened, endangered, or other special status 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, it is concluded that potential populations of threatened, endangered, or other special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Habitat and populations of threatened, endangered, or other special status animal species would not be significantly affected. Implementation of the wildlife and rangeland water projects would benefit wildlife by providing additional water, forage, and ecotones.

- Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Vermillion MFP. The 331 AUMs currently allocated in the WSA are controlled by eight livestock permittees. Motorized vehicle use for livestock management purposes would continue. The proposed spring development, catchment, reservoir, nine troughs, and 3.75 miles of pipeline could be developed and would result in improved livestock distribution.

Conclusion: Livestock management and grazing levels would not be adversely affected by the No Action/No Wilderness Alternative. Distribution would improve.

- Impacts on Recreation

The quality of the user's primitive recreational experience would be reduced by surface-disturbing activities associated with chaining and seeding of 300 acres of pinyon-juniper woodland and 7 acres of rangeland development. Sixteen miles of way would be left open to ORV use and primitive recreation activities would be adversely impacted by continued vehicular use of ways and other ORV activities.

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; Jungst, 1978; Cordell and Hendee, 1982; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase 2 to 7 percent per year over the next 32 years. At this rate, overall recreational use is expected to increase from 1,400 current visitor days per year to between 2,640 and 12,200 visitor days at the end of 32 years. 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 350 visitor days per year to between 660 and 3,050 visitor days per year over the next 32 years. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, etc.) would increase from 350 visitor days per year to between 660 and 3,050 visitor days. ORV play activity would increase from 700

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visitor days per year to between 1,320 and 6,100 visitor days per year.

Conclusion: The quality of primitive recreation opportunities would be reduced by increased use of ORVs. Both primitive and motorized recreational use would increase.

All Wilderness Alternative (30,800 Acres)

- Impacts on Wilderness Values

Designation and management of all 30,800 acres as wilderness would preserve the wilderness values in the Parunuweap 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 30,800 acres. Solitude would be protected on approximately 17,600 acres that meet and 13,200 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 17,500 acres that meet and 13,300 acres that do not meet the standards for outstanding opportunities. All special features in the WSA including scenic, biological, botanical, historic, and water features would be protected.

Disturbance of up to 5 acres is anticipated from range-land projects. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be reduced in the disturbed areas until activities and noise cease and reclamation is complete. Opportunities for solitude and primitive recreation would also be temporarily reduced on adjacent portions of the WSA. The areas that would be affected by disturbance, noise, and visual intrusion over the foreseeable future are generally not considered by BLM to have outstanding opportunities for solitude or primitive recreation. 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, due to the relatively high amount of ORV use occurring in the area and because much of the terrain in the vicinity of Elephant Cove in the WSA is readily accessible by vehicles.

Wilderness designation would complement wilderness management of the adjacent Zion National Park. Oppor-

tunities for primitive, unconfined recreation would be enhanced by a contiguous NPS-BLM wilderness area.

Conclusion: Wilderness values would be preserved overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on 5 acres of the WSA.

- Impacts on Vegetation Including Special Status Species

The vegetation resource, including the special status plant species, would be provided with additional protection over the entire area. There would be no significant disturbance and, therefore, no impacts.

Conclusion: The vegetation types and special status plant species located in the WSA would not be affected by the All Wilderness Alternative.

- Impacts on Water Resources

Water quality would be maintained at present levels because surface disturbance would be reduced. Opportunities for additional improvements or expansion of existing water improvements could not occur unless the work could be done in a manner nonimpairing to wilderness values. The proposed water-related range developments would likely be designed and constructed consistent with wilderness protection guidelines. The proposed livestock reservoir would not be allowed. Wilderness designation of Parunuweap Canyon would not add appreciably to existing constraints on water development and use upstream of the wilderness because flow requirements for Zion National Park and endangered fish in the Virgin River downstream of the area would be sufficient for maintenance of wilderness values.

Conclusion: A proposed livestock reservoir would not be allowed but water quality and water use outside of the WSA would not be significantly affected.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife would benefit due to the preservation of solitude. However, the proposed 300 acres of chaining and seeding for wildlife habitat improvement would not be allowed and the resulting increase in mule deer populations would not be realized.

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The threatened, endangered, and other special status animal species that may occur in the WSA would be provided additional protection with wilderness designation.

Conclusion: Wilderness designation would preclude the 300-acre wildlife habitat improvement project, but it would protect habitat from disturbance and provide all species with additional opportunities for solitude.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Vermillion MFP. The 331 AUMs currently allocated in the WSA are controlled by eight livestock permittees. Vehicle access for livestock permittees would be regulated by BLM. This would necessitate changes in livestock management and supervision from that currently practiced in the WSA. Restrictions on vehicle use would impact general access to and hauling of salt in eight grazing allotments. The result would be an inconvenience to the affected permittees.

The catchment, spring development, nine troughs, and 3.75 miles of pipeline proposed could be constructed consistent with wilderness protection standards. A proposed livestock reservoir that would better distribute livestock would not be allowed.

Conclusion: Present domestic livestock grazing would generally continue as authorized. Restrictions on access would necessitate changes in livestock management and supervision and cause inconvenience to eight livestock permittees. A proposed livestock reservoir would not be allowed.

- Impacts on Recreation

Although primitive recreation use is currently only about 350 visitor days a year, the WSA has outstanding primitive recreational values. If designated, those high quality recreational opportunities would be recognized, managed, and preserved. However, motorized vehicle use (1,050 existing and between 1,980 and 9,150 visitor days use projected to the year 2020) would be eliminated. Approximately 16 miles of ways would be closed to use. Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA.

As discussed for the No Action/No Wilderness Alternative, primitive recreational use of the WSA is esti-

mated to increase about 2 to 7 percent per year over the foreseeable future in relation to population increases and current trends of recreational use. Management provided through a Wilderness Management Plan would control future primitive-type use to ensure that the quality of the primitive recreation experience is maintained. Because ORV use would be eliminated, overall recreation use would probably decline initially.

Conclusion: Implementation of the All Wilderness Alternative would benefit primitive recreation. ORV use which has historically been the greatest recreational use would be eliminated. Overall visitation would decline initially.

Large Partial Wilderness Alternative (Proposed Action) (17,888 Acres)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action/No Wilderness Alternative. The specific actions that would take place within the 17,888-acre area designated as wilderness and the 12,912-acre nondesignated area are discussed in the Description of the Alternatives section.

- Impacts on Wilderness Values

Designation and management of 17,888 acres as wilderness would contribute to the preservation of the wilderness values in the Parunuweap Canyon WSA. The potential for surface-disturbing activities would be reduced through closure of the designated area to future mineral leasing and location and to ORV use, and through management of the designated area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 17,888 designated acres. Solitude would be protected on approximately 17,000 acres that meet and 888 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on approximately 17,000 acres that meet and 888 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA (including scenic, historical, botanical, biological, and water features) would also be protected, at least in part.

Overall, disturbance in the foreseeable future would be the same as described for the No Action/No Wilderness Alternative. None of the disturbance is

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anticipated in the designated portion of the WSA. Approximately 307 acres of disturbance is anticipated in the nondesignated portion of the WSA from wildlife and rangeland development. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be lost on the disturbed areas at least until activities and noise cease and reclamation is complete. Loss of wilderness values due to development of the livestock reservoir and chaining would remain as long as these projects are maintained. Opportunities for solitude and primitive recreation would also be reduced in quality on adjacent portions of the WSA during the period of activity. Vehicle activity would be eliminated in the designated areas, protecting wilderness values. ORV activity would continue in the nondesignated areas. In the nondesignated area, vehicular use would continue on 9 of the 16 miles of ways, and would continue and increase in the vicinity of Elephant Cove, further reducing naturalness and opportunities for solitude and primitive recreation. The areas that would be affected are generally not considered to have outstanding opportunities for solitude or primitive recreation. All in all, wilderness values in as much as 10 percent (3,080 acres) of the WSA could be affected by disturbance, noise, and visual intrusion from ORV use over the foreseeable future.

Special features would not be significantly affected by disturbance from proposed wildlife and rangeland developments because disturbance would not occur where these features are and because they would be protected by law and BLM policy. Refer to the Wildlife and Vegetation Including Special Status Species sections. Inadvertent and probably insignificant disturbance of cultural and biological special features would occur from ORV activities.

Increased visitor use that would occur with time would be managed so as to not result in loss of wilderness values in the designated portion. Loss in quality of the primitive recreation experience would occur in the nondesignated portion because of ORV activity.

Wilderness designation would complement wilderness management of adjacent Zion National Park. Opportunities for primitive, unconfined recreation would be enhanced by a contiguous NPS-BLM wilderness area. The extent to which disturbance would occur and, therefore, the extent to which wilderness values would be lost in the nondesignated portion over the long term is not accurately known. Loss would occur as intrusions increase.

Conclusion: Wilderness values would be preserved in the designated area, which is approximately 58 percent of the WSA. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be lost or reduced in quality on up to 3,387 acres of the WSA in the nondesignated area. Inadvertent and probably insignificant disturbance of cultural and biological special features would occur.

• Impacts on Vegetation Including Special Status Species

Since the proposed 307 acres of surface-disturbing activities and ORV use would occur in the nondesignated area, the impacts on vegetation would be essentially the same as described in the No Action/No Wilderness Alternative. The disturbance area would be less than 1 percent of the WSA and would not constitute a significant impact. Prior to any surface-disturbing activities, BLM would conduct site-specific clearances, initiate informal consultation with FWS if necessary, and take appropriate mitigation measures where needed.

Conclusion: The 307 acres of projected surface disturbance would affect about 1 percent of the pinyon-juniper woodland in the WSA. Therefore, no significant impacts are expected. Threatened, endangered, or other special status plant species would not be significantly affected.

• Impacts on Water Resources

Water quality and development in the WSA would be affected the same as with the No Action/No Wilderness Alternative because the proposed range developments would be located in the nondesignated area and would be constructed.

Conclusion: Wilderness designation would not alter present or future water quality or proposed developments in the WSA. Water use upstream of the wilderness would not be affected because of existing flow requirements downstream of the area.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

Since the proposed 300 acres of pinyon-juniper woodland chaining would occur on the nondesignated portion of the WSA, the impacts would be essentially the same as with the No Action/No Wilderness Alternative. However, wildlife species, including the threatened, endangered, and other special status species

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that may occur in the designated portion of the WSA, would be provided additional protection with wilderness designation through increased opportunities to find solitude. This would be a benefit to their continued population stability.

Prior to any development, BLM would conduct site-specific clearances of potentially disturbed areas, initiate consultation with FWS if necessary, and take appropriate measures to protect potential populations of threatened, endangered, or other special status species. No major habitat degradation is projected.

Conclusion: Implementation of the Large Partial Wilderness Alternative would not significantly degrade wildlife habitat or populations.

- Impacts on Livestock Management

The effects of designation of 17,888 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 331 AUMs allocated, 184 would be within the designated portion of the WSA and 147 within the nondesignated portion. Development of future roads or other livestock management facilities for use with the 184 AUMS in the designated portion could be restricted to preserve wilderness values. No developments have been proposed in the designated portion of the WSA. However, motorized vehicle use for livestock management on 7 miles of ways would be restricted after designation and would require some changes in livestock management practices.

Conclusion: Partial Wilderness Alternative would not result in a change in the level of livestock use, but would cause a minor change in livestock supervision and management in the designated portion causing an inconvenience to livestock permittees.

- Impacts on Recreation

Primitive recreation opportunities would be protected in the 17,888-acre area that would be designated as wilderness, which is the area currently receiving primitive use. Little impact on ORV recreational use would be expected due to the lack of such activity in the designated area except there would be a loss of the use of 7 miles of ways in the designated area. Approximately 9 miles of ways within the WSA would be in the nondesignated area and would continue to be available for ORV use. The Elephant Cove area would continue to be available for ORV use as well. The quality of the primitive recreation opportunity would de-

crease in the nondesignated area as ORV activity increases. Otherwise, little change in recreational opportunity is expected. Use would increase at the same rate identified for the No Action/No Wilderness Alternative.

Conclusion: Primitive recreational opportunities would be protected on 58 percent (17,888 acres) of the WSA in the area currently receiving primitive use. There would be some restriction to existing ORV use with the closure of 7 miles of way in the designated area, but overall ORV use areas and the percentage of use attributed to vehicular activity would not change.

Small Partial Wilderness Alternative (7,400 Acres)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action/No Wilderness Alternative. The specific actions that would take place within the 7,400-acre area designated as wilderness and the 23,400-acre nondesignated area are discussed in the Description of the Alternatives section.

- Impacts on Wilderness Values

Designation and management of 7,400 acres as wilderness would contribute to the preservation of the wilderness values in the Parunuweap Canyon WSA. The potential for surface-disturbing activities would be reduced on the designated portion of the WSA through closure to future mineral leasing and location and to ORV use, and through management of the designated area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 7,400 designated acres. Solitude would be protected on approximately 7,200 acres that meet and 200 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 7,200 acres that meet and 200 acres that do not meet the standards for outstanding opportunities. Resources that could be considered special features in the WSA (including scenic, historic, botanical, biological, and water values) would also be protected.

Overall, disturbance in the foreseeable future would be the same as described for the No Action/No Wilderness Alternative. None of the disturbance is anticipated in the designated portion of the WSA. About 307

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acres of disturbance is projected for the nondesignated portion of the WSA from wildlife and rangeland developments. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be lost on the disturbed areas at least until activities and noise cease and reclamation is complete. Wilderness values would be lost due to the development of a livestock reservoir and chaining. Opportunities for solitude and primitive recreation would also be reduced in quality on adjacent portions of the WSA during the period of activity. Fourteen of the 16 miles of ways are in the nondesignated area and would continue to be accessed by vehicle. New trails would be formed as ORV activity continues in the nondesignated portion in the vicinity of Elephant Cove, further reducing wilderness values. All in all, wilderness values in as much as 10 percent (3,080 acres) of the WSA would be affected by disturbance, noise, and visual intrusion from vehicles over the foreseeable future. The areas that would be affected are generally not considered to have outstanding opportunities for solitude and primitive recreation. The impacts on special features would be the same as described for the No Action/No Wilderness Alternative.

Increased visitor use that would occur with time would be managed so as to not result in loss of wilderness values in the designated portion. Loss would occur in the nondesignated portion due to ORV activity.

Wilderness designation would complement wilderness management of the adjacent Zion National Park. Opportunities for primitive, unconfined recreation would be enhanced by a contiguous NPS-BLM wilderness area.

Conclusion: Wilderness values would be preserved in the designated area which is approximately 24 percent of the WSA. Naturalness and opportunities for solitude and primitive recreation would be lost or reduced in quality on up to 3,387 acres of the WSA in the nondesignated area. Inadvertent and probably insignificant disturbance of cultural and biological special features would occur.

• Impacts on Vegetation Including Special Status Species

Since the proposed 307 acres of surface-disturbing activities and ORV use would occur in the nondesignated area, the impacts on vegetation would be essentially the same as described for the No Action/No Wilderness Alternative. The disturbed area would be less

than 1 percent of the WSA and would not constitute a significant impact. As previously discussed, prior to any surface-disturbing activities, BLM would conduct site-specific clearances and initiate consultation with FWS if necessary, and take appropriate mitigation measures where needed.

Conclusion: The 307 acres of protected surface disturbance would affect about 1 percent of the pinyon-juniper woodland in the WSA. Therefore, no significant impacts are expected. There would be no impacts to threatened, endangered, or other special status plant species.

• Impacts on Water Resources

Impacts on water resources would be about the same as with the Large Partial Wilderness Alternative because water developments and surface disturbance would be the same and the East Fork of the Virgin River would pass through the designated area.

Conclusion: Wilderness designation would not alter present or future water quality or proposed developments in the WSA. Water use upstream of the wilderness would not be affected because of existing flow requirements downstream of the area.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

Since the proposed 300 acres of pinyon-juniper woodland chaining would occur on the nondesignated portion of the WSA, the impacts would be essentially the same as with the No Action/No Wilderness Alternative. However, wildlife species, including the threatened, endangered, and other special status species that may occur in the designated portion of the WSA, would be provided additional protection with wilderness designation through increased opportunities to find solitude.

As discussed in the No Action/No Wilderness Alternative, BLM would conduct site-specific clearances of potentially disturbed areas, initiate consultation with FWS if necessary, and take appropriate measures to protect potential populations of threatened, endangered, or other special status species.

Conclusion: Implementation of the Small Partial Wilderness Alternative would not significantly affect wildlife habitat or populations.

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• Impacts on Livestock Management

The effects of designation of 7,400 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the No Action/No Wilderness Alternative. Of the 331 AUMs allocated, 80 would be within the designated portion of the WSA and 251 within the nondesignated portion. Because no developments have been proposed in the designated portion of the WSA and motorized vehicles are used on only 2 miles of ways, little effect on the management of livestock grazing is expected.

Conclusion: Implementation of the Small Partial Wilderness Alternative would not adversely affect livestock management.

• Impacts on Recreation

Primitive recreational opportunities would be protected in the 7,400-acre area that would be designated as wilderness. Little impact on ORV recreational use would be expected due to the lack of such activity in the designated area; and because only 2 miles of ways within the WSA would be closed to ORV use.

In the area that would not be designated (23,400 acres), little change in the type of recreational use is expected. The quality of the primitive opportunity would decline in the nondesignated area as ORV use increases.

Use would increase at the same rate identified for the No Action/No Wilderness Alternative.

Conclusion: Primitive recreational opportunities would be protected in the designated area which is where most primitive use is currently occurring. There would be a slight adverse impact to ORV use with the closure of 2 miles of way in the designated area, but overall ORV use areas and the percentage of use attributed to vehicular activity would not change.

Canaan Mountain WSA



CANAAN MOUNTAIN WSA

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CANAAN MOUNTAIN WSA

(UT-040-143)

INTRODUCTION

General Description of the Area

The Canaan Mountain WSA is located in southeastern Washington County, Utah, and southwestern Kane County, Utah. The WSA consists of 47,170 acres of public land. Approximately 42,858 acres are in Washington County and 4,312 acres are in Kane County. The WSA adjoins the recently designated BLM Cottonwood Point Wilderness in Arizona. Approximately 3,249 acres of State land are located within the WSA. No private lands are included in the WSA.

The WSA is located approximately 25 miles west of Kanab, Utah, and is bordered by Zion National Park on the north and the Cottonwood Point Wilderness on the south. Canaan Mountain is a spectacular plateau that towers 2,000 feet above the surrounding lands. From the slickrock of the plateau top, a panorama of Zion National Park, the Arizona Strip, and the Pine Valley Mountains are visible. There is a variety of vegetation, including hanging gardens, Ponderosa pine, Douglas fir, aspen, sage, maple, and pinyon pine.

The WSA has a cold desert climate. Annual precipitation averages approximately 12 to 15 inches with about half occurring in the form of winter snow and half in the form of rain in summer thunderstorms. Temperatures are usually mild but may reach into the high 90s during summer and dip below 0 degrees Fahrenheit (F) in winter.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, 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. 43 S., R. 11 W., sec. 2) has been redrawn to include this State section within the WSA. The EIS maps and State in-held acreage have been changed to reflect this addition.

2. The Partial Wilderness Alternative (BLM Proposed Action) analyzed in the Final EIS would designate 1,000 more acres than the Partial Wilderness Alternative presented in the Draft EIS. The partial has been

expanded in the South Creek area along the northern boundary of the WSA (see Map 3).

3. The anticipated surface disturbance presented in the Draft EIS (1,500 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 1,500 acres reported in the Draft EIS to 309 acres for the Final EIS.

4. As part of the 1,500 acres identified above, the Draft EIS identified 1,200 acres of chaining, seeding, and spraying within the WSA to increase livestock forage production. However, BLM does not anticipate sufficient funding in the foreseeable future to complete these projects. As a result, the vegetation treatment estimates have been revised downward to 300 acres in the Final EIS to reflect more realistic funding projections.

5. The proposed reservoir in South Creek reported in the Draft EIS has been dropped from consideration. Refer to the Water Resources section for more detailed information.

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 III-A (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 Canaan Mountain WSA were considered but are not

STATEWIDE
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WSA
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analyzed in detail in the Final EIS for the reasons described below.

1. Soils: Estimates of total surface disturbance without wilderness designation have been revised downward from the 1,500 acres reported in the Draft EIS to 307 acres in the Final EIS. Given this new scenario, the impacts of direct disturbance of soil would be reduced from that reported in the Draft EIS and would not be significant with any of the alternatives (less than 1 percent of the WSA would be disturbed). Over 80 percent of the soils in the WSA are classified as nonsaline with an average annual salt yield of only 12 lb per acre. Therefore, impacts on soils are not analyzed in detail for the Canaan Mountain WSA.

2. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

Even though there are two oil and gas leases within the WSA, potential oil and gas deposits are small with a low certainty that they exist. In addition, over 63 percent (29,900 acres) of the WSA is closed to leasing or closed to surface occupancy under the existing land use plans.

There are 112 mining claims along the margins of the WSA, but projected uranium and other locatable mineral deposits are small and could not be economically developed in the foreseeable future (refer to Appendix 6 in Volume I). More extensive and 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.

3. 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. There is also some concern that use of ORVs would disturb wildlife and destroy habitat.

Because no mineral developments are projected in the WSA in the foreseeable future, wildlife habitat would not be lost and populations would not be reduced. The proposed 300 acres of vegetation treatments would improve deer habitat and the proposed spring developments may cause bighorn sheep to migrate into the

area and become established near the isolated water sources.

Prior to any surface disturbance, BLM would conduct site-specific clearances of the potentially disturbed areas, consult with the FWS, and provide appropriate mitigation measures where necessary to protect threatened, endangered, or other special status animal species. Terrain, surface features, and the BLM land management plan generally restrict the use of ORVs to the 4 miles of way in the WSA. Recreation use is low (estimated 250 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.

4. Forest Resources: There has been no interest expressed for commercial or noncommercial harvesting of woodland or forest products within the WSA and this situation is not expected to change. Potential chaining and seeding of up to 300 acres of pinyon-juniper woodland would not result in a significant impact to this vegetation type. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

5. Visual Resources: As discussed above, 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. Impacts on visual resources would occur on less than 1 percent (307 acres) of the WSA. In the Final EIS, impacts on visual resources are addressed as part of the discussion of naturalness in the Wilderness Values section.

6. Cultural Resources: As discussed in the Draft EIS, cultural resources could be destroyed by surface-disturbing activities. However, there are only nine recorded sites in the Canaan Mountain WSA (four of which are of National Register quality). Surface disturbance estimates for the No Action/No Wilderness Alternative have been reduced from 1,500 acres to 307 acres for the Final EIS and there are no known sites in the northwestern portion of the WSA where the 300-acre chaining is proposed. Dispersed disturbance for ORVs is prevented by the steep terrain, surface features, and BLM's land management plan.

In addition, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance. Given these conditions, impacts on cultural resources are not significant issues for the Canaan Mountain WSA.

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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 Canaan Mountain WSA is light (estimated 250 visitor days per year), and would remain primitive with or without wilderness designation due to the terrain and present management of the WSA. Therefore, impacts on recreation use would not be significant and are not analyzed in detail in the Final EIS.

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.

There are no existing or anticipated mineral developments or proposals for land or realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected and because recreational use is only 250 visitor days per year, impacts on economic conditions are not significant issues for analysis in the Final EIS.

9. Kaiparowits Coal Transportation and Other Corridors: A portion of a Kaiparowits coal transportation corridor crosses the extreme southeast portion of the WSA (ERT, 1980). In addition, BLM land use plans have identified an energy corridor in the same area. Commentors on the Draft EIS expressed concern that designated wilderness areas, including the Canaan Mountain WSA, could block the use of these various corridors. However, the majority of the corridors would be available for rights-of-way if energy developments were to occur as they extend beyond the WSA boundary. Therefore, should the need arise, rights-of-way within the corridors could be developed without concern for wilderness values. Even if the Canaan Mountain WSA is not designated wilderness, construction of rights-of-way within the corridors would not significantly affect wilderness values in the WSA as development would be restricted to the Rosy Canyon area in the extreme southeast corner of the WSA. Therefore, impacts on energy and transportation corridors are not analyzed in detail in the Final EIS.

• Issues Analyzed in Detail

The significant issues for the Canaan Mountain 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 water resources.
4. Impacts on livestock management.
5. Impacts on energy transmission corridors.

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, 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 20, for responses to specific comments about the Canaan Mountain WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add acreage around the border of the WSA while deleting other small areas were suggested by the public during the public comment period for the Draft EIS. Some of this is State land and is 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). The proposed deletions would not result in impacts appreciably different from those analyzed for the Partial Wilderness Alternative.

Also, an alternative was suggested to include only lands above 6,000 feet in elevation. BLM did not identify significant new information or conflict resolution that would result from such an alternative; therefore, it was eliminated from further study.

CANAAN MOUNTAIN WSA

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (47,170 acres); and (3) Partial Wilderness (3 (Proposed Action) (33,800 acres). A description of BLM's management practices with each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. The assumed BLM management actions presented in the Introduction to Volume III-A are also applicable.

• No Action/No Wilderness Alternative

With this alternative, none of the 47,170-acre WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Virgin River and Vermillion MFPs (USDI, BLM, 1979b and 1981b).

The in-held State lands within the WSA (refer to Map 1) have not been identified in the MFPs for special Federal acquisition through exchange or purchase. In-held lands are analyzed as remaining under existing ownership. Refer to Appendix 3 in Volume I for further information on State in-holdings.

• Management Conditions and Constraints

All 47,170 acres would remain open to mineral location and sale. Development work, extraction, and patenting would be allowed on valid mining claims. There are 112 mining claims currently located in the WSA. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809). Two existing oil and gas leases (2,180 acres) could be developed subject to stipulations issued at the time of leasing. Future leases could be developed under leasing Category 1 (standard stipulations) on about 17,270 acres and Category 3 (no surface occupancy) on about 12,600 acres. Leasing would not be allowed on 17,300 acres (Category 4). Although mineral resources would be managed as described above, no locatable or leasable exploration or development are projected in 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 1 explains the mineral exploration and development projections.

The present domestic livestock grazing use of the 47,170-acre WSA would continue as authorized

in the MFPs (782 AUMs). Use of the existing livestock developments would continue. These include 10 miles of fences, a livestock corral, drive trail, four reservoirs, nine developed springs, 4.5 miles of pipelines, and nearly 1 mile of irrigation canals. Several other livestock developments are proposed and include seven spring developments, four reservoirs, one water catchment, 0.25 mile of pipeline, 1.5 miles of livestock trail, 0.75 mile of fence, vegetation treatment of 300 acres including spraying and reseeding of sagebrush and chaining, and reseeding of pinyon-juniper woodland. These developments could be implemented without wilderness considerations.

About 1,040 acres of public lands would continue to be managed as public water reserves which are segregated from public land law and mining of nonmetalliferous minerals. These reserves are located in Water Canyon and Short Creek on the south side of the WSA.

Nearly 28,860 acres of the WSA encompassing Canaan and South Mountains would remain closed to ORV use. The remaining 18,310 acres would remain open to ORV traffic. However, use of motor vehicles is limited in the WSA due to steep terrain and surface features. There are 4 miles of way in the WSA that would continue to be used for vehicular access.

The area would continue to be managed under VRM Class II on 41,470 acres and Class III on 5,700 acres.

• 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 309 acres of surface disturbance. About 300 acres of disturbance would result from planned vegetation treatments including a pinyon-juniper woodland chaining and seeding at the base of Canaan Mountain in the northwestern part of the WSA and the spraying and seeding of sagebrush areas in other parts of the WSA. The vegetation treatments would be maintained over the foreseeable future to provide forage for livestock. Approximately 9 acres of surface disturbance would result from the construction of seven spring developments, four reservoirs, one catchment, 0.75 mile of pipeline, 1.5

CANAAN MOUNTAIN WSA

T. 42 S.

T. 43 S.

T. 42 N.

R. 9 W.

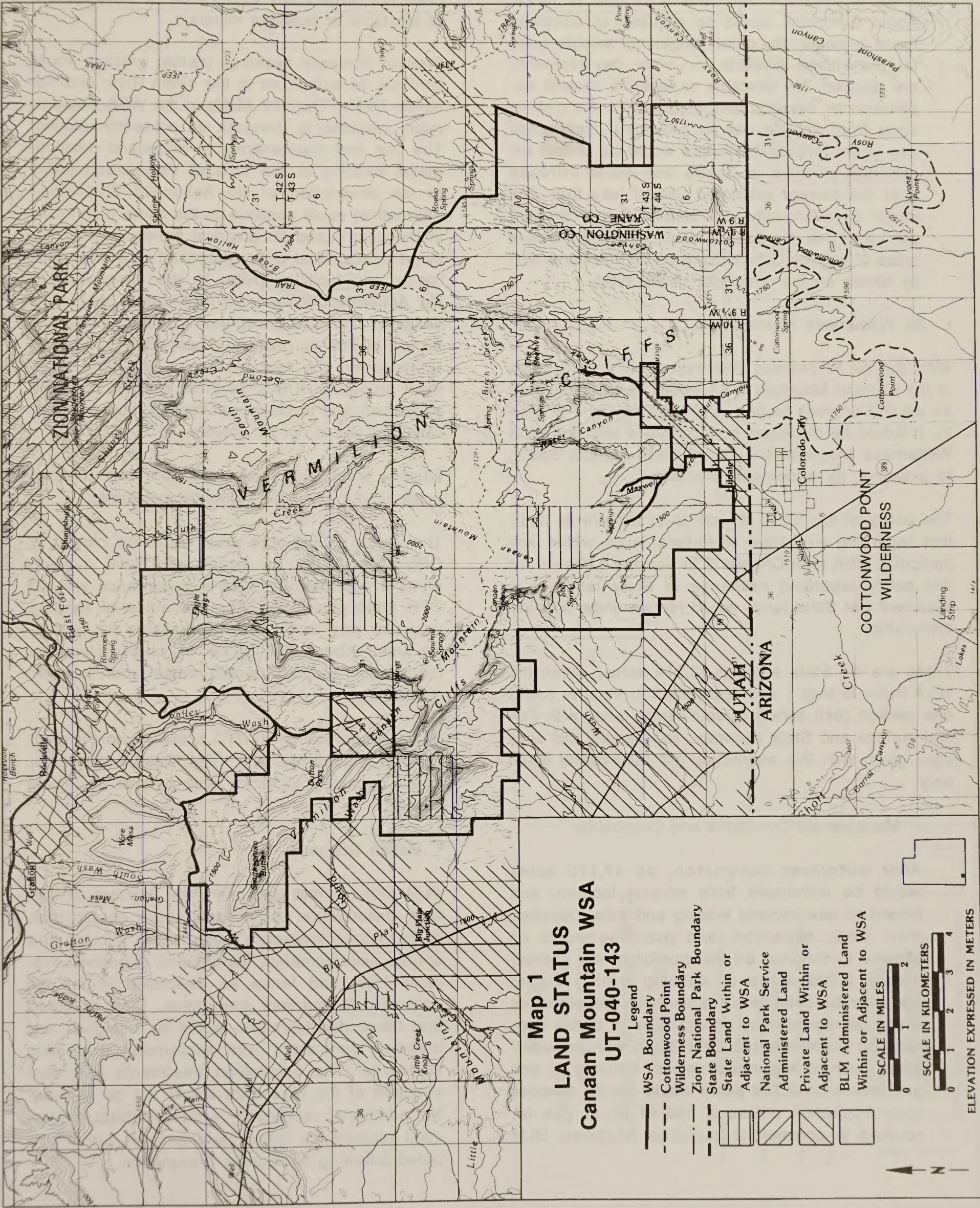
R. 10 W.

R. 11 W.

R. 5 W.

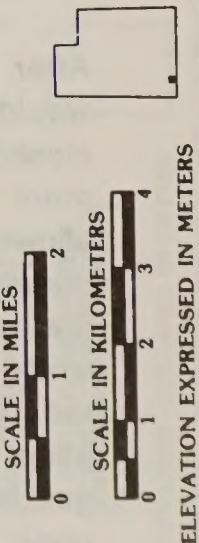
R. 6 W.

R. 7 W.



Map 1
LAND STATUS
Canaan Mountain WSA
UT-040-143

- Legend
- WSA Boundary
 - Cottonwood Point Wilderness Boundary
 - Zion National Park Boundary
 - State Boundary
 - State Land Within or Adjacent to WSA
 - National Park Service Administered Land
 - Private Land Within or Adjacent to WSA
 - BLM Administered Land Within or Adjacent to WSA



CANAAN MOUNTAIN WSA

miles of livestock trail, and 0.75 mile of fence. About 2 months would be required to complete these projects. No other rangeland, wildlife habitat, watershed projects, or other developments are planned. No locatable or leasable mineral exploration or development is projected. No disturbance from vehicle use is projected. Recreation use in the foreseeable future would be almost exclusively primitive in nature and would increase over the current estimated use of less than 250 visitor days annually at a rate of 2 to 7 percent per year. Use of vehicles would be restricted to 4 miles of way by ORV closure on 28,800 acres and by terrain on the remainder of the WSA.

- All Wilderness Alternative

With the All Wilderness Alternative, all 47,170 acres of the Canaan Mountain 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 six State sections (3,249 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I) and one section (640 acres) of split-estate lands with Federal surface and State minerals. The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 47,170 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 2,290 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. Existing oil and gas leases on 2,180 acres would not be reissued upon expiration unless a find of oil or gas resources in commercial quantities is shown. BLM

does not project any exploration or development of locatable or leasable minerals.

Present domestic livestock (cattle) grazing would continue as authorized in the Virgin River and Vermillion MFPs. The 782 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 (refer to the description of No Action/No Wilderness Alternative) could continue in the same manner as in the past based on practical necessity and reasonableness. Most of the proposed range developments and facilities (refer to the description of No Action/No Wilderness Alternative) would be designed and built consistent with wilderness protection standards (refer to Appendix 1 in Volume I). However, the four reservoirs and land treatment proposals of 300 acres to spray and reseed sagebrush and to chain and reseed pinyon-juniper woodland would not be allowed.

Existing public water reserves on 1,040 acres of public land in the WSA would be maintained.

The entire 47,170-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 4 miles of existing vehicular way would not be available for vehicular use. About 2.7 miles of cherry-stemmed roads within the WSA would remain open to vehicular use.

Visual resources on 47,170 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

BLM projects that approximately 6 acres of surface disturbance would result from construction of rangeland projects. These would include the spring developments, catchment, pipeline, livestock trail, and fence as described in the No Action/No Wilderness Alternative. It is assumed that these developments would be designed and installed consistent with wilderness protection standards. The vegetation treatments and construction of the reservoirs would not be allowed. No additional rangeland, wildlife habitat, watershed projects, or other developments are anticipated following wilderness designation.

CANAAN MOUNTAIN WSA

T. 42 S.

T. 43 S.

T. 42 N.

R. 9 W.

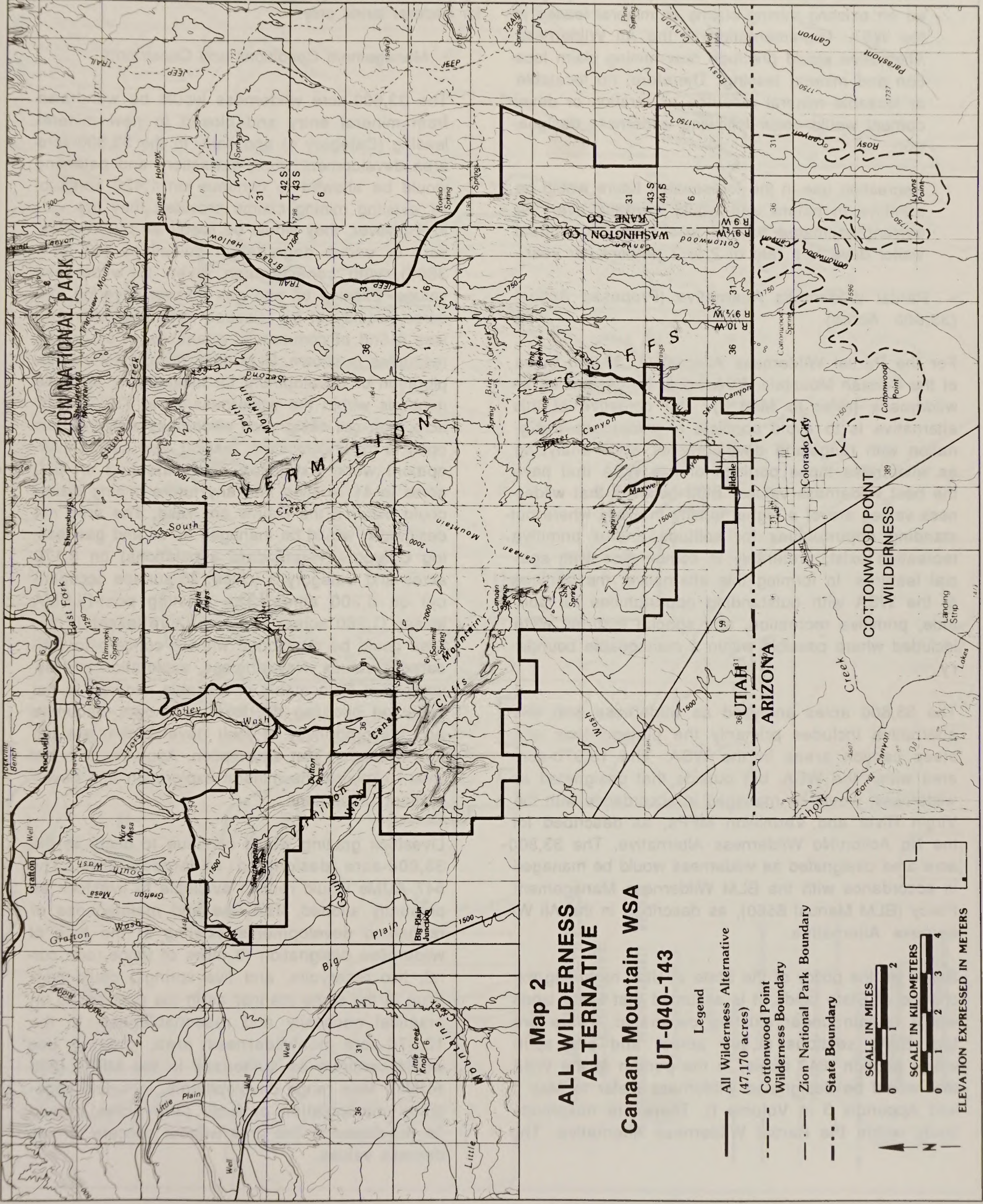
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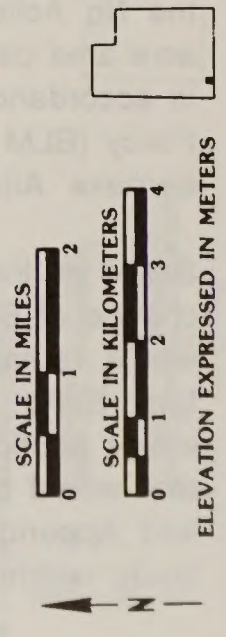
R. 6 W.

R. 7 W.



Map 2
ALL WILDERNESS
ALTERNATIVE
Canaan Mountain WSA
UT-040-143

- Legend
- All Wilderness Alternative (47,170 acres)
 - - - Cottonwood Point Wilderness Boundary
 - . - Zion National Park Boundary
 - . . - State Boundary



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No mineral exploration or development is projected on existing mining claims or mineral leases in the WSA. Implementation of the All Wilderness Alternative would preclude new mining claim location and mineral leasing. Therefore, no locatable or leasable mineral resource exploration or development would occur following wilderness designation.

Recreation use in the foreseeable future would be primitive in nature and would increase over the current estimated use of less than 250 annual visitor days at a rate of 2 to 7 percent per year.

- Partial Wilderness Alternative (Proposed Action) (33,800 Acres)

For the Partial Wilderness Alternative, 33,800 acres of the Canaan Mountain WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to avoid conflicts of wilderness designation with rangeland developments 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 with outstanding opportunities for solitude, primitive recreation, and special features were included where possible within a manageable boundary.

The 33,800 acres analyzed as wilderness with this alternative includes primarily the plateau tops and steep canyon areas in the WSA. The 13,370-acre area within the WSA, but outside that designated as wilderness, would be managed in accordance with the Virgin River and Vermillion MFPs, as described for the No Action/No Wilderness Alternative. The 33,800-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.

Based on the policy of the State of Utah regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. There are four State sections (1,969 acres) and one split-state section (640 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 lands within the Partial Wilderness Alternative. The

figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 33,800-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing (Category 4) and sale. In the 33,800-acre area development work, extraction, and patenting would be allowed to continue on 1,420 acres of 71 existing mining claims provided they are valid. However, they would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. Existing oil and gas leases, covering 920 acres, would not be reissued upon expiration unless a find of commercial quantities of oil or gas resources is shown. BLM does not project any exploration or development for locatable or leasable minerals within the wilderness area. The 13,370-acre area not designated wilderness would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting on 820 acres in 41 existing and any future mining claims could occur if the claims are valid. The area not designated would be managed as oil and gas leasing Category 1 (standard stipulations) on 8,170 acres and Category 3 (closed to surface occupancy) on 5,200 acres. The existing post-FLPMA leases (1,260 acres) and any future leases in this area could be developed without concern for wilderness values. Nevertheless, exploration and development of locatable or leasable minerals is not expected 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 exploration and development projections.

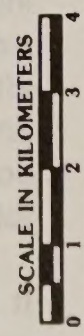
Livestock grazing would continue to occur in the 33,800-acre designated wilderness area. The 547 AUMs would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of wilderness designation (3 miles of fence, one corral, two reservoirs, and five springs) could continue in the same manner as in the past based on practical necessity and reasonableness. In the 13,370-acre nonwilderness area, grazing use would continue as authorized in the MFPs (235 AUMs). New range developments, including vegetation manipulation projects (300 acres), could be developed in this area without concern for wilderness values.

T. 42 N.



Map 3

- ## State Boundary



CANAAN MOUNTAIN WSA

In the 33,800-acre area, new water resource facilities or watershed activities would be allowed only if compatible with wilderness, to correct imminent hazards to life or property, or authorized by the President pursuant to Section 4(d)(4)(1) of the Wilderness Act. In the remaining 13,370-acre nonwilderness area, water resource developments would be allowed if in accordance with the MFPs.

Existing public water reserves on 1,040 acres of public land in the WSA would be maintained. Approximately 300 acres are within the area that would be designated and 740 acres are located in the nondesignated area.

The 33,800-acre wilderness area would be closed to ORV use. The 2.7 miles of cherry-stemmed roads and the 4 miles of way would be outside of the designated wilderness area. The existing roads bordering the WSA would remain open to vehicular travel. ORV use in the 13,370-acre nonwilderness area would be managed as directed by the Virgin River and Vermillion MFPs.

Visual resources on the 33,800-acre wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 13,370 acres would be managed as VRM Class II on 9,370 acres and Class III on 4,000 acres as outlined in the Virgin River and Vermillion MFPs.

- Action Scenario

BLM projects that 2 acres of surface disturbance would occur in the designated portion of the WSA as a result of the construction of a livestock trail and three spring developments. These developments would be designed and installed consistent with wilderness protection standards. No additional rangeland, wildlife habitat, watershed projects, or other developments are planned. Existing mining claims and mineral leases would not be explored or developed. Implementation of this alternative would preclude new mineral leasing and mineral location. Therefore, no mineral resource exploration or development would occur following wilderness designation.

It is projected that 307 acres of surface disturbance would occur in the nondesignated portion of the WSA in the foreseeable future. This disturbance would result from construction of rangeland

projects, including a water catchment and the 300 acres of chaining, spraying, and seeding described in the No Action/No Wilderness Alternative. No other projects are planned. No locatable or leasable mineral exploration or development is projected in the foreseeable future.

No disturbance from vehicle use is projected. Recreation use in the future would be almost exclusively primitive in nature and would increase over the current estimated use of less than 250 annual visitor days at a rate of 2 to 7 percent per year. Use of vehicles would be restricted to 4 miles of way by ORV closure and terrain.

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 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 WSA contains 47,170 acres of public land. There are approximately 42,858 acres in Washington County and about 4,312 acres in Kane County. The WSA is 10 miles long (north to south) and over 10 miles wide (east to west) and borders Zion National Park on a portion of its northern boundary and the Cottonwood Point Wilderness on its southern boundary.

- Naturalness

The WSA is in a natural condition with minor exceptions. Imprints of man in the WSA include vehicular tracks on Canaan Mountain and in the main Cottonwood Canyon channel, an old house trailer, fences, several spring developments, reservoir pools, 4 miles of way, and remnants of an old sawmill

CANAAN MOUNTAIN WSA

Table 1
Summary of Environmental Consequences

Alternatives			
Resource	No Action/No Wilderness	All Wilderness (47,170 Acres)	Partial Wilderness (33,800 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 and scenic values would be directly lost on 309 acres of the WSA and indirectly reduced in quality on up to an additional 2,360 acres of the WSA due to rangeland developments. Continued vehicular use of 4 miles of ways would detract from opportunities for solitude and primitive recreation. Over the long term future, additional distribution from development of a utility corridor in Rosy Canyon would occur and an unknown amount of wilderness values would be lost. The No Action/No Wilderness Alternative would not complement management policies for the adjacent Zion National Park and Cottonwood Point Wilderness.	Wilderness values would be preserved overall in the WSA. In the foreseeable future, naturalness, opportunities for solitude and primitive recreation, and scenic values would be slightly reduced in quality on 6 acres because of allowable rangeland projects. Development of the utility corridor would not occur within wilderness. Designation would be consistent with management of the adjacent Zion National Park and Cottonwood Point Wilderness.	Wilderness designation would preserve wilderness values over all in the designated area which is about 72 percent of the WSA. In the nondesignated area, the same loss of wilderness values would occur as for the No Action/No Wilderness Alternative. Wilderness values would be directly lost on 309 acres and indirectly reduced in quality on up to 2,359 acres due to development of rangeland projects. Continued vehicular use of 4 miles of way would detract from opportunities for solitude and primitive recreation. Designation would be compatible with management of adjacent NPS and wilderness lands. Over the long term future, additional distribution from development of a utility corridor in Rosy Canyon would occur and an unknown amount of wilderness values would be lost.
Impacts on Vegetation	About 1 percent (309 acres) of pinyon-juniper woodland and sagebrush in the WSA would be disturbed. Threatened, endangered, or other special status plant species would not be significantly affected because sensitive areas would be avoided.	There would be no effects on vegetation because surface disturbance would be reduced. Additional protection would be provided to any special status species that may occur.	Effects would be the same as for the No Action/No Wilderness Alternative because the proposed projects and existing access routes would be in the nondesignated area.
Impacts on Water Resources	Present or future water quality and uses would not be affected because projected disturbance would be temporary and proposed water projects could be constructed.	Wilderness designation would not alter present or future water quality, but would preclude development of four proposed livestock reservoirs.	Effects would be the same as for the No Action/No Wilderness Alternative because the proposed projects and existing access routes would be in the nondesignated area.
Impacts on Livestock Management	Current livestock grazing would not be affected because management practices and access would remain as at present and all of the proposed livestock projects would be constructed.	Wilderness designation would inconvenience livestock operators in the area by restricting vehicular access on 4 miles of ways. The loss of the vegetation treatments and proposed reservoirs would preclude potential AUM increases and opportunities to improve livestock distribution.	Livestock management would not be significantly affected because existing ways would remain open for use and the proposed vegetation treatment would be allowed. However, construction of two of the four proposed reservoirs would not be allowed.

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operation. These imprints combined involve less than 1 percent (470 acres) of the WSA. A baseball field with access road, wooden booths, and restrooms are on a Recreation and Public Purposes (R&PP) lease in Maxwell Canyon that has been cherry-stemmed. Approximately 2 acres of disturbance resulted from feasibility and archaeological studies for the once proposed South Creek Reservoir. The disturbed areas have been rehabilitated.

The high quality of naturalness in the Canaan Mountain WSA has changed little since the BLM Intensive Wilderness Inventory decision (USDI, BLM, 1980b).

- Solitude

The WSA has outstanding opportunities for solitude on 37,000 acres. Approximately 10,170 acres do not meet the standards for solitude.

The size of this WSA enhances the outstanding opportunities for solitude present in the WSA. The degree to which outstanding opportunities for solitude are present in the WSA is most influenced by the topographic makeup of the unit. In some areas vegetation screening, combined with topographic screening, also contribute to the opportunity. The specific natural screening elements that contribute to the outstanding opportunities for solitude are detailed below.

The WSA is an irregular plateau capped by massive exposures of Navajo Sandstone. The plateau's sandstone surface is extremely rough and broken. Although the Canaan Mountain landscape is often considered comparable to the adjacent Zion National Park landscape, a major distinction does exist. The sandstone plateau in Zion National Park is so incised by canyons that only a series of small remnant plateaus remain. In contrast, Canaan Mountain lacks the canyon incision and thus retains a large and contiguous plateau top. Furthermore, the Canaan Mountain plateau exhibits an extremely high ratio of exposed rock to soil cover. Although there are scattered areas of smooth open slickrock, these expansive rock exposures are exceedingly rough and dissected, offering opportunities for a visitor to avoid the sights, sounds, and evidence of other visitors to the plateau top.

Another natural screening element that contributes to the outstanding opportunities for solitude is the extensive cliffline of the Vermillion Cliffs. The cliffline offers outstanding opportunities for solitude because vertical jointing of the Navajo Sandstone has occurred

within a cliffline of high relief. This phenomenon is responsible for multifaceted broken and slotted cliff faces of considerable aerial expanse and lower talus slopes that are very steep and irregular. This type of escarpment offers innumerable secluded spots.

A third natural screening element is the several canyons that penetrate the cliffline and plateau top. In general, these canyons are deep, narrow, and heavily vegetated. In the canyons, topography and vegetation combine to offer superior natural screening.

Plateau top areas where the topographic screening is considered outstanding include most of the Lower Mountain and the Eagle Crags, Canaan Mountain, and South Mountain in their entirety, and all of the plateau between the Short Creek and Cottonwood Canyons.

The sights and sounds of human activities are present from some of the rims of the Canaan Mountain WSA. However, this "island in the sky" effect likely enhances the awareness of solitude for most visitors. Noise from aircraft does not limit the area's outstanding opportunities for solitude.

- Primitive and Unconfined Recreation

The WSA possesses a diversity of primitive recreational activities. Several of these activities are of superior quality. About 28,000 acres provide outstanding opportunities for primitive and unconfined recreation, but 19,170 acres do not meet the standard for outstanding opportunities. These activities include hiking, backpacking, hunting, horseback riding, rock climbing, photography, bird watching, and sightseeing for botanical and geological features. The backpacking and horse packing activities are considered of outstanding quality.

The backpacking activity is the most area-extensive of all of the activities identified as being of outstanding quality. It is assumed that the horse packing activity would occur only within the area conducive to the backpacking opportunity. Within this backpacking area, the horse packing activity would be limited because some areas are probably negotiable only by foot.

The backpacking activity is limited in the canyon areas and restricted on the clifflines. The entire Short Creek-Squirrel Canyons system is favorable for backpacking. Backpacking in Water Canyon is essentially limited to the canyon bottom. Backpacking

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is possible in most of the South Creek Canyon Basin. The upper cliffline or rim of South Creek Canyon cannot be backpacked. A similar situation exists in the Shunes Creek Canyon. The floor of Cottonwood Canyon also provides backpacking opportunities and represents a major access route to the plateau tops of the southeastern portion of the WSA. Most of the WSA's clifflines act as barriers to the plateau backpacking opportunities. Although it is possible to backpack the perimeter of the plateau along the talus slopes, this activity is not considered an opportunity of outstanding quality.

The remaining individual activity identified as being of outstanding quality is sightseeing. Scenery is one of the several objectives of travel within the WSA. Because the scenery resource or value is present in a large portion of the WSA, sightseeing for scenery is considered available throughout areas where backpacking or hiking opportunities are superior.

- Special Features

The Canaan Mountain WSA possesses scenic and historical values.

A variety of landscape types are evident in the Canaan Mountain WSA. Each of these landscapes exhibits high scenic values. In general, the WSA can be described as a sandstone plateau isolated by an impressive escarpment broken in places by deep canyons. The WSA is similar in character to the Zion National Park and the Cottonwood Point wilderness which abut Canaan Mountain on the north and south, respectively.

The northwestern portion of the WSA is essentially shaped by the South Creek Canyon. The South Mountain plateau borders this canyon on the east. On the west, the Lower Mountain plateau extends northward to terminate in the Eagle Crags above Rockville, Utah. The main Canaan Mountain plateau section lies at the head of South Creek Canyon. South Creek Canyon is the largest canyon in the WSA. It possesses a perennial stream, vegetation characteristic of a north-facing canyon, and deep narrows sections in its upper reaches. Waterfalls are present in a tributary canyon below the Lower Mountain.

The Eagle Crags are an important scenic feature of the Lower Mountain. Much of the Lower Mountain is a sandy sagebrush park interspersed with sandstone outcroppings and clumps of Ponderosa pine. Elevations reach 6,700 feet south of the Eagle Crags, but the

average elevation on the Lower Mountain is about 6,400 feet.

The Canaan Mountain plateau is one of the dominant visual features of the WSA. The surface of Canaan Mountain exhibits parallel fracturing and jointing of the sandstone, several large expanses of slickrock, and scattered clumps of Ponderosa pine and aspen. On the northwest, the plateau top reaches the highest point in the WSA at 7,340 feet and then abruptly terminates in a series of narrow finger-like projections and peninsulas. In the area of The Pines, a spectacular 1,400-foot wall in upper Horse Valley Wash marks the edge of the plateau. Smithsonian Butte, a major visual landmark in the area, is a detached 6,600-foot remnant of the main Canaan Mountain plateau.

The southwest face of Canaan Mountain is part of the Vermillion Cliffs and it constitutes a major landmark in southwestern Utah and the Arizona Strip. The escarpment reaches 2,000 feet above Canaan Ranch and terminates in the El Captain promontory above Maxwell Canyon. The abrupt rim or edge effect created by the cliffline is a major landscape feature of the Canaan Mountain plateau top.

In general, the areas exhibiting scenic values are largely congruent with the areas possessing outstanding opportunities for solitude. Both wilderness characteristics are a derivative of the topographic character of the WSA. Approximately 36,000 acres exhibit exceptional scenic features. The entire WSA is rated Class A for scenic quality.

A lumber operation that existed on the mountain from 1915 to 1928 is considered of significant historical value. An ingenious windlass pulley system was established on the south edge of the mountain and men, equipment, and supplies were lifted the 2,000 feet to the mountain by this means. As many as 25 men were employed. Logs as large as 4 feet in diameter were harvested. It is estimated that several million board feet of lumber were removed during the operation.

Access to the operation was by four routes: the Eagle Crags (South Creek) trail up Short Creek; by way of an extremely precarious route just west of the cable system; up the cable itself; and by way of The Pines at the head of Horse Valley Wash. Logging extended only 2 to 3 miles from the sawmill because of the difficulty of access from one area of the mountain to another and also because of primitive means of transportation.

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The logging operation on the mountain ceased in 1928 with removal of the mill and relocation to Rockville. Portions of the cable and windlass, a few sawed lumber slabs, one small building, and some machinery parts remain as evidence of the operation. These remains are in a deteriorating condition.

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 (bald eagle and peregrine falcon) listed as endangered which may occur in the WSA. In addition, there are 12 other animal species and four plant species that are special status species which may occur in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information. The WSA has populations of cougar and bobcat, and could support desert bighorn sheep which are wildlife species commonly associated with wilderness.

- **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. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area, Las Vegas, Nevada.

Air Quality

The area is presently classified as Class II under the PSD regulations as outlined by the Clean Air Act as amended. The air is usually clear and visibility extends over 100 miles. Occasionally, a light haze can be seen over the valley floor. These pollutants derive from the industrial complexes in Las Vegas and southern California. Zion National Park, a Class I air quality area, is adjacent to the WSA along the northeast boundary.

Geology and Topography

Canaan Mountain is a spectacular plateau comprised of three closely connected terraces coupled with a 4-mile hogback trending to the northwest and terminating at Smithsonian Butte. The WSA is on the western edge of the Colorado Plateau Physiographic Province

and is considered part of the Grand Staircase area. The southern geographic subunit is Canaan Mountain proper. The escarpment created by the leading edge of this terrace towers majestically 2,000 feet above Colorado City, Arizona; Hildale, Utah; and Utah Highway 54.

Rosy Canyon and Broad Hollow form the eastern boundary of the WSA. Lower Mountain is north of Canaan Mountain proper and is created by the east wall of Horse Valley Wash and the west face of the South Creek drainage. It is bounded on the north above Rockville by the Eagle Crags. The southern portion of the WSA extends along the Vermillion Cliffs to the Arizona border.

Bedrock exposures consist of flatlying Triassic and Jurassic sedimentary rocks. The top of the unit is a panorama of rippling slickrock, sandstone pinnacles, cones, balanced boulders, fractures, and scours forming an irregular plateau of sandstone. Massive cliffs of Navajo Sandstone form the skyline. At the base of the Navajo cliffs are more gentle slopes of the red-brown siltstone of the Kayenta Formation, below which the Moenave Sandstone forms the lower red-brown cliffs. Below the Moenave are the softer, lighter-colored Chinle shales. These formations also form the walls of Zion Canyon across the Virgin River immediately to the north.

The rock formations, along with their scattered flora, are the visual character of this WSA and the basis for the topographic screening comprising the outstanding solitude characteristic and the barrier to user access that has kept this unit natural.

Soils

The soils of this WSA are light and finely textured sands, originating from the sandstone caprock and lacking in organic matter. Soil depth is very shallow as evidenced by the abundance of exposed slickrock throughout the unit. The soils are subject to wind and water erosion. Erosion potential is slight to moderate. The capability rating (VIII) for the area is the lowest possible class and indicates extreme difficulty in surface rehabilitation and no potential for agricultural uses other than limited grazing (USDA, SCS, 1977). Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

Information from an unpublished Kane and Washington County Soil Survey conducted by BLM indicates that

CANAAN MOUNTAIN WSA

about 20 percent (9,470 acres) of the soils within the WSA are moderately saline and about 80 percent (32,700 acres) are nonsaline. It is estimated that undisturbed soils within the WSA have an annual salt yield of 17 lb per acre.

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	9,470	20	12,310
Slight	0.6	37,700	80	22,620
Stable	0.3	0	0	0
Total		47,170	100	34,930

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

Rehabilitation potential over most of the WSA is unsuitable because of shallow soils, abundant rockland, rock outcrops, and sandy soils. There are scattered areas around the base of Canaan Mountain where sandy loam soils make rehabilitation and seeding potentials good.

Vegetation Including Special Status Species

Four vegetation types are found in the WSA. The Ponderosa pine-mountain shrub type occupies 35,350 acres (75 percent) and occurs at the higher elevations, mainly on the plateau tops of Canaan Mountain proper and South Mountain. Ponderosa pine and Douglas fir are scattered throughout with isolated solid stands in groves and canyons. Large areas of slickrock void of vegetation are also in these areas. In some parts of the WSA, slickrock occupies as much as 50 percent of the surface area. Some of the more common associated plants of this type include pinyon pine, manzanita, Gambel's oak, Utah serviceberry, Indian ricegrass, western wheatgrass, and wyethia.

Pinyon-juniper woodland makes up approximately 9,000 acres (19 percent) of the WSA. It is found on the talus slopes surrounding the mountains and on the south end of South Mountain. Pinyon pine and Utah juniper are scattered throughout with understory shrubs of Utah serviceberry, manzanita, and live oak dominating the vegetative composition. Herbaceous vegetation includes grasses and forbs such as Indian ricegrass, galleta, sand dropseed, eriogonum, and penstemon. Vegetation cover makes up a small percentage (approximately 20 percent) of the total land-

scape. Rock slides, large boulders, and exposed, eroding soils make up the bulk of the land surface.

The sagebrush type occurs on approximately 2,320 acres (5 percent) of the WSA, mainly in Cottonwood Canyon. The soils in this canyon are sandy, deep, and very productive. Big sagebrush, sandsage, and rubber rabbitbrush make up the bulk of the vegetation. Herbaceous grasses and forbs such as Indian ricegrass, sand dropseed, grama grass, and eriogonum occur, but make up less than 2 percent of vegetation. This type is typically solid stands of sagebrush and rabbitbrush with a very small percentage of other plants.

Riparian vegetation covering 500 acres (less than 1 percent) of the area is located in the following drainages: Short Creek, Squirrel Creek, Water Canyon Creek, Maxwell Canyon Creek, Canaan Wash, Horse Canyon Wash, South Creek, Shune Creek, and Second Creek (approximately 13 miles total). Vegetation composition within these riparian areas varies greatly. Some of the more common plants are cottonwood, box elder, willow, salt cedar, sedges, and rushes. Associated with these riparian areas are numerous hanging gardens developed under protective overhanging cliffs. Plants common to these areas are maidenhair fern, shooting star, scarlet monkey flower, and cliff columbine.

No threatened or endangered plant species are known to occur within the WSA. However, four Category 2 candidate plant species may occur in this WSA. They are Asplenium andrewsii, Erigeron sionis, Heterotheca jonesii, and Sphaeromeria ruthiae (refer to Appendix 4 in Volume I). The known and projected habitat of these special status species extends beyond the WSA boundaries.

The Canaan Mountain 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 Canaan Mountain WSA is within the Virgin River subbasin of the Colorado River hydrologic subregion. The major drainages that flow into the Virgin River from the northern part of the unit include Horse Valley Wash, South Creek, Shunes Creek, and Second Creek. South Creek (3 miles) and Horse Valley Wash (1 mile) are perennial streams, whereas Second Creek is intermittent. The southern portion of the unit drains into the Fort Pearce Wash, which empties into

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the Virgin River about 25 miles west of the Canaan Mountain area. The major associated streams (all intermittent) in the southern part of the WSA are Maxwell Canyon, Water Canyon, Squirrel Creek, Short Creek, and Cottonwood Canyon.

Water on the Canaan Mountain complex is found in shallow lakes, pot holes, and small springs and seeps. Excellent fresh water springs, which are used for culinary purposes, are found several hundred feet below the rim at the base of the formation. Recharge comes from winter snow and late summer thunderstorms. The principal supplier of groundwater is bed-rock aquifers in the Navajo Sandstone. Dependability of these sites varies. This is due to the permeability of the Navajo Sandstone and lack of impervious geologic layering at the higher elevations. Most known water sources are on Canaan Mountain proper, although there are numerous springs and seeps scattered throughout the unit. Live water from springs is found in all the major drainages. Other water sources in the unit include four livestock reservoirs (refer to the Livestock section).

Most of the area is well watered for livestock and wildlife during the spring and early summer, but many seeps and potholes dry up by mid-July. Recreationists use many of the same water sources although potability is often questionable.

Bottom lands around Rockville and Springdale are irrigated by water diverted from the Virgin River, South Creek, and Shunes Creek. In the southern portion of the unit, irrigation water is diverted from Squirrel Creek, Water Canyon, and Short Creek to a reservoir on private land near Hilledale and Colorado City. Culinary water for Hilledale is taken from Maxwell Canyon. Water is also diverted from the springs above Canaan Ranch for livestock, irrigation, and culinary uses. Water quality for these uses is good due to closed systems (pipelines).

Nine developed springs used for livestock, culinary, and/or irrigation are within the WSA boundary. Some of these are more reliable than others. The springs in Water Canyon appear to be the most stable and are used as public water for Hilledale. Recharge for the springs probably originates on Canaan Mountain and production is dependent on precipitation and runoff. Seven springs are proposed for development for livestock use in the Kanab-Escalante Grazing Management EIS (USDI, BLM, 1980a). There are also four livestock reservoirs, a water catchment, and a 0.25 mile of pipeline proposed within the WSA.

A withdrawal containing approximately 1,040 acres for public water reserves exists along Water Canyon, Squirrel Creek, and Short Creek within WSA boundaries.

There are two existing State water rights (Certificate No. 8558 on Horse Valley Wash Springs and Certificate No. 8788 on Squirrel Creek, tributary to Short Creek) in the WSA. There are other valid rights in both the Maxwell and Water Canyons. There is one valid diligence claim (No. 81-1526) on seven springs north and east of Canaan Ranch. There is also one pending water rights application (No. 81-1177) on Short Creek Spring. The perennial water sources within the WSA are fully appropriated. Surface and groundwater sources are closed to further water right applications (UDNRE, DWR, 1988). There is an ongoing water right adjudication being conducted by the Fifth Judicial District Court for the Virgin River drainage for the general determination of rights to the use of both surface and underground water. The NPS is asserting Federal reserved rights for park values in this adjudication.

Since the waters from the WSA drain into the Virgin River, the water quality standard for it applies to the WSA watersheds. The State water quality standards for the Virgin River and tributaries from the State line to Quail Creek diversion are: 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). Those watersheds draining into the East Fork of the Virgin River have the additional Class of 3A (protected for cold water species of game fish and other cold water aquatic life), besides being designated as anti-degradation segments.

Water quality within this drainage is mostly affected by the natural geology of the area. Sedimentary sandstones and limestones contribute to dissolved and suspended solids primarily during runoff periods and storm events. Utah's 1986 305(b) Water Quality Assessment Report shows the East Fork of the Virgin River and the Virgin River to have water quality problems for public water supply, irrigation, livestock watering, and warm water fishery.

There are three existing rights-of-way for pipelines: U-25916 above Canaan Ranch, U-25917 in Maxwell Canyon, and U-5036 in Squirrel Creek. There is also a rights-of-way for the irrigation canal in Water

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Canyon (SL-062930). A rights-of-way for a 34 surface acres, 740 acre-foot reservoir pool in South Canyon was issued in 1984 with an optional renewal date of 1991. The dam would have been on State land, but the water pool would have been on 34 acres of BLM land within the WSA. A stipulation to the grant would have required that the reservoir be drained if the WSA is designated wilderness. Feasibility studies showed the proposed dam site to be undesirable and the applicant modified the original proposal by moving the dam site to inside the WSA and enlarging the reservoir pool to 100 surface acres. This proposal was rejected by BLM until the Congressional decision on the wilderness status of the Canaan Mountain WSA. The applicant has, since then, moved the reservoir site to private land downstream and north of the WSA, and it has been constructed. It does not affect the WSA and the original rights-of-way grant has been relinquished.

Mineral and Energy Resources

The energy and mineral resource rating summary for the Canaan Mountain WSA is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f 2	c1	Less than 500 metric tons of uranium oxide
Coal	f 1	c4	None
Geothermal	f 2	c1	None
Hydroelectric	f 1	c4	None

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools, similar perhaps to the Virgin field approximately 8 miles to the northwest (SAI, 1982). The favorability is rated (f2), having potential for small accumulations of hydrocarbons, containing less than 10 million barrels of oil or 60 billion cubic-feet of gas. A well was drilled in 1985, just to the northwest of the WSA, which contained shows of oil. Based on available information, the certainty for occurrence of deposits in the WSA is rated low (c2).

The tops of Canaan Mountain and South Mountain (approximately 17,300 acres) are in Category 4 (closed to oil and gas leasing). About 12,600 acres along the perimeter of the Utah portion of the WSA are in Category 3 (closed to surface occupancy). The rest of the unit (17,270 acres) is open to leasing with standard stipulations (Category 1). There are presently two post-FLPMA leases covering 2,180 acres located in the WSA.

• Coal

All bedrock of sedimentary origin within the WSA is pre-Cretaceous and is not known to be coal-bearing anywhere in the region. Therefore, the unit has a favorability of (f1), with a high degree of certainty (c4).

• Geothermal Resources

The nearest known thermal hot spring is 10 miles to the west near Hurricane, Utah. However, the WSA is within an area characterized by a major structural transition and high heat flow, and it is possible that low temperature geothermal resources may exist at shallow depths. This unit has been assigned a favorability of (f2) (potential for low temperature deposits), with a very low certainty (c1).

• Hydroelectric

Potential sites for development of small-scale hydroelectric facilities do not occur within this WSA because sufficient water does not flow except during times of heavy precipitation. Accordingly, the unit has been assigned a favorability of (f1), with a high certainty (c4).

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- Locatable Minerals

There are 112 mining claims within the WSA. Small amounts of gold and other precious metals have been known to occur in variegated clays of the Petrified Member of the Chinle Formation, but all attempts at economic recovery have failed. There are trace amounts of silver, palladium, and platinum in a few samples (USDI, USBM, 1986b). Economic recovery of such low grade material is not feasible now or in the foreseeable future.

- Uranium

The favorability for uranium in the Canaan Mountain WSA is rated as (f2), indicating the potential for small deposits of uranium oxide (less than 500 metric-tons of uranium oxide). A prospect several miles to the south has reportedly produced uranium from the Triassic Chinle Formation and there may be an occurrence in the Moenave Formation along the western edge of the WSA (USDI, USBM, 1986b; and SAI, 1982). The tract is still rated as (c)1 (very low certainty of occurrence) due primarily to the USBM study. Field work done in the WSA revealed no outcrops or stream sediment samples with a uranium content higher than "background." These uranium ratings were lowered from those in the Draft EIS, based on a reevaluation of existing data.

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. These deposits are not unique or economically significant due to the presence of ample similar materials near the WSA.

Wildlife Including Special Status Species

There is no crucial or critical habitat in the WSA, nor are management facilities or vegetation treatments planned specifically for wildlife.

Various mammals, birds, reptiles, and amphibians occur in the WSA. This diversity exists because of the variety of habitats. The primary big game animal in the WSA is mule deer. Presently, the WSA supports approximately 300 mule deer. Mule deer occur throughout the WSA during the winter with some deer using the top of Canaan Mountain and South Mountain during the summer.

Approximately 3,000 acres have been identified by BLM and UDWR as being highly suitable potential habitat for desert bighorn sheep. The identified zone lies on the talus slopes immediately under the northern rim of Canaan Mountain. Desert bighorn sheep have inhabited the WSA in the past, and the WSA could potentially support up to 100 bighorn sheep. In 1977, desert bighorn sheep were released in Zion National Park adjacent to the proposed release area. Radio telemetry information indicates use of the WSA by these sheep has been light.

Cougar, coyote, and bobcat use of the area is generally light, with most activity centered around drainages. The WSA is within Utah Cougar Management Unit 30, Cedar Mountain. Cougar populations and harvest by sport hunters and by the Animal Damage Control Program has been higher in this management unit than in any other location in Utah. During the 11-year period (1977 through 1987) a total of 217 cougars were taken from the Cedar Mountain management unit. This harvest averaged nearly 20 animals per year (UDNRE, DWR, 1988). It has not been determined how many of these may have been taken from within the WSA.

Other game animals found in the WSA are Gambel's quail, mourning dove, and cottontail. Use by these animals in the riparian areas is moderate, with light use in the remainder of the WSA.

A variety of raptors occupy the WSA, the most common being the red-tailed hawk and Cooper's hawk. A prairie falcon nest is located near Smithsonian Butte, a golden eagle (BLM sensitive species) nests in South Creek, and a number of Cooper's hawk nests are located in riparian areas. Peregrine falcon and bald eagle (both endangered species) use the WSA. Peregrine falcon sightings have been recorded in the general area and a known active nest is located adjacent to the WSA in Zion National Park. Nesting sites of the peregrine have not been found within the WSA, but an adequate prey base and suitable nesting areas do exist. The bald eagle, a winter visitor to the area, has been sighted a number of times along the Virgin River, adjacent to the WSA. No known roosting sites have been recorded, but potential sites exist.

In addition, 12 Category 2 candidate species may occur in the WSA. These are the Arizona Bell's vireo, ferruginous hawk, long-billed curlew, Merriam's kangaroo rat, mountain plover, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, Great Basin Silverspot

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butterfly, Virgin River montane vole, and white-faced ibis (see Appendix 4 in Volume I). If present, most of these species would be associated with riparian and wet meadow areas or cliff falls and deep gorges. Exceptions are the ferruginous hawk and Merriam's kangaroo rat. The ferruginous hawk inhabits pinyon-juniper woodland areas where there are ecotones or edges that provide opportunities for nesting, cover, and hunting activities. The Merriam's kangaroo rat would likely be located in sandy areas with sagebrush vegetation.

Forest Resources

Approximately 44,350 acres (94 percent) of the WSA are covered by stands of pinyon pine, Utah juniper, and Ponderosa pine. These woodlands and timberlands do not supply woodland products because of accessibility problems. Ponderosa pine was harvested

from the top of Canaan Mountain between 1915 and 1928. A sawmill and windlass were set up and milled lumber was lowered nearly 2,000 feet to Canaan Ranch. According to the owner, the operation was never profitable.

Stands of pinyon pine and Utah juniper occur at lower elevations, but legal access into these areas is blocked by private lands. Forest resources within the WSA are marginal. No interest has been expressed for commercial or noncommercial harvesting of woodland products in this WSA.

Livestock and Wild Horses/Burros

Of the 47,170 acres in the Canaan Mountain WSA, approximately 21,774 acres are not allotted for livestock grazing use (refer to Table 4). Vegetation condition, in terms of livestock forage, ranges from fair

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Big Plains	664	50	15	1	30 Cattle	yearlong	1
Buttermilk	1,714	340	40	8	8 Cattle	05/16-10/15	1
Canaan Mountain	7,795	7,795	188	188	53 Cattle	06/01-09/30	2
Canaan Ranch	2,755	570	24	5	2 Cattle	yearlong	1
Cottonwood	820	186	119	27	17 Cattle	10/16-05/31	1
Cottonwood Point	8,706	6,100	244	171	35 Cattle	yearlong	1
Goat Ranch	8,501	4,250	486	243	108 Cattle	06/01-10/15	1
Grapevine	4,762	2,380	120	60	30 Cattle	06/01-09/30	1
Maxwell Canyon	3,569	2,675	40	30	7 Cattle	05/15-10/31	1
Pine Springs	8,553	150	448	8	112 Cattle	11/15-03/15	1
Rock Springs	5,516	390	469	33	94 Cattle	06/15-11/15	1
Russel Field	1,195	60	60	3	5 Cattle	yearlong	1
Trail Well	1,012	120	88	0	18 Cattle	11/01-03/31	1
Well Springs	2,192	330	33	5	5 Cattle	11/15-05/31	1
Total	57,754	25,396	2,374	782			15

Sources: BLM File Data.

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to poor in the WSA, with the great majority being in poor condition. Livestock grazing is the only agricultural use existing within the WSA. However, water sources in the unit are used for irrigation outside of the WSA in the Canaan Ranch, Colorado City, and Hilledale areas.

Under present grazing management practices (Kanab-Escalante Grazing Management), there are 14 grazing allotments that are at least partially within the WSA boundaries. Fifteen livestock operators run a total of 524 cattle (refer to Table 4). The seasons of use vary yearly from yearlong grazing to seasonal use. Total annual authorized use on the 14 allotments is 2,668 AUMs. An estimated 782 AUMs are produced within the WSA. These grazing levels are down from those described in the Draft EIS as a result of implementation of the Kanab-Escalante Grazing EIS.

Existing range developments include approximately 10 miles of barbed wire fence used to restrict livestock movement. Most fences are on allotment boundaries, but some divide pastures. One livestock corral and the Squirrel Canyon Trail and Cottonwood Canyon are used for moving cattle to and from the grazing allotments and to water. The Broad Hollow, South Creek, and Water Canyon trails are not presently in use. The 4 miles of way are used to haul salt, move cattle, and maintain rangeland projects.

Existing livestock water developments include four livestock reservoirs, nine developed springs, approximately a 0.25 mile of pipeline for watering livestock, 1.5 miles of pipeline in Squirrel Canyon used for irrigation, 1 mile of irrigation canal in Water Canyon, 1 mile of pipeline used for irrigation at Canaan Ranch, and about 1.75 miles of pipeline in Maxwell Canyon used for culinary purposes in the Colorado City area. In addition, there are numerous undeveloped springs and potholes in the slickrock where livestock water.

The Kanab-Escalante Grazing Management EIS proposed development of seven springs, four reservoirs, one water catchment, and 0.25 mile of pipeline for watering livestock. Also planned are 1.5 miles of livestock trail and 0.75 mile of barbed wire fence. Land treatment proposals include 300 acres of spraying and reseeding sagebrush, and chaining and reseeding of pinyon-juniper woodland at the base of the mountain. This treatment acreage is less than that identified in the two MFPs, but is more realistic based on funding projections for the foreseeable future.

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

There are no wild horses or burros using the area.

Visual Resources

Canaan Mountain contains a unique combination of natural features creating a diverse visual panorama. Dominating the landscape are expanses of sandstone slickrock exhibiting geologic features such as pinnacles, cones, fractures, scours, and natural arches. Stunted forms of Ponderosa pine and pinyon pine grow out of scattered pockets of soil. The WSA exhibits contrasting colors of green against the reds, yellows, and whites of sandstone. The scenery is similar in quality to the adjacent Zion National Park. The entire WSA is rated Class A for scenic quality. Approximately 88 percent (41,470 acres) of the WSA is assigned a VRM Class II rating. A VRM Class III rating is assigned to approximately 5,700 acres along the boundaries of the WSA (refer to Appendix 7 in Volume I for a description of the BLM VRM rating system).

Cultural Resources

Two inventories have been conducted in the WSA and a total of nine sites have been recorded (USDI, BLM, 1988). Specific data concerning potential site densities in the unit are not available, but potential for finding additional sites is probably good. Three sites are multi-structural Anasazi sites and contain associated lithic and ceramic scatters, middens, and storage cists. The remaining prehistoric sites are lithic and ceramic scatters. One is of Anasazi origin, while the affiliation of the remaining three is unknown. A petroglyph panel is associated with one of the prehistoric sites. Four of the Anasazi sites are eligible for nomination to the National Register of Historic Places.

Historical resources include the Canaan Mountain Sawmill which has been nominated to the National Register of Historic Places. This site consists of the remains of the lumber operation which existed on Canaan Mountain between 1915 and 1928. Parts of a windlass pulley system used to lower lumber 2,000 feet to the valley floor are located a few miles north of the Canaan Ranch. Piles of rotten wood and collapsed buildings are found near Sawmill Springs along the west rim of Canaan Mountain. A second site which consists of two features, the remains of a windlass used to lower mail to the valley floor and the remains of

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the mail carrier's lean-to, is located in the north-eastern portion of the WSA. This site is associated with the historic Schunesburg Mail Trail.

Recreation

The Canaan Mountain WSA receives relatively little primitive-type recreation use, even though the WSA offers numerous opportunities for this type of recreation. BLM personnel estimate present use at less than 250 visitor days per year. Approximately 28,860 acres of the WSA encompassing Canaan and South Mountains are closed to ORV use. Although the remainder of the WSA is open, it receives no noticeable ORV use. Approximately 4 miles of way are found in the WSA.

A Recreation and Public Purposes (R&PP) lease area in Maxwell Canyon that has been cherry-stemmed receives community recreation use from Colorado City for activities such as baseball, football, barbecues, and picnics. Colorado City hikers also use Water Canyon and hike to the springs inside the WSA.

Sightseeing is presently the major recreational use of the WSA. The El Captain escarpment above Colorado City and the Eagle Crags and Smithsonian Butte areas are photographed and viewed by many motor vehicle tourists. The Eagle Crags and Smithsonian Butte areas are visible to all visitors to Zion National Park from Highway 15. Almost 250,000 vehicles annually use Highway 59 below the El Captain escarpment, and it is estimated that approximately 1 million visitor experiences result from this highway use. Canaan Mountain is viewed from Lava Point in Zion National Park which recorded 9,400 viewers in 1980. The WSA is also highly visible from the Zion National Park-Kolob Terrace Highway 14 overlooks, 35 miles to the north of the unit. Scheduled airline flights between Page, Arizona and St. George, Utah; and Las Vegas, Nevada and Denver, Colorado; frequently incorrectly identify Canaan Mountain as Zion National Park to passengers. Scenic flights by aviation companies in St. George and Cedar City, Utah, are frequently flown over the interior of the WSA.

Developed trailheads exist at the northwest boundary for the Eagle Crags trail and 3 miles north of Colorado City for the Squirrel Canyon trails and Water Canyon. The Eagle Crags trail is presently under construction and will follow a livestock trail onto the Lower Mountain. Other trailheads exist at Broad Hollow and Cottonwood Canyon. With the exception of Cottonwood Canyon, all of these trails feed the main

Canaan Mountain trail which leads to the old sawmill area. The trail system on Canaan Mountain is a result of early logging and livestock use of the WSA. Where the trail system crosses expanses of slickrock, it is often quite faint.

Drinking water for hikers within the WSA is unpredictable both to source and quality. During the spring, tanks and seeps are plentiful. During the summer, water sources become scarce and difficult to locate. Potability is often questionable.

Land Use Plans

The WSA is within the BLM's Virgin River and Vermillion Planning Units and is being managed under the land use decisions in the MFPs for those units (USDI, BLM, 1979a and 1981b). Wilderness is not addressed in those documents. 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 plan as the No Action/No Wilderness Alternative. The present principal uses within the WSA are recreational activities such as hiking and sightseeing, livestock grazing, and point sources for water.

BLM has closed 28,860 acres to ORV use to protect natural values. The Cedar City District records indicate a long-term recognition of Canaan Mountain's primitive values, as does the Virgin River Unit Resource Analysis and MFP. In 1976, a Canaan Mountain activity plan was prepared in conjunction with a primitive area designation proposal. However, the designation was not made due to the impending passage of the FLPMA. The District Manager's MFP decision is to "manage the area as recreation lands in a manner that will preserve natural values and allow operation of natural processes." The Kanab-Escalante Grazing Management proposes Allotment Management Plans encompassing this WSA (USDI, BLM, 1980a).

There are existing rights-of-way for water lines and a canal (U-25916, U-25917, SL-062930, and U-5036) which supply irrigation and culinary water. R&PP lease U-17609 in Maxwell Canyon has been cherry-stemmed out of the WSA. A rights-of-way was granted for construction of an irrigation reservoir on South Creek but has since been relinquished. Rosy Canyon, near the southeast corner of the WSA, has been identified by utility companies and the Vermillion MFP as an important energy utility corridor.

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The Kaiparowits Coal Development and Transportation Study (ERT, 1980) has identified a number of potential transportation corridors and truck haul routes that could be used to remove coal from the plateau. The objective of the study was to identify possible areas for construction and operation of future coal transportation systems within the restrictions of general environmental and engineering constraints. Corridor segments were required to contain at least one potential route for a railroad coal slurry pipeline. Specific routes, however, were not identified. By selecting corridors between 2 and 15 miles in width, maximum flexibility for future locations of specific routes were maintained. Corridor route C6 would cross the extreme southeast portion of the WSA in the Rosy Canyon area. The WSA does not extend across the entire width of the corridor, therefore, the corridor could be used without affecting the WSA. In fact, topography would tend to direct potential major rights-of-way away from the WSA.

The WSA is BLM-administered public land except for six State sections (3,249 acres) and one section of split-estate with Federal surface and State minerals. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding the 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. Three of the in-held State sections (1,747 acres) are under lease for livestock grazing (UDNRE, DSLF, 1988).

One section (640 acres) of private land that has been cherry-stemmed out of WSA boundary is used for grazing. Access to the private land is provided by a cherry-stemmed road.

NPS has indicated that wilderness designation of this WSA would complement management practices in Zion National Park. The northwestern areas (Smithsonian Butte-Eagle Crags) have been identified as part of Zion's Integral Vista Program. The Canaan Mountain WSA would complement the adjoining administratively endorsed Zion wilderness area.

The Arizona BLM Cottonwood Point wilderness adjoins the unit along the Arizona border. This area was inventoried as part of the Canaan Mountain WSA. However, the Arizona Wilderness Bill of 1984 designated Cottonwood Point as wilderness and, therefore, further study is unnecessary.

The Washington County Master Plan identifies the WSA as an "open space" zone and the Washington County Commission indicated they would support designation for a portion of the unit (Planning and Research Associates, 1971; and Washington County Commission, 1982). However, since then the County Commission has endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The Kane County Master Plan (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple-use of lands . . . Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept." The Consolidated Local Government Response to Wilderness indicates that the Kane County Commission opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

In March of 1988, BLM acquired, through a land exchange, 923 acres adjacent to the northeast corner of the WSA (T. 42 S., R. 9 W., secs. 19, 29, and 30). This acreage will be placed under IMP and will be inventoried for wilderness values during the next land-use planning update and will be studied for wilderness suitability, if appropriate.

Socioeconomics

• Demographics

The Canaan Mountain WSA is located in Washington County (42,858 acres) and Kane County (4,312 acres), Utah.

From 1970 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987 population increased to about 4,890. Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). Kanab, the county seat, is located 39 highway miles east of the WSA.

From 1960 to 1980, the population of Washington County grew from 13,699 to 26,400, an overall increase of about 93 percent. Table 5 presents the baseline and projected population data for Washington County. It is estimated that between 1980 and 1987

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population increased to about 38,750. Population projections for the county indicate that the number of people living in Washington County in the year 2010 will be about 65,600 for about a 148-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). The City of St. George is approximately 45 highway miles west of the WSA.

Table 5
Baseline and Projected Population and Employment Growth
Washington and Kane Counties

	1980	1990	2000	2010
Washington				
Population	26,400	45,500	51,000	65,600
Employment	8,100	14,400	18,400	24,100
Kane				
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

• Employment

Table 5 shows the baseline and projected total employment for Kane and Washington Counties to the year 2010.

Kane and Washington Counties are part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Totals	10,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent, and trade to 25 percent of the total. Agriculture will decline to 5 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

The communities nearest to the WSA are Hildale, Utah, and Colorado City, Arizona. Residents of these two communities have expressed a desire to remain relatively isolated. This desire is expressed both in the geographic isolation of the communities and the lack of retail trade outlets catering to nonresidents of the communities. These two communities lie along the major access route to the WSA.

• Sales and Revenues

Economic-related activities in the WSA include mineral leasing, livestock production, and recreation. Table 7 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

The WSA has 112 mining claims. Regulations require a \$100 minimal expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$4,360
Mining Claim Assessment	\$11,200	0
Livestock Grazing	\$15,640	\$1,204
Recreational Use	<u>\$ 1,025</u>	<u>0</u>
Total	\$27,865	\$5,564

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Fifteen livestock operators have a total grazing privilege of 782 AUMs within the WSA. If all this forage were utilized, it would account for \$15,640 of livestock sales and \$3,910 of ranchers' returns to labor and investment.

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The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The WSA's motorized recreational use and related local expenditures are also low. 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 expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Canaan Mountain WSA is estimated at about 250 visitor days per year.

The WSA generates Federal revenues from mineral leases and grazing fees (refer to Table 7).

Oil and gas leases in the WSA cover approximately 2,180 acres. At up to \$2 an acre, lease rental fees generate up to \$4,360 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.

The livestock permittees in the WSA can use up to 782 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$1,204 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

An undetermined amount of Federal revenues have also been generated annually from rights-of-way and land use permits issued for areas within the WSA.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on anticipated activities presented in the Introduction to Volume III-A and the Action Scenarios presented in the Description of the Alternatives section.

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., VRM Class II management on 41,470 acres; management under oil and gas leasing Category 4 [closed to leasing] on 17,300 acres and Category 3 [no surface occupancy] on 12,600 acres; and ORV closure on 28,860 acres).

Direct disturbance of approximately 309 acres (0.66 percent) of the WSA from development of rangeland projects is likely and would result in a loss of naturalness, solitude, and opportunities for primitive, unconfined recreation in the disturbed areas. During the period of activity, the visual and audible disturbance from rangeland development would reduce opportunities for solitude and primitive recreation, not only on directly disturbed areas but also on adjacent portions of the WSA. As much as an additional 5 percent (2,360 acres) of the WSA would be indirectly affected. Much of the area that would be affected is considered by BLM to not have outstanding opportunities for solitude or primitive recreation.

Most special features would not be significantly affected by disturbance from proposed range developments either because disturbance would not occur where these features are, or because they would be protected by law and BLM policy mainly through relocation and timing of disturbance, or salvage and interpretation of cultural resources.

Chaining and the limited vehicular use of the existing way would not affect special status wildlife species because activities would be in flat pinyon-juniper woodland areas and, if present, these species would inhabit riparian and cliff face areas. The ferruginous hawk and Merriam's kangaroo rat could inhabit the pinyon-juniper and sandy areas within the WSA. The ferruginous hawk would be disrupted by ORV use during the nesting season. However, chaining would create ecotones or edges and improve ferruginous hawk habitat. The Merriam's kangaroo rat would not be significantly affected because it is a burrowing nocturnal animal.

Since the entire WSA is rated as scenic Class A, scenic special features would be reduced in quality in the directly and indirectly disturbed areas.

In the foreseeable future, ORV use is not seen as a problem for wilderness values due to terrain and

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management restrictions. The increased visitor use that would occur over time would not be expected to reduce wilderness values because the use would be mostly primitive in nature, and the WSA is large enough to disperse the use.

This alternative would not complement the NPS proposal for wilderness in Zion National Park nor management of BLM's Cottonwood Point wilderness in Arizona, both of which are immediately adjacent to the WSA.

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 as intrusions increase.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, wilderness values would be directly lost on 309 acres and indirectly reduced in quality on up to 2,360 acres of the WSA.

- Impacts on Vegetation Including Special Status Species

The 309 acres of surface disturbance projected for the No Action/No Wilderness Alternative would mainly occur in the pinyon-juniper woodland. A small amount of sagebrush would also be sprayed and the area reseeded. On the 300 acres of vegetation treatments, vegetation composition would change from woodland or sagebrush to grass-shrub. It is assumed that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland or sagebrush. The chaining and seeding would be designed to provide livestock forage. Dead-and-down firewood would also be available. There would also be a loss of naturalness in the disturbed area. However, due to the small size of the disturbance (less than 1 percent of the WSA), the overall impact would not be significant. The 9 acres of surface disturbance resulting from the construction of rangeland projects would be reclaimed within a 3 to 5 year period.

The four Category 2 candidate plant species that may occur in the WSA are restricted to moist areas such as hanging gardens or the small Ponderosa pine stands. No surface disturbance would occur in these areas; therefore, no impacts to these species are projected. However, before 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 (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 special status plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Special status plant species would not be significantly affected. The 309 acres of projected surface disturbance would affect less than 1 percent of the pinyon-juniper woodland and sagebrush types in the WSA. Therefore, vegetation types would not be significantly altered.

- Impacts on Water Resources

Since precipitation is low and all disturbance would have to meet State water quality standards and restrictions placed on development imposed on public water resources, no significant sedimentation or change in TDS is expected to result from the 300 acres of vegetation treatments. The chaining and re-seeding of some of the 300 acres of pinyon-juniper woodland could cause a temporary (2 to 3 year) increase in TDS. However, after the new seedlings are established, water quality would improve. Opportunities for maintenance, additional developments, or expansion of existing water sources could occur as allowed in the current Virgin River and Vermillion MFPs.

Conclusion: The No Action/No Wilderness Alternative would not alter present or future water quality or uses.

- Impacts on Livestock Management

No changes in livestock management techniques are expected. Domestic livestock grazing would continue as authorized in the Virgin River and Vermillion MFPs. The 782 AUMs currently allocated in the WSA are controlled by 15 livestock permittees. Additional roads or other facilities for livestock handling could be developed in the future without regard for wilderness values. The four proposed reservoirs, seven spring developments, one catchment, a 0.25 mile of pipeline, 1.5 miles of trail, 0.75 mile of fence, and 300 acres

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of vegetation treatments could be developed and would result in improved livestock distribution and carrying capacity.

Conclusion: Current livestock management practices and grazing leases would not be affected.

All Wilderness Alternative (47,170 Acres)

• Impacts on Wilderness Values

Designation and management of all 47,170 acres as wilderness would contribute to the preservation of the wilderness values in the Canaan Mountain 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 47,170 acres. Solitude would be protected on approximately 37,000 acres that meet and 10,170 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 28,000 acres that meet and 19,170 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including scenic, historical, biological, botanical, and water features, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of the existence of valid existing rights. However, no disturbance is anticipated from exploration and development of existing mining claims.

Rangeland projects would be designed to meet wilderness protection criteria and upon completion would not be substantially noticeable in the area as a whole. All in all, wilderness values in 0.01 percent (6 acres) of the WSA would be reduced in quality by disturbance, noise, and visual intrusion.

Vehicular use of 4 miles of existing way would cease with ORV closure, improving opportunities for solitude and primitive recreation.

This alternative would complement the NPS management policies for the proposed wilderness area in the adjacent Zion National Park and the adjoining BLM Cottonwood Point wilderness. It would also provide opportunities for extensive primitive recreational trips between the three areas.

Conclusion: Wilderness values would be preserved overall in the WSA. Wilderness values would be reduced in quality on 6 acres of the WSA but the wilderness management criteria would be met.

• Impacts on Vegetation Including Special Status Species

The All Wilderness Alternative would provide additional protection to any special status species which may occur in the WSA. The proposed 300-acre vegetation treatment projects would not be allowed.

Conclusion: Implementation of the All Wilderness Alternative would not affect the vegetation resource in the WSA.

• Impacts On Water Resources

Opportunities for additional water developments or expansion of existing developments would only be allowed if they could be constructed in a manner not impairing to wilderness values.

Conclusion: Wilderness designation would not significantly alter present or future water quality, but would restrict future water use.

• Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Virgin River and Vermillion MFPs. The 782 AUMs currently allocated in the WSA are controlled by 15 livestock permittees. Since there is some use of motorized vehicles to manage livestock in the WSA, wilderness designation would necessitate some changes in management practices by the permittees.

Rangeland developments would be maintained as in the past, based on practical necessity and reasonableness. New rangeland developments would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future livestock management facilities would be restricted to preserve wilderness values.

The proposed seven spring developments, one catchment, a 0.25 mile of pipeline, 1.5 miles of livestock trail, and a 0.75 mile of fence would be constructed if they would not impair wilderness values. The four reservoirs and 300 acres of vegetation treatments

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or any other improvements requiring heavy equipment would not be allowed.

Conclusion: Wilderness designation would require changes in livestock management and supervision and cause a slight inconvenience to livestock permittees by restricting vehicular access. The loss of the vegetation treatments and proposed livestock reservoirs would preclude any potential increase in AUMs or improvements in livestock distribution.

Partial Wilderness Alternative (Proposed Action) (33,800 Acres)

• Impacts on Wilderness Values

Designation and management of 33,800 acres as wilderness would contribute to the preservation of the wilderness values in the Canaan Mountain WSA. The potential for surface-disturbing activities would be reduced through closure of the designated 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 33,800 designated acres. Solitude would be protected on 33,800 designated acres that meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 28,000 designated acres that meet and 5,800 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA (including scenic, biological, botanical, historical, and water features) would also be protected in the designated area.

Although protected, complete preservation of wilderness values in the designated area would not be assured because of the existence of valid existing rights. However, no disturbance is anticipated from development of existing mining claims in the WSA. Disturbance of 2 acres in the designated portion of the WSA and 307 acres in the nondesignated portion of the WSA is anticipated from development of rangeland projects.

The disturbed areas and related impacts would be the same as for the No Action/No Wilderness Alternative. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be lost on the directly disturbed areas (0.66 percent of the WSA). Opportunities for solitude and primitive recreation would also be indirectly reduced on adjacent portions of the WSA. Most of the areas that would be affected are not considered to have outstanding oppor-

tunities for primitive recreation. Special features in the nondesignated area would not be significantly impacted. Mitigation to protect wilderness values would be applied in the designated portion and wilderness management criteria would be met. Wilderness values in an additional 5 percent (2,360 acres) of the WSA would be indirectly reduced by disturbance, noise, and visual intrusion.

The 4 miles of existing vehicular way would be outside the designated portion of the WSA. Use by vehicles would continue to occasionally detract from opportunities for solitude and primitive recreation, but in areas where these opportunities are generally not considered by BLM to be outstanding.

Increased visitor use that would occur with time would be managed in the designated portion so as to not result in loss of wilderness values.

The boundaries of this Partial Wilderness Alternative are contiguous with and would complement BLM's Cottonwood Point wilderness and lands proposed by NPS for wilderness in Zion National Park. It would also provide for extensive primitive recreational opportunities between the areas.

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 as intrusions increase.

Conclusion: Wilderness values would be preserved in the designated area which is about 72 percent of the WSA. In the foreseeable future, as with the No Action/No Wilderness Alternative, wilderness values would be directly lost on 309 acres and indirectly reduced in quality on an additional 2,359 acres of the WSA.

• Impacts on Vegetation Including Special Status Species

The 307 acres of surface disturbance projected for the Partial Wilderness Alternative would mainly occur in the pinyon-juniper woodland. A small amount of sagebrush would also be sprayed and seeded. On the 300 acres of vegetation treatments, vegetation composition would change from woodland or sagebrush to grass-shrub. It is assumed that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland or sagebrush. The chaining and seeding

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would be designed to provide livestock forage. Dead-and-down firewood would also be available. There would also be a loss of naturalness in the disturbed area. However, due to the small size of the disturbance, less than 1 percent (307 acres) of the WSA, the overall impact would not be significant. The 7 acres of surface disturbance resulting from the construction of rangeland projects would be reclaimed within a 3 to 5 year period.

The four Category 2 candidate species that may occur in the WSA are restricted to moist areas such as hanging gardens or the small Ponderosa pine stands. No surface disturbance would occur in these areas; therefore, no impacts to these species are assumed. However, before 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 (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 special status plant species would be preserved with the Partial Wilderness Alternative.

Conclusion: There would be no impacts to special status plant species. The 307 acres of projected surface disturbance would affect less than 1 percent of the pinyon-juniper woodland and sagebrush types in the WSA, therefore, no significant impacts are assumed.

• Impacts on Water Resources

Since precipitation is low and all disturbance would have to meet State water quality standards and restrictions placed on development imposed on public water resources, no significant sedimentation or change in TDS is expected to occur from the 300 acres of vegetation treatments. The chaining and re-seeding of some of the 300 acres of pinyon-juniper woodland could cause a temporary (2 to 3 year) increase in TDS. However, after the new seedlings are established, water quality could be expected to improve.

Opportunities for maintenance, additional developments, or expansion of existing water sources could occur in the nondesignated area as allowed in the current Virgin River and Vermillion MFPs. Such opportunities in the designated areas would be analyzed on a

case-by-case basis but could be foregone. The two proposed reservoirs would not be constructed.

Conclusion: The Partial Wilderness Alternative would not significantly alter present or future water quality or uses. Two proposed reservoirs that would require heavy equipment for construction would be foregone.

• Impacts on Livestock Management

The effect of designation of 33,800 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as discussed for the All Wilderness Alternative. Of the 782 AUMs allocated, approximately 547 would be within the designated portion of the WSA and 235 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 547 AUMs in the designated portion would be restricted to preserve wilderness values. Three spring developments, two reservoirs, and a 0.5 mile of fence are proposed in the designated area. The two reservoirs would not be allowed. The remaining projects would be allowed on a case-by-case basis if constructed in compliance with wilderness protection standards. The water catchment and vegetation manipulation projects (300 acres) would be located in the nondesignated area and would be allowed. The 4 miles of way would be outside the designated area and would remain open for livestock management purposes.

Conclusion: Livestock management practices and grazing levels would not significantly change with this alternative. However, construction of the two reservoirs would not be allowed.

Moquith Mountain WSA



MOQUITH MOUNTAIN WSA

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MOQUITH MOUNTAIN WSA

(UT-040-217)

INTRODUCTION

General Description of the Area

The Moquith Mountain WSA is located in Kane County approximately 4 air miles west of Kanab, Utah. On the west, the WSA is contiguous to Coral Pink Sand Dunes State Park. It is bounded on the north by the Hancock Road and private lands, on the east by Cottonwood Canyon, and on the south by Arizona and the Kaibab-Paiute Indian Reservation. There are 14,830 acres of public land, 640 acres of State land, and 40.4 acres of split-estate land with private surface and State minerals within the WSA boundary.

There are five distinct landscape types within the WSA: the Vermillion Cliffs, Coral Pink Sand Dunes, colorful canyons, an escarpment above the dunes, and a pine forest-slickrock plateau. Elevations range from 5,000 feet above sea level in the southeast corner of the WSA to 7,000 feet above sea level on Moquith Mountain in the southwest corner of the WSA.

Average annual precipitation in the Moquith Mountain WSA is approximately 12 inches. Highest monthly precipitation occurs from July through December, during which time two-thirds of the yearly total falls. Intense thunderstorms are common during summer months.

Temperatures vary greatly with aspect and altitude, but are generally indicative of warm summers and cold winters. July and January are the warmest and coldest months, respectively. July temperatures range from 50 degrees to 100 degrees Fahrenheit (F), while the January range is 0 to 60 degrees F.

The predominant vegetation is pinyon-juniper woodland (approximately 70 percent of the WSA). The second major vegetation type is mountain shrub (18 percent).

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, the following changes specific to the Moquith Mountain WSA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the WSA (T. 43 S., R. 4 W, sec. 25; T. 43 S., R. 3 W., sec. 3; and T. 44 S., R. 4 W., sec. 10) 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 (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 104 acres of surface disturbance for the Final EIS.

3. The Final EIS projects that up to 100 acres would be developed as an overflow campsite area for ORV users. The campsite would be located adjacent to the Coral Pink Sand Dunes State Park in T. 43 S., R. 4 W., secs. 13 and 14. This development and associated land use was not discussed in the Draft EIS.

In addition, while not included in the overall surface disturbance totals, it is recognized that up to 3,200 acres (22 percent) of the WSA would continue to be subjected to ORV use. This use would be concentrated in the sand dunes area adjacent to the State park in the west and northwest portion of the WSA.

4. An additional 4 acres of surface disturbance is projected in the Final EIS resulting from the construction of several rangeland projects, including four troughs, three spring developments, and 1.5 miles of fence. No surface disturbance estimates were given for these projects in the Draft EIS.

STATEWIDE
POCKET MAP
WSA
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MOQUITH MOUNTAIN WSA

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 III-A (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 Moquith Mountain WSA were considered but are not analyzed in detail in the Final EIS for the following reasons.

1. Soils: The 104 acres of direct surface disturbance projected for the No Action/No Wilderness Alternative would affect less than 1 percent of the WSA. Surface-disturbing activities would mainly occur in the northwestern portion of the WSA as a result of recreation-related activities and development of an overflow campsite. Recreational use is already occurring in this area and is projected to continue for the foreseeable future. ORV use on the active sand dunes in the area would not be expected to significantly alter the characteristics of the soil or its erosion potential. Therefore, the impact on soils are not significant issues and are not analyzed further in the Final EIS.

2. Water Resources: Existing water developments could be maintained as in the past and would not be affected. Soil disturbance and increases in sedimentation would be small. Therefore, the impacts on existing water developments and water quality are not discussed in detail.

3. Mineral Resources: No mineral exploration or development has been projected for the foreseeable future (refer to Appendix 6 in Volume I for mineral exploration and development projections). There are no existing coal or oil and gas leases nor mining claims within the WSA. Potential oil and gas deposits are small with a low certainty that they exist. Potential uranium deposits also are small with a very low certainty of occurrence. For these reasons, it is projected that mineral exploration, development, or production would not occur in 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.

4. Wildlife Including Special Status Species: No crucial or critical wildlife habitat occurs in the WSA. No threatened or endangered animal species are known to be permanent residents in the WSA, although the en-

dangered peregrine falcon and bald eagle may occasionally utilize the area. Surface disturbance projected to occur would directly affect less than 1 percent (104 acres) of the WSA, although a larger portion of the WSA would be subjected to continued ORV use. However, because no crucial or critical habitat for any wildlife species is located in the WSA, impacts on wildlife are not analyzed further.

5. Forest Resources: The majority of the WSA is pinyon-juniper woodland which is common over a large portion of the State of Utah. Ponderosa pine stands are also located in the WSA, but are not used commercially. No commercial harvest of the Ponderosa pine is projected in the foreseeable future with any alternative. Approximately 50 cords of firewood have been taken from the WSA annually, including some trespass harvest of Ponderosa pine. However, the WSA represents only a minor portion of the general area used for firewood harvest. Therefore, significant impacts to forest resources are not projected.

6. Visual Resources: The surface disturbance projected to occur from development would be concentrated in the northwestern portion of the WSA and would affect less than 1 percent (104 acres) of the total acreage, and ORV use would occur mainly in the sand dune areas. The majority of the disturbance would occur in Scenic Class B and VRM Class IV areas. In the Final EIS, impacts on visual resources are addressed as part of that naturalness discussion in the Wilderness Values section.

7. Cultural Resources: Only three cultural sites have been recorded in the WSA, although the potential for additional sites is considered to be high. None of the recorded sites are of National Register quality. Inadvertent destruction of cultural sites could occur, particularly from ORV use. Continued vehicular traffic in the WSA could also increase vandalism of cultural resource sites. However, less than 1 percent (104 acres) of the WSA is projected to be disturbed in the foreseeable future. In addition, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any authorized surface disturbance. Given these conditions, impacts on cultural resources are not significant issues for the Moquith Mountain WSA.

8. Water Reserve Withdrawal: A public water reserve withdrawal on 30 acres is located within the WSA, segregating those lands from the public land laws and nonmetalliferous mining. Designation or

MOQUITH MOUNTAIN WSA

nondesignation of the Moquith Mountain WSA would not have an affect on the withdrawal; therefore, no significant impacts are projected.

9. Lands and Economic Conditions: There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impacted with or without wilderness designation. Because no economic developments are projected with or without wilderness designation, impacts on economic conditions or activities are not analyzed in detail in this Final EIS. Impacts on ORV use including potential economic effects are considered in the Recreation section.

• Issues Analyzed in Detail

The significant issues for the Moquith Mountain WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Potential impacts on vegetation including special status plant species as a result of ORV activities.
3. Impacts on water use including the Fredonia town municipal water supply.
4. Impacts on livestock management including potential limitations on vehicular access ways for livestock grazing operations.
5. Impacts on recreation activities including ORV use.

Comments made during the public comment period for the Draft EIS centered mainly on the BLM assessment of the value of wilderness versus other resource values (particularly minerals and ORV use). See Volume VII-B for responses to comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 21, for responses to specific comments about the Moquith Mountain WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

An alternative that would add 820 acres to the northeastern part of the WSA was suggested in the public comments. This alternative was not analyzed because those lands were determined to be ineligible during

the wilderness inventory phase (see Volume VII-B, General Comment Response 3.1). A partial alternative was suggested that would include 8,800 acres of wilderness in and adjacent to the eastern and southern portions of the WSA. It was not included for detailed analysis primarily because it included State lands outside of the WSA boundary. The alternative would reduce potential conflicts between ORV use and wilderness management.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness (Proposed Action) and (2) All Wilderness (14,830 acres). A description of the BLM management practices for 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 projected management actions presented in the Introduction to Volume III-A are also applicable.

• No Action/No Wilderness Alternative (Proposed Action)

With this alternative, none of the 14,830-acre Moquith Mountain 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 Vermillion MFP and Kanab-Escalante Grazing Management EIS (USDI, BLM, 1981b and 1980a). The 640 acres of State land and 40.4 acres of split-estate lands with private surface and State mineral within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase. The figures and acreages given are for Federal lands only.

• Management Conditions and Constraints

Except for the Water Canyon/South Fork Indian Canyon Area of Critical Environmental Concern (ACEC), the WSA would remain open to mineral location, leasing, and sale. There are no mining claims currently located 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. There are no oil and gas leases in the WSA. Future leases could be issued with leasing Category 1 (standard stipulations) on about









MOQUITH MOUNTAIN WSA

R. 8 W.

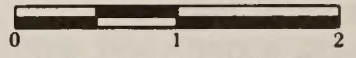
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Map 1 LAND STATUS Moquith Mountain WSA UT-040-217

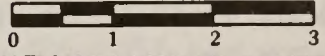
Legend

-  WSA Boundary
-  ACEC Boundary
-  State Park Boundary
-  Split-estate (private surface-state minerals) Land Within or Adjacent to WSA
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  Indian Reservation Land Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA

SCALE IN MILES



SCALE IN KILOMETERS

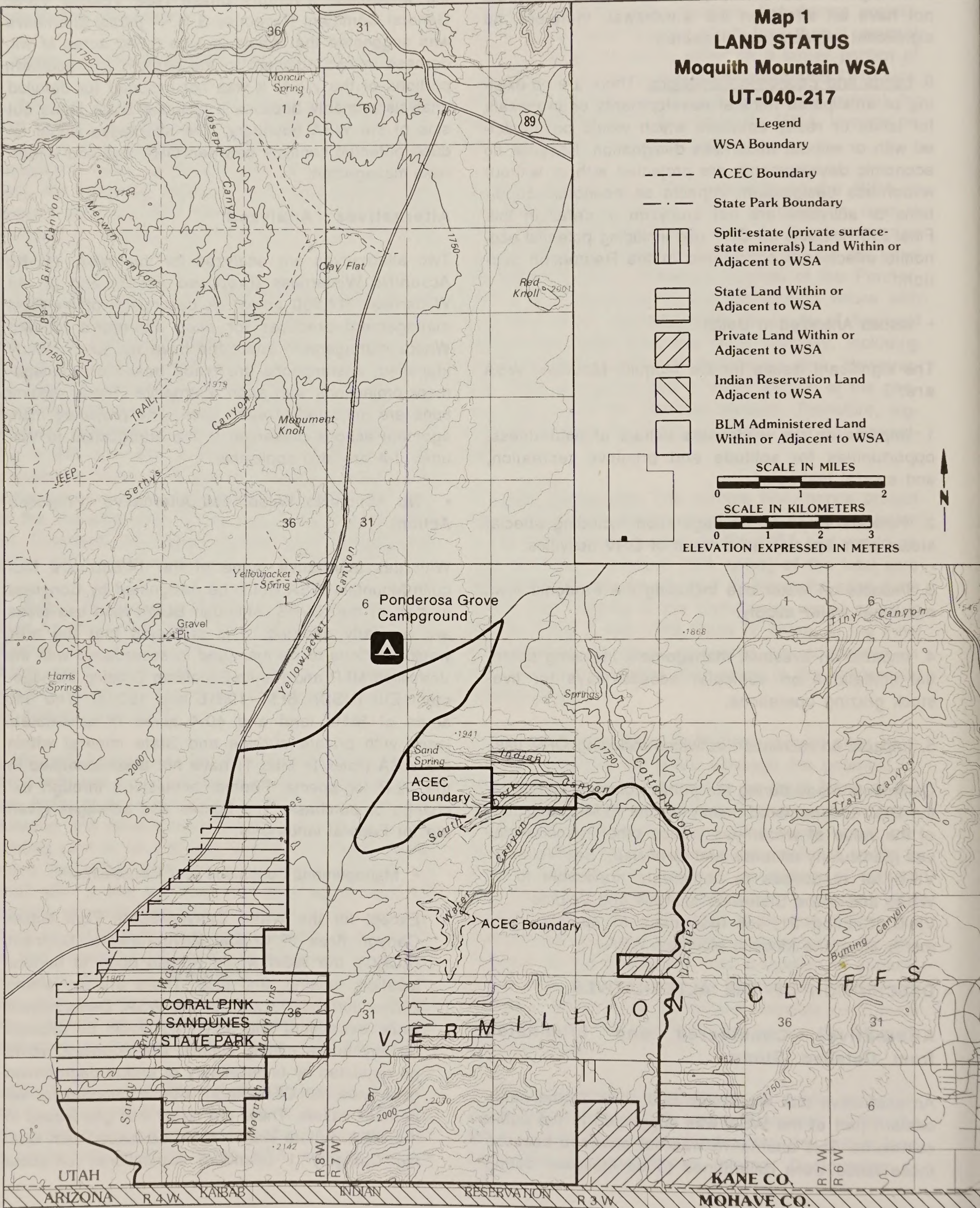


ELEVATION EXPRESSED IN METERS



T. 42 S.

T. 43 S.



MOQUITH MOUNTAIN WSA

13,550 acres and Category 3 (no surface occupancy) on about 1,280 acres. Although mineral resources would be managed as described above, no locatable or leasable exploration or development is projected in the WSA because the level of known resources and the probability of their development is too low to support that assumption. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present domestic livestock grazing use of approximately 140 AUMs in the WSA would continue as authorized in the MFP and Kanab-Escalante Grazing Management EIS. Use and maintenance of two existing spring developments, one windmill, 9 miles of fences, and one corral would continue. Planned new rangeland developments (1.5 miles of fence, four troughs, and three spring developments) could be implemented without wilderness considerations. Approximately 4 acres of surface disturbance would result from implementation of these projects.

No new wildlife developments are planned in the WSA. Two private water rights belonging to the Fredonia Water Conservation District are located in the WSA. About 0.5 mile of pipeline associated with municipal water development would continue to be maintained in accordance with terms of the existing rights-of-way grant.

Approximately 11,130 acres would be open to ORV use. On 2,100 acres, ORV use would be limited to existing roads and trails to protect riparian lands in Water Canyon and the South Fork of Indian Canyon. ORV use would be prohibited on the remaining 1,600 acres to protect the Fredonia, Arizona, municipal water system. The 11 miles of way inside the WSA and the approximately 7 miles of roads that border the WSA would remain available for vehicular use. New access roads could be planned in the future.

With the exception of the Ponderosa pine resource and specific areas protected for recreational purposes, the area would be open to woodland product harvest. Harvest of forest products in the past has been about 50 cords per year. The unauthorized harvest of Ponderosa pine for firewood is a continuing management problem.

The Water Canyon/South Fork Indian Canyon ACEC would be continued to provide special management attention on 225 acres. This ACEC

contains unique relict vegetation and riparian habitat. Because of these high resource values, it is projected that the ACEC will remain in force for the foreseeable future.

The area would continue to be managed under VRM Class II on 5,468 acres and Class IV on 9,362 acres.

It is projected that a campground would be developed in the northwestern portion of the WSA adjacent to the Coral Pink Sand Dunes State Park. This would be an overflow campsite for ORV users and would have restrooms, parking areas, fire pits, fences, and domestic water. The campsite would be located in T. 43 S., R. 4 W., secs. 13 and 14 and would involve up to 100 acres.

• 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 104 acres of surface disturbance. It is anticipated that up to 100 acres would be developed as an overflow campsite area for ORV users adjacent to Coral Pink Sand Dunes State Park. An additional 4 acres would be disturbed as the result of the construction of rangeland projects, including four troughs, three spring developments, and 1.5 miles of fence. About 1 month would be necessary to complete these projects. No surface disturbance is anticipated from locatable or leasable minerals exploration or development.

In addition, while not included in the overall surface disturbance totals, it is recognized that at least 3,200 acres (22 percent of the WSA) would be subjected to continued and random ORV use. This use would be concentrated in the sand dunes area located in the west and northwest portion of the WSA adjacent to the State park. It is assumed that recreation use in the foreseeable future would remain 95 percent vehicular in nature and would increase over the current estimated use of 6,000 visitor days annually at a rate of 2 to 7 percent per year.

• All Wilderness Alternative

With the All Wilderness Alternative, all 14,830 acres of the Moquith Mountain WSA would be designated by

MOQUITH MOUNTAIN WSA

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 and private lands would remain under existing ownership. There is one State section (640 acres) and one tract of split-estate land (private surface only and State subsurface [40.4 acres]) 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 14,830 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, there are no mining claims located in the WSA. Should any claims 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. BLM does not anticipate location or development of mining claims with this alternative. All previous oil and gas leases located in the WSA have expired and new leases would not be issued. Therefore, no development of leasable minerals in the WSA is predicted.

Present domestic livestock grazing would continue as authorized in the Vermillion MFP and Kanab-Escalante Grazing Management EIS. The estimated 140 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 (9 miles of fence, two developed springs, one windmill, and one corral) could continue in the same manner as in the past based on practical necessity and reasonableness. Rangeland developments presently planned in the WSA include 1.5 miles of fence, three spring developments, and four troughs. These projects would be designed and installed consistent with wilderness protection standards.

No new wildlife developments are planned in the WSA. Two private water rights in the WSA belonging to the Fredonia Water Conservation District would be maintained as would about a 0.5 mile of

the municipal water pipeline system in accordance with terms of the existing rights-of-way grant.

The entire 14,830-acre 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; (2) occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments; or (3) access to the 40-acre tract of split-estate land for use of the private surface or State subsurface. About 11 miles of existing vehicular way would not be available for vehicular use except as indicated above. About 7 miles (approximately 20 percent) of the WSA boundary follows existing roads, including 2.5 miles of a cherry-stemmed road that would remain open to vehicular travel.

The Water Canyon/South Fork Indian Canyon ACEC would be continued with provisions revised to be incorporated into the wilderness management plan.

Wilderness designation would preclude development of the overflow campsite adjacent to the Coral Pink Sand Dunes State Park. However, it is also projected that occasional trespass ORV use would continue in the Coral Pink Sand Dunes portion of the WSA.

- Action Scenario

Approximately 3 acres of surface disturbance would result from construction of the rangeland projects described in the No Action/No Wilderness Alternative. These projects would be designed and installed consistent with wilderness protection standards. No additional rangeland, wildlife habitat, watershed projects, or other developments are planned. It is also projected that no locatable or leasable mineral exploration or development would occur in the WSA following wilderness designation.

It is also projected that even though Moquith Mountain would be designated wilderness, occasional trespass ORV use would occur in the sand dunes in the northwest part of the WSA. This would be a continuing management concern. Overall, however, recreational use would be primitive in nature. Use would increase from the 300 annual visitor days of primitive use currently occurring at a rate of 2 to 7 percent per year.

MOQUITH MOUNTAIN WSA

R. 8 W.

R. 7 W.




Map 2

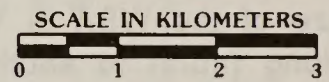
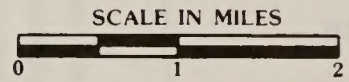
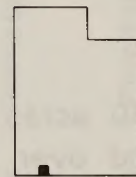
ALL WILDERNESS ALTERNATIVE

Moquith Mountain WSA

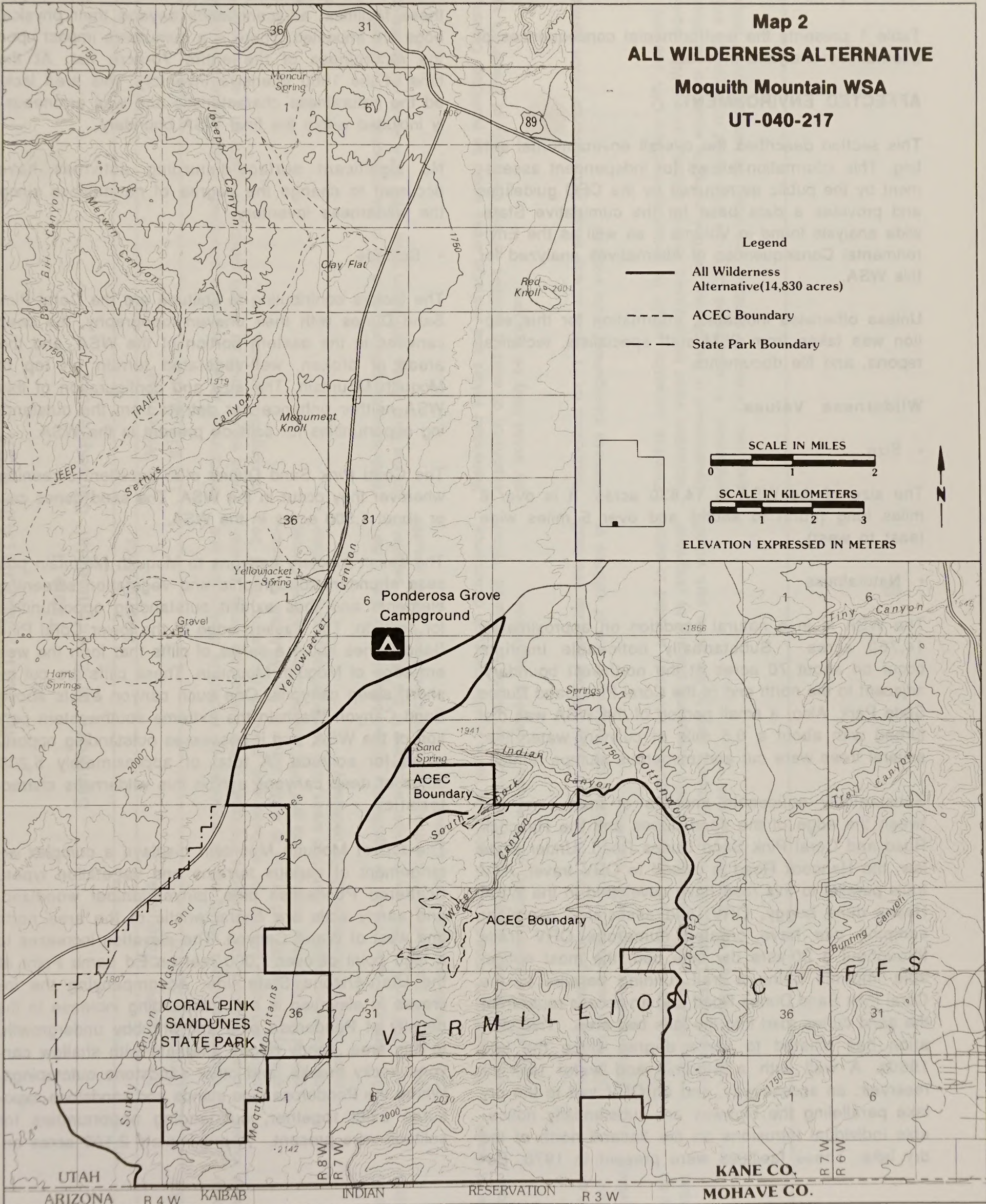
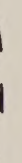
UT-040-217

Legend

-  All Wilderness Alternative(14,830 acres)
-  ACEC Boundary
-  State Park Boundary



ELEVATION EXPRESSED IN METERS



MOQUITH MOUNTAIN 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 analyzed 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 size of the WSA is 14,830 acres. It is over 6 miles long (north to south) and over 5 miles wide (east to west).

• Naturalness

The WSA is in a natural condition on approximately 14,760 acres. Substantially noticeable imprints occur on about 70 acres at the northwest boundary, adjacent to the north end of the Coral Pink Sand Dunes State Park. Also, a small portion of the WSA was disturbed with about a 0.5 mile of culinary water line; several trees were cut and numerous stumps remain.

Substantially noticeable imprints of man exist between the edge of the sand dunes and the Hancock Road and Coral Pink Sand Dunes Road. Under State law, the Hancock Road is closed to ORV travel. ATV trails parallel to this road have developed in the WSA. Heavy dune buggy, ORV, and associated overnight camping use have created numerous ORV trails throughout a 20-acre dry lake bed, the most noticeable imprints being a trail running parallel to the Coral Pink Sand Dunes Road and an access route from the sand dunes road into the lake bed area. This situation has existed to some degree since the late 1960s. A well with a windmill and water tank, a reservoir, an access way, and an ORV trail to the dry lake paralleling the highway are substantially noticeable individual intrusions on the flatland north of the dry lake. These facilities were present in 1976. Be-

cause of the geographic arrangement and proximity of these facilities, adjacent lands beyond their physical edge are impacted. There is a cumulative impact upon the naturalness of the entire 70-acre flat. At the time of the 1980 intensive inventory, this area lacked the naturalness characteristic and was erroneously included within the final WSA boundary.

No significant surface-disturbing activities have occurred to change the degree of naturalness since the wilderness inventory.

• Solitude

The factors contributing to solitude are the Coral Pink Sand Dunes with their uneven topography, the deep canyons in the eastern portion of the WSA, and the areas of broken, well-vegetated terrain on top of Moquith Mountain. The size and configuration of this WSA neither enhance nor detract from the outstanding opportunities for solitude present in the WSA.

The Coral Pink Sand Dunes offer excellent screening wherever they occur in the WSA. The sand dunes cover about 1,500 acres in the WSA.

The seven tributary canyons to Moquith Mountain possess abundant topographic and vegetation screening elements and thus exhibit outstanding opportunities for solitude. The eastern edge of the lower Coral Pink Sand Dunes abuts a series of cliffs that form the western edge of Moquith Mountain. These cliffs are cut by short, steep canyons. One such canyon exists above Sand Canyon Wash in the extreme southwestern portion of the WSA, and it possesses outstanding opportunities for solitude. A total of approximately 5,200 acres of deep canyons exhibit this wilderness characteristic.

The top of Moquith Mountain displays a complex arrangement of various terrains and vegetation types. Scattered Ponderosa pine, pinyon-juniper woodland, and sandy soils are characteristic of the area north and west of Water Canyon. The elevation increases to a high point of over 7,000 feet on Ed Lamb Point at the Utah/Arizona State line. Accompanying the increase in elevation is a corresponding increase in the density of Ponderosa pine and shrubby undergrowth. In this area, sandy ridges alternate with shallow canyons, rocky breaks, and other sandstone outcroppings. Where the Ponderosa pine stands and sandstone exposures exist together, outstanding opportunities for solitude are present. Approximately 2,100 acres on

MOQUITH MOUNTAIN WSA

Table 1
Summary of Environmental Consequences

Alternatives		All Wilderness (14,830 Acres)
Resource	No Action/No Wilderness (Proposed Action)	
Impacts on Wilderness Values	Wilderness values would not be preserved 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 or indirectly lost on up to 4,450 acres of the WSA due to campground and rangeland developments and ORV activity. Class A scenery would be reduced in quality in disturbed areas, and continued monitoring of threatened Welsh's milkweed would be necessary.	Wilderness values would be preserved. In the foreseeable future, wilderness values would be slightly reduced in quality on 3 acres by development of rangeland projects.
Impacts on Vegetation	No vegetation types would be significantly altered because less than 1 percent (104 acres) of the pinyon-juniper woodland in the WSA would be altered. Specific management of the threatened Welsh's milkweed would ensure the continued existence of the species.	Wilderness designation would aid in the protection of the Welsh's milkweed on the sand dunes. Vegetation types in the WSA would not be altered.
Impacts on Water Resources	No significant impacts would occur to water quality because disturbance would not be near surface waters and mitigation would be required. Water uses and development could occur without wilderness restrictions.	Watershed values and recharge areas would be protected. Opportunities for expansion of existing facilities for the community of Fredonia's water supply would likely be foregone.
Impacts on Livestock Management	Livestock management would not be significantly affected because new facilities could be installed to aid in livestock distribution and use of vehicles in livestock management would continue.	Restrictions on 11 miles of way would inconvenience seven permittees and increase management costs and time.
Impacts on Recreation	Opportunities for primitive recreation would be adversely affected in parts of the WSA by substantial increase in ORV recreational use and by rangeland developments. Development of the campsite next to the State park would help accommodate the increased ORV use.	Primitive recreation would be enhanced because ORV use and intensive recreation would be restricted. Overall visitation in the WSA would decline. Development of the planned overflow campsite would not be allowed in the wilderness. An established ORV use area would no longer be available for such use. Closure to vehicular use would be administratively difficult.

MOQUITH MOUNTAIN WSA

the top of Moquith Mountain contain this wilderness characteristic.

The sights and sounds of human activities are not present from most places within the WSA. However, ORV activities within the State park can be seen and heard from vantage points along the WSA's western boundary. These activities can be quite apparent and detract from the unit's solitude. Vehicles can also be seen along the cherry-stemmed road to the South Fork of Indian Canyon Pictograph and along the Hancock Road.

In summary, approximately 8,800 acres or 59 percent of the WSA present outstanding opportunities for solitude. The topographic and vegetation screening enables visitors to find a secluded spot in the majority of the WSA. The opportunity is uniformly present in the southern portion of the WSA. In the eastern half, the characteristic is distributed in a broken pattern. A large portion of the northwestern section is devoid of solitude. In the extreme northwest, the Coral Pink Sand Dunes exhibit solitude, but only as an area detached from the remainder of the WSA. Approximately 6,030 acres (41 percent) do not contain outstanding opportunities for solitude.

- Primitive and Unconfined Recreation

The opportunity for primitive recreation in the WSA is considered outstanding in locations that offer a diversity of activities in locations that offer an excellent sightseeing opportunity, and in areas that offer an excellent hiking opportunity. The major source for outstanding opportunities for primitive recreation in the Moquith Mountain WSA is the variety of available recreational activities. Hiking, backpacking, horseback riding, hunting, photography, and sightseeing for geological, botanical, and archaeological features are the eight activities cited by the BLM Intensive Wilderness Inventory as contributing to this diversity. Certain activities, such as sightseeing for archaeological features and horseback riding, are limited in location. Others, such as hunting and photography, occur throughout most of the WSA.

Because of the diversity of landscapes within the WSA, scenic photographic opportunities are present throughout. Similarly, hunting occurs in all but the Coral Pink Sand Dunes portion of the WSA. Sightseeing for archaeological features is limited to the pictograph site in the South Fork of Indian Canyon. Opportunities for sightseeing of botanical features are more widespread. They are present in upper Water

Canyon (relict area, Douglas fir), a branch of the South Fork of Indian Canyon (relict area, hanging gardens), Coral Pink Sand Dunes (unusual plant community), and the upper ends of the southernmost Art and Cougar Canyons (aspen pockets). Sightseeing for a geological feature is an obvious opportunity on the Coral Pink Sand Dunes.

The WSA is better suited for hiking than for backpacking because of its relatively small size. It is possible to backpack to the top of Moquith Mountain by extending the trip to Ed Lamb Point in Arizona and to each of the points and canyon rims. On the other hand, hiking opportunities are abundant. Each canyon represents a hiking opportunity. On the top of Moquith Mountain, the hiking alternatives are also numerous. Hikes to the points between canyons are possible. In the southern portion, many hiking routes are available in the more scenic Ponderosa pine and sandstone areas. Although they are difficult to traverse, the sand dunes also are a hiking objective. Horseback opportunities are limited to the hiking areas on Moquith Mountain and lower Water Canyon.

Outstanding primitive recreation opportunities exist on 7,300 acres (49 percent) of the WSA, while 7,530 acres (51 percent) do not meet the criterion.

- Special Features

Almost all of the Moquith Mountain WSA possesses scientific values. Geological, ecological, and archaeological features all contribute to the scientific values. The WSA is an ecologically complex segment of the Vermillion Cliffs of southern Utah. Elevations range from 5,000 feet to over 7,000 feet. The WSA contains active sand dunes, riparian communities, an upland Ponderosa pine forest, isolated stands of aspen, and a perennial stream. Canyons, large alcoves, and hanging gardens are also present. Relict areas are found in Water Canyon and a branch of the South Fork of Indian Canyon. The WSA has a very high potential for archaeological resources. Although no scientific investigations have been conducted, the WSA is a good candidate for future scientific study. The research value of the area is enhanced because most features are closely located and of easy access from the perimeter of the unit.

The same features that possess scientific values also contribute to a significant but unrealized educational value for the WSA. Because of the proximity of the WSA to Coral Pink Sand Dunes State Park and the heavily traveled U.S. Highway 89 tourist route, there is

MOQUITH MOUNTAIN WSA

a large potential audience for environmental education and natural history interpretation. The educational values are noteworthy because they are diverse, conveniently concentrated in a small area, and accessible.

The WSA possesses five distinctive landscapes. These include the Vermillion Cliffs, Coral Pink Sand Dunes, the densely vegetated and colorful canyons, the escarpment above the sand dunes, and the slickrock and pine forest on top of Moquith Mountain. The variety of scenery present is considered an important and unusual scenic asset of the WSA. Approximately 8,800 acres possess scenic features. About 7,300 acres are rated with Class A scenic quality.

Archaeological features constitute the historical values of this WSA. The South Fork of Indian Canyon Pictograph alcove site is one of three identified sites in the WSA. The pictograph site is eligible for listing on the National Register of Historic Places. The area along the Vermillion Cliffs, both within and outside the WSA, has a high potential for archaeological resources.

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) which are occasional visitors to the WSA and one plant species (Welsh's milkweed) listed as threatened. In addition, there may be 14 animal species and one plant species that are considered special status species. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information. The WSA has a small population of cougar which is a resident wildlife species associated with wilderness. Over 8 miles of perennial streams occur in the WSA.

- Diversity

The Moquith Mountain WSA is in the Colorado Plateau Province Ecoregion, and has the PNV type of juniper-pinyon woodland. The ecoregion and PNV type represented by this WSA are compared Statewide and nationally with existing and 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 Provo-Orem, Utah, and Las Vegas, Nevada.

Air Quality

The area including the WSA is presently classified as Class II air under the PSD regulations. This means that air quality deterioration that accompanies moderate, well-controlled growth would not be considered significant. The nearest PSD Class I air quality area is Zion National Park, approximately 10 air miles northeast of the WSA.

The region surrounding the WSA is well known for its excellent air quality. Based on telephotometer readings in Zion National Park, average visibility is about 120 miles.

Geology and Topography

The Moquith Mountain WSA is within the Vermillion Cliffs portion of the Grand Staircase section of the Colorado Plateau Physiographic Province.

Moquith Mountain dominates the western side of the WSA, while Cottonwood Canyon and its tributary canyons dominate the eastern portion. The Coral Pink Sand Dunes occur across the northwestern corner of the WSA.

Elevations range from 5,000 feet above sea level in Cottonwood Canyon in the southeast corner to 7,000 feet above sea level on Moquith Mountain in the southwestern part of the WSA. The major drainage is Cottonwood Canyon which slopes from north to south along the eastern boundary of the WSA. A number of tributary canyons enter from the west into Cottonwood Canyon.

Rocks of Jurassic and Triassic age, totaling about 2,000 feet in thickness, and thin deposits of Quaternary age outcrop in the WSA. The Jurassic Navajo Formation forms the most extensive outcrops. The Jurassic-Triassic Kayenta Formation and the Triassic Moenave and Chinle Formations are exposed along Cottonwood Canyon. Underlying Mesozoic and Paleozoic rocks may be as much as 9,000 feet thick in this vicinity.

At the western edge of the WSA is the west-facing escarpment of the Moquith Mountain, which is the result of vertical movements (east side up) along the north-trending Sevier fault.

MOQUITH MOUNTAIN WSA

Soils

The majority of Moquith Mountain WSA consists of rock outcrops, predominantly sandstone with some shale and siltstone. Eight percent of the WSA consists of rolling sand dunes. Most of the WSA is unsuitable for vegetation treatment projects and rehabilitation because of rockland/rock outcrops and sandy soils. Small, isolated pockets of soils are present which are relatively stable and would produce good seedings.

The largest percentage of the WSA has soils in the critical or severe erosion class. The erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary). About 12,500 acres have nonsaline soils and 2,330 acres are in the "slight" salinity class, according to an unpublished BLM soil survey in Kane County. It is estimated that undisturbed soils within the WSA have an annual salt yield of 12 lb per acre. This is considered slight when compared to Mancos Shale sites in the Price River Basin which are estimated to have annual salt yields of up to 94 lb per acre.

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	2,330	16	12,580
Critical	2.7	6,000	40	16,200
Moderate	1.3	2,500	17	3,250
Slight	0.6	4,000	27	2,400
Stable	0.3	0	0	0
Total		14,830	100	34,430

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

Vegetation Including Special Status Species

Vegetation in the WSA consists of three major and four smaller vegetation types.

A pinyon-juniper woodland type covers almost 70 percent (10,381 acres) of the WSA, a major portion of which is pinyon-juniper woodland associated with big sagebrush. This type generally has a sparse understory of shrubs, including mountain mahogany, serviceberry, Gambel's oak, cliffrose, silver buffaloberry, big sagebrush, snakeweed, bitterbrush, rabbitbrush, green ephedra, and sandsage.

Approximately 18 percent (2,669 acres) of the area is covered by a mountain shrub type. Associated species include oak, big sagebrush, serviceberry, pinyon-

juniper woodland, and manzanita, with some bitterbrush, rabbitbrush, and bunch grasses.

Slightly over 10 percent (1,483 acres) of WSA is of conifer forest type located in the sandy area north and northeast of the Coral Pink Sand Dunes State Park. Ponderosa pine is the dominant species, with an understory of blowout grass, forbs, and rabbitbrush.

There are four small, unusual plant communities within the WSA. These occur in conjunction with seep areas at the head of Water Canyon (a Douglas fir stand), South Fork of Indian Canyon (a hanging garden), and at the heads of Art and Cougar Canyons (aspen groves). These areas make up approximately 2 percent (297 acres) of the WSA.

The WSA likely contains one threatened plant species, Asclepias welshii, and one Category 2 candidate species, Astragalus ampullarius (see Appendix 4 in Volume I). The Federal Register Notice listing Asclepias welshii as threatened also identified critical habitat for the species, a portion of which is located in the northwest portion of the Moquith Mountain WSA. The species is restricted to active sand dune areas in association with sagebrush, juniper, and Ponderosa pine (Welsh, et al., 1987). Astragalus ampullarius is found in Utah on clay soils of the Chinle and Tropic Shale Formations in Kane and Washington Counties. Because the WSA is primarily sandstone derived soils, potential habitat for this species in the WSA is limited. However, it is known to occur near the WSA and, therefore, may extend into the WSA itself.

The Moquith Mountain WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

The Moquith Mountain WSA is within the Kanab and Johnson Creeks subbasin of the Lower Colorado River hydrologic subregion. Cottonwood Canyon, which is a main drainage, is located on the eastern border of the Moquith Mountain WSA and flows to the south across the Arizona/Utah border where it joins Kanab Creek which then in turn joins the Colorado River. Main tributaries of Cottonwood Canyon are Water Canyon, Indian Canyon, and the South Fork of Indian Canyon that headwaters in the WSA.

Within the WSA are five undeveloped springs, three developed springs, and over 8 miles of perennial

MOQUITH MOUNTAIN WSA

stream. One of the springs is located on top of the Moquith Mountain, east of the Coral Pink Sand Dunes State Park; three others (one developed) are in Water Canyon; one undeveloped and one developed spring are in the side canyon tributary of the South Fork of Indian Canyon; and a developed spring is in a side canyon tributary of Cottonwood Canyon.

The Moquith Mountain WSA is located within Water Rights Adjudications Area 85, Kanab and Johnson Creeks. Kanab Creek, Johnson Creek, and all tributaries are considered fully appropriated and closed to further appropriation (UDNRE, DWR, 1988). The underground water is directly connected to or recharged from surface streams. Unless further study confirms the aquifer is isolated from the surface flow, it is considered fully appropriated. The State Engineer will consider applications to develop underground water from bedrock formations in an isolated situation based on the merits of the application.

There are two known private water rights on public land within the WSA. Both of these belong to the Fredonia Water Conservation District. Water originating from these springs, along with water from four additional springs and four wells, supplies all culinary water needs for the city of Fredonia, Arizona. The water is collected at the spring and well sites and then routed approximately 12 miles through four 6-inch pipelines to Fredonia, Arizona. Approximately a 0.25 mile of a 2-inch pipeline is located within the WSA along the tributary of the South Fork of Indian Canyon, and approximately a 0.25 mile of 4-inch pipeline is located along Water Canyon within the WSA.

The water quality standards for the perennial stream within the WSA have not been set by the State as of yet, but since they are tributaries of Kanab Creek, BLM would manage them with the same standards as Kanab Creek which are as follows: Class 3C (protected for nongame fish and other aquatic life) and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). Springs being used for domestic purposes are Class 1C (protected for use as a raw water source for domestic water systems).

The area's water quality is presumed to be good since it is used for culinary purposes.

Mineral and Energy Resources

The energy and mineral resource rating summary for the Moquith Mountain WSA is given in Table 3. Refer

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

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic-feet of gas
Uranium	f2	c1	Less than 500 metric-tons of uranium oxide
Coal	f1	c4	None
Geothermal	f2	c2	Low temperature geothermal resources
Hydroelectric	f1	c4	None

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

There are no minerals currently listed as strategic and critical known to occur within the WSA (USDoD, 1988).

• Leasable Minerals

• Oil and Gas

According to SAI, the WSA is considered to have potential for small, widely scattered oil and gas pools, similar perhaps to the Virgin and Anderson Junction fields 30 and 35 miles to the west, respectively (SAI, 1982). The Virgin field has produced small amounts of oil intermittently since 1907, although production costs have generally exceeded profits (SAI, 1982). Cumulative oil production in the Virgin field has amounted to 201,127 bbl through 1970 (SAI, 1982). The Anderson Junction field produced only 1,380 bbl from 1968 to 1969 and is now abandoned (SAI, 1982). The small size of these fields is due to the relatively thin stratigraphic sequence which generally limits the volume of both favorable source and reservoir rocks, and to the tendency for medium-sized or larger accumulations to have been destroyed or reduced in size by recent tectonic events, deep erosion, or water flushing. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million bbl of oil or 60 billion cubic-feet of gas (f2).

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To date, no exploratory wells have been drilled within the WSA and, as a result, no direct data exists to establish whether or not deposits of oil and gas occur. However, two wells have tested the oil and gas favorability along the Sevier fault outside the western boundary of the WSA. One well is located approximately 2 miles northwest of the WSA along the downthrown side of the fault, and the other is about 5 miles to the north, along the upthrown portions of the fault (SAI, 1982). The well on the downthrown side reached a total depth of 10,503 feet and bottomed in Precambrian rocks. Oil shows were reported from Cambrian, Mississippian, and Triassic rocks. The well on the upthrown side was dry and penetrated Cambrian rocks at a total depth of 9,119 feet. Based on the available information, the certainty of occurrence for oil and gas is low (c2).

In the current land use plan, about 1,280 acres are subject to Category 3 stipulations (no surface occupancy) and the remainder of the WSA (13,550 acres) is available for leasing subject to standard stipulations (Category 1). There are presently no oil and gas leases in the WSA.

- Coal

There are no known coal beds within the WSA. The coal-bearing Cretaceous units typical of southwestern Utah do not occur (SAI, 1982). Therefore, the tract is rated (f1/c4) (no potential for deposits to exist with a high certainty).

- Geothermal Resources

No geothermal resources are known to occur within or near the WSA. According to SAI (1982), the geothermal favorability of the WSA is for only low-temperature geothermal resources (f2).

The WSA is within the Colorado Plateau which, in terms of geothermal resources, is characterized by a low heat flow and a general lack of thermal springs. The scarcity of hot springs may be due, in part, to a lowered regional water table caused by deep stream incision. If thermal waters do exist, they occur only at considerable depth (Muffer, 1978). Based on available information, the certainty of occurrence for geothermal resources is low (c2).

- Locatable Minerals

- Uranium

No uranium deposits are known to occur within the WSA. SAI reports that the closest uranium production is approximately 40 miles west of the WSA (SAI, 1982). Here, minor amounts of uranium were obtained from the Moenave Formation. This formation outcrops in the southeastern part of the WSA and underlies the remainder of the WSA at depths generally less than 1,000 feet (Hintze, 1973). The favorability is rated as (f2) indicating a potential for small deposits of uranium oxide (less than 500 metric-tons). Based on available information, the WSA has been assigned a low certainty (c1) for the occurrence of small deposits of uranium.

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. These deposits are not unique or economically significant due to the presence of ample similar materials outside of the WSA.

Wildlife Including Special Status Species

The Moquith Mountain WSA provides one major habitat type and smaller amounts of five others. The major habitat is pinyon-juniper woodland; the smaller types are Ponderosa pine and sand dunes, riparian, mountain shrub, clifflines, and sagebrush. The habitat types present in the WSA could theoretically support 52 species of mammals, 158 species of birds, 23 species of reptiles, and seven species of amphibians (USDI, BLM, 1981b).

There are no wildlife facilities or proposed vegetation treatments within the WSA. There are no crucial or critical wildlife habitats in the WSA.

Game species in the WSA include mule deer, cougar, cottontail rabbit, and mourning dove. Mule deer are common yearlong residents. Small numbers of cougar are also yearlong residents of the WSA. Cottontail rabbit occur throughout the WSA, and mourning dove are common from May to September.

Three listed sensitive animal species can be found within the WSA, at least on an occasional basis (UDNRE, DWR, 1982). These animals are roadrunners, Lewis woodpecker, and fox sparrow.

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Two endangered species, the peregrine falcon and bald eagle, may occasionally be found within the WSA, although neither species is believed to nest in or utilize the area extensively. In addition, nine Category 2 candidate species may occur in the WSA. These are the Great Basin Silverspot butterfly, Coral Pink Sand Dunes tiger beetle, ferruginous hawk, long-billed curlew, southern spotted owl, Swainson's hawk, western snowy plover, western yellow-billed cuckoo, and the white-faced ibis (see Appendix 4 in Volume I).

Forest Resources

The majority of the WSA is pinyon-juniper woodland characterized by an overstory of pinyon pine, Utah juniper, scattered Gambel's oak, and some Ponderosa pine in suitable habitat. About 10 percent of the WSA is conifer forest located northeast of the Coral Pink Sand Dunes State Park. Here, Ponderosa pine is the dominant species among the sparse vegetation due to drifting sands.

None of the forest resources in the WSA are of commercial quality, although there is some potential for firewood and fence post cutting within the unit.

It is estimated that about 50 cords of wood were removed annually before interim management protection was implemented. An undetermined amount of

trespass harvest continues to be a management concern.

Livestock and Wild Horses/Burros

The Moquith Mountain WSA covers all or parts of seven grazing allotments. Seven operators graze cattle within these allotments. Many of the allotments contain areas with little available forage within the WSA because of the unsuitable conditions for grazing (e.g., steep topography, lack of water, sparse forage, etc.). Table 4 shows the status of livestock grazing within the WSA. The following existing livestock facilities are located within the WSA boundary: (1) approximately 9 miles of fence at eight different locations (boundary, gap, and drift) and an additional 5 miles of fence on the Arizona border on the south end of the WSA; (2) one corral; (3) two spring developments; and (4) one windmill. The WSA has approximately 11 miles of way that are used during the grazing season to haul livestock to or from the corral, distribution of salt by vehicle, maintenance of the existing rangeland projects, and to collect vegetation data for trend evaluations.

The Moquith Mountain WSA also has the following proposed range developments: three springs, four troughs, and 1.5 miles of fence. These projects were identified to better distribute livestock grazing in the allotments. No vegetation treatments are proposed in the WSA.

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Art Canyon	9,092	8,880	352	95	88 Cattle	07/01-10/31	1
Chris Spring	7,403	520	216	8	36 Cattle	07/01-12/31	1
Cougar Canyon	1,546	1,546	55	13	11 Cattle	06/16-11/15	1
Farm Canyon	3,363	450	243	12	60 Cattle	06/01-10/15	1
Old Fort	2,151	1,475	2	10	1 Cattle	04/01-10/31	1
Water Canyon	3,170	1,757	26	1	6 Cattle	07/01-10/31	1
Yellow Jacket	10,036	202	280	1	40 Cattle	06/01-12/30	1
Total	36,761	14,830	1,174	140			7

Sources: BLM File Data.

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Predator control was not conducted during the 1986 to 1987 period in the grazing allotments in the Moquith Mountain WSA (USDA, APHIS, 1988).

There are no wild horses or burros within the WSA.

Visual Resources

The WSA has a varied landscape. The BLM visual resource inventory identifies approximately 7,300 acres as Class A and 7,530 acres as Class B scenery.

The unit also is divided into two VRM classes. There are 5,468 acres (37 percent) of the WSA as Class II and 9,362 acres (63 percent) as Class IV. Refer to Appendix 7 in Volume I for a description of the BLM VRM rating system.

Cultural Resources

There are three recorded archaeological sites in the WSA and they are located on the unit's north and east peripheries (USDI, BLM, 1988a). No known sites are on the National Register of Historic Places, although the South Fork of Indian Canyon Pictograph site is potentially eligible for inclusion in the register. Two other sites, a surface lithic and pottery scatter and another pictograph site, are known to exist in the unit. Based on Class II cultural resource inventories for the Southern Utah Coal Project, the WSA is estimated to contain high site densities (over 50 sites per 640 acres) (USDI, BLM, 1978a).

Recreation

The Moquith Mountain WSA is part of the 50,632-acre Moquith Mountain Special Recreation Management Area (SRMA). With the exception of developed sites, the WSA exhibits a great diversity of recreational opportunities similar to that found in the larger SRMA.

The Moquith Mountain WSA offers opportunities for back country recreation activities such as hiking, backpacking, and sightseeing. In addition, portions of the WSA are suitable for use by ORVs.

The South Fork of Indian Canyon Pictograph site, the 1,471-acre Ponderosa pine/sand dune area, the colorful red and orange cliffs, and several pockets of quaking aspen and Douglas fir add variety for sightseers.

The WSA has acreage in each of the three ORV categories. ORV use is prohibited on approximately 1,600

acres to protect the Fredonia, Arizona, municipal water system and is limited to existing roads and trails on approximately 2,100 acres to protect riparian lands in Water and Indian Canyons. The remaining 11,130 acres, or about 75 percent of the WSA, are open to ORV use. Dune riding and sightseeing by ORV users constitutes the heaviest use of the WSA. This use is generally confined to the sand dunes and to the existing vehicular way.

The Moquith Mountain WSA is adjacent to several well used recreational facilities. Recreationists use these facilities as a base for their activities in the WSA. These areas are described below.

Current recreational use of the WSA is heavily influenced by the close proximity of Coral Pink Sand Dunes State Park. The State park is adjacent to the western boundary of the WSA and includes a 19-unit campground and picnic area. The State of Utah maintains a permanent staff to manage the facility. Recreational use of the WSA closely approximates the visitor profile of the ORV user component at the State park. Visitation at the park has stabilized at more than 80,000 per year. Use peaks in May and then levels off during the June to September tourist season. The average visit to the park campground is made by nonresident, single-family groups of three, with an average stay of 2.3 nights. Utah resident use increased during the 1982 to 1984 seasons. The major component of park visitation is ORV users. One-half of the visitors indicate that the Coral Pink Sand Dunes is their primary trip destination.

The major users of the WSA are State park visitors who cross the sand dunes in ORVs between Sand Springs and the State park campground. The South Fork of Indian Canyon Pictograph is the only other area within the WSA receiving a substantial amount of use.

Vehicular access and use of the WSA is limited to vehicles with off-road capabilities due to the sandy nature of the WSA. Motor vehicle tourists staying at Kanab motels or camping at the State park cannot gain vehicular access into the WSA.

The BLM's Ponderosa Grove Campground is adjacent to the northern boundary of the WSA. The campground contains restrooms and group camping facilities. This area is used primarily for group day use by various local organizations. It also serves as an overflow area for the State park. Visitor use is estimated to be about 6,000 people per year. Use of this facility

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exceeds capacity during the spring and early summer months. The BLM Vermillion MFP recommends that, when over-use occurs, Sand Springs be developed. The Sand Springs area is a primitive camping area located near the boundary of the WSA. The site is used primarily as a staging area for visits into the WSA. BLM does not maintain a permanent staff at the facility. The Sand Spring site is primarily used by those interested in the South Fork of Indian Canyon pictograph site.

Hunting use is relatively high in the fall season although deer numbers generally are low throughout the WSA. Mourning dove hunting also occurs in the area south and east of the Vermillion Cliffs where the doves find abundant food, cover, and water in the riparian areas of Cottonwood Canyon.

Visitor use data for the WSA have not been recorded. However, some indication of the use can be drawn from visitor use information on the adjacent recreation sites. Use is less than the 85,059 visits to the State park recorded in 1982. It is estimated that visitor use in the WSA would be about the same as Ponderosa Grove Campground use (i.e., 6,000 visitor days per year). Approximately 95 percent (5,700 visitor days) is associated with vehicular sightseeing or hunting, often involving use of the 11 miles of way or sand dunes with ORVs. The remaining use is hunting or sightseeing, without vehicles.

Land Use Plans

The WSA is within BLM's Vermillion Planning Unit which is being managed under the land use decisions of the Vermillion MFP (USDI, BLM, 1981b). Principal uses within the WSA are livestock grazing, woodcutting, and recreation (both hiking and ORV use).

Wilderness is not addressed in the Vermillion MFP. 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. Approximately 225 acres in Water Canyon and the South Fork of Indian Canyon pictograph are designated as an ACEC to protect relict vegetation and riparian habitat.

The WSA is BLM-administered public land except for one State section (640 acres) and one tract of split-estate (40.4 acres of private surface and State sub-surface). None of the 680.4 acres of in-held State and split-estate lands are leased for minerals. The only

current revenue-producing activity on the State lands is livestock grazing. However, there is no road access to these lands. 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 Utah State Division of Parks and Recreation plan for the Coral Pink Sand Dunes State Park is generally directed to accommodation of ORV recreational uses.

There are 40.4 acres of private land (surface only) in T. 44 S., R. 7 W., sec. 3. This private land located in the southeast corner of the WSA is used for livestock grazing. There is no road access to the tract.

The Kane County Master Plan states, "Kane County supports the total concept of multiple-use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept" (Kane County Board of Commissioners, 1982). The WSA is within the county's multiple-use zone. Approximately 2,800 acres are zoned agriculture. The Kane County Commission has endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The WSA is directly north of and adjacent to the Kaibab-Paiute Indian Reservation. Tribal plans include possible oil and gas exploration near the boundary of the WSA (Savala, 1985).

Socioeconomics

• Demographics

The WSA is located in Kane County, Utah, where most of the economic impacts are expected to occur. It is a rural county having an average population density of approximately one person per square mile. This density is very low when compared to the Statewide average of 17 persons per square mile (USDC, Bureau of the Census, 1981). Much of the population is concentrated in small communities rather than being evenly distributed throughout the county.

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The major population center in the county is the city of Kanab, the county seat. The 1980 population of Kanab and adjacent areas was 3,116 persons (USDC, Bureau of the Census, 1981). Kanab is on U.S. Highway 89, which is the major access route in the region. Kanab, located approximately 20 highway miles from the WSA, is the main service and gateway for visitors to the Moquith Mountain area.

From 1970 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population and employment data for Kane County. It is estimated that between 1980 and 1987, population increased to about 4,890. Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 5
Baseline and Projected Population and Employment Growth
Kane County

	1980	1990	2000	2010
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

• Employment

Table 5 shows the baseline and projected total employment for Kane County to the year 2010.

Kane County is part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 5 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

• Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	8,100
Nonfarm Proprietors	2,386	3,100	3,500	4,700
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

Table 7 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	0
Mineral Production	0	0
Livestock Grazing	\$2,800	\$216
Woodland Products	\$3,750 ^b	\$125
Recreational Use	\$24,600	0
Total	\$31,150	\$341

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

^bThis figure represents the value of the products to those who harvest them and may not be directly related to sales.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income. Nearly all of the WSA in the past has been leased for oil and gas, but these leases have all expired and no lease revenues are being received.

Seven livestock operators have a total grazing privilege of 140 AUMs within the WSA. If all this forage were utilized, it would account for \$2,800 of livestock sales and \$700 of ranchers' returns to labor and investment.

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Approximately 50 cords of woodland products have been harvested from the WSA and have generated a value of about \$3,750.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are not significant to either the local economy or individual businesses. The WSA's motorized recreational use is high. However, related local expenditures are low due to expenditures outside the area. They have little impact to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, the approximate local expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average for local expenditures per recreational visitor day for all types of recreation in Utah is approximately \$4.10. The recreational use for the Moquith Mountain WSA is estimated at about 6,000 visitor days per year. In addition to local expenditures, ORV use at Moquith Mountain contributes an unknown amount of income to other communities, since many visitors are not local and they purchase camping equipment, ORVs, and supplies in other localities prior to traveling to recreational sites near or within the Moquith Mountain WSA.

The livestock operators are permitted up to 140 AUMs per year. Based on a \$1.54 per AUM grazing fee (1988 rate), the WSA can generate up to \$216 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments. Harvest of fuelwood from the WSA in the past has generated an estimated \$125 of Federal revenues annually, prior to relocation of this use outside the WSA due to IMP restrictions.

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 III-A and the Description of the Alternatives section for the Moquith Mountain WSA.

No Action/No Wilderness Alternative (Proposed Action)

• 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., VRM Class II management on 5,468 acres; management under oil and gas leasing Category 3, no surface occupancy, on 1,280 acres; and ORV limitations on 3,700 acres).

Disturbance of approximately 104 acres from campground and rangeland development is likely in the foreseeable future and would result in a direct loss of naturalness, solitude, and opportunities for primitive, unconfined recreation in the disturbed areas.

Another conflict with wilderness values in the foreseeable future is ORV activity. As much as 22 percent (3,260 acres) of the WSA can be accessed by recreational vehicles. Most of the use occurs in the sand dunes, however, where disturbance is temporary. In addition, there are 11 miles of way, accessible only by recreational and 4-wheel drive vehicles. In the foreseeable future, new trails formed by ORV use could directly reduce naturalness in places. Most special features would not be affected. An exception would be where Class A scenery would be reduced in quality by ORV activity. In addition, continued monitoring would be necessary to ensure that the threatened species, Welsh's milkweed, would not be jeopardized from continued and increased ORV activity (refer to the Vegetation Including Special Status Species section). Because no crucial or critical habitats for any wildlife species are located in the WSA and because appropriate measures would be taken to protect threatened, endangered, or other special status species prior to any surface-disturbing activity, these species would not be significantly affected.

Recreation use in the future would continue to be 95 percent vehicular in nature. During the period of activity, the visual and audible disturbance from campground development and use, and increasing levels of ORV use would reduce or eliminate opportunities for solitude and primitive recreation not only on directly disturbed areas, but also on adjacent portions of the WSA. In all, as much as 30 percent (about 4,450

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acres) of the WSA could be directly or indirectly affected in the foreseeable future. Solitude and primitive recreation opportunities in the sand dunes would be eliminated during periods of ORV use.

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 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 or indirectly lost or reduced in quality on up to 4,450 acres of the WSA. Some Class A scenic values would be reduced in quality in disturbed areas and continued monitoring of the threatened Welsh's milkweed would be necessary.

• Impacts on Vegetation Including Special Status Species

Implementation of the No Action/No Wilderness Alternative would not significantly alter any vegetation type in the WSA because less than 1 percent (104 acres) of the pinyon-juniper woodland would be disturbed. However, continued ORV use in a portion of the active sand dune area occupied by the threatened Asclepias welshii (Welsh's milkweed) would continue to be a management concern. Intensive monitoring efforts would continue in the foreseeable future. BLM is cooperating with the State of Utah in a public awareness effort to inform users in the area of the sensitive nature of the species and the necessity to avoid critical areas. BLM would also prepare a management plan which would consider various management options for habitat preservation. The plan is tentatively scheduled to be completed by 1990. Should it become necessary, BLM would implement interim measures to protect the species. Since prevention of ORV access would be administratively difficult, occasional ORV impacts may occur to individual milkweed plants. However, the viability of the population would not be threatened.

Conclusion: Vegetation types would not be significantly altered by the implementation of the No Action/No Wilderness Alternative. Specific management of the threatened Welsh's milkweed would ensure the continued existence of the species.

• Impacts on Water Resources

No significant sedimentation or change in TDS is expected to occur from the projected 104 acres of disturbance from development of the campground and livestock facilities. Likewise, no significant salinity increases are expected. The Fredonia town water supply and related facilities in the WSA would not be affected by wilderness restrictions. Opportunities for maintenance, additional developments, or expansion of existing water sources could occur as allowed in the current Vermillion MFP.

Conclusion: Water uses or quality would not be significantly affected.

• Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Vermillion MFP. The estimated 140 AUMs currently allocated in the WSA are controlled by seven livestock permittees. The three proposed spring developments, four troughs, and 1.5 miles of fence could be developed and result in improved livestock distribution. Use is being made on some of the 11 miles of way for livestock management during the grazing season, and this would continue.

Conclusion: Livestock management would not be significantly affected. New facilities could be installed to aid in livestock distribution. Use of vehicles in the WSA would continue for livestock operations.

• Impacts on Recreation

The future increase in recreational use of the WSA is unknown. However, based on a review of several projections, it is estimated that outdoor recreation in Utah will increase at between 2 to 7 percent per year over the short term (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Cordell and Hendee, 1982; Hof and Kaiser, 1981; and Jungst, 1978). At this rate, overall recreational use is expected to increase from 6,000 current visitor days per year up to a maximum of 53,000 visitor days by the year 2020. 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 300 visitor days per year to between 600 and 2,600 visitor days per year. Likewise, recreational activities utilizing ORVs would increase from 5,700 visitor days per year to between 10,700 and 49,680 by the year 2020.

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Overflow from the Coral Pink Sand Dunes State Park and Ponderosa Grove Campground would contribute to this increased use. Development of the overflow campsite adjacent to the park would help accommodate the increase in ORV recreation users. Up to 100 acres would be necessary to accommodate the campsite. Primitive-type recreation opportunities would be diminished or eliminated on the affected areas.

Conclusion: Substantial increases in ORV recreational use would be likely. Opportunities for primitive recreation would be adversely affected in parts of the WSA. Construction of the overflow campsite adjacent to the State park would be allowed and would help accommodate the increase in ORV-type recreation use. Primitive-type recreation opportunities would be diminished.

All Wilderness Alternative (14,830 Acres)

• Impacts on Wilderness Values

Designation and management of all 14,830 acres as wilderness would preserve the wilderness values in the Moquith Mountains 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 and would at least partially be restored on 70 acres not now meeting naturalness criteria. Solitude would be protected on approximately 8,800 acres that meet and 6,030 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 7,300 acres that meet and 7,530 acres that do not meet the standards for outstanding opportunities. Resources that would be considered as special features in the WSA (including archaeological, scenic, botanical, biological, geological, and water attributes) also would be protected.

In the foreseeable future, disturbance of up to 3 acres is anticipated from development of allowable 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.

Vehicular use on existing ways and other ORV activity generally would cease with ORV closure, improving opportunities for solitude and primitive recreation. It would be administratively difficult to totally

eliminate ORV use from the area, even with signing and patrol, due not only to the high amount of ORV use occurring in and adjacent to the WSA, but also because the western boundaries are difficult to define and the sandy terrain of the WSA is readily accessible by recreational vehicles.

Increased visitor use that would occur with time would be primitive in nature and managed so as to not result in loss of wilderness values.

Conclusion: Wilderness values would be preserved throughout the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on 3 acres of the WSA, but wilderness management criteria would be met.

• Impacts on Vegetation Including Special Status Species

Wilderness designation would add to the protection of vegetation, notably the threatened Welsh's milkweed which occurs in the sand dunes/Ponderosa pine areas. Due to ORV closure, the need for monitoring and other special recovery measures for this plant species may be reduced. Since complete prevention of ORV access would be administratively difficult, occasional ORV impacts may occur to individual milkweed plants, but this chance would be much less than with the No Action/No Wilderness Alternative.

Conclusion: Wilderness designation would aid in the protection of the threatened Welsh's milkweed on the sand dunes. No impacts to vegetation types in the WSA would occur.

• Impacts on Water Resources

Wilderness designation would help to protect watershed values and groundwater recharge areas in the WSA.

Opportunities within the WSA for additional water supply facilities or expansion of existing water facilities for the town of Fredonia could likely not be allowed. The future need for such additional facilities is uncertain at this time.

Conclusion: Wilderness would help protect watershed values in the WSA. Opportunities for additional development of water resources for the town of Fredonia would be foregone.

MOQUITH MOUNTAIN WSA

• Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Vermillion MFP. The estimated 140 AUMs currently allocated in the WSA are assigned to seven livestock permittees. Some use of motorized vehicles is currently taking place to manage livestock.

Rangeland developments would be maintained as in the past, based on practical necessity and reasonableness. The proposed range projects would not be affected because they could be designed and installed compatible with wilderness management criteria. Selective vehicular access for livestock operations may be allowed. However, random access by ranchers' vehicles and development of the future access routes for livestock management in the WSA could be restricted to preserve wilderness values. These restrictions on vehicle use on the 11 miles of way would be an inconvenience to the permittees, requiring more access by horseback with increased costs and time to manage livestock inside the WSA. Since predator control measures currently are not in effect, wilderness designation would not change this current condition.

Conclusion: Restrictions on vehicle use on some of the 11 miles of way would be an inconvenience to the seven permittees, requiring more access by horseback with increased costs and time to manage livestock inside the WSA.

• Impacts on Recreation

Designation would help to preserve primitive recreational opportunities in the WSA because ORV use would be eliminated. Although management provided through a Wilderness Management Plan would provide for prevention of destructive increases in future recreation use, the close proximity of Coral Pink Sand Dunes during peak use periods could continue to negatively affect the quality of the primitive recreation experience along the western edge of the WSA. Also, management to prevent trespass ORV use would be an administrative concern.

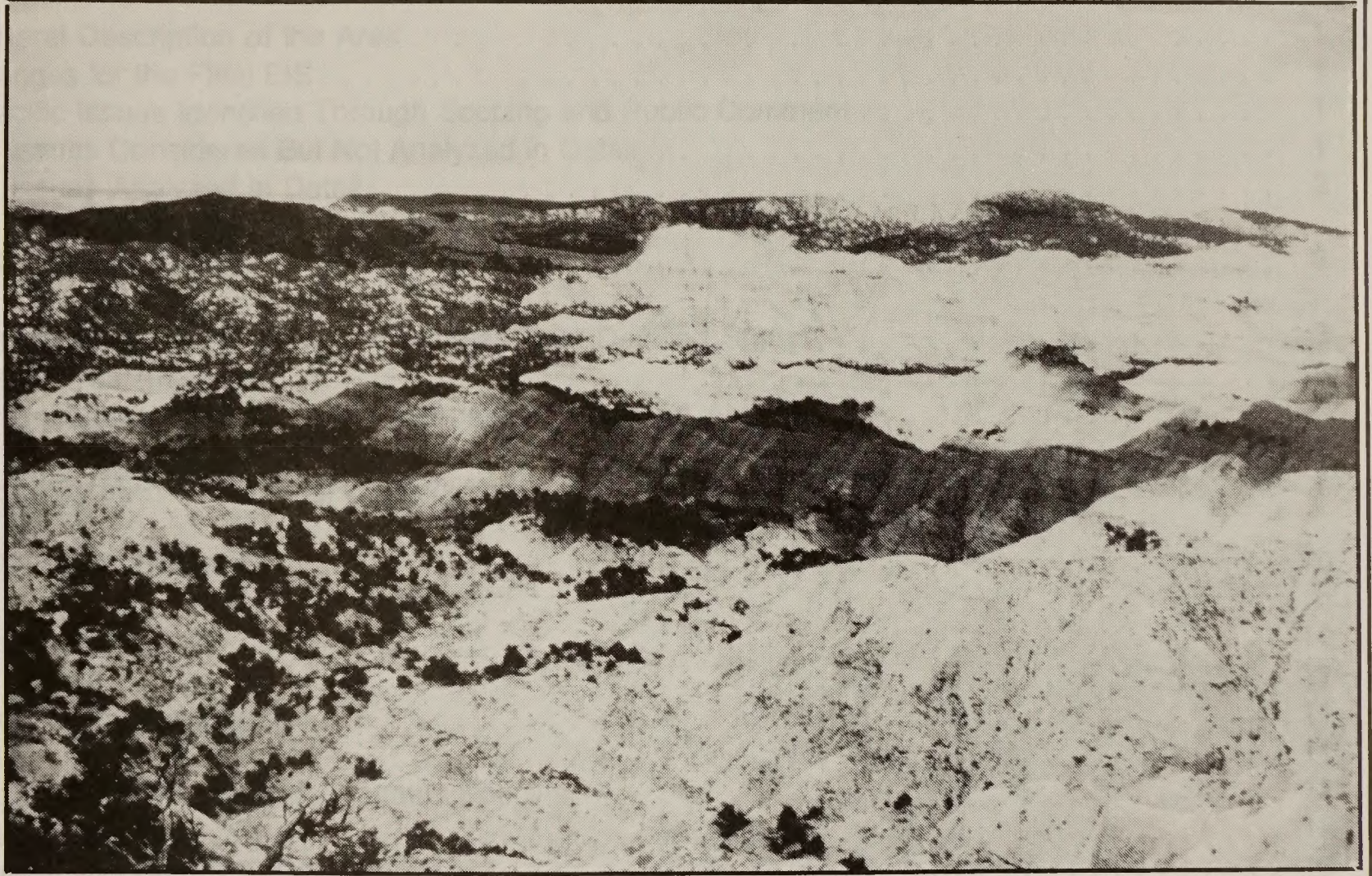
Wilderness designation would preclude development of the overflow campsite adjacent to the State park. Visitors to the area would be forced to locate elsewhere. Existing campsites would not be able to accommodate the increased demand, therefore, visitors would be forced to use rough camps.

The ORV play activity and/or vehicular hunting and sightseeing in the WSA that would occur without designation would be eliminated from the WSA. A significant impact on ORV recreational use would be expected due to the traditional use of the sand dunes and dry lake area. Closure of these features and the 11 miles of way within the WSA would result in a significant decrease in ORV use and loss of a major use area for ORV enthusiasts. It is likely that increases in primitive recreation use would never offset losses in existing and potential future ORV-related use in the WSA. Although primitive-type use would grow at a normal 2 to 7 percent rate, an overall decline in recreational use of the WSA is predicted. An estimated 2,680 primitive-type visitor days would occur annually by the year 2020. Because there are few other suitable sand dune areas for ORV recreation in the region, some of the ORV use likely would not be fully replaced nearby, but would be limited or relocated to other regions.

Conclusion: This alternative would benefit primitive recreation use, but ORV use and intensive recreation development would be eliminated. Overall visitation in the WSA would decline. Development of the planned overflow campsite would not be allowed in the wilderness.

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THE BLUES WSA

(UT-040-268)

INTRODUCTION

General Description of the Area

The Blues WSA is located in Garfield County, about 5 miles north and east of Henrieville, Utah. The southern boundary and portions of the eastern boundary of the WSA border Utah State Highway 12. Tropic Valley is to the west. There are 19,030 acres of public land and 640 acres of State land located in the WSA. The WSA is managed by the BLM Cedar City District, Kanab Resource Area.

The WSA is characterized by pinyon-juniper woodland vegetation, cliffs, escarpments, rolling hills, and blue-gray badlands. Elevations range from 8,200 feet near the Dixie National Forest to 6,400 feet at the western boundary bordering Tropic Valley.

Precipitation records from the National Weather Station in Henrieville show the average yearly precipitation in the vicinity of The Blues WSA to be 10.3 inches. The highest monthly precipitation occurs during the months of July through December when approximately two-thirds of the yearly precipitation falls. Intensive thunderstorms are common during the summer months and are triggered by southerly winds carrying moisture up from the gulfs of Mexico and California. Several damaging flash floods have occurred during the past 30 years in the Cannonville-Henrieville area due to these summer storms. Winter and spring precipitation is associated with storm systems moving in from the Pacific. July and January are the warmest and coldest months, respectively. Average daily maximum temperatures range from 41 degrees Fahrenheit (F) in January to 86 degrees F in July, while the average daily minimum temperatures range from 15 degrees to 51 degrees F during the same months.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, the following changes specific to The Blues WSA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the WSA (T. 36 S., R. 2 W., secs. 22, 27, and 34) have been redrawn to better define cherry-stemmed areas. 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 (4,530 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 4,530 acres reported in the Draft EIS to 681 acres of surface disturbance for the Final EIS.

3. As part of the 4,530 acres of disturbance identified in the Draft EIS, 3,400 acres of chainings and seedings were considered to improve mule deer habitat and to increase livestock forage production. However, BLM does not anticipate sufficient funding in the foreseeable future to complete these projects. As a result, the vegetation treatment estimates have been revised downward to 600 acres in the Final EIS to reflect more realistic funding projections. Estimates of potential increases in wildlife populations and livestock forage have been revised accordingly.

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 III-A (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 Blues WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

STATEWIDE
POCKET MAP
WSA
NO. **22**
SEE VOL. I

THE BLUES WSA

1. Soils: Soil disturbance estimates have been revised downward from 4,530 acres analyzed in the Draft EIS to 681 acres in the Final EIS. About 600 acres of the projected disturbance would result from vegetation treatments which would be reclaimed and existing soil conditions would likely be improved over existing conditions in the long term. Further, this disturbance would take place in those portions of the WSA where reclamation potential is the highest. Given this new scenario, direct disturbance of soil would affect only about 3.5 percent of the WSA. Therefore, impacts on soils are not significant issues for analysis in the Final EIS.

2. Water Resources: Concern has been expressed that future developments could increase sediment yield and affect water quality. However, there are no perennial streams, reservoirs, or lakes in the WSA. As explained above, increases in sediment yield would be small. For these reasons, water quality would not be significantly reduced.

3. Forest Resources: The forest resources in the WSA consists of approximately 17,127 acres of scattered pinyon-juniper woodland and some small, isolated stands of Ponderosa pine. Therefore, opportunities for forest resource harvest in the WSA are limited. Demand for forest resources in the WSA would continue to be very low due mainly to more accessible and higher quality areas located elsewhere. Therefore, impacts on forest resources are not significant issues for analysis in the Final EIS.

4. Visual Resources: As already discussed, estimates of surface disturbance have been substantially reduced for the Final EIS. The 681 acres of projected surface disturbance would affect less than 4 percent of the WSA. Disturbance would occur in Scenic Class B and C areas and in VRM Class III and IV areas. Impacts on visual resources are considered in the Final EIS as part of the discussion of naturalness in the Wilderness Values section.

5. Cultural Resources: No archaeological or historical sites are known to occur in the WSA. However, because surface-disturbing activities could potentially disturb or destroy sites not now known to occur in the WSA, inventories for the purpose of site recordation and mitigations of impacts would take place prior to any surface disturbance. Therefore, impacts on cultural resources are not significant issues for The Blues WSA.

6. Recreation: Recreational use of The Blues WSA is low, probably less than 100 visitor-use days per year. About 90 percent of this use is motorized use by hunters and sightseers and is generally restricted to the 5 miles of ways and dry stream beds in canyon bottoms in the WSA. Changes in recreational use resulting from designation or nondesignation would not be significant due to limited use now occurring and projected to occur in the future in the WSA.

7. Kaiparowits Coal Transportation Corridor: The WSA was identified in the Paria MFP as being located within an energy transportation corridor as described in the Kaiparowits Coal Development and Transportation Study (ERT, 1980). Commentors on the Draft EIS expressed concern that designated wilderness areas, including The Blues WSA, could block the use of the corridors described in the ERT study. However, portions of this corridor would be available for rights-of-way if energy developments were to occur as it extends beyond the WSA boundary. Therefore, should the need arise, rights-of-way within the corridor could be developed without concern for wilderness values. Even if The Blues WSA is not designated wilderness, the study recommends that natural topographic features, such as The Blues Formation, located within the WSA, be avoided. Therefore, use of this corridor within the WSA is not projected.

• Issues Analyzed in Detail

The significant issues for The Blues 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 leasable mineral exploration and production.
4. Impacts on wildlife habitat and populations including special status species.
5. Impacts on livestock management.
6. Impacts on 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 need for further inventories of resource values,

THE BLUES WSA

and BLM's assessments concerning 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 22, for responses to specific comments about The Blues WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

An alternative that would add about 1,130 acres of Federal and State lands to the southwest portion of the WSA and delete about 160 acres in the northeast portion of 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).

A partial alternative that would include only those lands which are not feasible for coal development was also suggested in the public comments. No details on specific boundaries were given. This alternative is not analyzed because the entire WSA is underlain by coal. It is recognized that development would most likely occur in the western part of the WSA but would eventually include all of the area. Therefore, inclusion of a Partial Wilderness Alternative would not eliminate potential conflicts with eventual development of the coal resource.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness (Proposed Action) and (2) All Wilderness (19,030 acres). A description of BLM's management practices with 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 BLM management actions discussed in the Introduction to Volume III-A are also applicable here.

• No Action/No Wilderness Alternative (Proposed Action)

With this alternative, none of the 19,030 acres of The Blues 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 Kanab-Escalante Grazing Management EIS and the Paria MFP (USDI, BLM, 1980a; and 1981c). The 640 acres of State land within the area of the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase (refer to Appendix 3 in Volume I). No private or split-estate lands are located in this WSA. The figures and acreages given are for Federal lands only.

• Management Conditions and Constraints

All 19,030 acres would remain open to mineral location, leasing, and sale. While no mining claims are currently located 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 regulations (43 CFR 3809) without concern for wilderness values. Three existing post-FLPMA oil and gas leases on 480 acres and future leases could be developed with Category 1 (standard stipulations). Coal leasing and development, including an existing 70-acre lease, could occur without regard for wilderness considerations. However, development in T. 36 S., R. 2 W., would be constrained by a 1980 decision by the Secretary of the Interior concerning suitability of the area for coal mining (U.S. Secretary of the Interior, 1980). That area (a portion of which is in the WSA) has been designated as suitable only for underground mining. BLM projects that in the short term, vegetation treatments and oil and gas exploration will occur with this alternative. In the long term, it is projected that oil and gas exploration would likely continue, and that the development of the coal resource would eventually occur (refer to Appendix 6 in Volume I for a description of exploration and development projections).

The present domestic livestock grazing use in the WSA, approximately 100 AUMs, would continue as authorized in the Paria MFP and Kanab-Escalante Grazing Management EIS. Use of the existing 4 miles of fence would continue. Three hundred acres of vegetation treatments planned for livestock in the WSA could be implemented without wilderness considerations. At the present time, the WSA is used for livestock grazing only on an emergency basis (e.g., during drought years).

THE BLUES WSA








Map 1

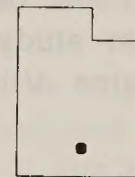
LAND STATUS

The Blues WSA

UT-040-268

Legend

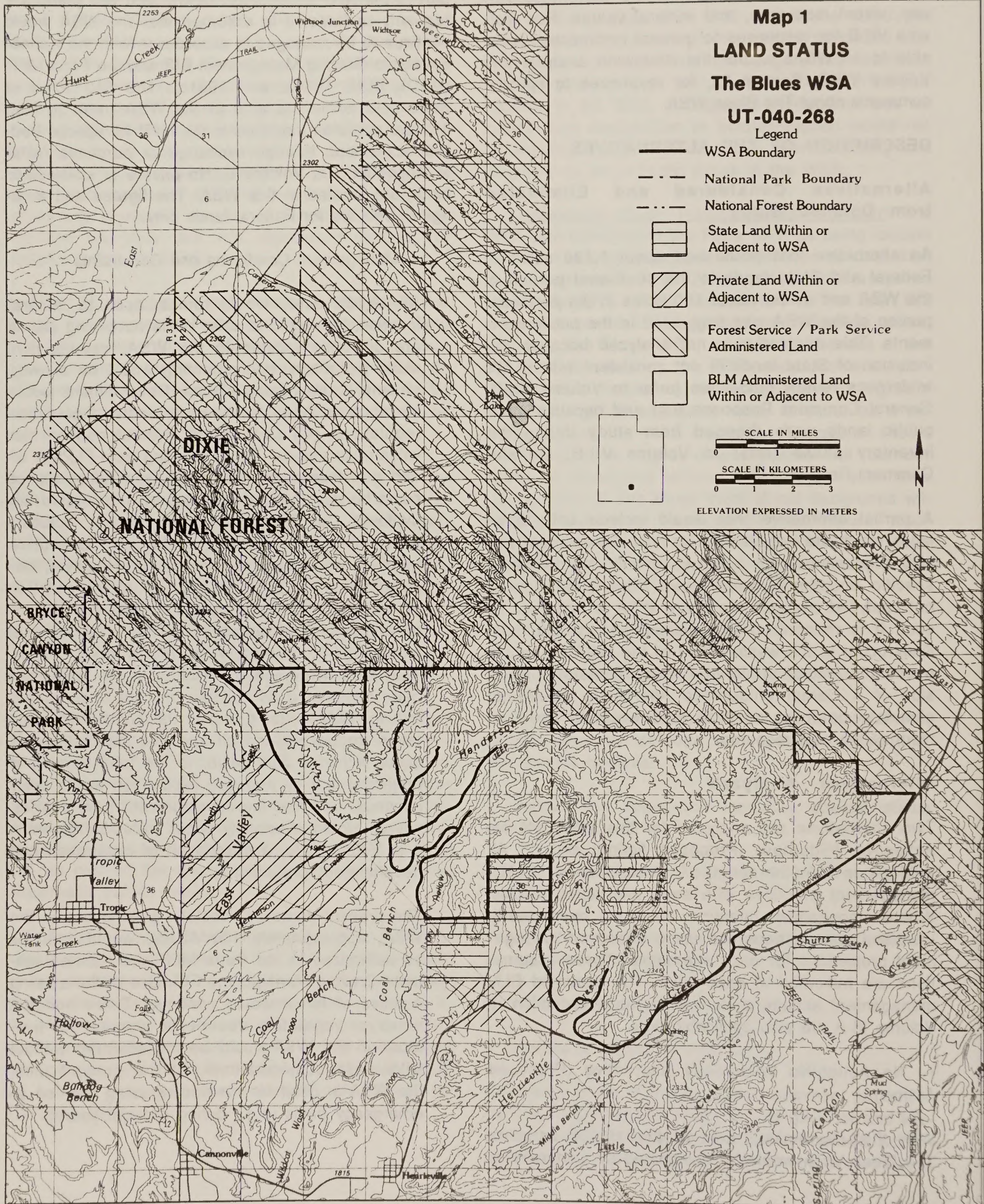
-  WSA Boundary
-  National Park Boundary
-  National Forest Boundary
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  Forest Service / Park Service Administered Land
-  BLM Administered Land Within or Adjacent to WSA



SCALE IN MILES
0 1 2

SCALE IN KILOMETERS
0 1 2 3

ELEVATION EXPRESSED IN METERS



R. 2 W.

R. 1 W.

THE BLUES WSA

Use, maintenance, and development of facilities and developments for wildlife, water resources, etc., could be allowed if in conformance with the MFP without regard for wilderness values. A 300-acre vegetation treatment (in addition to the 300 acres of vegetation treatments projected for livestock) for wildlife habitat improvement is planned in the WSA.

Three private water applications are pending in the WSA. However, because the area is already fully appropriated, it is assumed that these applications will be rejected.

Approximately 16,530 acres would be open to ORV use. On 2,500 acres, ORV use would be limited to existing roads and trails to protect riparian lands. The 5 miles of way inside the WSA and the approximately 3 miles of road that border the WSA would remain available for vehicular use.

The entire area would be open to woodland product harvest. Harvest of forest products at the present time is low and is expected to remain low for the foreseeable future due to more accessible areas located outside of the WSA.

The WSA would continue to be managed under VRM Class III on 4,730 acres and Class IV on 14,300 acres.

• Action Scenario

BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 681 acres of surface disturbance in the foreseeable future.

About 300 acres of disturbance would result from a planned vegetation treatment to improve livestock forage. An additional 300 acres of vegetation treatment is planned to improve wildlife habitat. Both treatments would be located in the northern portion of the WSA and would be maintained over the long term. About 2 months would be necessary to complete these projects. No additional rangeland, wildlife habitat, watershed projects, and other developments are projected in the foreseeable future.

About 40 acres would be disturbed as a result of leasable minerals activities. Geophysical operations would be conducted to determine the location of oil and gas exploratory wells. The highest

potential is in the north-central portion of the WSA along the John's Valley anticline. It is anticipated that up to four wells would be drilled in this area disturbing about 10 acres each for well pads and access roads. It is projected that individual access roads to the drill sites would not exceed 3 miles in length. Geophysical operations could delineate stratigraphic pinchouts anywhere in the WSA which may have as high a potential as areas along the John's Valley anticline. 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.

The entire WSA would be open to mineral location and mineral leasing (Category 1) with standard stipulations. Therefore, over the long term, mineral resource exploration and development may occur. While certainty and degree are unknown, it is believed that the extensive coal resource which underlies the WSA would eventually be explored and developed. Development would be by deep mining methods and would begin in the western portion of the WSA where the coal is nearest the surface and progress eastward. Location of surface facilities would likely be in canyons or drainages where the coal could be easily accessed. Two different mines could be located in the WSA. The size of individual coal operations typical of the intermountain area differ. Each surface facility site, including access roads, would occupy up to 20 acres. Up to 40 acres could be occupied by surface facilities and up to 10 miles of access roads. Additional temporary surface disturbance would result from exploratory drilling activities. Employees, including supervisory personnel, would number from 20 to 300 for each mine. Operations would last from 30 to 40 years. All disturbed areas would be reclaimed upon abandonment.

Oil and gas exploration would continue into the long term in the same manner as discussed for the short term. Interest would likely continue to be focused on the John's Valley anticline. The extent of this long-term interest in oil and gas cannot be predicted.

One acre would be disturbed as a result of access road construction to the in-held State section (T. 36 S., R. 1 W., sec. 32). It is projected that this State section would be explored for leasable minerals.

THE BLUES WSA

No disturbance from ORV use is anticipated in the foreseeable future because of terrain and management restrictions. It is projected that recreation use would increase over the current use of less than 100 visitor days annually at a rate of 2 to 7 percent per year. Ninety percent of the use would be vehicular in nature, associated with the use of the existing way and future access roads.

- All Wilderness Alternative

With the All Wilderness Alternative, all 19,030 acres of The Blues 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 values.

There is one State section (640 acres) within the WSA which would likely remain in State ownership (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 19,030 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently there are no mining claims located in the WSA. Should any 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. The existing post-FLPMA oil and gas leases (480 acres) would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. It is projected that the existing coal lease in the WSA would not be developed due to low demand for coal in the area and the presence of better resources elsewhere. It is projected that no exploration or development of other leasable or locatable minerals would occur in the WSA following wilderness designation. Existing oil, gas, and coal leases would expire and not be renewed. Access to the in-held State section would be allowed and is projected for the purposes of mineral exploration.

Present domestic livestock grazing would continue as authorized in the Paria MFP, Kanab-Escalante Grazing Management EIS, and Headwaters Allotment Management Plan. The estimated 100 AUMs in the WSA would remain available to live-

stock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (4 miles of fence) could continue in the same manner as in the past based on practical necessity and reasonableness. The 300-acre land treatment, as currently planned in the MFP and grazing EIS, would not be allowed.

The 300-acre planned land treatment project to improve wildlife habitat also would not be allowed.

The entire 19,030-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 5 miles of existing vehicular way would not be available for vehicular use except as indicated above. About 3 miles of the WSA boundary follow existing roads that would remain open to vehicular travel.

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 1 acre would be disturbed as a result of access road construction to an in-held State section as described in the No Action/No Wilderness Alternative. No rangeland, wildlife habitat, watershed projects, or other developments are projected following wilderness designation.

It is projected that the existing mineral leases in the WSA would not be explored or developed. New mineral location or mineral leasing would not be allowed. Therefore, no locatable or leasable mineral resource exploration or development would occur following wilderness designation.

No surface disturbance from ORV use would occur. Recreation use would be primitive in nature and would increase at a rate of 2 to 7 percent per year over the current primitive recreation use of 10 visits annually.

Summary of Environmental Consequences

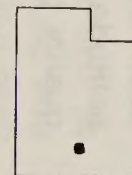
Table 1 presents the environmental consequences of alternatives analyzed in detail.

THE BLUES WSA

Map 2 ALL WILDERNESS ALTERNATIVE The Blues WSA UT-040-268

Legend

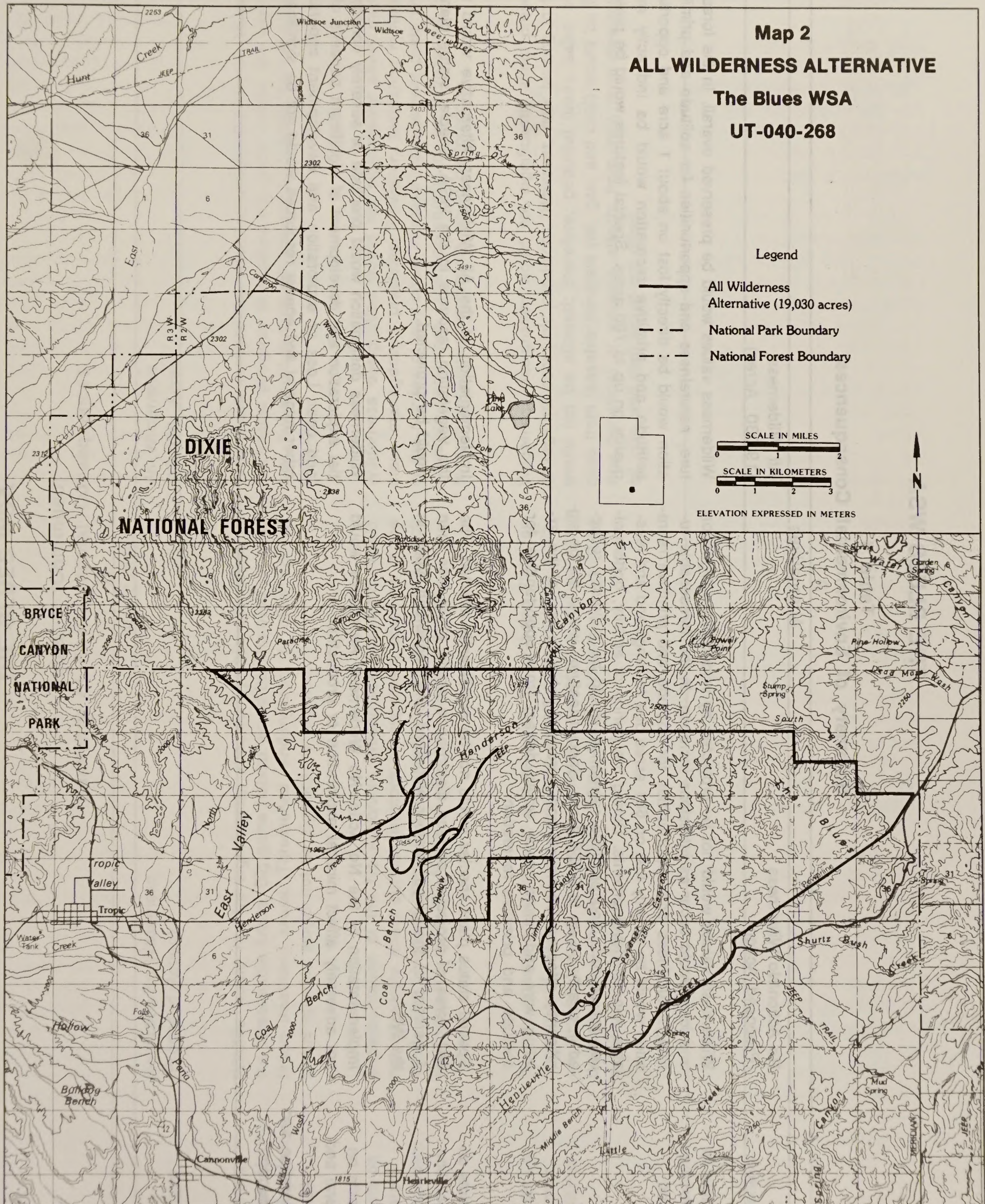
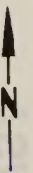
- All Wilderness Alternative (19,030 acres)
- - - National Park Boundary
- . - National Forest Boundary



SCALE IN MILES
0 1 2

SCALE IN KILOMETERS
0 1 2 3

ELEVATION EXPRESSED IN METERS



R. 2 W.

R. 1 W.

THE BLUES WSA

Table 1
Summary of Environmental Consequences

Alternatives		All Wilderness (19,030 Acres)
Resource	No Action/No Wilderness (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 681 acres due to rangeland and leaseable mineral developments. During the period of activity, opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 2,855 acres. Special features would not be significantly affected. Continued and increased vehicular use of the existing way and future roads would detract from opportunities for solitude and primitive recreation.	Wilderness values would be preserved overall. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on about 1 acre and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 760 acres. Special features would be preserved.
Impacts on Vegetation	Special status plant species would not be significantly affected. The 681 acres of projected surface disturbance would affect less than 4 percent of the pinyon-juniper woodland and sagebrush types in the WSA.	Implementation of the All Wilderness Alternative would not affect the vegetation resource in the WSA. Special status plant species would be protected.
Impacts on Mineral and Energy Exploration and Production	Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.	Wilderness designation would preclude or severely constrain potential exploration and development of significant deposits of oil, gas, and coal. Loss or exploration and development opportunities for other mineral and energy resources would not be significant.

THE BLUES WSA

Table 1 (Continued)
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness (Proposed Action)	All Wilderness (19,030 Acres)
Impacts on Wildlife Habitat and Populations	Wildlife would not be significantly affected by this alternative in the foreseeable future. Big game habitat would be improved on vegetation treatment areas. Threatened, endangered, or other special status species would not be significantly affected.	Wilderness designation would preclude 600 acres of vegetation treatments designed to improve big game habitat and livestock forage, but would provide all species with additional opportunities for solitude.
Impacts on Livestock Management	Implementation of the No Action/No Wilderness Alternative would not adversely affect current livestock management practices in the WSA. The proposed vegetation treatments would be allowed which would provide up to 56 AUMs of additional livestock forage.	Wilderness designation would not significantly affect current livestock management practices. However, restricting motorized use of the 5 miles of way could increase management costs and inconvenience permittees. The opportunity for an increase of 56 AUMs through vegetation treatments would be foregone.
Impacts on Economic Conditions	No loss of local employment or income occur. Federal and State revenues would not be reduced. Economic opportunities could be realized through mineral and energy resource exploration and eventual development in the foreseeable future. Local communities would be significantly affected.	Wilderness designation would not significantly affect present local or regional economic conditions. However, new leasing in the WSA would not be allowed; therefore, potential future sales and revenues from leasable minerals (oil, gas, and coal) would be foregone. Any beneficial or adverse affects from long term development of oil, gas, and coal would not occur.

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AFFECTED ENVIRONMENT

This section describes the overall environmental setting of The Blues WSA. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative Statewide analysis found in Volume I, as well as for analysis of the Environmental Consequences of Alternatives section 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 Blues WSA is 6 miles long (north to south) and 11 miles wide (east to west) and encompasses 19,030 acres.

- Naturalness

Imprints of man that remain in the WSA include a portion of way in Henderson Canyon (about 5 miles) and 4 miles of fence. These imprints involve less than 1 percent of the WSA and are substantially unnoticeable.

The high quality of naturalness has not changed in The Blues WSA since the BLM Intensive Wilderness Inventory decision (USDI, BLM, 1980b). No additional imprints have occurred in the WSA as a result of uses or activities allowed under the BLM Interim Management Policy (USDI, BLM, 1979c).

- Solitude

The WSA affords outstanding opportunities for solitude due to vegetation and topographic screening situations. The size and configuration of the WSA neither enhances nor detracts from the outstanding opportunities present.

Outstanding opportunities for solitude exist in the WSA where elements of vegetation and topographic screening combine to create a superior opportunity for visitors to avoid the sights, sounds, and evidence of other visitors. In the western portion of the WSA, the area of the 7,950-foot point between Henderson and Pasture Canyons, a small area on the Dixie National Forest boundary west of Pasture Canyon, and a portion of the east wall of Henderson Canyon all possess

this attribute. In the central portion of the WSA, the upper reaches of Pardner Canyon and the cliff area to the southeast also possess excellent natural screening. In The Blues, one area below the south rim at the Dixie National Forest boundary is sufficiently forested to offer an excellent opportunity to avoid other visitors. It would be easy for a visitor to find seclusion in the above mentioned areas. However, in much of the WSA, seclusion would be difficult to find. Certain vistas from the WSA are sufficient to give a feeling of vastness.

Outside sights and sounds generally do not affect opportunities for solitude within the WSA. An exception occurs on the elevated south rim of The Blues amphitheater, where the sights and sounds of truck traffic on the steep grades of Highway 12 and the activities at a nearby oil docking facility detract from the solitude opportunity in the WSA.

In summary, approximately 1,600 acres (8 percent) of the WSA have outstanding opportunities for solitude. Topographic and vegetation screening enables visitors to find a secluded spot in a few areas of the WSA. Ninety-two percent (17,430 acres) of the WSA does not meet the outstanding solitude standards.

- Primitive and Unconfined Recreation

The opportunity for primitive and unconfined recreation within the WSA is considered outstanding in areas where the number of primitive recreational activities are diverse. The opportunity is also considered outstanding where the exploring activity is of excellent quality.

The BLM Intensive Wilderness Inventory identified hiking, backpacking, rock climbing, hunting, geological sightseeing, and botanical sightseeing as the six activity opportunities existing within the WSA.

The opportunities for hiking and hunting exist throughout the WSA.

The rock climbing activity is very localized. It is dependent upon high sheer cliffs of the Wahweap or Straight Cliffs Sandstones. Cliffs suitable for this activity are found along Henrieville Creek above the gravel pit, on the east wall of the lower Pardner Canyon, and on the 7,950 foot monolith east of Pasture Canyon on the Pasture Canyon-Henderson Canyon divide.

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The botanical sightseeing activity is limited to the plant life in The Blues badlands. Observations of the plant associations in the badlands constitute a sightseeing objective in the WSA.

Some of the recreation activities are enhanced by the variation in vegetation and topography within the WSA. The backpacking and geological sightseeing opportunities are influenced by this variety. In fact, geological sightseeing is one of the objectives of backpacking in the WSA and these two activities are considered to exist in identical locations where a full traverse of the WSA's geological variety (landform, stratigraphy, and elevational diversity) can be accomplished. The WSA configuration is such that it would be difficult, if not impossible, to experience the variation in vegetation and topography by dayhiking without overnight stays.

Excellent opportunities for exploration are found in some of the remote and dissected locations of the WSA. These areas do not necessarily exhibit a diversity in landform types nor do they necessarily represent areas of outstanding solitude. Rather, they are rarely visited locations in difficult and confusing topography which would invite exploration. These areas include the upper reaches of the Pardner and Jimmie Canyons, a tributary canyon to Henderson Canyon beneath Powell Point, and the area along the Dixie National Forest boundary west of Henderson Canyon which includes the Pasture Canyon drainage.

All in all, approximately 3,000 acres (16 percent) of the WSA have outstanding opportunities for primitive recreation while 16,030 acres (84 percent) do not.

- **Special Features**

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. One endangered animal species, the peregrine falcon, is found in the WSA. Six additional animal species and six plant species that are considered special status species may also occur in the WSA. The WSA has populations of cougar and black bear which are wildlife species commonly associated with wilderness (refer to the Vegetation and Wildlife Including Special Status Species sections for more 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 discussions on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area, Provo-Orem, Utah.

Air Quality

No measurements of air pollution or visibility levels have been made in the Paria Planning Unit; however, data collected from various nearby sites (Page, Arizona, and Four Mile Bench, Kane County, Utah) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

The area is presently classified as Class II under the PSD regulations as outlined by the Clean Air Act, as amended in 1977. The closest Class I area is Bryce Canyon National Park, which is less than 5 miles to the west of the WSA.

Geology and Topography

The Blues WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province along the west side of the Kaiparowits Plateau. Exposed bedrock consists largely of sedimentary rocks of lower Cretaceous age. Included from east to west across the WSA are the Cretaceous Kaiparowits, Wahweap, Straight Cliffs, Tropic, and Dakota Formations. The rocks dip gently along the flanks of the John's Valley and Tropic anticlines and along an intervening syncline.

The eastern part of the WSA forms the rugged blue-gray badlands. The western part is composed of dissected sandstone canyonlands. Elevations range from 8,200 feet in the northern portion to 6,400 feet near the western boundary bordering Tropic Valley. Major drainages in the unit include the Pasture, Henderson, Jimmie, and Pardner Canyons. These drainages run predominantly in a north to south direction. Slopes are predominantly south-facing.

Soils

Approximately 75 percent of the WSA is made up of the Badland-rock outcrop and the Ustic Torriorthents-

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rock outcrop associations that produce high sediment yields. Also, about 75 percent of the area is from moderately steep (13 percent to 25 percent slope) to very steep (25 percent to 55 percent slope). Approximately 90 percent of the area is in the moderate or critical erosion susceptibility classes. The soil associations (land types) have natural erosion problems and have medium to high sediment yields. Also, approximately 90 percent of the soils have an effective rooting depth of 12 inches or less. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary in Volume I).

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	11,830	62	31,940
Moderate	1.3	5,300	28	6,890
Slight	0.6	1,900	10	1,140
Stable	0.3	0	0	0
Total		19,030	100	39,970

Sources: USDI, BLM, 1980a and 1981c; Leifeste, 1978.

The soils in this WSA are classed as nonsaline. The annual salt production from undisturbed soils within this WSA is estimated to be about 37 lb per acre as calculated from an unpublished soil survey.

Vegetation Including Special Status Species

Vegetation in the WSA consists of four major types. The pinyon-juniper woodland is the most dominant vegetation type. It occurs over approximately 90 percent (17,127 acres) of the WSA and has a sparse understory of mountain shrubs. Small stands of Ponderosa pine are also present in portions of the type. The black greasewood type is found on about 5 percent (952 acres) of the WSA. It is dominated by black greasewood, a salt-tolerant shrub which occupies saline-alkali soils. The big sagebrush type occurs on approximately 4 percent (761 acres) of the WSA. It is characterized by a brush mixture canopy, predominantly sagebrush, and a sparse grass/forb understory. The shadscale type occurs on about 1 percent (190 acres) of the WSA and has very little understory. About 190 acres of riparian vegetation exists within the WSA.

No threatened or endangered plant species are known to occur in the WSA. However, one Category 1 and four Category 2 plant species may occur in the WSA.

These are Lepidium montanum var. stellae, Lepidium montanum var. neeseae, Heterotheca jonesii, Coryphantha missouriensis var. marstonii, and Psoralea pariensis (see Appendix 4 in Volume I). Xylorhiza confertifolia, considered by some to be a sensitive species, may also occur in the WSA. Four of the species mentioned above are mostly located in the pinyon-juniper woodland and sagebrush areas where the majority of surface disturbance is projected to occur. The remaining two species (Lepidium montanum var. neeseae and Heterotheca jonesii) are located in the more restricted Ponderosa pine stands. The known and potential habitat for all of these special status species extends beyond the WSA boundaries.

The Blues WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

The Blues WSA is located within the Paria River sub-basin of the Lower Colorado River hydrologic subregion. Henderson Creek and Henrieville Creek are sub-basins draining into the Paria River.

Henrieville Creek and Henderson Canyon both run water during most of the year, but are generally not potable. Parts of other drainages have intermittent water. There is a developed spring and pipeline in Pasture Canyon immediately outside the WSA. There are no reservoirs, lakes, or ponds within the WSA. There are three undeveloped springs in the WSA. Two are located west and north of Pasture Canyon, while the other is located on the southern WSA boundary just north of the highway. Three private water applications are pending in The Blues WSA. A 45-acre public water reserve is also located in the WSA.

The WSA is located within Water Rights Adjudication Area 89. This area generally includes Townships 36 and 37, Ranges 1-3 West, and part of the headwaters of the Paria River, including North Creek, Henderson Creek, Campbell Creek, Bryce Creek, Henrieville Creek, and other tributaries. Area 89 is considered to be fully appropriated for the surface supply of water and any directly connected underground aquifer (UDNRE, DWR, 1988). The State Engineer will consider applications to appropriate water for 0.015 cfs based on the proposed location, outside of any existing municipal, town, or subdivision system, and on the individual merits of the applications.

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The water quality standards for Paria River and tributaries, from the State line to headwaters, are as follows: Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]); Class 3C (protected for nongame fish and other aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stock-watering).

The water quality of the Paria River indicates that sodium and TDS exceed the criteria for agricultural use. These impairments are due to the geology and the erosion of the Mancos Shale and dewatering.

Mineral and Energy Resources

Table 3 provides an energy and mineral resource rating summary for the WSA. Refer to Appendix 5 in Volume I for a description of the SAI rating system. No minerals currently listed as strategic and critical are known to occur within the WSA (USDoD, 1988).

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 3	c2	10 to 50 million barrels of oil; 60 to 300 billion cubic feet of gas
Uranium	f 2	c1	Less than 500 metric tons of uranium oxide
Coal	f 4	c4	245 million metric tons
Geothermal	f 1	c3	None
Hydroelectric	f 1	c4	None

Sources: SAI, 1982; USDI, BLM 1987.

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest-size deposit; f4 = highest favorability or largest-size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest; c4 = highest).

• Leasable Minerals

• Oil and Gas

Most oil and gas production in southern Utah is from the Paradox Basin, about 125 miles east of The Blues WSA. The only current oil production from south-central Utah comes from the Upper Valley Field located about 6 miles east of the WSA. Cumulative production through December 1975 from the Upper Valley Field was almost 15 million barrels of oil. Production is from four distinct zones within the Timpoweap Formation of

Triassic age and the Kaibab Formation of Permian age (Sharp, 1976). The oil reservoir is located along the prominent Upper Valley anticline, but production is offset from the crest of the anticline to the west flank and the southern-plunging nose. Sharp (1976) attributes this offset to a regional, southwest directed hydrodynamic drive in the Kaibab Formation. If correct, oil accumulations in other anticlines within the region may also be displaced to the south.

The John's Valley anticline was tested twice in 1952, again in 1965 (Kunkel, 1965; PIC, 1965), and most recently in 1970 (PIC, 1970). One of the 1952 wells penetrated the Redwall Limestone of Mississippian age and oil shows were reported from the Moenkopi Formation (Triassic), the Kaibab Limestone, Toroweap Formation, and Queantoweap Formation (all of Permian age), and the Hermosa and Molas Formations (Pennsylvanian). The other 1952 well penetrated the Kaibab Formation with good oil shows in the Timpoweap Member of the Moenkopi Formation. The 1965 well bottomed in the Cedar Mesa Sandstone (Permian) and oil shows were reported from the Shinarump Member of the Chinle Formation (Triassic) and the Timpoweap Formation. The 1970 well tested the anticline closest to the WSA (about 2.5 miles) with good oil shows in the Redwall Limestone and Cedar Mesa Sandstone.

Major stratigraphic traps within the vicinity of The Blues are possible, especially along the unconformity separating Mississippian and Permian rocks. Pennsylvanian rocks thin rapidly to the west across south-central Utah (SAI, 1982). The likelihood that a large oil field exists along this unconformity or within stratigraphic pinchouts has generally been thought to be low due to the low expectations of pre-Permian, and probably pre-Pennsylvanian rocks as source rocks. The good shows in the Redwall Limestone in the above-mentioned 1970 well indicates that the Redwall Limestone, at least in this area, may represent a potential source rock.

Based on this discussion, the oil and gas favorability along the John's Valley anticline in the north-central part of the WSA is (f3), potential for medium sized oil and gas fields, containing 10 to 50 million barrels of oil or 60 to 300 billion cubic-feet of gas, within a low degree of certainty (c2). The remainder of the WSA is considered to be favorable for small oil and gas fields,

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containing less than 10 million barrels of oil or less than 60 billion cubic-feet of gas, with a low degree of certainty (c1).

Under the current land use plan, the entire WSA is open for oil and gas leasing in Category 1 (standard stipulations). There are three post-FLPMA oil and gas leases covering 480 acres in the WSA. None are currently producing.

- Coal

The primary energy resource of The Blues WSA is coal, almost all of which lies within the Kaiparowits Known Recoverable Coal Resource Area (KRCRA) as delineated by the USGS.

The Blues WSA is on the west side of the Kaiparowits coal field. Most of the WSA is underlain by the Kaiparowits, Wahweap, Straight Cliffs, Dakota, and Tropic Formations, all of Cretaceous age. All of the coal within the WSA is in the upper part of the Straight Cliffs Formation (the Henderson coal zone in the John Henry Member). In the area near The Blues WSA, the cumulative thickness of coal is as much as 23 feet, and in places within the WSA individual coalbeds up to 12.2 feet thick have been measured (Doelling and Graham, 1972). The Henderson coal zone incorporates the youngest (uppermost) coal-bearing rocks in this part of the Kaiparowits coal field (Doelling and Graham, 1972). The maximum depth to the Henderson coal zone is estimated to be about 3,000 feet in the northeastern part of the WSA. Deeper coal-bearing rocks occur in the lower part of the Straight Cliffs Formation, the Tropic Shale, and the Dakota Sandstone (SAI, 1982).

The entire WSA is underlain by an estimated 245 million tons of in-place coal, of which 122 million tons is recoverable (Doelling and Graham, 1972). The WSA is, therefore, rated as (f4) (SAI, 1982). Certainty of occurrence is high (c4). The amount of overburden increases from less than 1,000 feet along the western edge of the WSA to over 3,000 feet along the eastern edge. The coal resource in the central and western portions of the WSA may have an economic advantage over more deeply buried deposits in the eastern portions of the WSA. The coal would be mined by underground methods.

Less than 25,000 tons of coal have been removed from the Kaiparowits coal field (Doelling and Grah-

am, 1972) and no mines are currently active. It is estimated that coal reserves within the entire Kaiparowits coal field total 15.2 billion short tons, of which one-third to one-half is minable by underground methods. A number of mines were active in and near The Blues WSA, but the cumulative tonnage extracted was probably very small (SAI, 1982). These mines are the Davies, Shakespeare, and Pollock. The largest of these was the Shakespeare mine and production probably totalled a few tens of thousands of tons (Doelling and Graham, 1972). There is one coal lease in the WSA, covering 70 acres, and the Shakespeare mine is within this lease. The coal lease is in W1/2 NW1/4, sec. 23, T. 36 S., R. 2 W. In 1980, a plan of operations was submitted to the USDI, Office of Surface Mining, by Shakespeare Coal Corporation. Mining was to commence in November 1980 according to the plan; however, no mining has taken place to date. Access to the mine and the mine portal are not within the WSA. It is estimated that approximately 0.50 million tons of minable coal is within this lease tract. The Davies mine is just outside the WSA on State land.

On December 16, 1980, the Secretary of the Interior designated a portion of the Alton and Kaiparowits coal fields, including a portion of The Blues WSA, as unsuitable for coal mining because of the close proximity to Bryce Canyon National Park (U.S. Secretary of the Interior, 1980). The Secretarial decision designated as unsuitable for surface coal mining operations, including surface impacts incident to underground mining that would be visible from Bryce Canyon National Park, all Federal lands in T. 40 S., R. 4 W.; T. 39 S., R. 4 W.; T. 38 S., R. 4 W.; T. 38 S., R. 3 W.; T. 37 S., R. 4 W.; T. 37 S., R. 3 W.; and T. 36 S., R. 3 W. The land in T. 36 S., R. 2 W. was designated as unsuitable for mining by surface methods only. Consequently, underground mining operations within the WSA would not be precluded by this decision.

In general, the quality of coal from the Kaiparowits coal field is poor to moderate. In the immediate area of The Blues WSA, the coal has an average moisture content of 18.3 percent, an average ash content of 13.6 percent, and an average sulfur content of 1.09 percent, and an average heat value of 11,683 British thermal units (Btu) per lb (Doelling and Graham, 1972). The coal within The Blues WSA would be considered of moderate quality in general and of average quality when

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compared with coal from the Kaiparowits coal field (SAI, 1982).

- Locatable Minerals

No claims, prospects, or any evidence of other mineralization are known to exist within the WSA.

- Uranium

The Colorado Plateau is one of the major uranium producing regions in the United States. The most important deposits occur in conglomerates, sandstones, and mudstones within the Morrison Formation of Triassic age and in the basal part of the Chinle Formation of Triassic age. Minor production has also been obtained locally from rocks of Permian, Cretaceous, and Eocene ages. The most productive areas of the plateau are in northern New Mexico and southeastern Utah (USDOE, 1979; and Doelling, 1975).

The following rock units are considered favorable for uranium in south-central Utah: the basal members of the Petrified Forest Member of the Chinle Formation and the Salt Wash Member of the Morrison Formation (USDOE, 1979). The Morrison Formation thickens to the east from the vicinity of south-central Utah and, according to SAI (1982), it has been removed by erosion in the immediate area of The Blues WSA. However, small erosional remnants of the Morrison may be preserved along the east side of the WSA. The depth to the favorable part of the Chinle Formation varies from at least 7,000 feet along the east side of the WSA to about 3,500 feet along the west side (Hintze, 1973).

The area encompassed by the WSA is not favorable for significant deposits of uranium (Peterson, et al., 1982). The term significant is defined by them as a uranium deposit that totals at least 100 metric-tons of uranium oxide at a minimum grade of 0.01 percent.

Based on available information, the WSA is assigned a uranium favorability of (f2) (a geological environment favorable for deposits containing less than 500 metric-tons of uranium oxide). The certainty that the deposit exists is very low (c1).

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that would be used for construction occur within the WSA. These deposits are not unique or economically significant due to the presence of ample similar materials outside of the WSA.

Wildlife Including Special Status Species

Due to the different habitat types within the WSA, a diversity of vertebrate species is present. The population level of most species is low, however, because of the poor habitat condition. Habitat types are pinyon-juniper woodland, sagebrush, mountain shrub, desert shrub, Ponderosa pine, and riparian. The riparian type located along Henrieville Creek produces the greatest diversity of species. These habitat types may support up to 45 species of mammals, 160 species of birds, 26 species of reptiles, and eight species of amphibians. However, no inventories have been completed in the WSA. No sport fish are found within the WSA.

Game species known to be present in the unit include mule deer, black bear, cougar, cottontail rabbits, blue grouse, Gambel's quail, mourning doves, and band-tailed pigeons. One endangered species, the peregrine falcon, may occur in the WSA. In addition, six Category 2 candidate species, the Great Basin Silver-spot butterfly, ferruginous hawk, long-billed curlew, southern-spotted owl, Swainson's hawk, white-faced ibis, and one BLM sensitive species, the golden eagle, may also occur in the WSA (see Appendix 4 in Volume I). No critical wildlife habitat has been identified in the WSA.

Approximately 300 acres of land treatment (pinyon-juniper chaining and seeding) have been identified for wildlife (deer) habitat improvement.

Forest Resources

Approximately 90 percent of the WSA is composed of pinyon-juniper woodland. Most of this type has a crown cover of less than 17 percent. Portions of the woodland, however, is quite dense and has a canopy cover of more than 17 percent. This latter area is found along a portion of Henderson Creek Canyon and north and east of the head of Jimmie Canyon.

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Some Ponderosa pine stands are scattered throughout the pinyon-juniper woodland but none are of commercial value. These stands are located primarily north of the Shakespeare mine and north and east of Pardner Canyon.

Although commercial timber is not found in the WSA, the area is suitable for firewood, post cutting, and Christmas tree cutting. A small amount of these resources has been utilized in the past.

Livestock and Wild Horses/Burros

The Blues WSA is in the Headwaters (Upper Paria) Allotment (Table 4). Twenty operators are licensed to graze cattle within this allotment. At the present time, the WSA is used for livestock grazing only on an emergency basis (e.g., during drought years) because the large majority of the area is unsuitable for livestock grazing. The unsuitability determination is based on steep slopes, poor forage availability, and inadequate water distribution. However, the following areas are used on occasion: Walt Bench, Pasture Canyon, Henderson Canyon, Pardner Canyon, Henrieville Creek, and near the northwest corner of the allotment (East Valley area). There are approximately 100 AUMs within the WSA boundary. Cattle are normally trailed down Henderson Canyon and Henrieville Creek each year to travel from one grazing unit to another. There are approximately 4 miles of fences within the WSA. The 5 miles of ways are used during the grazing season by the permittees for fence maintenance and livestock management. The Paria MFP identified 2,200 acres of potential vegetation treatment (chaining, plowing, and seeding) to improve livestock forage in the allotment. However, due to budget and resource constraints, only 300 acres of treatment are projected in the foreseeable future (an additional 300 acres of vegetation treatments are planned for wildlife habitat purposes). No other livestock facilities have been proposed within the WSA.

There are no wild horses or burros in the WSA.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments in The Blues WSA (USDA, APHIS, 1988).

Visual Resources

The BLM visual resource inventory classified approximately 12,630 acres as Class B and 6,400 acres as Class C scenery. The VRM ratings are Class III on 4,730 acres and Class IV on 14,300 acres. Refer to Appendix 7 in Volume I for a description of the BLM VRM rating system.

Cultural Resources

According to 1988 BLM data, the WSA does not have any known archaeological or historical values. No formal archaeological inventory, however, has been conducted for this WSA (USDI, BLM, 1988a). The potential for occurrence of cultural resources is low on the badlands area and moderate in the remainder of the WSA judging from similar sites in the region.

Recreation

Although The Blues WSA offers some opportunities for both primitive and nonprimitive types of recreational use, reliable data on existing visitor use are not available. There are probably less than 100 visitor use days actually made within the interior of the WSA. Most (90 percent) of this is motorized use of the vehicular way by hunters and sightseers. Primitive recreation use would account for only 10 percent of the current use.

The WSA is open to ORV use on 16,530 acres. Approximately 2,500 acres are designated as "limited to existing roads and trails" to protect riparian values. Present ORV use is very light because of the limitations posed by topographic features and the steepness of terrain.

Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Headwaters	239,122	19,030	5,930	100	744 Cattle	11/01-09/30	20

Sources: USDI, BLM, 1979a

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The Kanab Resource Area Office has not received any inquiries concerning the hiking possibilities within the WSA. It is assumed that most hiking or backpacking use in the area occurs on the Table Cliffs Plateau on the adjacent Dixie National Forest and in the Henderson Canyon amphitheater beneath the cliffs.

The most important recreational use of the WSA is general sightseeing by tourists on Highway 12. The highway borders the WSA on the south, and the current land use plan has identified the potential to develop an overlook near the badlands portion of the WSA. The overlook would identify physiographic features such as the badlands and the Table Cliffs on the Dixie National Forest. At the present time, however, development of this facility has been deferred until public demand is evident.

Land Use Plans

The WSA is located in the BLM Paria Planning Unit and is being managed under the land use decisions of the Paria MFP (USDI, BLM, 1981c). The Paria MFP does not address wilderness. 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 BLM-administered public land except for one State section (640 acres). 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 640 acres of in-held State land are under lease for coal and livestock grazing (UDNRE, DSLF, 1988). There is currently no activity on these lands.

Under its RARE II Study, the FS found the Table Cliff-Henderson Canyon unit, which adjoins the WSA on the north, to be unsuitable for wilderness designation. The 1984 Utah Wilderness Act (P.L. 98-428) released the unit from further review by the FS until the next revision of land management plans.

The Garfield County Master Plan recognizes that the county possesses "... Some of the most spectacular scenery in the United States ... The County is sparsely populated and most of it is in its original pristine condition" (Five County Association of Governments,

1984). Garfield County previously proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one FS unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including The Blues WSA, be retained for multiple-use. The plan's concept of multiple-use includes forestry, livestock grazing, minerals, wildlife, and recreation. The Garfield County Commission has endorsed the Consolidated Local Government Response to Wilderness that opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The Kaiparowits Coal Development and Transportation Study (ERT, 1980) has identified a number of potential transportation corridors and truck haul routes that could be used to remove coal from the plateau. The objective of the study was to identify possible areas for construction and operation of future coal transportation systems within the restrictions of general environmental and engineering constraints. Corridor segments were required to contain at least one potential route for a railroad or coal slurry pipeline. Specific routes, however, were not identified. By selecting corridors between 2 and 15 miles in width, maximum flexibility for future locations of specific routes were maintained. Corridor route C13 would encompass the entire WSA. However, the WSA does not extend across the entire width of the corridor. Therefore, the corridor could be used without affecting the WSA. In fact, the study states that natural topographic features, such as The Blues Formation in the WSA, would be avoided by any coal slurry or railroad lines.

Socioeconomics

• Demographics

Garfield and Kane Counties are rural, having average population densities of less than one person per square mile. This density is very low when compared to the Statewide average of 17 persons per square mile (USDC, Bureau of Census, 1981). Much of the population in these counties is concentrated in small communities rather than being evenly distributed throughout the area.

From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 5 presents the baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987 population increased to about 4,085. Population projections

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indicate that the number of people living in Garfield County in the year 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 5
Baseline and Projected Population and Employment Growth
Garfield and Kane Counties

	1980	1990	2000	2010
<u>Garfield County</u>				
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200
<u>Kane County</u>				
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

From 1970 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987 population increased to about 4,890. Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

• Employment

The economies of Kane and Garfield Counties are somewhat similar in structure, both being dominated by the government sector and having strong service sectors in terms of employment (USDC, Bureau of Economic Analysis, 1982). Garfield and Kane Counties are part of the Southwest MCD.

Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010 employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, mining to less than 1 percent, and government to 18 percent of the total MCD employment.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Total	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

• Sales and Revenues

Economic-related activities in the WSA include mineral leasing, livestock production, and recreation. Table 7 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 7
Local Sales and Federal Revenues

Source	Annual Local Sales ^a	Annual Federal Revenues
Oil and Gas Leases	\$ 0	\$960
Coal Leases	0 ^b	\$210
Livestock Grazing	\$2,000 ^c	\$154 ^b
Woodland Products	0	0
Recreational Use	<u>\$ 410</u>	<u>0</u>
Total	\$2,410	\$1,324

Source: BLM File Data; Appendix 9 in Volume I.

^aLocal sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

^bCurrently, there is no production from the Shakespeare Coal Mine.

^cDuring years when the forage is grazed.

Coal has been mined from the WSA in the past. However, none is currently being produced. No oil and gas production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA is not contributing to local employment or income.

Twenty livestock operators have a total grazing privilege of approximately 100 AUMs within the WSA. If all this forage were utilized, it would account for

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\$2,000 of livestock sales and \$500 of ranchers' returns to labor and investment.

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

The WSA's nonmotorized recreational use and related local expenditures are low. The WSA's motorized recreational use is also low and, consequently, related local expenditures are low. 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 The Blues WSA is estimated at about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Kane and Garfield Counties.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 7).

Oil and gas leases in the WSA cover approximately 480 acres. At \$2 per acre, lease rental fees generate up to \$960 of Federal revenues annually. One coal lease (70 acres) is also located in the WSA. At \$3 per acre, lease rental fees generate up to \$210 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 100 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$154 of grazing fee revenues during the years the forage is grazed, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and antici-

pated activities presented in the Introduction to Volume III-A and the Description of the Alternatives section for The Blues WSA.

A major long-term consideration in impact analysis for this WSA is development of the Kaiparowits coal field. For a detailed analysis of potential impacts of coal development in southern Utah, the reader is referred to the Final EIS for "Development of Coal Resources in Southern Utah" (USDI, USGS, 1979).

No Action/No Wilderness Alternative (Proposed Action)

• Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the protection afforded by application of the BLM Wilderness Management Policy (BLM Manual 8560).

Disturbance of approximately 681 acres from development of mineral leases and rangeland projects in areas throughout the WSA is likely in the foreseeable future. One acre of the approximately 681 acres of disturbance would be for access to a State section (T. 36 S., R. 1 W., sec. 32), where mineral exploration is likely. The result of the 681 acres of development would be a direct loss in naturalness, solitude, and opportunities for primitive, unconfined recreation in the disturbed areas, which is about 3.6 percent of the WSA. There would be little impact to special features. Appropriate measures would be taken prior to any surface-disturbing activity to protect special status animal or plant species (refer to the Vegetation and Wildlife Including Special Status Species sections). Bear and cougar could benefit slightly from increased wildlife numbers and improved conditions resulting from the vegetation treatments.

During the period of activity, the visual and audible disturbance from mineral exploration and rangeland development would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas, but also on adjacent portions of the WSA. As much as 15 percent (2,855 acres) of the WSA could be indirectly affected in the foreseeable future. The areas that would be affected are generally considered by BLM to not have outstanding opportunities for solitude or primitive recreation.

ORV activity is light in the WSA. Portions of the WSA can be accessed by vehicles and currently there are 5

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miles of way. In the foreseeable future, the formation of new trails and degradation of naturalness values by ORV use is unlikely due to topographic and management restrictions, but use of the existing ways and new roads would detract from opportunities for solitude and primitive recreation. The increased visitor use that would occur would be 90 percent vehicular.

The extent that disturbance would occur over the long term from oil and gas and coal development and, therefore, the long-term loss of wilderness values that would occur is not known. Loss would occur as intrusions increase.

Conclusion: Wilderness values would not be protected and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 681 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 2,855 acres. Special features would not be significantly affected.

• Impacts on Vegetation Including Special Status Species

The 681 acres of surface disturbance projected for the No Action/No Wilderness Alternative would mainly occur in the pinyon-juniper woodland. A small amount of sagebrush vegetation would also be affected. On the 600 acres of vegetation treatments, vegetation composition would change from woodland or sagebrush to grass-shrub. It is assumed that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland or sagebrush. The vegetation treatment would be designed to provide livestock and wildlife forage. Dead-and-down firewood would also be available. There would also be a loss of naturalness in the disturbed area. However, due to the small size of the disturbance (less than 4 percent of the WSA), the overall impact would not be significant. In the long term, anticipated coal development could disturb up to 40 acres per operation, including access and road construction. While no significant impacts to any vegetation type is anticipated, this disturbance would remain for the 30- to 40-year life of the operations.

Six special status plant species (none are listed as threatened or endangered) may occur in the WSA. Four of these species have a wide spread distribution in the pinyon-juniper woodland and sagebrush areas where the surface disturbance is projected to occur.

The two remaining species (Lepidium montanum var. stellae and Heterotheca ionessii) are more restricted and occur in the Ponderosa pine stands where no surface disturbance is projected. The habitat of all of the special status species extend beyond WSA boundaries. 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 the FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when necessary (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, while surface-disturbing activities could result in the inadvertent loss of some individual plants of these species, threats to the continued existence of any of the species would not occur. Because necessary measures would be taken to protect these species, the viability of populations of special status species would be preserved with the No Action/No Wilderness Alternative.

Oil and gas exploration and possible development is projected for the long term. However, the extent of this disturbance and its possible impact (40 acres of surface disturbance) on the vegetation resource in the WSA are not known but are not expected to be significant.

Conclusion: Special status plant species would not be significantly affected. The 681 acres of projected surface disturbance would affect less than 4 percent of the pinyon-juniper woodland and sagebrush types in the WSA.

• 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 habitat and populations would improve on 600 acres projected for vegetation treatments designed

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to improve big game habitat and livestock forage. The forage generated could increase wildlife numbers and improve the condition of the animals. This would not be a significant overall impact as only about 3 percent of the WSA would be affected by the vegetation treatments. Long-term disturbance of only 80 acres resulting from energy development would not have a significant effect on wildlife species.

Before 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 the FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate. 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 special status species would be preserved with the No Action/No Wilderness Alternative.

Possible leasable mineral and energy resources exploration and development are projected for the long term. However, the extent of this disturbance and its possible impact on wildlife in the WSA is not known, but is not expected to be significant due to projected underground mining rather than surface-mining methods.

Conclusion: Wildlife in The Blues WSA would not be significantly affected by this alternative in the foreseeable future. Big game habitat and populations would improve on vegetation treatment areas (600 acres). Threatened, endangered, or other special status species would not be significantly affected.

• Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Paria MFP. The estimated 100 AUMs currently allocated in the WSA are controlled by 20 livestock permittees. The proposed vegetation treatments could be developed and would result in improved livestock management and an additional carrying capacity of up to 56 AUMs. Use of the existing 5 miles of way in the WSA by motorized vehicles for livestock management purposes would continue.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect current livestock management practices in the WSA. The proposed vegetation treatments would be allowed

which would provide additional livestock forage (up to 56 AUMs).

• Impacts on Economic Conditions

There would not be a loss of local employment or income resulting from implementation of this alternative. The opportunity to explore and develop mineral and energy resources would remain as at present. The economic impacts of oil and gas exploration in the WSA in the short term are projected to be minor. Total employment resulting from projected exploration activities would not exceed 40 employees and 2 years in duration. This would represent less than one-tenth of 1 percent of the estimated 1990 Southwest MCD work force of 28,900 people (Table 6). However, local communities could benefit from increased sales, etc. It is projected that oil and gas exploration would continue in the long term with continued minor economic impacts. Production could eventually result but cannot be accurately predicted.

No coal exploration or development is projected in the short term. However, due to the extensive coal resource known to underlie the WSA, it is projected that in the long term coal would eventually be developed. Exact lease boundaries cannot be determined; therefore, it is not possible to project if one or more mines would actually be located within WSA boundaries. However, a typical Utah mine would be an underground operation, employ 20 to 300 people, and be in operation 30 to 40 years. The employment of 600 people (two mines) would represent only 1.3 percent of the projected Southwest MCD for the year 2010. However, it would be about 19 percent of the Garfield County or 21 percent of the Kane County projected employment in the year 2010 and nearby local communities would be significantly affected. There would be both beneficial and adverse impacts. Beneficial impacts would include increases in employment and income, while adverse impacts would include increased demands for housing and infrastructure such as schools, law enforcement, etc.

There would be no livestock-related economic losses because the existing grazing use (100 AUMs) and ability to maintain, replace, and build new range developments would remain as at present.

Recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the next 20 years (from 49 to 285 percent increase over 20 years). Because recreational use in the area is estimated to increase only from 49 to 285 visitor days

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per year over the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day, recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 18,550 acres in the WSA open to oil and gas leases that are currently not leased and 18,960 acres open to coal leasing that are not leased. If leased, they would bring nearly \$94,000 additional Federal lease fee revenues per year in addition to royalties from lease production (and bonus bids from new coal leases). Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$154 each year the forage is grazed) would continue. About 50 percent of the increased revenues would be returned to the local BLM District for use in range development projects.

Conclusion: No loss of local employment or income would occur. Federal and State revenues would not be reduced. Economic opportunities could be realized through mineral and energy resource exploration and eventual development in the foreseeable future in which case local communities would be significantly affected.

All Wilderness Alternative (19,030 Acres)

• Impacts on Wilderness Values

Designation and management of all 19,030 acres as wilderness would contribute to the preservation of the wilderness values in The Blues WSA. The potential for surface-disturbing activities would be reduced through closure of the entire WSA 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 19,030 acres. Solitude would be protected on approximately 1,600 acres that meet and 17,430 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 3,000 acres that meet and 16,030 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including special status plants and animals and bear and cougar, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of the exist-

ence of valid existing rights. In the foreseeable future, disturbance of up to 1 acre is anticipated from providing access to a State section (T. 36 S., R. 1 W., 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 on adjacent portions of the WSA from noise and visual disturbance during the period of activity when mineral exploration is occurring in State section 32. As much as 4 percent (760 acres) of the WSA could be so affected. 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. Due to the small amount of disturbance projected and due to the mitigation that would be applied to protect the special features mentioned previously, these values would be preserved.

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 2 to 7 percent annual increase in primitive-type visitor use would be managed so as to not result in the loss of wilderness values.

Conclusion: Wilderness values would be preserved overall. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 1 acre and opportunities for solitude and primitive recreation could be indirectly reduced in quality on up to 760 acres. Special features would be preserved.

• Impacts on Vegetation Including Special Status Species

Implementation of the All Wilderness Alternative would not directly affect any vegetation type in the WSA. The projected 600 acres of vegetation treatments would not be allowed. No surface disturbance from mineral and energy resource exploration or development is anticipated. Wilderness designation would provide additional protection for special status plant species.

Conclusion: Implementation of the All Wilderness Alternative would not affect the vegetation resource

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in the WSA. Special status plant species would be protected.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

Approximately 480 acres are under oil and gas lease; however, 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. Expired leases would not be reissued.

A potential resource of between 10 and 50 million barrels of oil or 60 to 300 billion cubic-feet of natural gas could exist in the WSA. Since exploration and development have been projected under the No Action/No Wilderness Alternative, an unknown amount of this oil and gas, not in producing leases prior to designation, would be foregone.

The WSA has an estimated 245 million tons of coal in-place, of which 122 million tons are recoverable. Only a small part of the coal (0.50 million tons) is under existing lease. This lease is not projected to be developed. Wilderness designation would preclude issuance of additional leases and development of the coal resource. Since exploration and development have been projected in the long term with nondesignation, recovery of approximately 122 million tons of coal would be foregone with designation.

- Locatable Minerals

Because of the low potential of locatable minerals and unfavorable economic conditions (high transportation costs, poor market conditions, etc.), no exploration or development is projected in the foreseeable future with or without wilderness designation. Therefore, significant locatable mineral production would not be foregone.

- Salable Minerals

No exploration or development is anticipated. Because of low potential of the salable minerals and the availability of better sources of material out-

side of the WSA, any loss of salable mineral products would be insignificant.

Conclusion: Wilderness designation would preclude or severely constrain potential exploration and development of significant deposits of oil and gas and coal. Loss of exploration and development opportunities for other mineral and energy resources would not be significant.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Implementation of the All Wilderness Alternative would not directly affect any species of wildlife in the WSA. The assumed 600 acres of vegetation treatments would not be allowed. Therefore, projected big game habitat improvements would not be realized. No surface disturbance from mineral and energy resource exploration or development is projected. Wilderness designation would provide additional protection for special status species.

Conclusion: Wilderness designation would preclude 600 acres of vegetation treatments designed to improve big game habitat and livestock forage, but would provide all species with additional opportunities for solitude.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Paria MFP. The estimated 100 AUMs currently allocated in the WSA are controlled by 20 livestock permittees. Use of the 5 miles of way by motorized vehicles to manage livestock would be regulated by BLM. The proposed 600 acres of vegetation treatments would not be allowed. Therefore, the potential for an additional 56 AUMs of livestock forage would be foregone.

Rangeland developments would be maintained as in the past, based on practical necessity and reasonableness.

Conclusion: Wilderness designation would not significantly affect current livestock management practices. However, restricting motorized use of the 5 miles of way could increase management costs and inconvenience permittees. The opportunity for an increase of 56 AUMs through vegetation treatments would be foregone.

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• Impacts on Economic Conditions

Overall, there would not be significant changes to existing patterns of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there would be losses of potential increases in sales and Federal revenues that would occur under the No Action/No Wilderness Alternative.

Precluding exploration and development of leasable minerals would not alter existing economic conditions, but could reduce future economic opportunities from what they would be with mineral development under the No Action/No Wilderness Alternative. The amount of potential economic loss is unknown. Any beneficial or adverse effects from long-term development of oil, gas, and coal would not occur.

Livestock use and ranchers' sales income would continue as at present with \$2,000 of livestock sales and \$500 of ranchers' return to labor and investment during the years the forage is grazed. Proposed vegetation treatments for livestock forage would be foregone along with any resulting increase in ranchers' income. Six hundred acres of vegetation treatments have been proposed. If this project were to be implemented and the additional forage used, ranchers' returns to labor and investment would increase by \$280 per year.

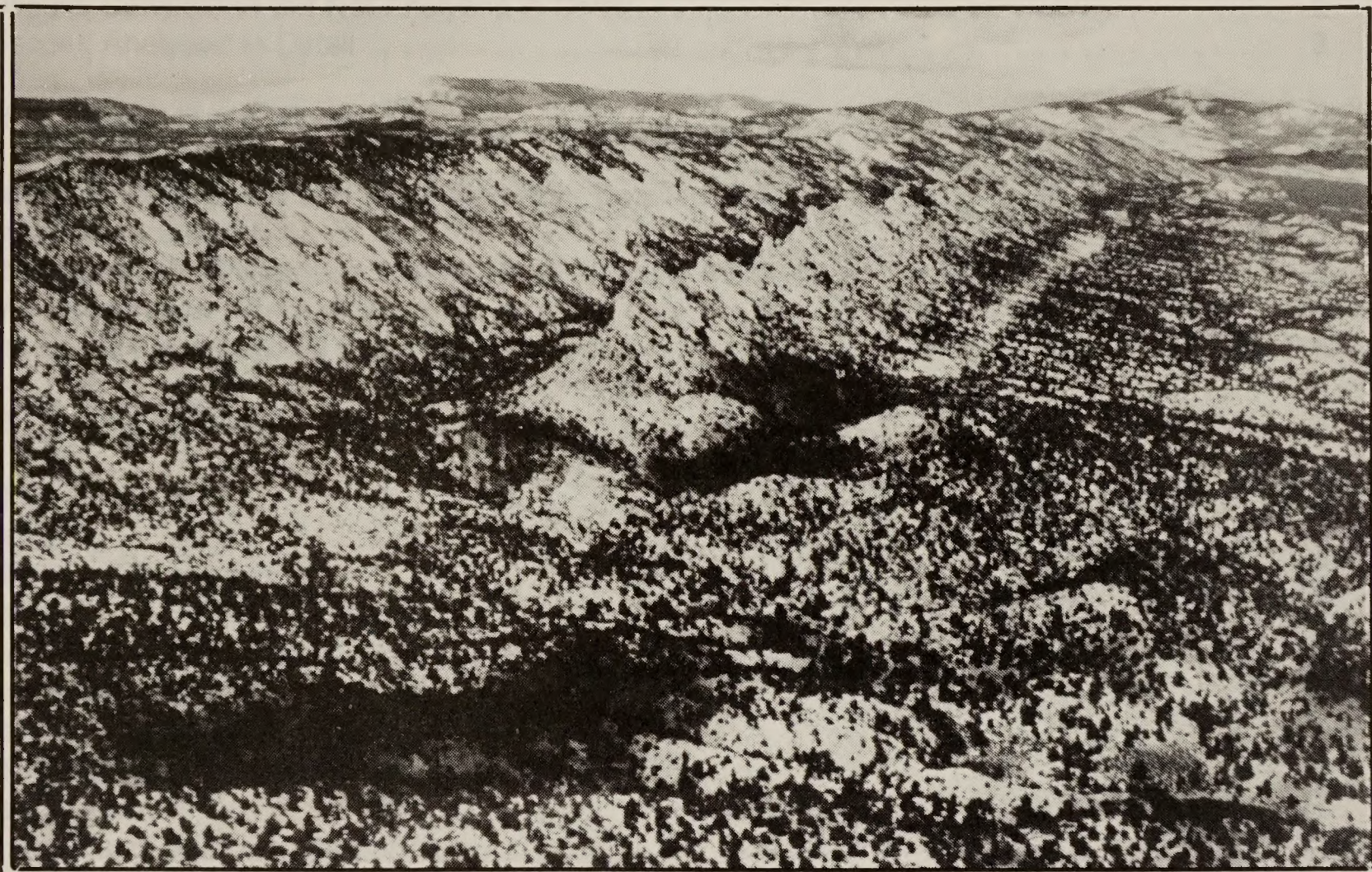
Related local expenditures would be small (average of \$4.10 per visitor day Statewide) and would not be significant. Motorized recreational use of the WSA is light (90 visitor days per year). The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 550 acres now leased (oil, gas, and coal) would cause an eventual loss of up to \$1,100 per year of lease fees to the Federal treasury. There would also be a potential loss of \$93,980 annually in Federal revenues from lands in the WSA that could be leased for coal, oil, and gas without designation. In addition to these rental fees, any potential royalties from lease production would also be foregone.

If the proposed range developments are not developed and used, an estimated annual \$87 of Federal grazing revenues from 56 increased AUMs would be foregone.

Conclusion: Wilderness designation would not significantly affect present local or regional economic conditions. However, new leasing in the WSA would not be allowed; therefore, potential future sales and revenues from leasable minerals (oil, gas, and coal) would be foregone. Beneficial and adverse effects from long-term development of oil, gas, and coal would not occur.

Mud Spring Canyon WSA



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MUD SPRING CANYON WSA

(UT-040-077)

INTRODUCTION

General Description of the Area

The Mud Spring Canyon WSA is located south of Utah State Highway 12 and approximately 9 miles east of Henrieville, Utah. It is in Garfield and Kane Counties. There are 38,075 acres of public land (15,575 acres in Kane County and 22,500 acres in Garfield County) within the WSA. About 2,401.5 acres of State land are located within the WSA.

The WSA is managed by the BLM Kanab and Escalante Resource Area Offices of the Cedar City District.

The WSA includes a portion of The Cockscomb, a prominent southern Utah geologic feature consisting of two parallel knife-like ridges.

Precipitation records from the National Weather Service Station in Henrieville (approximately 9 miles west of the WSA and from 200 to 2,100 feet lower in elevation) record the average yearly precipitation as approximately 12 inches. Highest monthly precipitation occurs from July through December, during which time approximately two-thirds of the yearly precipitation falls. Intensive thunderstorms are common during the summer months and are triggered by southerly winds carrying moisture from the gulfs of Mexico and California. Several damaging flash floods have occurred during the past 30 years in the Cannonville/Henrieville area from these summer thunderstorms. Several areas in the Mud Spring Canyon WSA are major source areas for flood waters (e.g., Henrieville Creek and Wahweap Creek drainages). Winter/spring precipitation is mainly associated with storm patterns moving from the Pacific Ocean.

July and January are the warmest and coldest months, respectively. Average daily maximum temperatures at Tropic (14 miles northwest of the WSA) range from 41 degrees Fahrenheit (F) in January to 86 degrees F in July, while average daily minimums vary from 15 degrees to 51 degrees F during the same months. The WSA's higher elevations (ranging up to 1,800 feet higher than the recording station) could be expected to be several degrees cooler than at Tropic.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, the following changes specific to the Mud Springs Canyon WSA have been made since publication of the Draft EIS.

1. The anticipated surface disturbance presented in the Draft EIS (7,930 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 7,930 acres reported in the Draft EIS to a more realistic 1,048 acres of surface disturbance for the Final EIS.

2. As part of the 7,930 acres of surface disturbance discussed in the Draft EIS, 5,700 acres of disturbance would have resulted from vegetation treatments to improve watershed, livestock, and wildlife habitat. However, BLM does not anticipate sufficient funding in the foreseeable future to complete these projects. As a result, the land treatment estimates have been revised downward to 1,000 acres in the Final EIS to reflect more realistic funding projections. Estimates of potential increases in wildlife populations and livestock forage have been revised accordingly.

3. An additional 8 acres of surface disturbance is projected in the Final EIS resulting from the construction of several rangeland projects, including four reservoirs, two spring developments, a fence, and a pipeline. No surface disturbance estimates were given for these projects in the Draft EIS.

STATEWIDE
POCKET MAP
WSA NO. **23**
SEE VOL. I

MUD SPRING CANYON WSA

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 III-A (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 Mud Spring Canyon WSA were considered but are not analyzed in detail in the Final EIS for the following reasons.

1. Soils: Soil disturbance estimates for the WSA have been revised downward from 7,930 acres analyzed in the Draft EIS to 1,048 acres in the Final EIS. About 1,000 acres of the projected disturbance would result from vegetation treatments for wildlife habitat, watershed, and livestock purposes. Once the seedlings have become established, soil loss would be reduced from the existing situation. About 8 acres of disturbance would result from construction of livestock reservoirs, spring developments, fences, and pipelines. Approximately 40 acres of disturbance would eventually occur from coal development. Once these projects are in place, the areas would be reclaimed. In total, the impacts of direct disturbance of soil would affect less than 3 percent of the WSA and disturbed areas would be reclaimed. Therefore, impacts on soils are not significant issues for analysis in the Final EIS.

2. Water Resources: Water resources in the WSA are limited. They include about 4 miles of perennial streams, three intermittent streams, six undeveloped springs, and seven livestock reservoirs. The surface-disturbing activities projected to occur in the WSA in the foreseeable future would avoid these areas; therefore, no impacts to water resources would occur. The possibility exists of some alteration of groundwater flow by underground mining activity in the long-term future. Because of the limited amount of water available, changes in water flow would be insignificant.

3. Forest Resources: The forest resources in the WSA consists mainly of pinyon-juniper woodland. A small amount of Ponderosa pine, Douglas fir, Engelmann spruce, and white fir are located in the north-central portion of the WSA. The surface disturbance projected in the foreseeable future would be limited to the pinyon-juniper woodland. Due to the large acreage of this resource in both the WSA and in the State

of Utah as a whole, the anticipated impacts from 1,048 acres of disturbance would not be significant.

4. Visual Resources: As previously discussed, estimates of surface disturbance have been substantially reduced for the Final EIS. The 1,048 acres of surface disturbance projected to occur in the foreseeable future (down from 7,930 acres analyzed in the Draft EIS) would affect less than 3 percent of the WSA and would likely occur in Scenic Class B and VRM Class IV areas. Impacts on visual resources are considered in the Final EIS as part of the discussion of naturalness in the Wilderness Values section.

5. Cultural Resources: Only four archaeological or historical sites have been inventoried in the WSA. The potential for additional sites is considered to be low. Inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance. Given these conditions, impacts on cultural resources are not significant issues for analysis in the Final EIS.

6. Recreation: Because surface disturbance would be limited to approximately 1,048 acres (less than 3 percent of the WSA), it is projected that existing recreational uses in the WSA would not be affected. Annual recreation use in the WSA is estimated at 100 visitor days, 95 of which are attributed to hunting and sightseeing, utilizing vehicle access on existing ways. Only five visitor days are attributed to primitive activities. Recreation use is expected to increase 2 to 7 percent annually in the foreseeable future. Recreation use patterns would change with wilderness status. Still, the area is not a destination area for ORV use and, therefore, impacts on recreation use are not significant issues for the Final EIS.

7. Kaiparowits Coal Transportation and other Corridors: Potential coal transportation and railroad corridors pass through the WSA (ERT, 1980). The Union Pacific Railroad has also identified a specific route that could be used for the transportation of Kaiparowits coal if development in the area were to occur. This route would cross the extreme southern portion of the WSA for approximately 1.5 miles east of "the Gut." Over 13 million tons of Kaiparowits coal would need to be mined annually to make this a feasible route.

Commentors on the Draft EIS expressed concern that designated wilderness areas, including the Mud Spring Canyon WSA, could block the use of these corridors. If wilderness designation were to occur, development

MUD SPRING CANYON WSA

of coal transportation systems would not be allowed within the WSA. However, the transportation corridors described in the ERT study extend beyond the WSA boundary, therefore, coal transportation systems could be sited outside the WSA and still be within the designated corridors. The Union Pacific route could be rerouted outside of the WSA. If no wilderness designation occurred, corridor development would likely only effect the extreme southern corner of the WSA. The Kaiparowits Coal Transportation Study directs that natural topographic features, such as The Cockscomb, be avoided. The Union Pacific route would extend into the WSA for less than 2 miles. Therefore, impacts related to potential coal transportation systems are not analyzed further for the Mud Springs Canyon WSA.

- Issues Analyzed in Detail

The significant issues for the Mud Spring Canyon WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on vegetation resources.
3. Impacts on leasable mineral exploration and production.
4. Impacts on wildlife habitat and populations.
5. Impacts on livestock management.
6. 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 need for further inventories of resource values; and BLM's assessments 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 23, for responses to specific comments about the Mud Spring Canyon WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add up to 22,705 acres of Federal lands and 1,120 acres of State lands, mostly adjacent to the southeastern 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 the 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 (Proposed Action); and (2) All Wilderness (38,075 acres). A description of BLM's management practices 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 III-A are also applicable here.

- No Action/No Wilderness Alternative (Proposed Action)

With this alternative, none of the 38,075-acre Mud 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 area would continue to be managed in accordance with the Paria and Escalante MFPs (USDI, BLM, 1981c and 1980d). The 2,401.5 acres (four sections) of State land within the WSA (refer to Map 1) have not been identified in the MFPs for special Federal acquisition through exchange or purchase (refer to Appendix 3 in Volume I). No private or split-estate lands are located in the WSA. The figures and acreages given are for Federal lands only.

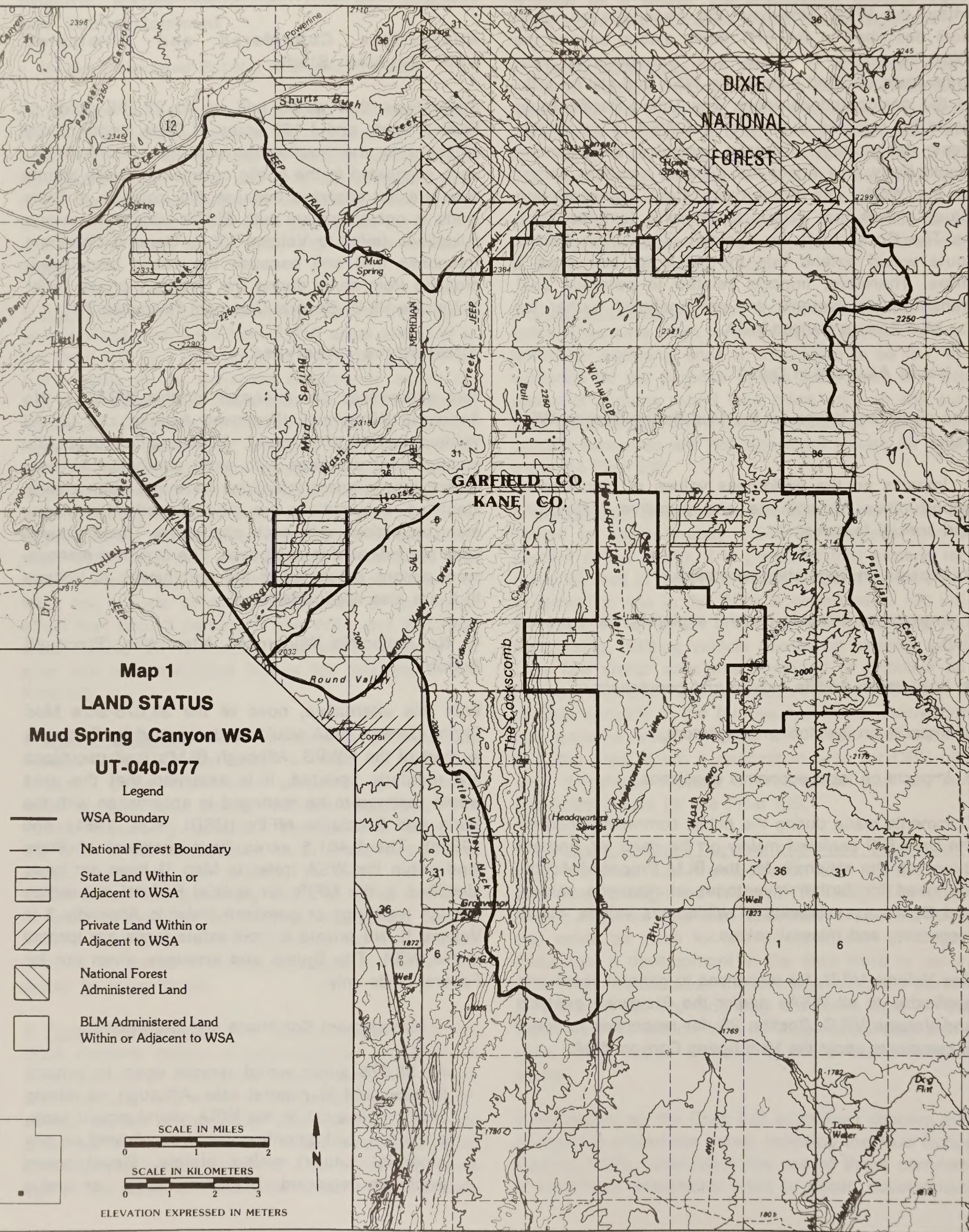
- Management Conditions and Constraints

All 38,075 acres would remain open to mineral location and to mineral sale. Although no mining claims now exist in the WSA, development work, extraction, and patenting would be allowed on any potential future mining claims. Development would be regulated by unnecessary or undue

MUD SPRING CANYON WSA

R. 1 W.

R. 1 E.



Map 1
LAND STATUS
Mud Spring Canyon WSA
UT-040-077

Legend

WSA Boundary

National Forest Boundary

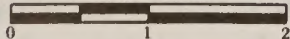
State Land Within or
Adjacent to WSA

Private Land Within or
Adjacent to WSA

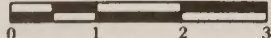
National Forest
Administered Land

BLM Administered Land
Within or Adjacent to WSA

SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS

MUD SPRING CANYON WSA

degradation regulations (43 CFR 3809) without consideration for wilderness values. Two existing post-FLPMA oil and gas leases (totalling 680 acres) could be developed under Category 1 (standard stipulations) without concern for wilderness values. The balance of the WSA (37,395 acres) could be offered for new oil and gas leases also under Category 1. Coal leases could also be issued and developed without wilderness considerations. There are presently no coal leases in the Mud Spring Canyon WSA. Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development is projected in the short term because the probability of economic development is too low to support that assumption.

However, a coal resource is known to occur in the WSA and it is projected that this resource would eventually be explored and developed. Appendix 6 in Volume I explains the mineral exploration and development projections. Coal development would be by deep mining methods and would begin in the western portion of the WSA where the coal is nearest the surface and progress eastward. Location of surface facilities would likely be in canyons or drainages where the coal could be easily accessed. The size of individual coal operations, typical of the intermountain area, differ. Each surface facility site, including access roads, would occupy up to 20 acres. Additional surface disturbance would result from exploratory drilling activities. Employees, including supervisory personnel, would number from 20 to 300. Operations would last from 30 to 40 years. All disturbed areas would be reclaimed upon abandonment.

Domestic livestock grazing use of the WSA would continue as now authorized (currently estimated at 250 AUMs). Existing developments for livestock, including seven reservoirs and 2.5 miles of fence identified in the MFPs, would continue to be maintained. The proposed rangeland developments (four reservoirs, two spring developments with water troughs, 1.5 miles of pipeline, 1.5 miles of fence, and 400 acres of vegetation treatments) would be allowed without consideration for wilderness values. The 400 acres of vegetation treatments would be part of a total of 1,000 acres of land treatments predicted to occur in the WSA in the foreseeable future for livestock, wildlife, and watershed purposes. These treatments would be scattered in various locations through-

out the central, southern, and western portions of the WSA.

Use, maintenance, and development of facilities and vegetation treatments for wildlife, water resources, etc., could be allowed in conformance with the MFPs. No facilities are projected in the foreseeable future, however, about 200 acres of land treatment are projected for wildlife habitat improvement and could be initiated without wilderness considerations.

Watershed improvements would be allowed as provided for in the Paria and Escalante MFPs. It is projected that 400 acres of watershed tillage would occur in the foreseeable future.

Approximately 37,975 acres would continue to be open to ORV use. Vehicle use on about 100 acres would be limited to existing roads and trails along Little Creek and Henrieville Creek. Present ORV use is low. The approximately 3 miles of way, 3 miles of cherry-stemmed roads, and 4 miles of dirt roads that border the WSA would be available for vehicle access.

Two existing rights-of-ways covering about a 0.25 mile (Henrieville water pipeline and/or a telephone line) would continue to be allowed.

The entire 38,075-acre area would be open to woodland product harvest. There has been limited commercial and noncommercial harvest of forest products (firewood, posts, and Christmas trees) in the past. Future harvest would be limited to noncommercial, local interests due to more favorable resources located elsewhere.

The area would continue to be managed under VRM Class III on 3,775 acres and Class IV on 34,300 acres.

• Action Scenario

It is projected that implementation of the No Action/No Wilderness Alternative would result in approximately 1,008 acres of surface disturbance in the short term. An additional 40 acres of surface disturbance resulting from coal development is projected to occur in the long-term future.

Approximately 1,000 acres of disturbance would result from planned vegetation treatments,

MUD SPRING CANYON WSA

including 400 acres for rangeland, 200 acres for wildlife habitat, and 400 acres for watershed. Treatment practices would include chaining, burning, plowing, tillage, and seeding. An additional 8 acres of surface disturbance would result from construction of four reservoirs, two spring developments, and 1.5 miles of pipeline. These rangeland projects would be in locations scattered through the WSA. A total of about 5 months of actual work would be necessary to complete these projects. It is recognized, however, that these projects would be implemented over a period of several years. All of these rangeland projects would be maintained over the long term. No other rangeland, wildlife habitat, or watershed projects are planned. No surface disturbance is anticipated from locatable or leasable mineral exploration or development in the short term.

Even though no mineral exploration or development is anticipated in the short term, the entire WSA would be open to mineral location and leasing (Category 1, open to surface occupancy with standard stipulations). Therefore, over the long term, exploration and development of the coal resource would likely occur as previously discussed. The size of individual coal operations, typical of the intermountain area, differ. Two sites would occupy up to 40 acres for surface facilities and access roads. Each surface facility site, including access roads, would occupy up to 20 acres. Road access would not exceed 10 miles. Additional temporary surface disturbance would result from exploratory drilling activities. Employees, including supervisory personnel, would number from 40 to 600. Operations would last from 30 to 40 years. All disturbed areas would be reclaimed upon abandonment. No oil and gas development is projected in the foreseeable future.

No disturbance from ORV use is anticipated. This is because ORV use will be largely restricted by terrain or management to existing and future ways, roads, and trails. It is projected that overall recreation use will increase over the current estimated use of 100 visitor days annually at a rate of 2 to 7 percent per year. Recreation use will continue to be 95 percent vehicular in nature, with vehicles using existing roads and ways and new roads resulting from provision of access to State lands and from mineral development.

• All Wilderness Alternative

With this alternative, all 38,075 acres of the Mud Spring 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 values.

There are four State sections (2,401.5 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). 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 and provisions of BLM Wilderness Management Guidelines regarding private lands, it is assumed that the State lands in the WSA would remain under existing ownership. No private or split-estate lands are located in the WSA. The figures and acreages given with 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 valid 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 for wilderness values. BLM does not anticipate location or development of mining claims with this alternative. Two existing post-FLPMA oil and gas leases involving 680 acres would not be reissued upon expiration unless an oil or gas find in commercial quantities is shown. No new oil and gas or coal leases would be issued following wilderness designation. No oil and gas exploration or development is projected due to the location of more favorable deposits elsewhere. Development of the substantial coal resource located in the WSA would not be allowed.

Present domestic livestock grazing use levels would continue as authorized in the Paria and Escalante MFPs. The estimated 250 AUMs in the WSA would remain available to livestock as presently allotted. After designation, range facilities existing at the time of designation (seven reservoirs and 2.5 miles of fence) 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

MUD SPRING CANYON WSA

R. 1 W.

R. 1 E.

T. 37 S.

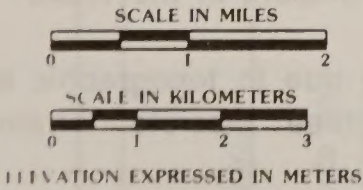
T. 38 S.

T. 39 S.

Map 2
ALL WILDERNESS ALTERNATIVE
Mud Spring Canyon WSA
UT-040-077

Legend

- All Wilderness Alternative (38,075 acres)
- - - National Forest Boundary



MUD SPRING CANYON WSA

and/or wilderness resource protection and management and wilderness protection standards (refer to Appendix 1 in Volume I). It is projected that the proposed 1.5 miles of fence, 1.5 miles of pipeline, and two spring developments would be allowed, but the proposed 400 acres of vegetation treatments and four new reservoirs would not be allowed.

The proposed 400 acres of watershed tillage would not be allowed.

The 200 acres of vegetation treatments for big game habitat improvement would not be allowed.

The entire 38,075-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 3 miles of existing way would not be available for vehicular use except as indicated above. The 3 miles of cherry-stemmed road and about 4 additional miles of dirt roads that border the WSA would remain open to vehicular use.

The two existing 0.25 mile long rights-of-way (Henrieville water pipeline and a telephone line) would be allowed to remain. New rights-of-way would not be allowed.

• Action Scenario

BLM projects that a total of 3 acres of surface disturbance would result from construction of rangeland activities described in the No Action/No Wilderness Alternative, with the exception of the four reservoirs. It is projected that these projects would be designed and installed consistent with wilderness protection standards. The 1,000 acres of vegetation treatments associated with rangeland, wildlife habitat, and watershed would not be allowed. No additional rangeland, wildlife habitat, watershed projects, or other developments are projected following wilderness designation.

No disturbance from ORV use is projected as it would not be allowed. It is projected that primitive recreation use would increase over the current estimated use of 5 visitor days annually at a rate of 2 to 7 percent per year.

The coal resource located in the WSA would not be developed.

Summary of Environmental Consequences

Table 1 presents 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 section 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 is 38,075 acres. It is approximately 12 miles long (north to south) and 11 miles wide (east to west).

• Naturalness

Since establishment of the WSA, approximately 2 acres of the WSA have been disturbed. This disturbance is the result of an oil and gas exploration well and access road constructed in 1985.

Because this area has been reclaimed to a substantially unnoticeable condition, the entire WSA meets the Wilderness Act criterion for naturalness. About 2.5 miles of livestock fences, seven reservoirs, and 3 miles of way located prior to establishment of the WSA are also substantially unnoticeable.

• Solitude

The WSA affords outstanding opportunities for solitude as a result of topographic and vegetative screening situations. The size or configuration of this WSA neither enhances nor detracts from the outstanding opportunities for solitude present in the WSA.

Opportunities for solitude due to topographic screening are associated with three discrete terrain types

MUD SPRING CANYON WSA

Table 1
Summary of Environmental Consequences

Alternatives		All Wilderness (38,075 Acres) (Proposed Action)
Resource	No Action/No Wilderness	
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 slightly reduced in quality on about 3 acres due to additional 7,900 acres due to rangeland and coal development activities. Special features would not be significantly affected.	Designation would preserve wilderness values throughout the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be slightly reduced in quality on about 3 acres due to rangeland projects. There would be no loss of wilderness values due to coal development.
Impacts on Vegetation	Special status plant species would not be significantly affected. The 1,048 acres of projected surface disturbance would affect less than 3 percent of the pinyon-juniper and sagebrush types in the WSA.	The vegetation resources would not be adversely affected because the area would be protected from surface disturbance.
Impacts on Mineral and Energy Exploration and Production	Mineral and energy exploration and development would not be affected because the area could be claimed, leased, and developed as at present.	Exploration or development opportunities for significant known coal resources would be precluded. Loss of exploration and development opportunities for other mineral and energy resources would not be significant.

MUD SPRING CANYON WSA

Table 1 (Continued)
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
	All Wilderness (38,075 Acres) (Proposed Action)
Impacts on Wildlife Habitat and Populations	<p>Threatened, endangered, or other special status species would not be significantly affected. Implementation of the wildlife and range-land water projects would benefit wildlife by providing additional water, forage, and ecotones.</p>
Impacts on Livestock Management	<p>Livestock grazing would not be adversely affected. The 1,000 acres of vegetation treatments would result in an increase of about 125 AUMs.</p>
Impacts on Economic Conditions	<p>Present local and regional economic conditions would not be significantly affected. Economic opportunities could be realized through coal exploration and eventual development in the long term. Local communities would be significantly affected.</p>
	<p>Wilderness designation would preclude 1,000 acres of vegetation treatments and reservoirs, but would provide all species with additional opportunities for solitude.</p>
	<p>Vehicular use restriction on 3 miles of way would inconvenience livestock operators in the area, and increase the costs of livestock management. The opportunity for an increase of up to 125 AUMs through vegetation treatments would be foregone.</p>
	<p>There would not be immediate significant changes in present local or regional economic conditions. However, new leasing in the WSA would not be allowed. Therefore, potential sales and revenues for leasable minerals would be foregone. Beneficial and adverse effects from long-term development of coal would not occur. Prohibiting certain proposed rangeland developments would result in the foregoing of 125 AUMs and associated economic returns.</p>

MUD SPRING CANYON WSA

in the WSA: the badlands of the Kaiparowits Formation, The Cockscomb, and the canyon dissected cliff-line extending from Henrieville Creek to Horse Creek. In the badlands area, topographic screening is the only factor that contributes to the solitude opportunity.

It would be easy for a visitor to find seclusion in The Cockscomb, badlands, and cliff-lines of the WSA. In the remainder of the WSA, seclusion would be much more difficult to find.

The sites and sounds of human activities are not present from most places within the WSA. From the top of The Cockscomb, vehicular activity on the Cottonwood Wash road can be observed.

Outstanding opportunities for solitude are thus located in three discrete sections of the WSA on a total of 18,000 acres. The badlands area possesses 7,300 acres of this characteristic. The Cockscomb/Cottonwood Wash section includes 4,100 acres. The cliff-line sections exhibit 6,600 acres. The remaining 20,075 acres do not meet the criterion for outstanding opportunities for solitude.

- Primitive and Unconfined Recreation

The WSA provides opportunities for five potential activities (hiking, backpacking, horseback riding, hunting, and rock climbing). The opportunity for primitive and unconfined recreation within the WSA is considered outstanding in those areas where an array of these activities can occur.

The opportunity for backpacking and hiking is enhanced by the variety of terrain. These terrain features include the badlands in the eastern portion of the WSA, The Cockscomb, the escarpments and benches northwest of Horse Creek, canyons (particularly Wiggler Wash Canyon, Mud Spring Canyon, an unnamed canyon west of Mud Spring Canyon, an unnamed canyon southeast of Henrieville Creek, and Upper Little Creek Canyon), the waterfall and relict areas in Dry Valley Creek Canyon, and the forested upper Mud Spring Canyon and Wiggler Wash valleys.

Opportunities for hiking and hunting exist throughout the WSA.

Rock climbing is localized within the WSA and is found in the west and central areas. Some of the more impressive cliff faces in the WSA are found above Henrieville Creek, on the escarpment between Henrieville

Creek and Dry Valley Creek, and on the walls of Dry Valley Creek Canyon. The east ridge of The Cockscomb also presents rock climbing opportunities.

Horseback riding is limited in the WSA. Much of the terrain that offers good photographic, botanical, or geological sightseeing opportunities cannot be negotiated on horseback. Several areas that do contain horseback riding opportunities include Little Creek, the upper reaches of Mud Spring Canyon and Wiggler Wash, and the bench above these canyons.

All in all, primitive recreation opportunities on 14,600 acres of the WSA meet the outstanding criterion for lands under wilderness review, while the remaining 23,475 acres do not meet the standards.

- Special Features

The WSA possesses both scientific and scenic special features. A waterfall blocks the entrance to Dry Valley Creek Canyon and, consequently, the canyon remains in its natural condition. The canyon exhibits a perennial stream which cuts through alluvial benches. Although no ecological studies have been made of this canyon, it is relict and probably possesses important scientific values. The canyon bottom is small and embraces approximately 200 acres.

The portion of The Cockscomb within the WSA is considered to possess exceptional scenic values. In the WSA, The Cockscomb forms two parallel knife-edged ridges with a bisecting V-shaped trough. Flatirons, small monoliths, and other colorful formations are present on the west ridge. Approximately 4,100 acres of The Cockscomb formation possess these scenic values.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. These include one animal species, the peregrine falcon, listed as endangered, and six animal species and five plant species that also are considered to be special status species. The WSA has populations of cougar and black bear which are wildlife species commonly associated with wilderness. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. The WSA has approximately 3.5 miles of perennial streams.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland.

MUD SPRING CANYON WSA

Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from one standard metropolitan statistical area (Provo-Orem, Utah).

Air Quality

No measurements of air pollution or visibility levels have been made in the Paria and Escalante planning units; however, data collected from various sites near these areas (Page, Arizona, and Four Mile Bench [Garfield County], Utah) indicate the air is generally free of pollutants, within National Ambient Air Quality Standards and State regulations, and visibility is good.

The area is presently classified as Class II air under the PSD regulations as outlined by the Clean Air Act as amended in 1977. The closest Class I air quality area is 14 miles to the west in Bryce Canyon National Park.

Geology and Topography

Mud Spring Canyon WSA is located at the interface of the Canyonlands and High Plateaus sections of the Colorado Plateau Physiographic Province. The WSA is situated along the west side of the Kaiparowits Plateau. Exposed bedrock in the WSA consists largely of cretaceous sedimentary rock.

The eastern part of the Mud Spring Canyon WSA is predominantly rugged badlands of blue-gray shale and weakly cemented sandstone of the Kaiparowits Formation. The southern part of the unit is dominated by The Cockscomb which is a sharp, double-ribbed, north-south ridge. It is formed of steeply tilted, resistant sandstone of the Wahweap and Straight Cliffs Formations. The Cockscomb is a major topographic feature in south-central Utah which begins within this tract and runs south along the East Kaibab Monocline to near the Arizona-Utah border. Within the WSA, The Cockscomb has an average relief of 400 feet.

The western part of the unit is dominated by southwest-facing escarpments of resistant Wahweap and Straight Cliffs sandstone and gently northeast-tilted benches. The benches have been dissected by

southwest-trending drainages. The northwestern part of the WSA is the gently forested slopes of Canaan Peak. Right Hand Collet and Wahweap Creek head in the highly dissected Kaiparowits Formation on the south slope of Canaan Peak in the north-central part of the unit. Wahweap Creek then runs southward through Headquarters Valley where it leaves the WSA.

Soils

About 70 percent of the WSA consists of rock outcrop and badlands with intermixed undulating, very shallow to deep loam and sandy loam soils. These are highly dissected, and slopes are undulating to steep. Over one-third of the soils in the WSA are in a deteriorating, erosive, or otherwise unstable condition due to steep slopes and soil properties that promote erosion. About 20 percent is undulating, very shallow to moderately deep, fine sandy loam and loam soils. These occur on the plateaus.

Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	15,675	41	42,320
Moderate	1.3	18,500	49	24,050
Slight	0.6	3,900	10	2,340
Stable	0.3	0	0	0
Total		38,075	100	68,710

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

The Paria and Escalante MFPs have identified a number of watershed treatment potentials for this WSA to mitigate erosion problems. These vegetation treatment opportunities include pinyon-juniper woodland chaining and seeding, sagebrush control, and watershed tillage practices.

The estimated annual salt yield from undisturbed soils within the WSA is 31 lb per acre. This is considered low when compared to Mancos Shale sites in the Price River Basin which are estimated to have annual salt yields of up to 94 lb per acre.

Reclamation potential is low on those portions of the WSA which contain rock outcrops, badlands, and

MUD SPRING CANYON WSA

shallow, sandy soils. Potentials for seeding establishment are considered good on the deeper, loamy soils.

Vegetation Including Special Status Species

The majority of vegetation in the WSA is pinyon-juniper woodland. Other vegetation types include Ponderosa pine stands, mountain shrub, and sagebrush. Riparian habitat is found along the few miles of streams located in the WSA and does not exceed 100 acres (about 0.2 percent of the WSA). The pinyon-juniper woodland type covers 90 percent (34,268 acres) of the WSA and has a sparse understory of shrubs, including mountain mahogany, serviceberry, Gambel's oak, cliffrose, and silver buffaloberry. In the north-central portion of the WSA, about 1,000 acres (3 percent of the WSA) of small stands of Ponderosa pine are found which also include some Douglas fir, Englemann spruce, and white fir. Also within this area, below Canaan Peak, about 707 acres (2 percent of the WSA) of a mountain shrub type occurs dominated by bitterbrush.

The sagebrush type (2,000 acres) occurs on the flats in the central and northern areas of the WSA and along the western slope of The Cockscomb. This type is dominated by big sagebrush. Associated species include Mormon tea, globemallow, snakeweed, and various grasses.

No threatened or endangered plant species are known to occur within the WSA. However, one Category 1 and four Category 2 plant species may occur in the WSA (see Appendix 4 in Volume I). These are Lepidium montanum var. stellae, Heterotheca jonesii, Coryphantha missouriensis var. marstonii, Lepidium montanum var. neeseae and Psoralea pariensis. The known and projected habitat of these special status species extends beyond the WSA boundaries.

The Mud Springs Canyon WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USGS, 1978a). The PNV type of the WSA is juniper-pinyon woodland.

Water Resources

The Mud Spring Canyon WSA lies within two drainages, the Paria River on the west and Wahweap Creek on the East, both are subbasins of the Upper Colorado River hydrologic subregion. It is located at the headwaters of the drainages. Henrieville Creek, Little Creek, Dry Valley Creek, Horse Creek, and Hackberry Canyon are side drainages of the Paria River

which drains into the Colorado River. The Right Hand Collet Creek drains into Wahweap Creek which in turn flows into Lake Powell.

Henrieville Creek, Dry Valley Creek, and Little Creek are perennial for a total of about 4 miles in the WSA. Water in Henrieville Creek and Little Creek is not potable. Dry Valley Creek is probably potable near its headwaters (about 1.5 miles in the WSA). Horse Creek, Cottonwood Creek, and Wahweap Creek are intermittent streams in the WSA. There are six undeveloped springs known in the unit and all but one are located on the WSA's periphery. There are seven BLM livestock water reservoirs in the WSA.

The WSA is within Water Rights Adjudication Area 89. The area generally included with T. 36 S., R. 1-3 W., and T. 37 S., R. 1-3 W., and part of the headwaters of the Paria River, including North Creek, Henderson Creek, Campbell Creek, Bryce Creek, Henrieville Creek, and other tributaries, is considered to be fully appropriated on the surface supply of water and any directly connected underground aquifer. The State Engineer will consider applications to appropriate water for 0.015 cfs based on the proposed location, outside of any existing municipal, town, or subdivision system, and on the individual merits of the applications (UDNRE, DWR, 1988).

Two existing private water rights, both held by the town of Henrieville, are found on public land within the WSA. These claims are found in T. 37 S., R. 1 W., secs. 8 and 9. Four livestock reservoirs and two spring developments are proposed within the WSA.

The water quality standards for Paria River and tributaries, from the State line to headwaters, are as follows: Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]), Class 3C (protected for nongame fish and other aquatic life), and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering). There are no set standards for the Wahweap drainage, however, BLM would manage this basin the same as for Paria.

The water quality of the Paria River indicates that sodium and TDS exceed the criteria for agricultural use. These impairments are due to the natural erosion of Mancos Shale and dewatering.

MUD SPRING CANYON WSA

Mineral and Energy Resources

The energy and mineral resource rating summary for the Mud Spring Canyon WSA is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system. No minerals currently listed as strategic or critical are known to occur within the WSA (USDoD, 1988).

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 2	c 1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f 2	c 1	Less than 500 metric-tons of uranium oxide
Coal	f 4	c 4	250 million metric-tons
Geothermal	f 1	c 2	None
Hydroelectric	f 1	c 4	None

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

• Leasable Minerals

• Oil and Gas

Most oil and gas production in southern Utah is from the Paradox Basin, about 124 miles east of the Mud Spring Canyon WSA. The only current oil production from south-central Utah comes from the Upper Valley Field located adjacent to the northern boundary of the WSA. In addition, minor amounts of oil have been produced intermittently from two fields in southwestern Utah.

Oil and gas exploration in southern Utah has been centered in the Paradox Basin and peaked in the late 1950s and early 1960s with the discovery of the Aneth Field in 1956 and the Lisbon Field in 1960. Since then, sporadic wildcat drilling (which has recently increased) has located some small fields, but no major discoveries have been made. The Upper Valley Field was discovered a short distance to the north in 1964 after activity in similar anticlinal structures in south-central Utah, but to date no commercial oil and gas potential has been identified in the WSA. Because of the proximity of the Upper Valley Field to the WSA, a

detailed description of this field relates directly to the oil and gas favorability of the WSA.

Cumulative production through December 1975 from the Upper Valley Field was almost 15 million barrels of oil. Production is from four distinct zones within the Timpoweap Formation of Triassic age and the Kaibab Formation of Permian age. The oil reservoir is located along the prominent Upper Valley anticline, but production is offset from the crest of the anticline to the west flank and the southern-plunging nose. Sharp attributes this offset to a regional, southwest-directed hydrodynamic drive in the Kaibab Formation. If correct, oil accumulations in other anticlines within the region may also be displaced to the south (Sharp, 1976).

The axis of the Upper Valley anticline plunges to the south and lies approximately a 0.25 mile northeast of the WSA. Producing wells occur less than 1,000 feet from the WSA. In all likelihood, Tenneco (the current operator) has defined the limits of the field through their exploration activities in the 1950s and 1960s. Based on the proximity to the producing wells, SAI assigned approximately 2,500 acres in the northeast portion of the WSA an oil and gas favorability of (f3) and a certainty of occurrence rating of (c1). SAI assigned the remainder of the tract an oil and gas favorability of f2, with a certain of occurrence rating of (c1) (SAI, 1982). Subsequently, in 1984, Tenneco drilled a well within the (f3/c1) area of the WSA and about 1,000 feet south of the southern most producing well in the Upper Valley Field. The well was dry and appears to define the southern limit of the Upper Valley Field (PIC, 1985). Based on this discussion, that portion of the WSA previously assigned the (f3/c1) rating for the occurrence of small sized oil and gas fields, was assigned an (f2) rating, containing less than 10 million barrels of oil or less than 60 billion cubic-feet of gas. The certainty rating remained at (c1).

Under the current land use plan, the entire WSA is open for oil and gas leasing in Category 1 (standard stipulations). There are two post-FLPMA oil and gas leases covering 680 acres in the WSA.

• Coal

The Mud Springs Canyon WSA is on the western side of the Kaiparowits coal field. Most of the

MUD SPRING CANYON WSA

WSA is underlain by the Kaiparowits, Wahweap, Straight Cliffs, Dakota, and Tropic Formations, all of Cretaceous age. The Straight Cliffs, Dakota, and Tropic Formation rocks are all coal-bearing. In the area near the WSA, coalbeds as thick as 11 feet have been measured, and beds at least 4 feet thick crop out in the western part of the WSA in the upper part of the Straight Cliffs Formation (the Henderson coal zone in the John Henry Member). The Henderson coal zone incorporates the youngest (uppermost) coal-bearing rocks in this part of the Kaiparowits coal field (Doelling and Graham, 1972). The maximum depth to the Henderson coal zone is estimated to be about 3,000 feet in the north-central part of the WSA. Deeper coal-bearing rocks occur in the lower part of the Straight Cliffs Formation, the Tropic Shale, and the Dakota Sandstone (SAI, 1982).

With the exception of about 3,600 acres in the northwestern portion, the entire WSA is underlain by minable coal (Doelling and Graham, 1972). Estimates of minable coal are available for only about one-third of the WSA. If the distribution of coal is assumed to be similar throughout the minable coal area, the WSA would contain an estimated 250 million tons of in-place coal resource, of which from one-third to one-half would be minable (from 83 to 125 million metric-tons). The tract is, therefore, rated at (f4) and certainty of occurrence is high (c4) (SAI, 1982).

The amount of overburden increases from less than 1,000 feet to over 3,000 feet from west to east across the WSA. The amount of coal with overburdens of 1,000 feet or less, 1,000 feet to 2,000 feet, and 2,000 feet to 3,000 feet is approximately equal. The amount of coal with overburden exceeding 3,000 feet is negligible.

In general, the quality of coal from the Kaiparowits coal field is poor to moderate. Doelling and Graham report two coal samples from the vicinity of the WSA as having an average moisture content of 17.7 percent, an average ash content of 22.7 percent, an average sulfur content of less than 1 percent, and an average heat value of 11,000 Btus per lb (Doelling and Graham, 1972).

• Locatable Minerals

No claims, prospects, or any evidence of other mineralization are known to exist within the WSA.

• Uranium

The Colorado Plateau is one of the major uranium-producing regions in the United States. The most important deposits occur in conglomerates, sandstones, and mudstones within the Morrison Formation of Jurassic age and in the basal part of the Chinle Formation of Triassic age. Minor production has also been obtained locally from rocks of Permian, Cretaceous, and Eocene ages. The most productive areas of the plateau are in northern New Mexico and southeastern Utah (USDOE, 1979; and Doelling, 1975).

The following rock units are considered favorable for uranium in south-central Utah: the Basal Members and the Petrified Forest Member of the Chinle Formation and the Salt Wash Member of the Morrison Formation (USDOE, 1979). The Morrison Formation thickens to the east from the vicinity of south-central Utah and, according to SAI, it has been removed by erosion in the immediate area of the Mud Spring Canyon WSA (SAI, 1982). However, small erosional remnants of the Morrison may be preserved at depth along the east side of the WSA. The depth to the favorable part of the Chinle Formation varies from at least 6,000 feet along the east side of the WSA to about 3,000 feet along the west side (Hintze, 1973).

It was concluded that the area encompassed by the WSA is not favorable for significant deposits of uranium. The term significant is defined as an uranium deposit that totals at least 100 metric-tons of uranium oxide at a minimum grade of 0.01 percent (Peterson, et al., 1972).

Based on available information, the WSA is assigned an uranium favorability of (f2) (a geological environment favorable for deposits containing less than 500 metric-tons of uranium oxide. The certainty that deposits exist is very low (c1).

• Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. These deposits are not unique or economically significant due to the presence of ample similar materials near but outside the WSA.

MUD SPRING CANYON WSA

Wildlife Including Special Status Species

A diversity of vertebrate species are present in the WSA due to the many different habitat types. The habitat types include Ponderosa pine, pinyon-juniper woodland, sagebrush, desert shrub, cliffs, riparian, and a very small area of mountain shrub. The riparian habitat is located along Henrieville Creek, Little Creek, Dry Valley Creek, and Upper Wahweap Creek. These habitat types may support up to 50 species of mammals, 168 species of birds, 26 species of reptiles, and eight species of amphibians. However, no inventory has been done to determine if these species actually exist. No sport fish are found within the WSA. No crucial habitat has been identified in the WSA.

Game species known to be present in the unit include mule deer, black bear, cougar, cottontail rabbits, blue grouse, Gambel's quail, mourning doves, and bandtailed pigeons. No critical wildlife habitat has been identified in the WSA.

One Federally endangered species, the peregrine falcon, inhabits the WSA. In addition, six Category 2 candidate species may occur in the WSA. These are the Great Basin Silverspot butterfly, ferruginous hawk, long-billed curlew, southern spotted owl, Swainson's hawk, and white-faced ibis (see Appendix 4 in Volume I). When present, most of these species would be associated with riparian and wet meadow areas or cliff faces and deep canyons. The exception is the ferruginous hawk which inhabits the pinyon-juniper woodland, especially in ecotone or edge areas that provide opportunities for nesting, cover, and hunting activities.

There are 200 acres of vegetation treatments projected for big game habitat improvement within the WSA. These treatments consist of both pinyon-juniper woodland chaining and seeding and sagebrush treatment and seeding.

Forest Resources

In the Mud Spring Canyon drainage, Ponderosa pine, Douglas fir, Engelmann spruce, and white fir are associated with the pinyon pine and Utah juniper. Limited commercial Ponderosa pine cutting occurred in this area in the early 1960s. However, this area is currently identified as noncommercial.

The largest part of the WSA, approximately 90 percent, is composed of the pinyon-juniper woodland. It is characterized by a dominant overstory of pinyon pine, Utah juniper, and scattered Gambel's oak. Slightly over half of this area is sparse, having a crown cover of 17 percent or less. The remainder of this woodland type, comprising some 30 percent of the entire unit, is quite dense, with a canopy cover exceeding 17 percent. This portion of the unit is west of The Cockscomb and south of the Ponderosa pine stands.

Although there are currently no recognized stands of commercial timber in the WSA, the area is suitable for firewood, post cutting, and Christmas tree cutting but demand is low. A small but undetermined amount of these resources has been utilized in the past.

Livestock and Wild Horses/Burros

Thirty-one operators graze cattle within the five allotments within the WSA (refer to Table 4 for livestock grazing use data). Approximately 8 percent of the total vegetation community is suitable for livestock grazing, while an additional 5 percent is potentially suitable. Although the majority of the WSA is unsuitable for grazing, all the allotments are grazed annually during allotted time periods. Three miles of way are used during the grazing seasons to provide better livestock management and to gain access for project maintenance. There are approximately 250 AUMs within the WSA boundary. Two gap fences totaling a 0.5 mile presently exist within the Headwaters Allotment. Mud Spring Allotment contains 2 miles of fence and seven reservoirs.

The Mud Spring Canyon WSA has a number of proposed rangeland developments. They are 400 acres of vegetation treatments (burnings, chaining, plowing, and seeding in the central, south, and western portions of the WSA), four reservoirs, two spring developments with water troughs, 1.5 miles of pipeline, and two fences totaling 1.5 miles. These projects would aid livestock management and would double the carrying capacity within the WSA.

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

There are no wild horses or burros in the WSA.

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Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Headwaters	239,122	16,950	5,930	113	744 Cattle	yearlong	20
Mud Spring	14,455	12,525	123	82	65 Cattle	Summer-Fall	1
Road Valley	8,974	5,425	495	35	99 Cattle	Winter	2
Last Chance	233,229	2,600	3,708	17	309 Cattle	yearlong	1
Cottonwood	83,999	575	2,027	3	431 Cattle	Fall-Winter-Spring	7
Total	579,779	38,075	12,283	150			31

Sources: BLM File Data.

Visual Resources

The BLM visual resource inventory classified approximately 34,300 acres as Class B and 3,775 acres as Class C scenery. The WSA is rated as VRM Class III on 3,775 acres and Class IV on 34,300 acres. Refer to Appendix 7 in Volume I for a description of the BLM VRM rating system.

Cultural Resources

A 1-percent area inventory has been completed in the general vicinity of the WSA. According to BLM cultural resource site maps, four sites have been located along the borders of the WSA (USDI, BLM, 1988a).

No significant cultural resources or potential for these resources are known to exist in the WSA at this time. The potential for finding additional sites is considered to be low.

Recreation

Although the Mud Spring Canyon WSA offers some opportunities for both primitive and nonprimitive types of recreation use, reliable data on existing visitor use are not available. Recreational use in the WSA is currently estimated at 100 visitor days annually. Approximately 5 percent of the use is attributed to primitive activities and approximately 95 percent is attributed to recreational activities such as hunting and sightseeing that currently utilize vehicular access on existing ways and roads.

All except 100 acres in the WSA are open to ORV use. On 100 acres, vehicles are restricted to existing roads and trails.

Big game hunting opportunities in the WSA are among the best in the Paria and Escalante Planning Units. Nevertheless, big game populations are rated only as moderate and shooting opportunities are poor. The overall success rate in the planning units is approximately 30 percent. Small game populations are generally low, with the area's quality lower than much of southwestern Utah. The hunting that does take place is primarily by local residents. The poor quality of the hunting experiences would draw few, if any, outside hunters to the area. Upland game hunting, primarily for mourning doves, is generally similar to the rest of southwestern Utah. The opportunity for quail hunting is poor because of limited huntable populations.

The sightseeing attractions are primarily geologic. One area of interest is a fold in Henrieville Creek along the northwestern boundary of the WSA. The major geologic sightseeing attraction in the unit is the East Kaibab monocline or The Cockscomb. A portion of these sightseeing attractions is visible to motor vehicle tourists from adjacent boundary roads.

Land Use Plans

The WSA is within the BLM Escalante and Paria Planning Units which are being managed through the land use decisions of the Escalante and Paria MFPs (USDI, BLM, 1980d and 1981c). The present principal use within the WSA is livestock grazing.

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Wilderness is not addressed in the Escalante and Paria MFPs. However, wilderness designation is part of the BLM multiple-use concept. BLM land use plans are linked to the Statewide Wilderness EIS through analysis of the present plans as the No Action/No Wilderness Alternative.

The WSA is BLM-administered public land except for four State sections (2,401.5 acres). 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. Of the 2,401.5 acres of in-held State land, 1,122 are under lease for oil, gas, and hydrocarbons and 1,280 are under lease for grazing. There is no current activity on these lands.

The Kane County Master Plan states, "Kane County supports the total concept of multiple-use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept" (Kane County Board of Commissioners, 1982).

In addition, the Consolidated Local Government Response to Wilderness indicates that Kane County opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The Garfield County Master Plan (Five County Association of Governments, 1984) recognizes that the county possesses "... Some of the most spectacular scenery in the United States ... The County is sparsely populated and most of it is in its original pristine condition." Garfield County previously proposed that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one FS unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Mud Spring Canyon WSA, be retained for multiple use. The plan's concept of multiple use includes forestry, livestock grazing, minerals, wildlife, and recreation. The Consolidated Local Government Response to Wilderness indicates that Garfield County opposes wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The Kaiparowits Coal Development and Transportation Study has identified a number of potential transportation corridors and truck haul routes (ERT, 1980). The

objective of the study was to identify possible areas for construction and operation of future coal transportation systems within the restrictions of general environmental and engineering constraints. Corridor segments were required to contain at least one potential route for a railroad or coal slurry pipeline. Specific routes, however, were not identified. By selecting corridors between 2 and 15 miles in width, maximum flexibility for future location of specific routes was maintained. Corridor C13 would encompass the entire Mud Spring Canyon WSA. However, the WSA does not extend across the entire width of this corridor. The study stated that natural topographic features, such as The Cockscomb, would be avoided by any coal slurry or railroad lines.

The Union Pacific Railroad (1980) has identified a specific route that would be needed for a spur line into the Kaiparowits coal field if coal is developed. This line would cross the boundary of the WSA for approximately 1.5 miles just east of "The Gut" in the extreme southern portion of the unit. Over 13 million tons of Kaiparowits coal would need to be mined annually for this route to be feasible.

Although the National Forest land does not border the WSA, it comes within a 0.25 mile of its boundary. Under its RARE II Study, the FS found the Canaan Peak unit to be unsuitable for wilderness designation.

Two existing rights-of-way covering about 2.5 miles are located in the WSA. These are portions of a Henrieville water pipeline and a telephone line.

Socioeconomics

• Demographics

The Mud Spring Canyon WSA is located in both Garfield (22,500 acres) and Kane (15,575 acres) Counties, Utah. Both counties are expected to receive the social and economic impacts from wilderness designation or nondesignation.

Garfield and Kane are rural counties having average population densities of less than one person per square mile. This density is very low when compared to the Statewide average of 17 persons per square mile (USDC, Bureau of the Census, 1981). Much of the population in these counties is concentrated in small communities rather than being evenly distributed throughout the area.

MUD SPRING CANYON WSA

From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 5 presents the baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987, population increased to about 4,085. Population projections indicate that the number of people living in Garfield County in the year 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 5
Baseline and Projected Population and Employment Growth
Garfield and Kane Counties

	1980	1990	2000	2010
<u>Garfield</u>				
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200
<u>Kane</u>				
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

From 1970 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987, population increased to about 4,890. Population projections indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

• Employment

Table 5 shows the baseline and projected total employment for Garfield and Kane Counties to the year 2010.

Garfield and Kane Counties are part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 6
Southwest Multi-County District
Employment ^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aincludes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected that by the year 2010, employment in the MCD will more than double and that services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 5 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

Table 7 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate the sales and revenues.

The geophysical exploration which has been conducted in the WSA has generated some temporary local employment and income. No 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.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$1,360
Mineral Production	0	0
Livestock Grazing	\$5,000	\$385
Recreational Use	<u>\$ 410</u>	<u>0</u>
Total	\$5,410	\$1,745

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

MUD SPRING CANYON WSA

• Sales and Revenues

Economic-related activities in the WSA include mineral leasing, livestock production, and recreation.

Thirty-one livestock operators have a total grazing privilege estimated at 250 AUMs within the WSA. If all this forage were utilized, it would account for \$5,000 of the livestock sales and \$1,250 of the ranchers' returns to labor and investment.

A limited amount of woodland products have been harvested from the WSA. These harvests have not been quantified but are believed to be small and insignificant to the local economy.

The WSA's nonmotorized recreational use is very low and related local expenditures are minimal. The WSA's motorized recreational use and related local expenditures are also low. 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 Mud Spring Canyon WSA is estimated to be about 100 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 7).

Two leases in the WSA cover approximately 680 acres. At \$2 per acre, lease rental fees generate up to \$1,360 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 250 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$385 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

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 III-A and the Description of the Alternatives section for the Mud Spring Canyon WSA.

A major long-term consideration in impact analysis for this WSA is the development of the Kaiparowits coal field. For a detailed analysis of potential impacts of coal development in southern Utah, the reader is referred to the Final EIS for "Development of Coal Resources in Southern Utah" (USDI, USGS, 1979).

No Action/No Wilderness Alternative (Proposed Action)

• Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive 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 and ORV limitations on 100 acres.

In the foreseeable future, disturbance of approximately 1,048 acres from development of vegetation treatments, rangeland projects, and coal would result in a direct loss of naturalness and opportunities for solitude and primitive and unconfined recreation in the disturbed areas. Scenic values, water, endangered and other special status animal and plant species, and wildlife associated with wilderness would not be negatively affected because the disturbance would be minor (involving 2.8 percent of the WSA) and the disturbance would not generally be located where the special features are located. Proposed water developments and vegetation treatments would benefit wildlife special features associated with wilderness because of improved water and forage sources and ecotones. Appropriate measures would be taken to protect endangered and other special status species prior to any surface-disturbing activity, and it can be assumed that no negative impact would occur to these species. Refer to the Wildlife and Vegetation Including Special Status Species sections for more information.

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During the period of activity, the visual and audible disturbance from coal development, vegetation treatments, and rangeland developments would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas, but also on adjacent portions of the WSA. As much as an additional 5 percent (1,900 acres) of the WSA would be affected in the foreseeable future. The areas that would be affected are generally considered by BLM to not have outstanding opportunities for solitude or primitive recreation.

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 use of existing ways would detract from opportunities for solitude and primitive recreation. The increased recreation use that would occur over time would not be expected to significantly reduce the quality of wilderness values because the additional use is expected to be small (2 to 7 percent per year increase over the current 100 annual visitor days of use).

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 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 1,048 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,900 acres of the WSA. Special features would not be significantly affected.

• Impacts on Vegetation Including Special Status Species

The 1,048 acres of surface disturbance projected for the No Action/No Wilderness Alternative would mainly occur in the pinyon-juniper woodland. A small amount of the sagebrush type would also be disturbed. On the 1,000 acres of vegetation treatments, vegetation composition would change from woodland or sagebrush to grass-shrub. It is projected that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland or sagebrush. The chaining, spraying, tilling, and seeding would be designed to provide live-

stock and wildlife forage and improve watershed. Dead-and-down firewood would also be available. There would also be a loss of naturalness in the disturbed area for the foreseeable future. However, due to the small size of the disturbance (less than 3 percent of the WSA), the overall impact would not be significant. The 8 acres of surface disturbance resulting from the construction of rangeland projects would be reclaimed within a 3- to 5-year period.

Five special status plant species (none are listed as threatened or endangered) may occur in the WSA. Three of these species have a wide-spread distribution in the pinyon-juniper woodland and sagebrush areas where the surface disturbance is projected to occur. The two remaining species (Lepidium montanum var. stellae and Heterotheca jonesii) are more restricted and occur in the Ponderosa pine stands where no surface disturbance is projected. The habitat of all of the special status species extends beyond WSA boundaries. 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 the FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when necessary (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, while surface-disturbing activities could result in the inadvertent loss of some individual plants of these species, threats to the continued existence of any of the species would not occur. Because necessary measures would be taken to protect these species, the viability of populations of special status species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Special status plant species would not be significantly affected. The 1,048 acres of projected surface disturbance would affect less than 3 percent of the pinyon-juniper woodland and sagebrush types in the WSA.

• 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.

MUD SPRING CANYON WSA

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 could be affected by an increase in the availability of water through the construction of four livestock reservoirs and the improvement and maintenance of two springs. Big game habitat, especially for mule deer, would be improved by chaining and seeding 1,000 acres of pinyon-juniper woodland and sagebrush in the central, south, and western portions of the WSA.

The extent and use of the WSA by the peregrine falcon, an endangered species, or the six other Category 2 candidate species that may occur there, is unknown. Chaining and seeding activities would not affect most of these species because activities would be in flat pinyon-juniper woodlands and these species inhabit the riparian and cliff face areas in the canyons. A possible exception would be the ferruginous hawk which could inhabit the pinyon-juniper woodland and sandy areas of the WSA. However, chaining would create ecotones or edges and eventually improve ferruginous hawk habitat.

BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened, endangered, or other special status species are located, BLM would initiate consultation with the 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 animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Threatened, endangered, or other special status animal species would not be significantly affected. Implementation of the wildlife and rangeland water projects would benefit wildlife by providing additional water, forage, and ecotones.

- Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Escalante and Paria MFPs. The estimated 250 AUMs currently allocated in the WSA are con-

trolled by 31 livestock permittees. Motorized vehicles are currently used on portions of the 3 miles of way to manage livestock in the WSA and would continue in the foreseeable future. The four proposed reservoirs, two spring developments, 1.5 miles of pipeline, 1.5 miles of fence, and 1,000 acres of vegetation treatments could be developed in the central, southern, and western portions of the WSA. This would result in improved livestock distribution and an increase of approximately 125 AUMs in the WSA.

Conclusion: Livestock management and grazing levels would not be adversely affected by implementation of the No Action/No Wilderness Alternative. The 1,000 acres of vegetation treatments would result in an increase of approximately 125 AUMs.

- Impacts on Economic Conditions

No changes are expected in existing patterns and trends of population, employment, and local income distributions in the short term. There would not be a loss of local employment or income. No coal exploration or development is projected in the short term. However, due to the extensive coal resource known to underlie the WSA, it is projected that, in the long term, coal would eventually be developed. Exact lease boundaries cannot be determined; therefore, it is not possible to project if one or more mines would actually be located within the WSA boundaries. BLM estimates that two mines could be located in the WSA. A typical Utah mine could be an underground operation, employ 20 to 300 people, and be in operation 30 to 40 years. The employment of 600 people (two mines) would represent only 1.3 percent of the projected Southwest MCD for the year 2010. However, it would be about 19 percent of the Garfield County or 21 percent of the Kane County projected employment in the year 2010 and nearby local communities would be significantly affected. There would be both beneficial and adverse impacts. Beneficial impacts would include increases in employment and income, while adverse impacts would include increased demands for housing and infrastructure such as schools, law enforcement, etc. An unknown portion of the jobs would be obtained by locals.

There would be no livestock-related economic losses because the existing grazing use (estimated at 250 AUMs) and ability to maintain, replace, and build new range developments would remain as at present. The proposed vegetation treatments would increase the WSA's carrying capacity from an estimated 250 AUMs to 375 AUMs and produce new allocated forage

MUD SPRING CANYON WSA

which could result in \$7,500 of livestock sales and \$1,875 of ranchers' returns to labor and investment.

Recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the next 20 years. Because recreational use in the area is estimated to increase only 49 to 285 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day, recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by implementation of this alternative. There are 37,395 acres in the WSA open to oil and gas leases that are currently not leased; the entire WSA could be leased for coal. If leased, up to \$189,019 additional Federal lease fee revenues per year would be realized, 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. However, because of the low probability of oil and gas exploration and production, it is unlikely that substantial lease revenues would be realized.

Collection of livestock grazing fees (\$385 per year) would continue. The additional 125 AUMs of forage that would be produced by proposed new range developments and allocated to livestock with this alternative would increase Federal revenues by \$193 annually. About 50 percent of the increased revenues would be returned to the local BLM District for use in range development projects.

Conclusion: Present economic conditions and trends would not be affected over the short term. Economic opportunities could be realized through coal exploration and eventual development in the long term. Local communities would be significantly affected.

All Wilderness Alternative (38,075 Acres)

• Impacts on Wilderness Values

Designation and management of all 38,075 acres as wilderness would preserve the wilderness values in the Mud Springs 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 protected on all 38,075 acres. Solitude would be protected

on approximately 18,000 acres that meet and 14,600 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on approximately 14,600 acres that meet and 23,475 acres that do not meet the standards for outstanding opportunities. All resources that could be considered as special features in the WSA would be preserved.

In the foreseeable future, direct disturbance of up to 3 acres is anticipated from development of rangeland projects. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be reduced in quality on the disturbed and adjacent areas until activities and noise cease and reclamation is complete. The areas that would be affected are generally not considered to have outstanding opportunities for solitude or primitive recreation. Rangeland projects would be designed to meet wilderness management criteria and upon completion would not be substantially noticeable in the area as a whole. Special features, including scenic values, water, threatened and other special status species, and wildlife associated with wilderness, would not be affected because the direct and indirect disturbance would be minor (involving less than 1 percent of the WSA) and the disturbance would not be located where the special features are located. Appropriate measures would be taken to protect endangered and other special status species prior to any surface-disturbing activity, and it is projected that no negative impact would occur to these species. Refer to the Wildlife and Vegetation Including Special Status Species sections for more information.

Vehicular use of existing 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 the development of new leases and mining claims. There would be no loss of wilderness values from coal development.

Visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values. Because 95 percent of the recreation use in the WSA is based on the use of vehicles, overall use would probably decline.

Conclusion: Wilderness designation would preserve wilderness values where found throughout the WSA. In the foreseeable future, wilderness values would be slightly reduced in quality on about 3 acres.

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- Impacts on Vegetation Including Special Status Species

Implementation of the All Wilderness Alternative would not directly affect any vegetation type in the WSA. The projected 1,000 acres of vegetation treatments would not be allowed. No surface disturbance from mineral and energy resource exploration or development is projected. Wilderness designation would provide additional protection for special status plant species.

Conclusion: Implementation of the All Wilderness Alternative would not adversely affect the vegetation resource in the WSA.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

Approximately 680 acres are under oil and gas leases. However, 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 will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

The WSA has an estimated 250 million tons of coal in-place, of which 125 million tons is recoverable. There are no coal leases located in the WSA and none would be issued prior to wilderness designation. Wilderness designation would preclude issuance of leases and development of the coal resource. Since exploration and development have been projected in the long term with nondesignation, recovery of approximately 122 million tons of coal would be foregone with designation.

- Locatable Minerals

Because of the low potential of the deposit and unfavorable economic conditions (high transportation costs, poor market conditions, etc.), no exploration or development is anticipated in the foreseeable future with or without wilderness designation. Therefore, significant locatable mineral production would not be foregone.

- Salable Minerals

No exploration or development is anticipated. Because of low potential of the deposit and the availability of better sources of material outside of the WSA, any loss of salable mineral products would be insignificant.

Conclusion: Wilderness designation would preclude exploration and development of significant known coal resources. Loss of exploration and development opportunities for other mineral and energy resources would not be significant.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife would benefit from the preservation of solitude. However, the proposed 1,000 acres of chaining and seeding for big game habitat improvement would not be allowed. Potential habitat for deer and nongame species would be reduced by precluding development of reservoirs.

The special status animal species that may occur in the WSA would be provided additional protection and solitude with wilderness designation.

Conclusion: Wilderness designation would preclude 1,000 acres of vegetation treatments and construction of four reservoirs, but it would provide all species with additional opportunities for solitude.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Escalante and Paria MFPs. The estimated 250 AUMs currently allocated in the WSA are controlled by 31 livestock permittees. Permittees are currently using motorized vehicles on the 3 miles of way in the WSA to manage livestock. Restrictions on motorized use on these ways would increase management costs and inconvenience permittees.

It is projected that the two spring developments, 1.5 miles of pipeline, and 1.5 miles of fence would be allowed. The proposed 1,000 acres of vegetation treatments and four reservoirs would not be allowed. The increase of 125 AUMs projected for the No Action/No Wilderness Alternative would not be realized with the All Wilderness Alternative.

MUD SPRING CANYON WSA

Conclusion: Wilderness designation would not significantly affect current livestock management practices. Restricting motorized use of the 3 miles of way would increase management costs and inconvenience permittees. The opportunity for an increase of 125 AUMs through vegetation treatments would be foregone.

- Impacts on Economic Conditions

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

Because of restrictions placed on the use of resources with wilderness designation, there could be losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 7), as well as loss of potential increases in income and Federal revenues that could occur with the No Action/No Wilderness Alternative.

Valid existing oil and gas leases (two leases on 680 acres) could be developed (although this is not projected), but designation would preclude new leases and claims from being established in the WSA. Designation would preclude development of the extensive coal resource in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development with the No Action/No Wilderness Alternative. Because the potential for development in the long term is high for coal, it is estimated that mineral-related local income would be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$7,500 of livestock sales and \$1,250 of ranchers' return to labor and investment. Certain proposed developments for livestock (1,000 acres of vegetation treatments and four reservoirs) would be foregone along with any resulting increase in ranchers' income.

Motorized recreational use of the WSA is light (95 visitor days per year). The loss in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 680 acres now leased would cause an eventual loss of up to \$1,360 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$189,015 annually in Federal revenues

from the leasing of oil, gas, and coal that would be leased without designation. In addition to these rental fees, any potential royalties from lease production and bonus bid revenues from new coal leases could also be foregone.

Prohibiting proposed range developments would result in an estimated annual \$154 of Federal grazing revenues from the increased 125 AUMs that would be foregone.

Conclusion: Wilderness designation would not significantly affect present local or regional economic conditions. However, new leasing in the WSA would not be allowed; therefore, potential sales and revenues for leasable minerals would be foregone. Beneficial and adverse effects from long-term coal development would not occur. Prohibiting certain proposed range developments would result in the foregoing of 125 AUMs and associated economic returns.

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No Action/No Wilderness Affirmative

All Wilderness Affirmative

Large Partial Wilderness Affirmative (Proposed Action) (25,042 Acres)

Small Partial Wilderness Affirmative (25,042 Acres)

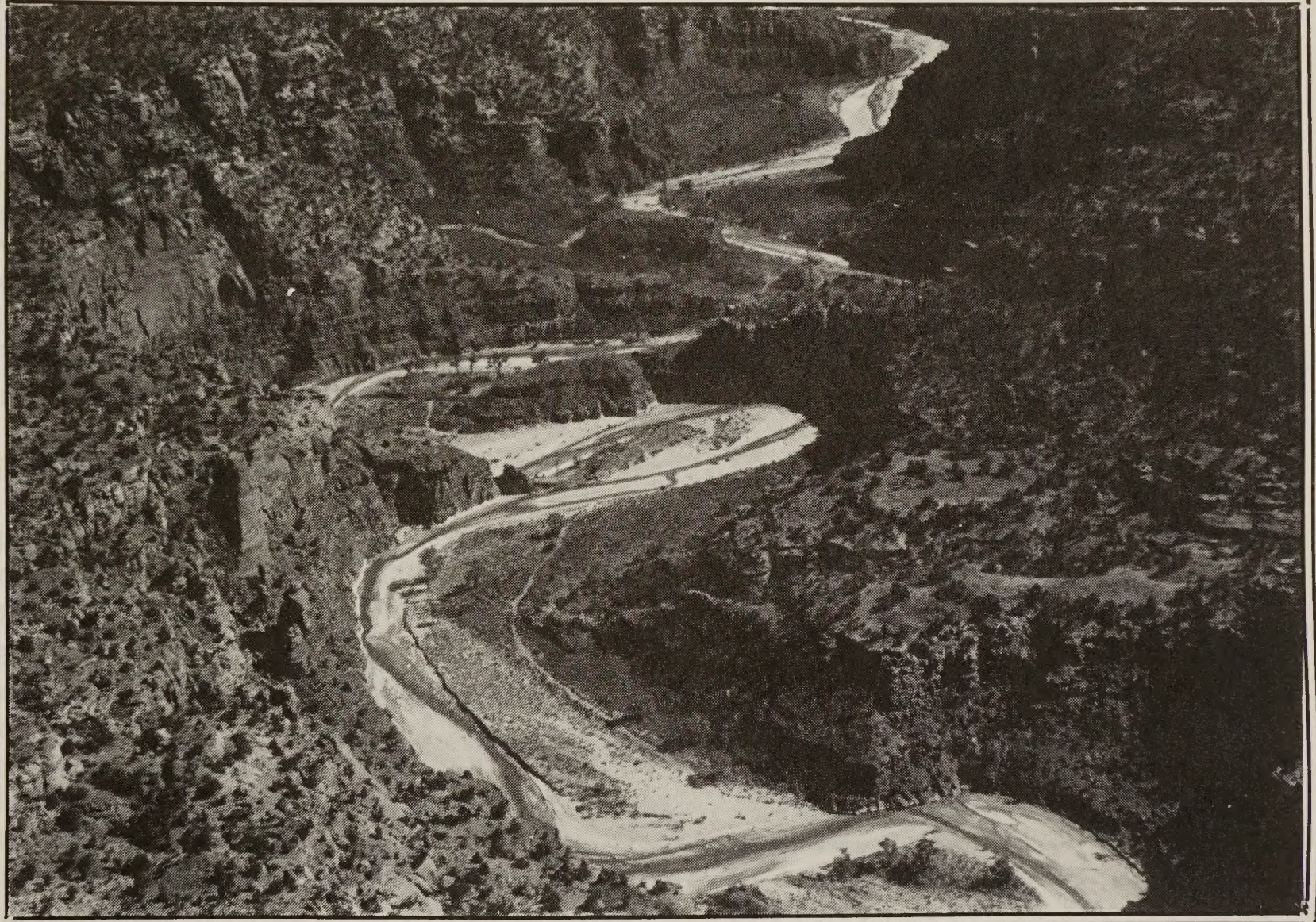


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(UT-040-247/UT-040-247A)

INTRODUCTION

General Description of the Area

The Paria-Hackberry/Paria-Hackberry 202 WSA encompasses the Paria River and Hackberry Creek drainages between Highway 89 and Cannonville in Kane County, Utah. The WSA is located approximately 30 road miles northeast of Kanab, Utah. The WSA is about 23 miles long (north to south) and 18 miles wide (east to west). It is immediately north of The Cockscomb WSA and west of the Wahweap WSA. The Draft EIS identified one 400-acre parcel (E1/2, N1/2 NW1/4, sec. 16, T. 40 S., R. 1 W.) as State land. In fact, the surface of this 400 acres has been reconveyed to the Federal Government while the State of Utah retains mineral ownership of the 400 acres.

BLM has decided to analyze this 400-acre tract as a WSA under Section 202 of the FLPMA. This 400-acre tract is completely within the Paria-Hackberry WSA and for the purpose of this EIS it will be included and analyzed with the 135,822-acre Paria-Hackberry WSA. Therefore, the Paria-Hackberry/Paria-Hackberry 202 WSA is 136,222 acres.

A wide variety of topographic features are present, including plateaus and benches cut by the Paria River and its tributaries, the White Cliffs, the Vermillion Cliffs, The Cockscomb, and numerous unnamed arches. The dominant vegetation type is pinyon-juniper woodland.

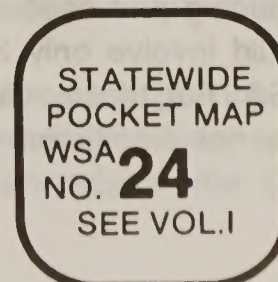
Average annual precipitation in the WSA is 14 inches but varies somewhat from this figure throughout the unit due to its large size and variations in altitude. Highest monthly precipitation occurs from July through December, during which time two-thirds of the yearly total precipitation falls. Intensive thunderstorms are common during the summer months.

Temperatures vary greatly with aspect and altitude. July and January are the warmest and coldest months, respectively. July temperatures range from 50 degrees Fahrenheit (F) to over 100 degrees F, while the January temperature range is from below 0 degrees to 60 degrees F.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A, 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. 40 S., R. 3 W., sec. 2) has 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 size of the WSA has been enlarged by 400 acres to include a FLPMA section 202 inventory unit which was formally State land, the surface of which has been reconveyed to BLM.
3. The Draft EIS analyzed one Partial Wilderness Alternative (59,220 acres) that was BLM's proposed action. In response to public comment, a new Partial Wilderness Alternative (95,042 acres) has been included in the Final EIS and is BLM's new proposed action.
4. The anticipated surface disturbance presented in the Draft EIS (25,030 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 25,030 acres reported in the Draft EIS to 4,251 acres of surface disturbance for the Final EIS.
5. As part of the 25,030 acres of surface disturbance identified above, the Draft EIS identified 24,700 acres suitable for developments such as chaining and seeding, burning, and watershed tillage within the WSA



to improve mule deer habitat, increase livestock forage production, and improve watershed conditions. However, BLM does not anticipate sufficient funding to complete these projects. As a result, the vegetation treatment estimates have been revised downward to 4,000 acres in the Final EIS to reflect more realistic funding projections.

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 III-A (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 Paria-Hackberry/Paria-Hackberry 202 WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production. Although there are 17 oil and gas leases within the WSA, development would likely not occur because of the very low certainty that oil and gas occur within the WSA.

There are only four mining claims within the WSA. All claims are located in the northeastern portion of the tract. Projected uranium and other locatable mineral deposits are small and/or could not be economically developed (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 with or without wilderness designation. Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

2. Forest Resources: About 105,750 acres of pinyon-juniper woodland are found in the WSA. Potential for commercial use of this resource is low because of the lack of adequate access and the same type of woodland available outside the WSA. There are small scattered Ponderosa pine stands in the WSA but no commercial quality timber. If the 4,000-acre pinyon-juniper woodland chaining and seeding project were to be completed, it would involve only 3.9 percent of the woodland in the WSA. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

3. 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 will increase with or without wilderness designation, potential impacts on economic conditions are not significant issues for analysis in the Final EIS.

4. Kaiparowits Coal Transportation and Other Corridors: Potential coal transportation and railroad corridors pass through the WSA (ERT, 1980). The Union Pacific Railroad has also identified a specific route that could be used for the transportation of Kaiparowits coal if development in the area were to occur. This route would cross the southern and extreme western portion of the WSA for approximately 11 miles. Over 13 million tons of Kaiparowits coal would need to be mined annually to make this a feasible route.

Commentors on the Draft EIS expressed concern that designated wilderness areas, including the Paria-Hackberry/Paria-Hackberry 202 WSA, could block the use of these corridors. If wilderness designation were to occur, development of coal transportation systems would not be allowed within the WSA. However, the transportation corridors described in the ERT study extend beyond the WSA boundary, therefore, coal transportation systems could be sited outside the WSA and still be within the designated corridors. The Union Pacific route could be rerouted outside of the WSA. If no wilderness designation occurred, corridor development would likely only effect the southern and western portions of the WSA. The Union Pacific route would extend into the WSA for about 11 miles but is unlikely to be developed. Therefore, impacts related to potential coal transportation systems are not analyzed further for the Paria-Hackberry/Paria-Hackberry 202 WSA.

• Issues Analyzed in Detail

The significant issues for the Paria-Hackberry/Paria-Hackberry 202 WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on soils.
3. Impacts on vegetation including special status species.
4. Impacts on water uses and quality, including the salinity in the Colorado River system.
5. Impacts on wildlife habitat and populations including special status species.
6. Impacts on livestock management.
7. Impacts on visual resources.
8. Impacts on the preservation of cultural resources.
9. Impacts on the 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, 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 24, for responses to specific comments about the Paria-Hackberry/Paria-Hackberry 202 WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

An alternative that would add approximately 22,930 acres of Federal, State, and private lands along the northern, western, and southern boundaries the WSA was suggested in the public comments. This alternative is not analyzed because the inclusion of State and private 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

Four alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (136,222 acres); (3) Large Partial Wilderness (Proposed Action) (95,042 acres); and (3) Small Partial Wilderness (59,670 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.

• No Action/No Wilderness Alternative

With this alternative, none of the 136,222-acre WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Kanab-Escalante Grazing Management EIS, and the Vermillion and Paria MFPs (USDI, BLM, 1980a; 1981c; and 1981b).

The State or private lands within the WSA (refer to Map 1 and Appendix 3 in Volume I) have not been identified in the MFPs for special Federal acquisition through exchange or purchase. State lands are analyzed as remaining under State ownership. Refer to Chapter 1 in Volume I for further information on State in-holdings.

• Management Conditions and Constraints

All 136,222 acres would remain open to mineral location (with standard and special lease stipulations) and sale. Development work, extraction, and patenting would be allowed on the four existing (80 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809). The existing 17 post-FLPMA oil and gas leases (25,200 acres) and future leases could be developed under leasing Category 1 (standard stipulations) on 73,978 acres and Category 3 (no surface occupancy) on 18,924 acres. Some 43,320 acres would be closed (Category 4) to oil and gas leasing.

Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or developments are projected in the WSA. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present livestock grazing use of the 136,222-acre WSA would continue as authorized in the MFPs and Kanab-Escalante Grazing Management

PARIA-HACKBERRY/PARIA-HACKBERRY 202 WSA

EIS (1,803 AUMs). Planned new range developments, including 2,000 acres of pinyon-juniper woodland chaining, six fences totaling about 4 miles, eight slickrock catchments, eight spring developments with watering troughs, and 7 miles of pipeline with watering troughs, could be implemented without wilderness considerations. Existing range developments would continue to be used and maintained as necessary without wilderness value considerations.

Approximately 1,000 acres would be treated to improve the WSA's watershed condition. BLM planning documents recommend that this be accomplished through watershed tillage practices, pinyon-juniper woodland chaining and seeding, and by sagebrush spraying and seeding.

The WSA would remain open to ORV use except on 66,600 acres where vehicle use would be limited to existing roads and trails. This restricted area includes No Man's Mesa and the area from the Paria River east to Cottonwood Canyon. The 33 miles of existing ways would remain open to vehicular use. The Paria riverbed would be available for continued ORV use.

Wildlife habitat improvements would be allowed if in conformance with the MFPs. Vegetation treatments on 1,000 acres would be allowed.

The area would continue to be managed under VRM Class II on 98,192 acres, Class III on 13,582 acres, and Class IV on 24,448 acres.

The No Man's Mesa ACEC would continue to provide special management direction. This ACEC contains unique relict vegetation of scientific value. Because of these values, it is projected that the ACEC will remain in force for the foreseeable future.

Public water reserves of 843 acres and 2,522 acres under recreation classification would continue to be withdrawn.

• 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 4,251 acres of surface disturbance in the foreseeable future.

About 4,000 acres of the projected disturbance would result from planned vegetation treatments, including 2,000 acres for rangeland, 1,000 acres for wildlife habitat, and 1,000 acres for watershed. Treatment practices would include chaining, plowing, tillage, and seeding. These treatments would be maintained over the long term. An additional 17 acres of surface disturbance would result from construction of 4 miles of fence, eight slickrock catchments, eight spring developments, and 7 miles of pipeline with watering troughs. These rangeland projects would be located throughout the WSA. Approximately 18 months would be required to complete these projects, including the vegetation treatments. It is recognized, however, that these projects would be implemented over a period of several years. No other rangeland, wildlife habitat, or watershed projects are planned.

Approximately 234 acres would be disturbed as a result of a 150-foot rights-of-way that would be located adjacent to the Cottonwood Canyon road along 13 miles of the eastern boundary of the WSA. This rights-of-way would be used for transmission lines, pipelines, road expansion, etc., and would be maintained over the long term.

No locatable or leasable mineral exploration or development is projected.

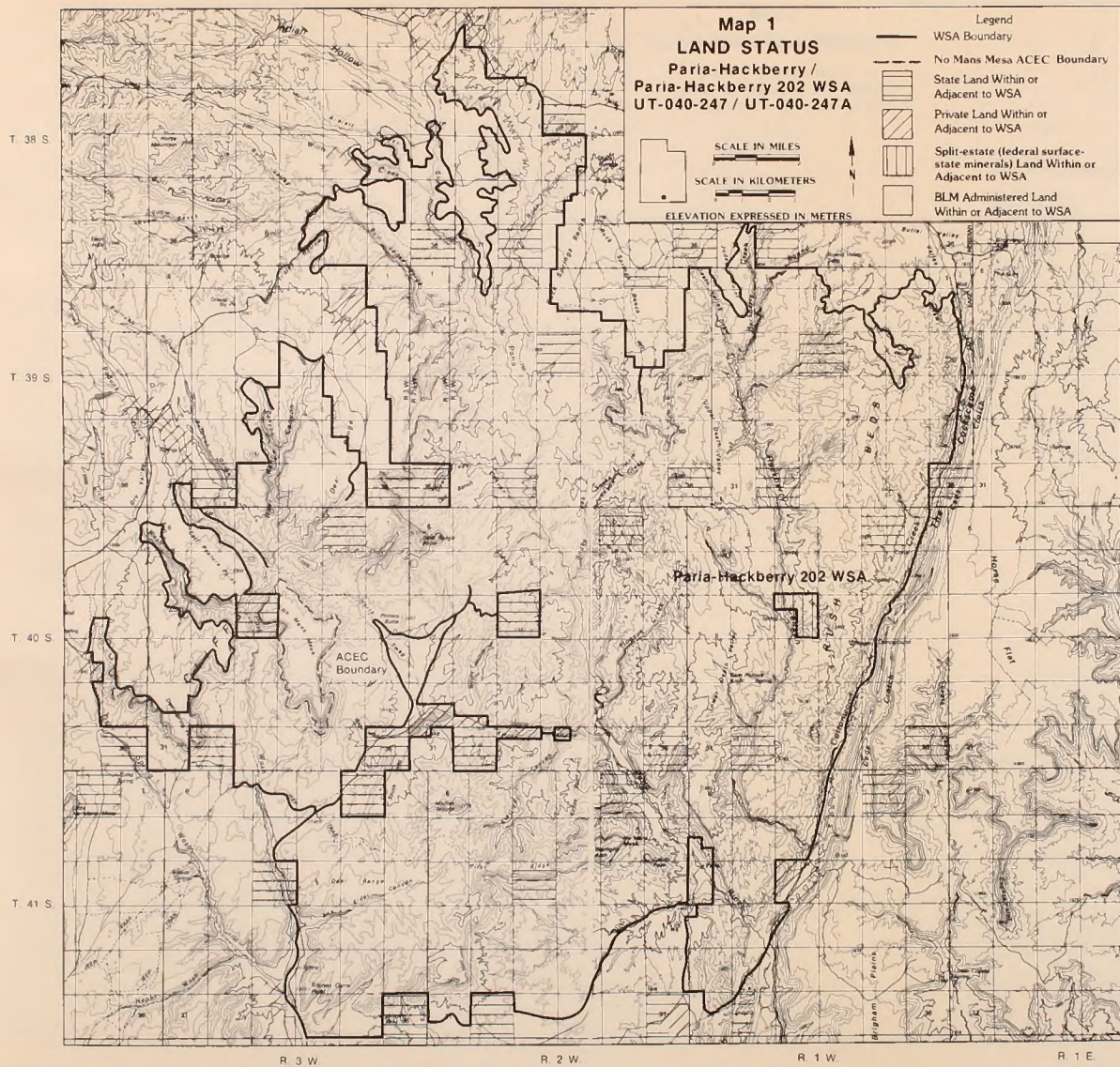
No disturbance from ORV use is projected because of terrain or management restrictions. It is projected that recreation use would increase over the current estimated use of approximately 700 visitor days annually at a rate of 2 to 7 percent per year. About 29 percent of the use would continue to be vehicular in nature; but would occur on existing ways, washes, or in the Paria riverbed where disturbance would be temporary. There are currently 33 miles of vehicular ways.

• All Wilderness Alternative

With the All Wilderness Alternative, all 136,222 acres of the Paria-Hackberry/Paria-Hackberry 202 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

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particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State and private lands would remain under existing ownership. There are 14 State sections (9,019 acres), 400 acres of split-estate land where BLM administers the surface and the State owns the mineral estate, and one tract of private land (40 acres) 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 including 400 acres of Federal surface split-estate lands.

- Management Conditions and Constraints

After wilderness designation, all 136,222 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 approximately 80 acres of the four existing mining claims that may be determined to be valid. The existing post-FLPMA oil and gas leases involving 25,200 acres would be phased out upon expiration unless an oil or gas find in commercial quantities is shown.

Present livestock grazing would continue as authorized in the Paria and Vermillion MFPs and the Kanab-Escalante Grazing Management EIS. The 1,803 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of range developments existing at the time of designation would continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new livestock facilities and range developments would be allowed only if consistent with wilderness protection standards (refer to Appendix 1 in Volume I). Several developments currently planned and identified in the No Action/No Wilderness Alternative would be allowed after wilderness designation. However, the vegetation treatments for livestock (burnings, chainings, spraying, and seeding) proposed on 2,000 acres in the WSA would not be allowed.

New water resource facilities or watershed activities would be allowed after designation only if compatible with wilderness values, if needed to correct imminent hazards to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the Wilderness Act. There are 1,000 acres of vegetation treatment proposed for watershed purposes.

The 1,000 acres of proposed wildlife habitat improvements (chainings, burnings, spraying, and seeding) would not be allowed.

The entire 136,222-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 33 miles of existing vehicular way would not be available for vehicular use. About 5.5 miles of cherry-stemmed roads within the WSA would remain open to vehicular use. About 27 miles of the WSA boundary follow existing gravel roads that would remain open to vehicular travel. The Paria riverbed would be closed to ORV use.

Visual resources on 136,222 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

The No Man's Mesa ACEC would be continued with provisions revised to be incorporated into the wilderness management plan.

Public water reserves on 843 acres and 2,522 acres under recreation classification would continue to be withdrawn.

- Action Scenario

BLM projects that a total of 14 acres of surface disturbance would occur in the foreseeable future. This disturbance would result from the construction of rangeland projects described in the No Action/No Wilderness Alternative including the fences, slickrock catchments, spring developments, and pipelines. It is projected that these projects would be designed and installed consistent with wilderness protection standards. The vegetation treatments would not be allowed. No additional rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation. The planned rights-of-way corridor located adjacent to the Cottonwood Canyon road as discussed in the No Action/No Wilderness Alternative would not be allowed. No future consideration would be given for the three energy transportation corridors which cross the WSA.

No mineral exploration or development is projected on existing mining claims or mineral leases in the WSA. Implementation of the All

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Wilderness Alternative would preclude new mineral location and mineral leasing. Therefore, no locatable or leasable mineral resource exploration or development would occur following wilderness designation.

No disturbance from ORV use is projected because of management restrictions. Primitive recreational use will increase over the current primitive use of 500 visitor days annually at a rate of 2 to 7 percent per year.

- Large Partial Wilderness Alternative (Proposed Action) (95,042 Acres)

For the Large Partial Wilderness Alternative, 95,042 acres of the Paria-Hackberry/Paria-Hackberry 202 WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to avoid conflicts of wilderness designation with other resource values 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 with outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. The 95,042 acres analyzed as wilderness with this alternative include most of the area east of the Paria River, No Man's Mesa, Starlight Canyon, Deer Range Canyon, Pilot Ridge, and the Bull Valley Gorge areas. The 41,180 acres within the WSA but outside of that designated as wilderness would be managed in accordance with the Paria and Vermillion MFPs and the Kanab-Escalante Grazing Management EIS, as described for the No Action/No Wilderness Alternative. The 95,042-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.

The policy of the State is to reserve its position regarding the exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding the exchange of State lands, it is assumed that State and private lands would remain under existing ownership. There are eight State sections (5,120 acres) and 400 acres where the State of Utah owns the mineral estate in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and

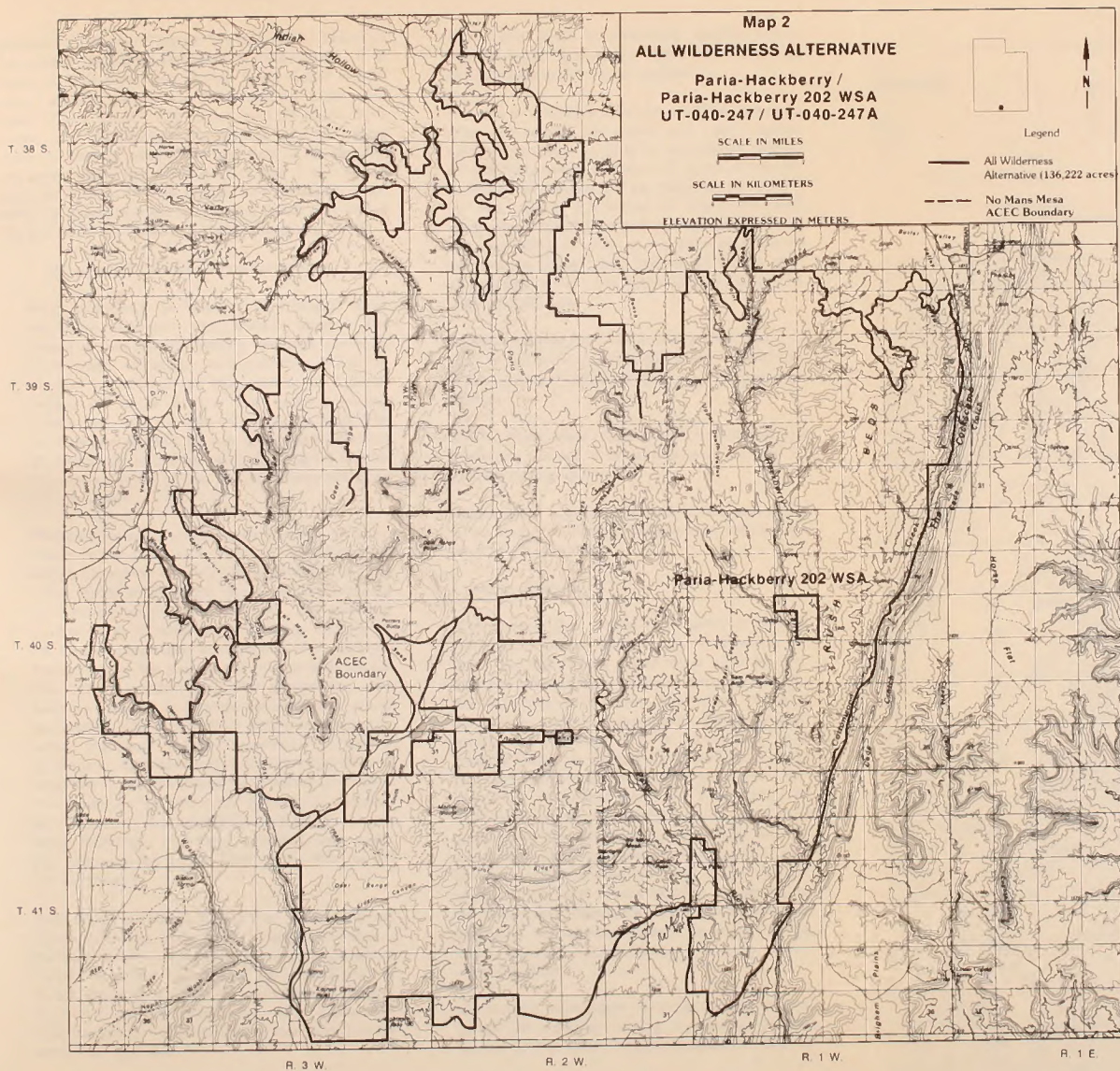
acreages given for this alternative are for Federal lands only. This includes 400 acres where BLM only owns the surface rights.

- Management Conditions and Constraints

The 94,642-acre Federal mineral estate of the 95,042-acre wilderness area 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 four existing mining claims (80 acres), provided that they are valid. BLM does not project exploration or development of mining claims in the wilderness area. The 11 existing post-FLPMA oil and gas leases, covering 16,560 acres, would not be reissued upon expiration unless a find in commercial quantities is shown. No exploration or development of oil and gas leases is projected. The 41,180-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting could occur on future mining claims. However, no exploration or development is projected. The 41,180-acre area not designated as wilderness would be managed as oil and gas leasing Category 1 (standard stipulations). Development of six existing post-FLPMA oil and gas leases (8,640 acres) and future leases could be developed without concern for wilderness values. However, no exploration or development is projected. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

Livestock grazing would continue in the 95,042-acre wilderness area. The 1,385 AUMs would remain available to livestock as presently allocated. The use and maintenance of range developments existing at the time of designation could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for range and/or wilderness resource protection and management. Several developments are currently proposed and include 4 miles of fence, three slick-rock water catchments, and six spring developments. However, proposed vegetation treatments for livestock range improvement on 1,700 acres would not be allowed. In the 41,180-acre nonwilderness area, grazing use would continue as authorized in the Paria and Vermillion MFPs and the Kanab-Escalante Grazing Management EIS. New

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range development and vegetation treatment proposals could be developed in this area without concern for wilderness values. Three hundred acres of pinyon-juniper woodland chaining and seeding would be allowed.

The wilderness area would be closed to ORV use. About 11 miles of existing way would not be available to vehicular use. No cherry-stemmed road would remain within the wilderness area. The remainder of the unit, including the existing roads that border the WSA, would remain open to vehicular travel. The Paria riverbed would be open to ORV use.

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 on 3,150 acres, Class III on 13,582 acres, and Class IV on 24,448 acres as outlined in the Paria and Vermillion MFPs.

The No Man's Mesa ACEC is located in the designated portion of the WSA and would be managed as discussed for the All Wilderness Alternative.

Public water reserves of 843 acres and 2,522 acres under recreation classification would continue to be withdrawn.

• Action Summary

Approximately 14 acres of surface disturbance would occur in the designated portion of the WSA as a result of construction of the rangeland projects described in the No Action/No Wilderness Alternative. These projects would be designed and installed consistent with wilderness protection standards. No additional rangeland, wildlife habitat, watershed projects, or other developments are projected. Existing mining claims and mineral leases would not be explored and developed. Implementation of this alternative would preclude new mineral leasing and mineral location in the designated portion. Therefore, no mineral resource exploration or development would occur following wilderness designation. The projected 150-foot rights-of-way corridor discussed in the No Action/No Wilderness Alternative would not be allowed. No further consideration would be given to the three energy transportation corridors which cross the WSA.

It is projected that 300 acres of surface disturbance would occur in the nondesignated portion of the WSA. This disturbance would result from 300 acres of vegetation treatments for rangeland purposes. No other projects are planned in the foreseeable future. No locatable or leasable mineral exploration or development is projected.

No disturbance is projected from ORV use in either the designated or nondesignated areas because of management or terrain restrictions. No use would be allowed in the designated area, and use is expected to remain on ways, in washes, or in the Paria riverbed in the nondesignated area, where disturbance would be temporary. Approximately 22 miles of the 33 miles of ways would remain available for vehicular use. Overall, recreation use would increase over the current estimated use of 700 annual visitor days (200 of which are vehicular in nature) at a rate of 2 to 7 percent per year. About 29 percent of the overall use would continue to be vehicular.

• Small Partial Wilderness Alternative (59,670 Acres)

For the Small Partial Wilderness Alternative, 59,670 acres of the Paria-Hackberry/Paria-Hackberry 202 WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to avoid conflicts of wilderness designation with other resource values while analyzing as wilderness those portions of this WSA that have the best wilderness values and to further reduce resource conflicts. The 59,670 acres analyzed as wilderness with this alternative include most of the area east of the Paria River (except for the Rushbeds area), Starlight Canyon, and the Bull Valley Gorge areas. The 76,552 acres within the WSA but outside of that designated as wilderness would be managed in accordance with the Paria and Vermillion MFPs and the Kanab-Escalante Grazing Management EIS, as described for the No Action/No Wilderness Alternative. The 59,670-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.

Based on the policy of the State to reserve its position regarding the exchange of in-held lands within any particular WSA, it is projected that State and private lands would remain under existing ownership. There are five State sections (3,214 acres) and 400 acres where the State owns the mineral estate in that

portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands only. This includes 400 acres where BLM only owns the surface rights.

- Management Conditions and Constraints

The 59,270-acre Federal mineral estate of the 59,670-acre wilderness area would be withdrawn from mineral entry and closed to new mineral leasing and sale. Eight existing post-FLPMA oil and gas leases, covering 8,340 acres, would not be reissued upon expiration unless a find of commercial quantities is shown. BLM does not project locatable or leasable exploration or development in the wilderness area. The 76,552-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of existing (four claims, 80 acres) and future mining claims could occur if the claims are valid. The area not designated as wilderness would be managed as oil and gas leasing Category 1 (standard stipulations) on about 70,000 acres, Category 3 (no surface occupancy) on about 4,552 acres, and Category 4 (no leasing) on 2,000 acres. Development of nine existing post-FLPMA oil and gas leases (16,860 acres) and future leases could be developed without concern for wilderness values. Nevertheless, BLM does not project exploration or development of leasable or locatable minerals in the WSA. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

Livestock grazing would continue in the 59,670-acre wilderness area. The 745 AUMs would remain available to livestock as presently allocated. The use and maintenance of range developments existing at the time of designation could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for range and/or wilderness resource protection and management. However, proposed vegetation treatments for livestock range improvement on 1,000 acres would not be allowed. In the 76,552-acre nonwilderness area, grazing use would continue as authorized in the Paria and Vermillion MFPs and the Kanab-Escalante Grazing Management EIS.

In the 59,670-acre wilderness, new water resource facilities or watershed activities would be allowed only if compatible with wilderness, if necessary to correct imminent hazards to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the Wilderness Act. Approximately 700 acres of the 1,000 acres proposed for land treatment for watershed improvement would not be allowed. In the remaining 76,552-acre nonwilderness area, water resource developments would be allowed if in accordance with the Paria and Vermillion MFPs.

The wilderness area would be closed to ORV use. About 3.5 miles of existing way would not be available for vehicular use. No cherry-stemmed road would remain within the wilderness area. The remainder of the unit, including the existing roads that border the WSA, would remain available to vehicular travel, although use would be restricted to existing roads and trails on 16,200 acres. The Paria riverbed would be available for ORV use.

Visual resources in the 59,670-acre 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 on 38,522 acres, Class III on 13,582 acres, and Class IV on 24,448 acres as outlined in the Paria and Vermillion MFPs.

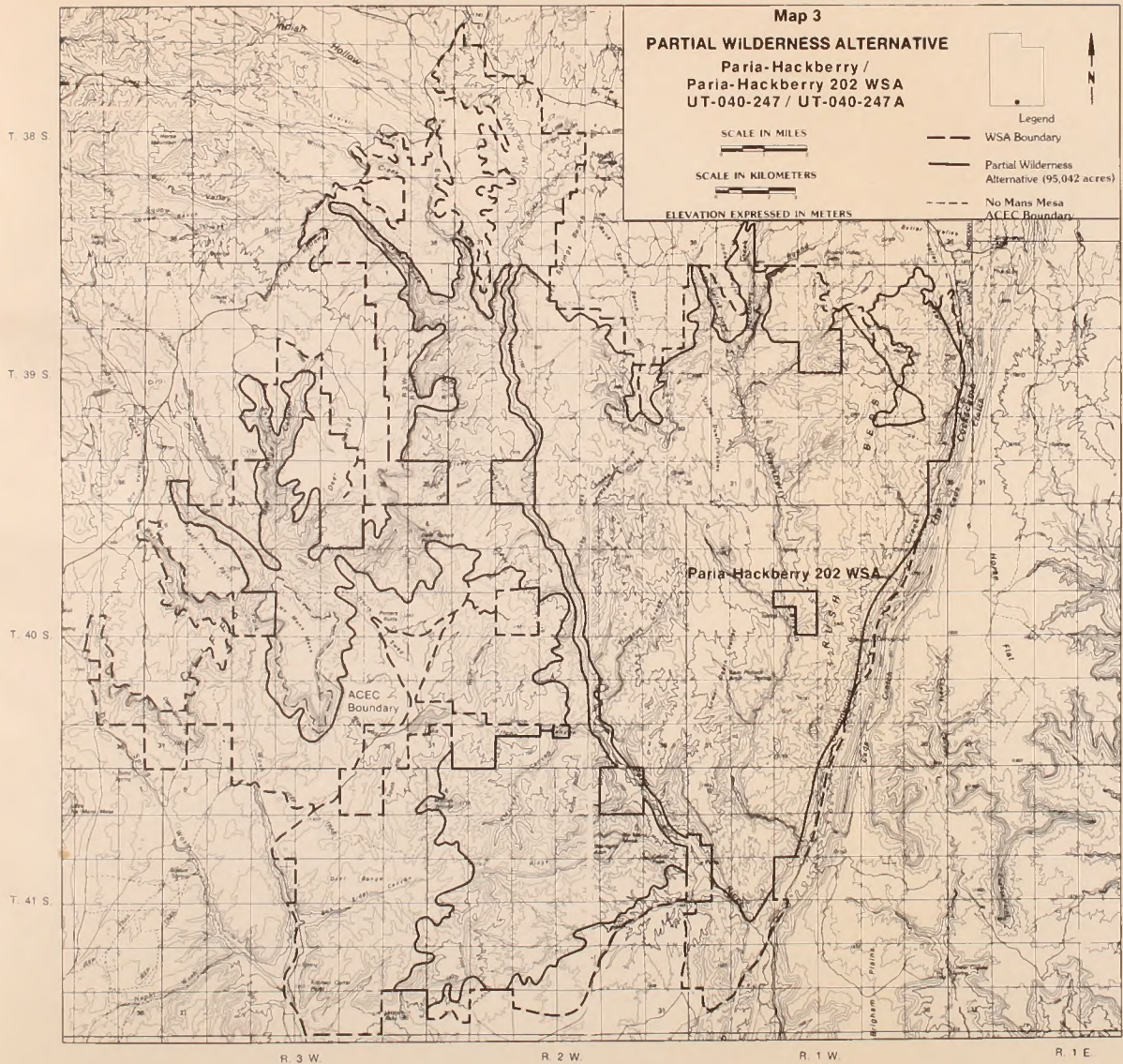
The No Man's Mesa ACEC is located in the nondesignated portion of the WSA and would continue to be managed as discussed for the No Action/No Wilderness Alternative.

Public water reserves of 843 acres and 2,522 acres under recreation classification would continue to be withdrawn.

- Action Scenario

Approximately 14 acres of surface disturbance would occur in the designated portion of the WSA as a result of construction of the rangeland projects described in the No Action/No Wilderness Alternative. These projects would be designed and installed consistent with wilderness protection standards. No additional projects are planned. Existing mineral leases would not be explored and developed. Implementation of this alternative would preclude new mineral leasing

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and location in the designated portion. Therefore, no mineral resource exploration or development would occur following wilderness designation. The planned rights-of-way corridor discussed in the No Action/No Wilderness Alternative would not be allowed. No further consideration would be given to the three energy transportation corridors which cross the WSA.

It is projected that 1,300 acres of surface disturbance would occur in the nondesignated portion of the WSA. This disturbance would result from 1,300 acres of chaining and seeding for rangeland and watershed purposes. No other projects are planned in the foreseeable future. No locatable or leasable mineral exploration or development is projected.

No disturbance is projected from ORV use in either the designated or nondesignated areas because of management or terrain restrictions. No use would be allowed in the designated area, and use is expected to remain on ways, in the washes, or in the Paria riverbed in the nondesignated area, where disturbance would be temporary. Approximately 29.5 miles of the 33 miles of ways would remain available for vehicular use. Overall, recreation use would increase over the current estimated use of 700 annual visitor days (200 of which are vehicular in nature) at a rate of 2 to 7 percent per year. About 29 percent of the use would continue to be vehicular.

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 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 size of the WSA is 136,222 acres. It extends 23 miles in a north-south direction and 19 miles in an east to west direction.

• Naturalness

The WSA is natural with only minor imprints of man. Imprints of man that remain in the WSA include short drift fences, ways, log skid trails, corrals, cabins, sheds, and mining prospects. Prospects and associated ways are present below Pilot Ridge. The upper Rush Beds area contains ways, short fences, and corrals. Skid trails are present on the Deer Range and Calf Pasture Point benches. A way is present in the North Swag and Park Wash area. Another way is located on the Deer Range ridge above Box Elder Canyon and South Swag. These imprints constitute less than 100 acres in the WSA.

In the WSA, the high quality of naturalness has not changed since the BLM Intensive Wilderness Inventory decision (USDI, BLM, 1980b). Since establishment of the WSA, approximately 0.75 acres of the WSA have been disturbed. This disturbance is the result of installing a 3/4-inch buried pipeline for 0.75 mile in an existing way. In addition a 925-foot drift fence was constructed using hand labor with access gained by horseback.

These areas have been reclaimed to a substantially unnoticeable condition.

• Solitude

The WSA affords outstanding opportunities for solitude generally created by topographic screening situations. The size of the WSA enhances the outstanding opportunities present. Configuration neither enhances nor detracts from the solitude.

Where the WSA is not cut by canyons, the White Cliffs cliffline forms a very irregular but continuous barrier with a distinct vertical cliff face. These cliffs, plus the Vermillion Cliffs, form barriers and screens that provide opportunities for solitude.

No Man's Mesa, unlike the other benches in the area, is totally isolated by the White Cliffs. This island-like structure provides an exceptional opportunity for solitude.

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Table 1
Summary of Environmental Consequences

Alternatives				
Resource	No Action/No Wilderness	All Wilderness (136,222 Acres)	Large Partial Wilderness (95,042 Acres) (Proposed Action)	Small Partial Wilderness (59,670 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 about 4,251 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 6,810 acres due to vegetation treatments, rangeland developments, and development of an utility right-of-way. Most special features including relict plant communities, perennial streams, special status animal and plant species, cultural values, and wildlife associated with wilderness would not be affected by development-related disturbance. Some Class A scenery would be disturbed. Special features that would be disturbed by continued ORV use are cultural values and sensitive wildlife species. Vehicular use of 33 miles of existing ways and about 25 miles of the Paria riverbed would continue to be an annoyance that would detract from solitude and primitive recreation opportunities in the WSA.</p>	<p>Wilderness designation would preserve wilderness values in the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly or indirectly reduced in quality on 34 acres. Only 14 acres would be directly disturbed. These impacts would be due to development of rangeland projects. Wilderness management criteria would be met. Special features including Class A scenery, relict plant species on No Man's Mesa, perennial streams, special status plant and animal species, wildlife commonly associated with wilderness, and cultural values would be preserved.</p>	<p>Wilderness values would be preserved in the designated area which is approximately 70 percent of the WSA. Because of vegetation treatments and rangeland developments, naturalness and opportunities for solitude and primitive recreation would be directly lost or indirectly reduced in quality on 814 acres of the WSA. Of this, only 300 acres would be directly lost. Vehicular use of 22 miles of ways and the 2.5 miles of the Paria riverbed in the nondesignated area would continue to be an annoyance that would detract from opportunities for solitude and primitive recreation in the WSA. Most special features would be preserved; however, continued ORV use in the nondesignated area would result in inadvertent or intentional disturbance of cultural and wildlife special features.</p>	<p>Wilderness values would be preserved in the designated area which is approximately 44 percent of the WSA. Because of vegetation treatments and rangeland developments, naturalness and opportunities for solitude and primitive recreation would be directly lost or indirectly reduced in quality on about 3,414 acres of the WSA. Of this, only 1,314 acres would involve direct loss. Vehicular use of 29.5 miles of ways and 2.5 miles of the Paria riverbed in the nondesignated area would continue to be an annoyance that would detract from opportunities for solitude and primitive recreation in the WSA. Some special features would be preserved; however, continued ORV use in the nondesignated area would result in inadvertent or intentional disturbance of cultural and wildlife special features.</p>

Table 1 (Continued)
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (136,222 Acres)	Large Partial Wilderness (95,042 Acres) (Proposed Action)
Impacts on Soils	There would be a 5.8 percent temporary increase in soil loss resulting from vegetation treatments, rangeland developments, and an utility corridor. The vegetation treatments would eventually reduce erosion rates in the WSA and soil loss would be less than at present.	Development projects which would reduce erosion rates from the WSA would not be allowed and erosion rates would remain at current levels.	A slight (0.5 percent) increase in annual soil loss would be expected for a 2 to 3 year period followed by a reduction in annual soil loss as seedlings were established following vegetation treatments.
	Special status plant species would not be significantly affected. The 4,251 acres of projected surface disturbance would affect about 11 percent of the pinyon-juniper woodland and sagebrush types in the WSA.	Vegetation types would be maintained and the five sensitive species in the WSA would receive additional protection.	Special status plant species would not be significantly affected. The 1,314 acres of projected surface disturbance would affect about 1 percent of the WSA. Therefore, vegetative types would not be significantly affected.
Impacts on Water Resources	This alternative would result in a 5.8 percent temporary (2 to 3 years) increase in sedimentation and TDS due to vegetation treatments and rangeland developments. Over the long term, the water quality and uses would not be adversely affected.	Wilderness designation would not significantly alter present or future water quality or uses.	This alternative would result in a temporary (2 to 3 year) (1.8 percent) increase in sedimentation and TDS production due to 1,300 acres of vegetation treatments.

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Table 1 (Continued)
Summary of Environmental Consequences

Alternatives				
Resource	No Action/No Wilderness	All Wilderness (136,222 Acres)	Large Partial Wilderness (95,042 Acres) (Proposed Action)	Small Partial Wilderness (59,670 Acres)
Impacts on Wildlife Habitat and Populations	Wildlife populations would improve due to increased water availability. Some wildlife species (mule deer and ferruginous hawk) would benefit from the vegetation treatments. However, wildlife species associated with riparian zones would continue to be disturbed by ORV use on the Paria riverbed.	Wilderness designation would negatively impact mule deer and ferruginous hawk habitat because 4,000 acres of vegetation treatments would not be allowed. Overall, wildlife would benefit from the ORV restrictions in the Paria riverbed and from solitude in the remainder of the area.	With this alternative, mule deer and ferruginous hawk would benefit from the 300 acres of vegetation treatments. However, wildlife species associated with riparian zones would be adversely affected due to continued ORV use on the Paria riverbed. Wildlife would benefit from solitude provided by wilderness designation on 70 percent of the WSA.	With this alternative, mule deer and ferruginous hawk would benefit from the 1,800 acres of vegetation treatments. However, wildlife associated with riparian zones could be adversely affected due to continued ORV use on the Paria riverbed. Wildlife would benefit from solitude provided by wilderness designation on 44 percent of the WSA.
Impacts on Livestock Management	Livestock management and grazing practices would continue as at present. Rangeland developments and vegetation treatments would result in an increase of 200 AUMs and improved livestock distribution.	Wilderness designation would necessitate changes in livestock management and supervision and cause inconvenience with increased operating costs to the 46 permittees because of restrictions on access to 33 miles of ways. Development of additional forage (up to 200 AUMs) through vegetation treatments would be precluded.	Operating costs to 18 permittees would be slightly increased by restrictions on access to 11 miles of ways. Grazing levels would not be altered, but 1,700 acres of pinyon-juniper woodland chainings and seedings would be precluded. A potential increase of at least 170 AUMs would be foregone.	Grazing levels would not be altered, but 1,000 acres of pinyon-juniper woodland chainings and seedings would be precluded. A potential increase of at least 100 AUMs would be foregone. Operating costs to 11 permittees would be slightly higher because of restrictions on access to 3.5 miles of ways.

PARIA HACKBERRY/PARIA-HACKBERRY 202 WSA

Table 1 (Continued)
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (136,222 Acres)	Large Partial Wilderness (95,042 Acres) (Proposed Action)
Impacts on Visual Resources	No Action/No Wilderness	All Wilderness	Small Partial Wilderness (59,670 Acres)
	In the foreseeable future, visual quality would be reduced on 3.2 percent (4,251 acres) of the WSA due to rangeland development, vegetation treatments and development of an utility corridor.	Wilderness designation would preserve visual resources because major surface disturbance would not be allowed. A slight reduction in visual quality would occur on 14 acres due to rangeland developments.	Visual quality would be reduced on less than 1 percent (314 acres) of the WSA due to vegetation treatments and rangeland developments. Most scenic values would be preserved.
Impacts on Cultural Resources	No Action/No Wilderness	All Wilderness	Small Partial Wilderness (59,670 Acres)
	Inadvertent loss or damage to archaeological sites may occur due to surface disturbance and continued ORV use. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resource management would continue without regard to wilderness management restrictions.	Surface disturbance would be minimal and benefits of protection would outweigh the threat of increased vandalism due to wilderness designation. Closure to ORV activity would protect sites from unintentional damage and generally decrease accessibility in the unit. Management of cultural resources may be restricted in scope and execution due to wilderness designation.	Seven recorded sites in the designated wilderness portion of the WSA would be protected from vehicular activity. The remaining 34 sites would receive protection as discussed for the No Action/No Wilderness Alternative.
Impacts on Recreation	No Action/No Wilderness	All Wilderness	Small Partial Wilderness (59,670 Acres)
	Both primitive and vehicle-oriented recreational use would increase. Primitive recreational values would be reduced in quality near the vegetation treatments, rangeland developments, and area of utility rights-of-way development. Primitive recreational opportunities would be reduced as vehicular use increases. About 25 miles of a wild and scenic river inventory segment would not receive additional protection provided by wilderness designation and would be subject to ORV use.	Primitive recreation values would benefit from a reduction in the likelihood for surface-disturbing activities, increasing management attention, and closure of the area to ORV use. The loss of vehicular opportunity would be considered significant because the riverbed is a historic and established travel route of interest to local users as well as tourists. Wild and scenic values on about 25 miles of the Paria River would receive additional protection provided by wilderness designation and would no longer be subject to ORV use.	Both primitive and vehicle-oriented recreation would increase. Primitive recreational values would be protected on the 59,670-acre designated wilderness area but would be reduced on the areas left open to ORV use including the Paria River bottom. Wild and scenic values on about 25 miles of the Paria River would not receive additional protection provided by wilderness designation and would continue to be subject to ORV use.

Deer Range Canyon and its Tank Canyon tributary lack the typical features of other canyons of the area. However, they are long, winding, 300- to 400-foot canyons with broken walls and shrub and Ponderosa pine vegetation screening. Topographic and vegetation screening combine here to create an outstanding opportunity for solitude.

The large area between the Paria River and Cottonwood Wash constitutes another distinctive topographic component of the WSA. This area includes most of the Paria River Canyon; several east side tributary canyons, including Hogeye and Snake Creek Canyons; Hackberry Canyon and its tributaries, including Death Valley and Round Valley Draws; Upper and Lower Death Valleys; and the Rush Beds and west escarpment of Cottonwood Wash. The area contains a mixture of entrenched canyons, flats with outcroppings of Navajo Sandstone slickrock and rimrock, several massive outcroppings of Navajo Sandstone in the form of domes and fins, "holes" of sandstone formations in the upper reaches of some drainages, and the dissected west escarpment of Cottonwood Wash. Opportunities for solitude are directly correlated with sandstone exposures in this area. Where the sandstone is absent, topographic screening is minimal.

Hackberry Canyon in its entirety possesses outstanding opportunities. All of Hackberry Canyon's upper eastern tributaries also possess this attribute. The western escarpment to Cottonwood Wash and most of the Rush Beds are characterized by exposed sandstone eroded into various complex topographic screening situations. Several benches and open flats on the Hackberry Canyon-Cottonwood Wash divide lack sandstone exposures and do not exhibit outstanding opportunities for solitude.

Outside sights and sounds are an insignificant influence on solitude at present.

A visitor can easily find seclusion in certain locations where canyonlands physiography is exceptionally rough or complex. The lower Bull Valley Gorge-Johnson Hole area is perhaps the best location in the WSA where the sights and sounds of others could easily be avoided.

Overall, approximately 89,700 acres (66 percent of the WSA) have outstanding opportunities for solitude.

• Primitive and Unconfined Recreation

The WSA offers outstanding opportunities for hiking, backpacking, horseback riding, exploring, rock climbing, sightseeing for geology, photography, and rock-hounding for petrified wood and agates. Several of these activities are superior because the WSA's canyon areas contain an unusually high number of tortuous canyons and slickrock exposures. Just as the canyonlands landscape offers outstanding opportunities for solitude because of its topographic screening capacities, it also offers superior primitive recreation opportunities because its topography is characteristically scenic, dissected, and exposed. Judged by either of the inventory standards, activity diversity or activity quality, the opportunity is outstanding within the WSA in those locations where canyonlands are present.

Rockhounding areas for petrified wood and agate are found below the Vermillion Cliffs and extend up the Paria River Canyon to Starlight Canyon. Although horseback riding opportunities are distributed throughout the WSA, the riding activity is limited in some areas due to very difficult terrain. Conversely, the rock climbing activity is limited to cliff face areas, but these areas are distributed throughout the portions of the WSA where foot travel activities are excellent. The sightseeing for geological features and photography activities are directly associated with areas where the quality of the individual foot travel activities are high.

The outstanding opportunity for primitive recreation exists in approximately the same locations as the outstanding opportunity for solitude. Exceptions include several areas in the upper Rush Beds area where topographic screening is inferior but the opportunity for primitive recreation is excellent because of photographic, geological sightseeing, or hiking and riding possibilities. Another area is the tip of Rock Springs Bench where a hiking route to the Upper Death Valley-Johnson Hole area exists.

Overall, outstanding opportunities for primitive and unconfined recreation are found on approximately 90,100 acres.

The major area where quality does not meet the standard is the large contiguous area formed by the North, South, and West Swags; lower Park Wash; and Deer Range-Box Elder Canyon. Smaller areas include the eastern and western sides of the Deer Range bench,

the extreme upper Paria River area, and portions of the Lower Death Valley-Rush Beds area.

• Special Features

The Paria-Hackberry/Paria-Hackberry 202 WSA possesses scenic and scientific values as special features.

The relict plant associations found on top of the No Man's Mesa and Little No Man's Mesa have scientific value. They serve as a standard to compare nearby land management practices and as a living museum of pristine vegetation. The total area of scientific value is about 1,500 acres. No Man's Mesa has been designated as an ACEC in existing planning documents.

The WSA possesses a variety of landscape features of high scenic value. The unit's landscape geology is unique because it embraces two prominent southern Utah physiographic systems. At Bull Valley Gorge and Deer Creek Canyon, the Paria River marks the eastern-most extension of the White Cliffs component of the famous ascending staircase, cliff, and terrace physiography of southwestern Utah, the Vermillion Cliffs, White Cliffs, and Pink Cliffs. East of the Paria River, the landscape is representative of the Glen Canyon physiography of sculptured, dissected, and exposed Navajo Sandstone. Portions of this WSA are characterized by Navajo and Kayenta Sandstone canyons, with intervening divides of exposed Navajo Sandstone, the White Cliffs of Navajo Sandstone, and the Vermillion Cliffs of the Chinle Formation.

The White Cliffs are high white or yellow cliffs of Navajo Sandstone. Cliff heights vary from 600 feet at the edge of Deer Springs Point bench to 1,200 feet in the vicinities of Deer Range Point and the Sheep Creek-Bull Valley Gorge-Paria River confluences. In the remainder of the WSA, the White Cliffs consistently reach 1,000 feet in height. The cliffline is interrupted by eight canyons. This escarpment is considered to possess high scenic values.

An important area of scenic value in the WSA is where the White Cliffs and canyonlands landscapes merge. This occurs in the large basin between Deer Range and Rock Springs Bench-Upper Death Valley area. This is a complex and colorful landscape.

A third area of scenic value includes the breaks of the Rush Beds and the west wall of Cottonwood Canyon; the upper tributaries to Hackberry Canyon, such as Death Valley Draw; and the exceptional Navajo Sand-

stone domes and fin formations on either side of lower Hackberry Canyon. With the exception of the Navajo Sandstone Formations, this area's scenic values are not of the quality of values in the Bull Valley Gorge-Johnson Hole area.

The Vermillion Cliffs terrace constitutes the remaining landscape component with scenic values. The Vermillion Cliffs, with its associated Wingate Sandstone cliffs, colorful Chinle badlands, and canyons, possesses high scenic values. The multiple colors and the intensity of the coloration contribute to the scenic quality of this landscape. Included in this landscape are Hackberry Canyon, the Paria River Valley, Hogeye Canyon, the Pilot Ridge-Starlight Canyon-Kirbys Point area, and Eight Mile Pass.

The aggregate area having special scenic features in the WSA is about 59,700 acres. Approximately 98,200 acres (approximately 72 percent of the WSA) have been rated Class A for scenic quality.

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) in the WSA listed as endangered. There are eight animal species and five plant species that are also considered to be special status species (refer to the Vegetation and Wildlife Including Special Status Species sections for more information). The WSA has populations of cougar which is a wildlife species commonly associated with wilderness. The WSA has potential for significant cultural sites eligible for listing on the National Register of Historic Places. It has about 50 miles of perennial streams including the Paria River which is a wild and scenic river inventory segment (refer to the Recreation section for more information).

• Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and saltbush-greasewood. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas (Provo-Orem, Utah, and Las Vegas, Nevada).

Air Quality

No measurements of air pollution or visibility levels have been made in the immediate area of the WSA; however, data collected from various sites (Page, Arizona, and Four Mile Bench, Kane County, Utah) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

The area is presently classified as Class II air under the PSD regulations as outlined by the Clean Air Act as amended in 1977. The BLM will not consider nor recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of BLM (USDI, BLM, 1982b).

The nearest Class I air quality area is Bryce Canyon National Park, approximately 6 to 10 miles northwest of the WSA.

Geology and Topography

The WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. The tract is a typical example of this landform, characterized by plateaus and benches sharply cut by the Paria River and its tributaries. The surface of the plateaus and benches form knobs, domes, and aprons of white Navajo Sandstone. Sandy pockets and sand dunes lie between these sandstone features. The exposed bedrock consists largely of flat-lying to gently dipping Triassic and Jurassic sedimentary rocks. These include the Chinle, Mohave, Glen Canyon Group, and Carmel Formations.

Petrified wood deposits are located just west of the Old Paria Townsite and in Hackberry Canyon. Both of these deposits are within the Chinle Formation.

The highest elevation is approximately 7,200 feet and is found on top of No Man's Mesa along the White Cliffs in the west-central part of the WSA, and also at another point several miles farther north along the top of the White Cliffs overlooking Deer Creek Canyon. The lowest elevation is approximately 4,700 feet and is found along the Paria River in the extreme southern portion of the WSA.

A number of natural arches are found in the unit. Sam Pollock Arch is located near the head of a tributary drainage of Hackberry Canyon while Starlight Arch is

located on the western boundary of Little No Man's Mesa and the eastern boundary of Pilot Ridge.

Other topographic features include Mollie's Nipple, No Man's Mesa, and The Cockscomb. Mollie's Nipple is an erosional remnant which is a major landmark in the WSA. No Man's Mesa is a 2,000-acre flat-topped isolated mesa standing nearly 1,000 feet above surrounding lands. The Cockscomb is the surface expression of the East Kaibab monocline.

Soils

Approximately 47 percent of the WSA consists of rock outcrop, predominantly sandstone with some shale and siltstone. The bulk of the remaining soils are well drained, moderately undulating to moderately rolling, very shallow to moderately deep with loamy sand or gravelly fine sandy loam surface layers.

Approximately 72 percent of the unit is classified as having moderate erosion susceptibility while only 13 percent is classified as being critical. Current erosion is primarily geologic in origin. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	17,450	13	47,115
Moderate	1.3	98,372	72	127,883
Slight	0.6	18,250	13	10,950
Stable	0.3	2,150	2	650
Total		136,222	100	186,598

Sources: USDI, BLM, 1981b and 1981c; Leifste, 1978.

Information from an unpublished Kane and Washington County soil survey conducted by BLM indicates that about 40 percent (54,489 acres) of the soils in the WSA are moderately saline and about 60 percent (81,733 acres) are slightly saline. It is estimated that undisturbed soils within the WSA have an annual salt yield of 46 lb per acre.

Rockland, rock outcrop and steep slopes limit suitability for seeding over much of the WSA. These areas are classified as low or unsuitable for seeding/development potential. However, other sites with

moderately deep soils and few rocks have good seeding potential.

The MFP has identified 1,000 acres of watershed treatment potentials for this WSA to mitigate erosion problems. These vegetation treatment opportunities include watershed tillage practices and pinyon-juniper woodland chaining and seeding.

Vegetation Including Special Status Species

The pinyon-juniper woodland type covers about 78 percent (105,752 acres) of the WSA. Small scattered stands of Ponderosa pine are considered to be a part of this woodland type. Other vegetation types in the WSA include 9,810 acres of the sagebrush type (7 percent of the WSA), 670 acres of saltbush type (0.4 percent), and 340 acres (0.2 percent) of pinyon-juniper woodland-sagebrush type. Riparian vegetation is found along the Paria River and in Hackberry and Cottonwood Canyons for about 50 miles and covers some 500 acres (0.4 percent of the WSA). Approximately 14 percent (19,150 acres) of the WSA is either barren slickrock or otherwise steep and rocky with little vegetation.

No Man's Mesa is a vegetation-rich area that was designated a research natural area in the Paria MFP and was later (September 1986) designated an ACEC.

No threatened or endangered plant species are known to occur in the WSA. However, five Category 2 candidate plant species may occur in the WSA (see Appendix 4 in Volume I). These are Psoralea epipsila, Psoralea pariensis, Penstemon ammophilum, Lesquerella tumulosa, and Xylorhiza cronquistii. A relict plant association is found on top of Little No Man's Mesa. Such sites are of scientific value in determining the effects of land management practices.

The Paria-Hackberry/Paria Hackberry 202 WSA is located in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978a). The PNV types of the WSA are juniper-pinyon woodland (111,000 acres) and saltbush-greasewood (25,222 acres).

Water Resources

The WSA is within the Paria River subbasin of the Upper Colorado River hydrologic subregion.

The primary drainages in the WSA include the Paria River, its major tributary Hackberry Creek, and their numerous tributaries. There are no continuously

gauged streams within the WSA, but there is a continuously recording gauge located at the mouth of the Paria River near Lee's Ferry, Arizona. The average annual discharge is 26 cfs. The vast majority of this discharge passes through the Paria-Hackberry/Paria-Hackberry 202 WSA.

The WSA is within Water Rights Adjudication Area 89. The area is considered to be fully appropriated on the surface supply of water and any directly connected underground aquifer. The State Engineer will consider applications to appropriate water for 0.015 cfs based on the proposed location, outside of any existing municipal, town, or subdivision system, and on the individual merits of the applications (UDNRE, DWR, 1988).

Withdrawals containing approximately 843 acres for public water reserves exist in several tracts spread throughout the WSA. These withdrawals segregate the lands from public land laws and nonmetalliferous minerals.

There are 24 undeveloped springs in the WSA (three of questionable reliability). Ten of these springs are in the upper Paria drainage, six in Hackberry, five along the eastern border of Cottonwood Creek, and three others along the western boundary. There are approximately six developed springs in the WSA. Five wells are found in the WSA; three are along the periphery in Cottonwood Creek and two are in Hackberry Canyon. The Paria and Hackberry Canyons and Cottonwood Creek contain perennial streams within the WSA boundaries. There are about 85 miles of streams in the WSA of which 50 miles are perennial and 35 are intermittent. Two reservoirs are within the WSA, located southwest of the Paria townsite. Water quality is generally poor and not recommended for human consumption without treatment. Present use is primarily for wildlife and livestock.

The water quality standards for the Paria River and tributaries, from the State line to headwaters are: Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]), Class 3C (protected for nongame fish and other aquatic life), and Class 4 (protected for agricultural uses including irrigation of crops and stock-watering).

The water quality of the Paria River indicates that sodium and TDS exceed the criteria for agricultural use. These impairments are due to the geology and the

erosion of Mancos Shale, dewatering, and from upstream agricultural activities.

The Paria River is a significant source of nonpoint salinity and sediment to the Colorado River. The reduction of the Colorado River's sediment and salinity is of national importance due to treaty obligations with Mexico. The Bureau of Reclamation, the agency responsible for reducing Colorado River sediment and salinity, has yet to evaluate the Paria River for possible control measures.

Mineral and Energy Resources

The energy and mineral resource rating summary for the WSA is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

No minerals currently listed as strategic or critical are known to occur within the WSA (USDoD, 1988).

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f3	c1	Less than 10 to 50 million barrels of oil; less than 60 to 300 billion cubic feet of gas
Uranium	f2	c1	Less than 500 metric tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None

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

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

• Leasable Minerals

• Oil and Gas

To date, there is no evidence indicating the existence of commercially recoverable oil and gas resources within this WSA. The only oil and gas production in south central Utah in the vicinity of the WSA comes from the Upper Valley Field located approximately 16 miles to the northeast. The field was discovered in 1964 after 17 years of intermittent drilling and it stimulated mild drilling activity in similar anticlinal structures in south-central Utah. To date, however, no commercial oil

and gas potential has been identified in the area outside the Upper Valley Field.

The stratigraphic and structural setting of the WSA closely resembles the area of the Upper Valley Field. Based on established production, recent literature, and exploratory well data from south-central Utah (Sharp, 1976; Schneider, et al., 1971; and Doelling, 1975), the following formations are considered the most favorable oil objectives in the vicinity of the tract: the Moenkopi (Triassic); the Kaibab Limestone (Permian); and the Redwall-Leadville Limestone (Mississippian). Oil shows and staining from rocks in other parts of the Paleozoic section have also been reported (Heylmun, et al., 1965), but most investigators consider the units listed above as the most favorable, especially the Kaibab Limestone.

One oil and gas well has been drilled within the WSA and two others are located less than 6 miles north and south of the tract boundary. The well within the WSA was completed in 1930 by Midwest Oil and is located in T. 39 S., R. 1 W., sec. 14 (Kunkel, 1965). The objective of this well was a small closure in the Butler Valley anticline and the well bottomed in Lower Permian rocks. Oil shows were reported from the Kaibab and Toroweap Formations (Kunkel, 1965). No oil shows were reported from the two wells outside the WSA, although oil staining was reported in the rocks of Permian age from the northern well (Campbell, 1958; and Kunkel, 1965). It is worth noting that the southern well tested the edge of the Kaibab Uplift along the prominent Kaibab monocline and penetrated Cambrian rocks at a total depth of 6,253 feet. Results from this well indicate that the Paleozoic section in this area is thin and that rocks of Pennsylvanian age probably do not occur in the immediate vicinity of the WSA.

The northern part of the WSA is considered favorable because of the combination of folds and a southward pinchout of Pennsylvanian rocks. The eastern side is favorable because of abundant folds (Paria, Butler Valley, Cockscomb). The western side is somewhat less favorable because the rocks are relatively flat-lying and have been disrupted by young faults. Based on this information, the WSA has been rated (f3), favorable for medium-sized fields, with accumulations between 10 and 50 million barrels of oil or between 60 and 300 billion cubic-feet of gas. The certainty of occurrence is very low (c1).

Under the current land use plan, 73,978 acres are open to leasing with standard stipulations (Category 1), 18,924 acres are open with no surface occupancy (Category 3), and 43,320 acres are closed to leasing (Category 4). There are presently 17 post-FLPMA oil and gas leases covering 25,200 acres.

No other leasable minerals are known to occur in the WSA.

• Locatable Minerals

There are four mining claims, covering 80 acres, located within the WSA. All claims are located in the extreme northeastern portion of the WSA.

• Uranium

The Colorado Plateau is one of the major uranium-producing regions in the United States. The most important deposits occur in conglomerates, sandstones, and mudstones within the Morrison Formation of Jurassic age and in the basal part of the Chinle Formation of Triassic age. Minor production has also been obtained locally from rocks of Permian, Cretaceous, and Eocene ages. The most productive areas of the plateau are in northern New Mexico and southeastern Utah (USDOE, 1979; and Doelling, 1975).

Exposed bedrock in the WSA consists largely of the Glen Canyon Group (Triassic-Jurassic) and the Carmel Formation (Jurassic). Favorable rock units for uranium in this area are included in the Moenave Formation (Triassic) and in the Chinle Formation, especially the Shinarump and Petrified Forest Members (Triassic) (USDOE, 1979). These rock units crop along the western and southern parts of the tract. In the northern part of the tract, the Moenave lies at a depth of at least 2,500 feet and the Petrified Forest and Shinarump Members lie at depths exceeding 2,700 feet (Hintze, 1973).

The area encompassed by the WSA is not favorable for significant deposits of uranium (Peterson, et al., 1982). The term significant is defined as a uranium deposit that totals at least 100 metric-tons of uranium oxide at a minimum grade of 0.01 percent. Randomly sampled areas within the WSA show no evidence to indicate the presence of a uranium resource in the WSA (USDI, USBM, 1986a).

Based on available information, the WSA is assigned an uranium favorability of (f2) (a geological environment favorable for deposits containing less than 500 metric-tons of uranium oxide). The certainty that the deposit exists is very low (c1).

• Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. Additionally, quartz-rich sandstone suitable for the manufacture of container glass and construction purposes is present (USDI, USBM, 1986a). These deposits are not unique or economically significant due to the presence of ample similar materials near the WSA.

Wildlife Including Special Status Species

The WSA has habitat that could support 40 species of mammals, 140 species of birds, 12 species of reptiles, and three species of amphibians. Since no wildlife inventory has been made in the WSA, it is unknown how many species actually inhabit the area. The speckled dace is the only fish species present. No critical wildlife habitat has been identified in the WSA. The bald eagle, peregrine falcon (both endangered species), and the golden eagle (BLM sensitive species) may occur in the WSA.

In addition, eight other Category 2 candidate species may occur in the WSA. These are the Arizona Bell's vireo, ferruginous hawk, long-billed curlew, southern spotted owl, Swainson's hawk, western snowy plover, Great Basin Silverspot butterfly, and white-faced ibis (see Appendix 4 in Volume I). If present, most of these species would be associated with riparian and wet meadow areas or cliff faces and deep canyons. An exception is the ferruginous hawk. The ferruginous hawk inhabits pinyon-juniper woodland areas where ecotones or edges provide opportunities for nesting, cover, and hunting activities.

Game species in the WSA are mule deer, cougar, cottontail rabbit, and mourning dove. Mule deer occur in the WSA from late fall to late spring, usually in the vicinity of pinyon-juniper woodland habitat. A few cougar move into the WSA during the winter, where they occupy pinyon-juniper woodland and rocky habitats. Cottontails are yearlong residents throughout the WSA. Mourning doves are common throughout the WSA from May to September. The lack of water in portions of the WSA limits wildlife populations.

Visual Resources

The BLM visual resource inventory classified approximately 98,200 acres as Class A, 35,000 acres as Class B, and 3,022 acres of the WSA as Class C scenery. The WSA is large and possesses a variety of landscape features. Many of these features are of high scenic value. For a discussion of the area's scenic value, refer to the Special Features in the Wilderness Values section. VRM Class ratings are Class II on 98,192 acres (72 percent); Class III on 13,582 acres (10 percent); and Class IV on 24,448 acres (18 percent). Refer to Appendix 7 in Volume I for an explanation of the BLM VRM rating system.

Cultural Resources

There are 41 sites recorded in the WSA (USDI, BLM, 1988a). Prehistoric sites include rockshelters, pit houses, lithic scatters, and masonry structures. Pictograph panels are located in the Deer Creek Canyon and petroglyphs are located in the Snake Creek Canyon. One site is associated with the Anasazi cultural manifestation, while the cultural/archaeological affiliation of the remaining sites is unknown. A lithic scatter with buried archaeological strata, is considered to be eligible for nomination to the National Register of Historic Places. No known historic sites have been recorded in the WSA.

Two inventories have been conducted in the WSA. Neither of the two projects yielded any sites, however, four other inventories conducted adjacent to the unit identified numerous cultural resources. Based on extrapolations from two of these inventories, the WSA may contain exceptionally high site densities. A study located and estimated 612 sites per 23,000 acres, 564 of which are potentially eligible for nomination to the National Register of Historic Places at the WSA's southern border (Westfall, 1983). At the WSA's northern border, a BLM inventory located and estimated 360 sites per 23,000 acres (USDI, BLM, 1988a).

Recreation

The WSA offers excellent opportunities for both primitive and nonprimitive types of recreation use. In 1976 a traffic counter at the Old Paria Townsite/Movie Set adjacent to the WSA gave an estimate of 6,000 visitors to the site. It is estimated that such use has increased. The WSA was at least viewed by these visitors but probably very few hiked into the unit. Similarly, the eastern face of the WSA receives

heavy sightseeing use by motor vehicle tourists traveling the Cottonwood Wash route between the Bryce Canyon National Park and Glen Canyon Dam.

The Paria riverbed is open to ORV travel, and some recreational ORV use presently occurs on the riverbed. Use is undoubtedly the heaviest in the Paria Box area, but recreationists from Bryce Valley communities also use the upper end of the Paria River in the WSA. Groups and individuals do occasionally travel the entire length of the Paria River by ORVs. BLM has received requests from nearby communities who wish to sponsor off-road events through the WSA.

Backcountry use of the WSA is low and is estimated by BLM recreation specialists to be approximately 500 visitor days annually. Most of this backcountry use is probably attributable to dayhikes by tourists on the Cottonwood Wash Road or at the Old Paria Townsite/Movie Set. It is assumed that limited overnight use is occurring in Hackberry Canyon and the lower Paria River Canyon.

None of the WSA is currently closed completely to ORV travel. ORV use on approximately 66,600 acres of the WSA, including No Man's Mesa and the area from the Paria River east to Cottonwood Canyon, is limited to existing roads and trails. The remainder of the WSA, including the Paria riverbed, is open to ORV travel. It is estimated that ORV use accounts for 200 visitor days annually.

A number of factors theoretically influence future recreation use of this WSA. These factors include the area's characteristics, availability of substitute areas, population distribution about the area, tastes and preferences, and income and leisure time. Because of the WSA's site characteristics and ease of local access, higher levels of nonprimitive recreational use can be expected. Given the availability of the Paria Canyon-Vermilion Cliffs wilderness area immediately south of the WSA, primitive recreation use may not increase significantly. Inquiry made at the Paria Ranger Station indicates that nonlocal public awareness of the WSA is presently low compared to the nonlocal awareness of the Paria Canyon-Vermilion Cliffs wilderness area.

The Paria River, from the Colorado River to its source, has been identified by the NPS as possessing values that may be of national significance and, therefore, as having the potential to be included in the National Wild and Scenic Rivers system. BLM must, as part of its environmental protection review process,

avoid or mitigate adverse impacts to the river and consult with the NPS before taking any action which could foreclose wild, scenic, or recreational river status (CEQ, 1980). Approximately 25 miles of the Paria River are within this unit. Approximately 2,522 acres surrounding Starlight Arch have been classified as recreation lands and withdrawn from the public land laws. However, these lands are still open to mineral leasing and location.

Land Use Plans

The WSA is located within the BLM Vermillion and Paria planning units and is being managed under the land use decisions of the Vermillion and Paria MFPs (USDI, BLM, 1981b and 1981c). 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 BLM has surface ownership of 136,222 acres and subsurface ownership of 135,822 acres of public land within the WSA boundary. The State has surface ownership of 8,619 acres and subsurface ownership of the 9,019 acres within the WSA boundary. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding the 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. All but one of the 14 State sections within the WSA are leased for grazing and seven State sections are leased for oil and gas and other hydrocarbons (UDNRE, DSLF, 1988).

A 40-acre tract of private land is located along the Paria River in the northern portion of the WSA. The property is presently utilized for livestock purposes and access to it is along the riverbed.

The Kane County Master Plan (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept." The Consolidated Local Government Response to Wilderness indicates that the Kane County Commission opposes

wilderness designation of BLM lands in Utah (Utah Counties, 1986).

The "Kaiparowits Coal Development and Transportation Study" identified a number of potential transportation corridors and truck haul routes (ERT, 1980). The objective of the study was to identify areas where it would be feasible to construct and operate future coal transportation systems within general environmental and engineering constraints. Corridor segments were required to contain at least one potential route for a railroad or coal slurry pipeline. Specific routes, however, were not identified. By selecting corridors between 2 and 15 miles in width, maximum flexibility for future location of specific routes was maintained. The Paria-Hackberry/Paria-Hackberry 202 WSA extends across all but a 1-mile section of corridor C10, the northern east to west connection between the Alton and Kaiparowits coal fields. The WSA also extends into corridors C14 and C15, although not to the extent noted for corridor C10.

The Union Pacific Railroad (1980) has surveyed a possible rail route to serve southern Utah coal fields if development should take place. This route would extend through the WSA for approximately 11 miles. It would cross through the Paria Box and loop around the Paria townsite. Over 13 million tons of Kaiparowits coal would need to be mined annually for this route to be feasible.

There are no rights-of-way within the WSA. However, powerlines are located adjacent to the eastern boundary of the WSA and an expanded 150-foot rights-of-way has been proposed adjacent to the Cottonwood Canyon Road along 13 miles of the eastern boundary of the WSA.

Socioeconomics

• Demographics

From 1970 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent. Table 5 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987, population increased to about 4,890. Population projections for the county indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987). Kanab, the county seat is located 30 road miles west of the WSA.

PARIA-HACKBERRY/PARIA-HACKBERRY 202 WSA

Table 5
Baseline and Projected Population and Employment Growth
Kane County

	1980	1990	2000	2010
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

• Employment

Table 5 shows the baseline and projected total employment for Kane County to the year 2010.

Kane County is part of the Southwest MCD. Table 6 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were trade (20 percent), nonfarm proprietors (12 percent), and government (23 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent, and trade to 25 percent of the total. Agriculture will decline to 5 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

Table 6
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

• Sales and Revenues

Economic-related activities in the WSA include mineral exploration, mineral leasing, livestock production, and recreation. Table 7 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Vol-

ume I identifies the multipliers used to estimate sales and revenues.

Table 7
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$50,400
Mining Claim Assessment	\$400	0
Livestock Grazing	\$36,600	\$ 2,777
Recreational Use	<u>\$ 2,870</u>	<u>0</u>
Total	\$39,870	\$53,177

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has four 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. Not all of the claims are current in assessment. The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income. One oil and gas well has been drilled in the WSA. This drilling was done in 1930 and generated an undetermined amount of employment 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.

Forty-six livestock operators have a total grazing privilege of 1,803 AUMs within the WSA. If all this forage were utilized, it would account for \$36,600 of the livestock sales and \$9,015 of the ranchers' returns to labor and investment.

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's motorized and nonmotorized recreational use and related local expenditures are low. 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 local average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the Paria-Hackberry/Paria-Hackberry 202 WSA is estimated to be about 700 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 7).

Seventeen oil and gas leases in the WSA cover 25,200 acres. At \$2 per acre, lease rental fees generate up to \$54,400 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 1,803 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$2,777 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

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 III-A and the Description of the Alternatives for the Paria-Hackberry/Paria-Hackberry 202 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., VRM Class II management on 98,192 acres, management under oil and gas leasing Category 4 [closed to leasing] on 43,320 acres, oil and gas leasing Category 3 [no surface occupancy] on 18,924 acres, and ORV limitations on 66,600 acres).

In the foreseeable future, disturbance of approximately 4,251 acres from development of vegetation treatments, rangeland projects, and a 150-foot rights-of-way would result in a loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Some Class A scenery

would be disturbed. Other special features, including relict plant communities on No Man's Mesa, perennial streams, endangered or other special status plant or animal species, wildlife associated with wilderness, and cultural values, would not be significantly affected because the disturbance would be minor, involving 3.1 percent (4,251 acres) of the WSA, and generally the disturbance would not be located where the special features are located. The proposed water-related range developments and vegetation treatments would benefit wildlife special features because water and forage sources would increase. Appropriate measures would be taken to protect endangered and other special status species prior to these surface-disturbing activities, and it is projected that no significant negative impact would occur to these values. Although appropriate measures would be taken to protect cultural and other values, some inadvertent loss could occur. Refer to the Wildlife and Vegetation Including Special Status Species and Cultural Resources sections for more information.

During the period of activity, the visual and audible disturbance from vegetation treatments, rangeland developments, and rights-of-way development would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA. As much as 5 percent (6,810 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, washes, or the Paria River bottom, additional disturbance from ORV activity is anticipated to be minimal in the future.

Vehicular use would result in the inadvertent disturbance of cultural resources and wildlife special features as well as aid in intentional vandalism of cultural resources. Refer to the Wildlife Including Special Status Species and Cultural Resources sections.

The increased visitor use that would occur would reduce the quality of the primitive recreation opportunity because as much as 29 percent of the activity would be vehicle based, involving use of the WSA's main access corridors.

The degree that disturbance over the long-term future would affect wilderness values 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, opportunities for solitude and primitive recreation, and scenic quality would be directly lost on 4,251 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 6,810 acres of the WSA. Little affect on special features is anticipated except for scenic quality and inadvertent or intentional disturbance of cultural resources and special status wildlife species.

• Impacts on Soils

The proposed 4,000 acres of vegetation treatments would result in a temporary (2 to 3 year) increase in soil loss until the seedings were established. It is projected that all disturbance would occur in areas with critical erosion class and that the erosion condition would temporarily increase one class, soil loss on the 4,000 acres would increase from 10,800 cubic-yards per year to 21,600 cubic-yards per year. Soil loss would decrease once seedings were established.

Therefore, with this alternative, maximum annual soil loss in the WSA from vegetation treatments would increase by approximately 10,800 cubic-yards (5.8 percent) over the current annual soil loss for a period of 2 to 3 years. This is a small increase and the effects would not be significant. However, in the long term the vegetation treatments, particularly the 1,000 acres for watershed purposes, would reduce erosion rates.

Soil loss from the 234 acres disturbed due to the 150-foot utility transmission rights-of-way would not be reclaimed due to road expansion. The 18 acres of surface disturbance for rangeland developments would be temporary (1 to 2 years) until rehabilitation was completed.

Conclusion: With the No Action/No Wilderness Alternative, there would be a temporary increase in soil loss resulting from vegetation treatments, rangeland developments, and an utility corridor. The vegetation treatments would eventually reduce erosion rates from those that currently exist and this alternative would have a beneficial impact on soils.

• Impacts on Vegetation Including Special Status Species

The 4,251 acres of surface disturbance projected for the No Action/No Wilderness Alternative would mainly occur in the pinyon-juniper woodland. A small amount of the sagebrush type would also be disturbed. On the 4,000 acres of vegetation treatments, vegetation composition would change from woodland or sagebrush to grass-shrub. It is assumed that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland and sagebrush. There would also be a loss of naturalness in the disturbed areas in the foreseeable future. The 17 acres of surface disturbance resulting from the construction of rangeland projects would be reclaimed within a 3- to 5-year period. The majority of the 234 acres of disturbance projected for rights-of-way use in Cottonwood Canyon would not be reclaimed in the foreseeable future due to road expansion.

Five special status plant species (none are listed as threatened or endangered) may occur in the WSA. Three of these species have a wide spread distribution in the pinyon-juniper woodland and sagebrush areas where the majority of the surface disturbance is projected to occur. The two remaining species (Lesquerella tumulosa and Penstemon ammophilum) are more restricted and occur on white, bare shale knolls and blow sand. The habitat of all of the special status species extends beyond WSA boundaries. The projected expanded rights-of-way would pass through potential Lesquerella tumulosa habitat. Before authorizing the rights-of-way or any other 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 the FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when necessary (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, while surface-disturbing activities could result in the inadvertent loss of some individual plants of these species, threats to the continued existence of any of these species would not occur. Because necessary measures would be taken to protect these species, the viability of populations of special status species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Special status plant species would not be significantly affected. The 4,251 acres of projected surface disturbance would alter about 11 percent of the pinyon-juniper woodland and sagebrush types in the WSA.

• Impacts on Water Resources

Since precipitation is low and all streams within the WSA have poor water quality, no major sedimentation or change in TDS is expected to occur from the temporary (2 to 3 year) annual increase of 10,800 cubic-yards of soil loss from surface disturbance due to vegetation treatments. The 10,800 cubic-yards of increase in soil loss represents a 5.8-percent increase from that which now occurs from the WSA. Opportunities for maintenance, additional developments, or expansion of existing water sources would occur as allowed in the current Paria and Vermillion MFPs. The proposed vegetation treatments would eventually improve water quality, but the amount would likely not be measurable.

Conclusion: The No Action/No Wilderness Alternative would result in a 5.8-percent temporary (2 to 3 years) increase in sedimentation and TDS. Over the long term, water uses or quality would not be adversely affected.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife populations would improve as a result of increased availability of water through the construction of water catchments and spring developments. The proposed 4,000 acres of vegetation treatments could be developed and would improve habitat mainly for mule deer. However, during the period of actual disturbance on the estimated 4,251 acres due to chaining and seeding, rangeland project developments, and energy rights-of-way development, wildlife species would be dispersed from disturbed areas. Significant long-term decreases in wildlife populations is not projected because habitat would be improved by water development, provision of forage, and additional ecotones.

Two endangered wildlife species, the peregrine falcon and bald eagle and eight other Category 2 candidate species may occur in the WSA. Before authorizing any surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, BLM would initiate consultation with the FWS as required to avoid or miti-

gate impacts to these species. Populations of special status wildlife species would be preserved where land use developments would occur. Habitat for the ferruginous hawk would be improved with the edge effect created by pinyon-juniper woodland chaining.

Increased use of ORVs, particularly in the Paria River bottom, could adversely effect the Category 2 candidate species in the associated riparian zone. Continued ORV use could cause disruption of breeding, nesting, and feeding cycles. However, this route has been a historical ORV use area and the No Action/No Wilderness Alternative would perpetuate this use.

Conclusion: Wildlife populations would improve due to increased water availability. With this alternative, some wildlife species (mule deer and ferruginous hawk) would benefit from the vegetation treatments. Wildlife species associated with riparian zones would continue to be disturbed by ORV use of the Paria riverbed.

• Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Paria and Vermillion MFPs. The 1,803 AUMs currently allocated in the WSA are controlled by 46 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Motorized vehicles currently used to manage livestock in the WSA could continue. The 2,000 acres of vegetation treatments, 4 miles of fence, eight catchments, eight spring developments, and 7 miles of pipeline could be developed without concern for wilderness values. This would result in improved livestock distribution and carrying capacity. If these vegetation treatments were only partially successful (10 acres per AUM), an additional 200 AUMs could be produced.

Conclusion: Livestock management and grazing practices would not be affected. Rangeland developments and vegetation treatments would result in an increase of 200 AUMs and improved livestock distribution.

• Impacts on Visual Resources

Even though vegetation treatments would be designed to meet VRM management objectives to the extent possible, treatments would not meet VRM Class II objectives. Also, visual values in areas affected by the energy transportation corridor would be degraded and VRM Class II management objectives would probably

not be met even though the eastern boundary of the WSA is already impacted by existing power lines. Management objectives in Class III and IV areas would be met. After rehabilitation, some permanent localized degradation would be expected; however, scenic values in the WSA as a whole would not be significantly affected. Overall in the foreseeable future, visual quality would be degraded on approximately 3.1 percent (4,251 acres) of the WSA.

Conclusion: In the foreseeable future, scenery would be reduced in quality on 3 percent (4,251 acres) of the WSA.

• Impacts on Cultural Resources

The cultural resources in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 234 acres in the energy transportation corridor and the proposed vegetation treatments (4,000 acres) with this alternative could affect archaeological sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed areas and continued use by ORVs in the 69,622-acre area open to ORV use. In addition, secondary impacts in the form of artifact collection or vandalism would occur due to increased activity in the region (Nickens et al., 1981).

ORV activity does not currently constitute a significant recreational use of the WSA; however, future ORV use could impact cultural resources in the unit under this alternative. ORV use would remain limited in the No Man's Mesa area and in the area between the Paria and Cottonwood drainages, thus, protecting both recorded and unrecorded sites located there. The bed of the Paria River would continue to receive ORV use and the one site recorded there, as well as other unrecorded sites, may continue to receive inadvertent damage. The remainder of the WSA would remain open to ORV use and cultural resources may continue to receive unintentional damage. In addition, open ORV use could provide some vehicular access to the unit, thus, increasing artifact collection and vandalization opportunities (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 restrictions of wilderness values maintenance.

Conclusion: Inadvertent loss or damage of archaeological sites may occur due to surface development and continued ORV use. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resource management would continue without regard to wilderness management restrictions.

• Impacts on Recreation

Up to 4,251 acres would be disturbed by vegetation treatments, rangeland projects, and energy transmission rights-of-way. Primitive recreational opportunities would be diminished on the affected areas but increased access could lead to increase in nonprimitive recreation. 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; 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 recreational use is expected to increase from 700 current visitor days per year to between 1,310 and 6,040 visitor days at the end of 30 years. 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 500 visitor days per year to between 940 and 4,310 visitor days per year over the next 30 years. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, ORV use, etc.) would increase from 200 visitor days per year to between 370 and 1,730 visitor days. Because of the proximity of the Paria-Vermillion Cliffs wilderness area, increases in visitation will probably be closer to the maximum projection.

Impacts to wild and scenic values of the Paria River would be analyzed as new projects are considered in the WSA. Wild and scenic values would not receive the added protection of wilderness designation. Increased vehicular use in the riverbed is likely.

Conclusion: Both primitive and vehicle-oriented recreational use would increase. Primitive recreational opportunities would be reduced in quality in disturbed areas. About 25 miles of a wild and scenic river inventory stream segment would not receive additional protection and would be subject to ORV use.

All Wilderness Alternative (136,222 Acres)

• Impacts on Wilderness Values

Designation and management of all 136,222 acres as wilderness would preserve the wilderness values in the 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 136,222 acres. Solitude would be protected on approximately 89,700 acres that meet and 46,522 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on approximately 90,100 acres that meet and 46,122 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, relict plant species on No Man's Mesa, perennial streams, endangered or other special status plant and animal species, wildlife commonly associated with wilderness, and cultural values, would also be protected.

With this alternative, wilderness values would be preserved. Disturbance of up to 14 acres is anticipated from development of rangeland projects in different places throughout the WSA. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be reduced on the disturbed areas until activities and noise cease and reclamation is complete. Opportunities for solitude and primitive recreation would also be reduced on adjacent portions of the WSA. Rangeland projects would be designed to meet wilderness management criteria and upon completion would not be substantially noticeable in the area as a whole. Special features, including Class A scenery, relict plant species on No Man's Mesa, perennial streams, endangered and other special status plant and animal species, wildlife commonly associated with wilderness, and cultural values, would be preserved because the direct disturbance would be minor involving 0.01 percent (14 acres) of the WSA in scattered locations. The disturbance would not be located where the special features are located. Indirect audible and visual disturbance during the period of activity would reduce opportunities for solitude and primitive recreation on about 0.02 percent (20 acres) of the WSA. Water associated rangeland developments would benefit wildlife special features because the number of water sources would increase. Appropriate measures would be taken to protect spe-

cial status species prior to any surface-disturbing activity, and it is projected that negative impacts would not occur to these species from rangeland development. Refer to the Wildlife and Vegetation Including Special Status Species sections for more information.

Vehicular use of existing ways and the Paria riverbed would cease with ORV closure, improving opportunities for solitude and primitive recreation, and alleviating disturbance to special status wildlife species and cultural sites.

Increased visitor use that would occur with time would be primitive in nature and would be managed so as to not result in the loss of wilderness values.

Conclusion: Wilderness designation would preserve wilderness values throughout the entire WSA. Naturalness and opportunities for solitude and primitive recreation would be directly or indirectly reduced in quality on 34 acres of the WSA, but wilderness management criteria would be met. The direct disturbance would involve 14 acres.

• Impacts on Soils

Wilderness designation would negatively impact soil resources because the proposed 1,000 acres of vegetation treatments for watershed purposes would not be allowed. The other vegetation treatments proposed for wildlife and livestock that would also reduce erosion and have a beneficial impact on watersheds would not be allowed and current erosion levels in the WSA (186,598 cubic-yards per year) would continue.

Conclusion: Development projects which would reduce erosion rates from the WSA would not be allowed and erosion rates would remain at current levels.

• Impacts on Vegetation Including Special Status Species

Implementation of the All Wilderness Alternative would not directly affect any vegetation type in the WSA. The projected 4,000 acres of vegetation treatments and rights-of-way would not be allowed. No surface disturbance from mineral and energy resource exploration or development is projected. Wilderness designation would provide additional protection for special status plant species.

Conclusion: Implementation of the All Wilderness Alternative would maintain existing vegetation types

and provide additional protection for special status species located in the WSA.

• Impacts on Water Resources

Opportunities for additional improvements or expansion of existing water resources would be considered on a case-by-case basis. The proposed eight catchments and eight spring developments would be allowed subject to compliance with wilderness protection criteria.

Conclusion: Wilderness designation would not significantly alter present or future water quality or uses.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife could benefit due to the preservation of solitude. Water is a limiting factor for wildlife in this WSA. The eight catchments and eight spring developments proposed for construction could be constructed subject to compliance with wilderness protection criterion thus improving wildlife habitat. Wildlife (mule deer and ferruginous hawk) habitat would not be improved because the 4,000 acres of proposed wildlife vegetation treatments would not be allowed. Overall, wildlife species associated with the Paria River riparian zone would receive protection with the closure of the Paria River bottom to ORV use and most species would benefit from solitude in the remainder of the area.

Conclusion: Wilderness designation would have a negative impact on wildlife due to restrictions on the potential improvement of wildlife habitat because 4,000 acres of vegetation treatments would not be allowed. Overall, wildlife would benefit from the ORV restrictions in the bottom of the Paria River and from solitude in the remainder of the area.

• Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Paria and Vermillion MFPs. The 1,803 AUMs currently allocated in the WSA are controlled by 46 livestock permittees. Motorized vehicle use currently taking place on some of the 33 miles of ways to manage livestock would be restricted.

The eight catchments, eight spring developments, 4 miles of fence, and 7 miles of pipeline proposed, would likely be designed and installed consistent with wilderness management criteria. The 2,000 acres of

vegetation treatments would not be allowed and the potential for at least 200 additional AUMs would be lost.

Conclusion: Wilderness designation would necessitate changes in livestock management and supervision and cause inconvenience with increased operating costs to the 46 permittees. Development of additional forage (up to 200 AUMs) through vegetation treatments would be precluded.

• Impacts on Visual Resources

The WSA's VRM Class II, III, and IV areas would be changed to the more restrictive Class I which generally allows for only natural ecological change. Visual resources would be preserved overall. A slight reduction in visual quality would occur on 14 acres due to rangeland developments.

Conclusion: Wilderness designation would preserve visual resources.

• Impacts on Cultural Resources

With this alternative, all 136,222 acres would be closed to ORV use, thus eliminating inadvertent damage to cultural resources from ORV use. In addition, restriction of ORV use would limit vehicular accessibility to the WSA, thus indirectly protecting archaeological sites from intentional vandalism and artifact collection (Nickens, et al., 1981).

As recreational use of the unit increases due to wilderness designation, 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 are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. The rockshelters, pit houses, and/or Anasazi architectural sites located in this WSA may be in this category (Wylie, 1988). The protection of cultural resources from ORV use and surface development would, however, probably outweigh any increases in vandalism due to wilderness designation and 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: Surface disturbance would be minimal. Protection would outweigh the threat of increased vandalism due to wilderness designation. Closure to ORV activity would protect sites from unintentional damage and generally decrease accessibility in the unit. Management of cultural resources may be restricted in scope and execution due to wilderness designation.

- Impacts on Recreation

The WSA has outstanding primitive recreational values. If designated, those high quality recreational opportunities would be recognized, managed, and preserved.

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. The current estimated 500 visitor days of yearly primitive recreational use would increase from 940 to 4,310 annual visitor days of use. Because of the proximity of the Paria-Vermillion Cliffs wilderness area, the WSA will be better known in the future and the higher projection is more likely. Quality of the primitive recreational experience would increase. This is because ORV use would cease, management provided through a Wilderness Management Plan would control any destructive increases in future recreation use, and because the size and configuration of the WSA will buffer the affects of visitation on the quality of the primitive recreation experience.

The existing 200 visitor days and potential 320 to 1,730 visitor days of ORV activity and/or vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA. Portions of the WSA, particularly the Paria riverbed, provide excellent opportunities for ORV use. The loss of the vehicular opportunity would be significant because the riverbed is a historic and established travel route of interest to local users as well as tourists.

In all, approximately 33 miles of ways would be closed to ORV use. Wilderness designation would provide additional protection for wild and scenic values on 25 miles of the Paria River. ORV use would not occur along the river.

Conclusion: Primitive recreation values would benefit. Historical ORV use of the Paria River bottom

would be precluded. Wild and scenic values of the Paria River would receive additional protection.

Large Partial Wilderness Alternative (Proposed Action) (95,042 Acres)

- Impacts on Wilderness Values

Wilderness designation of 95,042 acres would contribute to the 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 11 miles of ways, and closure to future mineral leasing and location. Naturalness, outstanding opportunities for solitude (including approximately 83,730 acres that meet and 11,312 acres that do not meet the standards for outstanding), primitive recreation (including approximately 85,530 acres that meet and 9,512 acres that do not meet the standards of outstanding), and most special features (including areas of Class A scenery, perennial streams, special status plant and animal species, wildlife commonly associated with wilderness, relict plant species on No Man's Mesa, and cultural values), would be preserved.

In the foreseeable future, direct loss or reduction of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance from rangeland projects and vegetation treatments would occur on up to 14 acres within the designated portion and on up to 300 acres within the nondesignated portion. Range projects in the designated area would be designed to meet wilderness management criteria, and no loss of wilderness values would occur in the designated area. The proposed water-related range developments would benefit wildlife special features because water sources would increase. Special features would be largely unaffected even in the nondesignated area because the direct disturbance (314 acres) would involve less than 0.23 percent of the WSA and is generally not expected in areas where special features are located. In addition, appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and it is projected that no significant negative impacts would occur to these species. Although appropriate measures would be taken to protect cultural values, some inadvertent loss could occur. Refer to the Wildlife and Vegetation Including Special Status Species and Cultural Resources sections.

Sights and sounds from foreseeable development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas (approximately 500 acres) during the periods of activity.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation somewhat in the WSA although vehicular use of 22 miles of ways and the Paria riverbed in the non-designated area would continue to detract from these opportunities during the period of activity. Continued vehicular use of the Paria riverbed and other areas could result in inadvertent disturbance of cultural and wildlife special features, as well as intentional vandalism of cultural features. Refer to the Wildlife Including Special Status Species and Cultural Resources sections.

The extent that disturbance would result in the long-term loss of wilderness is not accurately known. Loss would be much less than with the No Action/No Wilderness Alternative due to application of mitigation in the designated area that would limit development to valid existing rights.

Conclusion: Wilderness values would be preserved in the designated area which is approximately 70 percent of the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly or indirectly lost or reduced in quality on 814 acres of the WSA. Of this, only 314 acres would involve direct loss. Most special features would be preserved. Some inadvertent or intentional disturbance of cultural and wildlife special features would occur.

• Impacts on Soils

The proposed 300 acres of pinyon-juniper woodland chaining and seeding would result in a temporary (2 to 3 year) increase in soil loss until seedlings were established. Assuming that all disturbance would occur in areas with critical erosion class and that the erosion condition would temporarily increase one class, soil loss on the 300 acres would increase from 810 cubic-yards per year to 1,620 cubic-yards per year. Soil loss would decrease as seedlings were established.

Therefore, maximum annual soil loss in the WSA from pinyon-juniper woodland chainings would increase by approximately 810 cubic-yards (0.5 percent) over the current annual soil loss for a period of 2 to 3 years. This is a small increase and the effects would

likely be imperceptible. However, over the long term these treatments would reduce erosion rates but the effect would not be significant when compared to the present erosion over the entire WSA.

Since the utility transmission corridor would not be developed with this alternative, soils would not be impacted by this activity. Impacts to soils from 14 acres of disturbance necessary for development of rangeland projects would not be significant because the disturbance would be small and in scattered locations.

Conclusion: Soil loss due to erosion would increase by 0.5 percent for 2 to 3 years. Soils would not be significantly impacted.

• Impacts on Vegetation Including Special Status Species

The 14 acres of surface disturbance projected for the designated portion and the 300 acres of surface disturbance projected for the nondesignated portion of the WSA would occur mainly in the pinyon-juniper woodland. All 300 acres of disturbance in the nondesignated portion would result from vegetation treatments, mainly chainings and seedings to improve rangeland. The vegetation composition would change from pinyon-juniper woodland to a grass-shrub vegetation type. It is assumed that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland and sagebrush. Due to the small size of the disturbance, the overall impact to the vegetation types would not be significant.

The five special status species that may occur in the WSA would not be affected in the area designated wilderness. Before authorizing any surface-disturbing activities in the WSA, BLM would conduct site-specific clearances of the potentially disturbed areas as described for the No Action/No Wilderness Alternative. If any threatened or endangered plant species are located, BLM would initiate consultation with the 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 special status plant species would be preserved with the Large Partial Wilderness Alternative.

PARIA-HACKBERRY/PARIA-HACKBERRY 202 WSA

Conclusion: Special status plant species would not be significantly affected. The 314 acres of projected surface disturbance would directly affect less than 1 percent of the WSA and vegetation types would not be significantly affected.

- Impacts on Water Resources

Since precipitation is low and all streams within the WSA have poor water quality, no significant sedimentation or change in TDS is expected to occur from the temporary (2 to 3 years) 810 cubic-yards of soil loss from surface disturbance due to pinyon-juniper woodland chainings and seedings. This increase would represent a four-tenths of 1 percent from that which now occurs from the WSA.

Conclusion: The Large Partial Wilderness Alternative would result in an insignificant (0.4 percent) and temporary (2 to 3 year) increase in sedimentation and TDS production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife could be affected by an increase in the availability of water through the construction of water catchments and spring developments. The proposed 300 acres of pinyon-juniper woodland chainings and seedings could be developed and would improve habitat mainly for mule deer. However, during the period of actual disturbance on the 314 acres due to chainings, seedings, and rangeland development, wildlife species would be dispersed from the disturbed area. However, no reductions in population levels are projected.

Two endangered wildlife species, the peregrine falcon and bald eagle, and eight other Category 2 candidate species may occur in the WSA. Before authorizing any surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, BLM would initiate informal consultation with the FWS as required to avoid or mitigate impacts to these species. Populations of special status wildlife species would be preserved where land use developments would occur. Habitat for the ferruginous hawk would be improved with the edge effect created by pinyon-juniper woodland chainings.

Increased use of ORVs, particularly in the Paria River bottom, could adversely effect the Category 2 candidate species in the associated riparian zone. Contin-

ued ORV use could cause disruption of breeding, nesting, and feeding cycles. However, this route has been a historical ORV use area and the projected increase would not be appreciably different from the past use.

Conclusion: With this alternative some wildlife species (mule deer and ferruginous hawk) would benefit from 300 acres of vegetation treatments. However, wildlife species associated with riparian zones could be adversely impacted by continued ORV use of the Paria River bottom. Overall, wildlife would benefit from preservation of solitude on 70 percent of the WSA.

- Impacts of Livestock Management

The affect of designation of 95,042 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 1,803 AUMs allocated, 1,385 would be within the designated portion of the WSA and 418 within the nondesignated portion. Development of future roads or other livestock management facilities for use with the 1,385 AUMs in the designated portion could be restricted to preserve wilderness values. Approximately 1,700 acres of proposed vegetation treatments would be located within the designated portion of the WSA and, consequently, would not be allowed. This would result in the loss of at least 170 AUMs of potential livestock forage. Other proposed range developments could be built with this alternative.

Eleven of the 33 miles of ways would be closed to vehicle access with this alternative and would result in increased operating costs to 18 permittees.

Conclusion: Grazing levels would not be altered, but 1,700 acres of pinyon-juniper woodland chainings and seedings would be precluded and permittee operating costs would be slightly increased.

- Impacts on Visual Resources

Even though mitigation measures would be applied to minimize visual contrast created by pinyon-juniper woodland chainings, these treatments would not meet VRM Class II objectives. Visual quality would be degraded on less than 1 percent (314 acres) of the WSA. Most scenic values would be preserved.

Conclusion: Visual quality would be reduced on less than 1 percent (314 acres) of the WSA. Most scenic values would be preserved.

PARIA-HACKBERRY/PARIA-HACKBERRY 202 WSA

• Impacts on Cultural Resources

Seven sites would be included in designated wilderness with this alternative. One site is located in the Paria riverbed and the remaining six sites are located on No Man's Mesa. These sites and other unrecorded sites would receive protection under wilderness designation. This area would be closed to vehicular and ORV access, thus eliminating both direct and indirect impacts due to motorized activity.

The remaining 34 recorded sites and other unrecorded sites not included in this partial alternative would be managed as described for the No Action/No Wilderness Alternative.

Conclusion: Seven recorded archaeological sites in the designated wilderness portion of the WSA would be protected from vehicular activity with this alternative. The remaining 34 sites would receive protection as discussed in the No Action/No Wilderness Alternative.

• Impacts on Recreation

In the area designated as wilderness, primitive recreation values would be managed and preserved. Although 11 miles of way would be closed, most ORV opportunities would be continued. The Paria riverbed would be open to ORV use. The level of both primitive and motorized recreational use would be expected to increase as described in the No Action/No Wilderness Alternative. The resulting impacts would also be expected to be as described in the No Action/No Wilderness Alternative. Impacts on the wild and scenic values of the Paria River would be considered as actions are proposed, but the river would not receive the additional protection that would be provided by wilderness designation.

Conclusion: Primitive recreational values would be protected on the 95,042-acre designated area but would be reduced in those areas left open to ORV use, including the Paria riverbed. Most ORV opportunities would be continued. The wild and scenic values of about 25 miles of the Paria River would not receive additional protection.

Small Partial Wilderness Alternative (59,670 Acres)

• Impacts on Wilderness Values

Wilderness designation of 59,670 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 3.5 miles of way, and closure to future mineral leasing and location. Naturalness, outstanding opportunities for solitude (including 53,700 acres that meet and 5,970 acres that do not meet the standards for outstanding) and primitive recreation (including 55,100 acres that meet and 4,750 acres that do not meet the standards of outstanding), and some special features (including areas of Class A scenery, perennial streams, special status plant and animal species, wildlife commonly associated with wilderness, and cultural values) would be preserved.

In the foreseeable future, loss or reduction of naturalness and opportunities for solitude and primitive recreation due to allowable direct surface disturbance from rangeland projects and vegetation treatments would occur on up to 14 acres within the designated portion and on up to 1,300 acres within the nondesignated portion. Range projects in the designated area would be designed to meet wilderness management criteria and no loss of wilderness values would occur in the designated area. The proposed water-related range developments would benefit wildlife special features because water sources would increase. Special features including relict plant species would be largely unaffected even in the nondesignated area because disturbance would involve 0.97 percent (1,314 acres) of the WSA and is generally not expected in areas where special features are located. In addition, appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and it can be assumed that no negative impacts would not occur. Although appropriate measures would be taken to protect cultural values, some inadvertent loss could not occur. Refer to the Wildlife and Vegetation Including Special Status Species, and Cultural Resource sections.

Sights and sounds from foreseeable development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas (about 2,100 acres) during the periods of activity.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation somewhat in the WSA, although vehicular use of 29.5 miles of way and the Paria riverbed in the nondesignated area would continue to detract from these opportunities during the period of activity. Continued vehicular use of the Paria riverbed and other areas could result in inadvertent disturbance of cultural and wildlife special features as well as intentional vandalism of cultural features. Refer to the Wildlife Including Special Status Species and Cultural Resource sections.

The extent that disturbance over the long term would result in the loss of wilderness values that would occur is not accurately known. Loss would be much less than with the No Action/No Wilderness Alternative due to application of mitigation in the designated area that would limit development to valid existing rights.

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 lost or reduced in quality on 3,414 acres of the WSA. Of this amount, 1,314 acres would involve direct loss. Many special features would be preserved, but inadvertent or intentional disturbance of cultural and wildlife special features would occur in nondesignated areas.

• Impacts on Soils

The proposed 1,000 acres of chainings and seedings and 300 acres of tillage and seeding would cause a temporary (2 to 3 year) increase in soil loss until the seedings were established. Assuming that all disturbance would occur in areas with critical erosion class and that the erosion condition would temporarily increase one class, soil loss on the 1,300 acres would increase from 3,510 cubic-yards per year to 7,020 cubic-yards per year. Soil loss would decrease as seedings were established. Therefore, with this alternative, maximum annual soil loss in the WSA from vegetation treatments would increase by approximately 3,520 cubic-yards (1.8 percent) over the current annual soil loss for a period of 2 to 3 years. The effects of this increase would likely be imperceptible.

However, in the long term these treatments, particularly the 300 acres for watershed purposes, would reduce erosion rates. Soil loss from the 14 acres disturbed due to rangeland projects would be insignificant.

Conclusion: A slight (1.8 percent) increase in annual loss would be expected for a 2 to 3 year period followed by a reduction in annual soil loss as seedings were established following vegetation treatments on 1,300 acres.

• Impacts on Vegetation Including Special Status Species

The 1,300 acres of surface disturbance projected for the nondesignated portion of the WSA would occur mainly in the pinyon-juniper woodland. All 1,300 acres of disturbance would result from vegetation treatments, mainly chainings and seedings to improve rangeland. The vegetation composition would change from pinyon-juniper woodland to a grass-shrub vegetation type. It is projected that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland and sagebrush. There would also be a loss of naturalness in the disturbed areas. However, due to the small size of the disturbance (less than 1 percent of the WSA as a whole), the overall impact would not be significant.

The five special status species that may occur in the WSA would not be affected in the area designated wilderness. Before authorizing any surface-disturbing activities in the nondesignated portion of the WSA, BLM would conduct site-specific clearances of the potentially disturbed areas as described for the No Action/No Wilderness Alternative. If any threatened or endangered species are located, BLM would initiate consultation with the 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 special status plant species would be preserved with the Small Partial Wilderness Alternative.

Conclusion: Special status plant species would not be significantly affected. The 1,314 acres of projected surface disturbance would affect less than 1 percent

of the WSA. Therefore, vegetation types would not be significantly affected.

• Impacts on Water Resources

Since precipitation is low and all streams within the WSA have poor water quality, no significant sedimentation or change in TDS is expected to occur from the temporary (2 to 3 year) annual increase of 3.51 cubic-yards of soil loss from surface disturbance due to vegetation treatments. The 10,800 cubic-yards of increase in soil loss represents a 1.8-percent increase from that which now occurs from the WSA.

Conclusion: This Small Partial Wilderness Alternative would result in a temporary (2 to 3 year) 1.8-percent increase in sedimentation and TDS production.

• Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, wildlife could be affected by an increase in the availability of water through the construction of water catchments and spring developments. The proposed 1,000 acres of chainings and seedings and 300 acres of tillage and seeding could be developed and would improve habitat mainly for mule deer. However, during the period of actual disturbance on the 1,314 acres due to vegetation treatments and rangeland developments, wildlife species would be dispersed from the disturbed areas.

Two endangered wildlife species, the peregrine falcon and bald eagle, and eight Category 2 candidate species may occur in the WSA. Before authorizing any surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, BLM would initiate informal consultation with the FWS as required to avoid or mitigate impacts to these species. Populations of special status wildlife species would be preserved where land use developments would occur. Habitat for the ferruginous hawk would be improved with the edge effect created by pinyon-juniper woodland chainings.

Increased use of ORVs particularly in the Paria River bottom could adversely effect the Category 2 candidate species in the associated riparian zone. Continued ORV use could cause disruption of breeding, nesting, and feeding cycles. However, this route has been a historical ORV use area and the projected use would not be appreciably different than past use.

Conclusion: Mule deer and ferruginous hawks would benefit from the vegetation treatments. However, wildlife species associated with riparian zones could be adversely impacted by ORV use of the Paria River bottom. Wildlife would benefit from preservation of solitude on 44 percent of the WSA.

• Impacts on Livestock Management

The effect of designation of 59,670 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 1,803 AUMs allocated, 745 would be within the designated portion of the WSA and 1,058 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 745 AUMs in the designated portion could be restricted to preserve wilderness values. Approximately 1,000 acres of proposed vegetation treatments for improvement of livestock forage are located within the designated portion of the WSA and, consequently, would not be allowed. This would result in the loss of at least 100 AUMs of potential livestock forage. Other proposed rangeland developments could be built with this alternative.

Approximately 3.5 miles of the 33 miles of ways would be closed to vehicle access with this alternative and would result in a slightly higher operating cost to 11 permittees.

Conclusion: Grazing levels would not be altered, but 1,000 acres of pinyon-juniper woodland chainings and seedings would be precluded. Operating costs to 11 permittees would be slightly higher. Precluding the vegetation treatments would result in the foregoing of up to 100 additional AUMs.

• Impacts on Visual Resources

Even though mitigation measures would be applied to minimize visual contrast created by the 1,314 acres of pinyon-juniper woodland chainings and seedings, and the tillage, seeding, and rangeland developments, these treatments would not meet VRM Class II objectives. Visual quality would be degraded on about 1 percent of the WSA. Many scenic features would be preserved in the designated area.

Conclusion: Visual quality would be reduced on about 1 percent (1,314 acres) of the WSA. Many scenic features would be preserved in the designated area.

• Impacts on Cultural Resources

Only one recorded site is located in the area considered for partial wilderness designation. This site and other unrecorded sites would receive the protection provided by wilderness designation.

Cultural resources located in the No Man's Mesa vicinity would continue to be protected from ORV use impacts. Cultural resources in the WSA outside of the partial wilderness unit would be subject to the direct and indirect impacts of continued ORV use. The one recorded site in the Paria riverbed would not be protected from ORV play with this alternative.

Conclusion: One recorded site would receive protection as a result of wilderness designation with this alternative. The remaining 40 sites would receive impacts similar to those discussed in the No Action/No Wilderness Alternative.

• Impacts on Recreation

Impacts on recreational values and opportunities for the 59,670-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected because the Paria riverbed would be left open to ORV use. However, approximately 3.5 miles of way within the WSA would be closed to ORV use.

In the area that would not be designated (76,552 acres), little change in recreational use is expected. Impacts would essentially be the same as described in the No Action/No Wilderness Alternative. Impacts on the wild and scenic values of the Paria River would be considered as projects are proposed, but would not receive additional protection from wilderness designation.

Conclusion: Primitive recreational values would be protected on the 59,670 acres designated as wilderness but would be reduced in quality on the areas left open to ORV use, including the Paria riverbed. The wild and scenic values of about 25 miles of the Paria River would not receive additional protection.

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THE COCKSCOMB WSA

(UT-040-275)

INTRODUCTION

General Description of the Area

The Cockscomb WSA is located in Kane County, approximately 40 miles east of Kanab, Utah. The WSA is bordered on the south and west by U.S. Highway 89 and on the east by the Cottonwood Road and an existing powerline rights-of-way. The north border is approximately 2 miles south of the Paria Box along an existing powerline rights-of-way. The area includes the Rimrocks, a portion of West Cove, the Paria River, and The Cockscomb. There are approximately 10,080 acres of public land in the unit. The WSA is managed by the BLM Cedar City District, Kanab Resource Area Office. There are no private lands within the WSA. However, the State of Utah owns the mineral estate on portions of three sections (747 acres). Major vegetation types are pinyon-juniper woodland and desert shrub.

Average annual precipitation in The Cockscomb WSA is 9 to 11 inches. Highest monthly precipitation (60 to 70 percent of the yearly total) occurs from November through March. Most precipitation is a result of winter rain and snow.

Temperatures vary with aspect and altitude. July and January are the warmest and coldest months, respectively. July temperatures range from 50 degrees to over 100 degrees Fahrenheit (F), while the January temperature range is from below 0 degrees to 60 degrees F.

Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume III-A 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 (330 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 330

acres reported in the Draft EIS to 60 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 III-A (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 Cockscomb 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 330 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.

ORV use in the WSA is light, estimated at 90 visitor days per year, and most of this use occurs on the Paria riverbed. This area is considered a trail where ORV impacts are not significant because the riverbed is scoured by annual floods. Therefore, impacts on soils are not analyzed in detail for The Cockscomb WSA.

2. Vegetation Including Special Status Species: As described above for soils, no surface disturbance is projected for the WSA in the Final EIS. Six Category 2 candidate plant species may occur in the WSA. No other special status plant species, including threatened or endangered plant species are known to occur within the WSA. Should any surface-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 special status plant species. Therefore, impacts on

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vegetation are not analyzed in detail for The Cockscomb WSA.

3. The Blue Pool Water Users have proposed a reservoir on the Paria River within or near the WSA. However, no formal application has been made and many obstacles would have to be overcome before such a reservoir could be built. The water in the river is fully appropriated (UNDRE, DWR, 1988) and the river itself is part of a National Wild and Scenic Rivers systems inventory. Therefore, BLM does not project that the reservoir will be constructed in the foreseeable future and it is not analyzed further in this document.

4. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There is only one oil and gas lease within the WSA. The geologic history of the WSA indicates that large structural traps for oil and gas are unlikely to occur. Potential oil and gas deposits are small with a low certainty that they exist.

The Cockscomb WSA is located on the western edge of the Kaiparowits coal field. According to available information the coal here averages 2.4 feet thick at depths of 200 to 300 feet. There are no existing coal leases in the WSA. Should coal development occur in the Kaiparowits field, it would likely be in areas outside the WSA.

Even though there are 20 mining claims inside the WSA, 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 for mineral exploration and development projections). More accessible deposits of salable minerals exist outside the WSA. For these reasons, mineral exploration or development would not occur in 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. There is also some concern that use of ORVs would disturb wildlife and destroy habitat.

The Cockscomb WSA provides habitat for a variety of animal species, but populations are low and no one species can be described as abundant. Two endangered and eight other special status species may be found in the WSA. Impacts to these species are described in the special features discussion in the Wilderness Values sections.

Because no mineral developments are expected in the WSA in the foreseeable future and no surface disturbance from any resource development is projected, wildlife habitats would not be lost. Terrain and surface features generally restrict the use of ORVs to 3 miles of cherry-stemmed roads and the Paria riverbed. Recreation use is very low (estimated 100 visitor days per year), and is mainly associated with ORV travel along the riverbed. ORV use in crucial antelope habitat in riparian zones and terraces along the Paria riverbed would be limited to existing roads and trails under the MFP. Given these conditions, potential impacts on wildlife habitats and populations are not significant issues for the Cockscomb WSA.

6. Forest Resources: The only forest resources in the WSA are 4,435 acres of pinyon-juniper woodland. Demand is low and only half of the woodland is accessible. 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 developments, moving of livestock, and by preventing future range developments, and placing restrictions on predator control. However, under the BLM Wilderness Management Policy (BLM Manual 8560), there will 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 and 3 miles of cherry-stemmed road would be available for hauling water and other livestock management purposes should the area be designated as wilderness. Predator control would be allowed in designated wilderness area but spring loaded cyanide guns (M-44s) would be prohibited. For these reasons, impacts on livestock management are not significant issues for The Cockscomb WSA.

8. Visual Resources: As discussed above for soils, no surface disturbance is projected for the WSA in the

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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 special features and naturalness in the Wilderness Values sections.

9. Cultural Resources: Cultural resources could be destroyed by surface-disturbing activities, use of vehicles, or vandalism. However, only one cultural resource site has been recorded in The Cockscomb WSA. No surface disturbance is projected. Visitation is light (less than 100 visitor days per year). Terrain and surface features generally limit vehicle use to the 3 miles of road inside the WSA and the bottom of the Paria River.

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 Cockscomb WSA.

10. Economic Conditions: The public, including the 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 100 visitor days per year, potential impacts on economic conditions are not a significant issue for The Cockscomb WSA.

11. Kaiparowits Coal Transportation Corridors: Potential coal transportation and railroad corridors pass through the WSA (ERT, 1980). Commentors on the Draft EIS expressed concern that designated wilderness areas, including the Cockscomb WSA, could block the use of these corridors. If wilderness designation were to occur, development of coal transportation systems would not be allowed within the WSA. However, the transportation corridors described in the ERT study extend beyond the WSA boundary, therefore, coal transportation systems could be sited outside the WSA and still be within the designated corridors. If no wilderness designation occurred, corridor development would likely not occur within the WSA. The Kaiparowits Coal Transportation Study directs

that natural topographic features, such as The Cockscomb, be avoided. Therefore, impacts related to potential coal transportation systems are not analyzed further for the Cockscomb WSA.

• Issues Analyzed in Detail

The significant issues for The Cockscomb WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

2. Impacts on the 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, 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 25, for responses to specific comments about The Cockscomb WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

An alternative that would add 990 acres of Federal and State lands on the southeast and southwest boundaries of 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 (10,080 acres); and (3) Partial Wilderness (Proposed Action) (5,100 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

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BLM management actions presented in the Introduction to Volume III-A are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 10,080-acre Cockscomb WSA would be designated by Congress as part of the NWPS. The area would continue to be managed in accordance with the Paria MFP (USDI, BLM, 1981c), the Kanab-Escalante Grazing Management EIS (USDI, BLM, 1980a), and subsequent planning and management documents. The State of Utah owns the mineral estate on portions of three sections within the WSA (refer to Map 1). None of these sections have been identified in the MFP for special Federal acquisition through exchange or purchase, and are expected to remain under existing ownership.

- Management Conditions and Constraints

All 10,080 acres would remain open to mining claim location, mineral leasing, and mineral sale. Development work, extraction, and patenting would be allowed on 20 existing mining claims (400 acres) and on any future mining claims if such claims are determined valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), without concern for wilderness values. One existing post-FLPMA oil and gas lease (340 acres) and new leases could be developed under leasing Category 1 (standard stipulations) on the entire 10,080 acres. Leases for coal could be considered and issued in the future if coal leasing criteria are met. Although mineral resources would be managed as described above, no locatable or leasable exploration or developments are projected in 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 exploration and development projections.

The present 337 AUMs of domestic livestock grazing use in the 10,080-acre area would continue as authorized in the MFP and in decisions based on the Kanab-Escalante Grazing Management EIS. Existing developments of 3.5 miles of fence, four water catchments, two reservoirs, and one cattleguard would be maintained as in the past.

Public water reserve withdrawals of 76 acres would remain in effect.

ORV use on about 550 acres would continue to be limited to existing roads and trails to protect antelope kidding areas, and the remaining 9,530 acres of the WSA would remain open for vehicular use in accordance with the Paria MFP. The Paria riverbed would continue to be available for ORV use.

The area would continue to be managed under VRM Class II on 8,280 acres, Class III on 600 acres, and Class IV on 1,200 acres.

- Action Scenario

BLM projects that the implementation of the No Action/No Wilderness Alternative would not result in any surface-disturbing activities in the foreseeable future. No locatable or mineral resource exploration or development is anticipated. No rangeland, wildlife habitat, watershed projects, or other developments are planned. No disturbance from ORV use is projected because of management or terrain restrictions. It is projected that recreation use would increase over the current estimated use of approximately 100 visitor days annually at a rate of 2 to 7 percent per year. About 90 percent of the use would continue to be vehicular in nature, but would occur on roads or in the Paria riverbed where disturbance would be temporary.

- All Wilderness Alternative






With this alternative, all 10,080 acres of The Cockscomb 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 the exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding the exchange of State lands and provisions of BLM Wilderness Management Guidelines, it is assumed that State lands would remain under existing ownership. There are portions of three sections (747 acres) where the State of Utah owns the mineral estate 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, including the 747 acres of split-estate lands where BLM owns only the surface rights.

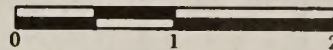
THE COCKSCOMB WSA

Map 1 LAND STATUS The Cockscomb WSA UT-040-275

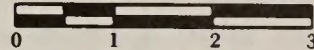
Legend

-  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-state minerals) Land Within or Adjacent to WSA

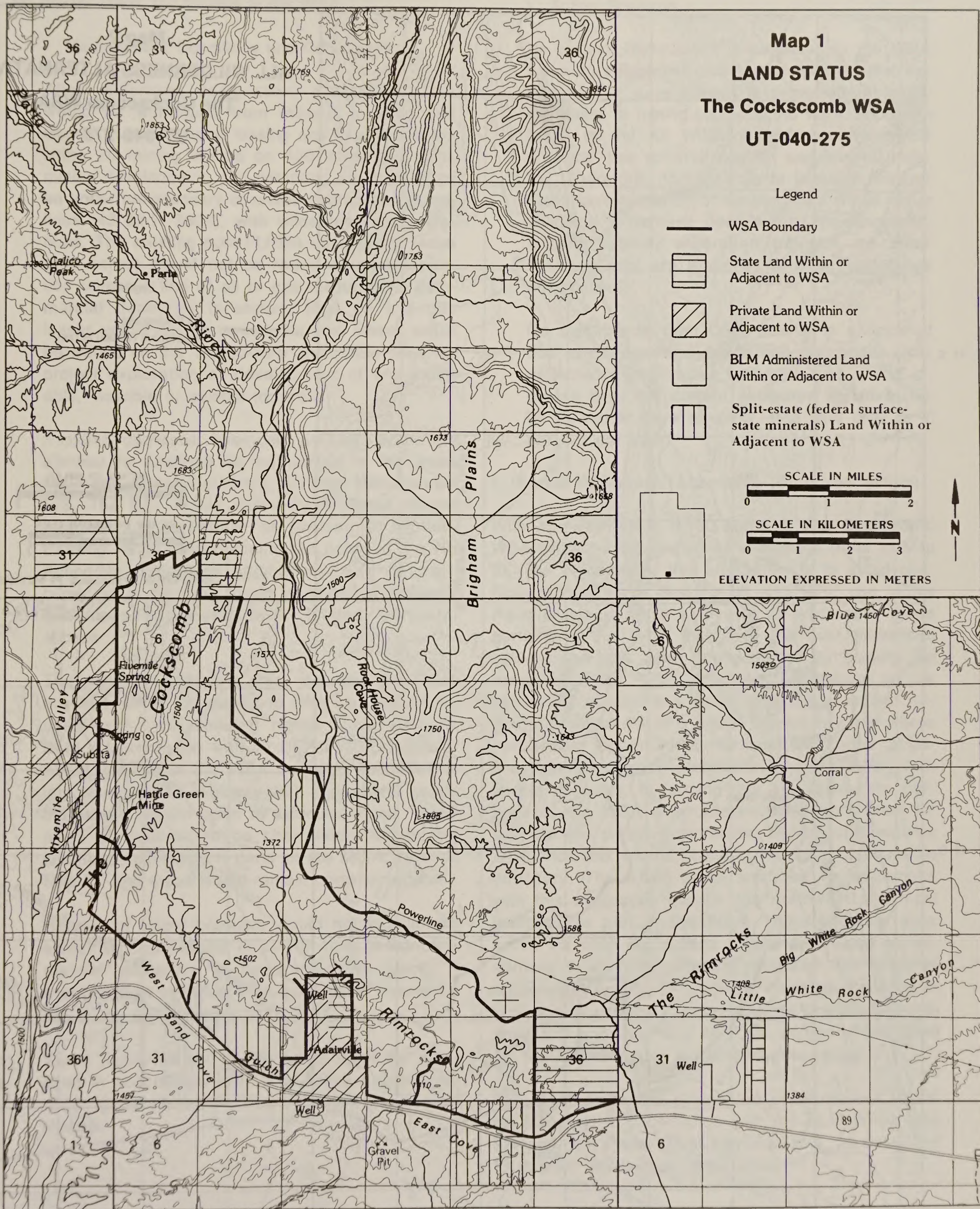
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



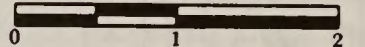
THE COCKSCOMB WSA

Map 2 ALL WILDERNESS ALTERNATIVE The Cockscomb WSA UT-040-275

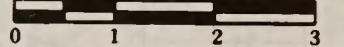
Legend

— All Wilderness
Alternative (10,080 acres)

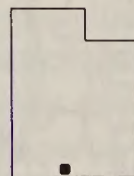
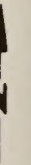
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



T. 41 S.

T. 42 S.

R. 1 W.

R. 1 E.

THE COCKSCOMB WSA

No private lands are located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 10,080 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. If the existing 20 mining claims on 400 acres are valid, mining development, and patenting would be allowed under unnecessary or undue degradation guidelines (43 CFR 3809), with wilderness considerations. The existing post-FLPMA oil and gas lease (340 acres) would not be reissued upon expiration unless a find of oil or gas resources in commercial quantities is shown. New oil and gas leases would not be issued. No coal leases would be issued on the 10,080-acre area. BLM does not project exploration or development of any locatable, leasable or salable minerals.

Present domestic livestock grazing would be allowed to continue as authorized in the Paria MFP and Kanab-Escalante Grazing Management EIS. The 337 AUMs in the WSA would remain available to livestock as presently allotted. Existing range developments, as noted in the No Action/No Wilderness Alternative, could be maintained as in the past based on practical necessity and reasonableness, with limited vehicular access.

The entire 10,080-acre area, including the Paria riverbed, 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 8 miles of the WSA boundary follow existing paved (U.S. Highway 89) and gravel roads that would remain open to vehicular travel. Three miles of road would be cherry-stemmed in the southern and western parts of the WSA (refer to Map 2), and these would remain open to vehicles.

Harvest of forest products would not be allowed except for the 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 on 10,080 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

No surface disturbance is projected in the WSA following wilderness designation. No mineral exploration or development is projected for existing leases or mining claims in the WSA. Implementation of the All Wilderness Alternative would preclude new mineral location and 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 activity is anticipated due to management and terrain restrictions. It is projected that primitive recreation use would increase over the current estimated primitive use of 10 visitor days annually at a rate of 2 to 7 percent per year.

- Partial Wilderness Alternative (Proposed Action)

With this alternative, 5,100 acres of The Cockscomb WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to avoid conflicts of wilderness designation with ORV use in the Paria drainage, while analyzing as wilderness those portions of this WSA that have the best wilderness values. This has been accomplished by placing the boundary of the Partial Wilderness Alternative on the west bank of the Paria River. 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 5,100 acres analyzed as wilderness with this alternative include the northwest and most inaccessible part of the WSA. The 4,980-acre area within the WSA but outside of that designated as wilderness is approximately the southeast half which is bordered by roads. This portion would be managed in accordance with the Kanab-Escalante Grazing Management EIS and the Paria MFP, as generally described for the No Action/No Wilderness Alternative.

The 5,100-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.

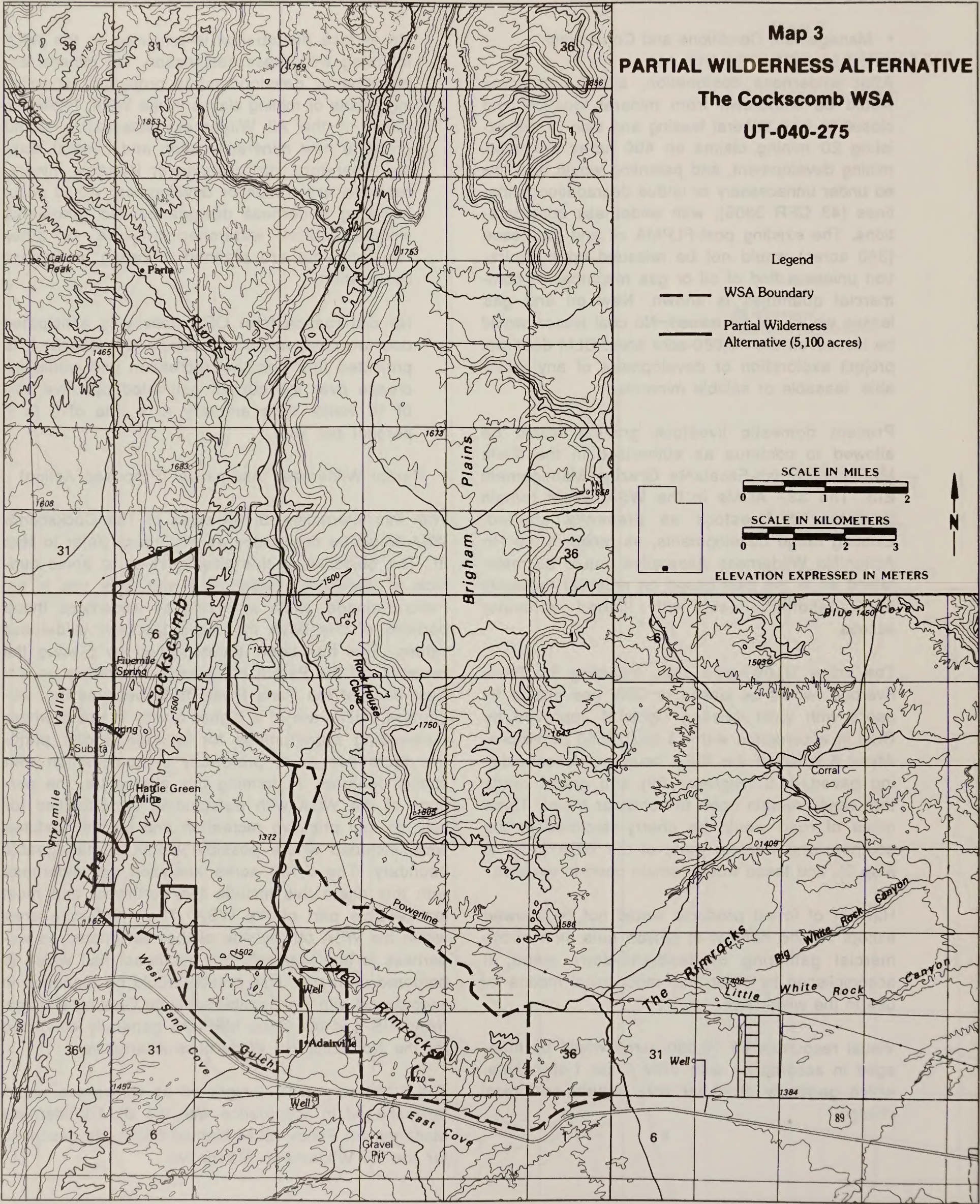
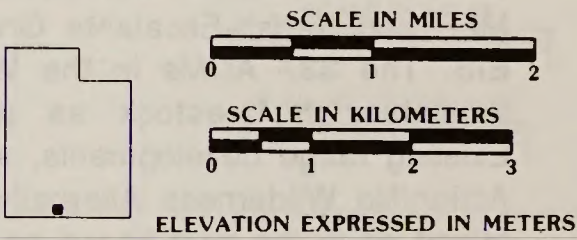
THE COCKSCOMB WSA

Map 3
PARTIAL WILDERNESS ALTERNATIVE
The Cockscomb WSA
UT-040-275

T. 41 S.

T. 42 S.

- Legend
- WSA Boundary
 - Partial Wilderness Alternative (5,100 acres)



THE COCKSCOMB WSA

The policy of the State is to reserve its position regarding the exchange of in-held lands within any particular WSA. Based on the policy regarding exchange of State lands and provisions of BLM Wilderness Management Guidelines regarding private lands, it is projected that State lands would remain in existing ownership. There is a portion of one section (125 acres) where the State of Utah owns the mineral estate in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands, including the 125 acres where BLM owns only the surface rights.

- **Management Conditions and Constraints**

The 5,100-acre wilderness would be withdrawn from mineral location and closed to new mineral leasing and sale. There are five existing mining claims in the 5,100-acre area. The existing and any new claims, if valid, would continue; and mining development, extraction, and patenting would be allowed as prior and existing rights. In the 5,100-acre area designated wilderness, the existing post-FLPMA oil and gas lease (340 acres) would not be reissued upon expiration unless an oil and gas find in commercial quantities is shown. The 4,980-acre area not designated wilderness would be open to mineral location, oil and gas lease development, and future mineral (including coal) leasing, without wilderness considerations. The area not designated would be managed as oil and gas leasing Category 1 (standard stipulations) on all 4,980 acres. No oil and gas leases are currently located in the nondesignated portions of the WSA. BLM does not project locatable or leasable exploration or developments in the WSA because the level of known resources and the probability of their development are too low to support that assumption (refer to Appendix 6 in Volume I).

Domestic livestock grazing would continue to be allowed in the designated wilderness area, and the estimated 167 AUMs in this area would remain available to livestock as presently allotted. In the 4,980-acre nonwilderness area, grazing use would continue as authorized in the MFP. No rangeland developments are proposed.

The part of the WSA comprising the 5,100-acre wilderness would be closed to ORV use. About 1.5 miles of road would be cherry-stemmed into the designated wilderness with this alternative.

The Paria riverbed would be in the nondesignated area and would be open for ORV use. Vehicular use would be limited to existing roads and trails in riparian zones and terraces adjacent to the Paria riverbed to protect antelope kidding areas.

Visual resources on the 5,100-acre wilderness would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The remaining 4,980 acres would be managed as Class II on 3,180 acres, Class III on 600 acres, and Class IV on 1,200 acres.

- **Action Scenario**

BLM projects that no surface disturbance will occur in either the designated or nondesignated portions of the WSA in the foreseeable future. In the designated portion, it is projected that existing mining claims and mineral leases would not be developed. New mineral location and mineral leasing would be precluded following wilderness designation. Therefore, no mineral resource exploration or development would occur. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

No disturbance from ORV activity is projected in the foreseeable future in either the designated or nondesignated areas. It is projected that recreation use will increase at a rate of 2 to 7 percent per year over the current estimated overall recreation use of 100 visitor days annually. Ninety percent of the use would be vehicular 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 CEQ guidelines and provides a data base for the cumulative Statewide analysis found in Volume I, as well as for the analysis of the Environmental Consequences of Alternatives for this WSA.

THE COCKSCOMB WSA

Table 1
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (10,080 Acres)	Partial Wilderness (5,100 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation. No disturbance is projected that would affect wilderness values in the foreseeable future. Continued vehicular use of the Paria riverbed would detract from opportunities for solitude and primitive recreation. Except for the Paria riverbed, special features would not be significantly affected.	Wilderness values would be preserved by wilderness designation.	Wilderness values would be preserved in the designated portion. Other effects would be the same as for the No Action/No Wilderness Alternative.
Impacts on Recreation	Primitive and motorized recreational use would increase and general use patterns would not be altered. About 3 miles of a wild and scenic river inventory segment would not receive the additional protection that would come with wilderness designation and would be subject to ORV use. The quality of the primitive recreation opportunity would decline.	Primitive recreational opportunities would be preserved and enhanced. Motorized use of the Paria riverbed would be precluded. Overall, visitation would decline initially. Designation would provide additional protection of 3 miles of the Paria River, a segment of the wild and scenic river inventory.	Primitive recreational opportunities would be preserved in the designated area. Other impacts would be the same as for the No Action/No Wilderness Alternative.

THE COCKSCOMB WSA

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

Wilderness Values

- Size

The WSA encompasses 10,080 acres. It is approximately 6 miles long (north to south) and 6 miles wide (east to west), being somewhat in the shape of a boot.

- Naturalness

There are five substantially noticeable imprints within the WSA, an open pit coal prospect near a 345-kv powerline, two stockwatering reservoirs, an irrigation reservoir on the Paria River, and the Bryce Canyon Coke and Coal Company mine. The Hattie Green mine and associated access route are substantially unnoticeable imprints within the WSA. These imprints involve less than 0.5 percent (50 acres) of the WSA.

Since establishment of the WSA, less than 1 acre of the WSA has been disturbed. This disturbance is the result of a 100-yard gap fence constructed in December 1983 by other than mechanical means, and is non-impairing.

- Solitude

In The Cockscomb WSA opportunities for solitude are associated with The Cockscomb and Rimrocks topographic features. Both are several miles long and offer topographic screening along their lengths. Opportunities for solitude exist along both features in various side drainages and canyons. The Cockscomb-West Cove area also has topographic screening; however, it is separated from the Rimrocks area by the open Paria River Valley.

In this unit, size and vegetation are not significant factors in considering solitude. Vegetation is sparse throughout the unit. The stands of pinyon-juniper woodland vegetation along The Cockscomb contribute very little to solitude; topography is the dominating factor contributing to solitude. The unit is small enough that roads and powerlines outside the WSA are readily observable from most of the WSA except where topographic screening in the Rimrocks and Cockscomb occurs. Outside sights and sounds from Highway 89 are noticeable from the southern portion of the WSA. Size does not contribute to the opportuni-

ties for solitude. About 43 percent (4,319 acres) of the WSA offers outstanding opportunities for solitude. The remaining 57 percent (5,761 acres) does not meet the criterion.

- Primitive and Unconfined Recreation

Recreation opportunities are hiking, photography, and sightseeing for geologic features. These opportunities in the Rimrocks and Cockscomb areas are considered outstanding. Although the unit possesses no hiking trails or routes, the entire unit is an easy 1-day trip for hikers from Highway 89 or the Cottonwood Wash Road. The opportunity for primitive and unconfined recreation is considered outstanding on 56 percent (5,600 acres) of the WSA, while 44 percent (4,480 acres) does not meet the standards for outstanding opportunities.

- Special Features

During the wilderness inventory, the WSA was found to have special scenic values associated with the same features that contribute to solitude and primitive recreation opportunities. The Cockscomb and Rimrocks Formations dominate the landscape with interesting scenic features on about 43 percent (4,300 acres) of the WSA. The Geology section describes these features in detail. The scenic values are associated with sheer canyon walls, numerous and diverse erosional features, and the contrasting color and structure of the topography.

The WSA has other resource values that, although not identified as such during the wilderness inventory, could be considered special features. The endangered bald eagle and peregrine falcon may occur in the WSA. In addition, there are eight other animal species and six plant species that are considered special status species. The WSA has populations of cougar which is a wildlife species commonly associated with wilderness. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information. Approximately 21 percent (2,092 acres) of the WSA is rated Class A for scenic quality. The WSA has approximately 3 miles of perennial streams, including the Paria River. The Paria River is a Wild and Scenic River Inventory Segment.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of saltbush-greasewood. Refer to the Vegetation Including Special Status

THE COCKSCOMB WSA

Species section for more discussion on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Provo-Orem, Utah, and Las Vegas, Nevada.

Air Quality

The area is presently classified as Class II air under the PSD regulations as outlined by the Clean Air Act as amended in 1977. BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of the BLM (USDI, BLM, 1982b).

No measurements of air pollution or visibility levels have been made in the Paria planning unit; however, data collected from various sites (Page, Arizona, approximately 24 miles southeast, and Four Mile Bench, Kane County, Utah, approximately 15 miles east) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

Geology and Topography

The Cockscomb WSA is located within the Canyonlands section of the Colorado Plateau Physiographic Province.

The two main topographical features are the southern tip of The Cockscomb in the west and the Rimrocks in the southeast. Triassic to Cretaceous strata are exposed in the WSA. Triassic strata, limited to the Moenkopi Formation, are exposed on a few places along The Cockscomb. Triassic/Jurassic strata, consisting of the Navajo, Carmel, and Entrada Formations, are exposed along The Cockscomb and in the southern portion of the WSA. Cretaceous strata include the Dakota, Tropic, and Straight Cliffs Formations. The Dakota and Tropic Formations form the most extensive exposures in the WSA. The Dakota is coal-bearing throughout most of the WSA.

The most prominent structural axis in the WSA is the East Kaibab monocline. East of the monocline is the Kaiparowits syncline. The Straight Cliffs and Dakota

Formations are involved in the steep folding of the monocline. At the north end of the WSA the dips are eastward usually 25 to 80 degrees. At the south end of the WSA the dips are gentle, approximately 2 degrees to the northeast.

The East Kaibab monocline, or The Cockscomb, as it is often called, is unique as a Colorado Plateau structure. Its alignment with the Paunsaugant, Sevier, and Hurricane faults suggests that it, too, could be a fault at depth. It extends about 60 miles from the Colorado River north to Canaan Peak. The monocline is often badly faulted and many breaks parallel the structure.

Soils

There are four major landforms in the WSA by which soils may be described: The Cockscomb, rock outcrops, terraces, and floodplains.

The Cockscomb landform occupies 20 percent (2,016 acres) of the WSA. Characteristic of this landform is steep exposed sandstone.

The rock outcrop landform makes up 61 percent (6,149 acres) of the WSA. It is characterized by badland-type rock outcrop on barren hills below The Cockscomb. Both landforms produce high volumes of sediment and have moderate salt hazards and high erosion hazards.

Terrace soils are shallow to moderately deep silty clay loams and clays on rolling topography. The 8 percent (806 acres) of the WSA in this landform is on the east side of the Paria River along the lower northeastern border of the WSA. These soils have moderate to high erosion hazard and high sediment and moderate salt yields.

The floodplain landform follows along the Paria River and West Cove drainages. Soils are deep, ranging from clay loams to gravelly fine sandy loams, some of which may be saline. Floodplains occupy 11 percent (1,109 acres) of the WSA. Floodplain soils have moderate erosion hazards and moderate to high sediment yields.

Salt yields from these soils are moderate to low because of previous leaching along the river channel. The overall salt production from undisturbed soils within the WSA is estimated to be 80 lb per acre per year. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

THE COCKSCOMB WSA

Table 2
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	4,480	44	12,100
Moderate	1.3	2,000	20	2,600
Slight	0.6	3,600	36	2,160
Stable	0.3	0	0	0
Total		10,080	100	16,860

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

Vegetation Including Special Status Species

The major vegetation types in the WSA consist of pinyon-juniper woodland on 4,435 acres (about 44 percent of the WSA) and desert shrub on 4,783 acres (47 percent). The desert shrub type includes mostly shadscale with some blackbrush snakeweed and big sagebrush in the higher elevations east of The Cockscomb. The pinyon-juniper woodland is found on The Cockscomb itself. The WSA also contains about 100 acres of riparian vegetation (1 percent of the WSA). The floodplain along the Paria River supports thickets of salt cedar and other desert riparian vegetation, but is generally sparsely vegetated. The remaining 762 acres (8 percent) of the WSA are barren.

There are no threatened or endangered plant species known to occur in the WSA. However, six Category 2 candidate plant species may occur in the WSA. (see Appendix 4 in Volume I). These are Psoralea epipsila, Psoralea pariensis, Penstemon ammophilum, Lesquerella tumulosa, Xylorhiza cron-quistii, and Astragalus ampullaris.

The Cockscomb WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler eco-systems map (USGS, 1978a). The PNV type of the WSA is saltbush-greasewood.

Water Resources

The Cockscomb WSA is located within the Paria River subbasin of the Upper Colorado River hydrologic sub-region.

Nearly all of the WSA is drained by the Paria River and its tributaries. The average annual discharge of the Paria River, as measured at a gaging station on the mouth of the river near Lee's Ferry, is 26 cfs. No records exist for flow on the river within the WSA. The Paria River runs through the WSA for approxi-

mately 3 miles and is classified as perennial. The water quality standards for Paria River and tributaries, from State line to headwaters are as follows: Class 2B (protected for boating, water skiing, and similar uses, excluding recreational bathing [swimming]), Class 3C (protected for nongame fish and other aquatic life), and Class 4 (protected for agricultural uses including irrigation of crops and stock-watering).

The water quality of the Paria River indicates that sodium and TDS exceed the criteria for agricultural use. These impairments are due to the geology and the erosion of Mancos Shale, dewatering, and from upstream agricultural activities.

Water quality samples taken 4 miles north of the WSA show that the water is unsuitable for human consumption because of high bacteria counts. The quality of the water improves after it reaches Cottonwood Creek north of the WSA.

Water quality data collected north of the WSA indicate that groundwater quality varies depending on the source and geology. Groundwater quality varies from fair quality to high TDS and sulfate concentrations.

The Paria River carries one of the heaviest concentrations of sediment in the Colorado River Basin. The sandstone and tropic shale formations in the WSA are not great contributors to salinity, although sediment yields are high. The Mancos Shale Formation north of the Kane County line to the headwaters is the major contributor of Paria River salinity.

The WSA is within Water Rights Adjudication Area 89. The area which generally includes part of the headwaters of the Paria River, including North Creek, Henderson Creek, Campbell Creek, Bryce Creek, Henrieville Creek, and other tributaries, is considered to be fully appropriated on the surface supply of water and any directly connected underground aquifers. The State Engineer will consider applications to appropriate water for 0.015 cfs based on the proposed location, outside of any existing municipal, town, or subdivision system, and on the individual merits of the applications. (UNDRE, DWR, 1988).

One irrigation and two stock watering reservoirs and four water catchments are located in the WSA. There are no known springs or wells in the WSA. One well has been developed adjacent to the WSA and is used for watering livestock and wildlife.

THE COCKSCOMB WSA

The Blue Pool Water Users have proposed a reservoir on the Paria River within or near the WSA. No formal application has been made by the Blue Pool Water Users and many obstacles would have to be overcome before such a reservoir could be built.

Mineral and Energy Resources

The energy and mineral resource rating summary for The Cockscomb WSA is given in Table 3. Refer to Appendix 5 in Volume I for a description of the SAI rating system.

Table 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ^a	Certainty ^b	
Oil and Gas	f 3	c 1	Less than 50 million barrels of oil; less than 300 billion cubic-feet of gas
Uranium	f 2	c 1	Less than 500 metric-tons of uranium oxide
Coal	f 2	c 4	168,000 metric-tons
Hydroelectric	f 1	c 4	None
Bentonite	f 2	c 1	Unknown

Source: SAI, 1982; USDI, BLM, 1987

^aFavorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

^bThe 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 that is currently listed as a strategic and critical material (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand.

• Leasable Minerals

• Oil and Gas

To date, there is no evidence indicating the existence of commercially recoverable oil and gas resources within this WSA. The only oil and gas production in south central Utah in the vicinity of The Cockscomb WSA comes from the Upper Valley field located approximately 30 miles to the north. The field was discovered in 1964 after 17 years of intermittent drilling and it stimulated mild drilling activity in similar anticlinal structures in south-central Utah. To date, however, no commercial oil and gas potential has been identified in the area outside the Upper Valley field.

No oil and gas wells have been drilled within the WSA. Two wells have been drilled nearby, one about 12 miles to the northeast and another about 2 miles to the southwest. The well to the northeast tested an anticlinal structure that does not affect the WSA. The well to the southwest tested the western edge of the prominent Kaibab monocline and penetrated Cambrian rocks at a total depth of 6,253 feet. Oil and gas shows were reported in Cambrian rocks from the well (Campbell, 1958; Kunkel, 1965).

The stratigraphic and structural setting of the WSA closely resembles the area of the Upper Valley field. Although the East Kaibab monocline occurs along the west side of the tract, it does not seem to represent a structure as favorable for oil and gas as the Upper Valley anticline.

The Kaibab monocline has not been tested. This fact, combined with the potential for subtle stratigraphic traps within the WSA, resulted in rating the WSA as favorable for small to moderate sized petroleum accumulations (SAI, 1982). Accordingly, the WSA has been rated (f3), favorable for accumulations of between 10 and 50 million barrels of oil and between 60 and 300 billion cubic-feet of gas. The certainty of occurrence is very low (c1).

With the current land use plan, all 10,080 acres of the WSA are open to oil and gas leasing with standard stipulations (Category 1). There is presently one post-FLPMA oil and gas lease covering 340 acres.

• Coal

The WSA is along the western edge of the Kaiparowits coal field. Estimated coal resources within the Kaiparowits field total 15.2 billion tons (Doelling and Graham, 1972). Most of these resources occur to the east of the WSA.

The only coal-bearing strata in the WSA is the Cretaceous Dakota Formation. Coal is usually present in the Dakota along the entire length of The Cockscomb, but can be intermittent. The coal is more continuous in the southern part of the WSA. Here the coal may be up to 5.6 feet thick and averages 2.4 feet (Doelling and Graham, 1972). The WSA contains at least 1.8 million tons of coal, although BLM estimates that there are 168,000 tons of in-place coal, based on seams greater

THE COCKSCOMB WSA

than 4 feet thick (USDI, USBM 1987b). Overburden ranges from 200 to 300 feet. No coal analyses are available and coal quality is unknown. Based on the available information, the WSA is assigned a favorability rating of (f2), with a high certainty of occurrence (c4).

To date, the only coal mining that has taken place in the WSA is that of the Bryce Canyon Coal and Coke Company in T. 42 S., R. 1 W., sec. 21. Activity was intermittent and the mine is no longer active. Only a small tonnage of coal has been removed. A small coal prospect is located in the northeastern portion of the WSA. There are no existing coal leases in the WSA.

- Locatable Minerals

A total of 20 mining claims are currently located in the southwestern portion of the WSA, covering 400 acres.

- Uranium

The following rock units are considered favorable for uranium in south-central Utah (USDOE, 1979): the basal members and the Petrified Forest Members of the Chinle Formation (Triassic), and the Salt Wash member of the Morrison Formation (Jurassic). According to SAI (1982), the Morrison has been removed by pre-Dakota erosion throughout the WSA. The Chinle Formation lies at depths ranging from 1,000 feet along The Cockscomb to about 2,500 feet in the eastern portion of the WSA.

The area encompassed by the WSA is not favorable for significant deposits of uranium (Peterson, et al., 1982). The term significant is defined as a uranium deposit that totals at least 100 metric-tons of uranium oxide at a minimum grade of 0.01 percent. USBM found no evidence to indicate the presence of a uranium resource in the WSA. Based on available information, the WSA is assigned an uranium favorability of (f2) (a geological environment favorable for deposits containing less than 500 metric-tons of uranium oxide). The certainty that the deposit exists is very low (c1).

- Other Locatable Minerals

The most promising bentonite deposits in the region are located west of the WSA. Most of the known deposits have not been adequately investi-

gated, but those that have been investigated (north of the WSA) have proven to be unimportant. Other deposits that may lie at depth in the WSA would probably be similar in size and would be too expensive to mine. Based on available information, bentonite was given an (f2) (favorability for small, low grade deposits) with a very low (c1) certainty of occurrence.

USBM reports evidence of mine workings in the WSA, most likely for copper deposits, however, mineral occurrences are of limited extent and low grade.

- Salable Minerals

Minor deposits of stream gravel and other loose rock material that could be used for construction occur within the WSA. 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 Cockscomb WSA contains four distinct habitat types: pinyon-juniper woodland, desert shrub, sagebrush, and riparian areas. Each of these habitat types supports a unique complement of animal species. Species composition may include as many as 113 birds, 18 mammals, 18 reptiles, and eight amphibians. In addition, a population of speckled dace inhabits portions of the Paria River.

Game species in the WSA are mule deer, antelope, cougar, cottontail rabbits, chukar, quail, and mourning doves. Mule deer are migrants typically found in the area during the winter months. A few head of antelope occur within the WSA. Approximately 550 acres within the unit have been designated as crucial big game (antelope) habitat. These areas are riparian and adjacent lands which are utilized for kidding. Small numbers of cougar are yearlong residents. Cottontails occur throughout the WSA but are most abundant along the unit's western boundary. Chukar and quail are found along the Paria River. Mourning dove are fairly common throughout the WSA from May to September.

Two endangered species, the peregrine falcon and bald eagle, have been recorded within the WSA as migrants. Both species are present along Lake Powell and can be expected to migrate through the WSA. In addition, eight other Category 2 candidate species may occur in the WSA: Arizona Bell's vireo,

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ferruginous hawk, long-billed curlew, southern spotted owl, Swainson's hawk western snowy plover, Great Basin Silverspot butterfly, and white-faced ibis (see Appendix 4 in Volume I).

The UDWR (1982) list of sensitive species includes three species that occur in the WSA: Lewis woodpecker, the western bluebird, and mountain bluebird.

No vegetation treatments have been proposed in the Paria MFP for the benefit of wildlife.

Forest Resources

Forest resources in the WSA are limited to the pinyon-juniper woodland type, which occurs on about 44 percent (4,435 acres) of the WSA. The entire WSA is open to fuelwood collecting but, due to limited access and the remoteness of the area, use is minimal and undoubtedly will continue to be so.

Livestock and Wild Horses/Burros

The WSA contains portions of four livestock (cattle) grazing allotments with about 337 AUMs allotted to 10 permittees. Table 4 summarizes livestock use in the WSA. Table 5 identifies existing range developments in the WSA. No new developments are proposed. Approximately 3 miles of road are used by permittees for livestock management, hauling water, etc.

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 Cockscomb WSA (USDA, APHIS, 1988).

Visual Resources

The WSA has a variety of landscape characteristics. Approximately 2,092 acres are classified as Class A quality scenery, 5,915 acres as Class B, and 2,073 acres as Class C. Class A scenery is found in areas where features of landform, water, and/or vegetation patterns are of unusual or outstanding visual quality. Class C scenery is found in areas where features display little variety and tend to be monotonous.

The VRM Classes for the WSA are Class II on 8,280 acres (82 percent), Class III on 600 acres (6 percent), and Class IV on 1,200 acres (12 percent).

Refer to Appendix 7 in Volume I for a detailed description of the BLM VRM system.

Cultural Resources

A Class I cultural inventory, "Development of Coal Resources in Southern Utah Regional Analysis" (USDI, BLM, 1978a), identified one cultural site within the WSA boundary. There are no known National Register sites in the WSA.

The Hattie Green copper mine, located on the crest of The Cockscomb, may have some historic value. Little is known about this mine other than that copper was discovered here at a very early date. There are no buildings on the site, but there are several mine shafts.

Recreation

The Cockscomb WSA offers limited recreational opportunities for hiking, sightseeing, clam fossil collecting, and ORV use.

Current use includes occasional stops by recreationists traveling on the Cottonwood Canyon Road and ORV use. It is estimated that the unit receives less than 100 visitor days per year. Most of these visits are associated with ORV use in the Paria River drainage (90 visitor days) and fossil collecting (10 visitor days).

ORV use is confined to existing roads and trails on approximately 550 acres in the floodplain and terraces along the Paria River. However, the actual river bottom is considered to be a trail and is open to ORV use. The remainder of the unit is open to ORV use, but much of the unit's topography makes it unsuitable. There are 3 miles of access road within the WSA.

The Paria River, from the Colorado River to its source, has been identified by the NPS as possessing values that may be of national significance and, therefore, as having the potential to be included in the National Wild and Scenic Rivers system. Approximately 3 miles of the Paria River are within the WSA. The BLM must, as part of its environmental protection review process, avoid or mitigate adverse impacts to the river and consult with the NPS before taking any actions which could foreclose wild, scenic, or recreational river status (CEQ, 1980).

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Table 4
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Cockscomb	1,200	1,129	36	18	12 Cattle	03/01-05/31	1
Clark Bench	53,673	1,426	1,800	70	175 Cattle 5 Horses	08/01-05/31	1
Bunting Well	9,555	1,405	3,307	1	275 Cattle	12/01-05/31	1
Cottonwood	83,998	6,120	2,627	248	431 Cattle	11/01-05/31	7
Total	148,426	10,080	7,770	337			10

Sources: BLM File Data

Table 5
Livestock Grazing Management Projects

Allotment	Existing Improvement	Proposed Improvement
Cockscomb	0	0
Clark Bench	1 Catchment, 1 Reservoir	0
Bunting Wall	1/4 Mile Fence, 1 Reservoir	0
Cottonwood	3-1/4 Mile Fence, 3 Catchments, 1 Cattleguard	0

Source: USDI, BLM, 1979f, 1980a, and 1981c.

Land Use Plans

The WSA is located within the BLM Paria planning unit and is being managed under the land use decisions of the Paria MFP. 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. Permitted uses in the WSA include livestock grazing, recreation, and mineral exploration.

The WSA is BLM-administered public land except for portions of three sections (747 acres) where the State of Utah owns the mineral estate. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding the exchange of in-held lands. 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. There are no mineral leases on the State mineral estate (UDNRE, DSLF 1988).

The Kane County Master Plan (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple-use concept."

In addition, the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) indicates that Kane County opposes wilderness designation of BLM lands in Utah.

There are no current or proposed rights-of-way or development projects within the WSA. A 345-kV line borders the northern boundary for approximately a 0.75 mile, a 230-kV parallels the western boundary for approximately 3.5 miles, and a small distribution line follows the southern boundary for approximately 5.75 miles.

The Kaiparowits Coal Development and Transportation Study has identified a number of potential transportation corridors and truck haul routes (ERT, 1980). The objective of the study was to identify possible areas for construction and operation of future coal transportation systems within the restrictions of general environmental and engineering constraints. Corridor segments were required to contain at least one potential route for a railroad or coal slurry pipeline. Specific routes, however, were not identified. By selecting corridors between 2 and 15 miles in width, maximum flexibility for future location of specific routes was maintained. Corridors C14 and C16 would encompass the entire Cockscomb WSA. However, the WSA does not extend across the entire width of the corridors.

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Socioeconomics

• Demographics

The Cockscomb WSA is 40 highway miles from Kanab, Utah and is located in Kane County. From 1960 to 1980, the population of Kane County grew from 2,421 to 4,050, an overall increase of about 67 percent.

Table 6 presents the baseline and projected population data for Kane County. It is estimated that between 1980 and 1987, population increased to about 4,890. Population projections for the county indicate that the number of people living in Kane County in the year 2010 will be about 6,950 for about a 72-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 6
Baseline and Projected Population and Employment Growth
Kane County

	1980	1990	2000	2010
Population	4,050	5,250	5,750	6,950
Employment	1,403	1,900	2,300	2,900

Source: Utah Office of Planning and Budget, 1987.

• Employment

Table 6 shows the baseline and projected total employment for Kane County to the year 2010. Kane County is part of the Southwest MCD. Table 7 shows the baseline (1980) and projected employment by source for MCD to the year 2010.

Table 7
Southwest Multi-County District
Employment^a

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	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	,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	4,616	5,800	6,500	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.

^aIncludes Beaver, Garfield, Iron, Kane, and Washington Counties.

In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm properties (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total, while agriculture will decline to 5 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

• Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 8 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate the sales and revenues.

Table 8
Sales and Revenues

Source	Estimated Annual Local Sales ^a	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$680
Mining Claim Assessment	\$2,000	0
Livestock Grazing	\$6,740	\$519
Recreational Use	<u>\$ 410</u>	<u>0</u>
Total	\$9,150	\$1,199

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

^aLocal sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 20 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.

No oil and gas exploration and only limited mineral exploration has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to the local employment or income.

Ten livestock operators have a total grazing privilege of 337 AUMs within the WSA. If all this forage were utilized, it would account for \$6,740 of the livestock sales and \$1,685 of the ranchers' returns to labor and investment.

Some woodland products are harvested from the WSA; however, the harvests have been small and are

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insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The WSA's motorized recreational use is low and related local expenditures are low. They 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. 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 The Cockscomb WSA is estimated to be about 100 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock sources (refer to Table 8).

There is one oil and gas lease in the WSA covering approximately 340 acres. At \$2 per acre, lease rental fees generate up to \$680 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.

Livestock permittees in the WSA can use up to 337 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$519 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland developments.

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 III-A and the Description of the Alternatives for The Cockscomb WSA.

No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Since 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., VRM Class II management on 8,280 acres, ORV limitations on 550 acres).

No development would be expected in the foreseeable future that would affect wilderness values. The only conflict with wilderness values expected would be ORV activity. ORV activity is currently occurring along the Paria riverbed. During the period of activity, the visual and audible disturbance from ORV use would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also on adjacent portions of the WSA. The increased visitor use that would occur over time would be expected to detract from wilderness values because based on existing use, 90 percent of future activity would involve vehicular use. No significant residual disturbance is anticipated from ORV use due to terrain restrictions which would largely limit ORV activity to roads and to the Paria riverbed where disturbance would be temporary.

The special feature wildlife species (Category 2 candidate species) which may occur in the WSA and are associated with riparian areas could be adversely impacted by continued ORV use of the Paria riverbed. These special status species include the Arizona Bell's vireo, long-billed curlew, western snowy plover, Great Basin Silverspot butterfly, and the white-faced ibis. Impacts could include direct disruption of life cycles. The extent of such impacts are unknown but are not expected to be severe because of the relatively light ORV use.

Class A scenic values would not be impacted because they occur in the western portion of the WSA where no ORV activity or surface-disturbing activities currently occur or are projected to occur.

The wild and scenic values of the Paria River, which is a Wild and Scenic River inventory stream, would not receive the additional protection that would be gained from wilderness designation.

Conclusion: Wilderness values would not be protected by wilderness designation. No disturbance is anticipated in the foreseeable future that would affect wilderness values. Continued and increased vehicular use would detract from opportunities for solitude and primitive recreation. Except for ORV use of the Paria

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riverbed, special features would not be significantly affected.

- Impacts on 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; 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 recreational use is expected to increase from 100 current visitor days per year to 190 to 870 visitor days at the end of 30 years. 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 10 visitor days per year to about 20 to 40 visitor days per year over the next 30 years. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, etc.) would increase from 90 visitor days per year to 170 to 830 visitor days. The Paria riverbed would be left open to ORV use, but the adjacent riparian and terraces (550 acres) would be closed to ORV use to protect the antelope kidding areas prescribed in the MFP.

Wild and scenic values of the 3 miles of Paria River in the WSA, which is a Wild and Scenic River inventory segment, would not receive the additional protection that would be provided by wilderness designation, and would be subject to increased ORV use.

Conclusion: Both primitive and motorized recreational use would increase, and general use patterns would not alter from those which currently exist. About 3 miles of a Wild and Scenic River inventory segment would not receive additional protection and would be subject to ORV use.

All Wilderness Alternative (10,080 Acres)

- Impacts on Wilderness Values

Designation and management of all 10,080 acres as wilderness would ensure the preservation of wilderness values in the Cockscomb 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. Solitude would be preserved on approximately 4,319 acres that meet and

5,761 acres that do not meet the standards for outstanding solitude. Naturalness would be preserved on 10,030 acres that meet and 50 acres that do not meet the standards for naturalness. Primitive and unconfined recreation would be preserved on 5,600 acres that meet and 4,480 acres that do not meet the standards for outstanding opportunities. Conflicts with ORV use would be eliminated. The scenic, biological, and water special features in this WSA would also be protected and preserved.

Conclusion: Wilderness values of naturalness, outstanding opportunities for solitude and primitive recreation, and scenic, biological, and water special features would be preserved.

- Impacts on Recreation

Although primitive use is currently low (about 10 visitor days per year), the WSA has some areas of outstanding primitive recreational values. If designated, those recreational opportunities would be recognized, managed, and preserved.

With this alternative, primitive, 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. Publicity of the WSA that would likely follow wilderness designation, would also lead to an undetermined temporary increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would assure that the quality of the primitive recreation experience would not be negatively affected by increased primitive use.

Designating the area as wilderness would eliminate ORV recreational use presently occurring in the area along the Paria riverbed. Approximately 90 percent of the recreation use occurring in the area is ORV play activity and/or vehicular hunting and sightseeing; therefore, wilderness designation could reduce overall visitor use in the area in the short term, but primitive recreational use of the WSA would likely offset the loss of motorized recreational use over the long term. Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA.

Wilderness designation would provide additional protection to wild and scenic values of 3 miles of the Paria River.

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Conclusion: The primitive recreational opportunities in the WSA would be protected and enhanced. Wild and scenic values of the Paria riverbed would receive additional protection, and motorized vehicle use of the riverbed would be precluded. Overall visitation would decline initially.

Partial Wilderness Alternative (Proposed Action)

• Impacts on Wilderness Values

Designation and management of 5,100 acres as wilderness would contribute to the preservation of the wilderness values in The Cockscomb WSA. The potential for surface-disturbing activities would be reduced through closure of the designated areas to ORV use, and through management of the designated area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 5,100 designated acres. Solitude would be protected on approximately 2,650 acres that meet and 2,450 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on 2,750 acres that meet and 2,350 acres that do not meet the standards for outstanding opportunities. Approximately two-thirds of the scenic special features would be in the designated area and; therefore, would be preserved. Special status plant and animal species that are considered special features would be preserved.

No development would be expected in the foreseeable future that would affect wilderness values in the 4,980-acre nondesignated area. The only expected conflict with wilderness values is ORV activity that would continue and increase along the Paria riverbed and detract from opportunities for solitude and primitive recreation as described for the No Action/No Wilderness Alternative. Vehicular activity would continue to provide 90 percent of the recreational use of the WSA.

Conclusion: Wilderness values would be preserved in the designated area. No disturbance is expected that would affect wilderness values in the nondesignated area in the foreseeable future. However, vehicular use of the Paria riverbed, which is a special feature would continue to degrade opportunities for solitude and primitive recreation during the period of activity.

• Impacts on Recreation

Recreation use in the WSA would continue to follow existing use patterns and would increase at a rate of 2 to 7 percent annually. The quality of and opportunities for primitive type recreation would be preserved in the designated area while vehicular use opportunities would be eliminated. Little impact on ORV recreational use would be expected, however, because the Paria riverbed would be located in the nondesignated area and would not be closed to ORV use. In the area that would not be designated (4,980 acres), little change in recreational use is expected and both primitive and motorized use would continue. Overall in the WSA, about 90 percent of the recreational use would continue to be vehicular in nature.

Conclusion: The quality of primitive recreational opportunities would be preserved on the 5,100-acre designated area. Recreational use (both primitive and motorized) would increase, and general use patterns would not change from those that currently exist.

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