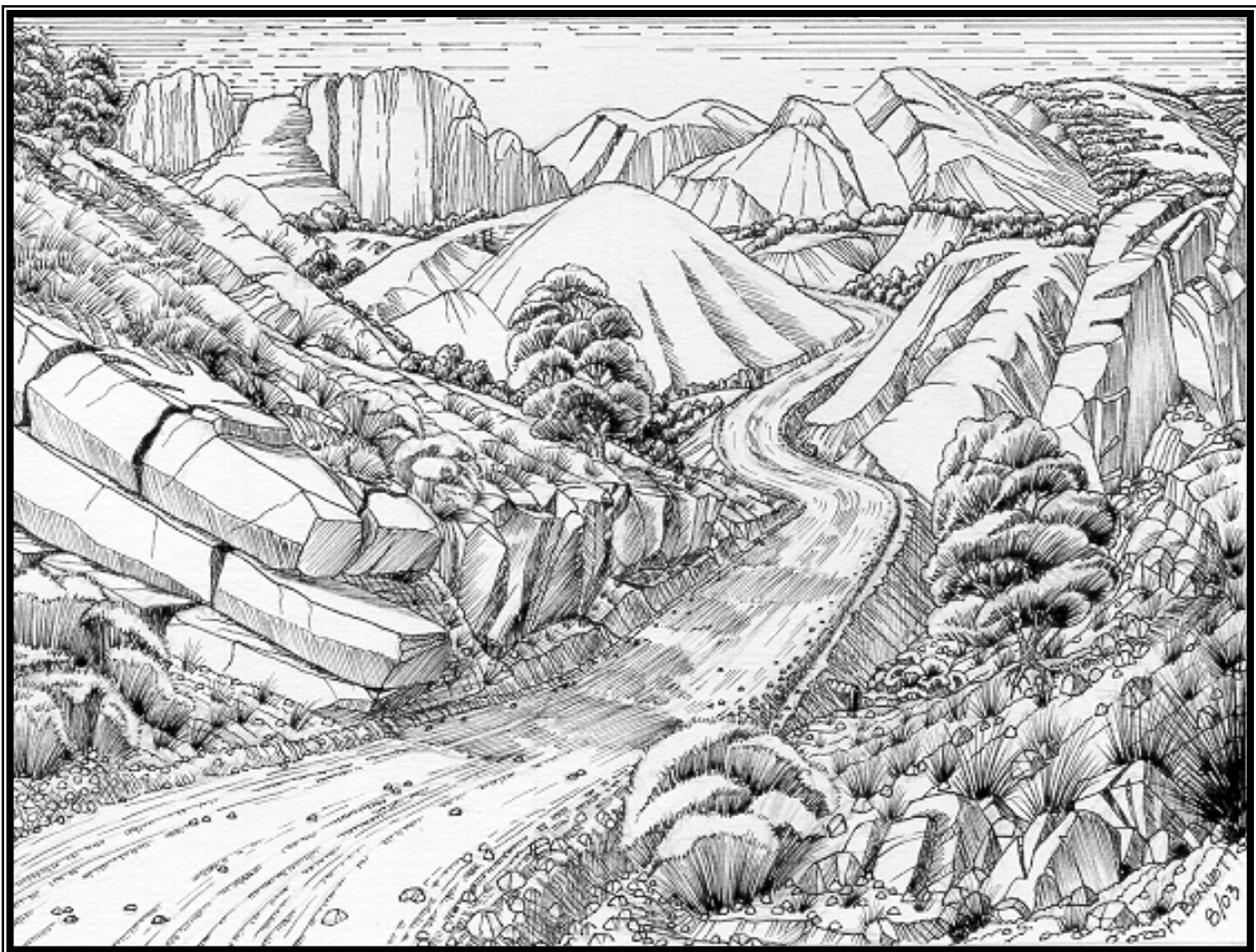




Burr Trail Modifications Final Environmental Impact Statement/ Assessment of Effect

December 2005



Capitol Reef

National Park • Utah

Final Environmental Impact Statement Burr Trail Modifications

CAPITOL REEF National Park • Utah

The National Park Service has prepared this final environmental impact statement with three cooperating agencies: the state of Utah, Garfield County, Utah, and Federal Highway Administration. This document evaluates the effects of proposed road modifications to the Burr Trail within Capitol Reef National Park. The proposed action is the product of the environmental compliance process that was needed to fulfill the May 30, 2001, settlement agreement that established a mutually agreeable procedure among the National Park Service, the state of Utah, and Garfield County, Utah to address road modifications that Garfield County would like to make to the Burr Trail.

This final environmental impact statement evaluates four alternatives. Three of these involve road modifications that stabilize parts of the road surface using gravel base material (some with geotextile fabric), install or improve drainage facilities at creek crossings, modify the road at mile point 0.65 to accommodate two-way traffic, and install slope protection along portions of the northern bank of Sandy Creek. The fourth alternative, the No Action Alternative, describes continuation of current conditions. This was the baseline condition against which the other alternatives were compared. Environmental consequences of the actions were evaluated to determine their potential effects to air quality; geologic features and landforms; biological soil crusts and soils; vegetation; wildlife; surface water, hydrology, and floodplains; natural soundscapes; ethnographic and ethnographic landscape resources; public health and safety; visitor use and experience; socioeconomics; park operations; Garfield County road maintenance operations; and sustainability and long-term management.

Public Comment

The draft environmental impact statement was on public review following publication of the Notice of Availability in the *Federal Register* by the Environmental Protection Agency beginning May 13, 2005. Public comments were accepted through July 19, 2005. The substantive comments received, and NPS responses, are included in the Consultation and Coordination section of this final environmental impact statement. All submissions from organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses are available for public inspection in their entirety.

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United States Department of the Interior • National Park Service • Capitol Reef National Park

SUMMARY

Capitol Reef National Park is located in south central Utah. The area is known for its sedimentary formations, cliffs, monoliths, and an abundance of canyons.

The Burr Trail (Boulder-to-Bullfrog Road) is a 66-mile-long backcountry road that passes through lands administered by two federal agencies, the National Park Service, and the Bureau of Land Management. About 8.4 miles of this road pass through the southern portion of Capitol Reef National Park.

Under Revised Statute 2477, Garfield County, Utah owns a right-of-way along the road. In accordance with a settlement agreement dated May 30, 2001, among the National Park Service, the State of Utah, and Garfield County, Utah, Garfield County has proposed road modifications to the Burr Trail within Capitol Reef National Park. The National Park Service prepared this final environmental impact statement to evaluate the effects of three action alternatives (including elements of the county's proposal) and a no action alternative.

Purpose and Need for Action

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Halls Creek crossing and at a drainage that crosses the road near the base of the switchbacks in Burr Canyon. The one-mile segment of the Burr Trail extends from the eastern park boundary to The Post. Based on the park's 1998 general management plan, Capitol Reef National Park has the following objectives for the proposed action:

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved, gravel and native material road, acknowledging that the road would be occasionally impassable depending on weather conditions;
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park; and
- Protect the natural and cultural resources of the park.

Garfield County has identified safety, stabilization, and improved drainage as the purposes of their proposal.

The proposed action is the product of the environmental compliance process that was needed to fulfill a May 30, 2001, settlement agreement, that established a mutually agreeable procedure between the National Park Service, the state of Utah, and Garfield County, Utah to address proposed road modifications that Garfield County would like to make to the Burr Trail.

Issues and Concerns

Issues and concerns addressed in this final environmental impact statement were identified through a cooperative planning process involving the National Park Service, the Federal Highway Administration, the state of Utah, and Garfield County, Utah. A conceptual design for the road modifications developed early in the planning process was used to help identify the objectives and issues for the proposed Burr Trail modifications.

Initial agency and public scoping emphasized adherence to the park's general management plan to ensure that the Burr Trail "remains an unpaved road with a winding nature and adventuresome character." The public requested that the Burr Trail's "primitive, less crowded, more solitary visitor experience be protected."

Impact topics (specific resources or values that could be affected by the proposed action) were used to focus the evaluation of the potential consequences of the proposed action and alternatives. Impact topics were identified based on required agency topics, public scoping, and park-specific resource information. Impacts analyzed included air quality; biological soil crusts and soils; geologic features and landforms; surface water, hydrology, and floodplains; natural soundscapes; vegetation; wildlife; ethnographic and ethnographic landscape resources; Garfield County road maintenance operations; park operations; public health and safety; socioeconomics; sustainability and long-term management; and visitor use and experience.

Alternatives

This final environmental impact statement evaluates four alternatives for managing the Burr Trail in Capitol Reef National Park. Three of the alternatives would involve road modifications. The fourth alternative, the No Action Alternative, would continue current conditions.

The No Action Alternative would continue management and maintain conditions as they currently exist. There would be no modifications to the drainage crossings, the road width would not be altered, the road surface would not be replaced, and road maintenance that currently takes place would continue.

Alternative A (the preferred alternative) would emphasize maintaining the rustic character of the road, minimizing disturbance to the environment, and integrating the visitor with the surrounding landscape. A prominent overhanging rock at mile point 0.65, which is a local landmark but which restricts the road to less than two lanes, would be left in place. Additional width for a two-lane road at this point would be obtained by expanding the roadside ditch toward the rock and adding a rock embankment on the south road bank adjacent to Sandy Creek. This would preserve this geological feature and landform. Alternative A was determined to be the environmentally preferred alternative. Other actions associated with Alternative A would include:

- Paved fords designed to contain 10-year storm event floodwaters overflowing the road within the paved portion of the ford at all of the drainage crossings; vented paved fords at two of the Sandy Creek crossings and at the Halls Creek crossing would allow 2-year storm events to pass through corrugated metal culverts without overtopping the road.

Each of the fords would be signed to warn travelers not to cross when water is present on the road;

- Excavation of one foot of bentonite clay along portions of the road in areas that get extremely slippery when wet, and replacement with gravel underlain by geotextile fabric;
- Slope protection at mile points 0.75 to 0.85 to stabilize the road embankment;
- Shifting the road a short distance downstream (primarily within the confines of the existing disturbed area between the road embankment slopes) from the confluence of the Burr Canyon drainage with Halls Creek and installing a vented paved ford at the crossing;
- Installing three 36-inch culverts and a downslope rock embankment to stabilize the slope at the upper Burr Canyon side drainage; and
- A cattle guard at the eastern park boundary.

Visitors traveling along the winding, hilly terrain would continue to experience the remote feeling and sense of adventure currently provided on the Burr Trail.

Alternative B would remove the overhanging rock, making room to widen and straighten the road at mile point 0.65. Other major differences between this alternative and Alternative A would include:

- The use of culverts designed to pass a 25-year storm event at the four crossings of Sandy Creek and at the Halls Creek crossing;
- The use of culverts designed to pass a 2-year storm event at the two minor drainage crossings;
- Road surface stabilization would be accomplished by excavating those sections with high bentonite clay content to a depth of one foot and installing a gravel road surface directly over the substrate (no geotextile would be used); and
- Slope protection at mile points 0.75 to 0.85 to stabilize the road embankment.

Alternative C also would remove the overhanging rock, use culverts at the major and minor drainage crossings, install gravel on selected sections of the road surface, and install slope protection between mile points 0.75 to 0.85. The major feature associated with Alternative C that differs from Alternative B includes:

- The culverts used would be able to pass a 50-year storm event at the major drainage crossings in the project area.

Environmental Consequences

Impacts of the four alternatives were assessed in accordance with *Director's Order 12 and Handbook: Conservation Planning, Environmental Impact Analysis and Decision Making*.

This handbook requires that impacts on park resources be analyzed in terms of their context, duration, and intensity. The analysis provides the public and decision-makers with an understanding of the implications of road modification actions in the short- and long-term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists. This final environmental impact statement was prepared in compliance with the National Environmental Policy Act (NEPA) and all applicable federal rules and regulations.

For each impact topic, methods were identified to estimate the change in park resources that would occur with the implementation of each road management alternative. Thresholds were established for each impact topic to help understand the intensity of changes in resource conditions, both adverse and beneficial.

Each road modification alternative was compared to a baseline to determine the context, duration, and intensity of resource impacts. The baseline is the condition that would result from management of the Burr Trail under the existing approach and is represented by the No Action Alternative.

The analysis of environmental consequences determined that none of the alternatives would have any major effects, including cumulative effects, on any of the impact topics. In addition, it found that there would not be any major adverse impacts to resources or values whose conservation was necessary to fulfill purposes identified in the established legislation of Capitol Reef National Park, key to the natural or cultural integrity of the park, or identified as a goal in the park's general management plan or other relevant NPS planning documents. Therefore, none of the alternatives for modifying the Burr Trail in Capitol Reef National Park would result in the impairment of the park's resources or values.

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INTRODUCTION

PROJECT BACKGROUND

The Burr Trail, also known as the Boulder-to-Bullfrog Road, is a 66-mile-long backcountry road that passes through lands administered by two federal agencies, the National Park Service (NPS) and the Bureau of Land Management. As shown in the General Vicinity map, about 8.4 miles of this road pass through the southern portion of Capitol Reef National Park. As decided by federal district court, Garfield County, Utah has a valid, existing right-of-way for the road under Revised Statute 2477.

Since the 1970s, the National Park Service has evaluated proposals to upgrade the Burr Trail within the park. These proposals have included paving and constructing an all-weather road. The most recent environmental assessment, prepared in 1993, evaluated the impacts of road modifications within the limits of National Park Service and Bureau of Land Management lands.

In February 1996, a Garfield County road crew performed unauthorized road work along this portion of the Burr Trail. The U.S. Department of Justice filed a trespass suit against the county, which resulted in a February 1999 trial in U.S. District Court. In a decision dated October 24, 2000, the court found that the work performed by Garfield County was unauthorized “construction” rather than “maintenance” and that the county did the work without a permit or NPS approval. In particular, the court said that the work by the county precluded an analysis of the action under the National Environmental Policy Act of 1969 (as amended) and frustrated the National Park Service in its ability to develop alternatives that would have a lesser level of effect. Specifically, the court said that:

- Pursuant to the Property Clause of the United States Constitution, pertinent Acts of Congress, and lawful rules and regulations issued by the Secretary of the Interior, the National Park Service has the power to regulate construction work performed by Garfield County in the Burr Trail right-of-way within the boundaries of Capitol Reef National Park to the extent provided by 36 C.F.R. § 5.7 and other pertinent statutes and rules..
- Garfield County may not perform construction within the meaning of 36 C.F.R. § 5.7 without first obtaining a permit, approval, or agreement from the National Park Service.
- Any Garfield County road construction action in the Park is subject to review and disclosure under the provisions of the National Environmental Policy Act.
- When the National Park Service receives from Garfield County a proposed plan for construction along the Burr Trail, the National Park Service shall proceed in timely fashion:
 - To determine if the work falls within the county’s right-of-way;
 - To comply with the National Environmental Policy Act, as well as any other applicable legal requirements;
 - To consider alternatives; and

INTRODUCTION

- To grant timely approval of the proposed work within the existing right-of-way, unless the work will significantly and adversely affect park lands, resources, values, or administration, in which case the National Park Service needs to formulate alternatives to reduce effects.

The court also ordered that Garfield County can do road maintenance to preserve the existing condition of the road without prior National Park Service approval.

A settlement agreement was filed in district court on May 30, 2001, on a counterclaim filed by Garfield County regarding the original case. The agreement established a cooperative process for addressing modifications that Garfield County and the state of Utah would like to make along the Burr Trail within Capitol Reef National Park. The settlement agreement commits the National Park Service to carry out the necessary environmental analysis in a timely fashion consistent with the district court's order. It also established that Garfield County and the state of Utah would be cooperating agencies in completing the environmental compliance process. A copy of the settlement agreement is provided in Appendix A. Appendix A also includes a Memorandum of Agreement, signed by the National Park Service, Garfield County, Utah, the State of Utah, and the National Parks Conservation Association, to confirm a mutually agreeable procedure to address improvements that the county and state want to make on the Burr Trail through Capitol Reef National Park.

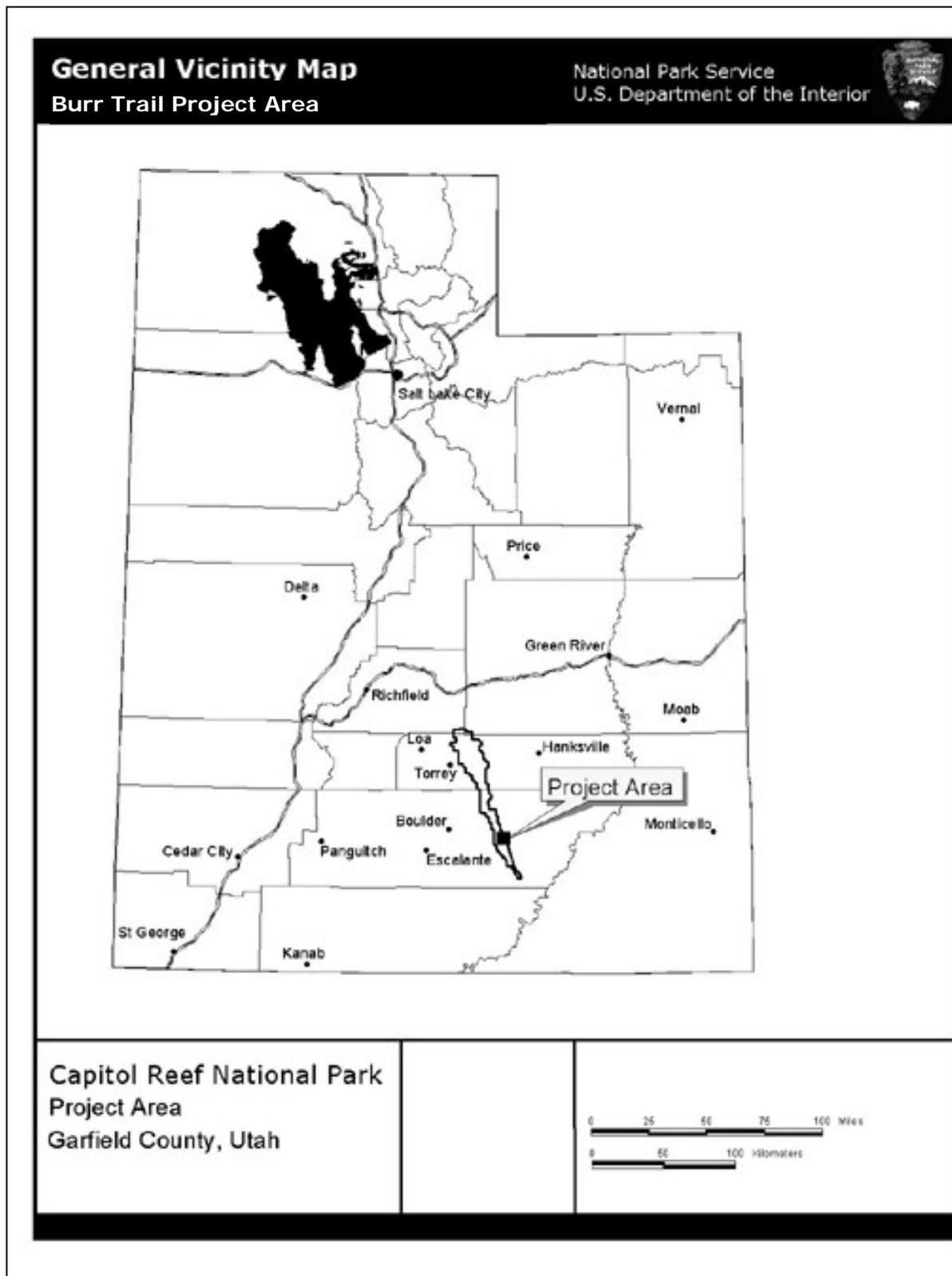
In accordance with the settlement agreement, Garfield County has proposed road modifications to the Burr Trail within Capitol Reef National Park. Under the provisions of the National Environmental Policy Act of 1969, (as amended), the National Park Service prepared this final environmental impact statement to evaluate the effects of Garfield County's proposal and alternatives.

Garfield County's proposed action includes road widening, resurfacing, roadbed and road bank stabilization, and drainage modifications along the Burr Trail. The proposed action also includes two drainage modifications outside the one-mile segment. These actions would be implemented about three miles northwest of the one-mile segment and would include the Burr Trail crossing of Halls Creek and a drainage crossing near the base of the switchbacks in Burr Canyon. The installation of a cattle guard at the east park boundary, which has been proposed by the National Park Service, also is included in the proposed action.

GENERAL SETTING OF THE BURR TRAIL PROJECT AREA

The Burr Trail winds through the hilly terrain of southern Utah's Garfield County. The Burr Trail has historically been the major access road into eastern Garfield County and is the primary route through the southern part of the Waterpocket Fold, a major physiographic feature of Capitol Reef National Park (see the Capitol Reef National Park map).

The Burr Trail alignment, which is along a natural pass across the Waterpocket Fold, initially was used by American Indians. The 8.4 mile-long-section of the Burr Trail within the park boundary was later improved by local ranchers. The road was extensively used by uranium miners and ore trucks throughout the 1950s and into the 1960s.



General Vicinity Map

INTRODUCTION

The Burr Trail is now used by visitors to the southern part of Capitol Reef National Park for sightseeing, hiking within the Circle Cliffs, and accessing surrounding public lands. It also provides access to the Bullfrog Marina area of Glen Canyon National Recreation Area, south of the park. In addition, it continues to be used by local farmers and ranchers who, along with other transportation uses, trail cattle to and from grazing allotments.

On an annual basis, about 29 vehicles per day use the Burr Trail through the park. Use is heaviest during April to June, when daily traffic counts occasionally exceed 50 vehicles per day. The peak traffic volume of 122 vehicles in one day was recorded in May 1994 (Wilson 2002).

The segment of road under consideration is shown on the Capitol Reef National Park map. It begins on the eastern boundary of Capitol Reef National Park. Features of the road are as follows:

- From the eastern park boundary, the road alignment is to the northwest. Starting near mile point 0.50, it makes a curve to a southwest alignment. As shown on the map, there are numerous curves along the entire road length.
- The road descends throughout most of its length from east to west after entering the park across the east boundary.
- The road surface is composed of native material.
- The design speed for traffic on the road is less than 25 miles per hour.
- The road width averages 18 feet with one-foot shoulders for a total road width of 20 feet.
- Typical road maintenance actions conducted by Garfield County involve repair of road surfaces, shoulders, slopes, and culverts, and maintaining the existing shape and width of the road.
- The road crosses the large Sandy Creek drainage channel four times. It also crosses two small, unnamed washes.
- Rough, hilly, terrain is present on both sides of the road along a long curve in the central portion of the one-mile road segment.
- A prominent, weathered, overhanging rock is located at the 0.65-mile point. This overhanging rock is an outstanding example of the rugged visual character of the Burr Trail. As the road approaches this rock, it narrows in width to less than two lanes and curves below the overhanging rock.
- From the overhanging rock to a point near mile point 0.75, Sandy Creek follows the base of the slope along the south side of the road.
- The intersection known as The Post occurs at the 1.0-mile point.

About 3.5 miles north and west of the park's eastern boundary, the road crosses Halls Creek near its confluence with the Burr Canyon drainage. At mile 4.0 from the east boundary, the road crosses a side drainage of the Burr Canyon. It then goes up an incline into an area known as the switchbacks.

THE GARFIELD COUNTY PROPOSAL

The National Park Service consulted with Garfield County and prepared a conceptual design for roadway modification proposals. The conceptual design plan is provided in Appendix B. The modifications would occur along the Burr Trail, plus the Halls Creek crossing and a side drainage crossing in Burr Canyon. Road modifications proposed by the county would include:

- Gravel surfacing on portions of the road,
- Modifying the roadway at the overhanging rock,
- Installing or modifying drainage facilities at selected wash and creek crossings,
- Installing slope protection along the bank of Sandy Creek where it runs parallel to the road, and
- Widening the road paralleling the Burr Canyon drainage, and stabilizing this area with a retaining wall.

Garfield County would be responsible for implementing the proposed road modifications.

PARK PURPOSE AND SIGNIFICANCE

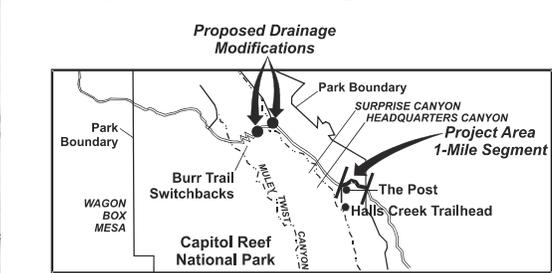
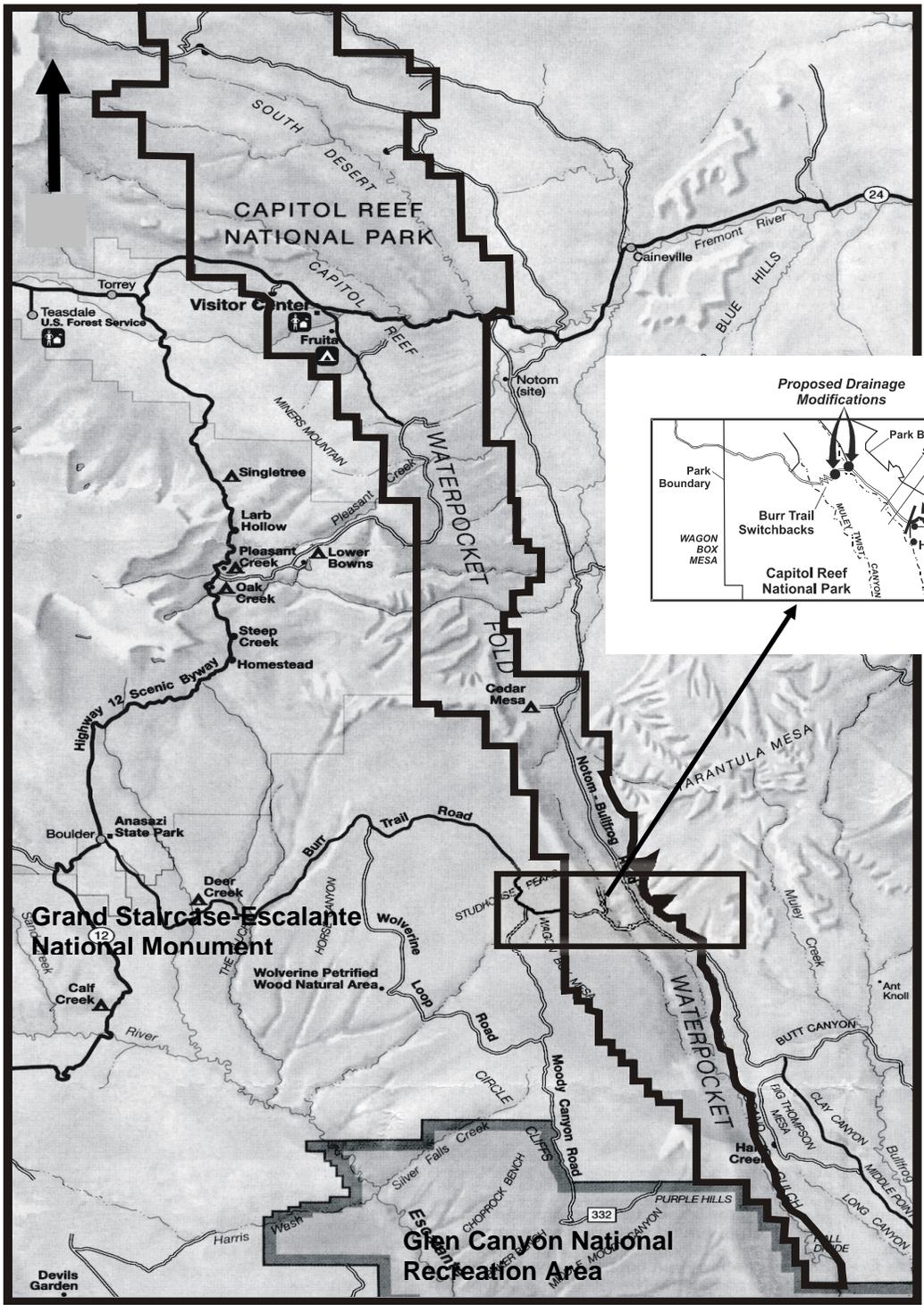
The purpose and significance of Capitol Reef National Park are defined in the *Final Environmental Impact Statement, General Management Plan, and Development Concept Plan: Capitol Reef National Park* (NPS 1998c). According to this document, the purposes of Capitol Reef National Park include:

- Conserving and protecting such geologic wonders as the Waterpocket Fold, Cathedral Valley, narrow canyons, evidence of ancient sand dune deposits, and objects of geologic and scientific interest; and
- Protecting all park features from unauthorized appropriation, injury, destruction, or removal.

The features of the park that contribute to its significance include the following:

- The Waterpocket Fold, the largest exposed monocline in North America.
- Numerous superlative geologic features carved by weathering, creating a diverse array of canyons, domes, cliffs, and pinnacles.
- Clear air, striking scenic views, and some of the best opportunities for quiet and solitude on the Colorado Plateau.
- A variety of habitat types that support diverse plant and animal life.
- Significant archeological resources, in particular those of the Fremont culture, and historical resources that illustrate the story of Mormon settlement and the closing frontier.
- Economic, recreational, and cultural importance to surrounding areas of visitation to Capitol Reef.

Capitol Reef National Park Map National Park Service U.S. Department of the Interior 158/20032



CAPITOL REEF NATIONAL PARK MAP

PURPOSE OF AND NEED FOR ACTION

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Halls Creek crossing and at a drainage crossing the road near the base of the switchbacks in Burr Canyon. The one-mile segment of the Burr Trail that would be modified extends from the eastern park boundary to The Post.

The *Final Environmental Impact Statement, General Management Plan, and Development Concept Plan: Capitol Reef National Park* (NPS 1998c) was approved in a March 2001 Record of Decision (NPS 2001c). This document sets National Park Service management direction within Capitol Reef National Park. Based upon this management direction, Capitol Reef National Park has the following objectives in connection with the proposed action:

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved, gravel and native material road, acknowledging that the road occasionally would be impassable, depending on weather conditions.
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park.
- Protect the natural and cultural resources of the park.

As described in the park's 1998 General Management Plan, the desired visitor experience is: "Visitors in this road corridor encounter an essentially all-weather, maintained, variable-width dirt road. The road may be seasonally impassible, depending on weather conditions" (NPS 1998c).

Garfield County has identified safety, stabilization, and improved drainage as the purposes of their proposal.

The purpose of the action is to ensure the continued passability, safety, and integrity of the roadway along the Burr Trail. The need for this project is based on erosion and undercutting of stream banks and the road bed along Sandy Creek and at other drainages, the slippery-when-wet character of the road surface, and concerns about the limited sight distance and narrowness of the road in the vicinity of the overhanging rock. The May 30, 2001, Settlement Agreement and a Memorandum of Agreement (both included in Appendix A) established a mutually agreed-to procedure among the National Park Service, the state of Utah, and Garfield County, Utah, to address road modifications.

The purpose of this environmental impact statement is to determine the effects of modifications to the Burr Trail on the natural, cultural, and social resources of the park and surrounding area. This would include the effects of the No Action Alternative and effects from three action alternatives. In accordance with Judge Jenkins' October 24, 2000 decision, the environmental impact statement develops alternatives that would reduce the potential adverse effects of the Garfield County proposal to park resources and values.

BALANCING PARK VALUES WITH COUNTY TRANSPORTATION NEEDS

The National Park Service and Garfield County have worked together to develop reasonable and necessary road modifications to provide safe passage on the two-lane, low-traffic-volume Burr Trail. The modifications are intended to blend the park's resource values and road design standards with the county's interest in keeping county roads safe and in good repair. A key element involves minimizing impacts on adjacent public lands and protecting important values of Capitol Reef National Park.

According to NPS Park Road Standards, which were developed by the National Park Service and the Federal Highway Administration, the road would be classified as Class IV: Primitive Park Road. Primitive park roads are those "which provide circulation through remote areas and/or access to primitive campgrounds and undeveloped areas" (NPS 1984). Further guidance from NPS Park Road Standards states "The fundamental purpose of national parks – bringing humankind and the environment into closer harmony – dictates that the quality of the park experience must be our primary concern. Full enjoyment of a national park visit depends on its being a safe and leisurely experience. The distinctive character of park roads plays a basic role in setting this essential unhurried pace. Consequently, park roads are designed with extreme care and sensitivity with respect to the terrain and environment through which they pass – they are laid lightly onto the land...The purpose of park roads remains in sharp contrast to that of the Federal and State highway systems. Park roads are not intended to provide fast and convenient transportation; they are intended to enhance visitor experience while providing safe and efficient accommodation of park visitors and to serve essential management access needs" (NPS 1984).

The Burr Trail is identified in the park's general management plan (NPS 1998c) as being within a Dirt, All-Weather, Two-Wheel-Drive Road Corridor Zone located within Capitol Reef National Park. Roads within this zone are sometimes washboarded and dusty, and traverse drainage bottoms. Visitors within this zone may encounter other visitors rarely to occasionally, depending on the season and location. Park facilities within this zone would include directional signs, cattle guards, pullouts, picnic areas, and trailhead parking areas. Emphasis in this zone is placed on preserving the natural character of the lands within the road corridor to ensure that the road provides the visitor with a sense of remote lands exploration.

Garfield County has identified Burr Trail as a Major Collector (part of the Rural Collector System), and the Burr Trail is shown on Utah state highway maps with that classification. According to the American Association of State Highway and Transportation (AASHTO) guidance, Major Collector routes "(1) serve county seats not on arterial routes, larger towns not directly served by the higher systems, and other traffic generators of equivalent intracounty importance, such as consolidated schools, shipping, points, county parks, and important mining and agricultural areas; (2) link these places with nearby larger towns or cities, or with routes of higher classifications; and (3) serve the more important intracounty travel corridors" (AASHTO 2001).

The park's management approach for the road is focused on protecting the area's scenic, natural, and cultural resources, while providing for visitor safety. This approach is consistent with the National Park Service' mandate under the Organic Act (USC 1916), park enabling legislation (U.S. Public Law 1971), and park general management plan (NPS 2001c). In accordance with the settlement agreement and memorandum of agreement (provided in Appendix A), the National Park Service will review and regulate road construction work performed by Garfield County or the state of Utah to ensure the protection of park resources.

As decided in federal district court, Garfield County has a Revised Statute 2477 right-of-way along the Burr Trail and is responsible for ensuring a safe, passable roadway (USDC 2000). The county's interest is to keep this and all other county roads in a safe condition and good repair. This includes preserving and maintaining existing county rights-of-way through federal lands.

The transportation goals of the Garfield County general plan (Five County Association of Governments 1995) relating to the Burr Trail state that the county will continue to maintain county roads to preserve their state funding and class designation. The county's general plan indicates that existing roads will be upgraded as traffic increases and safety standards are raised, to include developing and protecting the landscaping along routes proposed for scenic enjoyment. Garfield County's goal is to maintain or improve existing roads, and to maintain Revised Statute 2477 access rights-of-way to federal and state lands.

County road maintenance conducted on the Burr Trail is intended to preserve the existing condition of the Burr Trail. Road maintenance activities may involve:

- Repair of wear or damage to existing road surfaces, shoulders, and cut or filled slopes;
- Repair, clearing, or replacement in-kind of culverts and other structures; and
- Maintaining the existing shape and width of the road, which would include grading as needed to preserve a passable surface in both lanes.

Under the proposed action evaluated in this final environmental impact statement, the county would implement road modifications that would involve "construction" rather than "maintenance." The proposed action is intended to widen two sections of the road from 14 feet to 20 feet, improve sight distance along narrow and curved portions of the road, stabilize road banks and roadbeds, and install drainage structures that either are new or do not meet the definition of "in-kind."

SCOPE OF THE ANALYSIS

This final environmental impact statement evaluates the effects of road modifications to be implemented on the Burr Trail. The modification locations are shown on the Project Area map. To ensure conformance with the National Environmental Policy Act and the Council on Environmental Quality (1978) guidelines for its implementation, this environmental impact statement includes an analysis of cumulative effects on resources of the proposal in conjunction with all past, present, and reasonably foreseeable actions.

RELATIONSHIP TO OTHER PLANNING PROJECTS

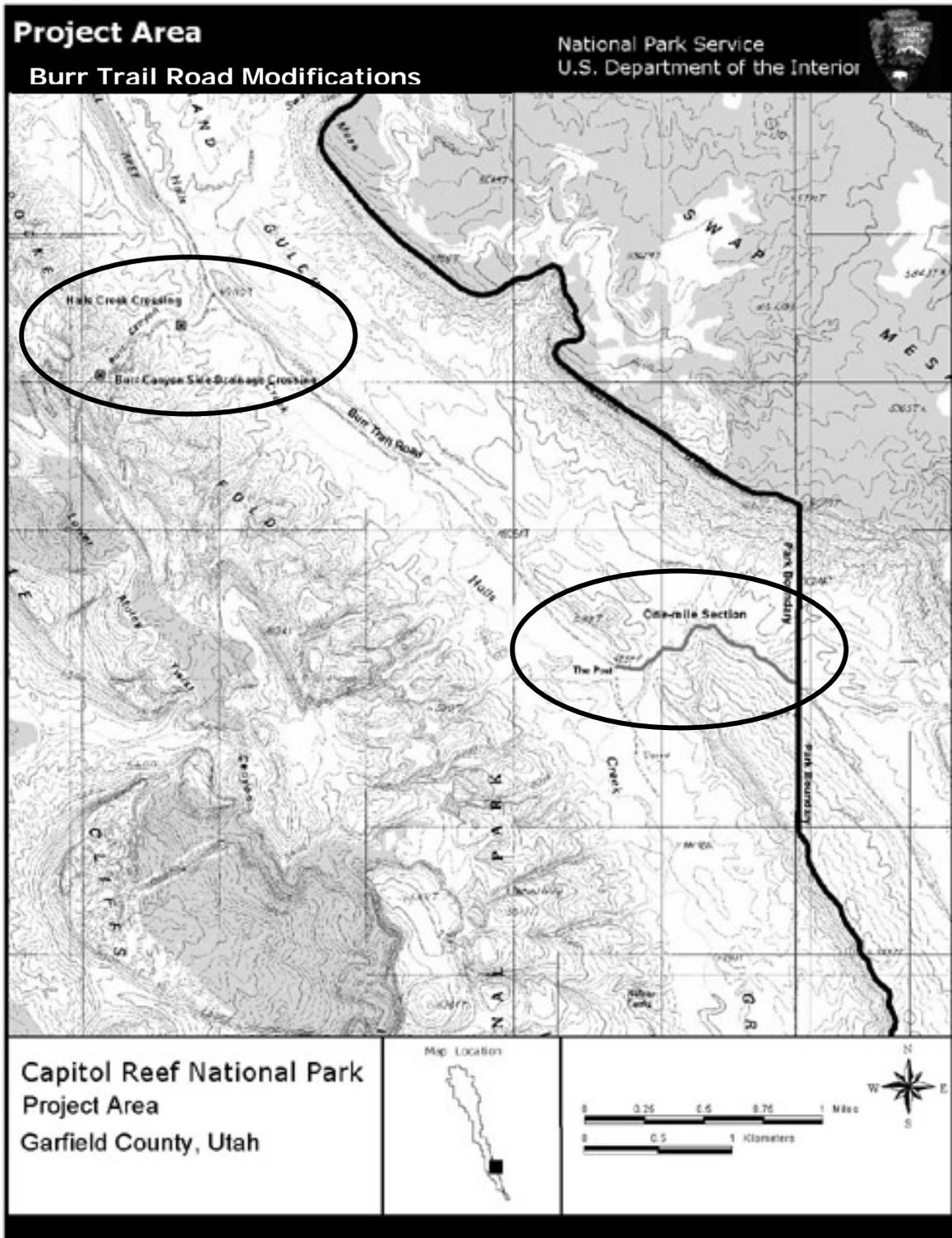
NATIONAL PARK SERVICE PLANS, PROJECTS, AND STANDARDS

Several plans, projects, and standards that the National Park Service and Capitol Reef National Park either have in place or have in progress may affect decisions regarding the modification of the Burr Trail. Two existing plans and policy documents are particularly applicable to the Burr Trail and visitor use characteristics. These documents provide the broad guidance within which the proposed action would function.

- ***Park Road Standards: National Park Service*** (NPS 1984). Park road standards for the planning, design, and construction of National Park Service roads were published in 1968 (NPS 1968) and updated in 1984. These standards include minimizing disturbance to the environment and creating a positive visitor experience that integrates the road with the surrounding landscape and preserves the natural and cultural values of the park. These standards were used for the planning, design, and construction of the proposed Burr Trail modifications.
- **Engineering & Landscape Architectural Assessment of the Burr Trail Road from The Post to the East Boundary** (NPS 1998a). This report evaluated the Burr Trail and recommended approaches that would minimize disturbances of the environment and integrate the visitor with the surrounding landscape. The report highlighted key design principles by assessing the character of the Burr Trail, outlined engineering and landscape architectural considerations, and recommended treatments to specific sections of the Burr Trail that would conform to National Park Service park road standards (NPS 1984).

Twelve other documents that were prepared by the National Park Service, the Bureau of Land Management, or a joint effort of these two U.S. Department of the Interior agencies could affect decisions regarding the Burr Trail. Some of these relate specifically to the road, while others focus on related facilities, such as the park as a whole or the visitor center. Identification of these documents, with key features or their relevance to Burr Trail modifications when it is not readily apparent, are provided below.

- **Environmental Assessment, Paving the Boulder-to-Bullfrog Road** (NPS and BLM 1985a). The National Park Service and Bureau of Land Management prepared this environmental assessment to evaluate paving the road. The basis for this action was the Boulder-to-Bullfrog Scenic Road Preliminary Engineering Report prepared by Creamer and Noble Engineers and Five County Association of Governments (1984).
- **Environmental Assessment Supplement, Paving the Boulder-to-Bullfrog Road** (NPS and BLM 1985b). The supplement to the 1985 environmental assessment was prepared to summarize the response to public comment on the environmental assessment identified in the preceding bullet.



Project Area Map

PURPOSE OF AND NEED FOR ACTION

- **Finding of No Significant Impact, Paving the Boulder-to-Bullfrog Road** (NPS and BLM 1985c). This document recommended that the entire length of the trail become a rural scenic road maintained by and under the jurisdiction of the National Park Service. The road was to adhere to the present horizontal and vertical alignment and cross-section but would be improved to have an all-weather gravel surface. The document also identified the need to conduct additional detailed investigations to satisfy environmental concerns.
- **Final Environmental Assessment, Boulder-to-Bullfrog Road Improvement Project (Burr Trail), a Supplement to Paving the Boulder-to-Bullfrog Road, 1985** (BLM 1989a). The Bureau of Land Management prepared additional site-specific environmental impact analyses to evaluate Garfield County proposals for improvements to sections 1 and 3 of the road, through what is now Grand Staircase-Escalante National Monument and the Henry Mountain Resource Area. No analysis was performed for section 2 within Capitol Reef National Park, or section 4 within Glen Canyon National Recreation Area.
- **Finding of No Significant Impact and Record of Decision, Boulder-to-Bullfrog Road Improvement Project, Segment 1** (BLM 1989b) and **Finding of No Significant Impact and Record of Decision, Boulder-to-Bullfrog Road Improvement Project, Segment 3** (BLM 1989c) These documents provided detail regarding site-specific decisions or proposed Garfield County road improvements for sections 1 and 3.
- **Environmental Assessment for Road Improvement Alternatives, Boulder-to-Bullfrog (Burr Trail), Capitol Reef National Park, Glen Canyon National Recreation Area, Escalante Resource Area, Henry Mountain Resource Area, Garfield County, Utah** (NPS and BLM 1993). This document was prepared by the National Park Service and Bureau of Land Management to further evaluate site-specific effects of improvement alternatives for the entire road. Four alternatives were considered, including a Garfield County proposal.
- **Finding of No Significant Impact, Road Improvement Alternatives, Boulder-to-Bullfrog Road (Burr Trail), Capitol Reef National Park, Glen Canyon National Recreation Area, Escalante Resource Area, Henry Mountain Resource Area** (NPS and BLM 1995). This document identified a preferred alternative that would improve the road in sections 1, 3, and 4. It also identified the need for additional environmental impact analysis before work is performed within section 2 (Capitol Reef National Park).
- **Final Environmental Impact Statement, General Management Plan, and Development Concept Plan: Capitol Reef National Park** (NPS 1998c). The park's general management plan describes the road as a dirt, all-weather, two-wheel-drive road corridor that provides the visitor with a sense of remote lands exploration. Natural resource management within the road corridor emphasizes preserving the natural character of the land. All road development activities for the Burr Trail are reviewed and regulated by the National Park Service to ensure that they remain compatible with these visitor management policies and resource protection measures.

- **Visitor Center and Existing Operations Offices Renovation Plan** (NPS no date c). This plan would result in a renovation of the visitor center to accommodate a larger annual visitation. The renovation plan includes expanding the exhibit space, expanding the public restrooms, renovating the indoor theatre to meet Americans with Disabilities Act standards, and making improvements to the visitor parking area. The proposed modifications would potentially provide improved audio/visual exhibits and interpretive programs that would encourage more visitors to travel from the park headquarters and visitor center area into the southern part of the park and explore opportunities in and around the Burr Trail.
- **Sleeping Rainbow Ranch Adaptive Reuse Plan and General Agreement** (NPS 1998c). This project would involve the adaptive reuse of existing facilities through the rehabilitation of existing buildings and utilities and a possible addition of facilities to be used for year-round education and research programs. The facility located at the ranch headquarters area near Pleasant Creek in Capitol Reef National Park would accommodate day-use and extended stays of up to three weeks for small Utah Valley State College groups and research teams participating in workshops, classes, and retreats in conjunction with park education, interpretation, and research. The proposed rehabilitation would potentially encourage more research to be conducted at other locations throughout the park. As a result, research groups may increase their study of areas in and around the Burr Trail, or may increase their use of the Burr Trail to access other areas of the park.
- **Livestock Trailing Special Use Permits.** Livestock trailing is allowed on the Burr Trail by permit. Livestock are driven twice per year between high summer grazing allotments and lower winter grazing allotments along the Notom Road and the Burr Trail from the Notom Road junction to the east boundary of the park. A special use permit is required each time livestock trailing is conducted. Special use permits for livestock trailing would continue to be issued to allow seasonal access and use of the Burr Trail by livestock.

PLANS, PROJECTS, OR ACTIONS OF OTHERS

Most of the following documents or actions were prepared or undertaken by parties other than the National Park Service and describe plans and actions that could influence the Burr Trail. They also include National Park Service documents for the management of other areas that could affect use of the Burr Trail. Identification of these documents, with key features or their relevance to Burr Trail road modifications when it is not readily apparent, are provided below.

- **Grand Staircase-Escalante National Monument Approved Management Plan, Record of Decision, Cedar City, Utah** (Bureau of Land Management 1999). This management plan identifies a portion of the Burr Trail as a “Passage Zone.” This zone includes all secondary travel routes that receive use as throughways and recreation destinations. Rudimentary facilities that are necessary to protect resources, educate visitors about monument resources, or protect public safety would be provided in these areas. These proposed modifications would provide improved facilities and could encourage additional visitors to explore portions of the park adjacent to the Burr Trail.

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- **Resource Management Plan for Public Lands and Resources in Garfield, Piute, Sanpete, Sevier, and Wayne Counties.** A resource management plan is currently under development by the Bureau of Land Management for public lands adjacent to or in the vicinity of Capitol Reef National Park. Portions of the Burr Trail on Bureau of Land Management-administered lands within the study area will be addressed in this plan.
- **Bureau of Land Management Cattle Grazing Permits.** Cattle grazing is permitted on Bureau of Land Management lands adjacent to Capitol Reef National Park. This activity leads to the transport and trailing of cattle along the Burr Trail and, sometimes, the trespass of animals onto the park.
- **Garfield County, Utah General Plan.** The Garfield County general plan, prepared by the Five County Association of Governments (1995), documents the goals, policies, and objectives relating to the present and future needs of the county, including growth and development of land within the county. The general plan also identifies the relationship of county land use plans to those of federal and state government land management activities. The planning assumptions and policy statements within the general plan provide the future goals for land use or desirable conditions, and the strategies that the county would pursue to achieve them. These include policies that would apply to the Burr Trail and other state and county roads in the county. The Garfield County general plan guides transportation operations and activities on the Burr Trail.
- **Glen Canyon National Recreation Area General Management Plan (NPS 1979).** The most recent general management plan for Glen Canyon National Recreation Area was completed in 1979 and reprinted in 1991. The plan established management zones, including the Recreation and Resource Utilization, Natural, Cultural, and Development Zones. The general management plan includes the segment of the Boulder-to-Bullfrog Road within recreation area boundaries in the Development Zone, which provides for permanent structures necessary to support recreational activities.
- **Bullfrog Development Concept Plan (NPS 1997) as amended.** This plan would increase visitor use by expanding the existing facilities at Bullfrog Marina. A portion of the visitor use would use the Boulder-to-Bullfrog Road to access the Bullfrog Marina.
- **Upgrades to the Burr Trail on Bureau of Land Management Lands.** Garfield County has paved the Burr Trail on Bureau of Land Management lands both east and west of the park. Throughout these areas, the road is wider and more developed than in the park. These changes did not increase the average daily traffic volume traveling the Burr Trail but probably have increased vehicle speeds both on the paved areas and at the park's west entrance, where the road surface changes to native material. The road is paved to within 8 miles of the east park boundary. The presence of paving on the Burr Trail on both sides of the park may increase future pressure to pave the entire road.
- **Wayne County's Upgrade of the Notom Road.** Wayne County paved the Notom Road south to the Garfield County line in 2002. The Notom Road provides access from Utah Highway 24 to the southern part of the park, where it connects with the Burr Trail. Paving of the Notom Road has not increased the average daily traffic on the Burr Trail,

but may increase pressure to pave the Notom Road to the current inholding of agricultural lands and, perhaps, to the park.

- **Travel Promotion by Grand Circle Association.** The Grand Circle Association promotes travel and vacation opportunities in the Four Corners region of the southwestern United States. This organization promotes travel destinations in southeast Utah, including Capitol Reef National Park, Deer Creek Recreation Site, Long Canyon, Lake Powell, and the Bullfrog Marina. This organization's literature depicts the Burr Trail as a scenic backway ("A backway is a paved or dirt road that reaches less traveled, but breathtaking areas." [Grand Circle Association 2004]) providing access to these areas, and may lead to increased traffic on the road in the future.

ISSUES AND OBJECTIVES

Issues and objectives addressed in this final environmental impact statement were identified through a cooperative planning process involving the National Park Service, the state of Utah, and Garfield County, Utah. A conceptual design for the proposed road modifications developed early in the planning process was used to help identify the objectives and issues.

Project objectives for the National Park Service include:

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved, gravel and native material road, acknowledging that the road occasionally would be impassable because of weather conditions;
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park; and
- Protect the natural and cultural resources of the park.

Garfield County has identified safety, stabilization, and improved drainage as the purposes of their proposal.

Issues associated with road modifications on the Burr Trail were identified using the following methods.

- Scoping meetings were held at Capitol Reef National Park. Participants included representatives from the National Park Service, the state of Utah, and Garfield County.
- A notice of intent to prepare an environmental impact statement was published in the *Federal Register* on April 10, 2002 (NPS 2002h). This notice of intent solicited comments from the public.
- A public scoping brochure was mailed to the public on May 20, 2002, soliciting their comments. A copy of the brochure is provided in Appendix C.

Additional information on scoping is provided in the "Consultation and Coordination" section and in the consultation letters in Appendix D.

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All issues that were identified using these methods and that were received by June 21, 2002, were classified in three categories: natural resource issues, cultural resource issues, and visitor use and socioeconomic issues. Brief descriptions of the issues within each of these categories are provided below.

NATURAL RESOURCE ISSUES

Air Quality. Scoping comments expressed concern that construction activities required to install road modifications could generate airborne particulates (dust). Increased numbers of vehicles could increase fugitive dust and temporarily affect air quality. This local release of particulates could reduce regional visibility.

Alterations of Geologic Features, Landforms, and Terrain. The geologic character and features of the landforms along the Burr Trail contribute to the road's distinctive character. Traveling along the road gives visitors a close-up perspective of natural features such as overhanging rock faces and eroded hills. It also provides a variety of scenic views of the Waterpocket Fold and the visual transition of slopes leading up to mesas. Changes in the horizontal or vertical alignment or the established surface contours of the road could change the shape, character, or views of some natural features. Weathering of the overhanging rock may cause rock-fall hazards that could impact vehicles. Constriction of drainage or storm flows may undermine surrounding landforms, changing the natural shape and contours of the landform.

Biological Soil Crusts and Soils. Soils disturbed by human activity are vulnerable to wind and water erosion. Concern was expressed that the disturbance of biological soil crusts could reduce natural soil nutrients and would result in soil loss through erosion and cause increased sedimentation. The clay road subgrade could create a slippery road surface when wet.

Vegetation. Land disturbance associated with some construction activities could remove or modify native vegetation and leave unvegetated, disturbed areas. Disturbed areas in arid environments are vulnerable to invasive non-native plant species that potentially could out-compete native species.

Wildlife, including Endangered or Threatened Species. Concerns were expressed that road modifications could cause the loss of some individuals or could decrease the suitability of habitat used by endangered or threatened species. Wildlife may be disturbed by vehicle noise or lights. Effects could include disrupted behavior or temporary or permanent displacement of wildlife.

Surface Water, Hydrology, and Floodplains. Motorized vehicles traveling the road may displace the gravel and native surface material, increasing surface roughness and leaving an uneven road surface. This could change the hydrology so that concentrated flows would change downstream sediment erosion and deposition or redirect natural surface drainage. Changes in road elevation at drainage crossings could cause periodic backflooding or over-bank flooding. Pollutants accumulating in sediments could be washed downstream, eventually entering water storage facilities. Installing permanent elevations in a streambed that

naturally fluctuates could change hydrology and erosion characteristics of the washes during flood events.

Wilderness Values. According to National Park Service policy, the National Park Service is not permitted to take any action that might diminish the wilderness suitability of an area recommended for wilderness study or designation. The Burr Trail is adjacent to several Bureau of Land Management wilderness study areas and National Park Service proposed wilderness areas. The road corridor along the one-mile segment abuts the Bureau of Land Management Mount Pennell wilderness study area boundary to the east and the National Park Service proposed wilderness to the south and west.

Natural Soundscapes. Changes in the number of trips per day and type of vehicles may cause noise impacts to the natural soundscape. Road construction activity may also temporarily affect natural soundscapes.

CULTURAL RESOURCE ISSUES

Cultural resource categories identified during scoping included archeological resources (prehistoric and historic), historic resources (including trails), and ethnographic resources. The cultural resource category of museum collections was not considered because there are no museum collections within the project area or its general vicinity.

Cultural Landscapes. Although there are no cultural landscapes formally determined for the project area, there may be one or more ethnographic landscapes. This landscape topic was combined with the discussion of ethnographic resources.

Archeological Resources. Road modifications could directly affect archeological resources within the construction zone, or could indirectly affect archeological resources by causing increased erosion.

Historic Resources and Historic Properties. Concerns about project impacts on cultural resources focused on historic properties, which include that subset of cultural resources that are listed in, or eligible for listing in the National Register of Historic Places. Road and culvert construction has the potential to affect historic resources; however, no *formally* designated historic properties (including cultural landscapes) are within the project area.

Ethnographic Resources and Landscapes. During scoping, concern was expressed that ethnographic landscapes containing ethnographic resources may be present within the project area. In the interest of clarity, discussions of ethnographic landscapes and ethnographic resources were combined. Road, culvert, and drainage channel construction has the potential to affect ethnographic and ethnographic landscape resources.

VISITOR USE AND SOCIOECONOMIC ISSUES

Visitor Use and Experience. According to Capitol Reef National Park's general management plan (NPS 2001c), travel along the Burr Trail is intended to provide the visitor with a feeling of remoteness in the hilly and winding terrain. Changes in the character of the road may reduce the feeling of adventure and remoteness. Some visitors could be sensitive to a potential

PURPOSE OF AND NEED FOR ACTION

increase in noise from motorized uses because they want to experience the natural quiet in the park.

Visual Quality. Changes in the character of the road may affect the visual or scenic quality. Road construction activity may also temporarily affect visual or scenic quality.

Public Health and Safety. Several concerns were expressed about road safety:

- Emergency services are limited along the Burr Trail because of its relatively remote location in the southernmost portion of the park and eastern Garfield County. In addition, the semi-primitive character of the road increases response times by emergency vehicles. These factors could increase the severity of effects from accidents compared to more developed areas.
- Areas of the road that contain bentonite clay become slippery when wet.
- The road narrows and curves in several places, which affects line of sight and increases the potential for accidents.
- It is difficult for two vehicles to safely pass along the upper portion of the Burr Canyon drainage and at the overhanging rock. This situation could lead to accidents, especially for visitors who are not familiar with common passing courtesies that are practiced along single-lane stretches.
- Under normal circumstances, the drainages crossed by the road are dry. However, during flash-flood events, surface water flows can be fast and deceptively deep. Deposition of silt and mud can leave drainages difficult to cross following rainstorms. Travel across these drainages can be unsafe for short periods of time during and after a flood.
- Trailing of cattle along the road can present a safety hazard, particularly for visitors who do not recognize the potential to encounter a herd around a blind curve.
- There is limited signage within the one-mile reach. As a result, visitors who are not familiar with the road could be more susceptible to local hazards.

Garfield County Road Maintenance Operations. Safe public transportation and use of the Burr Trail often depends on the frequency, quality, and timing of road maintenance and repair. Road surfaces and safe travel are influenced by seasonal and local climate conditions that erode the road and inundate drainages with water and sediment. This could result in increased need for road maintenance and repair to ensure safe travel. Issues of concern also include transportation safety, road stabilization, and improved drainage.

Park Operations. Increased visitation and use of the Burr Trail could increase the need for visitor services and for monitoring and controlling impacts on natural and cultural resources. Increased visitation could also result in insufficient visitor services and could limit the National Park Service' ability to meet land management objectives in the southern part of the park. Visitor safety and security and the protection of park resources were particularly cited. Another issue of concern was the potential need to implement park entrance

fees to offset the increased need for services and visitor facilities if the proposed action were implemented.

Socioeconomics. The road modifications may affect the local economy or the use of county, state, and federal lands adjacent to or in the vicinity of Capitol Reef National Park. Concern was expressed that the project could result in less visitor traffic and more pass-through traffic on the Burr Trail.

IMPACT TOPICS

Impact topics were used to focus the evaluation of the potential consequences of the proposed action and alternatives. Impact topics were identified based on legislative requirements, topics specified in *Directors Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001b), public scoping, and park-specific resource information.

The method used to select impact topics and the reasons for dismissing candidate impact topics from further consideration are provided below. The analysis in this final environmental impact statement included impacts to:

Air quality,

Geologic features and landforms,

Biological crusts and soils,

Vegetation,

Wildlife,

Surface water, hydrology, and floodplains,

Natural soundscapes,

Ethnographic and ethnographic landscape resources,

Public health and safety,

Visitor use and experience,

Socioeconomics,

Park operations,

Garfield County road maintenance operations, and

Sustainability and long-term management.

CANDIDATE IMPACT TOPICS

All impact topics considered for evaluation are presented in Table 1. The regulatory bases for considering these impact topics and whether each topic was retained for detailed analysis also are listed. In cases where an impact topic could be dismissed, the rationale for dismissal is provided under the heading “Impact Topics Dismissed From Further Consideration.” Topics were dismissed because the range of Burr Trail modification alternatives would have no effect on these particular resources or because the effects were evaluated as part of a closely related impact topic.

TABLE 1: IMPACT TOPICS FOR THE BURR TRAIL MODIFICATION PROJECT AT CAPITOL REEF NATIONAL PARK

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Air quality	Retain	Federal Clean Air Act (CAA), CAA Amendments of 1990 (CAAA), <i>Management Policies 2001</i> (NPS 2000b)
Geologic features and landforms	Retain	<i>Management Policies 2001</i> (NPS 2000b)
Biological crusts and soils	Retain	<i>Management Policies 2001</i> (NPS 2000b)
Ecologically critical areas or other unique natural resources	Dismiss	Wild and Scenic Rivers Act, 36 Code of Federal Regulations 62 criteria for national natural landmarks, <i>Management Policies 2001</i> (NPS 2000b)
Endangered or threatened species	Dismiss	Endangered Species Act, <i>Management Policies 2001</i> (NPS 2000b)
Vegetation	Retain	<i>Management Policies 2001</i> (NPS 2000b), Capitol Reef National Park general management plan (NPS 1998c).
Wildlife	Retain	<i>Management Policies 2001</i> (NPS 2000b), National Park Service Organic Act, Fish and Wildlife Coordination Act, Bald and Golden Eagles Protection Act, Migratory Bird Treaty Act
Surface water, hydrology and floodplains	Retain	Clean Water Act, Executive Order 12088, <i>Management Policies 2001</i> (NPS 2000b), Executive Order 11988 (Floodplain Management), National Park Service Special Directive 93-4, Floodplain Management Guideline (1993c)
Natural soundscapes	Retain	Directors Order #47 (NPS 2000a), <i>Management Policies 2001</i> (NPS 2000b)
Prime and unique agricultural lands	Dismiss	Council on Environmental Quality (1980) memorandum on prime and unique farmlands

TABLE 1: IMPACT TOPICS FOR THE BURR TRAIL MODIFICATION PROJECT AT CAPITOL REEF NATIONAL PARK (CONTINUED)

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Water quality	Dismiss	Clean Water Act, <i>Management Policies 2001</i> (NPS 2000b)
Wetlands	Dismiss	Executive Order 11990, Clean Water Act Section 404, Directors Order #77-1 (NPS 2002i)
Wilderness	Dismiss	1964 Wilderness Act, Directors Order #41 (NPS 1999), <i>Management Policies 2001</i> (NPS 2000b)
Archeological resources	Dismiss	National Historic Preservation Act, Section 106 regulations in 36 <i>Code of Federal Regulations</i> 800, National Environmental Policy Act, Executive Order 13007, Directors Order #28 (NPS 1996a), <i>Management Policies 2001</i> (NPS 2000b)
Cultural landscapes	Dismiss	National Historic Preservation Act, Section 106 regulations in 36 <i>Code of Federal Regulations</i> 800, National Environmental Policy Act, Executive Order 13007, Directors Order #28 (NPS 1996a), <i>Management Policies 2001</i> (NPS 2000b)
Ethnographic and ethnographic landscape resources	Retain	National Historic Preservation Act, Section 106 regulations in 36 <i>Code of Federal Regulations</i> 800, National Environmental Policy Act, Executive Order 13007, Directors Order #28 (NPS 1996a), <i>Management Policies 2001</i> (NPS 2000b)
Historic resources	Dismiss	National Historic Preservation Act, Section 106 regulations in 36 <i>Code of Federal Regulations</i> 800, National Environmental Policy Act, Executive Order 13007, Directors Order #28 (NPS 1996a), National Park Service <i>Management Policies 2001</i>
Museum collections	Dismiss	National Historic Preservation Act, Section 106 regulations in 36 <i>Code of Federal Regulations</i> 800, National Environmental Policy Act, Executive Order 13007, Directors Order #28 (NPS 1996a), National Park Service <i>Management Policies 2001</i>
Conflicts with land use plans, policies, or controls	Dismiss	<i>Management Policies 2001</i> (NPS 2000b)
Energy requirements and conservation potential	Dismiss	<i>Management Policies 2001</i> (NPS 2000b)

TABLE 1: IMPACT TOPICS FOR THE BURR TRAIL MODIFICATION PROJECT AT CAPITOL REEF NATIONAL PARK (CONTINUED)

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Environmental justice	Dismiss	Executive Order 12898
Indian trust resources	Dismiss	Department of the Interior Secretarial Order No. 3206, Secretarial Order No. 3175
Natural or depletable resource requirements and conservation potential	Dismiss	<i>Management Policies 2001</i> (NPS 2000b)
Public health and safety	Retain	Organic Act, <i>Management Policies 2001</i> (NPS 2000b)
Visitor use and experience	Retain	Organic Act, <i>Management Policies 2001</i> (NPS 2000b)
Visual quality	Dismiss	Organic Act, <i>Management Policies 2001</i> (NPS 2000b)
Socioeconomics	Retain	40 <i>Code of Federal Regulations</i> 1500 Regulations for Implementing the National Environmental Policy Act
Park operations	Retain	<i>Management Policies 2001</i> (NPS 2000b)
Garfield County road maintenance operations	Retain	American Association of State Highway Transportation Officials <i>Design Guidelines 2001</i> , <i>Garfield County, Utah General Plan</i> (Five County Association of Governments 1995)
Sustainability and long-term management	Retain	National Environmental Policy Act, 40 <i>Code of Federal Regulations</i> 1500 Regulations for Implementing NEPA, <i>Management Policies 2001</i> (NPS 2000b)

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

The following impact topics were eliminated from detailed impact analysis. Specific reasons for their dismissal are provided for each impact topic.

Ecologically critical areas: The analysis area does not contain any designated ecologically critical areas such as wild and scenic rivers, or other unique natural resources, as referenced in 40 *Code of Federal Regulations* 1508.27 (Council on Environmental Quality 1978).

Endangered or threatened species: Table 2 presents the endangered, threatened, and candidate species that were identified by the U.S. Fish and Wildlife Service as potentially occurring in the area of influence of the proposed action. The following factors contributed to the dismissal of endangered or threatened species or designated critical habitat as an impact topic in this document.

The park has no records of endangered, threatened, or candidate plants species within the project area. Recent field examinations of the site by park staff confirm that none of the species listed in Table 2 are found within the project area.

A large portion of the park lies within habitat designated as critical habitat for the Mexican spotted owl (USFWS 2001). However, only those areas within the park that meet the definition of protected and restricted habitat are designated as critical habitat, and the project area lies outside of these areas. Mexican spotted owls have not been documented in the project area. They may fly over the site, but do not depend on it for habitat.

The park believes that the project, as proposed, is not likely to adversely affect any protected species. Further, this project would not impact wetlands or other important fish and wildlife habitat. In a letter dated July 16, 2002, the U.S. Fish and Wildlife Service had no comments on the project as proposed. A copy of this letter is included among the consultation letters in Appendix D. In response to an October 11, 2005 NPS letter, the U.S. Fish and Wildlife Service concurred that the project would not likely adversely affect listed species.

TABLE 2: ENDANGERED, THREATENED, AND CANDIDATE SPECIES THAT POTENTIALLY COULD OCCUR IN THE AREA OF INFLUENCE OF THE PROPOSED ACTION

Common Name	Scientific Name	Status ^{a/}	Present in the Analysis Area
Plants			
Aquarius paintbrush	<i>Castilleja aquariensis</i>	C	No
Autumn buttercup	<i>Ranunculus aestivalis</i>	E	No
Jones cycladenia	<i>Cycladenia humilis var. jonesii</i>	T	No
Maguire daisy	<i>Erigeron maguirei</i>	T	No
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	T	No
Winkler cactus	<i>Pediocactus winkleri</i>	T	No
Wright fishhook cactus	<i>Sclerocactus wrightiae</i>	E	No
Fish			
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	E	No
Humpback chub	<i>Gila cypha</i>	E	No
Razorback sucker	<i>Xyrauchen texanus</i>	E	No
Birds			
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	No
California condor	<i>Gymnogyps californianus</i>	EXPN	No
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	No
Southwestern willow fly-catcher	<i>Empidonax traillii extimus</i>	E	No
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	C	No
Mammals			
Utah prairie dog	<i>Cynomys parvidens</i>	T	No

^{a/} E = federally endangered; T = federally threatened; P = proposed for federal listing as threatened; C = candidate for federal listing; EXPN = experimental, non-essential population (equivalent to threatened status in the National Park System).

PURPOSE OF AND NEED FOR ACTION

Prime and unique agricultural lands: Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. The Fruita Rural Historic District, located in Capitol Reef National Park, includes agricultural lands with 40 acres of orchard and 25 acres of open fields and pastures. These agricultural lands are managed and maintained as a historic landscape resource. They are located in the north half of the park about 25 miles from the project area and would not be affected by any of the alternatives. There are no prime and unique agricultural lands located in the project area.

Water quality: During construction, the removal of vegetation and disturbance of soils would have the potential to increase sediment transport into nearby waterways. Therefore, standard best management practices such as diversion structures and silt fences would be employed to ensure that construction-related adverse effects did not exceed negligible levels. Likewise, standard best management practices such as prohibiting the refueling or maintenance of construction equipment near waterways would prevent spills of fuels or oils into waterways. Water quality is not addressed as a separate impact topic; however, potential effects are evaluated under the Hydrology impact topic.

Wetlands: The project area within Capitol Reef National Park does not contain any wetlands regulated under the provisions of Section 404 of the Clean Water Act, or areas designated as wetlands using the classification system of Cowardin *et al.* (1979), within the areas of potential effect.

Wilderness: The Burr Trail corridor is adjacent to the Bureau of Land Management Mount Pennell wilderness study area to the east and the National Park Service proposed wilderness to the south and west. While construction activities would generate some noticeable noise at the edge of these areas, the noise would be short-term and would not be distinguishable from the sounds made by heavy vehicles or road equipment used to conduct routine road maintenance. There would not be any incursions of equipment into the wilderness areas. None of the activities associated with any of the alternatives would have adverse effects on the values or solitude associated with the proposed wilderness lands or wilderness study area.

Archeological resources: National Park Service archeologists intensively surveyed the roadway corridor, including the current project area, in March and April 1992 (NPS 1993a and 1993b). Previously documented sites were revisited during this survey. The proposed channel relocation area was surveyed by park archeologist Lee Kreutzer in July 2002 (NPS, Kreutzer, 2002f). Cultural resources discovered during the surveys were evaluated. No archeological sites listed in or eligible for the National Register of Historic Places are within the area of potential effect. Therefore, archeological resources were dismissed as an impact topic.

Cultural landscapes: No cultural landscapes have been formally determined for the project area. However, there appears to be a possible ethnographic landscape(s). Therefore, the potential ethnographic landscape has been combined with the discussion of ethnographic resources, and cultural landscapes were dismissed as a separate impact topic.

Historic resources: The Burr Trail has a long history. However, modifications to the road during the 20th century have changed its character and appearance, and it has been determined ineligible for the National Register of Historic Places. No National Register-eligible historic properties are within the area of potential effect, so historic resources were not considered as an impact topic.

Museum collections: The National Park Service's *Management Policies, 2001* (2000) and Director's Order-28, *Cultural Resource Management Guideline* (1997) require the consideration of impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material). None of the items in the park's museum collection, nor those on display in the visitor center, would be affected by the proposed action. Hence museum collections was dismissed as an impact topic in this document.

Conflicts with land use plans, policies, or controls: The section "Relationship to Other Planning Projects" describes National Park Service and other plans, projects, or actions in the area. The proposed project was designed to balance park values with county transportation needs to ensure that it would not conflict with any of these plans.

The Burr Trail lies within an area designated by the park's general management plan (NPS 2001c) as a Road Corridor Zone. The Burr Trail is within the Dirt, All-Weather, Two-Wheel Drive category of the Road Corridor Zone. Although the area is remote, the zoning provides for basic resource and visitor management and is designed to be consistent with the adjacent zones. The construction activities associated with the proposed action would not conflict with park zoning for this area.

Energy requirements and conservation potential: None of the alternatives would affect continued fuel availability. The amount of fuel consumed by equipment during construction would be negligible. None of the alternatives would change the number of vehicles using the Burr Trail or the number of miles driven per vehicle, and both the design speed of the Burr Trail and the average vehicle speed would remain below 25 miles per hour. As a result, energy requirements and fuel consumption would not be affected by the proposed road modifications.

Environmental justice: Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires that all federal agencies address the effects of policies on minorities and low-income populations and communities. None of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations, as defined in the Environmental Protection Agency's (1996) *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis*.

Indian trust resources: Indian trust assets are owned by Native Americans but held in trust by the United States. Requirements are included in the Secretary of the Interior's Secretarial Order No. 3206, "American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act," and Secretarial Order No. 3175, "Departmental Responsibilities for Indian Trust Resources." There are no Indian trust assets within Capitol Reef National Park.

PURPOSE OF AND NEED FOR ACTION

Natural or depletable resource requirements and conservation potential: Natural or depletable resources address the quality, recycling, or conservation of petroleum products and other natural resources. The use and conservation of fuels is considered under the impact topic of “energy requirements and conservation potential.” The use and conservation potential of other natural or depletable resources would be negligible.

There are no marketable natural or depletable resources located within the proposed project area. While the Burr Trail may be used to access these types of resources on adjacent Bureau of Land Management lands, none of the road modification alternatives would change access to these resources.

Visual quality: The scenic quality of the landscape surrounding the Burr Trail is comprised of geological features and landforms and views of the Waterpocket Fold. The park’s general management plan (NPS 2001c) recommends enhancing the visitor experience within road corridors while protecting natural resources. Therefore, the primary goal is to maintain existing natural resources within the Road Corridor Zone while maintaining existing unobstructed views and ensuring that the road is consistent with National Park Service road standards (NPS 1984). In keeping with the focus of visual quality as discussed in the park’s general management plan, this issue was dismissed as a separate topic but has been incorporated into the geologic features and landforms and the visitor use and experience topics.

PROPOSAL AND ALTERNATIVES

FORMULATION OF ALTERNATIVES

This section describes three action alternatives and the no action alternative (continue current management). The features of each of the alternatives are summarized in Table 3.

Some of the action alternatives were identified by the County and the State within the Settlement Agreement (United States District Court, 2001) established among Garfield County, the state of Utah, and the National Park Service. Others were the result of agency input and public scoping.

The roadway modifications considered during the development of the alternatives include gravel surfacing on portions of the road, installing drainage conveyance features at four major and two minor drainage crossings, modifying the roadway at the overhanging rock, and installing slope protection for stream bank stabilization adjacent to the road. Additional alternative components include drainage structures, drainage channel recontouring, realignment or a minor shift in the road alignment at Halls Creek and at a Burr Canyon side drainage near the base of the Burr Trail switchbacks, and installation of a cattle guard at the park's eastern boundary.

The settlement agreement, signed May 30, 2001, included an attachment entitled "Proposed Improvements to One Mile Segment of Burr Trail." The county and state proposed improvements included:

- Add a 6-inch gravel base course from mile point 0.0 to 0.45 and 0.85 to 0.9.
- New drainage facilities for four crossings of Sandy Creek (galvanized steel culverts for 10-year events or hardened low-water crossings of concrete or asphalt for 10-year events).
- New culverts for two minor wash crossings (galvanized steel culverts sized for 10-year events).
- Improvement of the existing 24-inch culvert at mile point 0.75.
- Widening of roadway width to 20 feet at the overhanging rock at mile point 0.65 (cutting into the rock or construction of a concrete or rock retaining wall to accommodate greater roadway width).
- Addition of slope protection to the bank of Sandy Creek at locations where the creek cuts into existing fill slope of the road between mile points 0.6 to 0.9 (placing protection up to 6 feet up the bank, using native rock in the streambed, or rock previously removed from the roadway/ hauled in from other areas).

A *Conceptual Design Plan* (see Appendix B) was developed using these elements. This plan has since been revised to minimize resource impacts and included consultation among the National Park Service, Garfield County, and the Federal Highway Administration.

ROAD DESIGN STANDARDS

The alignment and character of the Burr Trail are formed by the steep topography of the Waterpocket Fold. Where it passes through National Park Service lands, the Burr Trail is subject to road design standards and guidelines established by both the National Park Service and the American Association of State Highway Transportation Officials (AASHTO).

The AASHTO design guidelines (2001) are the industry standard for geometric road design and construction for all public roads, including local and rural roads. Design guidelines include road function, design and operating speed, traffic volumes, hydrology and hydraulics, road and shoulder width, criteria for intersection sight distance, stopping sight distance, and access management techniques.

Under AASHTO design guidelines, the Burr Trail would be classified as a two lane, low volume (a road with an average daily traffic (ADT) of less than 400 vehicles), rural collector. AASHTO guidelines for this type of roadway, with a design speed of 25 mph, recommend a traveled way width of 20 feet plus two 2-foot wide shoulders. The traveled way width may be reduced to 18-feet for roadways with an ADT less than 250 vehicles. On level terrain, the maximum road grade recommended is 7 percent. In mountainous terrain, a maximum grade of 12 percent is recommended. Typical design speeds recommended for this type of road range from 40 mph on level terrain to 20 mph in mountainous terrain.

For comparison purposes, National Park Service road standards (NPS 1984) require a minimum of two 8-foot lanes with 1-foot shoulders, based on an average daily traffic (ADT) of less than 50. However, on roads where greater than 5 percent of the design volume is recreational vehicles, the park service would consider adding an additional foot of lane width, for a total of 20 feet.

Road design standards and policies of the National Park Service (1984) require that parks consider the balance between how the visitor views the park and how this relates to the management objectives for the particular area of the park in which the road is located. As the senate report accompanying the Federal-Aid Highway Improvement Act of 1982 states, "Roads must be carefully designed to protect important natural and cultural resources under the jurisdiction of those agencies. Such roads must be designed to blend in with the natural landscape. Because of the resources preserved in Federal land management areas, and the type of tourist use in such areas, the roads in certain instances do not have to be constructed to normal highway standards."

The Burr Trail has multiple functions. It serves as a scenic route, providing an adventure-some driving experience through undeveloped areas of stark geology and scenic vistas. The road also provides access to the southern part of the park and serves as a through route to other features in and near the park and throughout the region.

The park's general management plan (NPS 2001c) identifies the Burr Trail as a dirt, all-weather, two-wheel-drive corridor that provides the traveling visitor with a unique natural and recreational experience. The plan directs the National Park Service to manage the road to provide an all-weather, maintained, variable-width, unpaved road of gravel and native surfacing. The plan recognizes that the road may be occasionally and briefly impassable because of local weather conditions. Visitors would be provided a sense of remote lands, adventure, and exploration.

TABLE 3: SUMMARY OF FEATURES FOR ALTERNATIVES FOR ROAD MODIFICATION FOR THE BURR TRAIL

Feature	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Roadbed Stabilization Mile point 0.00-0.45 Mile point 0.85-0.90	Grade bentonite road base and maintain as needed.	Excavate road bed to a depth of one foot in portions of road surface with high bentonite clay content. Install a gravel road base over geotextile fabric. Maintain as needed.	Install gravel road base on bentonite and maintain as needed.	Same as Alternative A.
Road Width and Overhanging Rock Mile point 0.65	Rock overhang and narrow road width would remain without alteration of natural features.	Widen road by shifting the drainage ditch to the north, closer to the overhanging rock. Support the road and protect the stream bank using a rock embankment on the north bank of Sandy Creek. The resulting 20-foot-wide road would provide two full traffic lanes, and the overhanging rock would remain intact.	Remove the overhanging rock and widen road by 6 to 10 feet. The resulting 20-foot-wide road would provide two full traffic lanes.	Same as Alternative B.
Road Bank Stabilization Mile point 0.75-0.85 Mile point 0.75 culvert	Road embankments would remain natural soil and rock with minimal shaping or soil erosion control.	Install up to 530 linear feet of slope protection 6 feet up the slope from the base of the embankment. Outlet protection would be added to the culvert at mile point 0.75.	Same as Alternative A.	Same as Alternative A.

TABLE 3: SUMMARY OF FEATURES FOR ALTERNATIVES FOR ROAD MODIFICATION FOR THE BURR TRAIL (CONTINUED)

Feature	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Major Road Drainage Crossings Mile point 0.10 Mile point 0.20 Mile point 0.50 Mile point 0.60	Surface and stormwater would drain across existing terrain and road surface.	Install paved fords designed to allow a 10-year storm event to pass over the paved portion of the roadway at mile points 0.1 and 0.2. Install vented paved fords designed to let 2-year storm pass through two 24-inch-diameter corrugated metal pipe culverts, with larger storms overtopping the paved portion of the roadway, at mile points 0.5 and 0.6. At each crossing, inlet and outlet protection would be installed to reduce and minimize erosion and scour.	Install culverts designed to pass floodwaters from a 25-year storm event. Each crossing would include five 48-inch-diameter corrugated metal pipe culverts with a concrete headwall and wingwalls. At each crossing, inlet and outlet protection would be installed to reduce and minimize erosion and scour.	Install culverts designed to pass floodwaters from a 50-year storm event. Each crossing would include six 60-inch-diameter corrugated metal pipe culverts with a concrete headwall and wingwalls. At each crossing, inlet and outlet protection would be installed to reduce and minimize erosion and scour.
Minor Road Drainage Crossings	Surface and stormwater would drain across existing terrain and road surface.	Install paved fords. At each crossing, recontour the inlet and protect the outlet.	Install culverts designed to handle a 2-year storm event. Each crossing would include one 24-inch-diameter corrugated metal pipe. Protect both the inlet and outlet as needed.	Install culverts designed to handle a 10-year storm event. Each crossing would include one 36-inch-diameter corrugated metal pipe. Protect both the inlet and outlet as needed.
Drainage at Halls Creek	Surface and stormwater would drain across existing terrain and road surface and natural	Install vented paved ford (four 36-inch pipes) designed to pass a 10-year storm event. Shift the roadway down-	Install culverts designed to handle a 25-year storm event. The crossing would consist of eight 72-inch-	Same as Alternative B.

TABLE 3: SUMMARY OF FEATURES FOR ALTERNATIVES FOR ROAD MODIFICATION FOR THE BURR TRAIL (CONTINUED)

Feature	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
	contours would be maintained. Washed-out 60-inch-diameter corrugated metal pipe culvert may be replaced with in-kind culvert of corrugated metal pipe.	stream, away from the confluence of Halls Creek and the Burr Canyon drainage, but within the area currently disturbed by the road embankments, so that culverts can accommodate high flows from the two drainages. Install protection for outlet, upstream and downstream stream banks as needed.	diameter corrugated metal pipes with a headwall and wingwalls. Realign 300 linear feet of Burr Canyon drainage channel in a northerly direction to enter Halls Creek 100 feet upstream of the Halls Creek road crossing.	
Drainage at Burr Canyon	Existing 24-inch-diameter corrugated pipe culvert would direct surface and stormwater under road and discharge into a Burr Canyon side drainage. Road would remain narrow. Flows exceeding culvert capacity would continue to flow over the road.	Install three 36-inch-diameter corrugated metal pipe culverts designed to handle a 10-year storm event. Widen 50 feet of road by 6 to 10 feet using a rock embankment at the toe of the fill and backfill using rock material from slope..	Same as Alternative A.	Same as Alternative A.
Signage	Maintain existing signs.	Provide advisory signs to ensure vehicle safety at narrow road segments and to warn travelers against crossing drainages when water of any depth is on the roadway.	Signs would not be needed at drainage crossings. Provide advisory signs to ensure vehicle safety at narrow road segments	Same as Alternative B.

TABLE 3: SUMMARY OF FEATURES FOR ALTERNATIVES FOR ROAD MODIFICATION FOR THE BURR TRAIL (CONTINUED)

Feature	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Cattle Guard	Eastern park entrance would remain unrestricted, allowing cattle to trespass. Existing cattle guard would remain at mile point 0.55.	Install a cattle guard at the eastern park boundary to prevent cattle from entering the park. National Park Service would remove existing cattle guard at mile point 0.55 when grazing allotment expires.	Same as Alternative A.	Same as Alternative A.

ROAD DESIGN PARAMETERS

The action alternatives were developed to include measures that would provide the visitor with a safe, leisurely travel experience that would differ substantially from that along a typical federal or state highway. The road would rise and fall below the mean road grade in conformance with the natural slopes of the hilly terrain, and the horizontal and vertical road alignment would follow the natural contours. The unpaved gravel and native material road surface, combined with the variable width that establishes the character of this road, would respect the terrain, environment, and resource protection aspects of the adjacent zones, slopes, and geological formations through which it passed.

In developing the action alternatives, the general character of the road was defined using the following design parameters:

- Design speeds would not exceed 25 miles per hour.
- Traffic volumes are not expected to change significantly from the current average daily traffic (ADT). National Park Service traffic counts along the Burr Trail from 1998 through 2001 averaged 29 vehicles per day (NPS no date b, NPS 1998b).
- Traveled way width would be set at 18 feet with two one-foot-wide shoulders. This would provide a total roadway width of 20 feet in accordance with National Park Service Standards *Park Road Standards* (NPS 1984) and AASHTO Guidelines. This figure was calculated based on an ADT of less than 50, which, under NPS Park Road Standards for roads with this volume of traffic, require two 8-foot lanes with 1-foot shoulders. However, on roads where greater than 5 percent of the design volume is recreational vehicles, the park service would consider adding an additional foot of lane width, for a total of 20 feet.
- Geometric design would follow the existing horizontal and vertical alignment to maintain the current contours of the road, and any alterations would be kept to a minimum.
- Drainage channel crossings would be treated sensitively using concrete paved fords, with some fords vented using corrugated metal pipe culverts, or a series of corrugated metal pipe culverts.
- Erosion would be controlled through careful shaping of terrain, by installing soil erosion control devices, and with revegetation in areas where suitable, although the arid environment typically limits revegetation success. Materials used for surface, fill, stone, rails, and signs would be chosen or treated to blend with the surrounding landscape to the greatest extent possible.
- Regulatory and advisory speed and hazard signs that comply with the *Manual on Uniform Traffic Control Device Standards* would be used to ensure vehicle speeds remained within the design capacity of the road and that drivers were warned of drainage crossing hazards.

NO ACTION ALTERNATIVE

The No Action Alternative is defined as the continuation of current road management and project area conditions. It does not mean that road management would cease. The No Action Alternative was used as the baseline condition against which all other alternatives were compared.

The segment of the Burr Trail where Garfield County has proposed road modifications begins at the eastern boundary of the park (see Eastern Park Entrance photo). At the boundary, the road enters the park through an ungated fence with no cattle guard. A cattle guard is currently located at mile point 0.55. During the winter grazing period, cattle trespass across the park boundary and adversely affect soils and vegetation along the roadside.



EASTERN PARK ENTRANCE

The road extends westerly, passing over gently to moderately rolling terrain. The road gradually progresses downgrade as it crosses two small washes and makes four crossings of the large Sandy Creek drainage channel at mile points 0.10, 0.20, 0.50, and 0.60, as measured from the park's eastern boundary.

The road surface at the crossings is native material (see Native Material Drainage Crossing photo). There are no crossing structures, such as an elevated roadway with culverts or paved low-water crossing in these drainage channels.

An area of winding terrain along a horizontal s-curve occurs between mile points 0.40 and 0.75. Within this area, the road narrows to less than two lanes as it passes a prominent, overhanging rock at mile point 0.65. The rock overhang constricts the roadway so that two vehicles cannot pass. The low height of the rock overhang affects passage by tall vehicles, and the location of the rock adjacent to a curve in the road restricts line of sight for on-coming vehicles.

West of the s-curve, the road proceeds in a southwesterly direction through hilly terrain. At mile point 1.00, it reaches the area known as The Post.



NATIVE MATERIAL DRAINAGE CROSSING

The road surface within this one-mile-long segment is a graded mixture of gravel and native material. The average roadway width is 20 feet.

Depending on weather conditions, the road is occasionally impassable at drainage crossings, and the road surface is slippery when wet along sections of the road with high bentonite clay content. In particular, two segments of road, between mile points 0.00 to 0.45

PROPOSAL AND ALTERNATIVES

and 0.85 to 0.90, are on grades with high bentonite content . These segments become extremely slippery and are often impassable during and following rainstorms.

Much of the road runs directly adjacent to the Sandy Creek channel. As shown in the Sandy Creek Channel photo, the roadway between mile points 0.75 and 0.85 is threatened by stream bank erosion.



SANDY CREEK CHANNEL

About 2.5 miles northwest of The Post is the first of two additional drainage crossings addressed in this proposed action. At this site, the road crosses the Halls Creek drainage, shown in the Halls Creek Drainage Crossing photo. The Burr Canyon drainage joins Halls Creek immediately upstream from the crossing. The size of the drainage and the close proximity of the confluence to the road result in very destructive storm water flows.

The road surface material at the Halls Creek drainage is similar to the material in the one-mile segment, composed of gravel and native soil. Previously, a corrugated metal pipe culvert was installed at this location. However, on two occasions, floods washed out culverts as large as 5 feet in diameter at this crossing. Maintenance of this site causes visual scars ranging from piles of sediment to twisted corrugated metal pipe removed after flood events.



HALLS CREEK DRAINAGE CROSSING

Just over 3 miles west of The Post is an area of the Burr Trail known as the switchbacks. Near the east side of the switchbacks, the road passes over a side drainage of Burr Canyon (see Burr Canyon Side Drainage Crossing photo). High water at this site overtops an existing, undersized, corrugated metal pipe and sediment-laden water flows directly onto the Burr Trail. Erosion causes deep gullies in the road and the side slope, and has caused roadway narrowing (see Burr Canyon Side Slope photo).



BURR CANYON SIDE DRAINAGE CROSSING

Under the No Action Alternative, current characteristics of the Burr Trail would not be modified. Road features would include the following:

- The road would continue to be maintained to provide travel on a variable-width, unpaved road of gravel and native material.
- During inclement weather, the road might be impassable at drainage crossings and the road surface would be slippery along sections of the road with high clay content on the surface.
- Maintenance needs as a result of storm-related drainage would remain at their current moderately high levels.



BURR CANYON SIDE SLOPE

- The overhanging rock at mile point 0.65 would remain as a natural feature along the road, and only one vehicle at a time would be able to pass around the curve adjacent to the rock.
- The road design would remain consistent with the management goals described in the park's general management plan (NPS 1998c).
- The Burr Trail at Halls Creek would remain a gravel and native material, low-water crossing, unless Garfield County replaces the previously washed out 60-inch-diameter corrugated metal pipe culvert with an in-kind culvert.
- Surface water runoff from the Burr Canyon side drainage would cross beneath the road and drain through the existing 24-inch-diameter corrugated metal pipe.
- The lower portion of the Burr Canyon drainage would channel storm flows and sediment directly onto the road, causing further erosion of the road and displacement of drainage culverts where it intersects with Halls Creek.
- During the winter grazing period, cattle would trespass across the eastern park boundary and adversely affect soils and vegetation along the road.

ALTERNATIVE A (PREFERRED ALTERNATIVE)

Alternative A would emphasize maintaining the rustic character of the road, minimizing disturbance to the environment, and integrating the visitor with the surrounding landscape, while improving safety for motorists. Road surface and drainage modifications would conform to the natural terrain and blend with the surrounding landscape. Advisory signs would ensure vehicle safety at narrow roads segments and warn travelers against crossing drainages when water is flowing over the road. Visitors traveling along the winding, hilly terrain would expect to experience the remote feeling and sense of adventure currently provided on the Burr Trail.

Alternative A is the preferred alternative because it meets the objectives associated with the purpose and need for the proposed action. The National Park Service has selected this alternative among others that have been considered to fulfill its mandate to the fullest extent possible in connection with this county proposal, in part because the settlement terms and resultant cooperative relationship with the county and state have allowed the selection to be made in this manner. Under this alternative, road modifications involving portions of the road surface, width, bank stabilization, slope protection, and drainage would be conducted along the target road segment. These are illustrated on the figure entitled Proposed Project Area One-Mile Section – Alternative A and Proposed Project Area Burr Canyon– Alternative A.

The road would remain passable during the majority of the year; some sections would occasionally be impassable when drainage crossings were overtopped by floodwaters.

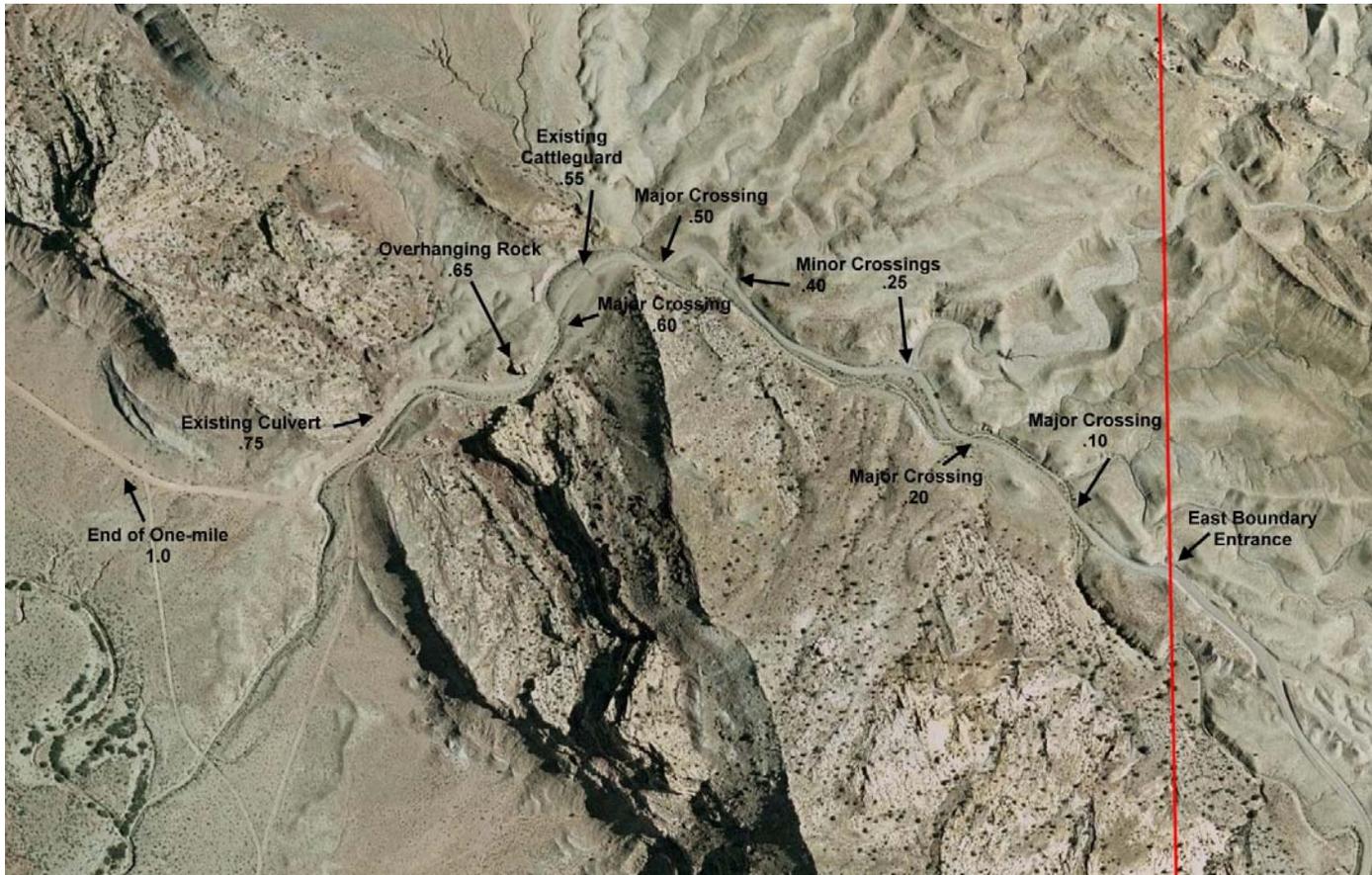
Opportunities for visitors to experience the surrounding geologic features would be provided from various roadside views. The driving experience in Alternative A would be consistent with the geology, topography, and environment through which the road passes.

The road surface has a high bentonite clay content from mile point 0.00 to 0.45, from mile point 0.85 to 0.90, and in a few other isolated locations. These areas would be excavated to 1 foot below the current road surface. A gravel base would be installed over a protective layer of geotextile fabric. The fabric would minimize gravel loss due to compression into the clay substrate. This action would improve vehicle passage and decrease the tendency of the road to become slippery during wet weather.

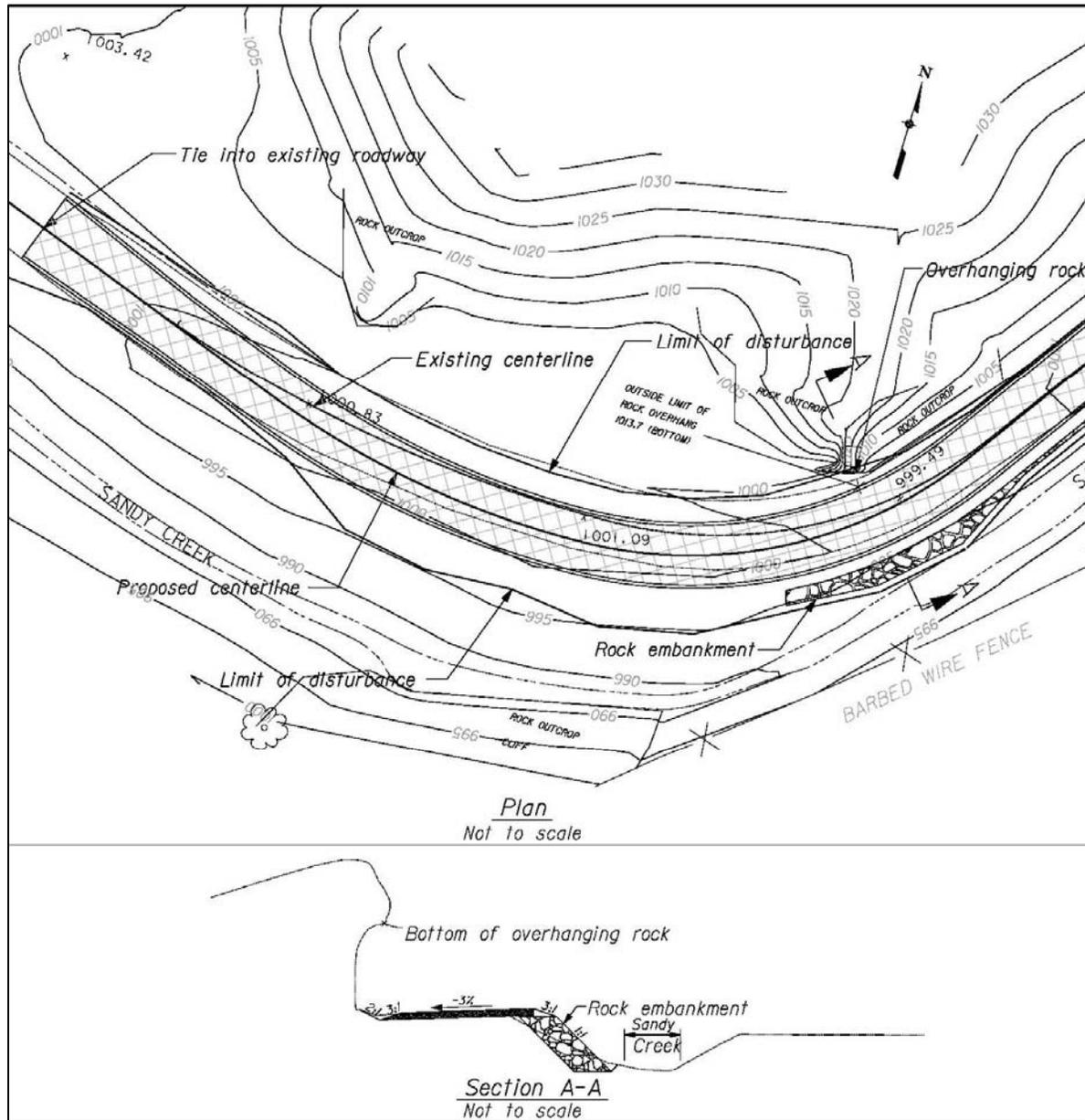
Without altering the overhanging rock, a narrow section of the road at mile point 0.65 would be widened by 6 feet to 10 feet. This would be accomplished by moving the northern roadside ditch toward the overhanging rock. A rock embankment would be added to the southern side of the road (the north bank of Sandy Creek) to provide structural stability for a portion of the road as well as slope protection. This would produce a road segment with two 9-foot-wide lanes with 1-foot-wide shoulders and a design speed of less than 25 miles per hour. This action would improve vehicle passage in accordance with the existing contours and current design standards (NPS 1998a, NPS 1998b).

**Proposed Project Area
One-Mile Section
Alternative A**

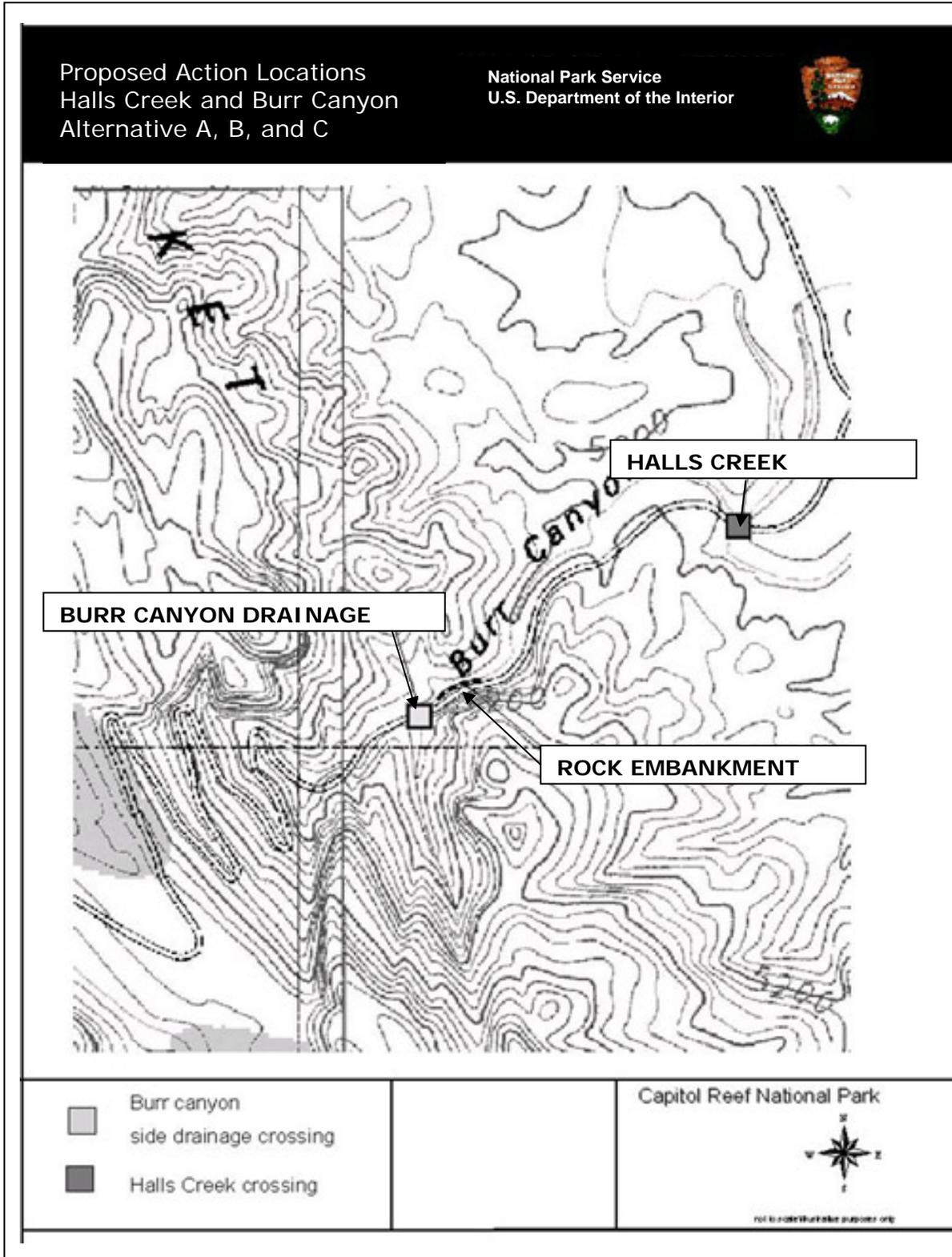
National Park Service
U.S. Department of the Interior
158/20041



PROPOSED PROJECT AREA ONE-MILE SECTION – ALTERNATIVE A



ROAD MODIFICATIONS AT THE OVERHANGING ROCK - ALTERNATIVE A



ACTION LOCATIONS HALLS CREEK AND BURR CANYON – ALTERNATIVES A, B, AND C

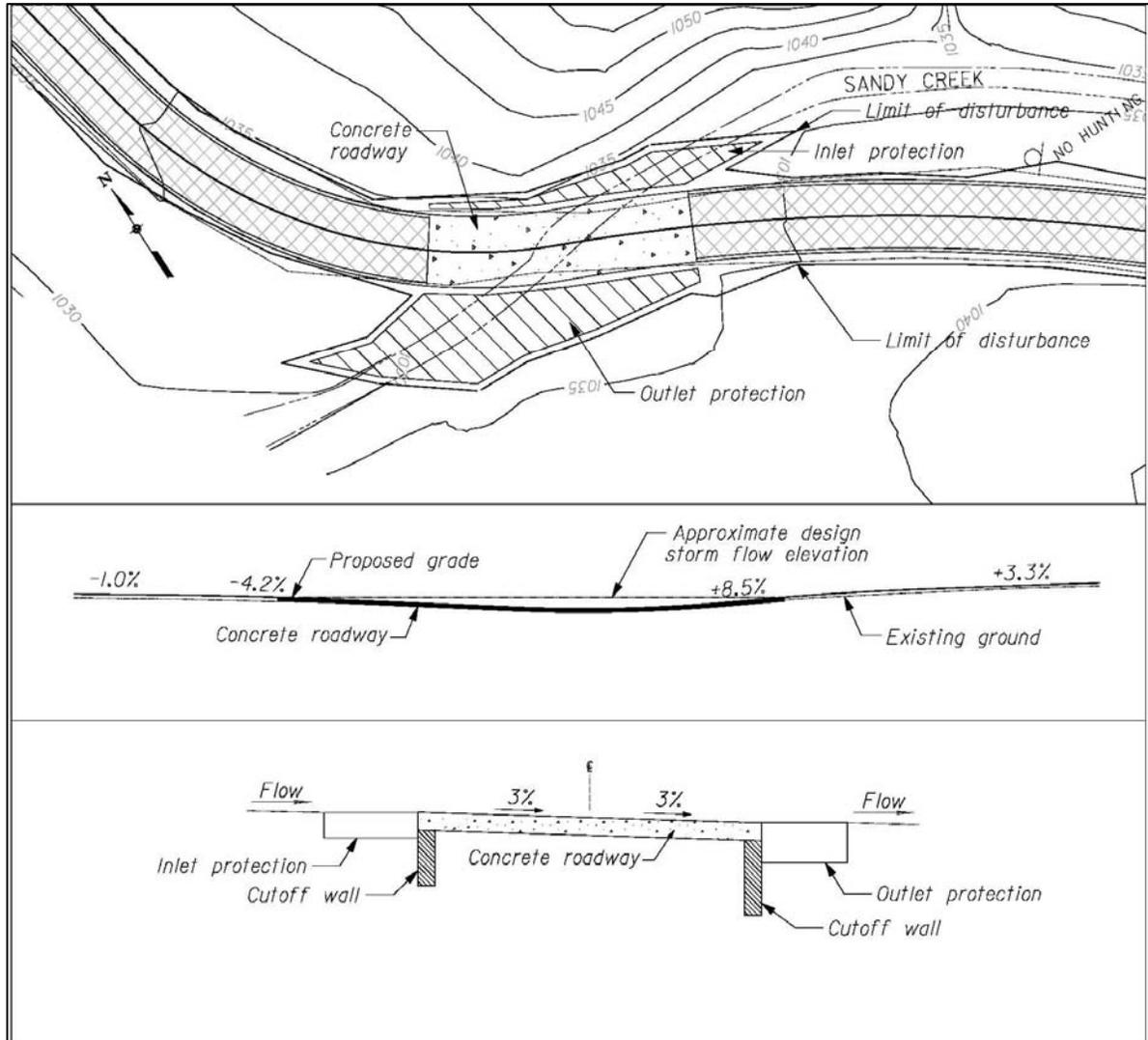


RETAIN THE OVERHANGING ROCK – ALTERNATIVE A

The road bank in the vicinity of mile points 0.75 and 0.85 would be stabilized using slope protection to reduce erosion and maintain the natural contours of the existing stream channel. Up to 530 linear feet of slope protection would be placed along the base and 6 feet up the sides of the road embankment. The base width of the protection would remain aligned with the slope to minimize placement of rock within the existing stream channel.

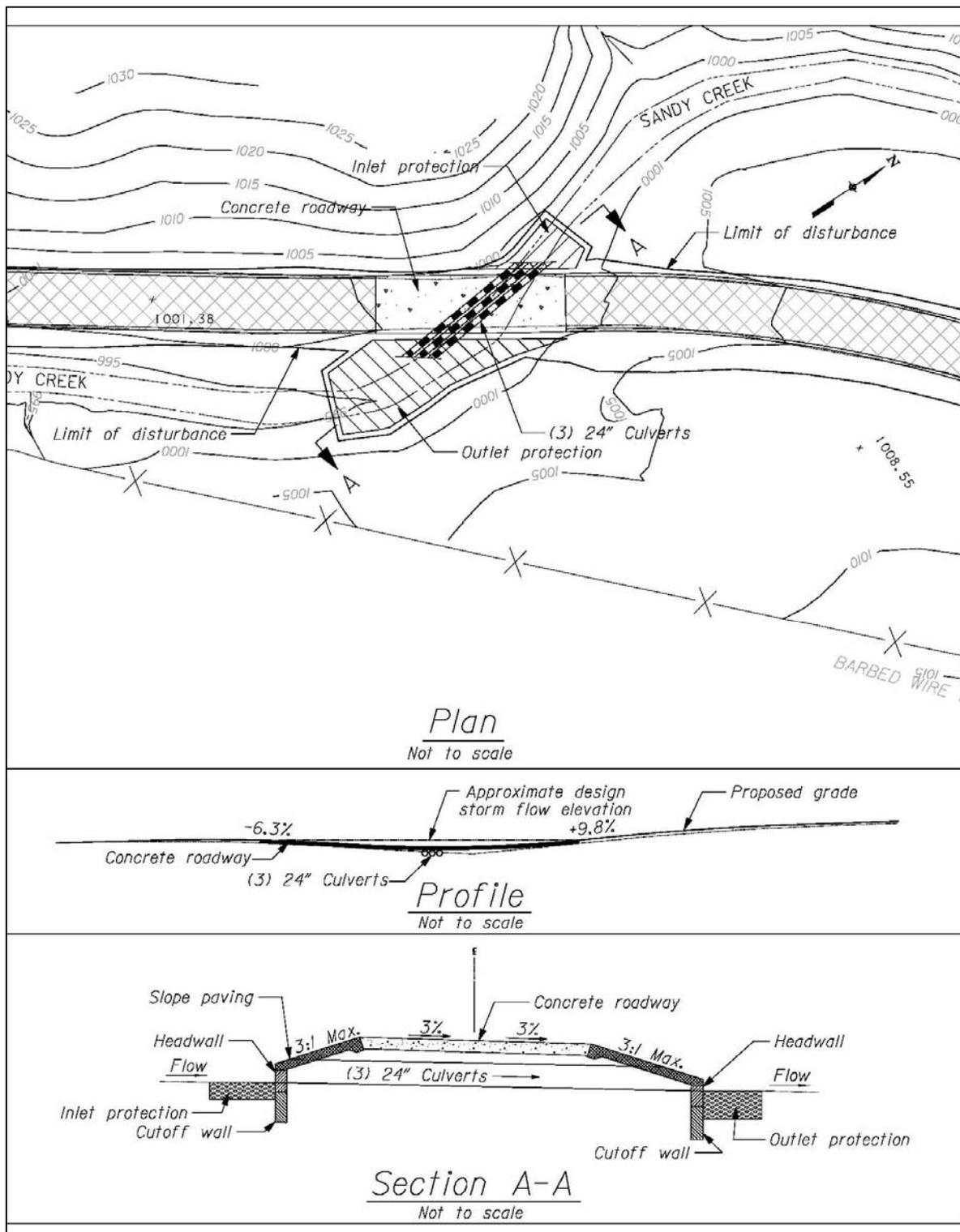
Two paved fords, impassable whenever water overtopped the roadway, would be constructed at mile points 0.10 and 0.20. The construction of the paved fords would disturb approximately 6,500 and 4,500 square feet of ground at mile points 0.10 and 0.20, respectively. Two vented paved fords would be constructed at mile points 0.50 and 0.60. These crossings would be passable during 2-year storm events; floodwaters would be conveyed through two 24-inch-diameter corrugated metal pipe culverts. The vented paved fords would be impassable during events greater than the 2-year storm because floodwater would overtop the paved portion of the roadway. Construction of the vented paved fords would disturb about 8,000 and 7,000 square feet of ground at mile points 0.50 and 0.60, respectively. The paved fords (vented and unvented) would be relatively consistent with the existing topography, and their length would be sufficient to contain overtopping 10-year storm event floodwaters within the paved area. Each of the fords would include slope protection to protect the up- and downstream banks and inlet and outlet protection to reduce and minimize erosion and scour. The fords are illustrated in the Major Road Drainage Crossings, Mile Points 0.10 and

o.20, Typical Paved Ford Design and the Major Road Drainage Crossings, Mile Points 0.50 and 0.60, Typical Vented Paved Ford Design figures.



MAJOR ROAD DRAINAGE CROSSINGS, MILE POINTS 0.10 AND 0.20, TYPICAL PAVED FORD DESIGN - ALTERNATIVE A

PROPOSAL AND ALTERNATIVES



MAJOR ROAD DRAINAGE CROSSINGS, MILE POINTS 0.50 AND 0.60, TYPICAL VENTED PAVED FORD DESIGN - ALTERNATIVE A

Paved fords, similar to those that would be constructed at mile points 0.10 and 0.20, would be constructed at each of the two minor drainage channels. There would be approximately 4,000 square feet of new ground disturbance associated with the construction of each of the paved fords at the minor crossings. The upstream channel (i.e., inlet) would be recontoured to direct surface flow over the paved ford, and inlet and outlet protection would be installed to minimize erosion and scour. Slope protection would be added to portions of the downstream road embankment to minimize erosion.

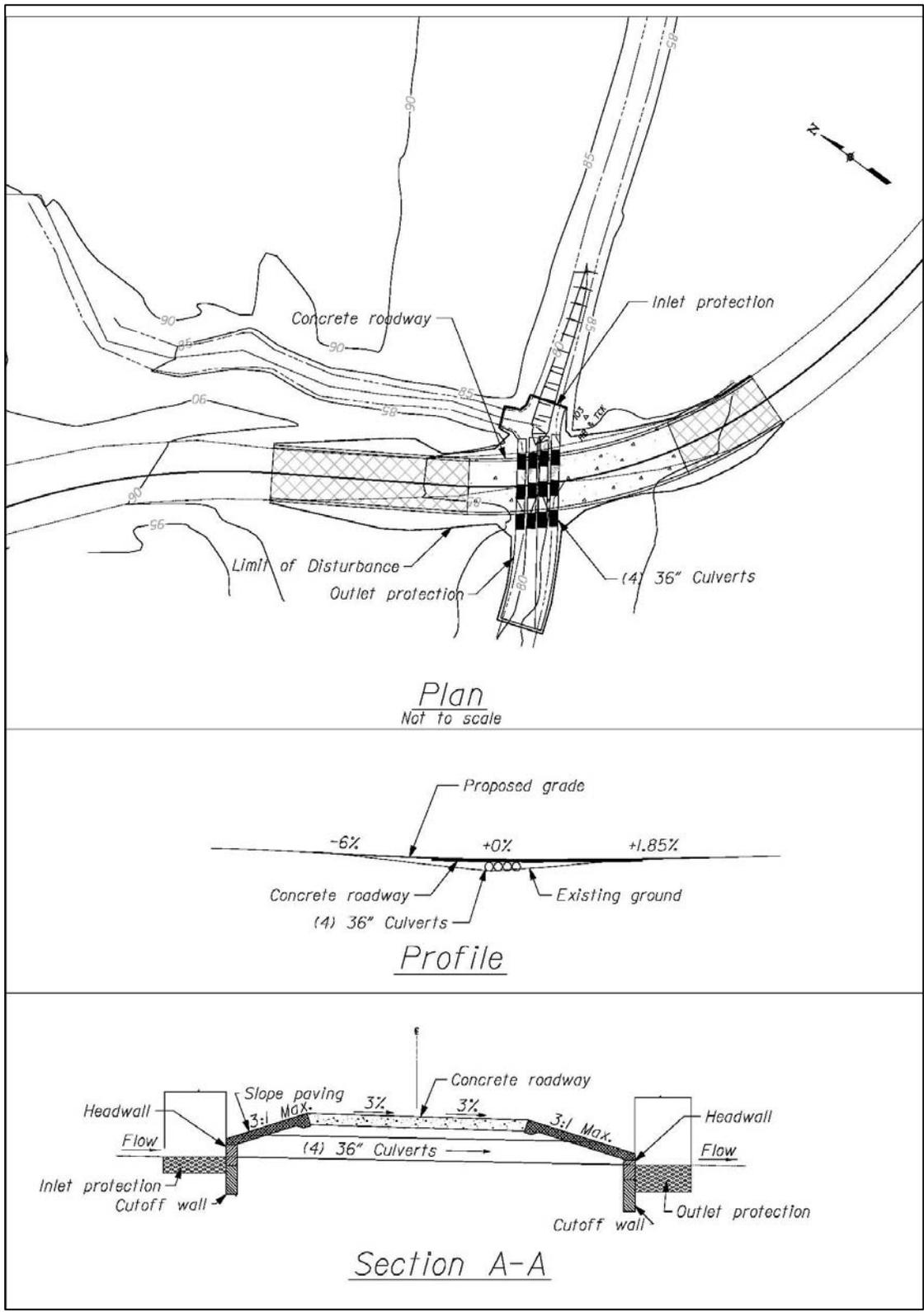
A vented paved ford would be constructed to facilitate crossing Halls Creek. This ford would include four 36-inch-diameter corrugated metal pipe culverts. Floodwaters from a 2-year storm event would be contained in the culverts, while events up to the 10-year storm would overtop the roadway within the limits of the concrete pavement, thus preventing erosion of the roadway. The roadway at the crossing would be shifted a short distance downstream (i.e., to the south) from the Halls Creek/Burr Canyon drainage confluence so that the culverts in the paved ford could accommodate flows from the two drainages. Construction of the vented paved ford and the roadway shift would disturb about 6,000 square feet, with approximately 3,500 square feet of that disturbance outside the existing roadway footprint. The vented paved ford and new road alignment is illustrated in the Burr Canyon Drainage at Halls Creek – Alternative A figure. Inlet and outlet protection would be added to minimize scour and erosion. Slope protection would also be placed on the stream banks both upstream and downstream of the crossing if necessary to reduce the potential for erosion of the stream banks.

An existing culvert near the base of the switchbacks in Burr Canyon would be replaced by three 36-inch-diameter corrugated metal pipe culverts, as illustrated in the Burr Canyon Drainage Culverts – Alternatives A, B, and C figure. Inlet protection would be installed while the outlet will use the existing rock channel as erosion protection. A 50-foot length of road just east of the existing culvert would be widened 6 to 10 feet by adding a rock embankment and backfilling with local material to widen the road on the south slope of the Burr Canyon drainage. These modifications in Burr Canyon would create about 8,000 square feet of new ground disturbance.

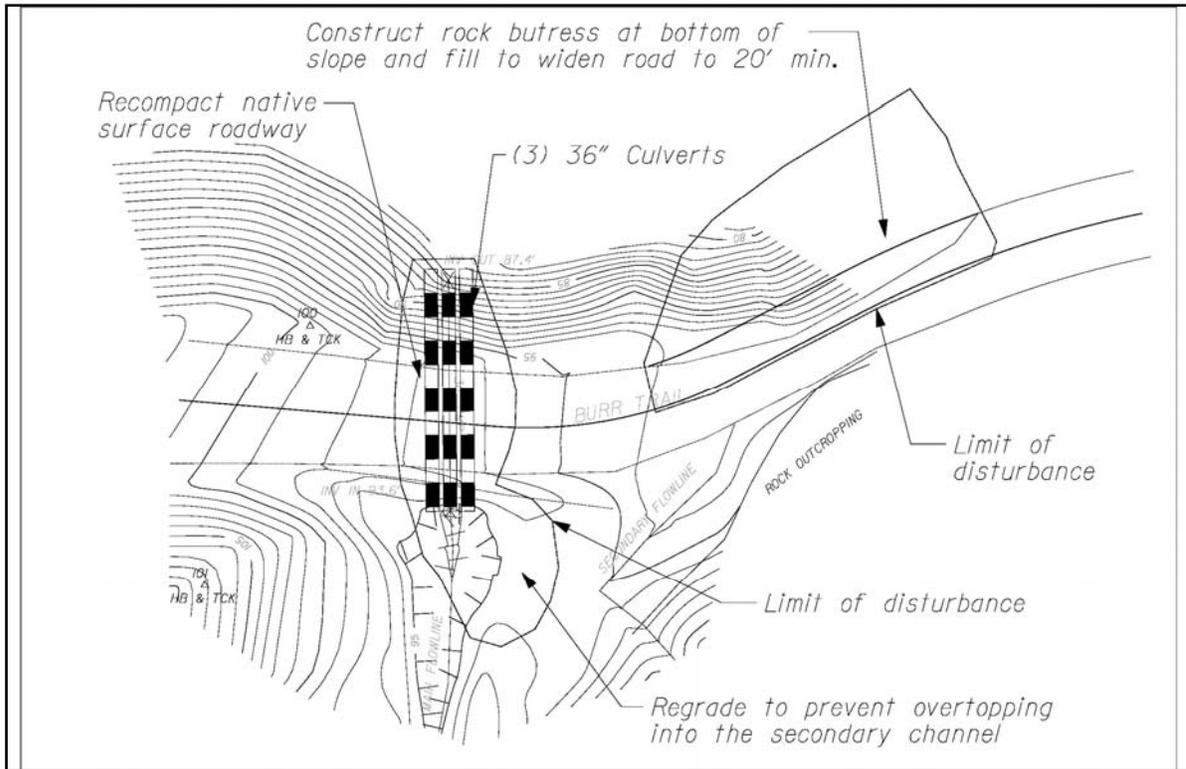
A cattle guard would be placed at the park boundary by the National Park Service to prevent cattle from entering the park from adjacent Bureau of Land Management-administered lands, and the existing cattle guard at mile point 0.55 would be removed when the current grazing allotment expires.

Prior to implementation of Alternative A, a construction operations plan would be prepared that would include construction staging, materials storage, and mitigation measures. This plan would include best management practices that would be implemented to insure that effects on resources were minimized.

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BURR CANYON DRAINAGE AT HALLS CREEK - ALTERNATIVE A



BURR CANYON SIDE DRAINAGE CULVERTS – ALTERNATIVES A, B, AND C

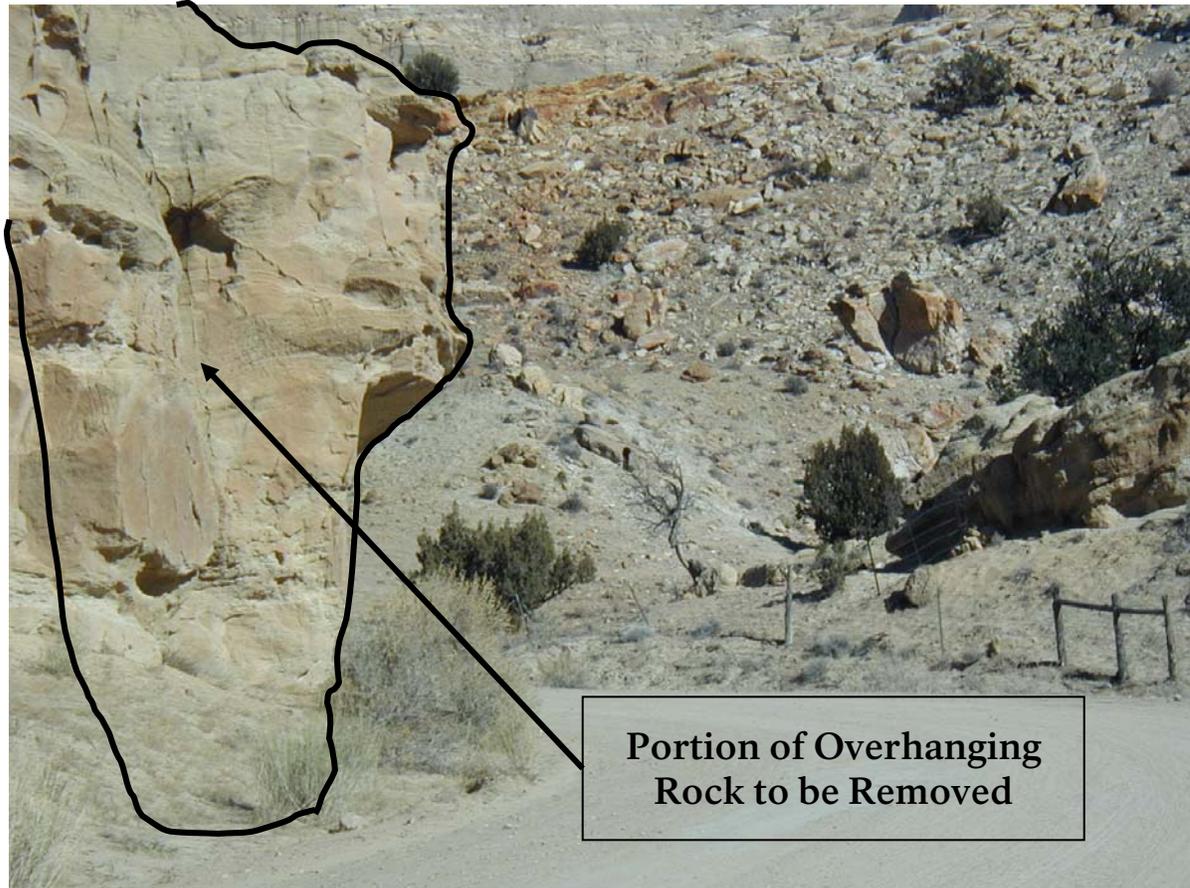
ALTERNATIVE B

Alternative B would remove the overhanging rock at mile point 0.65 due to a shifting of the alignment to improve safety. Other features of the road modification would include gravel surfaces, culverts at drainage crossings, and a cattle guard.

The road surface in areas with high bentonite clay content would be improved, and corrugated metal pipe culverts would direct drainage at the major and minor crossings underneath the road. Road elevations would be raised at drainage crossings to accommodate the large culverts that would pass floodwaters associated with a 25-year storm event. Stone and rock used to stabilize road banks, frame culverts, and reduce erosion would be treated, if sufficiently different than local materials, to blend into the surrounding landscape.

Under Alternative B, the following road surface, width, bank stabilization, and road drainage modifications would be made to the one-mile segment:

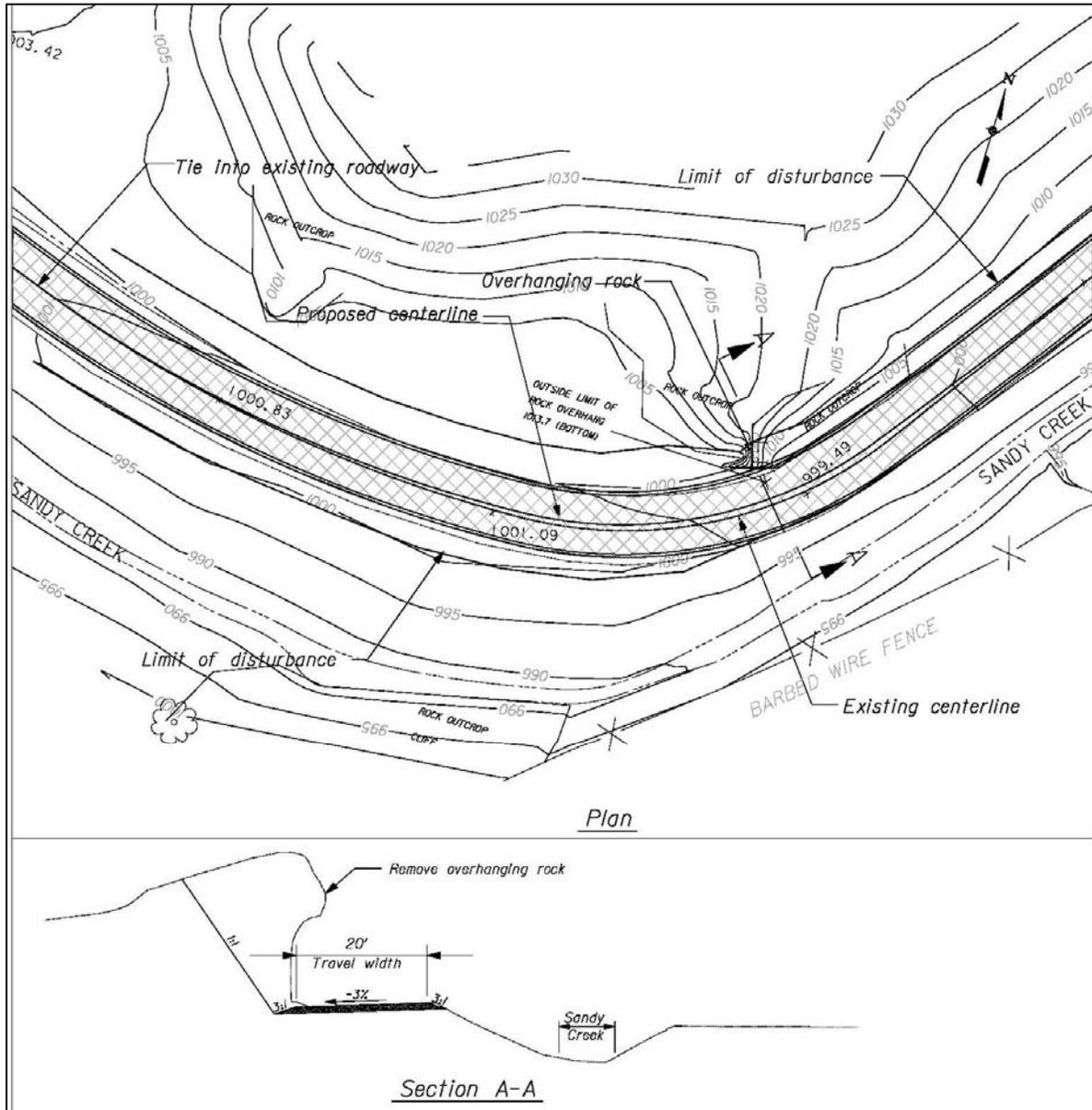
- Gravel road base material would be installed on the road surface along the sections of the road with high bentonite clay content on the surface and would be maintained as needed.
- The overhanging rock (or a large portion of it) would be removed and the road would be widened by 6 to 10 feet at mile point 0.65 (see Removal of Overhanging Rock – Alternatives B and C photo). The widening would occur on the north side of the road, eliminating the need for additional slope protection along the bank of Sandy Creek at mile point 0.65. The curve radius could be straightened with removal of the overhanging rock, and the line-of-sight distance would be increased.
- Slope protection would be added between mile points 0.75 and 0.85, as described for Alternative A.
- Drainage crossing structures along the road would be constructed to improve surface drainage at the four major and two minor crossings using corrugated metal pipe culverts that could pass 25-year and the 2-year storm floodwaters, respectively.
 - Corrugated metal pipes designed to pass the 25-year storm event floodwaters would be installed at mile points 0.10, 0.20, 0.50, and 0.60. These drainage structures would involve installing five 48-inch-diameter corrugated metal pipes with concrete headwalls and wingwalls and slope protection for the inlet and outlets. These major and minor crossing structures are illustrated in the Major Road Drainage Crossings, Typical 25-Year Storm Culvert Design – Alternative B and the Minor Road Drainage Crossings – Alternatives B figures, respectively.
 - The two minor drainage crossings would involve installing one 24-inch-diameter corrugated metal pipe culvert capable of passing 2-year storm event floodwaters, with slope protection at the inlet and outlet channels.
 - Outlet protection would be added to the existing 24-inch culvert at mile point 0.75.



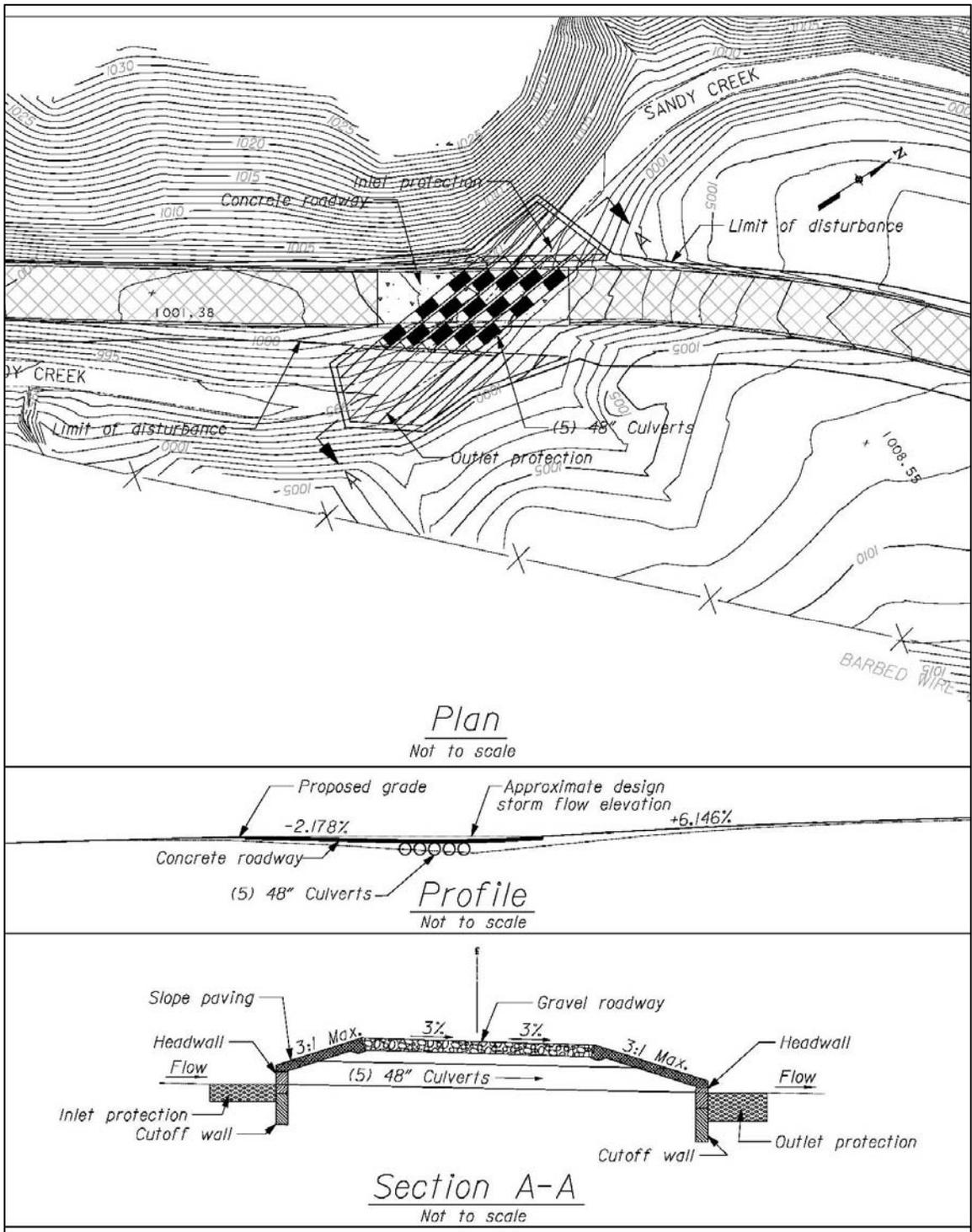
REMOVE THE OVERHANGING ROCK – ALTERNATIVES B AND C

- The Halls Creek drainage would be modified using eight 72-inch-diameter corrugated metal pipe culverts, a headwall and wingwalls, and erosion protection at the outlet. The culvert installation would create about 11,000 square feet of disturbance. This configuration, which would effectively pass 25-year design storm flows, is illustrated in the Halls Creek Crossing and Burr Canyon Realignment – Alternatives B and C figure.
- Culvert installation would require realignment of 300 linear feet of the Burr Canyon drainage channel in a northerly direction to intersect Halls Creek approximately 100 feet upstream of the Halls Creek crossing (see Halls Creek Crossing and Burr Canyon Realignment – Alternatives B and C).
- Drainage structures and road widening at a drainage near the base of the switchbacks in Burr Canyon would remain the same as described for Alternative A.
- The National Park Service would install a cattle guard on the Burr Trail at the eastern park boundary, as in Alternative A.

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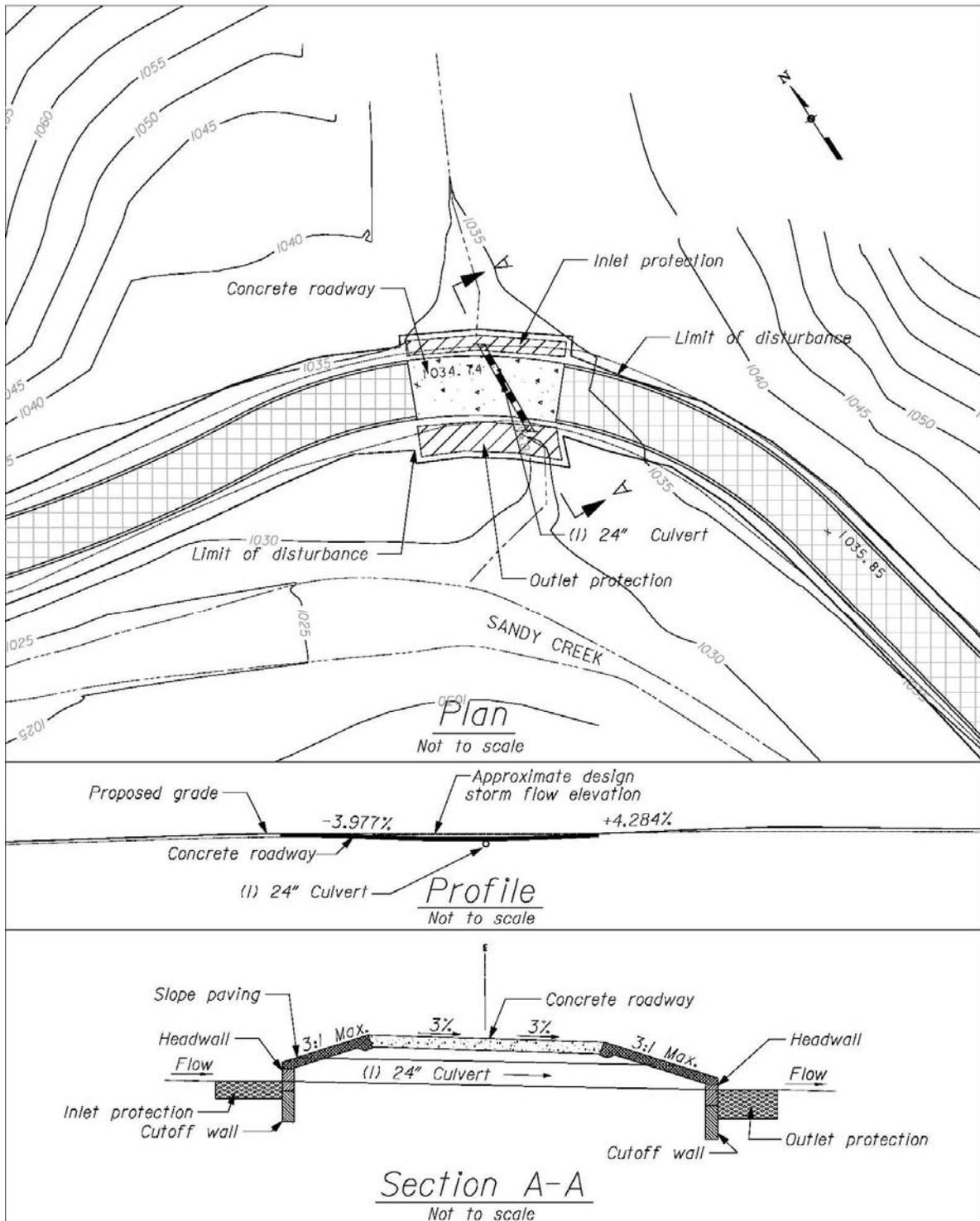


ROAD MODIFICATIONS AT THE OVERHANGING ROCK – ALTERNATIVE B

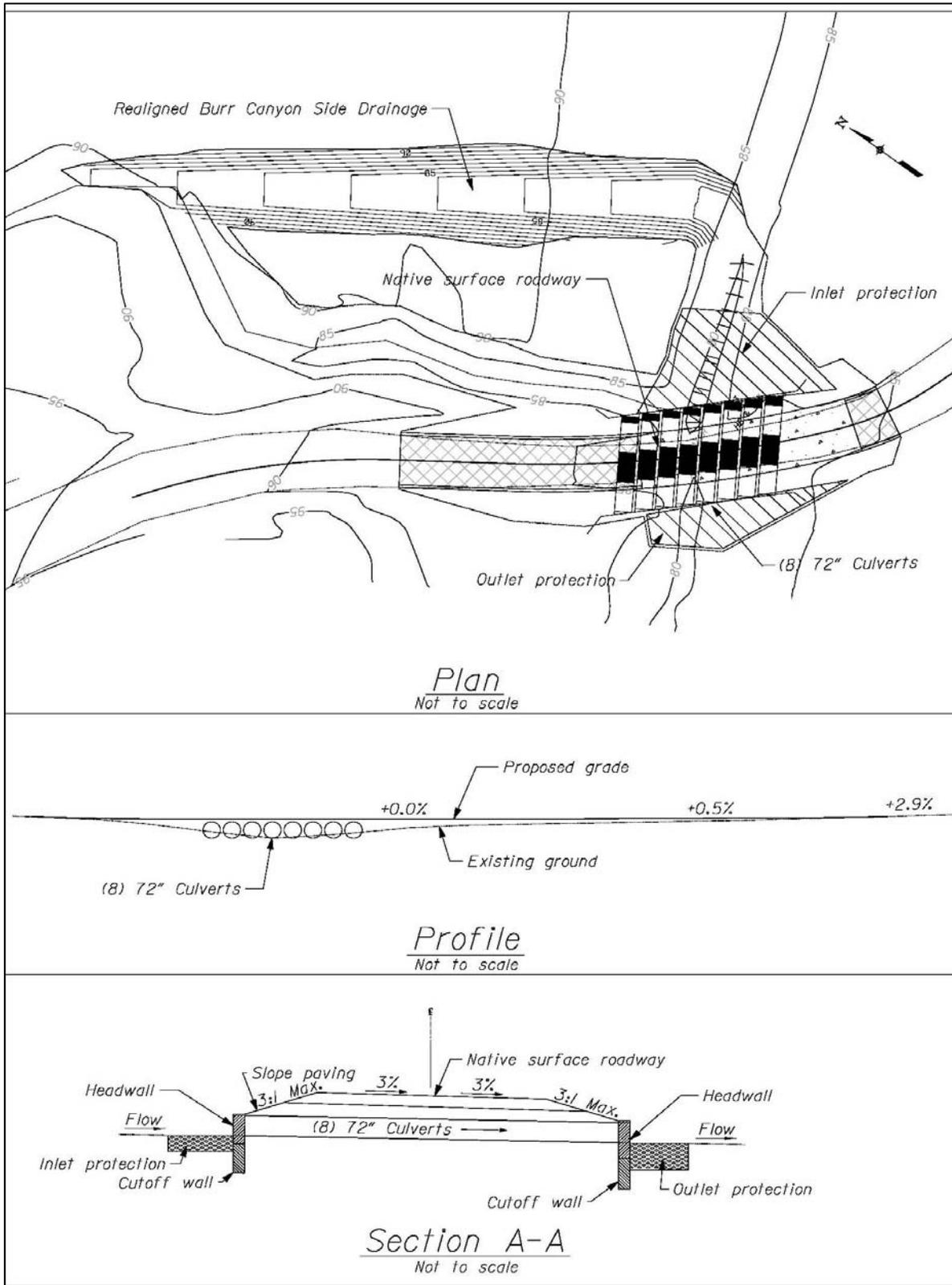


MAJOR ROAD DRAINAGE CROSSING, TYPICAL 25-YEAR STORM CULVERT DESIGN – ALTERNATIVE B

PROPOSAL AND ALTERNATIVES



MINOR ROAD DRAINAGE CROSSINGS – ALTERNATIVE B



HALLS CREEK CROSSING AND BURR CANYON REALIGNMENT – ALTERNATIVES B AND C

ALTERNATIVE C

Alternative C would stabilize road surfaces and provide two-way passage for vehicles at the overhanging rock by removing the rock and realigning the road to the north, similar to Alternative B. Road elevations would increase at drainages to accommodate multiple 60-inch corrugated metal pipe culverts. In this alternative, visitors could expect to travel over a cattle guard, gravel surfaces, and pass easily over drainages with culverts. Natural undisturbed visual characteristics would be substantially changed by removing the overhanging rock. Stone and rock treated to blend into the surrounding landscape would be used to stabilize road banks, protect against erosion, and frame culverts.

Under Alternative C, there would be road surface, width, bank stabilization, and drainage crossing modifications to the Burr Trail. Road surfaces along the sections of the road with high bentonite clay content would be stabilized in the same manner described for Alternative B.

The overhanging rock would be removed, and the narrow sections of the road at mile point 0.65 would be widened in the same manner described under Alternative B.

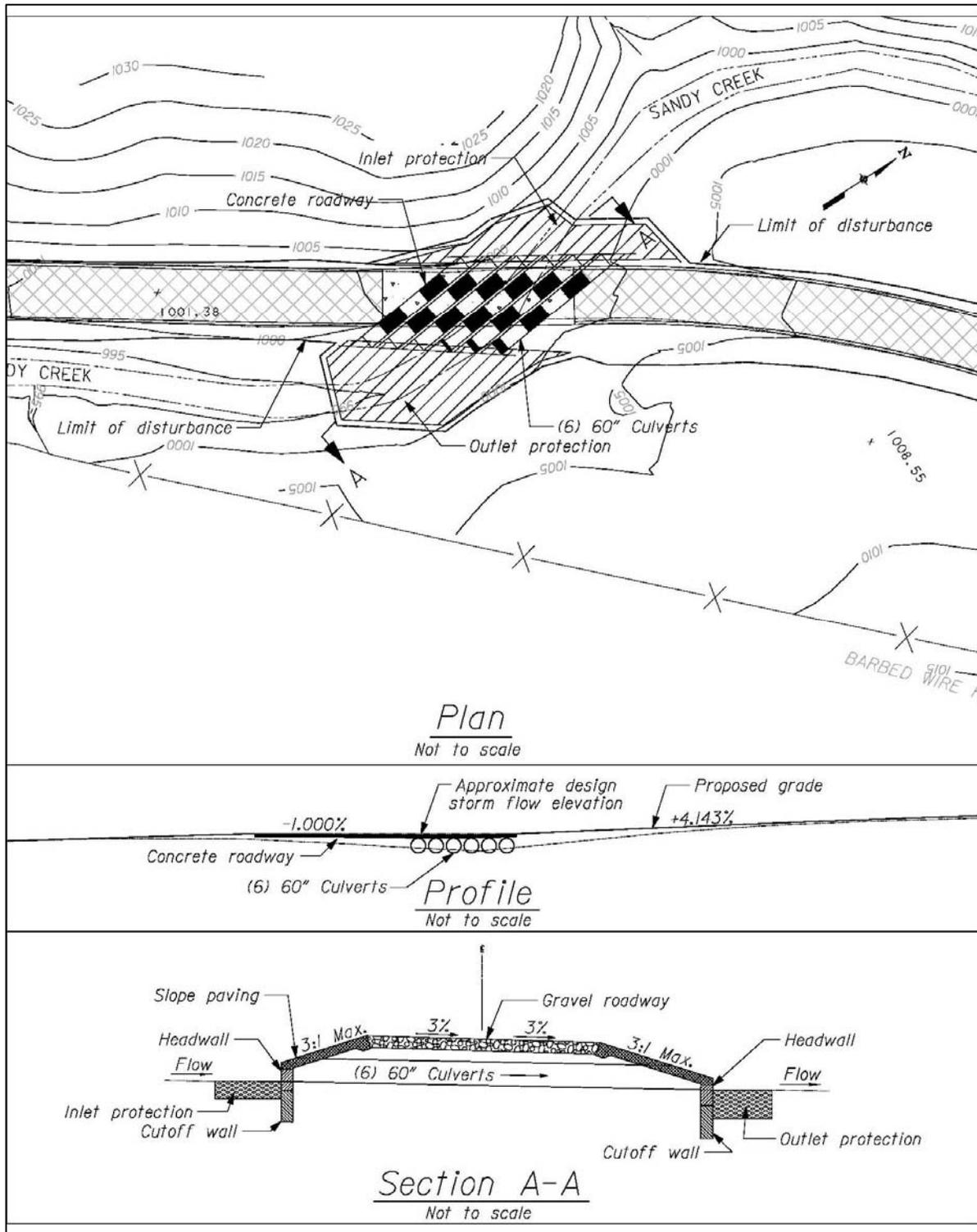
Slope protection would be added between mile points 0.75 and 0.85, as described for Alternatives A and B. Outlet protection would be added to the existing 24-inch culvert at mile point 0.75.

Drainage crossing structures would be constructed at the four major drainage crossings using corrugated metal pipes designed to pass 50-year storm event floodwaters. These drainage structures would include six 60-inch corrugated metal pipe culverts, concrete headwalls and wingwalls, and outlet erosion protection at mile points 0.10, 0.20, 0.50 and 0.60 (see Major Road Drainage Crossings, Mile Points 0.10, 0.20, 0.50 and 0.60 Alternative C). Modifications at the two minor drainage crossings would include installing one 36-inch corrugated metal pipe culvert to accommodate the 10-year storm event, with erosion protection and inlet and outlet protection to reduce and minimize erosion and scour.

Halls Creek would cross the road through a corrugated metal pipe culvert structure capable of passing 25-year storm event floodwaters, and the Burr Canyon drainage channel would be realigned as described for Alternative B.

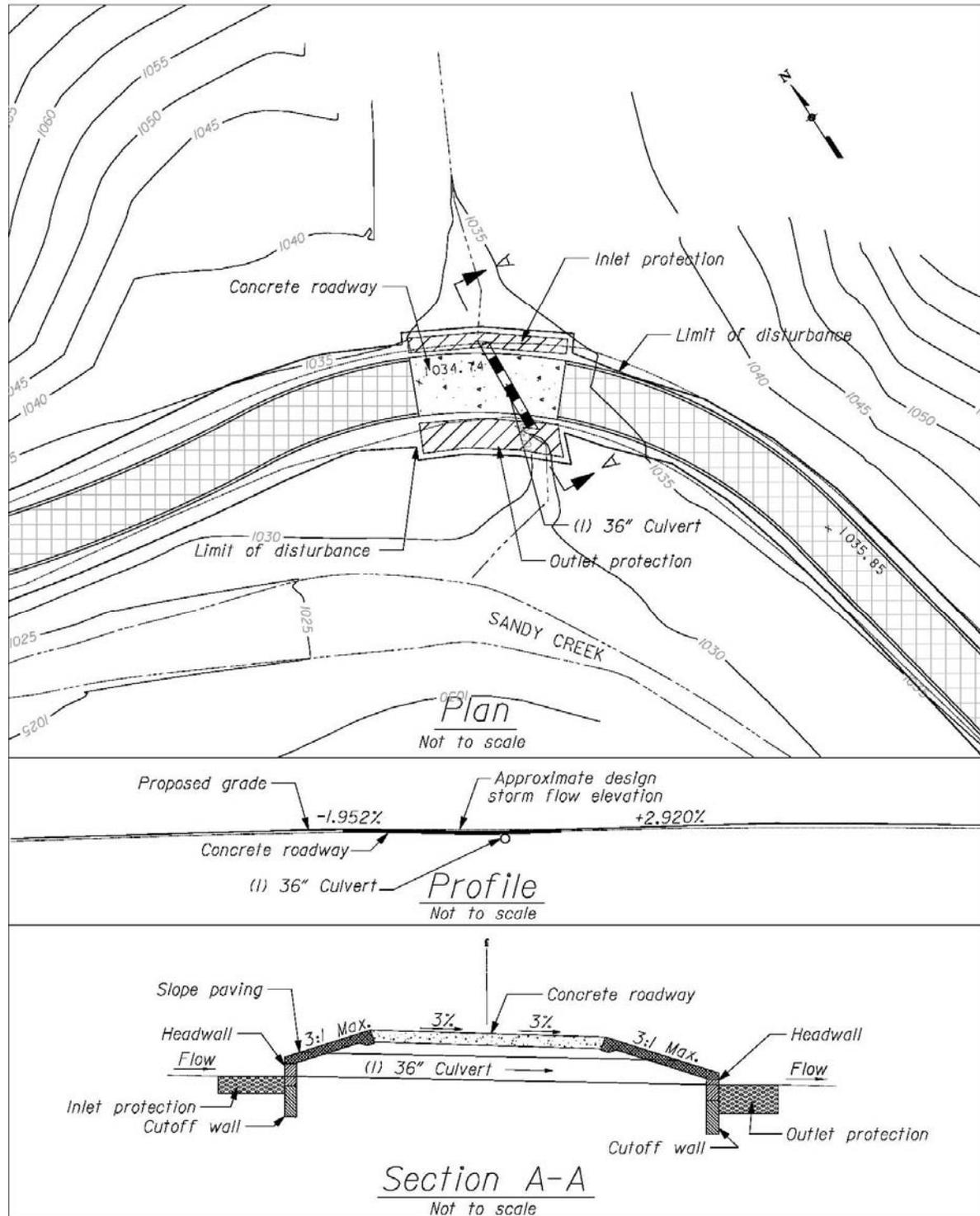
Drainage structures and road widening at the side drainage near the base of the switchbacks at Burr Canyon would be the same as described for Alternatives A and B.

The National Park Service would install a cattle guard on the Burr Trail at the eastern park boundary, as in Alternatives A and B.



MAJOR ROAD DRAINAGE CROSSINGS, MILE POINTS 0.10, 0.20, 0.50 AND 0.60
ALTERNATIVE C

PROPOSAL AND ALTERNATIVES



MINOR ROAD DRAINAGE CROSSINGS – ALTERNATIVE C

ALTERNATIVES CONSIDERED BUT DISMISSED

During the planning process, several road modification designs or mitigation techniques were considered but eliminated from further detailed analysis. These included the use of low-water crossings, over-sized drainage structures for minor drainage crossings, the use of reinforced concrete box culverts, stabilization of road embankments by re-grading or installing a check dam at a minor drainage crossing, and re-routing a portion of the one-mile road segment to avoid the overhanging rock.

PASSABLE LOW-WATER CROSSINGS

Passable low-water crossings were considered for the major and minor Burr Trail drainage crossings. The crossings would have allowed travelers to drive through the drainage during storm events up to the 10-year event. The crossing designs would accommodate floodwaters passing over the road approximately six inches deep. Use of passable low-water crossings was dismissed from consideration for the following reasons:

- Allowing passage through floodwaters would pose an unacceptable risk to drivers and vehicles. Floodwaters transport high loads of sediment and debris that could sweep a vehicle and its passengers from the crossing and into the flood. Although the design would maintain water depth at approximately six inches or less for floods up to the 10-year event, a traveler on the road would have no way to ascertain the magnitude of the storm event or the true depth of floodwaters on the road.
- Additionally, the construction of passable low-water crossings would require that relatively large areas be graded to accommodate the contour required to keep floodwaters at or below the six inch depth. The adverse impacts to soils and vegetation and to the natural topography would be too great.

OVERSIZED DRAINAGE STRUCTURES FOR MINOR DRAINAGE CROSSINGS

The upstream drainage areas affecting the minor drainage crossings are relatively small. The vegetative cover type at and in the vicinity of the minor drainage crossings is undisturbed desert-shrub. The soil classification, topographic survey, and precipitation data typical of the region indicate that sufficient drainage would be provided using a structure designed to handle the 10-year storm event (FHWA 2001). The use of oversized drainage structures (designed for the 25-year and 50-year storm events) for minor drainages would involve larger structures, require raising the road surface, involve more disturbance of adjacent land, and be more expensive to construct. Although they would require less maintenance, oversized culverts would not provide a greater drainage benefit sufficient to justify the higher cost of construction.

REINFORCED CONCRETE BOX CULVERTS

Reinforced concrete box culverts for the 2-year, 10-year, 25-year, and 50-year storm events at major drainage crossings would be more expensive to construct than corrugated metal pipe culverts sized to accommodate the same storm event. Concrete box culverts are wider, requiring more excavation of the natural drainage channel, removal of native vegetation, and displacement of adjacent soil resources to install them. Long-term maintenance costs would be less, but the adverse effects to resources would be greater than those caused by installing culverts.

STABILIZE ROAD EMBANKMENTS BY RE-GRADING OR INSTALLING A CHECK DAM AT A MINOR DRAINAGE CROSSING

Re-grading the road surface and road embankment at a minor drainage crossing at mile point 0.40 would not resolve surface and bank erosion over the long term. Soil erosion caused by surface water draining across the road would continue to make frequent maintenance necessary. Installing a check dam at the drainage outlet along the road embankment would re-direct the drainage and delay the need for maintenance. However, the check dam would not provide long-term protection against erosion, and frequent maintenance along the road embankment would still be necessary. A single check dam would provide less bank stabilization and erosion protection than other drainage structures.

RE-ROUTE A PORTION OF THE ROAD TO AVOID THE OVERHANGING ROCK

Rerouting the Burr Trail around the north side of the overhanging rock would result in more disturbances of native vegetation and soil resources, substantially changing the topography and alignment of the Burr Trail. Geotechnical analysis would be necessary to ensure that re-alignment could be accommodated without blasting and to determine the potential for adequate subgrade and sources for fill material. Per-mile maintenance costs along the Burr Trail would potentially increase over the long term.

SELECTION OF THE PREFERRED ALTERNATIVE

To develop the preferred alternative, the alternatives were evaluated by an interdisciplinary team that included representatives from each of the cooperating agencies and experts representing the relevant professional disciplines. Evaluation of the alternatives considered the advantages and the costs of each alternative.

The advantages of each alternative were described according to a set of evaluation factors. The factors represented those key areas and impact topics that clearly differentiated the alternatives from one another. The following factors were developed by the evaluation team and used to select the preferred alternative.

Area of disturbance – the types of natural or cultural resources that would be disturbed by the alternatives and the extent of the area of disturbance. The area of disturbance did not include the road surface or its shoulders. The goal was to minimize the area of disturbance.

Visual quality or effect – how the alternative would affect the scenic quality of the surrounding landscape of geological features and landforms or the views of the Waterpocket Fold. The goals were to maintain high scenic quality and unobstructed views.

Functional differences – how the design would handle a storm event, the amount of time that visitors would be delayed due to impassable road conditions, and traveler safety during storm events. The objectives were to maximize the ability of road drainage structures to handle storm events, maximize visitor safety, and minimize traveler delays.

Maintenance and operations – how the design would affect Garfield County’s ability to clear debris and sediment from drainage structures and repair drainage structure failures over the lifetime of the proposed action. The goal was to have the simplest design to maintain and the easiest to repair/replace when needed.

Visitor use and experience – how well the park could achieve objectives for visitor use and experience of the natural processes and the forces of nature in a remote, primitive setting. The goal was to maximize the ability to achieve park visitor use and experience objectives.

EVALUATION OF DRAINAGE CROSSINGS

Major and minor drainage crossings were evaluated for the storm event for which the crossing structure would be designed and the type of crossing structure (vented and unvented paved fords or corrugated metal pipe culverts).

Paved Fords

Vented and unvented paved fords were selected for the preferred alternative. Both structures would be designed to withstand the force of a 10-year storm event. The unvented fords would not be traversable during storm events, as all water would flow over the road

surface. The vented paved fords would have culverts capable of conveying the flow of a 2-year storm event but would not be traversable in a larger storm. These were selected for inclusion in the preferred alternative because they would achieve a balance between the evaluated factors.

The paved fords would largely follow the natural contour of the drainage and would maintain the character of the road as it winds and dips through drainages. This would have a minimal effect on the scenic quality of the landscape, as well as keeping the area of disturbance to a minimum.

While most storms would cause visitors to stop for as long as water flowed through the drainage and over the fords, the experience of being forced to stop and wait would facilitate visitor understanding of the power and effect of storm events in canyon country and other important resources and themes of the park such as topography, geology, and hydrology.

Paving would stabilize the road surface across the drainage and would enable passage through the crossing soon after storm waters subsided. This would also improve maintenance of the crossing, making removal of mud and silt on the road surface easier. Paved fords would require little in post-storm maintenance compared to multiple culvert crossings that often need to be repaired or replaced following very large storms. Vented paved fords would be more simple structures to repair than 25- or 50-year culverted crossings.

Corrugated Metal Pipe Culverts

Crossings with corrugated metal pipe culverts that could accommodate 25- and 50-year storm events were not selected as the preferred alternatives, although they could have the advantage of providing more reliable passage. They would allow water flows up to the design storm event to pass under the road and not impede travel, although through travel on the Burr Trail may not be possible because of impassable conditions at minor crossings or other storm-impacted locations.

Crossings with culverts that would pass the 25- and 50-year storm event would be more costly, would be higher profile structures within the drainage than paved fords, would have a greater effect on local topography because they would require additional grading, and would create a more noticeable visual impact on the landscape.

Halls Creek

Realigning the roadway a short distance downstream from the confluence of Halls Creek and Burr Canyon drainage was selected for the preferred alternative. This would direct flow through the vented paved ford crossing at Halls Creek, reduce bank erosion and the impacts of large water flows on the crossing structure, reduce routine maintenance costs, and reduce the likelihood of structural failure of the crossing structure during a storm event. This would be accomplished with much less disturbance of surrounding soils and vegetation and at a lower cost than the option to realign about 300 linear feet of the Burr Canyon drainage channel.

Burr Canyon Side Drainage

The side drainage that empties into Burr Canyon near the base of the switchbacks has relatively low flows similar to other minor cross drainages in the project area. Three 36-inch culverts would conform to the slope of the embankment and adequately convey storm flows needed to flush sediments. Surface fill and a rock embankment to contain the backfill would be used to stabilize the eroding bank and protect the road with minimal impact on the scenic quality of the canyon.

EVALUATION OF ROAD SURFACE TREATMENT

The preferred alternative for treatment of the road surface would be to excavate those surface areas with high bentonite clay content to a depth of 1 foot and apply gravel over a geotextile fabric. This would improve traction on the road under wet conditions, the combination of surface excavation and fabric would keep gravel in place longer, and erosion and sedimentation would be reduced. Twenty-five percent less gravel would be needed during initial application over a geotextile fabric, and longer retention of gravel would reduce re-application and improve life-cycle costs.

Although gravel applied directly over clay soils without the application of geotextile fabric would improve traction on the road, it was not selected for the preferred alternative. Without excavation of the existing surface and with nothing to hold the gravel in place, road traffic would displace or embed the gravel and widen the road surface as gravel spread to the sides of the road. During wet periods, gravel would sink into the underlying clay, requiring frequent replacement and maintenance.

EVALUATION OF THE OVERHANGING ROCK

This issue was addressed in the Engineering and Landscape Architectural Assessment of the Burr Trail Road from the Post to the East Boundary (NPS 1998b). This document, a joint effort of the National Park Service and Federal Highway Administration, presented the following evaluation of the overhanging rock:

"This weathered rock appears gray in some light and golden in others. The weathered holes in its face give the impression of a medieval gargoyle. This character-defining feature provides both visual interest and a geographical place marker, and unless geotechnical evidence is presented that the rock feature represents a safety hazard, it should not be altered.

At this location [mile post 0.60], the existing roadway is narrow in width (approximately 14 feet wide), a horizontal curve is present and the stream channel is immediately adjacent to the toe of fill slope. Due to these roadway conditions and the presence of the overhanging rock, two vehicles traveling in opposite directions can not pass and improvements are warranted.

This is supported by the review of recent (1992-1996) accident history for this roadway. Accident records indicate that two accidents occurred at this location and it appears that the combination of the rock overhang, sharp horizontal curve, reduced

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roadway width and steep fill slope drop-off partially contributed to each accident. No other accidents were noted on the remaining one mile portion of the Burr Trail road.

To the best of our knowledge, no work was done by Garfield County at this site in 1996."

This position was also supported in NPS and FHWA court testimony in February 1999.

EVALUATION OF BANK STABILIZATION

Slope protection is recommended to stabilize the stream banks in two locations. Rock used to stabilize slopes throughout the project would either be native rock that would blend with the local landscape or be treated (i.e., colored) to minimize contrast with native rock. This is particularly important between mile points 0.75 and 0.85, where the stream bank is visible to travelers on the road.

EVALUATION OF CATTLE GUARD

Installing a new cattle guard at the park boundary and removing the existing cattle guard at mile point 0.55 when the current in-park grazing allotment permit expires was recommended because the new cattle guard would fulfill all related resource protection needs.

MITIGATING MEASURES

The following mitigating measures would be implemented by Garfield County or the National Park Service under all action alternatives to reduce the impacts to park resources:

Surface Water, Hydrology, Vegetation, and Soil Resources. Best management practices to control erosion and sediment transport processes would be used during all construction activities. Generally accepted methods to protect soil, water, and vegetation resources would include, but would not be limited to:

- Limiting the area of disturbance. For example, heavy construction equipment would be kept on the road surface when placing slope protection or performing excavation adjacent to the roadway, to the extent possible.
- Removing and stockpiling topsoil for reapplication to disturbed areas when construction is complete.
- Avoiding construction during mid- to late-summer when heavy rainstorms would dislodge freshly disturbed soil, causing erosion and sedimentation.
- Restoring disturbed areas to natural contours to the extent possible and revegetating with native species to reduce the potential for erosion.
- Providing fuel and oil services for construction machinery in a designated area away from channels or drainages. This would include secondary containment for all fuel storage tanks and on-site availability of a specialized “spill kit” with capacity to contain a 95-gallon fuel spill.
- Biological soil crusts would be identified, staked, and flagged by NPS personnel to delineate areas near but outside the work areas that are not to be disturbed.
- Implementing best management practices and stormwater pollution prevention plan measures prior to, during, and following ground disturbing activities. The primary measure used to control sediment in the stormwater runoff would be installation of temporary silt fencing at the bottom of the drainage contours to trap sediments generated during construction.
- Obtaining all applicable state and federal permits for planned actions. Under permitting requirements, the state of Utah and/or the U.S. Army Corps of Engineers may need to determine jurisdiction of affected watercourses, as well as stability or feasibility of planned modifications. All permit requirements would be met.
- Obtaining gravel and fill for construction or maintenance from certified noxious weed-free sources. Gravel pits and fill sources would be inspected to identify weed-free sources. There would be no quarrying of construction materials from inside the park. Use of materials obtained during normal construction activities would be permitted.

Cultural Resources. Protective measures designed to avoid disturbance to cultural resource sites would be developed prior to construction. There are several cultural resource sites where care needs to be taken to avoid and protect the sites. Those areas would be identified in the construction operations plan. In addition, if previously undiscovered archeological resources are uncovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented, and an appropriate mitigation strategy developed in consultation with the Utah State Historic Preservation Office. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 United States Code §3001) of 1990 would be followed.

Geologic Features, Landforms, Public Health and Safety, and Visitor Use and Experience. Measures designed to maximize visitor use and experience and to avoid disturbance of the natural landscape would be developed prior to construction. Generally accepted methods to protect public health and safety while providing for visitor use and experience include but would not be limited to:

- Providing signs at all paved ford crossings to warn travelers not to cross if water is overtopping the roadway. Signs advising drivers that the general nature of the road changes from a paved, relatively straight road outside the park to a narrower, winding road when entering Capitol Reef National Park would be beneficial.
- Minimizing adverse impacts to visitor use and experience of the natural landscape. These measures could include the use of rock facing at culvert inlets or outlets, and the use of coloring on constructed elements to blend their appearance with the surrounding landscape.

THE ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will best promote the national environmental policy expressed in the National Environmental Policy Act. The environmentally preferred alternative would cause the least damage to the biological and physical environment, and would best protect, preserve, and enhance historical, cultural, and natural resources.

Section 101(b) of the National Environmental Policy Act identifies six criteria to help determine the environmentally preferred alternative. The act directs that federal plans should:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.
- Preserve important historical, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

This discussion also summarizes the extent to which each alternative meets section 102 (1) of the National Environmental Policy Act, which stipulates that agencies administer their own plans, regulations, and laws so that they are consistent with the policies outlined above to the fullest extent possible.

Alternative A is the environmentally preferred alternative because it would provide the greatest balance in meeting the objectives set out in Section 101 of the National Environmental Policy Act. Alternative A would prevent the loss of natural and cultural resources, and would effectively provide for the primary functions for which the Burr Trail is intended. Paved fords at all major and minor drainage crossings and signs warning against crossing drainages when water is present on the road would enhance public safety while resulting only in minor adverse impacts on the geological landscape as the road dipped into and out of drainages. The paved fords would be small and would be at approximately the same grade as the stream bed. Their presence would result in negligible to minor adverse effects on the natural hydrologic conditions in drainages, or on water quality, vegetation, or wildlife.

Road surfaces with high bentonite clay content become extremely slippery when wet, and applied gravel typically would not remain on the surface. Under Alternative A, these areas would be stabilized with geotextile fabric covered with gravel to make the road safer and to reduce maintenance needs.

PROPOSAL AND ALTERNATIVES

The road at the overhanging rock would be widened by reconfiguring the ditch alignment on the north side of the road so that there would be adequate travel width (two 9-foot lanes with 1-foot shoulders on each side). Bank stabilization would be used to protect the northern bank of Sandy Creek at this point. The overhanging rock would be retained as a geologic feature within the landscape, and soils and water resources would be protected.

Stream banks that are eroding and threatening to encroach on the road would be stabilized with erosion protection that would have a negligible to minor effect on the visitor appreciation of the visual characteristics of the natural stream channel and associated landscape. Soil, water, and vegetation resource protection would be enhanced by the bank stabilization efforts in the long-term.

The shift in the roadway at the Halls Creek crossing would allow the culverts in the vented paved ford to operate properly and efficiently, while minimizing erosion potential and additional disturbance to soils and vegetation.

Alternatives B and C were not selected as the environmentally preferred alternative because removal of the overhanging rock would alter a prominent geologic feature, an important element of the view of the Waterpocket Fold from the east.

Alternatives B and C would not include the use of geotextile fabric to treat the roadbed. Lack of geotextile fabric would not provide the safety and road maintenance benefits that are provided by Alternative A.

Alternatives B and C would provide somewhat greater protection of public health, safety, and welfare with corrugated metal pipe culverts designed, respectively, to accommodate 25- and 50-year storm events. The culverts would also increase the frequency and duration of times that the road would be passable during and immediately following storm events. However, neither alternative would be the environmentally preferred alternative because these crossing structures would adversely affect soils, vegetation, topography, and stream hydrology more than the paved fords associated with Alternative A. Additionally, Alternatives B and C would realign the Burr Canyon drainage channel, which would result in additional adverse effects to natural resources and potential adverse effects to ethnographic resources in the project area.

The corrugated metal pipe culvert crossing structures of Alternatives B and C would alter the characteristics of the natural landscape by elevating the road surface and separating it from the natural contour of the land, thus altering the geological landform and visitor appreciation of the visual character of the undulating landscape.

Based on this analysis, Alternative A is the environmentally preferred alternative. It best fulfills the National Park Service' responsibilities as trustee of the outstanding natural resources; ensures safe, healthful, productive, and aesthetically and culturally pleasing surroundings; and attains a wider range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

ALTERNATIVES SUMMARY

Table 4 provides a brief summary of the effects of each of the alternatives on the impact topics that were retained for analysis. More detailed information on the effects of the alternatives is provided in the “Environmental Consequences” section.

The objectives of Burr Trail modifications were provided in the “Purpose and Need for Action” section. Table 5 summarizes how each alternative meets each of the proposed action objectives.

TABLE 4: COMPARISON OF IMPACTS OF THE ALTERNATIVES

Resource	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Air Quality	The No Action Alternative would have local, short-term, negligible to minor, adverse impacts on air quality and visibility. Impacts to regional air quality would be negligible. Cumulative impacts would be negligible, short-term, and adverse.	Alternative A would have short- and long-term, negligible beneficial impacts on air quality and visibility because of a reduction in fugitive dust. Construction activities would create a short-term, negligible adverse impact on air quality and visibility from temporary emission of particulates. Cumulative impacts to air quality or visibility would be beneficial, but negligible.	Alternative B would have local, short-term, negligible adverse impacts on air quality or visibility due to fugitive dust and particulate emissions during construction activities. In the long-term, impacts to air quality or visibility would be negligible but beneficial. Cumulative beneficial impacts to air quality or visibility would be negligible.	Same as described for Alternative B.
Geological Features and Landform	The No Action Alternative would have no effect on geologic features due to the preservation of the overhanging rock and the park’s natural topographic and geologic setting. Cumulative impacts to geological features and landforms would be negligible.	There would be no impacts to the overhanging rock as a result of the road reconfiguration at that location. Negligible to minor adverse impacts would result from bank stabilization, construction of the rock embankment, and slight surface grade changes to the geologic landscape. Cumulative effects to geological features and landforms would be inconsequential and barely detectable from a regional perspective.	Alternative B would have a local, long-term, minor, adverse effect on geologic features because the overhanging rock would be removed. Long-term, negligible to minor adverse effects would result from construction of the bank stabilization, the slope protection, and alterations to road embankments within the geologic landscape. Cumulative impacts to geological features and landforms would represent a minor adverse impact.	Same as described for Alternative B.
Biological Soil Crusts and Soils	The No Action Alternative would produce local, negligible to minor, short- and long-term, adverse effects on biological soil crusts and soils in the vicinity of the proposed actions. Cumulative impacts to soil resources would be negligible and adverse.	Alternative A would produce local, negligible to minor, short- and long-term adverse and beneficial effects on biological soil crusts and soils. Adverse impacts would include potential loss of soil resources associated with flooding in storms greater than	Similar to Alternative A, Alternative B would produce local, negligible to minor, short- and long-term, adverse and beneficial effects on biological soil crusts and soils. Additionally, the realignment of the Burr Canyon drainage would represent a moderate, long-term adverse effect. Ultimately, the modifica-	Same as described for Alternative B.

TABLE 4: COMPARISON OF IMPACTS OF THE ALTERNATIVES

Resource	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Vegetation	The No Action Alternative would have local, short- and long-term, negligible to moderate adverse effects on vegetation. Cumulative effects would be negligible.	<p>10-year events and the effects of construction, installing slope and bank protection, and shifting the road alignment at the Halls Creek crossing. For storm events up to 10-year magnitudes, the proposed modifications would represent beneficial effects as they would protect against erosion and restore aspects of natural sediment transport processes in the project area. Cumulative effects would result in negligible adverse effects to soil resources.</p> <p>Alternative A would produce local, short- and long-term negligible to minor adverse effects on the desert-shrub and riparian vegetation along the Burr Trail. Overall, cumulative effects on vegetation would not likely be detectable.</p>	<p>tions would represent a long-term, local, minor benefit to soil resources. Cumulative effects would result in negligible adverse effects to soil resources.</p> <p>Alternative B would produce negligible to minor, local, short-and long-term adverse effects on vegetation similar to Alternative A, plus minor to moderate, long-term, local adverse impacts resulting from the realignment of the lower Burr Canyon drainage. Cumulative effects would not likely be detectable.</p>	Same as described for Alternative B.
Wildlife	The No Action Alternative would continue to have a temporary disturbance or displacement effect on wildlife, with rare instances of vehicle/wildlife collisions that would have negligible adverse effects on species' populations. Cumulative effects would be negligible.	There would be negligible to minor, short-term, local, adverse effects to wildlife and wildlife habitat associated with passing vehicles and construction of the road modifications. Effects would be long-term and beneficial, as the frequency of flood-damaged road repairs and surface maintenance, would lessen the potential for disturbance or displacement of wildlife. Cumulative effects	Alternative B would have local, short-term, negligible to minor, adverse habitat disturbance effects on wildlife and their habitats. In the long-term, the effects would be beneficial, as the frequency of flood-damaged road repairs and the use of heavy construction equipment would be reduced, thus lessening the potential for disturbance or displacement of wildlife. Cumulative effects would be negligible.	Same as described for Alternative B.

TABLE 4: COMPARISON OF IMPACTS OF THE ALTERNATIVES

Resource	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Surface Water and Hydrology (including floodplains)	The No Action Alternative would have negligible to minor adverse effects on hydrology, water quality, and floodplain function during low flow storms. During flash flood events, the current road conditions impede flow, deliver added sediment, and hamper floodplain functions. These conditions would result in minor, short- and long-term, adverse effects. Cumulative impacts to surface water and hydrology are negligible.	would be negligible. Under Alternative A, negligible, long-term, beneficial effects to surface water quality, hydrology, and floodplains would accrue. Modifications to the Burr Canyon drainage at Halls Creek would produce short- and long-term, negligible, adverse effects to water quality and hydrology. Short-term adverse effects resulting from construction activities would be negligible and local. Effects to natural floodplain functions would be negligible to minor and adverse. Overall, in the long-term, Alternative A would have negligible beneficial effects on water quality, hydrology and the floodplain. Cumulative effects would be negligible.	Under Alternative B, negligible to minor, long-term beneficial effects to hydrology and floodplains would occur. Bank stabilization would result in minor beneficial effects of reduced erosion of the bank, accompanied by the minor adverse effects of potential erosion of the downstream channel caused by narrowing the channel. Realignment of the Burr Canyon drainage would produce short- and long-term, moderate adverse effects to hydrology resulting from manipulation of natural channel-forming processes and the potential for substantial quantities of sediment production. Short-term adverse effects resulting from construction activities would be negligible to minor and local. Overall, Alternative B would produce minor, beneficial effects on hydrology and the floodplain. Cumulative effects to surface water, hydrology and floodplain would be negligible.	Same as described for Alternative B.
Natural Soundscapes	The No Action Alternative would have a short-term, local, negligible to minor, adverse effect on the natural soundscape, with the minor effects related to the frequency of road-damaging floods and the zone where the sound receptor would be located. Cumulative adverse impacts to the natural soundscape would be	Effects associated with Alternative A would be short-term, negligible, minor to moderate, and adverse as a result of vehicles passing along the Burr Trail and the road modification construction noise, respectively. Ultimately, this alternative would result in a beneficial effect to the natural soundscape, as recurrent	Same as described for Alternative A.	Same as described for Alternative A.

TABLE 4: COMPARISON OF IMPACTS OF THE ALTERNATIVES

Resource	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
	negligible.	repairs and the introduction of noisy construction equipment would be reduced. Cumulative effects on the natural soundscape would be negligible.		
Ethnographic and Ethnographic Landscapes.	No new adverse impacts or cumulative impacts on ethnographic resources or ethnographic landscapes would be anticipated under the No Action Alternative. Cumulative effects to ethnographic resources (including landscapes) would be negligible.	Adverse impacts on ethnographic resources from road and bank stabilization and drainage crossings would be negligible. Cumulative effects would be negligible.	Adverse impacts of the road surface, road bank and slope stabilization, channel realignment, and removal of the overhanging rock could have moderate, local, long-term, adverse impacts on ethnographic resources, including potential ethnographic landscapes. Cumulative effects to ethnographic resources (including landscapes) would be minor.	Same as described for Alternative B.
Public Health and Safety	The No Action Alternative would neither reduce nor enhance public health and safety, resulting in direct, negligible to minor, long-term, adverse impacts to visitor health and safety. Cumulative impacts would be negligible.	Alternative A would enhance public health and safety. The benefits would be negligible to minor. Short-term adverse effects on safety caused by construction activities would be negligible. When compared to the No Action Alternative, road widening and stabilization would provide minor benefits to public health and safety. Cumulative effects would be beneficial and of negligible to minor intensity.	Public health and safety would be enhanced by implementation of Alternative B. The benefits would be negligible to minor. Improving drainage crossings so that travel would still be possible during storms less than the 25-year storm event would yield long-term, moderate benefits to public health and safety. Short-term effects to safety caused by construction activities would be negligible. Cumulative effects would be beneficial and negligible.	Same as described for Alternative B.
Visitor Use and Experience	The No Action Alternative would produce long-term, minor to moderate beneficial and adverse effects on the visitor experience. The visitor's perspective with re-	Alternative A would produce long-term adverse effects to the visitor experience by altering the natural terrain. These effects would be local, and of negligible	Alternative B would result in long-term adverse effects to the visitor experience by altering the natural terrain and introduction of additional engineered elements to the Burr Trail. These effects	Same as described for Alternative B.

TABLE 4: COMPARISON OF IMPACTS OF THE ALTERNATIVES

Resource	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
	<p>gard to experiencing remote areas or to maintain a predetermined travel schedule are examples of how the effects could range from beneficial to adverse. Cumulative effects on visitor experience would be negligible.</p>	<p>to minor intensity. Short-term adverse effects on visitor experience would occur from construction activities, and these would be minor and limited to construction sites. Cumulative effects would be negligible and range from adverse to beneficial, depending on the visitor's expectations and perspective.</p>	<p>would be local and of negligible to minor intensity. Short-term adverse effects associated with construction would be as discussed for Alternative A. Cumulative effects on visitor experience would be negligible and range from adverse to beneficial, depending on the visitor's expectations and perspective.</p>	
Socioeconomics	<p>The No Action Alternative would not produce detectable effects on the local economy. The county and local grazing permit holder would continue to use the road, and would not experience changes in economic benefits under this alternative. Cumulative effects to socioeconomics would be negligible.</p>	<p>Alternative A would produce negligible to minor, short-term beneficial effects on the local economy. The county and local grazing permit holder would continue to use the road, and would not experience changes in economic benefits under this alternative. Cumulative effects would be negligible.</p>	<p>Same as described for Alternative A.</p>	<p>Same as described for Alternative A.</p>
Park Operations	<p>The No Action Alternative would have short- and long-term, minor, adverse impacts on park operations. Cumulative effects would be negligible if detectable at all.</p>	<p>Alternative A would have long-term, negligible to minor beneficial impacts on park operations. Construction of modifications would have short-term, minor, adverse impacts. Cumulative impacts to park operations would be negligible.</p>	<p>Same as described for Alternative A.</p>	<p>Same as described for Alternative A.</p>
Garfield County Road Maintenance Operations	<p>The No Action Alternative would have minor adverse effects on road maintenance operations because of the continuation of existing conditions and the road</p>	<p>Alternative A would have negligible to minor, beneficial impacts on road maintenance operations for the long-term because of decreased maintenance needs and</p>	<p>Alternative B would have negligible to minor, beneficial impacts on road maintenance operations in the long-term because frequency of maintenance activities would be reduced. Cumulative ef-</p>	<p>Same as described for Alternative B.</p>

TABLE 4: COMPARISON OF IMPACTS OF THE ALTERNATIVES

Resource	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
	maintenance operations needed to ensure that road surfaces are stabilized and drainages are cleared. Cumulative effects to road maintenance operations would be minor and adverse.	operating costs. Cumulative adverse effects on road maintenance operations would be negligible to minor and beneficial overall and in the long-term.	effects to road maintenance operations would be negligible and beneficial.	

**TABLE 5: OBJECTIVES OF THE BURR TRAIL MODIFICATIONS,
AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM**

Burr Trail Modification Objectives	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Provide for safer travel on an all-weather, maintained, variable-width, unpaved, gravel and native-material road, acknowledging that the road would occasionally be impassable, depending on weather conditions	Clay road surfaces are slick, making it difficult to travel when wet. Road widths range from 14 feet to 20 feet, and the road generally follows the natural topography. Narrow sections of the road near the overhanging rock make two-way passage difficult. During rainstorms, passage across washes and drainages is not always possible.	Safer travel on the Burr Trail would be provided under all weather conditions by excavating the clay, laying fabric and a gravel base, and installing paved fords designed to handle 10-year storm drainage. Stormwater draining through the paved fords would occasionally block vehicle passage. Sections of the road would be widened, resulting in a more uniform road width.	A roadbed consisting of a gravel road base combined with culverts designed for the 25-year storm would provide safer travel on the Burr Trail. All-weather travel would be improved. Existing road surfaces would be raised and narrow portions widened to 20 feet.	A roadbed consisting of a fabric and gravel road base combined with culverts designed for the 50-year storm would provide safer travel and increase all-weather drainage crossings on the Burr Trail. Existing road surfaces would be raised and narrow portions widened to 20 feet.
Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park	The road follows the natural rolling terrain, slopes gently, and rises and falls below the natural contours with no alterations to the alignment.	The road would preserve the winding and adventuresome character of the Burr Trail, but narrow road sections at the overhanging rock and at the Burr Canyon side drainage crossing would be widened. Alternative A would preserve the overhanging rock.	This alternative would adjust the road alignment by removing the overhanging rock and widening the road at that location, and increasing the elevation of the road at drainage crossings by installing drainage culverts. Slope protection would minimize the visual impacts of road embankments but would be visible at drainage crossings. Re-alignment and bank stabilization of the Burr Canyon drainage would have an adverse visual impact the landscape.	Similar to Alternative B, with even greater elevation changes associated with more and larger culverts at the major drainage crossings.

**TABLE 5: OBJECTIVES OF THE BURR TRAIL MODIFICATIONS,
AND THE ABILITY OF THE ALTERNATIVES TO MEET THEM**

Burr Trail Modification Objectives	No Action	Alternative A: Preferred Alternative	Alternative B	Alternative C
Protect the natural and cultural resources of the park	There would be natural weathering of the natural and cultural resources of the park.	This alternative would protect cultural resources but would involve short-term and small scale impacts to natural resources. Natural weathering processes would continue.	There could be adverse impacts to ethnographic landscapes as a result of the realignment of the Burr Canyon drainage, and there would be long-term impacts to natural resources as a result of construction of the drainage crossings. Natural weathering processes would continue.	Similar to Alternative B.
Road safety, stabilization, and improved drainage	When wet, the slippery clay road surfaces make travel on the Burr Trail difficult. Erosion of the road bank undermines the road surface and eventually narrows the road. Accidents have occurred along portions of the road less than 20 feet wide (at the overhanging rock and at Halls Creek). Storm flooding impedes crossing drainages during storms and for several hours afterwards, and following storms, the road may remain rough until it is re-graded.	Safer travel would be maintained by stabilizing the road surface, road banks, and widening the road in select locations and by installing paved fords at all major and minor drainage crossings. Unvented paved fords would be impassable during storm flooding. Signs would warn travelers approaching paved fords not to cross when water is flowing over the road.	Same as Alternative A, except that culverts would be designed to pass 25-year storm floodwaters, allowing safe passage during storms of 25-year magnitude or less and reducing the need to re-grade the road.	Same as Alternative A, except that culverts would be designed to pass 50-year storm floodwaters, allowing safe passage during storms of 50-year magnitude or less and reducing the need to re-grade the road.

AFFECTED ENVIRONMENT

AIR QUALITY

Capitol Reef National Park is in the Colorado Plateau and includes portions of rural Emery, Garfield, Sevier, and Wayne Counties, Utah. This remote area has relatively little development and few major sources of air pollutants, and is over 200 miles away from the largest urban center, Salt Lake City.

The U.S. Environmental Protection Agency has designated Emery, Garfield, Sevier, and Wayne Counties as in attainment for all criteria pollutants (U.S. Environmental Protection Agency 2002). Air quality attainment is evaluated on the basis of National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), lead (Pb), particulate matter smaller than 10 microns in diameter (PM₁₀), and sulfur dioxide (SO₂) (U.S. Environmental Protection Agency 2001). The directly emitted criteria pollutants are CO, NO₂, SO₂, and PM₁₀. Ozone is a secondary air pollutant resulting from photochemical reactions involving nitrogen oxides (NO_x) and reactive organic gases.

Air pollutants of recent origin generally come from the few local point sources and area sources in and around the park. Local sources of air pollution within the park include fuel odors and exhaust from recreational and motor vehicles as well as fugitive dust that is wind- and vehicle-generated from naturally exposed ground surfaces (NPS 1998c). A point source of substantial size close to the park is the Nuclear Fuel Service near the Bullfrog area in Utah. Monitoring was conducted in 2001 in nearby Glen Canyon National Recreation Area for five of the criteria pollutants. Based on these data, all ambient air quality levels meet the national ambient air quality standards (NPS 2001a).

Capitol Reef National Park has been designated a Class I airshed and is therefore given the highest level of air quality protection (U.S. Environmental Protection Agency 1999a, 1999b). Ambient air quality in Class I airsheds exceeds the National Ambient Air Quality Standards.

Atmospheric visibility is a primary resource in many national parks. Visibility in Capitol Reef National Park is normally fairly high, ranging to 100 miles or more. However, poor visibility in Capitol Reef National Park can be caused by a combination of wind-generated dust from naturally exposed surfaces, locally generated particulate emissions, and regional emissions such as coal-fired plants in surrounding counties.

Capitol Reef National Park participates in a collaborative visibility monitoring effort known as the Interagency Monitoring of Protected Visual Environments (IMPROVE) program. A monitoring device was installed within the park in the year 2000 to help assess visibility conditions, sources, and trends. Evaluation of air quality data from this station would not provide information relevant to the project area because of its remoteness and the short-term nature of any impacts on visibility; however, in a general sense, measurements from nearby Canyonlands National Park revealed that aerosol concentrations were low and visibility has been improving (IMPROVE 2000).

GEOLOGIC FEATURES

The Burr Trail passes through canyons, cliffs, and geologic features that have been formed over millions of years, and the various colored rock formations and layers are quite evident along the route. The sedimentary rocks that outcrop in the region date back to the Cretaceous, Jurassic, and Triassic periods, or 65 million to 248 million years ago. These rocks are largely composed of deposits of mudstone and sandstone.

The Burr Trail crosses, and then follows, the southern extent of the most spectacular monoclinical flexure in North America, the Waterpocket Fold (NPS and BLM 1993). This primary geological feature of the park stretches for nearly 100 miles, from Thousand Lake Mountain in the north to Lake Powell in the south. The fold is a geological uplift, formed around 65 to 80 million years ago (NPS 1998c).

The one-mile Burr Trail segment passes through hilly terrain and enters a narrow north-south valley on the eastern side of the park that is bounded by the Waterpocket Fold on the west and steep cliffs on the east. Most of the spectacular scenery of Capitol Reef National Park was created by erosion of the various rock layers by wind and stormwater runoff during more recent geologic time (NPS 1998c).

A prominent overhanging rock that stands out along the Burr Trail at mile point 0.65 could be affected by various alternatives.

The Halls Creek drainage is composed primarily of Entrada Sandstone that is overlain with thick alluvial deposits. The Burr Trail winds west through Burr Canyon, which cuts through the Carmel Formation, the Navajo Sandstone, and the Kayenta Formation (NPS and BLM 1993).

BIOLOGICAL SOIL CRUSTS AND SOILS

The soils in and adjacent to the Waterpocket Fold are composed of fine- to coarse-grained sands. Just east of the Waterpocket Fold monocline and extending to the east boundary of the park, the soils are primarily alluvial, of the El Rancho-Henrieville-Ruinpoint series, comprised of a fine sandy-loam to sandy-clay-loam. These soils are very deep and well drained, with a clay content of 18 to 27 percent (NPS and BLM 1993). Predominant soil types along the Burr Trail are composed of well-drained, coarse-grained sands with some areas of silts and clays ranging in thickness from zero to tens of feet. Most of the soils are highly unstable and susceptible to erosion by wind and water. Bentonite clays shrink and crack when dry, and when wet they swell and become slippery. These soils may be redistributed under varying climatic conditions.

Biological soil crusts have been documented within 50 feet of the roadway. This material is found in areas of low landform gradients along the route (NPS and BLM 1993). The crusts are composed of cyanobacteria and nitrogen-fixing lichens. Crusts in this region commonly form pinnacles and serve to stabilize arid soils (U.S. Geographical Survey 2001). They also influence the organic matter content, soil acidity, and proportions of nitrogen, carbon, calcium, magnesium, potassium, and phosphorus in the soils. Areas containing biological soil

crusts typically have substantially higher infiltration rates and lower sediment production than similar soils uninfluenced by the symbiotic formation.

VEGETATION

Over 900 species of vascular plants have been documented at Capitol Reef National Park (NPS and BLM 1993). This variety of flora is the largest reported at any of the national parks on the Colorado Plateau. The large number of species is due to the numerous soils, substrates, and changes in elevation across the park.

There are 34 individual plant communities, 11 of which are unique to the park. These communities range from badlands, grasslands, and pinyon-juniper shrublands to five forest types found at higher elevations.

Four communities are of special concern because they are rare or vulnerable to disturbance. These include the bristlecone pine-cushion plant community, waterpocket community, hanging garden community, and hornbeam-boxelder-oak woodland (NPS 1998c). None of these sensitive plant communities are present along the Burr Trail where the proposed actions would be implemented.

The project area lies in a sparse desert-shrub vegetative community with riparian vegetation found at several drainages along the route. Vegetation cover in the desert-shrub community is generally very low with several feet of distance between individual plants. Shadscale is the dominant plant where the salinity of the soils dictates species composition and perennial plant cover. Four-wing saltbush, Mormon tea, matchweed, and greasewood are also found within the desert-shrub community. Galleta grass and needle-and-thread grass are somewhat common in the desert-shrub community, but stands of grass along the road are sparse.

Spring snowmelt leads to the temporary presence of a number of perennial forbs. These include Indian paintbrush, sego lilies, onions, larkspur, and numerous sunflowers. There are also a variety of spring and summer annuals adding to the vegetative cover (NPS and BLM 1993).

The riparian vegetation along the Burr Trail that grows in and adjacent to ephemeral and intermittent stream channels and washes has adapted to the sporadic hydrologic regime of the area. Generally low precipitation, thin rocky soils, and rapid runoff rates do not support dense riparian vegetation or trees.

The effects of livestock grazing on vegetation are evident on both sides of the fence, near the existing cattle guard (mile point 0.55), and just south of the road near a creek crossing. In these areas, the vegetation has been trampled or no vegetation is present at all.

Invasive, exotic vegetation has been identified within the park, but inventories of exotic plants have not been made. Plant species such as mustards, thistles, cheatgrass, and tamarisk can enter the park through a variety of mechanisms. Within the proposed action area, exotic vegetation species can be introduced by vehicles traveling the road, by wind and wildlife, and through fill material transported for road maintenance activities.

WILDLIFE

There are more than 300 species of mammals, birds, reptiles, amphibians, and fish found in Capitol Reef National Park (NPS 1998c). A wide variety of wildlife uses the diverse habitats that occur in the park. Springs, intermittent streams, riparian vegetation, desert vegetation, and rugged terrain, including cliff and talus habitat, contribute to the wildlife diversity.

Four of Utah's six big game species occur in the general vicinity of the Burr Trail. These include mule deer, elk, desert bighorn sheep, and bison. While mule deer and bison are relatively tolerant of human disturbance, desert bighorn sheep and elk are less tolerant, and in this region are more typically associated with undeveloped conditions.

Mule deer are abundant, with the highest densities primarily along the western portion of the Burr Trail. The Utah Department of Wildlife Resources rates all of the road area as year-long deer range. However, deer abundance decreases with decreasing elevation such that deer are relatively scarce from The Post to the east boundary of the park. These big game species have the potential to occur in areas that would be affected by the Burr Trail modifications, but the potential is relatively low because the generally sparse vegetation, lack of cover, and low water availability make the habitat less favorable.

The primary wildlife habitat in the vicinity of the Burr Trail is the riparian plant community found along the intermittent drainages and stream channels. This habitat provides food, cover, and occasional access to water.

In the 1970s, bighorn sheep were reintroduced into the Moody Canyon area of the Waterpocket Fold by the Utah Department of Wildlife Resources in cooperation with the Bureau of Land Management and the National Park Service. Post-reintroduction monitoring has shown that the sheep population is increasing and concentrated in the Moody Canyon area. Bighorn sheep have been sighted along the Burr Trail near the project area, but established populations are found primarily near Moody Canyon, about 15 miles south of the project area.

Bison have been established in the Henry Mountains for many years. The bison generally reside at elevations above the Burr Trail, to the east. Although their critical winter range does come close to the road at Swap Mesa, access to the lower elevations around the Burr Trail in the park is limited by steep terrain.

Predators such as the mountain lion, bobcat, badger, ring-tailed cat, coyote, and red and gray fox occur in relatively low densities, as do their prey. Mountain lions may pass through the Burr Trail area, but are most likely found near populations of large prey (for example, mule deer) along the western portion of Burr Trail. Bobcats can exist on large or small prey but usually prefer relatively undisturbed habitat outside the project area. Coyotes rely on numerous food sources and exist in all terrains despite the intensity of human activity. Red fox also exhibit this ability to adapt to any food source but are not as compatible with intense human activity, while gray fox are associated with pinyon-juniper habitat not found in the project area.

The cottontail is usually associated with riparian habitats or diverse rocky areas that support north-aspect vegetation. Black-tailed jackrabbits are more common in the open desert shrub vegetation. Smaller mammals are known to occur throughout the area.

Reptiles, including snakes and lizards, are common in the arid terrain associated with the lower elevations found in the project area.

The open, rocky terrain within the park provides good habitat for many raptors. The golden eagle lives on the benches and mesas, hunting for rabbits and rodents. The Cooper's hawk, American kestrel, and great horned owl nest and hunt in the riparian communities, where prey densities are highest. Raptor nest sites are known in Long, Surprise, and Muley Twist Canyons, located west of the proposed project area. Large trees in riparian and higher-elevation communities provide cavity and canopy nest sites for owls, falcons, and accipiters.

A wide variety of nongame birds are found throughout the area, with the greatest diversity and abundance associated with riparian habitats, especially those with developed canopy and understory. Chukar, Gambel's quail, and mourning dove are game birds with potential to occur along the Burr Trail. Chukars prefer rocky slopes with annual grasses and forbs. Quail live mostly along streams in close association with the riparian community. Neither chukar nor quail are common along the road. Mourning doves are found in riparian habitats and are not concentrated at any one site (NPS and BLM 1993).

Generally, reptiles, small mammals (such as rodents, cottontails, and hares), and passerine birds (belonging to the order Passeriformes or perching birds), including corvids (crow family, including jays, magpies, crows, and ravens), are the most common wildlife in the project area. Other wildlife species, including larger mammals, raptors, game birds, and amphibians, may occasionally be present along the Burr Trail. They are more likely to use Sandy Creek and the Burr Trail as movement or foraging corridors rather than as resident habitats.

SURFACE WATER, HYDROLOGY, AND FLOODPLAINS

The climate at Capitol Reef National Park is arid, dominated by hot summers and cool, dry winters. The weather station at Boulder, Utah, approximately 25 miles west of the proposed action area, reports an average total annual precipitation of 10.7 inches. August receives the most rainfall, with an average of 1.54 inches (DRI 2002). Summer precipitation generally occurs in the form of thunderstorms that can be intense. Spring is the driest season, with little snow or rain falling in the months of April through June. The area receives 26.9 inches of snow from November through April, but this contributes less than 3 inches to the total annual precipitation (DRI 2002).

Floods in the ephemeral drainages along and across the roadway occur periodically, mostly during the summer monsoon season of July to September. The most intense storms, which produce the highest runoff rates, occur as the result of local summer thunderstorms. These storms are highly variable, and produce differing amounts of rainfall in the park. On occasion, a storm can cause flooding in one portion of the park and produce no precipitation in

others (NPS, Kehrer, 2002e). Although intense, these thunderstorms are generally of short duration.

Table 6 presents the maximum quantity of rainfall expected to occur in the area for storm events of different time periods. These data reveal that a 1-hour storm event can generate about half as much rain as a full-day storm event.

TABLE 6: MAXIMUM PRECIPITATION AND FREQUENCY DATA FOR CAPITOL REEF NATIONAL PARK, GARFIELD COUNTY, UTAH

Storm Duration	2-Year Recurrence Interval (precipitation in inches)	10-Year Recurrence Interval (precipitation in inches)	25-Year Recurrence Interval (precipitation in inches)	50-Year Recurrence Interval (precipitation in inches)
30 minutes	0.52	0.87	1.1	1.2
1 hour	0.66	1.1	1.4	1.5
6 hours	1.0	1.6	2.0	2.2
24 hours	1.4	2.2	2.6	3.0

Source: National Oceanic and Atmospheric Administration 1973 Precipitation-Frequency Atlas of the Western U.S. (NOAA 1978).

Heavy rainstorms cause water to rise quickly in the stream channels. Storm-related flows erode natural surfaces and wash out dirt roads and trails. Roads throughout the area, including the Burr Trail, are marked with warning signs about the danger of flash floods (NPS 1998c).

In 2001, a summer rainstorm produced a flash flood that carried an automobile about a half mile downstream when the vehicle was driven into the Halls Creek crossing during the flood runoff period. A second flash flood in 2001 carried an automobile about 25 feet downstream from the same crossing. Only one such dramatic event was previously reported; it occurred prior to 1983 (NPS, Kehrer, 2002e). Floods have washed out roads, including a 60-inch culvert previously located at the Halls Creek crossing (NPS, Kehrer, 2002e).

The Burr Trail traverses the Sandy Creek and Burr Canyon subwatersheds, which drain into the Halls Creek watershed and ultimately to Lake Powell on the Colorado River. The one-mile segment of the Burr Trail generally follows Sandy Creek, crossing the intermittent drainage four times. The road crosses two other minor drainage washes within the one-mile segment. A drainage at the Burr Trail/Halls Creek crossing and a drainage crossing the road near the base of the switchbacks in Burr Canyon would be affected by the proposed action.

Surface waters within Capitol Reef National Park generally flow in response to rainstorms and snowmelt. Precipitation patterns, coupled with the high potential for evaporation, prevent most of the drainages in the park from having perennial flow. These watersheds are susceptible to occasional, short-term high flows. Due to the large amount of exposed bedrock and thin, undeveloped, coarse-grained soils, water storage is low and runoff peaks are high.

Transient flood conditions occur periodically in response to unusual precipitation events or during rapid spring snowmelt. Water levels in drainages rise quickly due to sparse vegetative cover, rocky terrain with thin or nonexistent soil cover, and steep topography. In this environment, the time for rainwater to concentrate in drainages is short, and flows peak promptly.

Sediment loading during flash flood events is the primary water quality-related problem for streams in the area. This is a natural phenomenon and results from the erratic nature of precipitation events, steep topography, and lack of vegetative cover to protect soils from erosive processes.

During storm events or periods of high snowmelt, surface flows are generally characterized by high sediment loads, as is typical of the arid environment. The sparse vegetation provides little protection for exposed soils when rains come. Stream channels usually consist of exposed bedrock and thin, undeveloped, coarse-grained soils. Soil particles are easily dislodged and carried to nearby drainages and stream channels. When flows are moving rapidly through the channel, suspended sediment is transported in the water column. When flows slow in response to decreasing gradient or decreasing precipitation, the sediment load is quickly dropped. Little actual data on flow quantities or water quality are available for the watersheds that the road traverses.

The park also contains numerous small seeps and springs. Seeps are generally present at the base of hillsides or on canyon walls (NPS 1998c). No springs or seeps are known to exist within the vicinity the project area.

The park has mapped the 100- and 500-year floodplains for larger drainages in the park, such as the Fremont River and Sulphur Creek. Floodplains for smaller drainages such as Sandy Creek, Burr Canyon, and Halls Creek have not been mapped.

Floodways in the project area are generally 5 to 10 feet deep and range from 10 to 20 feet wide. A floodway is where the water is likely to be deepest and fastest and should be reserved (kept free of obstructions) to allow floodwaters to move downstream (FEMA 2004).

Much of the floodway lies in steep topography and is constrained within a 10- to 20-foot width. In portions of the proposed action area, high storm flows overtop the stream banks and flow into the adjacent low-lying valley. These occasional high-water floods generated by spring snowmelt and summer thunderstorms erode and wash out sections of the Burr Trail.

NATURAL SOUNDSCAPES

The natural soundscape can be defined as the natural ambient sound level of a park. "It is comprised of the natural sound conditions in a park which exist in the absence of any human-produced noises. These conditions are actually composed of many natural sounds, near and far, which often are heard as a composite, not individually" (NPS 2000a).

Noise, an element that can degrade the natural soundscape, is defined as "...unwanted or undesired sound, often unpleasant in quality, intensity or repetition. . . . In a national park setting, noise is a subset of human-made noises" (NPS 2000a).

In general, parks and wilderness areas in the Colorado Plateau region are characterized by exceptionally low ambient sound levels. The primary human-made sound that is present in the project area is noise associated with passing vehicles.

CULTURAL RESOURCES

As discussed in the “Purpose and Need for Action” section, archeological resources, historic resources, and cultural landscape all were dismissed from consideration. Therefore, the description of the affected environment is limited to ethnographic resources, including potential ethnographic landscapes, traditional cultural properties, and Native American concerns.

No cultural landscapes have been formally determined for the project area. However, there appear to be one or more possible ethnographic landscape(s).

Ethnographic resources include traditional cultural properties or places; this class of cultural resource was specifically addressed in the 1992 amendments to the National Historic Preservation Act. Traditional cultural properties or places are places of special heritage value to contemporary communities (often, but not necessarily, Native American groups) because of their association with the cultural practices or beliefs rooted in the histories of those communities. Thus, they are important in maintaining the communities' cultural identities.

During the previous planning phases conducted in 1993, extensive discussions were held with potentially affiliated American Indian tribes to identify possible ethnographic resources. Three surveys of the Boulder-to-Bullfrog Road were conducted to acquaint the American Indian tribes with the project area, and two ethnographic resource inventory and assessment reports were completed (NPS 1996b, 1996c).

No discrete resources were identified as traditional cultural properties within the area of potential effect for this project. However, tribal consultants asserted cultural ties to the area, ascribed religious significance to the entire viewshed between the Burr Trail and the Henry Mountains and beyond, and identified plant species and mineral types traditionally used by their peoples. They also considered all archeological resources to be ethnographic properties. Tribal consultants generally preferred that road modifications to the Burr Trail be kept to a minimum. See the “Consultation and Coordination” section for a list of the tribes consulted.

The National Park Service recognizes four categories of cultural landscapes: historic designated landscapes, historic vernacular landscapes, ethnographic landscapes, and historic sites. Ethnographic landscapes represent a complex subset of cultural landscapes within a discrete geographic area. Their natural and cultural elements reflect human adaptation and resource use associated with a historic activity, event, or person. These landscapes may be expressed in a variety of ways, such as patterns of settlement or land use, systems of circulation and transportation, buildings and structures, or parks and open space. Ethnographic landscapes associated with contemporary groups typically are used or valued in traditional ways.

Although no cultural landscapes have been formally defined for the Burr Trail, the spectacular viewsheds that lie between the Burr Trail and the Henry Mountains have religious significance to American Indian tribes and contain plant species and mineral types important to these groups. For these reasons, when discussing possible project impacts, the road corridor and surrounding areas will be considered a potential ethnographic landscape, and discussions of the ethnographic resources and landscapes will be combined in the impact analysis sections of this document.

PUBLIC HEALTH AND SAFETY

Travel in the remote and less frequently visited areas of Capitol Reef National Park includes risks associated with use of gravel or dirt roads that are susceptible to changing environmental conditions. In keeping with the remote nature of the Burr Trail, very few road signs, other than occasional warning signs, are present.

In this arid environment, summer thunderstorms occur, bringing transient torrential rains and causing occasional flash floods. For details, see the “Surface Water, Hydrology, and Floodplains” section. Summer thunderstorms have washed out the Burr Trail as well as other park roads, on occasion stopping safe passage. In addition, when wet, the clay soils can be very slippery and can make passage difficult or impossible in wet conditions. Attempting travel under these conditions has been likened to “driving on grease.” There are reports of travelers being stranded overnight on bentonite (clay) stretches, awaiting drier driving conditions (NPS, Kehrer, 2002i).

During the summer of 2001, two separate incidents of vehicle washout were reported on the Burr Trail. The incidents were approximately three weeks apart, both were at the Halls Creek crossing, and both occurred during flash floods generated by thunderstorms. Substantial quantities of water were running through the crossing, and the drivers entered, only to be carried downstream in the Halls Creek drainage. No one was injured in either incident, but one vehicle was carried a half mile downstream in Halls Creek (NPS, Kehrer, 2002i).

No other incidents this dramatic have been reported along the Burr Trail in the park. However, there were two accidents reported at the overhanging rock in the last 10 years (NPS 1998a). Travel for vehicles passing in opposite directions is difficult at this location, and the overhanging rock has the potential to damage high profile vehicles such as large campers, recreational vehicles, and trailered boats that pass too closely.

VISITOR USE AND EXPERIENCE

Capitol Reef offers a diversity of recreational opportunities, along with spectacular landscape views. Visitor uses of the park include camping, hiking established trails, sightseeing from motor vehicles, picnicking, and backcountry exploration.

The Burr Trail provides access to the Waterpocket Fold and other geologic features of interest. Areas within Capitol Reef National Park that are accessed from the Burr Trail include Muley Twist Canyon, a premier backcountry hiking opportunity; Headquarters and

Surprise Canyons, which are narrow slot canyons; and the superb view from the Strike Valley Overlook. The Burr Trail also provides access to portions of Glen Canyon National Recreation Area and adjacent lands administered by the Bureau of Land Management.

A total of 606,146 visitors came to Capitol Reef National Park during calendar year 2002. The park is open all year, with the majority of visitor use occurring from March through October. Visitation peaks during the spring and fall, with somewhat reduced travel during the warmest months of mid-summer.

A substantial majority of the total annual visitor use occurs in the vicinity of the Fruita Rural Historic District, including the Scenic Drive, the main park campground, and park headquarters. A significantly smaller percentage of park visitors travel to the more remote portions of the park, including those areas accessed along the Burr Trail.

The Burr Trail serves as a rural, all-season, 2-wheel-drive-accessible road. The travel surface within the project area is native material and gravel, and is passable by most vehicles for the vast majority of the year.

Table 7 shows the average daily travel usage of the Burr Trail from 2001 through 2002. As shown in the table, typical use over the 3-year period was 20 to 30 vehicles per day. Travel along the Burr Trail within the park represents less than 5 percent of the total park visitation. Road users are typically park visitors, park staff, and county road maintenance personnel.

TABLE 7: BURR TRAIL ANNUAL AVERAGE DAILY VEHICLES PER DAY

Year	2003	2002	2001
Count	7,127	9,907	9,429
Average/day	20	27	26

Peak traffic volume was 2186 (71/day) in May of 1999.
 Source: Capitol Reef National Park

As shown in Table 8, visitor use along the Burr Trail within the park is similar to the overall park visitation trend. It is greatest in the spring and fall, with a slight reduction during the mid-summer months. Extremely low travel usage of fewer than 10 vehicles per day occurs during the winter months. The peak recorded traffic volume was an average 71 vehicles per day in May 1999. The current design capacity of up to 400 vehicles per day is well in excess of the past and current usage.

TABLE 8: BURR TRAIL VEHICLE USE BY MONTH AND YEAR

Month					
Month	2003	2002	2001	Three-Year Mean	Daily Mean
January	178	220	264	220.7	7.1
February	192	401	94	229.0	8.2
March	408	646	401	485.0	15.6
April	922	1302	1084	1102.7	36.8
May	1116	1810	1531	1485.7	47.9
June	874	874	1315	1021.0	34.0
July	651	994	1014	886.3	28.6
August	621	959	1350	976.7	31.5
September	908	1454	1035	1132.3	37.7
October	801	753	746	766.7	24.7
November	277	344	351	324.0	10.8
December	179	150	244	191.0	6.2
Annual Total	7,127	9,907	9,429	8,821.0	24.2
Year (through June 2004)					
	Cedar Mesa Notom Road Park Boundary	Burr Trail West Boundary	Burr Trail East Boundary		
1993	4,621	8,659	6,130		
1994	6,506	11,099	6,470		
1995	7,442	9,924	8,455		
1996	7,920	9,981	10,386		
1997	8,911	10,465	10,281		
1998	8,667	11,101	10,697		
1999	16,231	11,530	13,129		
2000	12,649	9,544	8,453		
2001	8,647	9,300	9,429		
2002	11,106	9,141	9,907		
2003	11,198	10,973	7,127		
YTD-2004	4,845	5,455	3,487		

Source: Capitol Reef National Park

VISITATION PROJECTIONS

Previous assessments of visitation at Capitol Reef National Park have reported and predicted steady increases in visitation rates. From 1984 to 1991, park visitation increased approximately 10 percent each year (NPS and BLM 1993). The 1998 general management plan used a continued growth estimate of 3.6 percent for planning purposes. However, visitation in 2001 was less than that of previous years. The most recent trend appears to indicate level to slightly decreasing visitation rates over the past few years. When overall park visitation declines, fewer visitors travel on the Burr Trail. Specific trends or projections for visitation are not addressed in this document.

BURR TRAIL EXPERIENCE

The lands adjacent to the Burr Trail in Capitol Reef National Park are among the most colorful and rugged of the Waterpocket Fold, the primary geologic feature of the park. The heights above Strike Valley near the Burr Trail have high potential as a site for experiencing the park's primary geological theme. The primitive character of the land, aesthetics, quiet, and solitude make traversing the Burr Trail a special visitor experience.

No visitor use studies of the Waterpocket District or the Burr Trail have been conducted by the park; however most would agree that the experience varies by individual. Some visitors would find the unimproved sections of the road a challenge, while others may object to the sometimes jarring, bumpy ride experienced when the road is "washboarded." The existing primitive feel of the road allows visitors to experience what the area was like for the early settlers in the area.

The overhanging rock at mile point 0.65 appears gray in some light and golden in others, and has holes in its face that give the impression of a medieval gargoyle. This character-defining feature provides both visual interest and a geographical place marker (NPS 1998a). Travel along the Burr Trail offers the visitor a "picture frame" view to experience and understand the geologic significance of this and several features throughout the park.

Muley Twist Canyon, one of the premier backcountry hiking locations in the park, is in the Waterpocket District along the Burr Trail. Park staff estimate that up to half of all recreational travelers to the park engage in hiking activities. Many of these hikers appreciate the area's solitude and quiet and hold strong opinions concerning environmental preservation. However, backcountry recreational use of the park represents only a very small percentage of the total recreational use of the park (NPS 1998c).

SOCIOECONOMICS

The Burr Trail project area and adjacent portions of Capitol Reef National Park are located in south central Utah's rural Garfield County. According to the 2000 census, Garfield County had a total population of 4,735 (U.S. Census Bureau 2002). The primary economic activities in the county are tourism, cattle ranching, service industries, and government (Five County Association of Governments 2002).

Land ownership within the county is largely federal. The Bureau of Land Management, U.S. Forest Service, National Park Service, and Bureau of Reclamation administer 88 percent of the acreage within Garfield County. Utah State Trust Lands make up another 8 percent, and private land ownership comprises only 4 percent of the total (Utah State University Extension Governor’s Rural Partnership Office 2001). To address this situation, the county has included public lands management as a specific planning topic in the 1998 amendment to the general plan (Five County Association of Governments 1998).

Non-agricultural jobs represented 80 percent of employment in Garfield County in 1999 (U.S. Census Bureau 2002). More than a thousand people in Garfield County are employed in travel-related industries (Five County Association of Governments 1995, NPS 1998c). Tourism is a vital component of the Garfield County economy and provides substantial revenue, with annual estimates of traveler spending ranging from \$20 million (Five County Association of Governments 1995) to over \$60 million (NPS 1998c). Visitor services that support the tourism industry generate revenues for local, county, and state governments through taxes.

Median annual household income is \$30,149, which is less than the Utah state average of \$38,884. The county poverty rate is 13.5 percent, compared to Utah’s average of 10 percent (U.S. Census Bureau 2002). Table 9 describes the general demographic and economic profile for Garfield County and the state of Utah.

Major land uses in the vicinity of Capitol Reef National Park include recreation, agriculture, and cattle ranching. Mining and hunting also occur in the area, but are of decreasing economic importance (NPS and BLM 1993).

Within the park, an active grazing allotment continues to be utilized by a local rancher. This allotment, known as Sandy 3, is permitted for 410 animal unit months of winter grazing. That is, cow/calf pairs or steers may be grazed on the allotment for a cumulative total not to exceed 410 months (100 head x 4 months = 400 animal unit months). The allotment generally follows the Notom Road, with its southern end near the park’s eastern boundary, at The Post Corral along the Burr Trail (NPS Clark 2002g).

**TABLE 9: DEMOGRAPHIC AND ECONOMIC SUMMARY
FOR GARFIELD COUNTY AND UTAH**

	Utah	Garfield County
Population 2000	2,233,169	4,735
Population 1990	1,722,850	3,980
Percent change 1990 to 2000	29.6	19.0
Per capita income, 1997	\$20,185	\$16,392
Civilian labor force 1999 (percent of population)	1,083,912 (49 percent)	2,698 (57 percent)
Employed by government	17.2 percent	19.2 percent
Unemployment	3.7 percent	8.3 percent
Retail sales per capita, 1997	\$9,666	\$4,021
Land area, square miles	82,144	5,174
Persons per square mile	27.2	0.90

Source: U.S. Census Bureau 2002.

AFFECTED ENVIRONMENT

Twice each year, a permit is granted for the allottee to move cattle to and from the grazing allotment along park roads. Cattle are driven by cowboys along the Burr Trail (below the switchbacks) and over the Notom Road. The timing and number of cattle vary. This road use is likely to continue until the grazing permit expires or until the permittee participates in the ongoing “willing seller buyout program” offered by the park (NPS, Clark, 2002g).

State economic development and transportation improvement programs are used to support and stimulate growth and provide employment opportunities in the county. The Utah Quality Growth Commission provided \$7,000 to the county in 1999 to conduct growth surveys and open houses (Utah Quality Growth Commission 2002). The *Statewide Transportation Improvement Plan 2002-2006* includes funding for construction of a bridge and visitor center, and plans for conceptual design for two additional future transportation facilities in the county; however, none of these plans include upgrades to the Burr Trail (Utah Department of Transportation 2002).

Garfield County is responsible for road maintenance of the Burr Trail, including those portions on Bureau of Land Management and National Park Service lands. The county receives state and federal funding for road maintenance through agreements with partial funding from the Utah Department of Transportation and the state's Community Impact Board (Five County Association of Governments 1995). County maintenance trucks use the Burr Trail to transport road materials (gravel and rock) to and from fill and borrow sites outside the park to conduct road maintenance on the Burr Trail and other county roads. Persons traveling from the Boulder area (west of the park) to Glen Canyon National Recreation Area (southeast of the park) also use the road. The Burr Trail is rarely used as a commuter or business route.

PARK OPERATIONS

The superintendent at Capitol Reef National Park is responsible for the full scope of managing the park, its staff, all of its programs, and its relations with persons, agencies, and organizations interested in the park. Park staff members provide the full scope of functions and activities to accomplish management objectives and meet requirements in law enforcement, emergency services, public health and safety, science, resource protection and management, visitor services, interpretation and education, community services, utilities, housing, fee collection, and management support.

For administrative purposes, the park is divided into three districts: the Fremont River District (headquarters/Fruita), the Waterpocket District (formerly South district), and the Cathedral District (formerly North District). The Fremont River District includes the primary automobile access to Capitol Reef National Park, SR 24, which parallels the Fremont River and bisects the northern segment of the park. Most of the existing park facilities and developments are in this district. The Waterpocket District, in which the Burr Trail is located, and the Cathedral District have few visitor facilities, and in-park access is by dirt roads. Small, primitive campgrounds are located in both of the outlying districts (NPS 1998c).

An entrance fee of \$5 per vehicle is collected for those traveling the park's Scenic Drive beyond a campground in Fruita (NPS 2002b). There is currently no fee for visitors to enter the park in either the Waterpocket or Cathedral Districts.

The Bureau of Land Management administers lands adjacent to the park. Cattle trespass into the park from Bureau of Land Management lands across unfenced portions of the park boundary during the winter grazing season is a regular concern.

In the park's general management plan, the Burr Trail is zoned as a road corridor that is an "all-weather, maintained, variable-width dirt road" (NPS 2001c). Access to the road is by two-wheel-drive vehicles and may be occasionally impassable due to weather conditions. Along the Burr Trail, visitors may find directional and interpretive signs, cattle guards, well-defined turnouts, trailhead parking areas, and picnic sites (NPS 1998c). The road is maintained by Garfield County. During a normal precipitation year, significant storms that require follow-up maintenance may occur several times a month, typically in late summer.

As previously described, the drainage crossings along the Burr Trail are susceptible to flash floods, and the road can become slippery in wet conditions because of the composition of the road surface. Accidents have occurred, and park rangers patrolling the road are responsible for responding to emergencies.

GARFIELD COUNTY ROAD MAINTENANCE OPERATIONS

Garfield County is responsible for maintenance of the county roadway system, which includes the Burr Trail. County road crews perform the functions and activities necessary to meet requirements in road maintenance within the Burr Trail right-of-way.

Garfield County has paved portions of the Burr Trail passing through adjacent Bureau of Land Management lands to the park's western entrance and within 8 miles of the park's eastern entrance. Access from the north is provided on the Notom Road, which Wayne County has paved to the Garfield County line 8 miles north of the park boundary. Within the county's RS 2477 right-of-way inside park boundaries, the county is responsible for road maintenance.

The width of the Burr Trail varies. The road narrows at the overhanging rock, impeding two-way traffic, and there have been reports to the National Park Service of two accidents in the mid-1990s. However, no accidents involving damage to vehicles or damage to the overhanging rock have been reported to Garfield County (Garfield County, Bremner, 2003).

Along the Burr Trail, visitors may find road maintenance equipment and vehicles in transit or conducting routine grading within the road right-of-way two or three times a year (typically in the spring and fall) to stabilize the road surface and one to two times a year to remove sediment at drainages. During wetter conditions, the frequency of maintenance may increase to two or three times a week for one to three weeks to remove sediment at drainages such as Halls Creek. Typically, road crews grade and clear the drainages for safe transit within 48 hours of a storm (Garfield County, Bremner, 2003).

Annual road operations include acquisition of surface material used to repair and stabilize the road surface. Road operation equipment is stored at the maintenance facility in Boulder,

AFFECTED ENVIRONMENT

about 30 miles west of the park boundary. Materials are obtained from an established borrow pit 12 to 15 miles east of the park boundary on Bureau of Land Management lands. Occasionally, surface material is obtained from the Wagonbox Pit west of the park on Grand Staircase-Escalante National Monument lands. Travel times and distances influence road operations and maintenance activities.

The Burr Trail is susceptible to flash floods, and can become slippery in wet conditions because of the composition of the road surface. Surface grades on portions of the road composed of bentonite clays are graded away from the drainage to improve transportation safety (Garfield County, Bremner, 2003). Road crews have responded to emergency calls from travelers whose vehicles have become stuck in deep, wet clays along the road. After large storm events, road crews conduct emergency maintenance to clear sediment that has clogged the Halls Creek and other drainage crossings.

ENVIRONMENTAL CONSEQUENCES

SUMMARY OF LAWS AND POLICIES

Three key environmental protection laws and policies guide the National Park Service. They include the:

- National Park Service Organic Act (United States Code 1916), which established the National Park Service and defined its mission;
- National Environmental Policy Act of 1969 and its implementing regulations; and
- National Parks Omnibus Management Act of 1998.

The Organic Act creating the National Park Service states that the agency will “conserve the scenery and the natural and historic objects and the wild life therein and . . . provide for the enjoyment of the same *in such manner and by such means as will leave them unimpaired for the enjoyment of future generations*” (emphasis added; 16 USC §1). The italicized text is the basis for all resource management decisions made by the National Park Service.

The National Environmental Policy Act is implemented through regulations developed by the Council on Environmental Quality, which are published as 40 *Code of Federal Regulations* 1500–1508 (Council on Environmental Quality 1978). The National Park Service has adopted procedures to comply with the National Environmental Policy Act and the Council on Environmental Quality regulations. These are contained in *Directors Order #12: Conservation Planning, Environmental Impact Analysis, and Decision Making* and its accompanying handbook (NPS 2001b).

The National Parks Omnibus Management Act of 1998 underscores the National Environmental Policy Act. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available and provide options for resource impact analysis should this be the case.

This Environmental Impact Statement is designed to fulfill these laws and policies, recognizing that the proposed action is the county proposal and the Burr Trail, in addition to serving functions within Capitol Reef National Park, also serves additional functions throughout the region.

IMPAIRMENT ANALYSIS

The purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the National Park Service management discretion to allow adverse impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impacts do not constitute impairment of the affected resources and values.

ENVIRONMENTAL CONSEQUENCES

Congress has given the National Park Service management discretion to allow certain impacts within parks, limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. Valid existing rights, such as RS 2477 rights of way, are unaffected by these laws.

The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. An impact would be more likely to constitute impairment to the extent it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

A determination on impairment is included in the impact analysis section for all impact topics relating to Capitol Reef National Park resources and values. It is based on the impact-topic-specific definition of impairment provided in the methodology section for each impact topic that addresses park resources or values.

The following process was used to determine whether the various Burr Trail modification alternatives had the potential to impair park resources and values:

- The park's enabling legislation, general management plan, and other relevant planning and management documents were reviewed to ascertain the park's purpose and significance, resource values, and resource management goals or desired future conditions.
- Burr Trail modification objectives that could affect resource protection goals in the park were identified.
- Thresholds were established for each resource of concern to determine the context, intensity, and duration of impacts, as defined below under the heading "General Methodology for Establishing Impact Thresholds and Measuring Effects."
- An analysis was conducted to determine if the magnitude of impact reached the level of "impairment" as defined by *Management Policies 2001* (NPS 2000b).

The impact analyses include any findings of impairment to park resources and values for each of the Burr Trail modification alternatives.

CUMULATIVE ANALYSIS

The Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act require assessment of cumulative effects in the decision-making process for federal actions. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 *Code of Federal Regulations* 1508.7). Cumulative effects are considered for the no action alternative and for all action alternatives.

Cumulative effects were determined by combining the effects of each alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions within Capitol Reef National Park and in the surrounding vicinity. Actions that have the potential to have cumulative effect in conjunction with the road modifications to the Burr Trail include:

- Livestock Trailing Special Use Permits issued to allow seasonal access and use of the Burr Trail by livestock. Transport or trailing of cattle on the Burr Trail could contribute to trampling of soil and short-term loss of vegetation in the immediate vicinity of the road corridor.
- The Burr Trail has been upgraded on Bureau of Land Management Lands, and the Notom Road in Wayne County has recently been paved to the Garfield County line. Garfield County has paved the Burr Trail east and west of the park, and Wayne County has paved the Notom Road up to the Garfield County line. Garfield County is considering conceptual designs for grading and drainage for 15 miles of the Notom Road from the county line to the park boundary, and 8 miles of the Burr Trail to the eastern park boundary. This could increase vehicle speed on the Burr Trail, both on the paved areas and at the park entrance where the road surface changes to native material.
- The Bureau of Land Management is preparing a resource management plan for public lands and resources located in Garfield, Piute, Sanpete, Sevier, and Wayne Counties. The Bureau of Land Management also issues cattle grazing permits for Bureau of Land Management lands in these counties. The resource management plan under development will include future use of the Burr Trail. This could lead to incremental changes in activities such as transport of oil, gas, or mineral-exploration equipment and vehicles, or trailing and transport of cattle.
- Plans for improvements to the Bullfrog Marina at Glen Canyon National Recreation Area could cause an increase in the use of regional roads other than the Burr Trail. Increases in the number of vehicles hauling trailers and watercraft to access the Bullfrog Marina could increase maintenance needs for the road surfaces and increased dust.

GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND ASSESSING EFFECTS

National park system units are directed to assess the extent of impacts to park resources as defined by the context, duration, intensity, and timing of the effect.

Issues and concerns, as presented in the “Purpose and Need for Action” section, were further defined and focused to assess the various Burr Trail modification alternatives given the context, duration, and intensity of effects on park resources. Thresholds were established for each impact topic to help understand the severity and magnitude of changes in resource conditions, both adverse and beneficial, of the various road modification alternatives.

When baseline inventory data were available, the change from the baseline was used as an indicator. When criteria were not applicable, standard definitions for the degree of change were used. In the absence of quantitative information, best professional judgment was applied. The thresholds came from existing literature, federal and state standards, and consultation with subject matter experts and appropriate agencies.

In addition to helping to establishing impact thresholds, the park’s resource management objectives and goals were integrated into the impact analysis. To further define resource protection goals relative to management of the Burr Trail, the park’s general management plan was used to ascertain the “desired future condition” of resources over the long term. The impact analysis then considered whether each alternative contributed to the park’s achievement of its resource goals, or would be an impediment to achieving resource goals. The interdisciplinary team then considered potential ways to mitigate adverse effects of road modification activities, and modified the alternatives accordingly.

All alternatives were evaluated for their effects on the resources and values identified during the scoping process, and are grouped into impact topics for further discussion. The effects associated with a particular alternative were compared to the No Action Alternative to determine the intensity, scope, and duration of the impacts. Cumulative effects were evaluated for each impact topic. Definitions of intensity levels and duration varied by impact topic, but the following definitions were applied for all impact topics.

Beneficial: A positive change in the condition or appearance of the resource, or a change that moves the resource toward a desired condition.

Adverse: A negative change in the appearance or condition of the resource or a change that moves the resource away from a desired condition.

Cumulative: The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 Code of Federal Regulations 1508.7).

AIR QUALITY

METHODOLOGY

The Environmental Protection Agency has promulgated national ambient air quality standards (NAAQS) and regulations for the protection of public health and welfare or of the environment in compliance with the Clean Air Act and its amendments. To assess the level of air quality impacts resulting from a given management alternative, the following methods and assumptions were used:

- The national ambient air quality standards were examined for six criteria air pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), lead (Pb), particulate matter smaller than 10 microns in diameter (PM₁₀), and sulfur dioxide (SO₂) (US EPA 2001). The directly emitted criteria pollutants are CO, NO₂, SO₂, and PM₁₀. Ozone is a secondary air pollutant resulting from photochemical reactions involving nitrogen oxides (NO_x) and reactive organic gases.
- Air quality designations for the surrounding area were determined. If the park, or a portion of a park, was within the boundaries of a non-attainment or the maintenance area for a given pollutant, ambient air quality concentrations were assumed to violate the national ambient air quality standards for that pollutant. Capitol Reef National Park and the nearby areas are in attainment for all criteria pollutants.
- Air quality is achieved through reduction of pollutants and maintenance or improvement of visibility. Visibility can be degraded when fine particles in the air cover a large area, creating what is known as “regional haze.” Vehicle operations contribute to environmental problems such as smog, toxics, and global warming. Future air problems occur due to pollution generated by fine particulates and fugitive dust contributes to pollution. Visibility impacts were determined by assessing particulate matter levels from local monitoring data or from qualitative evidence such as personal observations and photographs.

The Environmental Protection Agency model AP-42 was used to estimate the amount of particulate emissions that could be locally generated by vehicles traveling the Burr Trail (EPA 2000). The model compiles standard air pollutant emission factors and then quantifies the amount of fugitive dust that would be generated by a 4,000 pound vehicle traveling approximately one mile at 15 miles per hour on a dirt road surface (although the maximum design speed on the Burr Trail is 25 miles per hour, 15 miles per hour was used to account for slowing and stopping by visitors who would likely be viewing sights and scenery). Table 10 shows that the amount of fugitive dust (PM₁₀) generated per vehicle-mile traveled on a dirt surface was 0.73 pounds more than would be generated by the same vehicle traveling on a gravel surface. The total number of all particulate size classes is expressed as the total ratio of dirt to gravel (or 1:1.54).

The air quality impacts of the various alternatives were assessed by comparing existing air quality levels and related values with expected pollutants generated by each alternative. Impact thresholds may be qualitative (e.g., photos of degraded visibility) or quantitative (e.g.,

based on impacts to air quality related values or federal air quality standards, or emissions based on emission factor models), depending on what type of information is appropriate or available. Cumulative impacts were analyzed qualitatively.

**TABLE 10: FUGITIVE DUST GENERATED BY TRAVEL ON DIRT ROADS
COMPARED TO GRAVEL ROADS**

Gravel Surface		Dirt Surface		Output Variance
Particle Size	Pounds per Vehicle Mile	Particle Size	Pounds per Vehicle Mile	Pounds per Vehicle Mile
PM _{2.5}	0.195	PM _{2.5}	0.301	0.106
PM ₁₀	1.337	PM ₁₀	2.062	0.725
PM ₃₀	4.940	PM ₃₀	7.616	2.678
Ratio Dirt : Gravel		1:1.54		

Impact thresholds for air quality depend on the type of pollutants produced, the background air quality, and the resources in the environment that may be affected by airborne pollutants (air quality related values). Air quality related values include “visibility and those scenic, cultural, biological, and recreation resources of an area that are affected by air quality” (43 *Federal Register* 15016) (U.S. Environmental Protection Agency 1999).

The cumulative impacts for air quality related values were based on the effects of air emissions from traffic and other motorized vehicles on the Burr Trail. A state implementation plan (SIP) for visibility issues affecting federal Class I areas such as Capitol Reef National Park is being prepared, but the Utah Division of Air Quality has not completed the SIP (U.S. Environmental Protection Agency 1999b). Therefore, a qualitative analysis was conducted. The assessment of airborne pollutants emitted from motorized sources and their contribution to ground-level ozone or regional transport of ozone was limited to the location of the Burr Trail and the immediate surrounding area within the park. Emissions from regional point sources such as energy, mining, or construction were also considered.

Primary steps used for assessing impacts included 1) identifying state of Utah and local air quality standards for ozone and fugitive dust, 2) identifying air quality designation for the region, 3) identifying local ambient air quality data from monitoring sites in or within 100 miles of the park to determine the level of pollutants, and 4) determining visibility impairment from local monitoring data or qualitative evidence from park staff observation. To understand the effects of road modifications on air quality in the areas of concern, park staff, experts, monitoring data, and literature reviews were used to identify the information contained in this analysis.

Impacts were evaluated using these thresholds:

- *Negligible*: No changes in air quality and visibility would occur, or changes would be below or at the level of detection and if detected would have slight to imperceptible effects.
- *Minor*: Changes in air quality and visibility would be measurable, though they would be small, temporary, or short-term and local. No air quality mitigation measure would be necessary.
- *Moderate*: Changes in air quality and visibility would be measurable, involving some consequences that would be relatively local. Air quality mitigation measures would be necessary, and the measures would likely be successful.
- *Major*: Changes in air quality and visibility would be measurable, would have substantial consequences, and would be noticed at the regional level, thereby influencing attainment of national standards. Air quality or visibility mitigation measures would be necessary, and the success of the measures could not be guaranteed.
- *Duration*: Short-term – Effects on air quality parameters and visibility last 7 days or less following initiation (e.g., vehicle passage or road maintenance work). Long-term – Effects last more than 7 days following initiation. A 7-day evaluation period was selected because it best depicts the typical work week for construction and road maintenance projects.

Geographic Area Evaluated for Impacts. The analysis area included the immediate location of the Burr Trail and the area surrounding the near-road environment where locally generated air pollutants may accumulate. Influence on the regional ambient air quality included the nearby power generation plants in Utah and Arizona. Cumulative effects that would occur both within and outside these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

Clean Air Act. The Clean Air Act establishes national ambient air quality standards (NAAQS) to protect the public health and welfare from air pollution. The act also establishes the prevention of significant deterioration (PSD) of air quality program to protect the air in relatively clean areas. One purpose of this program is to preserve, protect, and enhance air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value (42 U.S.C. 7401 et seq. 1970). The program also includes a classification approach for controlling air pollution.

Class I areas, which are typically national parks and wilderness areas, are afforded the greatest degree of air quality protection. Very little deterioration of air quality is allowed in these areas, and the unit manager has an affirmative responsibility to protect visibility and all other Class I area air quality related values from the adverse effects of air pollution. Capitol Reef National Park is designated a Class I area (EPA 1999b).

Conformity Requirements. National park system areas that do not meet the national ambient air quality standards or in which current ambient levels already adversely affect resources require a greater degree of consideration and scrutiny by National Park Service managers. Areas that do not meet national air quality standards for any pollutant are designated as nonattainment areas. Section 176 of the Clean Air Act states:

No department, agency, or instrumentality of the federal government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an [State] implementation plan. . . . [T]he assurance of conformity to such a plan shall be an affirmative responsibility of the head of such department, agency or instrumentality.

Essentially, federal agencies must ensure that any action taken does not interfere with a state's plan to attain and maintain the national ambient air quality standards in designated nonattainment and maintenance areas. In making decisions regarding modifications within a designated nonattainment or maintenance area, park managers should discuss their plans with the appropriate state air pollution control agency to determine the applicability of conformity requirements.

Because the counties that Capitol Reef National Park occupies are designated by the Environment Protection Agency as in attainment for all criteria pollutants (CO, O₃, NO_x, SO₂, PM₁₀, and lead) (EPA 2002), no state implementation plans apply to the project area. Therefore, the proposed action(s) are not subject to particular federal conformity determination or requirement.

National Park Service Organic Act and Management Policies. The National Park Service Organic Act (16 USC 1, et seq.) (USC 1916) and the National Park Service *Management Policies 2001* (NPS 2000b) guide the protection of park and wilderness areas. The general mandates of the Organic Act (1916) state that the National Park Service will

...promote and regulate the use of . . . national parks . . . by such means and measures as conform to the fundamental purpose of the said parks, . . . which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 USC 1) (USC 1916).

Under its *Management Policies 2001*, the National Park Service will

...seek to perpetuate the best possible air quality in parks to 1) preserve natural resources and systems; 2) preserve cultural resources; and 3) sustain visitor enjoyment, human health, and scenic vistas (NPS 2000b).

Management Policies 2001 further states that the National Park Service will assume an aggressive role in promoting and pursuing measures to protect air quality related values from the adverse impacts of air pollution. In cases of doubt as to the impacts of existing or potential air pollution on park resources, the National Park Service "will err on the side of protecting air quality and related values for future generations."

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. The arid environment and the exposed road surfaces composed of gravel and native material make fugitive dust the primary concern with regard to air quality or visibility. Under the No Action Alternative, visitor traffic is expected to continue to average 29 vehicles per day with design speeds not exceeding 25 miles per hour. In general, the types of vehicles traveling the road include passenger vehicles, sport utility vehicles and light trucks, and occasional cattle trucks, recreational vehicles, and road maintenance vehicles.

Each time vehicles drive along the Burr Trail and through drainages, fugitive dust (which is included in the larger category of particulate matter) is emitted into the air. The amount and duration of fugitive dust and emissions suspended into the air is based on the size and speed of the vehicle. Impacts from fugitive dust include low visibility and, in severe cases, interference with plant growth and reproduction by clogging pores and reducing light interception.

Although generally not toxic, fugitive dust can cause human health problems over the long term, alone or in combination with other air pollutants. However, under current conditions, these risks are generally low; therefore, there would be no change in Class I airshed status from this alternative, as current levels of vehicle travel on the Burr Trail have not resulted in a violation of any national air quality standard (University of Missouri 1999).

Under the No Action Alternative, the impacts to air quality would continue to be short-term, minor, and adverse in the local vicinity due to generation of fugitive dust. Because fugitive dust quickly dissipates at the relatively low volume of traffic and slow speeds found on the Burr Trail, the impacts from fugitive dust and vehicle emissions on the regional scale would be negligible. Impacts to vegetation and human health are also negligible due to the small amounts of air pollutants produced.

Cumulative Effects. Past and current management of the Burr Trail within Capitol Reef National Park has retained the native surface of the road, whereas portions of the Burr Trail outside the park have been paved, as has the Notom Road up to the Garfield County line. Paving surrounding roads has reduced the production of particulates generated in the region, but increased vehicle speeds would increase the generation of fugitive dust within the local vicinity of the Burr Trail. Mobile emissions attributed to air quality in the region come from cars, light and heavy-duty trucks, recreational vehicles, and motorcycles using gasoline and diesel fuels.

Under certain conditions, volatile organic compounds, nitrogen oxide, and fugitive dust generated from vehicle use and cattle trailing can reduce visibility in the park and contribute to regional haze. However, pollutants from road traffic or road maintenance vehicles on county roads are negligible, and no reasonably foreseeable changes in vehicle miles traveled are expected.

Construction-related emissions from development of adjacent public lands would create some particulate emissions, but they would not degrade regional air quality or visibility and would be local and of short duration. Emissions from regional power generating stations would continue to have adverse effects. Fugitive dust and emissions from future oil- and gas-exploration, other vehicle traffic, or livestock trailing on the Burr Trail would be low

and have slight or imperceptible effects. Impacts to air quality or visibility from the No Action Alternative in conjunction with past, present, and foreseeable future projects would be negligible, short-term, and adverse.

Conclusion. The No Action Alternative would have local, short-term, negligible to minor, adverse impacts on air quality and visibility. Impacts to regional air quality would be negligible. Cumulative impacts would be negligible, short-term, and adverse.

There would be no major adverse impacts to an air quality resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Under Alternative A, there would be no long-term change in the average daily traffic volume along the road caused by proposed road modifications and, therefore, no increase in fugitive dust created by normal traffic.

The installation of a gravel base over a geotextile fabric would improve air quality because less dust would be produced by vehicles traveling over gravel than over dirt. As shown in Table 10, for each vehicle-mile traveled over a gravel rather than a dirt surface, there would be about 2.7 fewer pounds of dust with a particle size of 30 microns or less, and 0.7 fewer pounds of dust with a particle size of 10 microns or less. Alternative A would replace portions of the road's dirt surface with gravel over a geotextile base in areas where needed to stabilize the road surface. With an average use of the Burr Trail of 29 vehicles per day, Alternative A would reduce (based on an estimated replacement of 0.5 mile of dirt with gravel):

- Production of dust with a particle size between 10 microns and 30 microns by about 20 pounds per day or about 5.3 tons per year. Dust with particle sizes between 10 microns and 30 microns is important because most of it settles out of the air within 50 feet of the road and potentially can smother vegetation and biological soil crusts.
- Production of dust with a particle size of 10 microns or less by 10.1 pounds per day or about 1.8 tons per year. Dust in this size class is important because it can become suspended in the air column and produce adverse health effects to humans when it is inhaled. Suspended particles also can adversely affect visibility.

Changing portions of the road surface from the current native dirt to gravel also would reduce the need for road maintenance, which can produce large volumes of fugitive dust. The vented paved fords and the Halls Creek crossing would allow 2-year storm floodwaters to pass through culverts, which would lessen the need for maintenance equipment to remove sediment that would otherwise be deposited on the roadway as a result of flooding. Re-

duced maintenance would have negligible beneficial effects on air quality that would accrue regularly over the long-term.

The effects on air quality in the immediate vicinity of the Burr Trail would be long-term and beneficial. However, the intensity would be negligible because of the small area involved. Effects on vegetation and biological soil crusts from reduced dust generation are considered within the discussions of those impact topics.

There would be short-term, negligible, adverse impacts on air quality for the duration of project-related construction. Fugitive dust emissions would occur as a result of construction vehicles transporting material along the road and soil disturbances from other construction activities. Construction vehicle exhaust emissions would have a short-term, negligible, adverse effect on air quality.

Cumulative Effects. Although relatively similar to the No Action Alternative, cumulative impacts to air quality or visibility from Alternative A would be slightly less adverse because of reduced road maintenance. There would be a short-term, regional, negligible, adverse effect on air quality that would contribute to cumulative effects as a result of heavy-duty trucks hauling gravel and materials (e.g., concrete, culverts) over regional roads for the duration of construction activities. However, these impacts would be short-lived and would not make the cumulative effects of Alternative A substantially different than the No Action Alternative, namely negligible, short-term, and adverse.

Conclusion. Alternative A would have short- and long-term, negligible beneficial impacts on air quality and visibility because of a reduction in fugitive dust. Construction activities would create a short-term, negligible adverse impact on air quality and visibility from temporary emission of particulates. Cumulative impacts to air quality or visibility would be beneficial, but negligible.

There would be no major adverse impacts to an air quality resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. The impacts of Alternative B on air quality or visibility are similar to those identified for Alternative A, although the ability of the culverts at all the major crossings to pass 25-year storm events would further lessen the need for maintenance. This would be offset by the need for continued maintenance of the road surface because Alternative B lacks geotextile fabric underneath the gravel that minimizes loss and displacement of the gravel surface. Constant displacement of the gravel due to the lack of fabric would necessitate maintenance at a rate similar to the No Action Alternative. As a result of the offsetting effects, impacts to air quality would be negligible, short- and long-term, and beneficial. As in Alternative A, there would be short-term, negligible, adverse impacts on air quality or visibility for the duration of project-related construction.

Cumulative Effects. Cumulative impacts would be similar to Alternative A.

Conclusion. Alternative B would have local, short-term, negligible adverse impacts on air quality or visibility due to fugitive dust and particulate emissions during construction activities. In the long-term, impacts to air quality or visibility would be negligible but beneficial. Cumulative beneficial impacts to air quality or visibility would be negligible.

There would be no major adverse impacts to an air quality resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The impacts of Alternative C would be similar to those identified for Alternative B, except less dust would be generated by maintenance activities because the culverts would be able to pass 50-year storm floodwaters, which would reduce the need for road maintenance and repair. The impacts to air quality or visibility would be negligible and beneficial in the short and long terms compared to the No Action Alternative.

Cumulative Effects. Cumulative impacts would be similar to Alternative A.

Conclusion. Similar to Alternative B, short-term impacts associated with Alternative C would be local, negligible, and adverse. Long-term effects would be beneficial, but negligible. Cumulative beneficial impacts to air quality or visibility would be negligible.

There would be no major adverse impacts to an air quality resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

GEOLOGIC FEATURES AND LANDFORMS

METHODOLOGY

Capitol Reef National Park is known for its sedimentary formations, cliffs, monoliths, and abundance of canyons. There are significant geological features, such as narrow canyons, colorful cliffs, cliff-top washes, and striking scenic views created by the Waterpocket Fold. The impact analysis for the Burr Trail modifications recognized the importance of the natural setting of the road in relationship to these geological features and natural landforms.

Identification of geological features was accomplished through discussions with park staff, evaluation of these features in relation to the park's general management plan (NPS 2001c), and consideration of the National Park Service Road Standards, (NPS 1984, NPS 1998a). Primary steps for assessing impacts included identifying 1) which geologic features are in areas likely to be affected by road modifications, 2) current and future use of the road, 3) loss or alteration of geologic features caused by road modifications, and 4) disturbance potential of the road project on the natural landform. The information contained in this analysis was obtained through best professional judgment of park staff and experts in the field and by conducting literature reviews.

Impacts were evaluated using these thresholds:

- *Negligible*: An action that could result in a change to a geologic feature or landform, but the change would be so small that it would not be of any measurable or perceptible consequence.
- *Minor*: An action that could result in a change to a geologic feature or landform, but the change would be small, local, and of little consequence.
- *Moderate*: An action that would result in a change to a geologic feature or landform; the change would be measurable and of consequence.
- *Major*: An action that would result in a noticeable change to a geologic feature or landform; the change would be measurable and result in a severely adverse or beneficial impact.
- *Duration*: Short-term – Recovers in less than 3 years. Long-term – Effects from noticeable change last more than 3 years or are considered non-renewable.

Geographic Area Evaluated for Impacts. The area analyzed for possible impacts on geologic features and landforms for this assessment consisted of the one-mile segment of the Burr Trail and natural landforms abutting the road corridor. Two additional areas of analysis included the natural topography of the road, contours, and surrounding landforms at Halls Creek and the Burr Canyon side drainage. Cumulative effects that would occur both within and outside these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICY

Under its *Management Policies 2001* (NPS 2000b), the National Park Service will protect geologic features from the adverse effects of human activity, while allowing natural processes to continue. The term “geologic features” describes the products and physical components of geologic processes. Examples of geologic features in parks include rocks, soils, and minerals; geysers and hot springs in geothermal systems; cave and karst systems; canyons and arches in erosional landscapes; sand dunes, moraines, and terraces in depositional landscapes; dramatic or unusual rock outcrops and formations; and paleontological resources such as fossilized plants or animals, or their traces.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. The No Action Alternative would have no effect on geologic resources because no features would be altered. The Burr Trail offers the visitor a driving experience consistent with the park’s geology, topography, and management objectives for this part of the park, and this would remain the same under the No Action Alternative. A prominent geologic feature is the overhanging rock located at mile point 0.65. The No Action Alternative would not alter or change the size, character, and shape of this rock. No significant drainage modifications would be made under this alternative that would change the existing contours of the road; therefore, all existing geologic features and landscapes would be preserved.

Cumulative Effects. The No Action Alternative would continue to implement past and current management plans that preserve the geologic features and landforms of the landscape, and most vehicle travel and cattle trailing would not alter the geological features. Large vehicles traveling the Burr Trail occasionally scrape or chip the overhanging rock when traveling on narrow portions of the road.

Increased use of the Burr Trail by larger vehicles resulting from road upgrades and development conducted on adjacent public lands could contribute to negligible adverse impacts to the road stability and long-term incremental changes in the road contours.

Neither the future park development, visitor use, or expansion of Bullfrog Marina is expected to have noticeable impacts on geologic features within the park or in the immediate project vicinity. Future oil and gas operation, road maintenance, vehicle traffic, or livestock trailing on the Burr Trail would have imperceptible local effects on park geologic resources. Cumulative effects of the No Action Alternative would be negligible when considering the extent and scale of the park’s geologic resources and the lack of other actions that would affect them.

Conclusion. The No Action Alternative would have no effect on geologic features due to the preservation of the overhanging rock and the park’s natural topographic and geologic setting. Cumulative impacts to geological features and landforms would be negligible.

There would be no major adverse impacts to a geological feature or landscape resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural in-

tegrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Under Alternative A, the overhanging rock at mile point 0.65 would be maintained with no alterations to its size, shape, and character. The road alignment would be modified to expand the road width at the overhanging rock by shifting the drainage ditch to the north (closer to the rock). This shift would not affect the overhanging rock.

Drainage modifications under Alternative A would cause long-term, negligible, adverse impacts to the existing topography as a result of minimal grading (about a one-foot change in contour) to accommodate the profile necessary to install the paved fords. The impact of these modifications would therefore be negligible, short-term, and adverse compared to the No Action Alternative.

The proposed shift in road alignment at the confluence of the Burr Canyon drainage and Halls Creek drainage would disturb about 6,000 square feet, 3,500 square feet of which would be outside the existing roadway footprint. The installation of a vented paved ford at the Halls Creek crossing, and the culverts and a rock embankment on the slope in Burr Canyon would involve minor recontouring of the drainages, grading the inlets and outlets, and placing slope protection. Geologic resources would be impacted in a minor, adverse manner because of the landscape alterations.

Cumulative Effects. The cumulative effects of Alternative A would be similar to those described under the No Action Alternative.

Conclusion. There would be no impacts to the overhanging rock as a result of the road reconfiguration at that location. Negligible to minor adverse impacts would result from bank stabilization, construction of the rock embankment, and slight surface grade changes to the geologic landscape. Cumulative effects to geological features and landforms would be inconsequential and barely detectable from a regional perspective.

There would be no major adverse impacts to a geological feature or landscape resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Alternative B would remove the overhanging rock at mile point 0.65 to widen the road to accommodate two-way traffic. Impacts would result in a local, long-term, minor, adverse impact because this prominent geologic feature would be removed. No other specific geologic features are expected to be impacted under Alternative B.

ENVIRONMENTAL CONSEQUENCES

Drainage modifications under Alternative B would involve installing culverts that would pass 25-year storm events at all minor and major road drainages. This would result in long-term, negligible to minor, adverse impacts because the natural topography at the drainage crossings would need to be graded to accommodate the profiles necessary to construct the culvert structures. The crossing at Halls Creek would change the existing topography within the geologic landscape. The impact of this modification would be long-term, negligible to minor, and adverse compared to the No Action Alternative.

The proposed channel realignment at the confluence of the Burr Canyon drainage and Halls Creek drainage inlet and the culverts and a rock embankment on the slope in Burr Canyon would involve recontouring the drainages, grading the inlet and outlets, and placing slope protection along the ditches. Geologic resources would be impacted in a long-term, minor, adverse manner because of the landscape alterations.

Cumulative Effects. Cumulative impacts would be the same as described for the No Action Alternative except for the following:

Past and current management activities have limited roadwork and avoided altering the road width and natural contours to preserve adjacent geological features and landforms within the road corridor. Alternative B would have a long-term, minor, adverse, cumulative impact because the overhanging rock, a prominent geologic feature in the project area, would be removed.

Conclusion. Alternative B would have a local, long-term, minor, adverse effect on geologic features because the overhanging rock would be removed. Long-term, negligible to minor adverse effects would result from construction of the bank stabilization, the rock embankment, and alterations to road embankments within the geologic landscape. Cumulative impacts to geological features and landforms would represent a minor adverse impact.

There would be no major adverse impacts to a geological feature or landscape resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. Alternative C would affect geologic features and landscape resources the same as Alternative B. Removal of the overhanging rock would result in a local, long-term, minor, adverse impact because this prominent geologic feature would be removed.

Drainage modifications under Alternative C would be similar to Alternative B, but the culverts would pass 50-year storm events. As a result, grading changes would be greater and would result in long-term, minor, adverse impacts because the natural topography at the drainage crossings would need to be graded to accommodate the profiles necessary to construct the culvert structures. The multiple 72-inch-diameter corrugated metal pipe culverts at Halls Creek would raise the surface of the road at this drainage, thereby changing existing

topography within the geologic landscape. The impact of this modification would therefore be minor and adverse compared to the 60-inch culvert (which has been removed) of the No Action Alternative.

The impacts of the proposed realignment of the Burr Canyon drainage channel to a point upstream of the Halls Creek crossing, installation of culverts, and construction of a rock embankment in upper Burr Canyon would be the same as Alternative B. Geologic resources would be impacted in a long-term, minor, adverse manner because of the landscape alterations.

Cumulative Effects. Alternative C would have the same cumulative effects as Alternative B.

Conclusion. Alternative C would have a local, long-term, minor, adverse effect on geologic features because the overhanging rock would be removed. Long-term, negligible to minor adverse effects would result from construction of the bank stabilization, the rock embankments, and alterations to road embankments within the geologic landscape. Cumulative impacts to geological features and landforms would represent a minor adverse impact.

There would be no major adverse impacts to a geological feature or landscape resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

BIOLOGICAL SOIL CRUSTS AND SOILS

METHODOLOGY

Biological soil crusts are composed of soil particles bound together by organic materials generated by living organisms. These communities are well adapted to areas subject to severe weather conditions such as severe temperatures and drought. These specialized groups of bacteria and lichens are typically present in open, low-lying, undisturbed areas of the Colorado Plateau where vascular plants tend not to grow. The symbiotic relationships that form soil crusts are slow to develop, and damage done may take 100 years or more to repair. These organisms are particularly sensitive to burial, and will die if deprived of air and light for any length of time (Belnap 1994).

Activities that may produce impacts to biological soil crusts and soils include any activities that remove vegetation or disturb the soil surface.

- *Soil Accumulation* caused by dust generated by vehicles or wind along the Burr Trail can suffocate the biological soil crust.
- *Soil Removal* would result in a long-term impact because soil properties, which have formed over thousands of years, would be removed.
- *Soil Profile Mixing* results from excavation and redistribution of the soil. Disrupting the soil structure interrupts physical and biological processes that naturally occur in the soil. It may be many years before the soil profile redevelops.
- *Soil Compaction* reduces infiltration rates, increasing surface runoff and the potential for erosion. Slow growth of vegetation on compacted soils is often due to low infiltration and poor root penetration.
- *Soil Erosion* is accelerated by removal of vegetation and by disturbance of the soil surface. Soils on steep slopes and along watercourses are especially susceptible to erosion.
- *Soil Contamination* occurs from the addition of chemical components to the soil. Machinery used in construction activities may deposit contaminants on soils during fueling.
- *Soil Restoration* may have both adverse and beneficial effects. Adverse effects may occur if soils are compacted or exposed to erosive processes, or if vegetation is removed. Beneficial effects may include restoration of natural physical and biological soil processes. However, restoration cannot be achieved for biological soil crusts.

Primary steps for assessing impacts would include identifying 1) if biological soil crusts or other soil resources are in areas likely to be affected by road modifications, 2) potential changes in biological soil crusts or soils from current and future use of the road, 3) potential changes in soil erosion or sedimentation caused by road modifications, and 4) disturbance potential of the road project. The information contained in this analysis was obtained through best professional judgment of park staff, experts in the field, and literature reviews.

Impacts were evaluated using these threshold definitions:

- *Negligible*: Soils or biological soil crusts would not be affected or the effects would be below or at the lower levels of detection. Any effects to physical soil properties, productivity, or fertility would be slight, and no long-term effects to soils would occur.
- *Minor*: The effects to soils or biological soil crusts would be detectable. Effects to physical soil properties, stability, productivity, fertility or to infiltration capacity, or species composition of the soil crust would be small, as would the area affected. If mitigation were needed to offset adverse effects, it would be relatively simple to implement and likely successful.
- *Moderate*: The effect on physical soil properties, productivity or fertility, or to biological soil crusts would be readily apparent, likely long-term, and result in change to the soil or soil crust character over a relatively wide area. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- *Major*: The effect on physical soil properties, productivity or fertility or to biological soil crusts would be readily apparent, long-term, and would substantially change the character of the soils or soil crust over a large area in and out of the park. Mitigation measures to offset adverse effects would be necessary and extensive, and their success could not be guaranteed.
- *Duration*: Short term – Recovers in less than three years. Long term – Takes more than three years to recover.

Geographic Area Evaluated for Impacts. The area analyzed for possible impacts on biological soil crusts and soils included the natural contours and topography within 50 feet of the one-mile segment of the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. The area of analysis included the areas in the Burr Canyon and Halls Creek drainage channels proposed for re-contouring and realignment. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICY

Current laws and policies require that natural soil and biological soil crusts function as naturally as possible (NPS 2000b). The park’s general management plan supports preserving the natural character of resources within the road corridor. Soil resources should be monitored regularly and mitigation provided (NPS 2001c).

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. The Burr Trail through the project area was constructed along the Sandy Creek and Halls Creek drainages. Periodic flooding within these drainages during storms has historically carried sediments from eroding uplands. Except for portions of the road containing clay soil, much of the soil along the Burr Trail is well drained. This one-mile

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stretch of road produces approximately 3.5 acres of long-term soil disturbance and loss of productivity. During normal precipitation events, the presence of the road has minor adverse effects on project area soil resources.

The road can slow or block runoff flows, interfering with natural soil transport processes. Such interference with sediment transport would produce long- and short-term, adverse effects of minor intensity for soil resources in the project area.

The road embankment in the Burr Canyon drainage would erode periodically, resulting in negligible to minor loss of soils.

An existing cattle guard would prevent trailing cattle from accessing a portion of the Burr Trail. However, trespassing cattle between the cattle guard and the boundary would continue to cause local soil compaction and minor, long-term, adverse effects to soils.

Flood flows from unusual precipitation events are likely to generate a different set of effects on local soil resources. For example, the Halls Creek crossing has traditionally conveyed stormwater through culverts installed beneath the road surface. On multiple occasions, the capacity of the culverts was exceeded, and the road washed out. The culverts were carried a short distance downstream by the flood waters. During such events, the road failure causes local disturbance and produces local, short-term, adverse effects to soil processes of minor intensity.

Routine maintenance and repair of the road would have the potential to affect soils. Depending on the type of maintenance being conducted, use of heavy equipment off the main road would disturb the soil profile, remove soil, or compact the soil, reducing infiltration and increasing erosion. Detectable effects to soils are unlikely, because the majority of maintenance occurs directly on the road surface.

Dust is generated by passing vehicles and during maintenance operations, and biological soil crusts are suffocated as dust accumulates. Biological soil crusts are the primary nitrogen fixers in desert soils, and the death of these organisms will reduce the ability of native vegetation to compete with exotic plant species. Biological crusts are present within the project area, and continuation of current traffic levels and maintenance operations would result in local, minor, long-term, adverse effects.

Cumulative Effects. Past and current management activities include routine maintenance and oil and gas equipment transport along the Burr Trail and the Notom Road. Routine road maintenance performed by Garfield County includes road repairs after flood events, grading, and application of surface material to replace material lost to erosion and displacement by vehicles. During road scraping, soils can be disturbed and sediment may be released into nearby drainages.

Permitted cattle trailing and trespass grazing contributes to soil compaction, removal of vegetation, and soil disturbance within the park.

Changes in vehicle use in the park caused by upgrades on the Burr Trail and the Notom Road outside the park may increase dust and sediment transport as road surface material is displaced into drainages. Future development activities on public lands adjacent to the park

may increase general vehicular traffic, including trailered watercraft and oil and gas equipment. The effects of increased traffic and increased maintenance include soil removal, compaction, profile mixing, increased generation of dust, and possible contamination from equipment fuel and oil.

Erosion may have negligible to minor adverse effects on Lake Powell by increasing the rate of sedimentation. The effects on soils from the No Action Alternative would contribute incrementally to the effects of other activities and would likely produce negligible, adverse cumulative effects on soil resources.

Conclusion. The No Action Alternative would produce local, negligible to minor, short- and long-term, adverse effects on biological soil crusts and soils in the vicinity of the proposed actions. Cumulative impacts to soil resources would be negligible and adverse.

There would be no major adverse impacts to a biological soil crust or soil resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents. Therefore, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. As described for the No Action Alternative, disturbed soils on portions of road surfaces and embankments would continue to erode periodically, increasing sedimentation and deposition in drainages during rainstorms. This would produce local, long-term, adverse effects on soil resources of negligible to minor intensity.

Stabilization of the bentonite road surface using excavation and installation of gravel over a geotextile fabric (likely between miles 0.00 to 0.45 and 0.85 to 0.90 and other road sections as needed) would protect the road surface from erosion caused by traffic on the wet bentonite clay. Because excavation and gravel application would occur on the existing road, no new disturbance would be likely to result from this action. Protection of the roadway from sloughing would produce local, negligible to minor, long-term benefits for soil resources and sediment transport processes in the Sandy Creek drainage.

Installing a rock embankment slope on the existing north bank of Sandy Creek near the overhanging rock would result in negligible adverse effects as a result of the loss of small areas of soil. However, the embankment would decrease potential bank erosion, providing a local, minor, long-term, beneficial effect.

Under Alternative A, modifications to drainage crossings along the Burr Trail at mile points 0.10 and 0.20 would allow floodwaters from storms of 10-year or less magnitudes to pass over and within the paved, protected portion of the crossing. Modifications at mile points 0.50 and 0.60 would convey a 2-year storm event through culverts, with events up to the 10-year event passing over and within the ford's paved section. The increased erosion protec-

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tion afforded under this alternative would provide local, short- and long-term, beneficial effects of minor intensity for soil resources in the project area.

At the Halls Creek crossing, construction of the vented paved ford and a minor shift in the roadway alignment would disturb approximately 6,000 square feet, with about 3,500 square feet of disturbance outside the existing roadway footprint. This would represent a local, long-term, minor, adverse impact on soils.

At the Burr Canyon side drainage crossing, modifications would be made to carry the 10-year storm volume of water through the channel. This would include installation of new culverts with slope protection above and below the road, as needed, and a rock embankment to stabilize the bank. This would result in reduction in erosion and sediment transport in this section of the drainage. Effects to soils would include about 8,000 square feet of new disturbance and approximately 1,900 square feet of temporary construction impacts. The short-term effects on soils would be local, negligible, and adverse because of the small area affected, while the long-term effects would be local, beneficial, and negligible to minor because the modifications would minimize future erosion and maintenance needs.

Alternative A would include installation of a new cattle guard in the road at the park's eastern boundary. This would produce approximately 200 square feet of long-term disturbance adjacent to the road. In addition, the existing cattle guard at the Sandy 3 allotment boundary would be removed when the permit expired. Disturbed soils at the existing cattle guard (also about 200 square feet) would be rehabilitated. Given the modest size of the disturbances involved, these actions would produce negligible adverse effects to park soil resources. Additionally, there would be a minor, long-term benefit to soils that are currently adversely affected by trespass cattle.

The modifications at the major Sandy Creek crossings, at Halls Creek, and in the Burr Canyon side drainage would have long-term, minor, beneficial impacts to soil resources as a result of less need for maintenance. The disturbances generated by construction activities and vegetation removal would compact soils, remove soils, and disturb soil profiles. These activities would represent adverse, short- and long-term, negligible to minor impacts to soils resources. All actions would include implementation of appropriate mitigation, as described for surface water, hydrology, and soil resources in the "Mitigating Measures" section. Ultimately, the modifications would represent a long-term, local, minor benefit to soil resources.

Dust generation and deposition on biological soil crusts would be reduced as a result of replacing some native dirt road surfaces with gravel and lower maintenance frequencies at drainage crossings. Although the area affected would be relatively small, there would be negligible, long-term, beneficial effects on biological soil crusts under Alternative A.

Cumulative Effects. Current and future vehicle use and cattle trailing under Alternative A would remain the same as described under the No Action Alternative except for the following:

Future development of the Bullfrog Marina may increase the number of large vehicles traveling the Burr Trail, but when combined with Alternative A would not contribute measurably to cumulative effects to soil resources throughout the region.

Conclusion. Alternative A would produce local, negligible to minor, short- and long-term adverse and beneficial effects on biological soil crusts and soils. Adverse impacts would include potential loss of soil resources associated with flooding in storms greater than 10-year events and the effects of construction, installing slope and bank protection, and shifting the roadway alignment at the Halls Creek crossing. For storm events up to 10-year magnitudes, the proposed modifications would represent beneficial effects as they would protect against erosion and restore aspects of natural sediment transport processes in the project area. Cumulative effects would result in negligible adverse effects to soil resources.

Because there would be no major adverse impacts to a biological soil crust or soil resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Alternative B includes modifications to the Burr Trail to convey 25-year storm events through culverts at the major crossings and for 2-year storm event floodwaters to pass through culverts at the two minor crossings. This alternative would reduce the potential for washout at the drainage crossings, and erosion protection would be added at culvert inlets and outlets.

Stabilization of the bentonite road surface with the installation of a gravel surface, with no geotextile fabric liner (likely between mile points 0.00 to 0.45 and 0.85 to 0.90 and other areas as needed), would disturb less than one-tenth of an acre of soil, and would protect the road from erosion caused by traffic on the wet bentonite clay surface.

Removal of the overhanging rock would provide room for the roadbed to be moved away from Sandy Creek. This would reduce erosion on the road embankment and on the northern bank of Sandy Creek, resulting in negligible to minor benefits for soil resources and sediment transport processes in the Sandy Creek drainage.

Installation of culverts to handle the 25-year storm event at the four major Sandy Creek drainages would disturb about 9,000 square feet of ground in the long-term, and over 13,000 square feet of earth in the short-term, at major drainage crossings. Larger but less frequent stormflows in excess of the 25-year storm could occur. When flows exceed the 25-year storm event design threshold, floodwaters would overtop the roadway and potentially erode soils near the crossing. This erosion of soils adjacent to the road embankments and transport of sediment downstream would represent a minor adverse impact, with the intensity of the impact directly related to the magnitude of the storm event.

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Alternative B includes modifications for the Halls Creek and Burr Canyon side drainage crossings, and a new cattle guard configuration as described for Alternative A. These modifications would yield long- and short-term, local, minor, adverse and beneficial effects to soil resources. Recontouring the Burr Canyon drainage at the confluence with Halls Creek would have construction and channel realignment effects that would be local, long-term, adverse, and minor to moderate.

This alternative includes effects to soil resources caused by construction activities and vegetation removal and disturbance, as described for Alternative A. Disturbance, compaction, disruption of soil profile, and increased erosion would result in negligible to minor, short-term, adverse effects at all sites. All actions would include implementation of appropriate mitigation, as described in the Mitigating Measures section.

The effects on biological soil crusts would be the same as Alternative A.

Cumulative Effects. Cumulative impacts are the same as described for Alternative A with the following exceptions:

Implementation of Alternative B would continue to require routine road maintenance similar to the No Action Alternative such as grading and gravel replacement because this alternative uses gravel on the road surface but does not use a geotextile fabric liner to stabilize the gravel. Sediments that build up at road crossings and culverts after flood events would need to be removed.

Conclusion. Similar to Alternative A, Alternative B would produce local, negligible to minor, short- and long-term, adverse and beneficial effects on biological soil crusts and soils. Additionally, the realignment of the Burr Canyon drainage would represent a moderate, long-term adverse effect. Ultimately, the modifications would represent a long-term, local, minor benefit to soil resources. Cumulative effects would result in negligible adverse effects to soil resources.

Because there would be no major adverse impacts to a biological soil crust or soil resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. Under Alternative C, modifications to the Burr Trail major drainages would convey a 50-year storm event. There would be a 1 in 50 chance that a storm of the design magnitude would occur each year. Such precipitation events would be rare, and the capacity of the modifications would not likely be exceeded in any given year. However, storms in excess of the 50-year event would likely produce high volume, high velocity flows, and may cause channel changes and damage or destroy man-made structures or modifications placed in the flood area.

Stabilization of the bentonite road surface and removal of the overhanging rock would have effects similar to those described for Alternative B.

Slope protection (mile point 0.75 to 0.85) would fill portions of the natural stream channel. This would generate approximately 3,000 square feet of long-term surface disturbance. The hardened surface would reduce erosion and downstream sedimentation but constrict the channel at the installation site. Narrowing the channel could accelerate flow velocity through the narrow section and increase downstream scour. Overall adverse effects to soils at this site would be negligible.

Road modifications at the four major Sandy Creek crossings would include installation of multiple 60-inch culverts at each site, including slope protection upstream and downstream of the drainage crossings. At minor drainages, 36-inch culverts would be installed. These modifications would reduce erosion of the road during flood and decrease the sediment load delivered to the channel during all events of lesser or equal volume to the 50-year event. Use of these components would result in almost 4,000 square feet of long-term surface disturbance and over 15,000 square feet of short-term disturbance. These modifications would reduce erosion of the road during floods and decrease the sediment load delivered to the channel during the 50-year and more frequent storm events. This would result in long-term, minor, beneficial effects to the soil resources at the major Sandy Creek drainage crossings.

The 50-year corrugated metal pipe culverts to be installed at Halls Creek would have effects similar to those described for Alternative B, although the ground area disturbed would be larger to accommodate the larger culverts. Culvert installation would provide increased flow conveyance capacity. This option improves drainage and reduces required maintenance at this site. This would yield minor, long-term, beneficial effects to soil resources at this site.

Alternative C includes changes to the cattle guards and actions for the Burr Canyon side drainage crossings as described for Alternative A. The effects include minor benefits to soil resources as a result of reduced erosion and maintenance needs.

Realignment of 300 feet of the Burr Canyon drainage would have substantial adverse effects on soils of the site. This would require the transfer of approximately 2,100 cubic yards of soil and earth and installation of approximately 1,500 square feet of slope protection. Excavation of the new channel and placing bank protection would remove soil, disrupt soil structure, cause compaction, and increase erosion. In addition, small populations of soil crust would be removed or buried, which could lead to their death. Filling the natural drainage and redirecting the flow would also increase erosion, as natural processes are likely to continue to direct flow to the natural drainage. There is no guarantee of the stability or longevity of this action. Realignment of this drainage would generate long-term, moderate, adverse effects on soil resources.

All actions under Alternative C include long-term effects on soils generated by construction activities. Disturbance increases the likelihood of erosion and disrupts the soil profile, and heavy equipment can increase soil compaction. For all proposed actions, except the Burr Canyon drainage realignment, the effects to local soil resources would be adverse, long-

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term, and negligible to minor. Larger-scale excavation and filling needed to complete the channel realignment would likely generate long-term, moderate soil loss at the site. All actions would include implementation of appropriate mitigation, as described in the “Mitigation Measures” section.

The effects on biological soil crusts would be the same as Alternative A.

Cumulative Effects. Cumulative impacts are the same as described for Alternative A.

Conclusion. Alternative C would produce local, negligible to minor, long-term, adverse and beneficial effects on biological soil crusts and soils similar to Alternative B. Long-term, negligible to minor beneficial effects would be expected from a reduced need for maintenance. Cumulative effects would result in negligible adverse effects to soil resources.

Because there would be no major adverse impacts to a biological soil crust or soil resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park’s general management plan or other relevant National Park Service planning documents, there would be no impairment of the park’s resources or values.

VEGETATION

METHODOLOGY

There are sparsely populated desert shrub vegetative communities along the Burr Trail. Vegetation community types and species were identified through discussions and informal consultation with park staff and the state of Utah Natural Heritage Program. The primary steps for assessing impacts included identifying 1) which vegetative communities are found in areas likely to be affected by the Burr Trail modification alternatives, 2) disturbance or loss of vegetation caused by the road modification alternatives, and 3) the vegetative communities' potential to be affected by them. Impacts would be evaluated using these thresholds:

- *Negligible*: Impacts would have no measurable or perceptible changes in plant community size, integrity, or continuity.
- *Minor*: Impacts would be measurable or perceptible but would be limited to a relatively small area. The overall viability of the plant community would not be affected and, if left alone, would recover.
- *Moderate*: Impacts would cause a change in the plant community (e.g. abundance, distribution, quantity, or quality); however, the impact would remain local.
- *Major*: Impacts to the plant community would be substantial, highly noticeable, and permanent.
- *Duration*: Short -term – Effects persist less than three years. Long-term – Effects last more than three years.

Geographic Area Evaluated for Impacts. The area analyzed for possible impacts on vegetation consists of the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. The area of analysis includes the vegetation zone encompassing the natural contours and topography within the shoulder of the road and the inflow and outflow adjacent to road crossings at minor and major drainages of Sandy Creek, the Burr Canyon side drainage, and the Halls Creek drainage channel. The drainage banks and adjacent uplands of the lower 100 feet of the Burr Canyon drainage at its confluence with Halls Creek are also included in the evaluation area. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICY

The National Park Service Organic Act of 1916 (as amended) states that the purpose of the parks are to "conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." This is the basis for protecting and conserving natural resources, including vegetation, within National Park system. Executive Order 13112, Invasive Species, and the Federal Noxious Weed Act of 1974

have similar objectives to prevent the introduction of invasive species and to minimize the adverse economic, ecological, and human health impacts associated with invasive species. National Park Service *Management Policies 2001* (2000b) direct the Park Service to ensure that removal of plants does not cause unacceptable impacts to native resources, processes, or other park resources. The park must manage removal of vegetation to prevent interference with natural habitats, sensitive species, scientific study, or breeding of native species. The park's general management plan (NPS 2001c) states that natural resources within the road corridor should be preserved to the fullest extent and that where needed, monitoring and site mitigation should be implemented.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. The Burr Trail passes through a sparsely vegetated, desert-shrub community comprised of shadscale and several arid washes with riparian plants. Non-vegetated naturally eroded and exposed rock, sandstone, and clay also exist along several sections of the road. Periodic road maintenance conducted to remove the washboards and surface irregularities caused by normal weathering and vehicle passage would not directly disturb vegetation adjacent to the road, but material brought in to resurface the road may cause a buildup of loose dirt in adjacent areas and along the drainages. This could smother biological soil crusts and encourage growth of exotic annual plant species and native increasers that thrive on disturbed soils. Once established, exotics can spread into the surrounding areas. In several areas, this impact is becoming noticeable and can result in a permanent vegetation type change from perennial native plants to annual exotic species.

Vehicle travel along the road and local winds generate dust that, in severe cases, interferes with plant growth and reproduction by clogging pores and reducing light interception. Severe rainstorms erode road banks and increase the undercutting of stream banks. Sloughing or eroding road banks exposes and dries out plant roots, and eventually dislodges or kills vegetation.

Vegetation within the major and minor drainages would continue to limit erosion upstream and downstream of the road during normal rainstorms. Severe rainstorms would scour the drainage bed, removing newly established plants, particularly near the overhanging rock where rocky substrate within Sandy Creek is present. As described above, the No Action Alternative would interfere with the natural growth and distribution of vegetation along the road; therefore, impacts to vegetation would be long-term, local, minor to moderate, and adverse.

The eroding road banks at the confluence of the Halls Creek and the Burr Canyon drainage channels would continue to require regular maintenance to replace the washed out culvert. During intense rainstorms, high stream flows would erode the banks, undercut the roadbed, and dislodge the culvert in Halls Creek, widening the drainage channels and disrupting shrubs and vegetation. Routine maintenance after floods typically involves dumping mud from the crossing onto adjacent upland areas. This disturbs the native soils and creates an area where exotic plants have invaded and replaced native vegetation. Negligible to minor amounts of vegetation along the Burr Canyon drainage and Halls Creek would be lost from naturally eroding drainages, but desert-shrub vegetation on adjacent uplands also would be

disturbed; therefore, impacts to vegetation would be short- and long-term, local, minor, and adverse.

The road culvert located at the upstream crossing of the Burr Canyon side drainage would remain. Natural weathering and drainage from severe rainstorms would erode the rock and soil at the culvert's outfall and on the adjacent road embankment. Because the area is small and little vegetation grows on the road embankment because of the rocky substrate, impacts to vegetation would be negligible at the Burr Canyon culvert outlet and road embankment.

Vegetation is absent where cattle congregate at the existing cattle guard. Continued grazing, trampling, and compacted soils limit vegetation growth in this area, resulting in long-term, local, minor, adverse impacts to vegetation.

Given the sparse natural vegetative cover typical of the arid environment, the No Action Alternative would produce minor adverse effects on vegetation. These effects would be long- and short-term, and local.

Cumulative Effects. Past and current management of cattle grazing and cattle trailing along the Burr Trail disrupt native plant communities by changing species composition (livestock decrease the supply of desirable forage species, therefore allowing undesirable plant species to increase). Periodic repairs and maintenance performed on the road surface has minimal effects on roadside vegetation as described above. Hauling road maintenance materials and equipment as well as traffic associated with future gas and oil exploration vehicles along the Burr Trail generate airborne dust that resettles on vegetation, potentially reducing photosynthetic processes and retarding plant growth.

Future development activities, including improvements to the Bullfrog Marina at Glen Canyon National Recreation Area, would increase use of the Burr Trail and could potentially affect vegetative resources. The effects of increased use include more dust that interferes with plant growth and reproduction. Use of non-native road material for future road maintenance and stabilization could result in the spread of exotic plants along road edges. These activities, in concert with the No Action Alternative, would likely produce negligible, long-term, adverse cumulative effects on the plant communities of the park.

Conclusion. The No Action Alternative would have local, short- and long-term, negligible to moderate adverse effects on vegetation. Cumulative effects would be negligible.

Because there would be no major adverse impacts to a vegetative resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (PREFERRED ALTERNATIVE)

Impact Analysis. Several sections of the Burr Trail are barren and lack vegetation because the road banks are eroded to expose rock, sandstone, and clay soils, or have been over-

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grazed by cattle. Disturbed soil conditions often do not support native vegetation and, when continually disturbed, the areas either do not revegetate or native plants are replaced by non-native species. Use of non-native materials for road fill may also introduce non-native species along the road corridor. Under Alternative A, removal of bentonite clays on the roadway surface and the use of gravel over geotextile fabric would reduce the amount of gravel lost due to displacement or compression into the substrate. Material brought in to re-surface the road would still have the potential to increase exotic plants into the area, although mitigation to ensure that imported material does not contain exotic plant material would be implemented. Soil displacement resulting from vehicle travel along the road and local winds would continue to generate dust that interferes with plant growth and reproduction. This would result in long-term, negligible, adverse effects to vegetation.

Eroded road banks along some sections of the Burr Trail provide little or no soil to support plant growth. Small numbers of shrubs and herbaceous plants would be removed when slope protection is installed, resulting in minor, long-term, adverse effects to vegetation. This would be offset by reduced erosion and sedimentation, which would slow the loss of soil, help to stabilize the drainage channel, and result in minor, long-term, beneficial effects.

Installation of paved fords, slope protection, and erosion protection at culvert inlets and outlets would remove small amounts of vegetation on road and stream banks and at drainage crossings. Effects would be short-term, local, minor, and adverse.

Installation of a rock embankment to support the roadway and stabilize the stream bank at the overhanging rock site would eliminate a small number of individual plants. Impacts to vegetation would be long term, local, minor, and adverse.

Shifting the roadway at the Halls Creek crossing, installing a paved ford, and grading the Burr Trail road banks would remove individual shadscale shrubs and herbaceous plants. Newly disturbed areas would typically revegetate to some degree, although the potential for non-native plants to become established on disturbed soils is greater, and some native and exotic vegetation may grow protected banks; therefore, impacts to vegetation would be short-and long-term, local, minor, and adverse.

Replacement of the road culvert at the upstream crossing of the Burr Canyon side drainage with three 36-inch culverts, adding slope protection, and a rock embankment below the culverts would involve removal of desert-shrub vegetation during construction. Little vegetation grows on the rocky slopes at the outfall or along 50 feet of the road embankment where sloughing has occurred along the upper slope. Road widening and bank stabilization at this site would remove individual shrubs growing along the drainage channel. Removing a few shrubs and plants would be a long-term, local, minor, adverse impact at the Burr Canyon side drainage crossing.

Installation of a new cattle guard at the park boundary would reduce trampling of vegetation and soil compaction by reducing the number of cattle that trespass on park lands along the Burr Trail. This would provide a long-term, local, minor benefit for vegetation.

Cumulative Effects. Alternative A would decrease the frequency of road repairs and maintenance, use less non-native fill material, stabilize the road banks, improve drainage, and re-

duce of the number trespassing cattle. This would be offset by vehicles hauling road maintenance materials and equipment and a potential increase in the number of gas and oil exploration vehicles. These collective activities would likely produce no detectable cumulative effects on the vegetative communities adjacent to the Burr Trail.

Conclusion. Alternative A would produce local, short- and long-term minor adverse effects on the desert-shrub and riparian vegetation along the Burr Trail in Capitol Reef National Park. Overall, cumulative effects on vegetation would not likely be detectable.

When compared with the No Action Alternative, total additional disturbance to vegetation caused by this alternative is less than one acre. This includes short- and long-term disturbances to the desert-shrub community adjacent to the existing roadway. Each road modification would only affect a few individual plants. Effects on vegetation would be local, short-term, negligible to minor, and adverse with minor long-term vegetative benefits associated with installation of a cattle guard at the park boundary. Cumulative effects on vegetation would be negligible.

Because there would be no major adverse impacts to a vegetative resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Under Alternative B, the effects of road surface stabilization, drainage crossing modifications, and installation of a new cattle guard would be the same as Alternative A.

The road modifications along Sandy Creek, at Halls Creek, and in the upper Burr Canyon drainage would produce effects similar to Alternative A. Although the areas that would be disturbed differ, the low density of vegetation in the project area would result in similar impacts.

Limited site grading and roadwork as well as removal of the overhanging rock to widen a narrow section of the Burr Trail and provide stream bank stabilization would remove some individual shrubs on the north side of the road. This would represent a short-term, local, negligible impact to vegetation in the vicinity of the overhanging rock.

The modifications to the Burr Canyon drainage just upstream of the confluence with Halls Creek would require realignment and slope protection on the lower portion of the Burr Canyon drainage. These relatively substantial changes would affect more previously undisturbed vegetation, resulting in local, long-term, minor to moderate, adverse impacts to vegetation.

Cumulative Effects. The cumulative effects of Alternative B would be similar to those of Alternative A.

Conclusion. Alternative B would produce negligible to minor, local, short-and long-term adverse effects on the desert-shrub and riparian vegetation similar to Alternative A, with the exception of minor to moderate, long-term, local adverse impacts resulting from the realignment of the lower Burr Canyon drainage. Cumulative effects on vegetation would not likely be detectable.

Because there would be no major adverse impacts to a vegetative resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. Under Alternative C, the effects of road surface stabilization, removal of the overhanging rock, drainage crossing modifications, realignment of the lower Burr Canyon drainage, and installation of a new cattle guard on vegetation would be the same as Alternative B. There would be an incrementally greater benefit associated with additional reductions in maintenance because the culverts could pass 50-year storm events rather than just 25-year events. However, this incremental benefit would be offset by adverse effects associated with larger areas of disturbance and greater losses of vegetation because the larger culverts would need more surface grading and changes to the roadway profile.

Cumulative Effects. The cumulative effects of Alternative C would be similar to those of Alternative A.

Conclusion. Similar to Alternative B, Alternative C would primarily produce negligible, local, short-and long-term adverse effects on the desert-shrub and riparian vegetation, with minor to moderate adverse effects as a result of the realignment of the Burr Canyon drainage. Cumulative effects on vegetation would not likely be detectable.

Because there would be no major adverse impacts to a vegetative resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

WILDLIFE

METHODOLOGY

The focus of information gathering and impact analysis for wildlife and wildlife habitat was on wildlife guilds, species, and habitats that were considered most likely to be exposed to potential effects of the proposed action in the areas that would be affected by the road modifications. No aquatic species were considered in this evaluation because there are no permanent water bodies or perennial streams in the area that would be affected by the proposed action.

Wildlife species at Capitol Reef National Park that have the potential to be affected by proposed modifications to the Burr Trail were identified through discussions with park staff and experts in the field, and thorough literature review. Federal- and state-listed species were identified through discussions and informal consultation with park staff, U.S. Fish and Wildlife Service, and the state of Utah Natural Heritage Program (USFWS 2002, UDWR 1988) (Appendix D). Primary steps for assessing impacts included identifying 1) which species are found in areas likely to be affected by the Burr Trail modification alternatives, 2) habitat loss or alteration caused by the alternatives, and 3) degree of displacement and disturbance to wildlife and habitats caused by the alternatives and the mitigation measures that could be implemented to offset or minimize potential adverse effects, if any.

Impacts were evaluated using these thresholds:

- *Negligible*: There would be no observable or measurable impacts on native fish and wildlife species, their habitats, or the natural processes sustaining them. Impacts would likely be of short duration and well within the range of natural fluctuations.
- *Minor*: Impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not be expected to have any long-term effects on native species, their habitats, or the natural processes sustaining them. Occasional responses to disturbance by some individuals could be expected. Sufficient habitat would remain functional to maintain viability of all species. Impacts would fall outside critical reproduction periods for certain species.
- *Moderate*: Impacts on native fish and wildlife species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability for short periods of time. Frequent responses to disturbance by some individuals could be expected. Sufficient habitat would remain functional to maintain viability of all native fish and wildlife species. Some impacts might occur during critical periods of reproduction or in key habitat for certain native species.
- *Major*: Impacts on native fish and wildlife species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or permanent. Frequent responses to disturbance by some individuals would be expected. Breeding colonies of na-

tive species might relocate to other portions of the park. Loss of habitat may affect the viability of at least some native species.

- *Duration:* Short-term – Effect lasting less than one year. Long-term – Effect lasting more than one year.

Geographic Area Evaluated for Impacts. The area analyzed for possible impacts on wildlife and wildlife habitats consists of the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. The area includes the terrestrial zone encompassing the natural contours and topography within and adjacent to the minor and major drainages of Sandy Creek, and the current and proposed realignment of the Burr Canyon drainage and Halls Creek drainage channel. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

The regulations and policies associated with the assessment of wildlife include the National Park Service Organic Act (16 USC 1 *et seq.*) (1916), the Fish and Wildlife Coordination Act (16 USC 661 *et seq.*) (1934), the Migratory Bird Treaty Act (16 USC 703 *et seq.*) (1918), Bald and Golden Eagles Protection Act (16 USC 668 *et seq.*) (1940), National Park Service *Management Policies 2001* (2000b), and the Capitol Reef National Park mission statement.

The National Park Service Organic Act (1916), which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the park’s natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities.

The Fish and Wildlife Coordination Act of 1934 requires that federal agencies consult with the U.S. Fish and Wildlife Service or National Marine Fisheries Service and with parallel state agencies whenever water resource development plans result in alteration of a body of water. The Secretary of the Interior is authorized to assist and cooperate with federal agencies to "provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs."

The Migratory Bird Treaty Act of 1918 prohibits the taking, possession, and trade of migratory birds, except as permitted by regulations released by the Secretary of Agriculture. The act provides search, arrest, and seizure authority to authorized federal employees; provides for civil and criminal penalties for violation; allows states to impose more restrictive measures to protect migratory birds; and allows taking for scientific and propagation purposes.

The Bald Eagle Protection Act of 1940 prohibits the taking, possession, and trade in bald and golden eagles. Only bald eagles were originally given protection; an amendment in 1962 gave the same protection to golden eagles. A third amendment in 1973 provided increased criminal penalties and made second and subsequent offenses felonies. The act provides federal protection for bald and golden eagles; provides for civil or criminal penalties for violations and a reward for informers; authorizes cancellation of grazing, leases, licenses, per-

mits, or other agreements for violations; and provides for the possession and transport of golden eagles for falconry under certain conditions.

The National Park Service *Management Policies 2001* state that the National Park Service will maintain as parts of the natural ecosystems of parks all native plants and animals (section 4.4.1) (NPS 2000b):

- Preserving and restoring the natural abundance, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and communities and ecosystems in which they occur.
- Restoring native plant and animal populations in parks when they have been extirpated by past human-caused actions.
- Minimizing human impacts on native plants, animal populations, communities, and ecosystems, and the processes that sustain them.

The mission statement for Capitol Reef National Park states in Mission Goal 1A:

- Natural and cultural resources and associated values are protected, restored, and maintained in good condition and managed within their broader ecosystem and cultural context.

Collectively, these regulations, policies, and mission statements establish long-term goals to protect, manage, maintain, and restore wildlife populations and their supporting habitats.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. The only effect that current management of the Burr Trail would have on wildlife is the continued negligible, short-term, local, adverse effect that vehicles using the Burr Trail have on wildlife. Vehicles passing along the road would cause short-term, local disturbance or displacement of wildlife directly in the road corridor, and this would represent a negligible adverse effect. The effects of roads on wildlife are diverse. These effects include mortality, restricted movement, introduction of exotic plants that could affect wildlife habitat, habitat fragmentation and edge effect, and increased human access to wildlife habitats (Findlay and Bourdages 2000, Forman 2000, Forman and Alexander 1998). The average number of vehicles passing along the Burr Trail daily is relatively low (average daily traffic on the Burr Trail for 2000 and 2001 was 29; see Table 6 in the “Natural Soundscapes” section). However, just the presence of the road may cause reluctance in some rodent species to cross the road, even though it is relatively narrow and unpaved (Trombulak and Frissell 2000). The disturbance and potential displacement of small areas of habitat that result from light excavation, grading and recontouring, or maintenance conducted adjacent to the road along road embankments, minor and major drainages of the Burr Trail, and the Halls Creek and Burr Canyon side drainage crossings would be short-lived and generally would not adversely affect wildlife species. There are sporadic interactions between wildlife and vehicles when collisions occur and mortality results. While this represents a severe adverse effect to the individual, the effect would be considered negligible on wildlife species' populations because of the infrequency of the fatal collisions.

Cumulative Effects. The No Action Alternative would continue current management that preserves the natural features and character of the Burr Trail and would not contribute to the potential cumulative effects of other projects and plans in or near Capitol Reef National Park that could have an effect on wildlife. The small amount of disturbance and potential displacement of habitat along road embankments, minor and major drainages would be short-lived and generally would not adversely affect wildlife species. Cumulative effects would be negligible.

Conclusion. The No Action Alternative would continue to have a temporary disturbance or displacement effect on wildlife, with rare instances of vehicle/wildlife collisions that would have negligible adverse effects on species' populations. Cumulative effects would be negligible.

Because there would be no major adverse impacts to a wildlife resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (PREFERRED ALTERNATIVE)

Impact Analysis. Alternative A would not change the volume of traffic on the Burr Trail in the long-term. As a result, potential effects to wildlife associated with Alternative A would be related to maintenance and construction of road modifications. Vehicles passing along the road would cause short-term, local disturbance or displacement of wildlife directly in the road corridor, and this would represent a negligible adverse effect. The effects of roads on wildlife are diverse (refer to the No Action Alternative for more detail). The disturbance and potential displacement of small areas of habitat that result from light excavation, grading and recontouring, or maintenance conducted adjacent to the road along road embankments, minor and major drainages would be short-lived and generally would not adversely affect wildlife species.

Compared to the No Action Alternative, effects to wildlife and their habitats would involve local, short-term, negligible to minor, and adverse habitat disturbance from construction of drainage crossings, bank stabilization, slope protection, and road modifications in Burr Canyon and adjacent to Sandy Creek.

The construction of paved fords and other road modifications would have a short-term effect, although the time scale for construction would be in terms of months rather than minutes as for passing vehicles, and the disturbance or displacement effect would take place throughout the typical construction working day. The distribution of wildlife resources throughout the relatively homogeneous habitats in and around the road corridor would allow wildlife to use other areas of the local habitats without having much of an adverse effect on them.

The light excavation, grading, and recontouring associated with road re-surfacing and bank stabilization at the overhanging rock, minor and major drainage crossing modifications on

the Burr Trail, and the Halls Creek and Burr Canyon side drainage crossings modifications would be such that only local areas would be affected at any one time. Generally, the area affected by construction of the road modifications would range from 100 feet or less for small wildlife species (e.g., lizards, snakes, rodents, small birds), to 1,000 feet or more for larger, more mobile species (e.g., coyote, deer). Installation of a cattle guard at the park boundary would have no detectable effect on any wildlife. Based on the relatively small areas that would be affected and the short-term nature of the effects, construction of the road modifications would have a negligible to minor, local, adverse effect on wildlife and their habitats because of habitat disturbance at the project sites.

In the long-term, Alternative A would represent a negligible, beneficial effect to wildlife and wildlife habitats compared to the No Action Alternative, because flood damage to the road at drainage crossings would be decreased. Repairs to the road and drainage crossings would be less frequent, thus reducing the potential adverse effects of heavy construction equipment.

Cumulative Impacts. Alternative A would not contribute to the potential cumulative effects of past or current management or other projects and plans in or near Capitol Reef National Park that could have an effect on wildlife or wildlife habitat. No other projects or plans were identified that have had or would have an effect on wildlife or wildlife habitat in the project area. The small reduction in amount of disturbance and potential displacement of habitat along road embankments, minor and major drainages of the Burr Trail, and the Halls Creek and Burr Canyon side drainage crossings that result from maintenance conducted on the road surface and shoulders adjacent to the road would be short-lived and generally would not adversely affect wildlife species, and consequently cumulative effects would be negligible.

Conclusion. There would be negligible to minor, short-term, local, adverse effects to wildlife and wildlife habitat associated with passing vehicles and construction of the road modifications as a result of the implementation of Alternative A. In the long-term, the effects would be beneficial, as the frequency of flood-damaged road repairs, surface maintenance, and the use of heavy construction equipment would be reduced, thus lessening the potential for disturbance or displacement of wildlife. Cumulative effects would be negligible.

Because there would be no major adverse impacts to a wildlife resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. The effects of Alternative B would be the similar to those identified for Alternatives A; however, the realignment of the Burr Canyon drainage channel at the confluence with Halls Creek and the use of culverts rather than paved fords would result in different intensities of effect.

ENVIRONMENTAL CONSEQUENCES

The realignment of the Burr Canyon drainage at its confluence with Halls Creek channel would have a minor adverse effect not only in the short term during construction, but also as a result of changes in the habitat. The new channel would have substantial slope protection along the channel, thus changing the nature of the riparian corridor that typically parallels the creek. Over time, vegetation would likely be restored, but the wildlife habitat along the creek would experience a minor to moderate, local, adverse effect.

Although there is little or no research regarding wildlife use of or the effects of low-water crossings (represented by current conditions) on wildlife, there is evidence that wildlife would use culverts as passageways under roadways (Yanes et al. 1995). Amphibians, lizards, snakes, small mammals, rats, rabbits, and several species of carnivorous mammals have been found to use culverts. Yanes et al. (1995) found that the intensity of animal movement was influenced by various factors, such as the culvert dimensions, road width, height of boundary fence, the complexity of the vegetation along the route, and the presence of detritus pits at the entrance of culverts. They concluded that adequately designed culverts can aid the conservation of vertebrate populations. The 48-inch culverts proposed under this alternative would be sufficient to allow passage of all wildlife that would likely find a culvert crossing preferable over a surface route (i.e., small wildlife that may be reluctant to cross the roadway).

Cumulative Impacts. Cumulative impacts are the same as described for Alternative A; consequently, cumulative effects would be negligible.

Conclusion. Alternative B would have local, short-term, negligible to minor, adverse habitat disturbance effects on wildlife and their habitats. In the long-term, the effects would be beneficial, as the frequency of flood-damaged road repairs and the use of heavy construction equipment would be reduced, thus lessening the potential for disturbance or displacement of wildlife. Cumulative effects would be negligible.

Because there would be no major adverse impacts to a wildlife resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The effects of Alternative C would be the similar to those identified for Alternative B; however, the habitat disturbance resulting from installation of the culverts at the major Sandy Creek crossings would be greater because of the increased diameter of the culverts compared to Alternative B. The adverse effect to wildlife habitat associated with this additional disturbance would be very small and would be offset by an increased benefit associated with less maintenance needed because the major crossings would be able to withstand 50-year storm events. Thus, Alternative C would result in local, short-term, negligible to minor, and adverse effects on wildlife and their habitats.

Cumulative Impacts. Cumulative impacts are the same as described for Alternatives A and B; consequently, cumulative effects would be negligible.

Conclusion. Alternative C would have local, short-term, negligible to minor, adverse habitat disturbance effects on wildlife and their habitats. In the long-term, the effects would be beneficial, as the frequency of flood-damaged road repairs and the use of heavy construction equipment would be reduced, thus lessening the potential for disturbance or displacement of wildlife. Cumulative effects would be negligible.

Because there would be no major adverse impacts to a wildlife resource or value whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

SURFACE WATER, HYDROLOGY, AND FLOODPLAINS

METHODOLOGY

Each alternative was assessed to determine the impacts of the actions relative to surface water, hydrology, and floodplains. The evaluation of surface water includes an assessment of effects on water quality. Water quality refers to meeting Clean Water Act requirements and to the suitability of surface water for downstream uses, such as for wildlife use or stock watering. Particular attention is paid to the potential for the enhancement or degradation of water quality. Hydrology refers to water-related processes, such as storm flow scouring, erosion, deposition, and geomorphologic changes (processes that change the landscape). Particular attention is given to alterations in natural patterns of water flow. Because flooding is an important hydrologic process, flooding and floodplain function also were evaluated.

Primary steps for assessing impacts included identifying 1) the location of surface water in areas likely to be affected by road modifications, 2) potential changes in surface water and hydrology from current and future use of the road, and 3) potential changes in surface water and hydrology caused by road modifications. To understand the effects of road modifications to the hydrology in specific areas of concern, park resource and survey maps, the Federal Highway Administration Hydrology Study, and experts were consulted to identify the information contained in this analysis.

Impacts would be evaluated using these thresholds:

- *Negligible:* Water quality, hydrology, and floodplains would not be affected. Changes would be either non-detectable or, if detected, would have effects that would be considered slight and local.
- *Minor:* Changes in water quality, hydrology, or floodplains would be measurable, although the changes would be small and local. No mitigation measures associated with water quality, hydrology, or floodplains would be necessary.
- *Moderate:* Changes in water quality, hydrology, or floodplains would be measurable but would be relatively local. Mitigation measures associated with water quality, hydrology, or floodplains would be necessary, and the measures would likely succeed.
- *Major:* Changes in water quality, hydrology, or floodplains would be readily measurable, would have substantial consequences, and would be noticed on a regional scale. Mitigation measures associated with water quality, hydrology, or floodplains would be necessary, and their success would not be guaranteed.
- *Duration:* Short-term – following treatment, recovery would take less than one year. Long-term – following treatment, recovery would take longer than one year.

Geographic Area Evaluated for Impacts. The area analyzed for possible impacts on surface water, hydrology, and floodplains includes the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. The area of analysis includes the upstream and downstream drainage zone encompassing the natural contours and topography within and adjacent to the shoulder of the road. The area analyzed also includes the floodplain adjacent to road crossings extending 100 feet upstream and downstream at minor and major drainages within the project area. The drainage banks and adjacent uplands of the lower 100 feet of the Burr Canyon side drainage at its confluence with Halls Creek are also included in the evaluation area. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICY

The National Park Service *Freshwater Resource Management Guidelines* requires the National Park Service to "maintain, rehabilitate, and perpetuate the inherent integrity of water resources and aquatic ecosystems." The Clean Water Act requires the National Park Service to "comply with all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution." Particular consideration has been given to those actions with the potential to affect the natural hydrology and surface water quality of Halls Creek and Sandy Creek.

The National Park Service manages floodplains in accordance with Executive Order 11988, Floodplain Management, and the National Park Service Special Directive 93-4, *Floodplain Management Guideline* (NPS 1993c). In brief, National Park Service policy is to protect natural floodplain values and functions and to minimize risk to life or property by avoiding the use of the regulatory floodplain whenever there is a feasible alternative location. Evaluation of impacts of the alternatives as related to floodplains is based on avoiding the loss of life and property during major floods. When there is no practicable alternative to placement of facilities in a floodplain location, National Park Service policy permits the use of the floodplain when there are compelling reasons for doing so, when the level of impact to natural floodplain processes is acceptable, and when mitigation is provided to protect human life and property. Although no floodplains have been mapped in the project area, occasional flooding has presented hazards to visitors and staff. Analyses of floodplain impacts are addressed relative to reducing such hazards and maintaining or enhancing the hydrologic function of the flood-prone sites within the project area.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. Current conditions along the Burr Trail allow the road to function as a maintained, variable-width, rural roadway. Regular precipitation in the form of snow and rain does not affect the ability of the roadway to convey traffic except in areas where the road surface has a high bentonite clay content and during and immediately following flood events. The culvert once present beneath the road surface at Halls Creek was capable of conveying runoff from everyday storm events. The culvert was washed out several years ago by a heavy rainstorm and was not replaced, leaving the existing road to function as a low-water crossing. There are no buildings or other park structures in the floodplain or in any part of the proposed project area.

ENVIRONMENTAL CONSEQUENCES

The hydrological processes in the areas where actions are proposed are affected, to a limited degree, by the presence of the roadway in drainages. During a rainstorm, water infiltrates into the desert uplands, and once soils become saturated, surface water drains across the road and into the stream channels. Because there is no baseline water quality data or hydrology studies of the project area, the magnitude and intensity of this effect are difficult to judge. It is likely that the presence of the road has a negligible, short-term, adverse effect on natural water quality and hydrologic functions.

The unpaved road surface increases sediment delivery to the local drainages above the baseline or background rate. Estimates of the increase in sediment delivery from dirt and gravel roads range from 10 to 100 times the natural rate. Production of this quantity of sediment is similar to those found in urban areas under development (Novotny and Olem 1994). During routine road maintenance, the road is scraped and graded to remove washboards, and surface material is added to improve driving conditions. This provides material that can be transported by floodwaters as suspended sediment to the downstream channels. This can result in decreased water quality and can temporarily reduce the channel volume as sediment settles in the drainage. Overall, the adverse effect would be negligible.

Existing conditions on the Burr Trail present problems during high water conditions. High water can occur as a result of unusual precipitation events or during rapid spring snowmelt (see "Affected Environment"). Excessive runoff can overtop the road and drainage crossings, erode and damage the road surface, and deliver sediment to the channels.

Under the No Action Alternative, the one-mile project area would remain unchanged. Occasionally during flash floods, the sediment that collects on the roadway may act as a barrier to flow in the drainages. The buildup of floodwaters behind these barriers may increase erosion and sediment deposition and transport. The culvert installed at the Halls Creek crossing has repeatedly washed out into the downstream channel. This makes the road impassable and delivers large amounts of sediment and debris to the channel. Flooding exacerbates channel and surface erosion. The presence of unimproved road crossings in the stream channels and drainages would produce adverse effects on floodplains within the project area. These effects would be both short- and long-term and of minor intensity.

At the Burr Canyon side drainage crossing, the existing 24-inch culvert would continue to be used to convey stormwater flows. This piping may be undersized for storm events of great magnitude. Surface drainage would continue to erode the banks and top slopes of the Burr Canyon drainage, undercutting and narrowing the road at the s-curve, causing short-term, minor, adverse effects.

When the culvert was present at Halls Creek, it caused upstream ponding during storm events that exceeded the culverts' design capacity. This caused inundation of areas outside of the floodway, resulting in local, long-term, minor adverse effects on water quality as a result of increased sediment loads. (A floodway is where the water is likely to be deepest and fastest. This area of the floodplain should be kept free of obstructions to allow floodwaters to move downstream [FEMA 2004].)

Increased sediment that results from the road surface can cause increased deposition of sediment on vegetation within the floodplain. This would result in local, long-term, negligible, adverse effects on natural floodplain functions.

Storm events that inundate portions of the floodplain can present safety hazards to the public. These effects are analyzed under Public Health and Safety.

Cumulative Effects. Past and present management of the Burr Trail likely produces long- and short-term, moderate, adverse effects to water quality in the local drainages. Continued implementation of the No Action Alternative would contribute, at a minor level, to these adverse effects. The No Action Alternative would not change the intensity or duration of natural drainage processes within the project area, the park, or regionally. Visitors would expect to have some difficulty in driving through these natural drainages. When combined with other past, present, and foreseeable future activities and processes, no new adverse cumulative effects on hydrology, floodplains, or water resources would be expected to occur; therefore, cumulative effects would be negligible.

Conclusion. The No Action Alternative would have negligible to minor adverse effects on hydrology, water quality, and floodplain function during low flow storms. During flash flood events, the current road conditions impede flow, deliver added sediment, and hamper floodplain functions. These conditions would result in minor, short- and long-term, adverse effects. Cumulative impacts to surface water and hydrology are negligible.

Because there would be no major adverse impacts to water-related resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Under Alternative A, drainage modifications to the Burr Trail would include paved fords (vented and unvented) at all major and minor crossings. The fords would be designed to contain flooding associated with the 10-year storm event within their paved limits. This alternative also would decrease bank erosion at specific sites, stabilize the Sandy Creek north bank in the vicinity of the overhanging rock, and recontour the banks of the Burr Canyon drainage to better protect the existing road.

Actions taken to excavate the bentonite road surface (mile points 0.00 to 0.45 and 0.85 to 0.90) and replace these sections with gravel underlain by geotextile fabric would minimize surface erosion on the road. Although Sandy Creek only contains water temporarily during runoff and most of the sediment load in the creek is derived from sources away from the road, this would reduce the sediment delivery to the drainage and produce local, short-term, negligible benefits for water quality in Sandy Creek.

ENVIRONMENTAL CONSEQUENCES

Paved crossings at the four major Sandy Creek drainage crossings, at the Halls Creek crossing, and at the minor drainage crossings would better convey stormwater across the road surface. The concrete paved fords would protect the road from eroding during storm events, thus reducing sediment loads and downstream sediment deposition. Inlet and outlet protection would be installed to reduce and minimize erosion and scour at the crossings. These actions would decrease the sediment load delivered to the channel during the 10-year storm events. This would represent a short- and long-term, local, minor benefit for water quality. Periodic high intensity storms that exceed the 10-year storm event would increase the flow volume beyond the design capacity of the paved fords and would likely carry increased sediment loads downstream because sections of the road and its banks would be exposed to the erosive effects of floodwater. This would result in long- and short-term, adverse effects to the stream channel of minor to moderate intensity, depending on the magnitude of the storm.

At the Halls Creek crossing, the roadway would be shifted slightly to the south, a vented paved ford would be installed, and slope protection would be added as needed on adjacent embankments. The roadway shift would allow flows to pass through or over the vented paved ford, minimizing erosion and resulting in long-term, negligible, adverse effects on hydrology at the site.

At the Burr Canyon side drainage crossing, runoff would carry the larger 10-year storm volume of water through new culverts. This would result in some improvement to water quality and hydrology. Because this road has not previously washed-out, the effects to the floodplain would be negligible. The culverts at Burr Canyon and the rock embankment below would increase bank stability, reduce erosion at the outfall, and decrease sedimentation. The road and drainage modifications would result in local, long-term, negligible beneficial effects to water quality, hydrology, and floodplains.

Disturbance of road surfaces and embankments caused by excavation, minor grading, and recontouring during construction increases the likelihood of erosion and sediment delivery to channels and streams. The effects to local water quality and hydrology would be adverse, short-term, and negligible. Best management practices to control erosion, sediment release, and floodplain function would be utilized during all construction activities. Identifying and staking the limits of clearing and grading, installing silt fences, establishing a controlled area for construction material and equipment, and preparing a sediment and erosion control plan would minimize the potential for adverse impacts to water quality, hydrology, and floodplains.

Cumulative Effects. Cumulative effects are the same as described for the No Action Alternative except for the following:

Alternative A would reduce erosion, improve drainage, and enhance watershed functions, producing negligible, long-term, beneficial effects. When impacts of Alternative A are combined with other past, present, and foreseeable future activities and processes, no new adverse cumulative effects on hydrology, floodplains, or water resources would occur; therefore, cumulative effects would be negligible. Cattle grazing and trailing, road maintenance and equipment hauling, oil and gas exploration equipment hauling, and trailering of other

vehicles conducted on the road would result in negligible to minor, long-term, adverse impacts to water resources.

Conclusion. Under Alternative A, negligible, long-term, beneficial effects to surface water quality, hydrology, and floodplains would accrue. Modifications to the Burr Canyon drainage at Halls Creek would produce short- and long-term, negligible, adverse effects to water quality and hydrology. Short-term adverse effects resulting from construction activities would be negligible and local. Effects to natural floodplain functions would be negligible to minor and adverse. Overall, in the long-term, Alternative A would have negligible beneficial effects on water quality, hydrology and the floodplain. Cumulative effects would be negligible.

Because there would be no major adverse impacts to water-related resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Under Alternative B, stabilization of the bentonite road surface without using geotextile fabric would displace more gravel over time compared to Alternative A, which would produce negligible adverse effects to hydrology in the Sandy Creek drainage similar to the No Action Alternative.

Slope protection of the roadway between mile points 0.75 to 0.85 would harden the embankment. This would decrease bank erosion at the site, providing a long-term minor beneficial effect.

Culverts at the four major Sandy Creek drainage crossings would include protection upstream and downstream to minimize scour and erosion. The culverts would allow the 25-year storm event to pass without overtopping the road. At the minor drainages, culverts would be installed and protection from flood damage would be increased, but only to meet the 2-year storm event. There would be improved drainage and overall reduction in erosion and sedimentation, but these would be of negligible intensity.

Alternative B includes installation of eight 72-inch culverts at the Halls Creek crossing. This change would affect the natural channel-forming processes and would result in local, short-term, minor to moderate, adverse effects to hydrology. However, in the long-term, the culvert crossing would reduce erosion and sedimentation in the vicinity of the Halls Creek/Burr Canyon confluence and result in long-term, minor beneficial effects to hydrology. Realignment of the Burr Canyon drainage channel would result in short-term, moderate, adverse effects to natural hydrological processes and configuration of the floodplain, but in the long-term, the realignment would represent a local, minor, beneficial effect as potential sedimentation and erosion would be reduced.

ENVIRONMENTAL CONSEQUENCES

Overall, in the long-term, Alternative B's effects on hydrology would result in local, long-term, minor, beneficial effects from construction of drainage crossings, road surface and bank stabilization, and road widening at Burr Canyon and along Sandy Creek.

The effects on natural floodplain functions would be the same as Alternative A.

All action alternatives include short-term effects on water resources generated by construction activities. Disturbance increases the likelihood of erosion and sediment delivery to channels and streams. For all proposed actions associated with Alternative B except the Burr Canyon channel realignment at Halls Creek, the effects to local hydrology would be adverse, short-term, and negligible to minor. Larger scale excavation and slope protection needed to complete the confluence realignment would likely generate long-term, moderate changes in sediment release at the site. All actions would include implementation of appropriate mitigation, as described for surface water, hydrology, and soil resources in the "Mitigating Measures" section.

Cumulative Effects. Cumulative effects would be similar to those for Alternative A.

Conclusion. Under Alternative B, negligible to minor, long-term beneficial effects to hydrology and floodplains would occur. Bank stabilization would result in minor beneficial effects of reduced erosion of the bank, accompanied by the minor adverse effects of potential erosion of the downstream channel caused by narrowing the channel. Realignment of the Burr Canyon drainage would produce short- and long-term, moderate adverse effects to hydrology resulting from manipulation of natural channel-forming processes and the potential for substantial quantities of sediment production. Short-term adverse effects resulting from construction activities would be negligible to minor and local. Overall, Alternative B would produce minor, beneficial effects on hydrology and the floodplain. Cumulative effects to surface water, hydrology and floodplain would be negligible.

Because there would be no major adverse impacts to water-related resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The effects of Alternative C on hydrology and floodplains would be similar to those of Alternative B. Although there would be less potential for erosion because the culverts would allow the 50-year storm event to pass without overtopping the road, rather than the 25-year event as in Alternative B, the difference between the alternatives would not change the magnitude of the impacts.

Cumulative Effects. Cumulative effects would be similar to those for Alternative A.

Conclusion. The impacts to hydrology and floodplains would be the same as those for Alternative B.

Because there would be no major adverse impacts to water-related resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

NATURAL SOUNDSCAPES

METHODOLOGY

Natural soundscapes of parks include silence, solitude, and tranquility along with the sounds of the natural environment such as birds, water, and wind. Internal and external development pressures are making it increasingly difficult for National Park Service units to maintain natural soundscapes. Changes in recreational opportunities and visitor transportation create increased noise affecting visitor experience.

The evaluation of soundscape impacts associated with the proposed action considered noise context and time factors, including duration and frequency of occurrence. These factors, and the presence of a receptor, interact to determine the degree of impact to the soundscape for an activity. Potential receptors include people and wildlife. The effects of sound on wildlife (as an element that contributes to disturbance) are addressed in the wildlife section.

Context

The natural soundscape can be defined as the natural ambient sound level of a park: “It is comprised of the natural sound conditions in a park which exist in the absence of any human-produced noises. These conditions are actually composed of many natural sounds, near and far, which often are heard as a composite, not individually” (NPS 2000a). Noise, an element that can degrade the natural soundscape, is defined as “unwanted or undesired sound, often unpleasant in quality, intensity or repetition. . . . In a national park setting, noise is a subset of human-made noises” (NPS 2000a). Because the proposed action would occur within the dirt, all-weather, two-wheel-drive road corridor zone (NPS2001c), vehicle noise is inherently acceptable in this zone. Thus, the context that the assessment of effects to the soundscape considers is the ambient natural soundscape plus occasional vehicle noise.

Visitor experiences that are most likely to be adversely affected by noise are the opportunities to experience solitude and the park's natural soundscape. Visitor sensitivity to noise varies and is principally based on the experience being sought by visitors and their activity when exposed to noise.

The road corridor and semi-primitive zones are the areas considered in this noise impact analysis. While vehicle and motorized noise are regularly expected in the road corridor zone, the visitor to the semi-primitive zone can expect only occasional exposure to vehicle and equipment-generated noise (NPS 2001c).

Time Factors

The time of day or time of year influences the impact a given noise would have because these factors are related to the number of potential receptors. The greatest number of receptors that could be affected by noise would be present in the summer daytime hours, as

use of the Burr Trail peaks in early and late summer (refer to Table 6 in the Affected Environment section describing soundscape) (NPS 2002d).

Duration and frequency of occurrence of a noise affect the impact that the noise would produce. For example, vehicle noise in the road corridor zone is relatively infrequent, and the noise would last only as long as it takes for the vehicle to pass into and out of hearing range. In the lightly used semi-primitive zone adjoining the road corridor zone around the proposed action sites, the intermittent noise of passing vehicles would have a greater effect on the soundscape than the same noise in the road corridor zone. These factors were addressed qualitatively in the impact analysis. The vast majority of Capitol Reef National Park visitors experience the road modification sites from within their vehicles. This attenuates the noise effects on these receptors; the relatively rapid passage of a vehicle through the road modification areas would minimize the duration of exposure to construction noise.

IMPACT THRESHOLD DEFINITIONS

Primary steps for assessing impacts would include 1) identifying existing activities that may be affected by noise from the road, 2) determining the average daily traffic counts for the Burr Trail and the design speed, and 3) identifying the number of vehicles, existing traffic noise levels and predicted traffic noise levels, and impacts or potential areas where noise concentrations and effects on other visitors may be of concern.

Impacts would be evaluated using these thresholds:

- *Negligible*: Natural sounds predominate. Human-caused noise is rarely audible at 100 feet or more from the noise source. When noise is present, it is at very low levels and occurs only for short durations in most of the area. Visitors almost always have the opportunity to experience the natural soundscape free from human-caused noise.
- *Minor*: Natural sounds usually predominate. Human-caused noise is present only infrequently and occurs only at low levels and for short durations in most of the area. Visitors have the opportunity to experience the natural soundscape free from human-caused noise most of the time in most of the area. Human-caused noise is rarely audible between sunset and sunrise at 100 feet or more from the noise source.
- *Moderate*: Human-caused noise is present infrequently to occasionally, at low to medium levels and durations. Human-caused noise at low or medium levels and durations is often present and human-caused noise is occasionally audible between sunset and sunrise at 100 feet or more from the noise source.
- *Major*: Natural sounds commonly are masked by human-caused noise at low or greater levels for extended periods of time. Human-caused noise can be experienced within a half-mile of the source at medium levels and durations, and noise levels in these areas occasionally are high. More than a mile from the source, the natural soundscape free from human-caused noise can be experienced less than half the time during the day. Human-caused noise is frequently audible between sunset and sunrise at 100 feet from the noise source.

- *Duration:* Short -term – Effects would last no longer than one year. Long -term – Effects would last more than one year.

Geographic Area Evaluated for Impacts. The areas analyzed for possible impacts on the natural soundscape include the road corridor and semi-primitive zones. The lightly used semi-primitive zone areas adjoining the road corridor zone around the proposed action sites are included in the impact analysis area. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

The fundamental mission of the national park system, established by law (16 *United States Code* *et seq.*), is to conserve park natural and historic resources and to provide for the enjoyment of park resources only to the extent that the resources will be left unimpaired for the enjoyment of future generations. As described in Section 1.4.6 of *Management Policies 2001* (NPS 2000b), natural soundscapes are recognized and valued as a park resource in keeping with the National Park Service mission. Other pertinent regulations and policies related to soundscape include:

- *Management Policies 2001* (NPS 2000b), which states, "The National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks. Natural soundscapes exist in the absence of human-caused sound. The natural soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive, and can be transmitted through air, water, or solid materials."
- *Director's Order -47: Soundscape Preservation and Noise Management* (NPS 2000a), which states that the natural ambient sound level of a park is the basis for determining the affected environment in environmental impact statements and other documents prepared for compliance with the National Environmental Policy Act.
- Noise Control Act of 1972, which addresses the potential effects of aircraft overflights.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. The No Action Alternative would continue to affect the natural soundscape as a result of the noise introduced by vehicles on the Burr Trail. This effect would represent a negligible, short-term, local, adverse impact to the soundscape because the Burr Trail is in the road corridor zone (NPS 2001c), where, by definition, vehicle noise of short duration would be considered acceptable. However, the No Action Alternative would not improve the Burr Trail drainage crossings. As a result, flash floods would likely continue to damage the road and repairs would be required on a recurring basis. These repairs would require the use of large motorized construction equipment that would introduce substantial noise. This noise would have a short-term (although recurrent, depending on the frequency of damaging flash floods), local, minor, adverse effect on the natural soundscape in the road corridor zone each time repairs were needed. Receptors in the adjacent semi-primitive zone

may experience moderate adverse soundscape effects because the natural soundscape would be a standard expectation in that zone.

Cumulative Effects. The No Action Alternative would continue to implement current management plans and directions and would contribute cumulative effects on the natural soundscape as a result of the likely need for road and drainage crossing repairs. Occasionally, large recreation vehicles, trailered boats, road-hauling maintenance or oil and gas equipment vehicles, or cattle trailing activities would generate local, negligible, adverse noise impacts. The visitor would expect to hear vehicle and motorized noise when traveling the road corridor. Few if any of the other plans and projects would affect the soundscape in the areas that would be affected by the road modifications; thus, the occasional vehicle traffic and the current road maintenance activities would create the primary impacts to the natural soundscape. Future increased traffic on the Burr Trail associated with development of Bullfrog Marina and other adjacent lands would affect the natural soundscape but would not contribute measurably to ongoing cumulative effects in the region. Cumulative adverse impacts to the natural soundscape would be negligible.

Conclusion. The No Action Alternative would have a short-term, local, negligible to minor, adverse effect on the natural soundscape, with the minor effects related to the frequency of road-damaging floods and the zone where the sound receptor would be located. Cumulative adverse impacts to the natural soundscape would be negligible.

Because there would be no major adverse impacts to natural soundscape resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE A (PREFERRED ALTERNATIVE)

Impact Analysis. Alternative A, like the No Action Alternative, would have short-term, negligible, local adverse effects on the natural soundscape as a result of noises introduced by vehicles that pass along the Burr Trail. There would be no permanent or long-term change in the average daily traffic volume along the road associated with Alternative A, although there may be a very small, short-term increase of traffic associated with construction workers accessing the road modification work sites. This potential short-term effect would also be negligible.

Alternative A would have a local, minor to moderate, adverse effect on the natural soundscape in the short-term while the road modifications were being constructed. The operation of large machinery would create noise during daytime working hours for a total of several months during construction of the road modifications. However, in the long-term, when the modifications are complete, these actions would represent a beneficial effect on the natural soundscape as compared to the No Action Alternative because the frequency of road-damaging floods that would require repair would decrease use of construction machinery. The minor to moderate range of adverse effects would depend on the location of the receptor (i.e., in the road corridor or semi-primitive zone), whether in a vehicle or using

a mode of transportation from which sounds are more easily perceived (e.g., walking or on horseback), and the duration of the receptor in the audible noise range of construction.

Cumulative Impacts. During construction, Alternative A, would contribute most, if not all, of the adverse effects to the natural soundscape in the vicinity of the road modification locations, because other plans and projects being considered would not affect the natural soundscape in the project area. A visitor would expect to hear vehicle and motorized noise when traveling the road corridor. Developments in other parts of the park or increased use of the Burr Trail associated with future development of Bullfrog Marina and other adjacent lands may have local adverse effects on the natural soundscape in those areas. There is potential that a person could experience construction noise at multiple locations in the park, but the adverse cumulative effects on the natural soundscape would be negligible, considering the overall long-term beneficial effects of Alternative A.

Conclusion. Effects associated with Alternative A would be short-term, negligible, minor to moderate, and adverse as a result of vehicles passing along the Burr Trail and the road modification construction noise, respectively. Ultimately, this alternative would result in a beneficial effect to the natural soundscape, as recurrent repairs and the introduction of noisy construction equipment would be reduced. Cumulative effects on the natural soundscape would be negligible.

Because there would be no major adverse impacts to natural soundscape resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Alternative B would involve less vehicle slowing, stopping, and idling at drainages as vehicles easily cross culverts under most types of weather conditions. More cars would be able to pass over culverts more frequently at slightly higher speeds. Vehicle speed would be more uniform, resulting in negligible, local, short-term, beneficial effects to the natural soundscape. Other effects would be the same as Alternative A.

Cumulative Impacts. Cumulative effects would be the same as described for Alternative A.

Conclusion. Like Alternative A, adverse effects associated with Alternative B would be short-term, negligible and minor to moderate, as a result of vehicles passing along the Burr Trail and the road modification construction noise, respectively. Ultimately, this alternative (as compared to the No Action Alternative) would result in a beneficial effect to the natural soundscape, as recurrent repairs and the commensurate introduction of noisy construction equipment would be reduced. Cumulative effects on the natural soundscape would be negligible.

Because there would be no major adverse impacts to natural soundscape resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legis-

lation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The effects of Alternative C would be the same as those identified for Alternative B.

Cumulative Impacts. Cumulative effects would be the same as described for Alternatives A and B.

Conclusion. Like Alternatives A and B, adverse effects associated with Alternative C would be negligible and minor to moderate as a result of vehicles passing along the Burr Trail and the road modification construction noise, respectively. Ultimately, this alternative (as compared to the No Action Alternative) would result in a beneficial effect to the natural soundscape as recurrent repairs and the commensurate introduction of noisy construction equipment would be reduced. Cumulative effects on the natural soundscape would be negligible.

Because there would be no major adverse impacts to natural soundscape resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

CULTURAL RESOURCES

GENERAL METHODOLOGY

Cultural resources typically are understood to include archeological sites, buildings, structures, districts, landscapes, and objects, along with ethnographic sites and landscapes, as defined in the National Historic Preservation Act. The National Historic Preservation Act and its implementing regulations provide guidance for deciding whether cultural resources are of sufficient importance to be determined eligible for listing on the National Register of Historic Places. Historic properties (i.e., archeological, landscape, and ethnographic resources) determined to be eligible for listing in the National Register of Historic Places must be associated with an important historic context; that is, possess significance – the meaning or value ascribed to the item – and have integrity of those features necessary to convey its significance – namely its location, design, setting, workmanship, materials, feeling, and association.

Impacts to cultural resources are described in terms of type, context, duration, and intensity, consistent with the regulations of the Council on Environmental Quality (CEQ 1978) that implement the National Environmental Policy Act. These impact analyses also are intended to comply with the requirements of both the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 CFR Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by:

- Determining the area of potential effects;
- Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;
- Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and
- Considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

Council on Environmental Quality regulations (CEQ 1978) and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001b) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential effect, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact by mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 and is an assessment of the effect of implementing the alternative on cultural resources, based on the criteria of effect and adverse effect found in the Advisory Council's regulations.

Geographic Area Evaluated for Impacts. The geographic area that was evaluated for impacts to cultural resources (the area of potential effect) extends 40 meters on either side of the road and the area(s) proposed for channel realignment. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the "Cumulative Analysis" section.

ETHNOGRAPHIC RESOURCES METHODOLOGY

For ease of discussion for this final environmental impact statement, the term "ethnographic resources" includes potential ethnographic landscapes and places, traditional cultural properties, and Native American concerns. Ethnographic resources are those cultural and natural resources to which park-associated American Indian communities ascribe cultural significance and which continue to play a role in a community's identity and way of life. Only members of the communities to whom the resources hold cultural value can determine ethnographic resources and potential impacts to them.

Ethnographic resources are a class of cultural resource specifically addressed in the 1992 amendments to the National Historic Preservation Act. Traditional cultural properties or places are places of special heritage value to contemporary communities (often, but not necessarily, Native American groups) because of their association with the cultural practices or beliefs rooted in the histories of those communities. Thus, they are important in maintaining the communities' cultural identities.

The National Park Service recognizes four categories of cultural landscapes: historic designated landscapes, historic vernacular landscapes, ethnographic landscapes, and historic sites. Ethnographic landscapes represent a complex subset of cultural landscapes within a discrete geographic area. Their natural and cultural elements reflect human adaptation and resource use, and may be expressed in a variety of ways, such as patterns of settlement or land use, locales of plants and minerals, or areas of religious significance. Ethnographic landscapes associated with contemporary groups typically are used or valued in traditional ways and illustrate the strong interrelationship between the dynamic natural resources of the region and cultural groups through many generations.

ENVIRONMENTAL CONSEQUENCES

Within traditional societies, religious beliefs are closely tied to the land and its natural resources. Mountains, streams, geologic features, and plants and animals all may form important components of traditional belief systems. Thus changes in the character of valued natural features may impact traditional societies. Because the ethnographic resources identified by the tribes are important in each tribe's history, and because the resources are interconnected with places and resources located throughout customary tribal lands, any impacts to ethnographic resources would be regional in scope.

In addition, because ethnographic resources are tied to communities' cultural identities, effects to the resources also have an effect on the communities to which they are tied in perpetuity. Therefore, the duration of impacts to ethnographic resources is long-term. Any adverse impacts to ethnographic resources would be readily apparent to the tribes to whom the resources hold cultural significance, and in most cases, because impacts to these resources affect cultural identity and ways of life, most impacts, whether positive or adverse, would be moderate.

Although no cultural landscapes or traditional cultural properties (TCPs) have been formally defined for the Burr Trail, the spectacular viewsheds that lie between the Burr Trail and the Henry Mountains have religious significance to American Indian tribes and contain plant species and minerals important to these groups. For these reasons, when discussing possible project impacts, the road corridor and surrounding areas will be considered a potential ethnographic landscape, and discussions of the ethnographic resources and landscapes will be combined in the impact analysis sections of this document.

During the previous planning phases conducted in 1993, extensive discussions were held with potentially affiliated American Indian tribes to identify possible ethnographic resources. Three surveys of the Boulder-to-Bullfrog Road were conducted to acquaint the American Indian tribes with the project area, and two ethnographic resource inventory and assessment reports were completed (NPS 1996b, 1996c).

No discrete resources were identified as traditional cultural properties within the area of potential effect for this project. However, tribal consultants asserted cultural ties to the area, ascribed religious significance to the entire viewshed between the Burr Trail and the Henry Mountains and beyond, and identified plant species and minerals traditionally used by their peoples. They also considered all archeological resources to be ethnographic properties. Tribal consultants generally preferred that road modifications to the Burr Trail be kept to a minimum. See the "Consultation and Coordination" section of this final environmental impact statement for a list of tribes affiliated with the park.

For purposes of analyzing potential impacts to ethnographic resources and landscapes, the thresholds of change for the intensity of an impact are defined below. Impacts would be evaluated using these thresholds:

- *Negligible:* Impacts would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of beliefs and practices. There would be no change to a group's body of beliefs and practices. For purposes of Section 106, the de-

termination of effect on Traditional Cultural Properties (TCPs) would be *no adverse effect*.

- *Minor:* Adverse impact – impacts would be slight but noticeable and would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group’s body of beliefs and practices. For purposes of Section 106, the determination of effect on TCPs would be *no adverse effect*. Beneficial impact – would allow traditional access and/or accommodate a group’s traditional practices or beliefs. For purposes of Section 106, the determination of effect on TCPs would be *no adverse effect*.
- *Moderate:* Adverse impact – impacts would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group’s beliefs and practices, even though the group’s beliefs and practices would survive. For purposes of Section 106, the determination of effect on TCPs would be *adverse effect*. Beneficial impact – would facilitate a group’s beliefs and practices. For purposes of Section 106, the determination of effect on TCPs would be *no adverse effect*.
- *Major:* Adverse impact – impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group’s body of beliefs and practices, to the extent that the survival of a group’s beliefs and/or practices would be jeopardized. For purposes of Section 106, the determination of effect on TCPs would be *adverse effect*. Beneficial impact – would *encourage* a group’s beliefs or practices. For purposes of Section 106, the determination of effect on TCPs would be *no adverse effect*.

REGULATIONS AND POLICY

The National Park Service’ primary interest in cultural sites stems from its responsibilities under the following legislation, regulations, guidelines, and agreements:

- *The National Park Service Act of August 25, 1916 (Public Law 64-235):* responsibility to conserve the natural and historic objects within parks unimpaired for the enjoyment of future generations.
- *Preservation Act (Public Law 89-665, as amended) and 36 CFR 800:* Federal agencies must take into account the effects of their undertakings on historic properties (including pre-historic resources); afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings; and consult with the public, the State Historic Preservation Officer (SHPO), and with Indian tribes, recognizing the government-to-government relationship between the Federal Government and tribes.
- *National Environmental Policy Act (NEPA) (Public Law 91-190):* this act and its implementing regulations direct the federal government to preserve important historic, cultural, and natural aspects of our national heritage. The public scoping process outlined in NEPA also helps meet the consultation goals of the National Historic Preservation Act.

ENVIRONMENTAL CONSEQUENCES

- *1995 Programmatic Agreement*: Section 106 compliance for this project also would be in accord with the terms of the 1995 programmatic agreement among the National Park Service, the Advisory Council on Historic Preservation, and National Conference of State Historic Preservation Officers.
- *American Indian Religious Freedom Act (Public Law 95-341)*: protects and preserves the right of American Indians to pursue traditional religious activities, including access to sites, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.
- *Archeological Resources Protection Act (Public Law 96-95)*: responsibility to secure, for the present and future benefit of the American people, the protection of archeological resources and sites that are on public lands.
- *Executive Order 13007*: responsibility to 1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and 2) avoid adversely affecting the physical integrity of such sacred sites.
- *Presidential Memorandum of April 29, 1994, on Government-to-Government Relations with Tribal Governments*: responsibility to consult with tribal governments prior to taking actions that affect federally recognized tribal governments (e.g., regarding National Park Service planning, management, and operational decisions that may affect subsistence activities, sacred materials or places, or other ethnographic resources with which tribes are historically associated).
- *Cultural Resource Management Guideline (DO-28) and National Park Service Management Policies*: require the National Park Service to carefully consider the effects that National Park Service actions may have on cultural resources.
- *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*: responsibility to protect the qualities of historic properties that contribute to their listing or eligibility for listing on the National Register of Historic Places.

IMPACT OF THE NO ACTION ALTERNATIVE

Impact Analysis. Under this alternative, no modifications in width, surfacing, drainage, or bank stabilization of the Burr Trail would occur, and the road would continue to be maintained as described in the park's general management plan (NPS 2001c) to provide for safe travel.

Increased tourism and use of recreational vehicles and four-wheel drive vehicles have necessitated a number of changes in regional transportation routes, including road widening, paving, road cuts, curve straightening, new bridges, etc. Over the past half century, character-defining elements of the Burr Trail have been so altered that the historic trail has been deemed ineligible for the National Register of Historic Places.

Implementation of the No Action Alternative would have no new impacts on ethnographic resources, including landscapes.

Cumulative Impacts. Regionally ethnographic resources continue to be destroyed by construction, development, and vandalism. These resources are non-renewable, so over time, loss of cultural sites within and outside the park would cumulatively diminish the regional resource base. These losses would, in turn, reduce the number and variety of ethnographic sites and landscapes valued by tribes. The No Action Alternative would not change the intensity or duration of damage occurring to ethnographic sites, either within the park or regionally. So when impacts of the No Action Alternative are combined with other past, present, and foreseeable future activities and processes affecting ethnographic resources, no new adverse cumulative effects on ethnographic resources (including landscapes) would be anticipated; therefore, cumulative effects would be negligible.

Conclusion. No new adverse impacts on ethnographic resources or ethnographic landscapes would be anticipated under the No Action Alternative. Cumulative effects to ethnographic resources (including landscapes) would be negligible.

Because there would be no major adverse impacts to cultural, archeological, ethnographic resources and ethnographic landscapes, historic resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Section 106. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of the No Action Alternative would have *no adverse effect* on the ethnographic resources within the project area of potential effect.

ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Under Alternative A, road surfaces containing bentonite clay between mile point 0.00 and 0.45 and 0.85 and 0.90 would be excavated down to one-foot and a gravel base installed over geotextile fabric. This excavation would not affect known cultural resources. Stop-work provisions would be included in work plans in the unlikely event that buried cultural or paleontological resources are encountered during these excavations.

The overhanging rock would not be altered, and there are no known archeological or historic sites eligible for the National Register of Historic Places in this area. The historic Pector inscription, adjacent to the road a short distance from the overhang, is not considered an archeological site, and is not eligible for the register. It would remain undisturbed under this alternative. These changes would have only negligible effects on ethnographic resources due to the limited extent of the work.

Slope protection would be added to the road banks between mile points 0.75 and 0.85. Installation of the slope protection would change the visual impression of the stream, and could increase stream channel scouring, possibly causing minor adverse effects on potential ethnographic resources, including landscapes.

ENVIRONMENTAL CONSEQUENCES

The paved fords to be installed at mile points 0.10, 0.20, 0.50, and 0.60 and the culverts to be installed at the minor drainage crossings would result in negligible adverse effects to ethnographic resources.

A vented paved ford would be installed at the Halls Creek crossing. Slope protection associated with this structure would extend up and downstream of the crossing. The roadway would be shifted slightly to the south (i.e., downstream) to accommodate combined flows below the confluence of Halls Creek and the Burr Canyon drainage. Ethnographic resources could be affected by these activities in a negligible, adverse manner. Installation of three metal pipe culverts with slope stabilization below the culvert outlet in the upper Burr Canyon side drainage would not affect any known cultural resources.

Most Native Americans value archeological sites and artifacts as important ethnographic resources. A prehistoric pictograph (42GA1444) is located near the roadway but outside of the area of potential effect. Physical barriers would be installed to protect the site, and construction crews would be briefed on its presence, importance, and the need for protection. An archeologist meeting the Secretary of the Interior's Standards would monitor construction in this area to ensure the site remains undisturbed. These mitigation measures would help protect the site's ethnographic values, resulting in negligible adverse impacts on an ethnographic resource.

Most of the changes proposed in this alternative are relatively modest, would disturb only minimal amounts of native vegetation or mineral resources, and would be confined to the existing road corridor and the channel inlet recontour area. Thus, most of the adverse impacts on ethnographic resources (including potential ethnographic landscapes) would be minor and local. Minor, adverse effects on the potential ethnographic landscape would be long term because of the changes in topography and because revegetation of native plants would be hampered by the extreme aridity of this region.

Installation of a cattle guard at the park boundary would have no effect on any cultural resources.

Cumulative Effects. Regionally, ethnographic sites continue to be destroyed by construction, development, and vandalism. Cultural resources are non-renewable, so over time, loss of resources within and outside the park would cumulatively diminish the regional resource base.

Increased tourism and use of recreational vehicles and four-wheel drive vehicles have necessitated a number of changes in regional transportation routes, including road widening, paving, road cuts, curve straightening, new bridges, etc. Over the past half century, character-defining elements of the Burr Trail have been so altered that the historic trail has been deemed ineligible for the National Register of Historic Places.

All of these changes also combine to diminish natural elements of the potential ethnographic landscape (landforms, plants, etc.). When impacts of Alternative A (including recontouring of the Burr Canyon drainage channel) are combined with these other past, present, and foreseeable future activities and processes affecting ethnographic resources, the resulting cumulative impacts would be moderate and adverse. However, the proposed pro-

ject work is local and generally located along a previously developed road corridor, so implementation of this alternative would not contribute measurably to ongoing cumulative effects in the broader region (i.e., only a negligible effect regionally).

Conclusion. Adverse impacts on ethnographic resources from road and bank stabilization and construction of channel crossings would be negligible, including potential ethnographic landscapes. Cumulative effects to ethnographic resources (including landscapes) would be negligible.

Because there would be no major adverse impacts to cultural, archeological, ethnographic and ethnographic landscapes, historic resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Section 106. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of Alternative A (the preferred alternative) would have *no adverse effect* on the ethnographic resources within the project area of potential effect.

IMPACT OF ALTERNATIVE B

Impact Analysis. Cultural resource impacts of gravel overlays between mile points 0.00 and 0.45 and 0.85 and 0.90, and slope protection between mile points 0.75 and 0.85 would be much the same as described for Alternative A.

Project work near mile point 0.65 would involve removing the overhanging rock and re-routing the road to the north to avoid affecting the Sandy Creek channel. Removal of the overhanging rock would change the natural landscape along the road. These actions have the potential for moderate adverse effects on ethnographic resources, changing a familiar landform that may be valued by tribes. Removal of the rock could possibly contribute to loss of a nearby historic inscription. While this inscription is not eligible for the National Register, it may be of interest to visitors.

Under Alternative B, installation of corrugated metal pipe and associated slope protection upstream and downstream of the crossings at major and minor road drainages could have long-term, minor, adverse effects on the potential ethnographic landscape by addition of intrusive visual elements and disturbance of adjacent landforms. Impacts would include placement of slope protection material (e.g., concrete or rock), and temporary construction areas.

Resource impacts from construction work conducted at Halls Crossing would be adverse, long-term, and minor to moderate as a result of the realignment of the Burr Canyon drainage at the Halls Creek crossing. Vehicle access (new two-track roads) also might be necessary between the old and new channels to allow transfer of rocks and soil from one to the other. Adverse impacts on the potential ethnographic landscape could range from minor to moderate, depending upon the amount of change in landforms and whether traditionally valued plants or mineral resources are lost.

ENVIRONMENTAL CONSEQUENCES

Resource impacts from work at the Burr Canyon side drainage crossing would be the same as described for Alternative A.

Installation of a cattle guard at the park boundary would have no effect on any cultural resources.

Cumulative Impacts. Cumulative impacts for Alternative B would be much the same as for Alternative A, with two exceptions. Removal of the overhanging rock would destroy a familiar geological feature, permanently changing the character of the landscape in this area, and the Burr Canyon drainage would be realigned upstream of its confluence with Halls Creek. These changes would contribute adversely to the cumulative impacts of other past, ongoing, and future construction work in the region. However a relatively small area would be affected; thus, implementation of Alternative B would contribute incrementally to ongoing cumulative effects, and these cumulative effects would be minor.

Conclusion. Adverse impacts of the road surface, road bank stabilization, channel realignment, and removal of the overhanging rock could have minor to moderate, local, long-term, adverse impacts on ethnographic resources, including potential ethnographic landscapes. Cumulative effects to ethnographic resources (including landscapes) would be minor.

Because there would be no major adverse impacts to cultural, archeological, ethnographic and ethnographic landscapes, historic resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Section 106. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of Alternative B would have an *adverse effect* on the ethnographic landscape from removal of the overhanging rock and realignment of the Burr Canyon drainage channel.

IMPACTS OF ALTERNATIVE C

Impact Analysis. Impacts of road resurfacing, road bank stabilization, removal of the overhanging rock, installation of culverts at the major, minor, and Halls Creek crossings and modifications at the upper Burr Canyon side drainage would be the same as described for Alternative B.

Cumulative Impacts. Cumulative impacts would be much the same as for Alternative B. A familiar landform (the overhanging rock) would be permanently altered. The impacts would contribute adversely to the cumulative impacts of other past, ongoing, and future construction work in the region. Cumulative effects would be minor because of the limited nature of the project along an established roadway.

Conclusion. Road bank stabilization, removal of the overhanging rock, installation of culverts at the major, minor, and Halls Creek crossings, realignment of the Burr canyon chan-

nel, and modifications to the Burr Canyon side drainage would have minor to moderate adverse impacts on the potential cultural landscape. Cumulative effects to ethnographic resources (including landscapes) would be minor.

Because there would be no major adverse impacts to cultural resources or values whose conservation is 1) necessary to fulfill purposes identified in the established legislation or proclamation of Capitol Reef National Park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Section 106. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of Alternative C would have an *adverse effect* on the ethnographic landscape from alteration of the overhanging rock and other landform changes.

SECTION 106 SUMMARY

This final environmental impact statement provides detailed descriptions of four alternatives (including a No Action Alternative) and analyzes the potential impacts associated with possible implementation of each alternative.

Mitigating measures would be employed to reduce potential impacts on cultural resources. Use of locally obtained native gravels and rock that are the same color and general texture as the road surroundings would help reduce visual impacts on the landscape. Work limits would be established to protect vulnerable resources listed on or potentially eligible for the National Register. The park would continue to actively work with tribes to protect ethnographic resources and privacy for traditional activities. An archeologist meeting the Secretary of the Interior's Standards would monitor construction in work areas near historic properties, and construction workers and highway crews would be informed regarding the protocol for notification procedures and protecting resources should presently unknown resources be uncovered.

If it is determined that there is potential for adverse impacts to cultural resources listed on or eligible for listing on the National Register of Historic Places, the National Park Service would coordinate with the Utah State Historic Preservation Officer to determine the level of effect to the property and to determine what mitigation measures would be needed.

The park staff would continue to educate visitors regarding archeological and ethnographic site etiquette to provide long-term protection for surface artifacts, features, and traditional activities.

Concerned Native American tribes will receive copies of the final environmental impact statement. This final environmental impact statement also will be sent to the Utah State Historic Preservation Officer and to the Advisory Council on Historic Preservation as part of the Section 106 compliance.

ENVIRONMENTAL CONSEQUENCES

Pursuant to 36 CFR Part 800.5, implementing regulations of the National Historic Preservation Act (revised regulations effective January 2001), addressing the criteria of effect and adverse effect, the National Park Service finds that the implementation of Alternative A in Capitol Reef National Park, with identified mitigation measures, would not result in any new adverse effects (*no adverse effect*) to archeological, historic, ethnographic, or cultural landscape resources currently identified as eligible for or listed on the National Register of Historic Places.

PUBLIC HEALTH AND SAFETY

METHODOLOGY

The National Park Service must ensure that visitor and employee safety and health are protected, and is committed to providing a safe environment for the public. This includes ensuring that there would be no conditions that would create an unsafe or unhealthful environment for the public, visitors, or employees, or interfere with the public health and safety. To evaluate public health and safety, traffic count and vehicle accident data for the Burr Trail were used and compared with previous vehicle use patterns and safety data on the Burr Trail. This data indicated whether vehicle safety and traffic along the Burr Trail has been stable over time. A proportion of traffic count data may be attributed to in-county travel, pass-through travel, or travel from one federally managed area to another; therefore, an assumption was used to determine the number of pass-through trips per day. Traffic count data was compared to other traffic count data and park visitor data to determine if there would be increasing, decreasing, or relatively consistent use of the Burr Trail. Based on the data, an evaluation was made about visitor use and safety of the Burr Trail in the future.

To determine impacts of the road modifications on public health and safety, other vehicles and public activities that are proposed in vicinity of the road were identified from park staff, state of Utah and Garfield County representatives, the park's general management plan (NPS 1998c), and the Garfield County General Plan (Five County Association of Governments 1995). Primary steps for assessing impacts included identifying 1) whether the safety-defining features of the road, including speed limits and curve radii, would be retained, 2) visual safety (i.e., safe lines of sight) along the road would be maintained, and 3) if the modifications would be sufficient to maintain adequate public transportation and passage on the road.

Impacts would be evaluated using these thresholds:

- *Negligible*: Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on the public health or safety.
- *Minor*: The effect would be detectable and would likely be short-term, but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and would likely be successful.
- *Moderate*: The effects would be readily apparent and long-term, and would result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.
- *Major*: The effects would be readily apparent and long-term, and would result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed.

ENVIRONMENTAL CONSEQUENCES

- *Duration:* Short-term – Effects last one year or less. Long-term - Effects last longer than one year.

Geographic Area Evaluated for Impacts. The geographic area that was evaluated for public health and safety included the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. The area of analysis includes the Burr Canyon drainage and Halls Creek drainage channel and the area(s) proposed for channel relocation. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

Park staff are charged with providing a safe environment as well as opportunities for park enjoyment. National Park Service *Management Policies 2001* (Section 8.2.5.1) (2000b) states that the National Park Service "will seek to provide a safe and healthful environment for visitors and employees. The Service will work cooperatively with other federal, tribal, state, and local agencies, organizations, and individuals to carry out this responsibility. The Service will strive to identify recognizable threats to the safety and health of persons and to the protection of property by applying nationally accepted codes, standards, engineering principles, and the guidance contained in DO-50, DO-58, and DO-83 and their associated reference manuals." Further, the National Park Service will strive to protect human life and provide for injury-free visits (Section 8.2.5.1) (NPS 2000b).

State of Utah regulations related to public health and safety and transportation include the 2004 Standards and Specifications (UDOT 2004), which provides engineering and design data to specifically address public health and safety on roadways.

The Garfield County General Plan (Five County Association of Governments 1995) provides guidance regarding road maintenance and associated public health and safety.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. Under the No Action Alternative, visitors unfamiliar with the rough and hilly terrain of the Burr Trail may occasionally experience difficulty driving. Road sections comprised of clay are hazardous when wet. These sections of the road can become impassable, and there are reports of visitors staying overnight in their vehicles awaiting drier conditions (NPS, Kehrer, 2002i). Vehicle travel at the overhanging rock is restricted to one-lane, and two approaching vehicles may cause traffic conflicts leading to possible accidents. Halls Creek is marked as a flood hazard area, and flash flooding at Halls Creek occasionally makes it unsafe for vehicle passage. Under the No Action Alternative, unsafe driving conditions would not be remedied. Persistence of these conditions would produce both short- and long-term, adverse effects to public health and safety of minor intensity.

Cumulative Effects. Outside the park boundaries, the Burr Trail and other county roads have been improved. Paved portions of the Burr Trail east and west of the park and on the Notom Road along the eastern park boundary have stabilized road surfaces, which may reduce driving hazards and may reduce emergency response times in case of accidents. How-

ever, this also encourages slightly higher vehicle speeds on these rural roads prior to entering unpaved portions located in the park. Traffic volumes are higher in these areas due to denser settlement patterns, such as farms and the town of Torrey, and the presence of state highways. Visitors would expect to drive through rough and hilly terrain and experience occasional delays at drainage crossings on the Burr Trail during rainstorms. Although the effect cannot be measured, increased use, transport of oil and gas, trailing of cattle, and vehicles towing trailers or watercraft to public lands surrounding the park may contribute to accidents on the Burr Trail. Continuing the current design of the Burr Trail would have a negligible contribution to the cumulative effects of road improvements and road safety within the park and surrounding counties.

Conclusion. The No Action Alternative would neither reduce nor enhance public health and safety, resulting in negligible to minor, long-term adverse impacts to visitor health and safety. Cumulative impacts would be negligible.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Replacement of bentonite clay road surfaces with gravel, underlain by geotextile fabric, would improve wet road driving conditions. This would reduce the likelihood of travelers losing control of their vehicle on slippery road surfaces or being stranded waiting for drier conditions. Because of light travel volumes on the road, a reduction in accidents or delays may or may not be detectable and would produce negligible to minor benefits to public health and safety.

Widening the road while preserving the overhanging rock would create additional roadway surface, enabling two-way traffic to pass. The rock embankment would provide support for the roadway. These changes would likely produce negligible to minor beneficial improvements to public health and safety at this site.

Installation of paved fords at the major and minor drainages that cross the Burr Trail, including Halls Creek, would improve travel conditions when runoff is present in the drainages. Signs would alert visitors to potential hazards during periodic floods and provide a warning not to cross drainages when stormwater overtops the road. Modifying the major and minor drainage crossings would yield long-term, minor benefits to public health and safety.

Roadside delineators (reflectors) would be installed on the curve at the overhanging rock to mark the outside radius of the curve. This feature would have a minor beneficial effect on public health and safety as a result of safer driving conditions.

Negligible long-term benefits would result from installing a cattle guard and reducing the potential safety hazard of cattle on the road within the eastern boundary of the Park.

This alternative would provide minor beneficial improvements to public health and safety as compared to the No Action Alternative by widening the road and stabilizing the road and road drainage.

ENVIRONMENTAL CONSEQUENCES

Activities associated with construction of features of this alternative would result in short-term, adverse effects on public health and safety that would be local and negligible. Construction crews would use all appropriate traffic control measures, warning signs, and flagging to ensure that travelers experience safe passage through construction zones.

Cumulative Effects. Cumulative effects are the same as described for the No Action Alternative except for the following:

Alternative A would make a small beneficial contribution to travel safety within the park and surrounding counties, but these effects would likely be local and of negligible to minor intensity.

Conclusion. Alternative A would enhance public health and safety. The benefits would be negligible to minor. Short-term adverse effects on safety caused by construction activities would be negligible. When compared to the No Action Alternative, road widening and stabilization would provide minor benefits to public health and safety. Cumulative effects would be beneficial and of negligible to minor intensity.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Application of gravel to bentonite areas would improve wet road driving conditions. This would reduce the likelihood of travelers losing control of their vehicle on slippery road surfaces or being stranded to wait for drier conditions. However, without geotextile fabric beneath the gravel, the rate of gravel loss would be higher and the benefits more short lived than with fabric. Because of the light travel on the road during the storm season, a reduction in accidents or delays may or may not be detectable and would produce negligible benefits to public health and safety.

Removal of the overhanging rock would create additional space to realign and widen the road to allow two-way traffic conditions and increase visibility and sight distance at this site. This would likely produce negligible to minor, beneficial improvements to public health and safety at this site.

Changes to the major and minor drainages that cross the Burr Trail, including Halls Creek and the Burr Canyon side drainage crossing, would improve travel conditions during most storm events. Although no warning signs at crossings would be mandated, signage warning of the hazards associated with flash floods may be considered. Except in the most extreme storm events, crossings would be passable and safe for all vehicles. Improving water crossings up to the 25-year storm event would yield long-term, moderate benefits to public health and safety.

Negligible, long-term benefits would result from installing a cattle guard and reducing the potential safety hazard of cattle on the road within the eastern boundary of the Park.

This alternative would provide minor beneficial improvements to public health and safety as compared to the No Action Alternative by widening the road, increasing visibility and sight distance at the curve adjacent to the overhanging rock, and stabilizing the road and road drainage.

Activities associated with construction of features of this alternative would result in short-term adverse effects on public health and safety that would be local and negligible. Construction crews would use all appropriate traffic control measures, warning signs, and flagging to ensure that travelers experience safe passage through construction zones.

Cumulative Effects. Cumulative impacts are the same as described for the No Action Alternative and for Alternative A.

Conclusion. Public health and safety would be enhanced by implementation of Alternative B. The benefits would be negligible to minor. Improving drainage crossings so that travel would still be possible during storms less than the 25-year storm event would yield long-term, moderate benefits to public health and safety. Short-term effects to safety caused by construction activities would be negligible. Cumulative effects would be beneficial and negligible.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The effects of road surface stabilization, removal of the overhanging rock, drainage modifications at the Halls Creek and Burr Canyon side drainage crossings, and the installation of a cattle guard at the park boundary would be the same as for Alternative B.

Modification of major and minor Sandy Creek crossings on the Burr Trail would provide for the greatest increase in public health and safety. Except during storms that exceed the 50-year event, crossings would be passable and safe for all vehicles. This would result in only incremental safety enhancements over Alternative B and would yield local, long-term benefits of moderate intensity.

Activities associated with construction of features of this alternative would result in short-term adverse effects on public health and safety that would be local and negligible. Construction crews would use all appropriate traffic control measures, warning signs, and flagging to ensure that travelers experience safe passage through construction zones.

Cumulative Effects. Cumulative impacts are the same as described for the No Action Alternative except for the following:

The contribution of Alternative C to overall effects on public health and safety would likely produce detectable and minor cumulative benefits to public health and safety within the park by improving access over drainages and to surrounding counties through future road improvements.

Conclusion. Under Alternative C, public health and safety would be beneficially affected. The benefits would be negligible to moderate and would result from reduced flood hazard with culverts at drainage crossing, improved road surface stability with the installation of gravel on bentonite areas, and increased visibility and added room for 2-way traffic flow at the overhanging rock. Construction activities would result in negligible short-term effects to public health and safety. Cumulative effects would be beneficial and minor.

VISITOR USE AND EXPERIENCE

METHODOLOGY

The assessment of potential impacts to scenic resources was based on comparisons between the No Action Alternative and the three action alternatives. The effects of each alternative were evaluated by analyzing potential impacts on the physical component of the landscape and how the change may be experienced. Potential impacts to landscape views are determined by analyzing whether there would be improvement or degradation of the view. The underlying assumption is that natural appearing conditions are aesthetically pleasing, and that constructed facilities would decrease the amount of undeveloped area and the sense of naturalness.

Impacts on visitor experience may occur as a result of changes to park facilities and resources that contribute to the type and quality of the visit to Capitol Reef National Park. They may also occur from direct actions altering the availability of a specific experience or activity. Visitor use and experience are also directly affected by actions influencing natural resources, such as air quality, scenic resources, and cultural resources. Though impacts to these resources are not repeated in the analysis of visitor experience, enhancement or degradation of these resources also enhances or degrades the quality of the visitor experience.

Impacts on visitor experience have been assessed using professional judgment to develop a qualitative analysis of the effects of actions on the activities of different visitor populations. These conclusions have been considered in combination with data on the proportion, when known, of visitors who participate in different activities while in the park.

Visitation data for Capitol Reef National Park and traffic counts for the Burr Trail were used and compared with previous park visitation data. A proportion of traffic count data may be attributed to in-county travel, pass-through travel, or travel from one federally managed area to another. Based on the data, an assumption was made about visitor use and experience of the Burr Trail in the future.

To determine impacts of the road modifications to the visitor experience, other recreational activities and the type of visitor experience that is proposed in the vicinity of the road were identified from park staff and from the park's general management plan. Primary steps for assessing impacts would include identifying whether 1) the character-defining features of the road would be protected, 2) the visual quality of the natural landforms along the road would be maintained, and 3) the modifications would be sufficient to maintain the winding and adventuresome character of the road.

Impacts would be evaluated using these thresholds:

- *Negligible:* Visitors would not be affected or impacts to visitor use and experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.

- *Minor:* Impacts on visitor use and experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
- *Moderate:* Impacts on visitor use and experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.
- *Major:* Impacts on visitor use and experience would be readily apparent and have important consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.
- *Duration:* Short-term – occurs only during the road construction activities. Long-term – effects continue to occur after the road construction activities are complete.

Geographic Area Evaluated for Impacts. The geographic area that was evaluated for visitor use and experience included the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. The area of analysis includes the Burr Canyon drainage and Halls Creek drainage channel. Potential impacts to landscape views were determined by analyzing the immediate and surrounding landscapes as viewed from the Burr Trail corridor. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

The National Park Service *Management Policies 2001* state that the enjoyment of park resources and values is part of the fundamental purpose of all park units, and the National Park service is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks (NPS 2000b). The desired condition is for visitors to understand and appreciate park values and resources and to have the information necessary to adapt to park environments (NPS 2000b).

Capitol Reef National Park promotes resource stewardship, education, and visitor use management activities to provide tranquil, sustainable use and enjoyment of the park while simultaneously protecting these resources from degradation. Part of the significance of the park is that it provides a unique opportunity for visitors to experience remote geologic features of the area, views of the Waterpocket Fold, and other scenic views in the area while traveling the Burr Trail.

The visitor experiences that can be expected on the Burr Trail as defined in the park’s general management plan (NPS 2001c) include:

- A sense of remote lands exploration.
- Encounters with other visitors range from rare to occasional.
- Washboarded and dusty roads that traverse wash bottoms.

- Directional and interpretive signs, cattle guards, well-defined turnouts, trailhead parking, and picnicking.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. Under the No Action Alternative, visitors would continue to experience the Burr Trail in its current configuration. The route provides a remote and scenic experience of the landscape. The sparsely vegetated, rocky, hilly terrain; geologic features of the area; and views of the Waterpocket Fold and other dramatic formations are the focus of the visitor experience along the Burr Trail.

On average over a 12-hour visitor day, approximately two cars per hour travel the road (see “Soundscapes” for greater detail). This low use enhances the remote aspect of the experience afforded to visitors who make the trip along the Burr Trail.

Implementation of the No Action Alternative would preserve a valuable visitor experience that provides a sense of remote adventure. This represents a long-term, beneficial effect of moderate intensity for visitors who venture onto the trail.

The overhanging rock is a distinctive geologic feature of the park that frames the view of the Waterpocket Fold for visitors as they enter the park. The visual experience created by the rock in its context of the first view of the Waterpocket Fold results in minor benefits to visitor experience.

For many visitors, the primitive road conditions and crossing delays during floods add immeasurably to their experience. The slow nature of travel gives them time to contemplate natural processes and to appreciate the struggles of early pioneers in the area. A small portion of other visitors desire to experience the scenery and remoteness of this part of the park; however, rough roads and crossing delays during storm events present an inconvenience and detract from their experience. For these visitors, the current conditions would continue to present a long-term, minor to moderate, adverse effect.

Cumulative Effects. Within the region, several other national park units, national monuments, and resource conservation areas offer travelers the opportunity to experience remote reaches of canyon country on minimally improved roads. Regionally, retention of current conditions on the Burr Trail would have a negligible, beneficial cumulative effect on remote primitive driving opportunities.

Outside the park boundaries, the Burr Trail and other county roads have been paved or surfaces have been upgraded. Road surfaces have been paved on the Burr Trail west of the park and on the Notom Road along the eastern park boundary. These changes adversely affect the experience of some visitors by detracting from the rural nature of the setting and interfering with appreciation of the remote and scenic landscape. To others, road modifications provide an opportunity to venture into remote portions of the park that they might not otherwise visit. Continuing current visitor uses and experiences of the Burr Trail would have negligible, adverse and beneficial cumulative effects when combined with other road modifications and visitor experience opportunities in the park and within the county.

Conclusion. The No Action Alternative would produce long-term, minor to moderate beneficial and adverse effects on the visitor experience. The visitor's perspective with regard to experiencing remote areas or to maintain a predetermined travel schedule are examples of how the effects could range from beneficial to adverse. Cumulative effects on visitor experience would be negligible.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Excavation of the bentonite clay road surface and installation of gravel underlain by geotextile fabric would be unlikely to affect the visual character of the Burr Trail. Local gravel sources would be utilized, which would blend with the native components of the road surface. This action would have negligible, long-term, adverse effects to visitor experience related to visual aspects of the road. The more stable gravel and fabric road surface would improve driving conditions in the project area under wet conditions during and after storm events. Because roads leading to the project area are often impassable during storm events, a visitor's inconvenience would be displaced to another location; therefore, the benefit would be short-term and negligible.

Stream and road bank stabilization using a rock embankment at the overhanging rock and at the Burr Canyon side drainage, and slope protection further west on the road could adversely affect the visitor experience. Concentrations of rock used to stabilize road and stream banks would not appear as natural features when observed closely. Although the rock would be treated to blend with the surroundings as much as possible, it would still remain a noticeable unnatural feature. The result would be a long-term, negligible, adverse effect on the visitor experience.

Changes to the drainages that cross the Burr Trail, including Halls Creek, would introduce concrete surfaces to the roadway. These structures would be low profile, and include slope protection measures upstream and downstream in the drainage as needed to minimize bank erosion. Runoff from the drainages would flow over these paved fords, mimicking natural flow patterns. Many visitors would be accustomed to seeing alternations of drainages near roads, but installation of these paved fords would result in long-term, adverse effects to visitor experience of negligible to minor intensity for visitors who are sensitive to alterations to the natural landscape.

The side drainage crossing at Burr Canyon would receive treatments including installation of culverts beneath the road surface, widening the road, and a downslope rock embankment. These elements would alter the natural landscape, but would not likely be readily apparent to visitors traveling on the road. The terrain is rugged and the road and switchbacks are already noticeable features within the landscape. The road modifications would result in negligible adverse effects on the experience of visitors.

Shifting the roadway near the confluence of Halls Creek and the Burr Canyon drainage would alter the appearance of the stream channel and banks. This would minimally contrast with the existing conditions and the natural and remote nature of the Burr Trail. New visitors as well as travelers familiar with the area could be likely to note this condition, thus producing a long-term, negligible adverse effect on visitor experience.

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The construction of a new cattle guard, in conjunction with the boundary fence, would have minor, long-term, adverse effects on visitor use, as overall, improved conditions within the park would offset the additional development that the cattle guard would represent.

Each action alternative includes potential, short-term disruptions in traffic flow through the one-mile section during the period of construction. Travelers could expect short delays, reduced speeds, restricted lane usage, and one-way travel over portions of the road, temporary construction noise, and the presence of construction equipment. These conditions would persist through the several month construction period. Effects to visitor experience would be adverse, local, short-term, and minor.

Cumulative Effects. Cumulative impacts would be similar to those described for the No Action Alternative.

Conclusion. Alternative A would produce long-term adverse effects to the visitor experience by altering the natural terrain and introduction of additional engineered elements to the Burr Trail. These effects would be local, and of negligible to minor intensity. Short-term adverse effects on visitor experience would occur from construction activities, and these would be minor and limited to construction sites. Cumulative effects on visitor experience would be negligible and range from adverse to beneficial, depending on the visitor's expectations and perspective.

IMPACTS OF ALTERNATIVE B

Impact Analysis. The overhanging rock would be removed and the road realigned. This would remove an element that frames the view of the Waterpocket Fold for visitors as they enter the park. The unobstructed and impressive view of the Waterpocket Fold would continue to be present, however. Travelers familiar with the route would be likely to notice this change. Such changes would produce long-term, minor adverse effects to visitor experience at this location.

Stabilization of the road surface using gravel on those portions where bentonite clay is present would be unlikely to affect the visual character of the Burr Trail. Local gravel sources would be utilized, and material would blend with the native components of the road. This action would have negligible, long-term, adverse effects to visitor experience related to visual quality of the road. The more stable gravel road surface would improve travel during wet conditions so long as the gravel remained on the road (gravel without geotextile fabric may be displaced or become embedded in the substrate). This would result in minor, short-term benefits to travelers on the road at these times.

Road and stream bank stabilization along the road could adversely affect the visitor experience. Concentrations of rock used to stabilize slopes do not appear as natural features when observed closely. Although the rock would be treated to blend with the surroundings as much as possible, it would still remain a noticeable unnatural feature. The result would be a long-term, negligible to minor, adverse effect on the visitor experience.

Changes to the minor and major drainages that cross the Burr Trail, including Halls Creek, would introduce culverts beneath the roadway along with bank protection. The presence of

culverts would alter the nature of the road's association with the surrounding topography. Where the road currently flows with the land and drops and rises through drainages, the introduction of culverts would reduce the visitor's experience of an undulating road. Culverts would also reduce the visitor's awareness of the dramatic alterations to the landscape that have resulted from storms. The drainage modifications would reduce delays and stoppages during storm events resulting in minor, short-term benefits for travelers wanted to reach their destination without delay. However, the opportunity for visitors to fully understand the power of water in the desert landscape would be diminished; representing a long-term, negligible to minor, adverse effect.

Roadway and drainage modifications and effects at the Burr Canyon side drainage crossing, the impacts related to installation of a new cattle guard, and the effects of construction activities would be the same as Alternative A.

Cumulative Effects. Cumulative impacts would be similar to those described for the No Action Alternative except that the visual impact of driving over relatively large culvert crossings could adversely affect the visitor's perspective of the remoteness of the region. The cumulative effect would be negligible.

Conclusion. Alternative B would result in long-term adverse effects to the visitor experience by altering the natural terrain and introduction of additional engineered elements to the Burr Trail. These effects would be local and of negligible to minor intensity. Short-term adverse effects associated with construction would be as discussed for Alternative A. Cumulative effects on visitor experience would be negligible and range from adverse to beneficial, depending on the visitor's expectations and perspective.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The impacts of Alternative C would be similar to those associated with Alternative B, but Alternative C would allow travelers to cross major drainages during floods up to the magnitude of 50-year storm events. However, such events would likely make travel on other portions of the Burr Trail or other secondary roads impossible, thus offsetting any benefit the traveler might gain by being able to traverse the major drainages. Additionally the adverse visual impacts of the larger culverts used in this alternative would be greater, with an incremental increase in the adverse impact on the visitor experience, but still within the minor intensity range.

Impacts associated with the other elements of Alternative C would be the same as those resulting from implementation of Alternative B.

Cumulative Effects. Cumulative impacts would be similar to those described for the No Action Alternative except that the visual impact of driving over relatively large culvert crossings could adversely affect the visitor's perspective of the remoteness of the region. The cumulative effect would be negligible.

Conclusion. Alternative C would result in long-term adverse effects to the visitor experience by altering the natural terrain and introduction of additional engineered elements to the Burr Trail. These effects would be local and of negligible to minor intensity. Short-term

ENVIRONMENTAL CONSEQUENCES

adverse effects associated with construction would be as discussed for Alternative A. When compared to the No Action Alternative, there would be minor adverse effects to the visitor experience due to the alteration of the natural landscape. Cumulative effects on visitor experience would be negligible and range from adverse to beneficial, depending on the visitor's expectations and perspective.

SOCIOECONOMICS

METHODOLOGY

This section summarizes the socioeconomic impacts associated with the proposed alternatives for modifications to a one-mile stretch of the Burr Trail inside Capitol Reef National Park. Garfield County provides the economic setting for actions taken along the Burr Trail in Capitol Reef National Park. Potential effects to economic activities are described using the following terms for context, duration, and thresholds to define intensity. Impairment is not considered for economic effects, because parks are not established or defined by economic activities or indicators.

- *Negligible:* Socioeconomic conditions would not be affected, or effects would not be measurable.
- *Minor:* The effect on socioeconomic conditions would be small but measurable, and would affect a small portion of the population. Few effects could be discerned outside the Garfield County area.
- *Moderate:* The effects on socioeconomic conditions would be readily apparent and widespread in Garfield County with effects starting to broaden into surrounding counties.
- *Major:* The effects to socioeconomic conditions would be readily apparent, and would substantially change the economic or social services within the five-county government area.
- *Duration:* Short-term – occurs only during the road modifications. Long-term – occurs after road modifications are complete.

Geographic Area Evaluated for Impacts. The socioeconomic impact analysis concentrated on the geographic area that encompasses Garfield County, Utah, and acknowledges minor influence from the surrounding five-county association. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

The National Environmental Policy Act requires analysis of social and economic impacts resulting from proposed federal actions in an environmental impact statement. Based on this requirement, the National Park Service has identified conditions that it wants to achieve in association with its management of national parks. These conditions are described in §1.5 of *Management Policies 2001* (2000b) and for Capitol Reef National Park in the park’s general management plan (NPS 2001c).

Public participation in planning and decision-making ensures that the National Park Service fully understands and considers the public’s interests in Capitol Reef National Park. The

National Park Service works cooperatively with others to improve the condition of Capitol Reef National Park to enhance public service, and to integrate the park into sustainable ecological, cultural, and socioeconomic systems. Possible conflicts between alternatives and land use plans, policies, or controls for the area concerned, and the extent to which the park will reconcile the conflict are identified in environmental documents.

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. Implementation of the No Action Alternative would allow the Burr Trail to continue to be used as a mostly all-weather, two-wheel drive, rural road. The road would remain passable under the majority of weather conditions. In the event that the road experienced flood or other damage, the county would maintain the road.

As discussed in the “Visitor Use and Experience” section of “Affected Environment,” a small portion of visitors to Capitol Reef National Park use the Burr Trail. Total park visitation exceeds approximately 600,000 yearly, yet average daily traffic counts on the Burr Trail typically do not exceed 29 vehicles per day. This traffic count includes travel by county maintenance vehicles and park staff. The Burr Trail does not serve as a notable route for economic activity. Under the No Action Alternative, visitation to Capitol Reef National Park and Garfield County would be neither enhanced nor diminished.

Garfield County receives funding from state and federal sources to maintain roads within county boundaries. Under the No Action Alternative, existing funding for modifications and maintenance would not be affected. The county would also continue to use the Burr Trail to transport fill and borrow material from sites outside the park boundaries.

The No Action Alternative would continue to allow access to the park’s grazing allotment. The Sandy 3 allottee would be permitted to use the road to move cattle to and from the allotment each year. No adverse or beneficial effects to agricultural use of the Sandy-3 Allotment would occur.

Continuing current management of the Burr Trail would not have detectable effects on the economy of Garfield County. The small number of visitors using the road, county maintenance traffic, and park staff use of the road would continue.

Cumulative Effects. Increased use of the Burr Trail from future development of surrounding public lands and the Bullfrog Marina at Glen Canyon National Recreation Area, combined with future park development, could result in modest increases in visitation. These visitors could use the Notom Road and the Burr Trail, but these actions, in concert with the No Action Alternative, would have no discernable effect on the local economy.

The population of Garfield County grew by 19 percent from 1990 to 2000. At the same time, park visitation declined slightly. The growth of the service sector and decline of agricultural income would not be affected under this alternative. Current management of the Burr Trail within the project area would also be unlikely to affect any current or planned strategies for economic development in the county.

Conclusion. Continued current management of the Burr Trail would not produce detectable effects on the local economy. The county and local grazing permit holder would continue to use the road, and would not experience changes in economic benefits under this alternative. Cumulative effects to socioeconomics would be negligible.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. None of the actions associated with Alternative A would include substantial alterations to the roadway that would convey greater amounts of traffic, increase traffic speeds, or encourage use by larger vehicles (e.g., trucks hauling large or oversize loads). Specifically, no straightening or changes in the general grade of the road are proposed. Therefore, it is unlikely that any of the alternatives would change overall road usage or have long-term effects on the local economy.

The cost of constructing the various alternatives ranges from approximately \$800,000 to \$2,000,000 (FHWA 2002). Road modifications implemented by a contractor would generate short-term economic benefits within the local economy. The construction period is likely to last for several months, and income would be paid to workers over that period. Although project implementation would provide an economic benefit, its relative contribution to the local economy would be small. Total revenue to Garfield County businesses is in excess of \$60,000,000 annually. The addition of this project would contribute between 1.7 and 3.3 percent to local economic activity. This represents beneficial effects that are short-term, local, and of minor intensity.

Cumulative Effects. Cumulative impacts would be similar to those described for the No Action Alternative.

Conclusion. Alternative A would produce negligible to minor, short-term beneficial effects on the local economy. The county and local grazing permit holder would continue to use the road, and would not experience changes in economic benefits under this alternative. Cumulative effects would be negligible.

IMPACTS OF ALTERNATIVE B

Impact Analysis. Alternative B would have socioeconomic effects similar to those of Alternative A.

Cumulative Effects. Cumulative impacts would be similar to those described for the No Action Alternative.

Conclusion. Alternative B would produce negligible to minor short-term beneficial effects on the local economy. The county and local grazing permit holder would continue to use the road, and would not experience changes in economic benefits under this alternative. Cumulative effects would be negligible.

IMPACTS OF ALTERNATIVE C

Impact Analysis. Alternative C would have socioeconomic effects similar to those of Alternative A.

Cumulative Effects. Cumulative impacts would be similar to those described for the No Action Alternative.

Conclusion. Alternative C would produce negligible to minor short-term beneficial effects on the local economy. The county and local grazing permit holder would continue to use the road, and would not experience changes in economic benefits under this alternative. Cumulative effects would be negligible.

PARK OPERATIONS

METHODOLOGY

To understand the effects of road modifications in the areas of concern on park operations, park staff were consulted and literature was reviewed. The primary steps for assessing impacts included identifying 1) the potential level of ranger monitoring needed on the Burr Trail, and 2) the level of road inspection and follow-up coordination needed for maintenance activities to be conducted on the Burr Trail.

Impacts would be evaluated using these thresholds:

- *Negligible*: Park operations would not be affected, or the effect would be at or below the lower levels of detection and would not have an appreciable effect on park operations.
- *Minor*: The effect on park operations would be detectable, but would be of a magnitude that would not have an appreciable effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and would likely be successful.
- *Moderate*: The effect on park operations would be readily apparent, and would result in a substantial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- *Major*: Effects on park operations would be readily apparent, would result in a substantial change in park operations in a manner noticeable to staff and the public, and would be markedly different from existing operations. Mitigation measures to offset adverse effects would be necessary and extensive, and their success could not be guaranteed.
- *Duration*: Short-term – Occurs only during road modification activities. Long-term - Effects persist after road modifications are complete.

Geographic Area Evaluated for Impacts. The geographic area that was evaluated for park operations included the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. With park headquarters located more than 30 miles north of the eastern park entrance, travel time and distance plays a major influence on park operations. Limited ranger patrol staff means that committing resources to the Burr Trail requires a reduction in services in another area of the park; therefore, the entire park was included in the geographic area evaluated for impacts on park operations. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

Management Policies 2001 guide maintenance activities in park units (Section 9.1.4.1) (NPS 2000b). The policies state that the “Service will conduct a program of preventive and rehabilitative maintenance and preservation to 1) provide a safe, sanitary, environmentally pro-

protective, and esthetically pleasing environment for park visitors and employees; 2) protect the physical integrity of facilities; and 3) preserve or maintain facilities in their optimum sustainable condition to the greatest extent possible. Preventive and rehabilitative maintenance programs will incorporate sustainable design elements and practices to ensure that water and energy efficiency, pollution prevention, and waste prevention and reduction are standard practice.”

Guidelines for interpretation and educational programs are also provided in National Park Service *Management Policies 2001* (Chapter 7) (NPS 2000b). These guidelines direct the National Park Service to disseminate to the public the history and significance, the resources, and the mission goals of the park. In instances when park managers are called upon to make difficult resource decisions that may be highly controversial, the interpretive and educational programs can build public understanding of, and support for, such decisions and initiatives, and for the National Park Service mission in general. National Park Service *Management Policies 2001* (Section 7.5.3) directs that “parks should, in balanced and appropriate ways, thoroughly integrate resource issues and initiatives of local and Service-wide importance into their interpretive and educational programs” (NPS 2000b). *Management Policies 2001* also states that “resource issue interpretation should be integrated into both on- and off-site programs, as well as into printed and electronic media whenever appropriate” (Section 7.5.3) (NPS 2000b).

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. Under the No Action Alternative, large rainstorms would continue to make access to and within the project area along the Burr Trail difficult. Portions of roads in the area may become impassable for days due to deep mud and sediment at drainage crossings, slippery road surfaces in areas with high clay content, rock falls in canyons, and road washouts in erosion-prone locations. However, the frequency of these events is relatively low, such that the adverse impacts to park operations would be short-term and minor.

No improvements to the existing cattle guard would be made. Cattle would continue to trespass on park lands during the winter grazing period. This would result in a long-term, minor, adverse impact.

Cumulative Effects. Increased use of the regional roads from future development of surrounding public lands and the Bullfrog Marina at Glen Canyon National Recreation Area combined with future park development could result in modest increases in visitation. The minor, adverse impacts of this project’s No Action Alternative would not have a noticeable cumulative effect on any of the park’s other improvement projects.

Conclusion. The No Action Alternative would have short- and long-term, minor, adverse impacts on park operations. Cumulative effects would be negligible if detectable at all.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Alternative A would reduce slippery road surfaces and improve driving conditions by resurfacing portions of the road with gravel underlain with geotextile fabric.

The paved fords would be impassible during storm events. As a result, there would be a no detectable change in the ability of the park to perform operations activities compared to the No Action Alternative. Implementation of this alternative would result in minor, long-term, beneficial impacts by improving the ability of staff to travel the road following storms because the road would not likely washout or need repairs as often.

The ability to cross Halls Creek during storms up to the design capacity (i.e., the 10-year storm event) of the vents (i.e., culverts) in the paved ford would result in a negligible to minor, long-term, beneficial effect on park operations because the potential for staff to be stranded would be reduced.

Under all action alternatives, a short-term, minor, beneficial impact would be associated with a cattle guard at the park boundary to prevent cattle trespass on park lands during the winter grazing period.

Short-term, minor, adverse impacts to park operations would be associated with construction, because park staff would be needed to monitor construction activities. This impact would continue for the duration of construction.

Cumulative. Effects. Cumulative impacts would be the same as described for the No Action Alternative.

Conclusion. Alternative A would have long-term, negligible to minor beneficial impacts on park operations. Construction of modifications would have short-term, minor, adverse impacts. Cumulative impacts to park operations would be negligible.

IMPACTS OF ALTERNATIVE B

Impact Analysis. The impacts of Alternative B on park operations would be similar to those described for Alternative A. The improved ability to cross major drainages during floods associated with storms up to 25-year events would not greatly affect park operations because other drainage crossings and hazards associated with flash floods may cause delays in travel on the Burr Trail at other locations.

The ability to cross Halls Creek during storms up to the design capacity of the culverts (i.e., the 25-year storm event) would result in a minor, long-term, beneficial effect on park operations because the potential for staff to be stranded as a result of road washouts would be reduced.

Cumulative Effects. Cumulative impacts would be similar to those described for Alternatives A.

Conclusion. The impacts and cumulative effects of Alternative B would be similar to those of Alternative A.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The impacts of Alternative C on park operations would be similar to those described for Alternative A. The improved ability to cross major drainages during floods associated with storms less severe than the 50-year events would not greatly affect park operations because other drainage crossings and hazards associated with flash floods would likely cause delays in travel on the Burr Trail at other locations.

The ability to cross Halls Creek during storms up to the design capacity of the culverts (i.e., the 50-year storm event) would result in a minor, long-term, beneficial effect on park operations because the potential for staff to be stranded as a result of road washouts would be reduced.

Cumulative Effects. Cumulative impacts would be similar to those described for Alternatives A and B.

Conclusion. The impacts and cumulative effects of Alternative C would be similar to those of Alternatives A and B.

GARFIELD COUNTY ROAD MAINTENANCE OPERATIONS

METHODOLOGY

To understand the effects of road modifications in the areas of concern on road operations and maintenance, Garfield County road operations staff and literature review were consulted. The primary steps for assessing impacts included identifying 1) the potential level of road operations and maintenance needed on the Burr Trail and 2) the level of road inspection and follow-up coordination needed with the park for road operations, maintenance, or modification activities to be conducted on the Burr Trail.

Impacts were evaluated using these thresholds:

- *Negligible*: Road maintenance operations would not be affected by the modifications, or the effect would be at or below the lower levels of detection and would not have an appreciable effect on road operations.
- *Minor*: The effects of road modifications would be detectable, but would be of a magnitude that would not have an appreciable effect on road operations and maintenance. If mitigation were needed to offset adverse effects, it would be relatively simple and would likely be successful.
- *Moderate*: The effect on road maintenance operations would be readily apparent, and would result in a substantial change in road operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- *Major*: Effects on road maintenance operations would be readily apparent, would result in a substantial change in road operations and maintenance in a manner noticeable to staff and the public, and would be markedly different from existing operations. Mitigation measures to offset adverse effects would be necessary and extensive, and their success could not be guaranteed.
- *Duration*: Short-term – Occurs only during road operations and maintenance or road modification activities. Long-term – Effects persists after road operations, maintenance, or modifications are complete.

Geographic Area Evaluated for Impacts. The geographic area that was evaluated for road maintenance operations includes the Burr Trail from the eastern park entrance to The Post, and the road crossings at Halls Creek and the Burr Canyon side drainage. Road maintenance equipment is stationed in Boulder, Utah, more than 30 miles west of the park boundary. An established borrow pit is 12 to 15 miles east of the park, near Bullfrog Creek, on Bureau of Land Management lands (where the Notom and Starsprings Road cross Bullfrog Creek near Eggnog, Utah). The Wagonbox Pit, another occasionally used source of fill material, is 12 to 15 miles west of the park on Grand Staircase-Escalante National Monument

lands. The distance and travel time to these sites plays a major influence on road maintenance operations. Cumulative effects that would occur both within and outside of these areas were evaluated using the methods described in the “Cumulative Analysis” section.

REGULATIONS AND POLICIES

Garfield County road maintenance operations are guided by a combination of the Garfield County, Utah, General Plan; regulations and statutes; and the court decision. Road maintenance, operations, and construction conducted by the county are guided, in part, by standard engineering practices and standards. At the state level, the Utah Department of Transportation 2004 Standards and Specifications (UDOT 2004) provides regulation and guidance regarding engineering standards for construction and maintenance of roadways.

The American Association of State Highway and Transportation (AASHTO) provides uniform engineering practices and guidance for all public roads. AASHTO’s primary goal is to foster the development, operation, and maintenance of an integrated national transportation system (AASHTO 2001). These policies include following standard designs to maintain road function, design and operating speed, traffic volumes, hydrology and hydraulics, road and shoulder width, criteria for intersection sight distance, stopping sight distance, and access management techniques.

In accordance with the Memorandum Opinion and Order District Court (U.S. District Court, 2000), the county must adhere to the following when conducting road work within the Revised Statute 2477 right-of-way located on Capitol Reef National Park lands:

“[T]he National Park Service has the power to regulate construction work performed by or at the direction of Garfield County or the State of Utah in connection with Garfield County’s established R.S. § 2477 right-of-way to the extent that right-of-way falls within the existing boundaries of Capitol Reef National Park.”

“Garfield County, its officers, agents, employees, or contractors, may not perform work constituting “construction” within the meaning of 36 C.F.R. § 5.7 without first obtaining a permit, approval or agreement from the National Park Service, including but not limited to widening, realigning, surfacing, or otherwise significantly altering the road; installing of culverts, or other new structures; or excavating, removing or displacing of rock, soil or other earth materials outside of the existing road and shoulders;”

“[T]he county has a valid existing right to an R.S. § 2477 right-of-way along the Capitol Reef segment of the Boulder-to-Bullfrog Road; and . . . Garfield County, its officers, agents, employees, or contractors, may engage in work maintaining the existing roadway so as to preserve the status quo through repair of the wear or damage to existing road surfaces, shoulders, cut and fill slopes; repair, clearing, or replacement in kind of culverts and other structures; maintaining the existing shape and width of the road, grading it as needed to preserve a passable surface in both lanes or similar routine maintenance work, without prior authorization from the National Park Service.”

IMPACTS OF THE NO ACTION ALTERNATIVE

Impact Analysis. Under the No Action Alternative, the Burr Trail and drainage crossings would require the same county road maintenance practices that exist today. The county would continue to repair the road surface on a routine basis and clear drainage crossings after storm events. Road conditions, such as slippery clay road surfaces, sediment deposits in drainage crossings, and erosion of road embankments, would continue.

The need for road maintenance increases during and after large rainstorms. County road crews consequently put in additional efforts at these times to ensure the road surface is graded and drainage crossings are cleared of sediment or debris. This may divert maintenance resources from other parts of the county resulting in a minor, short-term, adverse effect on county road maintenance operations.

Cumulative Effects. All roads (the Notom Road and portions of the Burr Trail outside the park boundary) that provide access to the Burr Trail within Capitol Reef National Park are partially paved, and road traffic, including cattle operations, other agricultural, and oil and gas equipment transport, continue to contribute incremental amounts of wear and tear on county roads, including the Burr Trail. Past, current, and future road maintenance operations require acquisition of surface materials and transport on the Burr Trail between stockpile and maintenance activities east and west of the park boundary, adding time and cost to road maintenance operations. Development of the Bullfrog Marina at Glen Canyon National Recreation Area could increase traffic and road maintenance outside of the park.

The No Action Alternative would contribute incrementally to total county road maintenance and result in long-term, minor, adverse cumulative impacts on road maintenance operations.

These activities, in concert with the No Action Alternative, would likely produce minor, adverse cumulative impacts on road maintenance operations because of the long-term continued use and routine maintenance of the Burr Trail.

Conclusion. The No Action Alternative would have minor adverse effects on county road maintenance operations because existing conditions would continue and current road maintenance operations would be needed to ensure that road surfaces are stabilized and drainages are cleared following storm events. Cumulative effects to road maintenance operations would be minor and adverse.

IMPACTS OF ALTERNATIVE A (THE PREFERRED ALTERNATIVE)

Impact Analysis. Routine surface grading would still be needed to maintain the gravel surface under Alternative A, but reduced road surface and road bank erosion would result in fewer ruts and washboards and a slight decrease in road maintenance operations.

Although signs would advise travelers against crossing drainages when water was present on the roadway and travelers would be inconvenienced at crossings in the short-term, there would be increased road stability and a corresponding improvement of the road surface at

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the crossings as a result of the paved surfaces. This would have a minor, beneficial effect because of the decreased road maintenance requirements and expected reductions in response time for emergency maintenance on the Burr Trail for road crews (Garfield County, Bremner, 2003).

Under all alternatives, a short-term, minor, beneficial impact would be associated with placing a cattle guard at the park boundary to prevent cattle from trespassing across the park boundary. This would reduce potential erosion on the road banks and subsequent degradation of the road surface and the need for local surface grading would be decreased.

Cumulative Effects. Cumulative impacts of Alternative A would be similar to the No Action Alternative. Improvements to drainage crossings, stabilization of eroding banks, and improvements to areas where the road surface has high bentonite clay content, in conjunction with other road and development plans, would result in negligible to minor, beneficial cumulative impacts to road maintenance operations.

The materials used to construct the paved fords and to resurface the road would need to be hauled from locations outside the park. The potential sources for these materials include Eggnog Junction and a private site along the Notom Road in Wayne County (Garfield County 2004). In addition, a disposal site for excavated bentonite would be needed. Although the no site has been identified definitively, potential disposal sites include the gravel pit at Eggnog Junction, portions of the Garfield County roadside right-of-way on state land sections east of the park, at several ponds outside the park (with landowner permission), or at other locations to be determined later (Garfield County 2004). The impacts of increased heavy truck traffic on roads in and outside the park and the resultant effect on Garfield County road maintenance operations would represent a negligible to minor, adverse cumulative effect because of increased wear and tear on road surfaces.

Gravel underlain with geotextile fabric used to stabilize the road surface in Alternative A would require slightly less road grading and gravel replacement and reduce maintenance operation efforts and costs. Continuation of cattle trailing and grazing and transportation of agricultural, oil and gas industry equipment and supplies, and road maintenance equipment would result in a minor, adverse cumulative effect on road maintenance operations because these activities would require continued road maintenance efforts. Cattle trailing through the park would stop when the grazing allotments expire in the future, mitigating the adverse effects on road maintenance associated with this practice. Overall, the cumulative effects would be negligible and beneficial.

Conclusion. Alternative A would have negligible to minor, beneficial impacts on road maintenance operations for the long-term because of decreased maintenance needs and operating costs. Cumulative effects on road maintenance operations would be negligible to minor and beneficial overall and in the long-term.

IMPACTS OF ALTERNATIVE B

Impact Analysis. The effects of the road surface stabilization of Alternative B are similar to those described for Alternative A, although there may be an incrementally greater need for maintenance of the gravel surface because the gravel would not have a geotextile fabric

liner. Culverts at the major and minor crossings that would pass the 25-year storm event would reduce maintenance needs for road repair. There is the possibility that moderate-size storm events could increase the need for maintenance because culverts could become clogged and debris removal would be required. On balance, the benefits of a reduction in road repair frequency, combined with the adverse effects of the potential need to clear culverts following storms, would result in negligible to minor beneficial impacts on long-term road maintenance operations.

Cumulative Effects. Cumulative effects to road maintenance operations would be similar to those described for Alternative A.

Conclusion. Alternative B would have negligible to minor, beneficial impacts on road maintenance operations in the long-term because frequency of maintenance activities would be reduced. Cumulative effects to road maintenance operations would be negligible and beneficial.

IMPACTS OF ALTERNATIVE C

Impact Analysis. The effects of Alternative C would be similar to Alternative B, with a small incremental benefit of less necessary maintenance because the culverts could pass the 50-year storm event. However, this added benefit would not change the intensity of the effect beyond the negligible to minor threshold.

Cumulative Effects. Cumulative effects to road maintenance operations would be similar to those described for Alternatives A and B.

Conclusion. Similar to Alternative B, Alternative C would have negligible to minor beneficial impacts on road maintenance operations in the long term as a result of a reduction in road maintenance needs. Cumulative effects on county road maintenance operations would be negligible to minor and beneficial.

SUSTAINABILITY AND LONG-TERM MANAGEMENT

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are the environmental consequences of an action that cannot be avoided either by changing the nature of the action or through mitigation if the action is taken. Therefore, these environmental consequences would remain throughout the duration of the action.

The No Action Alternative would continue to have adverse effects associated with public health and safety because of the potential dangers associated with travel through flooded drainage crossings. There would be unavoidable adverse impacts to some visitors' use and experience under Alternative A as a result of travel delays, but this would be offset by an increase in public health and safety because signs would be posted warning against unsafe passage through flooded crossings.

All action alternatives would result in unavoidable adverse impacts on the vegetation, soils, natural soundscape, and short-term degradation of air quality caused by fugitive dust. However, these adverse impacts would be primarily negligible to minor, often short-term, and not have adverse effects beyond the local area.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The intent of this determination is to identify whether the proposed action would trade off the immediate use of the land or resources for any long-term management possibilities, adversely affecting the productivity of the resources in the park. This determination also discloses whether the proposed action or alternatives would be a sustainable action that could continue over the long term without causing environmental problems (NPS 2000b).

None of the alternatives would result in substantial loss or impairment of natural resources or ecosystems in the park as a consequence of their implementation. There would be some trade-offs from a local or short-term perspective, as described below.

The No Action Alternative would maintain and provide safe travel on a mostly all-weather, maintained, variable-width, unpaved, native-material road, acknowledging that the road would occasionally be impassable, depending on weather conditions. This alternative does not propose any additional management actions to minimize adverse impacts. Trade-offs would include continued short-term release of fugitive dust into the air and noise associated with road repair and maintenance activities that may affect the natural soundscape and visitors experiencing the Burr Trail. Impacts on these resources would range from negligible to minor.

Alternative A would stabilize the road surface, retain the overhanging rock, install paved fords, shift the roadway a small distance to the south at the Halls Creek/Burr Canyon drainage confluence, and stabilize the road bank. This alternative would reduce long-term air and noise impacts, improve public health and safety, enhance visitor use and experience, and lessen long-term adverse effects to soils, vegetation, and water quality.

Alternative B would include removal of the overhanging rock, continued short-term release of fugitive dust into the air, improvements to road surface stability, beneficial impacts to water quality, and public health and safety. Loss of the overhanging rock would adversely affect views of the natural landscape and visitor's experience while driving along the Burr Trail, as would the installation of numerous relatively large culverts at the drainage crossings. Realignment of the Burr Canyon drainage would adversely impact potential ethnographic landscapes, is likely to require long-term maintenance and replacement of slope protection, and the stability and longevity of the man-made changes would not be guaranteed. The ethnographic landscape and resource experiences would be adversely affected by this visual intrusion on the landscape. Impacts on these resources would range from negligible to moderate adverse impacts. Trade-offs would include negligible beneficial effects on air quality, soil resources, public health and safety, and park operations.

Alternative C would have overall effects similar to Alternative B, although there would be a potential increase in sustainability with the ability of the road to withstand storm events up to the 50-year magnitude. This would be offset by the additional impacts associated with a need for more surface disturbance to accommodate larger culverts and the adverse impact on visual elements associated with multiple large culverts at the drainage crossings.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

This determination identifies whether the proposed action or alternative would result in effects or impacts that could not be changed over the long-term or would be permanent. An effect on a resource would be irreversible if the resource could not be reclaimed, restored, or otherwise returned to conditions that existed before the disturbance. An irretrievable commitment of resources involves the effects on resources that once gone, cannot be replaced or recovered (NPS 2000b).

All action alternatives would involve the irretrievable commitment of energy resources such as gasoline and fuel oil for vehicles, including road maintenance, park equipment, and visitor's vehicles that operate or travel on the Burr Trail. Alternatives B and C would remove the overhanging rock to alleviate the narrow road at mile point 0.65. These alternatives would result in the permanent alteration of the landform and long-term loss of a geological feature that adds to the geological and visual character of the road.

CONSULTATION AND COORDINATION

Capitol Reef National Park conducted informal consultation and coordination with the following agencies and organizations in April 2002 (Appendix D).

AGENCIES/ORGANIZATIONS

Agencies and organizations contacted for information; or that assisted in identifying important issues, developing alternatives, or analyzing impacts; or that will receive the final environmental impact assessment include:

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Bureau of Land Management, Henry Mountain Field Office
Grand Staircase-Escalante National Monument
U.S. Fish and Wildlife Service, Utah Field Office

STATE AGENCIES

Utah State Historic Preservation Officer
Utah Department of Environmental Quality
Utah Division of Water Rights

INDIAN TRIBES

Paiute Indian Tribe of Utah	Goshute Business Council
White Mesa Ute Tribe	Tesuque Pueblo
Navajo Nation	San Ildefonso Pueblo
Cochiti Pueblo	Pueblo of Zuni
Pueblo of Acoma	Hopi Tribe
Southern Ute Tribal Council	Santa Clara Pueblo
Taos Pueblo	Pueblo of Pojoaque
Pueblo of Isleta	Kaibab Paiute Tribal Council
Pueblo of Jemez	Santa Ana Pueblo
Ute Mountain Ute Tribe	Pueblo of Zia
Paiute Indian Tribe of Utah	Sandi Pueblo
Picuris Pueblo	Zuni Pueblo
San Juan Pueblo	Hopi Cultural Preservation Office
Uintah and Ouray Tribal	White Mesa Ute Tribe
Santo Domingo Tribe	Paiute Tribe of Utah Tribal Council
Las Vegas Colony Council	

HISTORY OF PUBLIC INVOLVEMENT

The scoping process for the Burr Trail modifications began in February 2002 with a meeting of the National Park Service planning team. The team discussed the park's objectives for

road modifications and identified issues related to the road modifications. In March 2002 the National Park Service planning team met with Garfield County and the state of Utah to refine the issues and objectives.

In April 2002, the park notified the public of the intent to prepare an environmental impact statement for Burr Trail modifications in an announcement in the *Federal Register* (NPS 2002h). The notice requested that the public comment on the scope of the environmental impact statement, issues and alternatives related to road modifications, and other concerns. The notice also announced the park's intent to issue a public scoping brochure to further facilitate public participation in the process.

The National Park Service conducted public scoping in May and June 2002. A public scoping brochure was sent to the public and other interested groups (Appendix C). The planning team used public scoping/agency comment and cooperating agency input to revise the preliminary alternative concepts into the four alternatives for Burr Trail modifications that were evaluated in this final environmental impact statement (for more detail see Formation of Alternatives" under the Proposal and Alternatives section).

In March 2004, a mail-back postcard was sent to the public mailing list announcing the upcoming release of the draft EIS. The postcard gave respondents various choices for reviewing the document.

REGULATORY COMPLIANCE

For all action alternatives, Capitol Reef National Park, and Garfield County would be responsible for obtaining all applicable state and federal permits for planned actions. The U.S. Army Corps of Engineers (USACE) and/or the state of Utah would determine jurisdiction of affected watercourses, as well as the stability or feasibility of planned modifications to these drainage channels. Modifications to drainages may be eligible for either a USACE Nationwide Permit and/or a Regional General Permit # 40 – Fill Discharge in Streams Where Utah has Issued Stream Alteration Permits. This permit authorizes discharges of dredged or fill material into certain streams in the state of Utah, provided a State Stream Alteration Permit has been issued. All applicable permit application requirements would be met, and the recommendations of governing agencies followed.

LIST OF PREPARERS

CAPITOL REEF NATIONAL PARK PLANNING TEAM MEMBERS

Albert J. Hendricks, Superintendent Capitol Reef National Park, National Park Service. B.A. Geography and Geology, 32 years National Park Service. Responsible for all facets of park planning, operations, fiscal management, visitor and resource protection, interpretation, and facilities management.

Tom Clark, Chief of Resource Management and Science, Capitol Reef National Park, National Park Service. B.S. Wildlife Management, M.S. Zoology. 8 years National Park Service,

13 years prior professional experience with the Bureau of Land Management, the U.S. Forest Service, Department of the Army and Department of Navy. Responsible for alternatives development and document review.

Robert J. Cox, Roads, Trails, and Cultural Landscapes Supervisor, Capitol Reef National Park, National Park Service. B.A. Graphic Design 11 years National Park Service, 10 years U.S. Forest Service, 10 years private road and dam construction companies. Responsible for road, cultural landscapes, and park operations review.

Ken Kehrer, Chief Ranger, Capitol Reef National Park, National Park Service. Twenty-nine years National Park Service. Responsible for public health and safety, visitor use, and park operations review.

Lee Kreutzer, (PhD) former Cultural Resources Program Manager, Division of Resources Management and Science, Capitol Reef National Park, National Park Service. PhD Archeology, 10 years National Park Service, 10 years prior professional experience with various firms, agencies and universities. Responsible for cultural resource identification and verification, and tribal consultations.

Dave Worthington, Biologist, Division of Resource Management and Science, Capitol Reef National Park. BA, MA, in Zoology, University of Montana, 4 years National Park Service, 5 years U.S. Fish and Wildlife Service, and 3 years Fish and Wildlife Division Northern Mariana Islands. Responsible for natural resource information and NEPA review.

COOPERATING AGENCY PLANNING TEAM MEMBERS

Ed Hammontree, P.E., Project Manager, Central Federal Lands Highway Division – Denver, Federal Highway Administration. B.S. Civil Engineering, 16 years Federal Highway Administration and professional experience.

Barbara Hjelle, Counsel-Environmental Coordinator, Washington County Water Conservancy District, Utah. B.S. Biology, M.S. Biology, J.D., 18 years private law practice. Representing cooperating agency, state of Utah.

Chris Longley, Design Team Leader, Central Federal Lands Highway Division – Denver, Federal Highway Administration. B.S. Civil and Environmental Engineering, 2 years Federal Highway Administration, 11 years professional experience. Responsible for the roadway design and coordination with other design disciplines .

Tom Puto, Project Manager, Central Federal Lands Highway Division - Denver, Federal Highway Administration. B.S. Civil Engineering, 18 years Federal Highway Administration, 22 years professional experience. Responsible for road design and material estimates.

Clare Ramsay, Garfield County Commissioner, Garfield County Commission, Representing cooperating agency, Garfield County, Utah.

CONSULTANT PLANNING TEAM MEMBERS

John Freeman, Landscape Architect, Denver Service Center, National Park Service. B.A. Landscape Architecture, 13 years National Park Service, 12 years U.S. Forest Service. Responsible for review of document presentation.

NATIONAL PARK SERVICE, REGIONAL OFFICE

Christine L. Turk, Regional Environmental Quality Coordinator, Intermountain Support Office-Denver, National Park Service. B.A.A.S. Biological Sciences, 25 years National Park Service, 5 years University of Delaware College of Marine Studies. Responsible for project management and policy review.

PARSONS

Jacklyn Bryant, Senior Scientist, Planning and Environment, Parsons – Denver. M.S. Watershed Sciences, B.A. Natural Resources Management, two years Parsons, four years professional scientist. Responsible for impact topic analysis and preparation, natural and socio-economic resources.

Connie Chitwood, Environmental Scientist, Planning and Environment, Parsons – Denver. M. Sc. Environmental Forestry, one year Parsons, two years U.S. Army Corps of Engineers, four years environmental project management, 15 years professional planning and natural resource management. Certified Planner, Certified Environmental Professional, and Certified Professional Wetland Scientist. Responsible for project management.

John Hoesterey, Technical Manager, Planning and Environment, Parsons – Denver. M.A. Geography, Regional Planning, and Economics, three years Parsons, 23 years National Park Service Project Manager and Senior Planner. Responsible for impact topic analysis and preparation, technical review of document.

Don Kellett, Principal Scientist, Planning and Environment, Parsons – Denver. B.S. Wildlife Biology, five years Parsons, eight years ICF Kaiser Engineers/IT Corporation, Colorado State University. Document author and responsible for initial scoping and natural resource impact topic analysis.

Scott Lowry, Senior Editor, Parsons – Denver. Ph.D. in English, two years at Parsons. Provided technical editing.

Diane Rhodes, Cultural Resources Specialist/Archeologist, Planning and Environment, Parsons – Denver. M.A. Anthropology (Archeology), two years Parsons, six years Cultural Resource Planner, National Park Service, 21 years Archeologist, National Park Service. Responsible for cultural resource section analysis and preparation.

Janet Snyder, Environmental Scientist and Technical Editor, Parsons – Denver. B.S. in Zoology, 25 years Parsons. Provided technical editing and technical review.

Nicole White-Scott, Environmental Scientist, Planning and Environment, Parsons – Denver. B.S. Environmental Sciences, two years Parsons, one year IT Corporation. Responsible for impact topic section analysis and preparation, natural resources.

LIST OF RECIPIENTS

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Bureau of Land Management, Henry Mountain Field Office
Grand Staircase-Escalante National Monument
National Park Service
Environmental Protection Agency
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service, Utah Field Office
Natural Resources Conservation Service

STATE AND LOCAL AGENCIES

Utah State Historic Preservation Officer
Utah Division of Water Rights
Utah Division of Wildlife Resources

INDIAN TRIBES

Paiute Indian Tribe of Utah	Goshute Business Council
White Mesa Ute Tribe	Tesuque Pueblo
Navajo Nation	San Ildefonso Pueblo
Cochiti Pueblo	Pueblo of Zuni
Pueblo of Acoma	Hopi Tribe
Southern Ute Tribal Council	Santa Clara Pueblo
Taos Pueblo	Pueblo of Pojoaque
Pueblo of Isleta	Kaibab Paiute Tribal Council
Pueblo of Jemez	Santa Ana Pueblo
Ute Mountain Ute Tribe	Pueblo of Zia
Paiute Indian Tribe of Utah	Sandia Pueblo
Picuris Pueblo	Zuni Pueblo
San Juan Pueblo	Hopi Cultural Preservation Office
Uintah and Ouray Tribal	White Mesa Ute Tribe
Santo Domingo Tribe	Paiute Tribe of Utah Tribal Council
Las Vegas Colony Council	

ORGANIZATIONS

National Parks and Conservation Association

RESPONSES TO COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

The National Park Service received 12 comment documents, containing a total of 23 substantive comments, on the *Draft Environmental Impact Statement and Assessment of Effect*. The U.S. Environmental Protection Agency, Capitol Reef Natural History Association, and one individual expressed support or did not object to the preferred alternative, Alternative A. However, most comments expressed opinions in opposition to the preferred alternative, although the reasons for opposition differed substantially. The comments in letters from the Sierra Club (5 comments), the Southern Utah Wilderness Alliance (13 comments) and two individuals (1 comment each) opposed Alternative A and supported the No Action Alternative, while Wayne County, Bicknell Town, and an individual (1 comment each) opposed Alternative A and were in favor of paving the road and improving accessibility.

The Council on Environmental Quality (1978) guidelines for implementing the National Environmental Policy Act require the National Park Service to respond to "substantive comments." A comment is substantive if it meets any of the following criteria from Director's Order 12, "Conservation Planning, Environmental Impact Analysis, and Decision-Making" (NPS 2001b).

- It questions, with reasonable basis, the accuracy of information.
- It questions, with reasonable basis, the adequacy of environmental analysis.
- It presented reasonable alternatives other than those proposed in the plan.
- It would cause changes or revisions in the preferred alternative.

Several commentors provided opinions in general agreement or disagreement with a particular alternative, but did not meet the substantive comment criteria, and thus, are not included in this *Final Environmental Impact Statement*. The documents containing substantive comments, and the NPS responses, are included on the following pages.



UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY

REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466

Consultation and Coordination

JUN 13 2005

CAPITOL REEF NATIONAL PARK

JUN - 8 2005

Ref: 8EPR-N

Albert J. Hendricks, Superintendent
Capitol Reef National Park
HC 70, Box 15
Torrey, UT 84775

Re: Burr Trail Modifications, Draft
Environmental Impact Statement,
CEQ# 20050196

Dear Mr. Hendricks:

The U.S. Environmental Protection Agency, Region 8 (EPA) thanks the National Park Service (NPS) for the Draft Environmental Impact Statement (DEIS) and offers our comments to the FEIS pursuant to our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Our enclosed comments acknowledge the efforts and resources that the NPS committed to prepare the EIS for this project. We thank you for clear and informative documentation of the proposed actions.

Overall, the project will result in long-term benefits for soils, reduced erosion and sediment loss potential, wildlife and habitat protections, and recreation visitors' experiences. EPA trusts that applicable best management practices will be used to reduce the potential for adverse construction practices to soils, erosion and sediment, and other potential short-term construction impacts.

Based on the procedures EPA uses to evaluate the potential effects of proposed actions and the adequacy of the information in the DEIS, the Preferred Alternative will be listed in the Federal Register in the category 'LO' or 'lack of objections' (see enclosure for EPA ratings criteria and definitions). The rating means that EPA's review did not identify potential environmental impacts that require substantive changes to the proposal.

Brad Crowder of my staff coordinated EPA's comments. He can be reached at the address above, by telephone at 303-312-6396, or by e-mail at crowder.brad@epa.gov.

Sincerely,

Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection and Remediation



Printed on Recycled Paper

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

Definitions and Follow-Up Action*

Environmental Impact of the Action

LO -- Lack of Objections: The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC -- Environmental Concerns: The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO -- Environmental Objections: The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU -- Environmentally Unsatisfactory: The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 -- Adequate: EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 -- Insufficient Information: The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new, reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

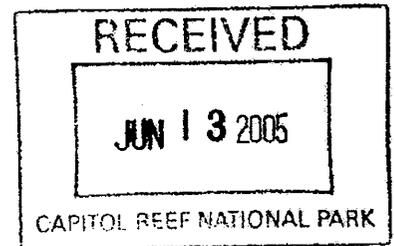
Category 3 -- Inadequate: EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. Feb., 1987.



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119



In Reply Refer To
FWS/R6
ES/UT
05-0862

June 10, 2005

To: Superintendent, Capitol Reef National Park, HC 70, Box 15, Torrey, Utah 84775

From: Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, Utah

Subject: Burr Trail Modifications Draft Environmental Impact Statement

The U.S. Fish and Wildlife Service (Service) has reviewed the draft environmental impact statement (received May 26, 2005) for the proposed modification to the Burr Trail. The project proposes to modify a one-mile segment of the Burr Trail for the purpose of increasing safety and stability, and improving drainage. We have no comment on the project as proposed.

We note, however, that the document refers on page 23 to a letter from the Service, dated July 16, 2002 (printed on page 260 in the document), which you believe concurred with your "not likely to adversely affect" determination for listed species, relative to this project. Our letter of July 16, 2002, was simply a "no comment" letter in response to your National Environmental Policy Act (NEPA) scoping notice. We have no record of consultation under section 7 of the ¹Endangered Species Act relative to this project.

We appreciate the opportunity to review your project. Should you have any questions or need any further information please contact Betsy Herrmann, Ecologist at 801-975-3330, extension 139.

Comment # 1

Concern ID: 10602

CONCERN STATEMENT: We have no record of consultation under section 7 of the Endangered Species Act relative to this project.

Response: The park and U.S. Fish and Wildlife Service had been exchanging letters and reviews of the document and potential impacts during the development of the draft EIS. One letter had been misinterpreted as concurrence by FWS that no adverse affects would occur to listed species. The park initiated informal consultation on October 11, 2005. In response to the October 11, 2005 NPS letter, the FWS concurred that the project would not likely adversely affect listed species.

Wayne County
18 South Main
Loa, Utah 84747

COMMISSIONERS
Scott L. Durfey, Chairman
Thomas A. Jeffery
Allen R. Jones

Recorder/Treasurer
Assessor
Attorney
Clerk/Auditor
Sheriff

Colleen Brinkerhoff
Carolyn Moosman
Marvin Bagley
Ryan Torgerson
Kurt R. Taylor

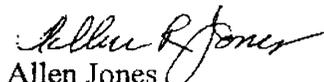
July 19,2005

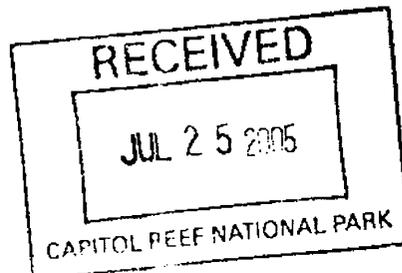
To whom it may concern,

We the Wayne County Commissioners would like it to be known that Wayne County supports the paving of the Burr Trail road. The road gets enough traffic to warrant a need to pave the road. The Burr Trail area is getting more and more popular and people should be able to access the area on a good road.

2

Sincerely,


Allen Jones
Wayne County Commission



Comment # 2

Concern ID: 10613

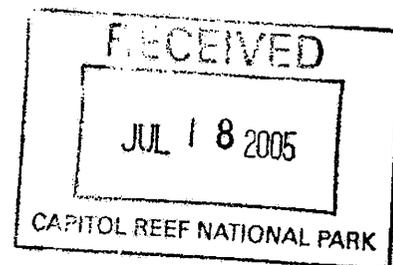
CONCERN STATEMENT: The road gets enough traffic to warrant a need to pave the road. The Burr Trail is getting more and more popular and people should be able to access the area on a good road.

Response: Please refer to the response to Comment # 22.

BICKNELL TOWN
P.O. BOX 96
BICKNELL, UT 84715

13 July 2005

Superintendent
Capitol Reef National Park
HC 15 Box 70
Torrey, UT 84775



To Whom It May Concern:

We are writing in regards to the draft environmental impact statement dealing with modifications to a stretch of the Burr Trail Road.

This road had needed some improvements for many years, but has been shot down by special interest groups. We would really like to see some improvements in the future. We read the evaluations for the four alternatives and discussed them in our board meeting. We would like to add our support for Alternative C. We look forward with interest to the final decision on this issue.

Sincerely,

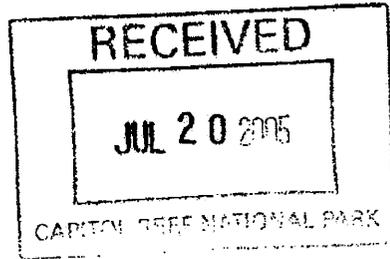
A handwritten signature in cursive script that reads "Sherwood Albrecht".

Sherwood Albrecht, Mayor

Two handwritten signatures in cursive script. The first signature is "Brent Derby" and the second is "Howard Bluff".

Bicknell Town Board

Association



June 27, 2005

Albert J. Hendricks
Superintendent
Capitol Reef National Park
HC 70, Box 15
Torrey, UT 84775

Capitol Reef Natural History Association Board has reviewed the Burr Trail Modifications Draft Environmental Impact Statement/Assessment of Effect dated March 2005.

We strongly support alternative C as the preferred alternative.

The popularity of southern Utah continues to escalate and is a major destination for both Americans and international visitors alike. The advent of the Grand Staircase Escalante National Monument has brought additional focus on the beauties surrounding the Burr Trail. We believe the federal land management agencies, along with Garfield County, have a duty and responsibility to provide reasonable, all-weather access along this spectacular travel corridor. We also believe that most of the impacts associated with alternative C are acceptable and that the proposed realignments and improvements will create a more positive, rather than negative, visitor experience.

Thank you for the opportunity to provide our perspective on this important issue.

Sincerely,

Sammy Newton
Sammy Newton

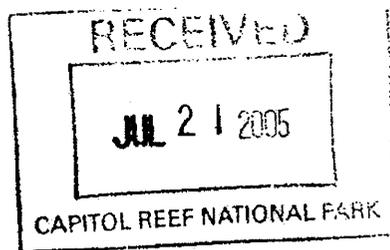
Newell Harward
Newell Harward

Burke Torgerson
Burke Torgerson

Lois Hoddenbach
Lois Hoddenbach

Mary O. Ellett
Mary Ellett

Gary Hallows
Gary Hallows



July 18, 2005

Sierra Club
Utah Chapter Office
2120 South 1300 East Suite 204
Salt Lake City, UT 84106-3785

Albert Hendricks, Superintendent
Capitol Reef National Park
HC 70, Box 15
Torrey, UT 84775

RE: Draft Environmental Impact Statement (DEIS) Burr Trail Modifications

Dear Superintendent Hendricks,

The Sierra club appreciates the opportunity to participate in the decision making process for Garfield County's proposed modifications of the Burr Trail that is within Capitol Reef National Park. The Sierra Club has a long-standing interest in the status and character of this route. We are keenly interested in the modifications proposed by Garfield County that are the subject of the DEIS. The Sierra Club has a long history of involvement on the Burr Trail including following the legal issues surrounding the nature and extent of rights of way acknowledged under R. S. 2477.

The Sierra Club has about 4,000 members in Utah and almost 800,000 members nationally. Sierra Club members enjoy and use Capitol Reef National Park and in particular enjoy using the more primitive portions of the southern portion of the Park in the Waterpocket Fold area. During the decades the Sierra Club has been involved in and concerned about the Burr Trail we have seen it increasingly change in character, often times as the result of local politicians acting against the best interests and will of the United States.

We have over the years seen segments of the Burr Trail appear to be paved under the guise of maintenance with chip and seal construction. We have seen the Trail widened and straightened. And we have seen the Trail disintegrate when Garfield County devoted financial resources into quixotic pursuits of R. S. 2477 right of way on other federal lands rather than regular maintenance of roads.

The Burr Trail and the lengthy history of litigation form the largest body of case law about the nature and extent of rights of way granted across federal real estate. The Sierra Club has always been a prime interest during this history. Our name appears in the citation of cases related to the Burr Trail.

Purpose and Need

The DEIS states the purpose and need relate improved safety, stabilization and drainage of watercourse crossings. However, the DEIS concludes that the preferred alternative would realize only “minor benefits to public health and safety.” We have found no information in the DEIS to support benefits to public health and safety which necessitate changing the rugged and primitive character of the portion of the Burr Trail in Capitol Reef National Park.

3 The DEIS acknowledges that the current road is designed to accommodate far more traffic than currently uses the Burr Trail. Only two accidents have occurred on the Burr Trail and neither of those accidents is related to almost all perceived problems, which are to be “corrected” by the project. The project appears to be a solution in need of a problem.

Any perceived problems with travel on the Burr Trail have an already existing solution. Highways 24 and 95 provide an all weather, all season, paved route between Boulder and Bullfrog. Any increase in distance is compensated by the rapid and easy travel along those roads. In fact those roads are designed to carry the kind of travel and type of vehicles that the Burr Trail will never be able to carry without tremendous financial expense and dramatic alterations to the primitive and wild nature of the southern end of Capitol Reef NP.

Legal Requirements

4 The Sierra Club does not believe that the case law determining the extent scope and nature of the Burr Trail right of way includes the necessity of a two-lane highway. It requires that the road be “reasonable” for the purposes of travel but does not limit the authority of the National Park to protect resources which the Park has long valued.

Cumulative and other impacts

The DEIS states that the proposed improvements will not change the type or level of use, however there is nothing in the DEIS to support this assertion. In fact, the Sierra Club knows this is not supportable.

“...recent changes in Forest Service and Bureau of Land Management administrative priorities towards developing oil and gas resources and lessening protection of roadless areas” may have the potential to impact Capitol Reef National Park. (Watson, John F., State of the Parks Report on the Natural Resources of Bryce Canyon National Park, National Parks Conservation Association. 2005)

It is also the case that increasing improvements along an acknowledged primitive and wild road will diminish those qualities. In light of the failure of the current administrative priorities to value roadless areas or the need for lower levels of

Comment # 3

Concern ID: 10604

CONCERN STATEMENT: The DEIS states the purpose and need relate improved safety, stabilization and drainage of watercourse crossings. However, the DEIS concludes that the preferred alternative would realize only “minor benefits to public health and safety.” We have found no information in the DEIS to support benefits to public health and safety which necessitate changing the rugged and primitive character of the portion of the Burr Trail in Capitol Reef National Park. The DEIS acknowledges that the current road is designed to accommodate far more traffic than currently uses the Burr Trail. Only two accidents have occurred on the Burr Trail and neither of those accidents is related to almost all perceived problems, which are to be “corrected” by the project. The project appears to be a solution in need of a problem. Any perceived problems with travel on the Burr Trail have an already existing solution.

Response: Benefits to public health and safety were identified in the draft EIS on pages 161- 162. It is incorrect to state that "only two accidents have occurred on the Burr Trail," as the text on page 87 makes clear. The text on page 87 will be revised and further clarified in the final EIS to read: “During the summer of 2001, two separate incidents of vehicles being carried downstream by flood washout were reported on the Burr Trail.” The road modifications proposed will reduce the safety risk at several locations in the project area, including at the overhanging rock and at the Halls Creek crossing.

Comment # 4

Concern ID: 10605

CONCERN STATEMENT: The Sierra Club does not believe that the case law determining the extent scope and nature of the Burr Trail right of way includes the necessity of a two- lane highway. It requires that the road be “reasonable” for the purposes of travel but does not limit the authority of the National Park to protect resources which the Park has long valued.

Response: This draft EIS is proposing site- specific fixes to problem areas and does not propose wholesale changes to the entire road. The draft EIS determined that providing for two- way traffic is a reasonable alternative and within the guidelines established in the park’s general management plan. We have fulfilled our responsibilities by evaluating the Garfield County proposal and suggesting other alternatives and mitigating measures to reduce adverse effects to park resources. Please also refer to the response to comment # 21.

motorized access for the future benefit of Americans there must be a rigorous analysis of the potential of diminishing primitive and wild land and experiences in the region.

Currently most of the traffic on the Burr Trail consists of National Park Service employees and staff from other federal agencies. Capitol Reef NP must analyze the likelihood that further changes and “improvements” to the Burr Trail could markedly alter the demographics of traffic including both the number of vehicles traveling the route and the kind of people traveling the route.

If the results of analysis show that the numbers and types of travelers on the Burr Trail is not expected to change then the purpose and need would fail the test of actual need. If the development leads to changes in the numbers and types of travelers then the primitive and wild character of the route as described in the DEIS would change. But the DEIS makes the claim that the changes would not make a significant change in the experience of visitors. This conclusion is insupportable and rigorous analysis must be included in the EIS before a decision can be made.

The Capitol Reef National Park web site includes a “chat room” with the following messages posted about the Burr Trail.

“We had the 4x4 but we didn't need it. We saw cars on the road.”

“The backcountry road into Capital Reef is easy. I drove through in a two-wheel drive truck.”

“...the paving has probably led to more traffic in what should have remained quiet and a bit challenging.”

Already the primitive quality of the Burr Trail is diminishing.

Capitol Reef NP needs to take a hard look at the current proposed and potential future changes to the Burr Trail. The current level of use does not demand changes. Safety issues do not demand changes. The DEIS notes only two accidents in a particular location which would not be “improved” or reduce possible risk by the proposed changes.

If Capitol Reef concludes that the current proposed changes are essential and necessary and concludes that no future changes to the Burr Trail will be necessary or ever occur then such a conclusion should be included in the FEIS and decision. The Management Plan should also be amended to note such a conclusion.

Our arguments here are not hypothetical. We have observed the continued changes and alterations to the Burr Trail for decades. Not to recognize that each small change alters the character and use of the Burr Trail could only occur with willful blindness.

Comment # 5

Concern ID: 10606

CONCERN

STATEMENT:

Currently most of the traffic on the Burr Trail consists of National Park Service employees and staff from other federal agencies. Capitol Reef NP must analyze the likelihood that further changes and “improvements” to the Burr Trail could markedly alter the demographics of traffic including both the number of vehicles traveling the route and the kind of people traveling the route. If the results of analysis show that the numbers and types of travelers on the Burr Trail is not expected to change then the purpose and need would fail the test of actual need. If the development leads to changes in the numbers and types of travelers then the primitive and wild character of the route as described in the DEIS would change. But the DEIS makes the claim that the changes would not make a significant change in the experience of visitors. This conclusion is insupportable and rigorous analysis must be included in the EIS before a decision can be made.

Response:

There is no evidence to validate the statement “Currently most of the traffic on the Burr Trail consists of National Park Service employees and staff from other federal agencies.” With yearly average traffic of about 25 vehicles per day and a peak daily volume of 71, it is highly unlikely that this is primarily federal agency personnel. As described on page 173 of the draft EIS, “None of the actions associated with Alternative A would include substantial alterations to the roadway that would convey greater amounts of traffic, increase traffic speeds, or encourage use by larger vehicles (e.g., trucks hauling large or oversize loads). Specifically, no straightening or changes in the general grade of the road are proposed. Therefore, it is unlikely that any of the alternatives would change overall road usage or have long- term effects on the local economy.” There is no evidence to support the claim “further changes and improvements to the Burr Trail could markedly alter the demographics of traffic.” The project objective was to “provide for safe travel on an all- weather, maintained, variable- width, unpaved, gravel and native material road” and not change the number or types of traveler using the road, so it still satisfies the test of need. The changes proposed, especially in the Halls Creek area, will make for a safer visitor experience. The draft EIS stated that Alternative A would produce long- term adverse effects on the visitor experience by altering the natural terrain and introducing additional engineered elements to the road. These effects would be local, and of negligible to minor intensity. Short- term adverse effects to visitor experience would occur from construction activities, and these would be minor and limited to construction sites. There are no facts presented by the commenter to dispute the accuracy of this analysis.

Comment # 6

Concern ID: 10619

Representative

Quote:

We have observed the continued changes and alterations to the Burr Trail for decades. Not to recognize that each small change alters the character and use of the Burr Trail could only occur with willful blindness.

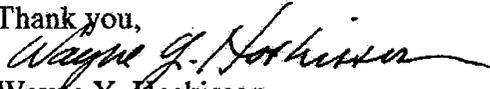
Response:

Changes provided for in the project proposal are within the scope of what is appropriate for Capitol Reef National Park, as described in the park’s general management plan. Therefore, this is an incremental change that was considered appropriate.

In this situation, cumulative effects that are necessary to analyze include the potential for nearby oil and gas exploration and drilling. The Department of Interior is

7 currently considering exploration and possible field development near the Burr Trail and near Capitol Reef NP. The combination of new oil and gas developments and the changing character of the Burr Trail require the hard look required by the National Environmental Policy Act.

Thank you,



Wayne Y. Hoskisson
Public Lands Chair
Sierra Club Utah Chapter
263 S. 100 E.
Moab, UT 84532

Comment # 7

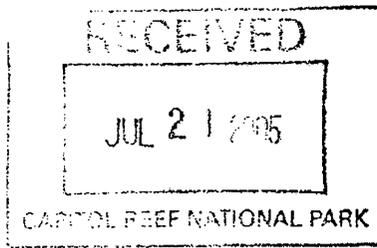
Concern ID: 10607

CONCERN STATEMENT: The Department of Interior is currently considering exploration and possible field development near the Burr Trail and near Capitol Reef NP. The combination of new oil and gas developments and the changing character of the Burr Trail require the hard look required by the National Environmental Policy Act.

Response: This analysis was included in the draft EIS on pages 97 and 103 as part of the cumulative effects discussions. The following statements are extracted from those discussions. "The resource management plan under development will include future use of the Burr Trail. This could lead to incremental changes in activities such as transport of oil, gas, or mineral- exploration equipment and vehicles, or trailing and transport of cattle." "Construction- related emissions from development of adjacent public lands would create some particulate emissions, but they would not degrade regional air quality or visibility and would be local and of short duration...Fugitive dust and emissions from future oil- and gas- exploration, other vehicle traffic, or livestock trailing on the Burr Trail would be low and have slight or imperceptible effects." Full development of an oil field is not a reasonably foreseeable impact because all exploratory wells in the Circle Cliffs area to date have been dry holes. Predicting future exploration is also very speculative because of the lack of successful finds in this area. All future projects of this type would require their own NEPA analysis and public involvement.



southern
utah
wilderness
alliance



July 18, 2005

Albert Hendricks, Superintendent
Capitol Reef National Park
HC 70, Box 15
Torrey, UT 84775

RE: Draft Environmental Impact Statement (DEIS)
Burr Trail Modifications

Dear Al,

The Southern Utah Wilderness Alliance (SUWA) appreciates the opportunity to participate in the decision making process for Garfield County's proposed modifications of the Burr Trail that is within Capitol Reef National Park. SUWA has a long-standing interest in the status and character of this route, and we are keenly interested in the modifications proposed by Garfield County that are the subject of this DEIS.

SUWA's staff and members routinely enjoy the Waterpocket Fold area of Capitol Reef National Park, including the remote and rugged character of the Burr Trail as it traverses this section of the park. One of the most attractive features of this segment of the Burr Trail is that it is an adventure in itself. As other segments of the Burr Trail have been paved, straightened, realigned, smoothed and essentially divested of all historic and traditional character, the segment of the Burr Trail within Capitol Reef National Park continues to retained some of its celebrated historic character.

Unfortunately, it appears that this final segment of the Burr Trail, which has withstood threats of "improvements" and significant changes over time, is destined to become "just another road through a scenic national park."

Purpose and Need

Safety. The DEIS asserts that Garfield County's stated purpose and need for the proposed project is for improved *safety, stabilization and drainage*. DEIS at iii However, the DEIS concludes that even if the Preferred Alternative is approved, the

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“road widening and stabilization would provide minor benefits to public health and safety. Cumulative effects would be beneficial and of negligible to minor intensity.” DEIS at 73. “Because of light travel volumes on the road, a reduction in accidents or delays may or may not be detectable and would produce negligible to minor benefits to public health and safety.” DEIS at 161. The DEIS failed to address the reasonably foreseeable effect that graveling portions of the road will have – it is conceivable that vehicles will likely drive at higher speeds. Thus any “negligible beneficial impacts” would easily be negated by vehicles traveling at faster speeds.

8

The DEIS reports that less than 30 cars per day travel this segment of the Burr Trail, with fewer than 10 vehicles per day traveling this road during winter months. DEIS at 4, 88-89. “On average over a 12-hour visitor day, approximately two cars per hour travel the road. DEIS at 166. This level of use is extremely low, especially in light of the fact that the road’s “current design capacity of 400 vehicles per day is well in excess of the past and current usage.” DEIS at 88.

SUWA found no reference in the DEIS to the alternative route from Boulder to Bullfrog via Hanksville. This entire route is a paved and passable in all types of weather – except in big snow storms when the Burr Trail would also be impassable. Although this Hanksville route might be a few miles longer it clearly provides a safe, passable route for travelers to use and enjoy, on the few days each year that the Burr Trail segment through Capitol Reef is “impassable” due to flood waters and residual muddy conditions.

Given (1) the extremely low volume of use that this segment of the Burr Trail receives; (2) the findings in the DEIS that the preferred alternative would have only “*minor benefits to public health and safety*,” and; (3) the existence of an alternative route from Boulder to Bullfrog, it is far from certain that this proposed project should be approved. Indeed, there are likely *other alternatives* that would cause less impact to the visitor experience in the park, would cause less adverse impact to the natural resources of the park (including vegetation, wildlife, geologic features), and would maintain the existing and historical nature of this segment of the Burr Trail. Such alternatives would include better signage warning travelers of washed out road segments, narrow sections of road and overhangs with limited clearance, and signage directing travelers to the alternative paved route between Boulder and Bullfrog.

9

10

SUWA urges NPS to consider these alternatives in the Final DEIS, if, indeed, the purpose of this proposal is to increase safety when traveling from Boulder to Bullfrog.

General Comments

SUWA submits the following comments on the DEIS.

Alternatives. As noted above, the DEIS failed to include a reasonable range of alternatives – alternatives that are better suited to the particular circumstances of this segment of the Burr Trail. Such alternatives must

11

Comment # 8

Concern ID: 10608

CONCERN STATEMENT: The DEIS failed to address the reasonably foreseeable effect that graveling portions of the road will have – it is conceivable that vehicles will likely drive at higher speeds. Thus any “negligible beneficial impacts” would easily be negated by vehicles traveling at faster speeds.

Response: The nature of the road is such that there would be no appreciable difference between a gravel and dirt surface. The road would continue to be winding and relatively narrow, and the speed limit would remain unchanged. Please also refer to the response to comment # 5.

Comment # 9

Concern ID: 10609

CONCERN STATEMENT: Given (1) the extremely low volume of use that this segment of the Burr Trail receives; (2) the findings in the DEIS that the preferred alternative would have only “minor benefits to public health and safety,” and; (3) the existence of an alternative route from Boulder to Bullfrog, it is far from certain that this proposed project should be approved.

Response: As the commenter points out, the project has benefits to public health and safety. Please also refer to the response to comment # 15.

Comment # 10

Concern ID: 10610

CONCERN STATEMENT: Such alternatives would include better signage warning travelers of washed out road segments, narrow sections of road and overhangs with limited clearance, and signage directing travelers to the alternative paved route between Boulder and Bullfrog.

Response: Although providing informational signs would be of value to the visiting public, it would not meet the objectives of the project to “provide for safe travel on an all-weather, maintained, variable- width, unpaved, gravel and native material road.” Signing the road would not solve the problem of informing visitors that the road may be unsafe due to changing conditions, because the weather could be clear in Boulder at the start of the Burr Trail, but it could be raining on the road 40 miles away in the park. Alternate roads are already marked on highway maps as dirt and other routes are shown as paved. Visitors, therefore, can already choose their experience depending on their road surface preference.

Comment # 11

Concern ID: 10611

CONCERN STATEMENT: Such alternatives must include options for better signage “narrow road, impassable when wet” on the few days each year that the Burr Trail is impassable within Capitol Reef NP, and the signs providing information on the Hanksville route as an optional travel route for those who seek a less adventuresome vehicle route.

Response: Please refer to the response to comment # 10.

11 (con't)

include options for better signage – narrow road, impassable when wet -- on the few days each year that the Burr Trail is impassable within Capitol Reef NP, and the signs providing information on the Hanksville route as an optional travel route for those who seek a less adventuresome vehicle route.

Alternatives. The DEIS failed to consider an alternative that would use cement fords for all creek crossings, rather than vented fords at most of the crossings. The *vented* fords are clearly more noticeable and result in a higher degree of distraction from the visitor experience. There is little evidence that the vented fords will contribute more significantly to the public safety than the unvented fords.

12

- **Alternatives.** The DEIS failed to include an alternative that would allow cement fords at the creek crossings, but that would *maintain* the narrow stretch of the road by the overhanging rock. This alternative would include posting additional signs in the vicinity warning of the overhanging rock and narrow passageway. Although the Burr Trail case (122 F. Supp. 2d 1201, Utah Dist.Ct. 2001) may be interpreted as granting a 2-lane right-of-way to Garfield County, there is nothing in the case that states that this 2-lane right-of-way must exist for the every foot of the road. Indeed, the case notes that “the scope of Garfield County’s R.S. §2477 right-of-way is defined by what is “reasonable and necessary” to permit safe passage on a two-lane road, not by what may be “desirable,” preferable, or even optimal for two-lane highway construction.” 122 F. Supp. 2d at 1254. Thus, it is reasonable that a very short section of this route be slightly less than two lanes when natural geologic features are present, such as the overhanging rock, a local landmark as described in the DEIS. DEIS at iv and 80.

13

Impassable - Frequency. The DEIS failed to inform the decision maker and interested publics as to the number of days each year (on average) that this segment of the Burr Trail is impassable due to flooding. This is critical information that is needed by the decision maker and the public to make an informed decision as to the validity of the purpose and need of this proposed project. Please include this information in the Final EIS.

14

Cost. The DEIS disclosed that the cost of this proposed project is estimated to range between \$800,000 to \$2,000,000. DEIS at 173. How will this cost be balanced against the negligible beneficial impacts to safety?

15

- **Change in use.** The DEIS contains statements that the proposed improvements will not change the type or level of use, however there is nothing in the DEIS to support this assertion. DEIS at 167. There can be little doubt that as roadways are “improved,” use levels tend to increase, and the types of vehicles that use these roads change, i.e. from 4-wheel drive vehicles to standard passenger cars to large motor home vehicles.

16

Indirect Impacts. NEPA requires federal agencies to analyze the direct, indirect and cumulative impacts that could arise from the proposed project. Indirect effects are defined as those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 CFR 1508.8. The DEIS failed to analyze the indirect effects,

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Comment # 12

Concern ID: 10612

CONCERN STATEMENT: The DEIS failed to consider an alternative that would use cement fords for all creek crossings, rather than vented fords at most of the crossings. The vented fords are clearly more noticeable and result in a higher degree of distraction from the visitor experience. There is little evidence that the vented fords will contribute more significantly to the public safety than the unvented fords.

Response: Most of the fords proposed in the draft EIS are unvented. There are four unvented fords (at major crossings mile 0.10 and 0.20 and at minor crossings 0.25 and 0.40) and three vented fords (at major crossings 0.50, 0.60, and Halls Creek). The three vented fords are being proposed because they will handle the higher stream flows expected at those locations during flood events and provide increased safety to motorists. The map on page 41 shows that several drainages feed into the wash between crossings 0.20 and 0.50 and this would result in higher average flows at the downstream crossings.

Comment # 13

Concern ID: 10613

CONCERN STATEMENT: The DEIS failed to include an alternative that would allow cement fords at the creek crossings, but that would maintain the narrow stretch of the road by the overhanging rock. This alternative would include posting additional signs in the vicinity warning of the overhanging rock and narrow passageway.

Response: Please refer to the response to comment # 21 about the overhanging rock, comment # 12 about increased signage, and comment # 10 about fords.

Comment # 14

Concern ID: 10614

CONCERN STATEMENT: The DEIS failed to inform the decision maker and interested publics as to the number of days each year (on average) that this segment of the Burr Trail is impassable due to flooding. This is critical information that is needed by the decision maker and the public to make an informed decision as to the validity of the purpose and need of this proposed project.

Response: We have no definitive statistics on the number of times the road is closed. As the draft EIS described on page 35, "Depending on weather conditions, the road is occasionally impassable at drainage crossings, and the road surface is slippery when wet along sections of the road with high bentonite clay content. In particular, two segments of the road, between mile points 0.00 to 0.45 and 0.85 to 0.90 are on grades with high bentonite content. These segments become extremely slippery and are often impassable during and following rainstorms." Sometimes the road is impassable to passenger cars only but, at other times, it is impassable to all vehicles, including four-wheel drive vehicles. Park staff estimate that during the summer, the road is impassable, on an average, at least weekly for an hour or more.

Comment # 15

Concern ID: 10615

CONCERN STATEMENT: The DEIS disclosed that the cost of this proposed project is estimated to range between \$800,000 to \$2,000,000. DEIS at 173. How will this cost be balanced against the negligible beneficial impacts to safety?

Response: Appropriately, the draft EIS does not attempt to "balance" safety with costs. The project is designed to address the purpose and needs identified in the draft EIS and to

improve the safety for motorists at identified locations. Please also refer to the response to comment # 3.

Comment # 16

Concern ID: 10616

CONCERN

STATEMENT:

The DEIS contains statements that the proposed improvements will not change the type or level of use, however there is nothing in the DEIS to support this assertion. DEIS at 167. There can be little doubt that as roadways are “improved,” use levels tend to increase, and the types of vehicles that use these roads change, i.e. from 4- wheel drive vehicles to standard passenger cars to large motor home vehicles.

Response:

We disagree because these are site- specific improvements to identified problem areas along the road and are not changes to the entire road. Please also refer to the response to comments # 8 and # 17.

17 (cont.) such as increase vehicle traffic, for this proposed action. The Final EIS must correct for this omission.

- **Cumulative Impacts: Death by a Thousand Cuts.** SUWA is very concerned that this project will be the first of several such "improvement" proposals that the county will present to NPS in the coming years. Where will it stop? Is there a line in the sand at which NPS will deny the county's proposals? Will NPS continue to allow these "improvement" proposals (under the guise of public safety) until eventually the Burr Trail no longer "retains the winding nature and adventuresome character [t]hrough Capitol Reef National Park?" It is reasonably foreseeable that Garfield County will continue to propose improvement projects to the Burr Trail, and NEPA requires that NPS analyze the effects of such proposals. 40 CFR 1508.7. The DEIS must conclude that if these current proposed changes are approved, that no further "improvements" will be considered.

18

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- **Minimize Impact to Scenic Resources.** The DEIS failed to state that if this project is approved, that the cement used for the fords will be colored to match the surrounding soils. The Final EIS must include this stipulation.

I look forward to NPS's response to our concerns noted above. If you have any questions, please contact me at 435.259.5440.

Sincerely,



Liz Thomas
SUWA

Comment # 17

Concern ID: 10617

CONCERN STATEMENT: The DEIS failed to analyze the indirect effects, such as increased vehicle traffic, for this proposed action.

Response: As disclosed in the draft EIS on page 173, “None of the actions associated with Alternative A would include substantial alterations to the roadway that would convey greater amounts of traffic, increase traffic speeds, or encourage use by larger vehicles (e.g., trucks hauling large or oversize loads). Specifically, no straightening or changes in the general grade of the road are proposed. Therefore, it is unlikely that any of the alternatives would change overall road usage...” Although some modifications are proposed, the majority of the road will remain unchanged.

Comment # 18

Concern ID: 10619

Representative Quote: **Cumulative Impacts: Death by a Thousand Cuts.** SUWA is very concerned that this project will be the first of several such “improvement” proposals that the county will present to NPS in the coming years. Where will it stop? Is there a line in the sand at which NPS will deny the county’s proposals? Will NPS continue to allow these “improvement” proposals (under the guise of public safety) until eventually the Burr Trail no longer “retains the winding nature and adventuresome character [] through Capitol Reef National Park?” It is reasonably foreseeable that Garfield County will continue to propose improvement projects to the Burr Trail, and NEPA requires that NPS analyze the effects of such proposals. 40 CFR 1508.7. The DEIS must conclude that if these current proposed changes are approved, that no further “improvements” will be considered.

Response Garfield County has not proposed further improvement to the Burr Trail to the National Park Service, so such improvements are not reasonably foreseeable. The objectives for the road, as identified in the park’s general management plan, mark the line in the sand. As described in the *Purpose and Need* section on page 7 of the draft EIS, these objectives are to 1) “provide for safe travel on all- weather, maintained, variable- width, unpaved, gravel and native material road” and 2) “retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park”.

The October 24, 2000 District Court decision involving the Burr Trail requires the park to consider any future county proposals for construction work within the park.

Comment # 19

Concern ID: 10619

CONCERN STATEMENT: It is reasonably foreseeable that Garfield County will continue to propose improvement projects to the Burr Trail, and NEPA requires that NPS analyze the effects of such proposals.

Response: Garfield County has not proposed further improvement to the Burr Trail to the National Park Service, so such improvements are not reasonably foreseeable. Any future road construction must be consistent with the objectives of the road as identified in the park’s general management plan. As described in the *Purpose and Need* section on page 7 of the draft EIS, these objectives are to “provide for safe travel on all- weather, maintained, variable- width, unpaved, gravel and native material road.” Although we have no indication from Garfield County that further changes are proposed, should such changes be forthcoming, they will be treated in the same

manner these changes were and must meet the objectives of the park's general management plan. Then, an analysis of impacts would occur and NPS would analyze alternatives and propose mitigating measures to reduce any identified adverse effects.

Comment # 20

Concern ID: 10620

CONCERN STATEMENT: The DEIS failed to state that if this project is approved, that the cement used for the fords will be colored to match the surrounding soils.

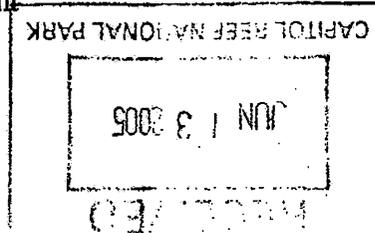
Response: Mitigation measures, as discussed on page 66 of the draft EIS, would be done for this project and would include the use of rock facing at culvert inlets or outlets and the use of coloring on constructed elements to blend their appearance with the surrounding landscape.

George & Frances Alderson

112 Hilton Avenue
Baltimore, Maryland 21228

June 4, 2005

Albert J. Hendricks, Superintendent
Capitol Reef National Park
HC 70, Box 15
Torrey, UT 84775



Dear Mr. Hendricks:

Please include this letter as our comment on the Draft EIS for Burr Trail road modifications. We visited Capitol Reef in May 2004 and were very pleased with the sense of remoteness we experienced in visiting several parts of the park. I (George) visited the park twice before, in 1966 and 1973 and saw the Burr Trail road. It was an obvious scar on a great landscape. We hope that in time it will become less of an eyesore.

We favor Alternative A with a modification. We like the way Alternative A protects the park visitor's experience, keeping the road as "an unpaved road with a winding nature and adventuresome character." We favor the use of paved fords instead of culverts at stream crossings. However, *we emphatically disagree* with changing the roadway at mile 0.65 to expand the surface to two full lanes where it passes the overhanging rock. Let's stick with the more primitive experience of alternating traffic. This is done in many European scenic landscapes, and it is common in the western United States.

We like the description in the General Management Plan (2001) as "an all-weather, maintained, variable-width, unpaved road of gravel and native surfacing" that "may be occasionally and briefly impassable because of local weather conditions." Please follow that concept.

We oppose other modifications discussed in Alternatives B and C. They are not consistent with the park visitor's experience as we have enjoyed it. Large culverts may be fine for public highways, but not in a national park. Gravel surfacing, again, is appropriate in some places, but this is not one of them. Dynamiting the overhanging rock would be an abomination. The county officials seem to want a road that is passable 24 hours a day, 365 days a year. That would be fine in downtown Salt Lake City, but it is neither necessary nor desirable in Capitol Reef National Park. We go to Capitol Reef and Glen Canyon NRA to seek wild places and grand natural landscapes, not great highways.

We ask you to protect park values as the top priority in the final decision. Please keep us informed of further public reviews on this project. Thank you for considering our views.

Sincerely,

George & Frances Alderson
George & Frances Alderson

Comment # 21

Concern ID: 10603

CONCERN STATEMENT: The roadway at mile 0.65 should not be expanded to two full lanes where it passes the overhanging rock. Let's stick with the more primitive experience of alternating traffic.

Response: This option was described and analyzed in the no- action alternative. The project objective as identified in the *Purpose and Need* section was to "provide for safe travel on an all- weather, maintained, variable- width, unpaved, gravel and native material road." This location has been the site of two separate accidents because of the narrow road and blind corner. Widening the road around the corner would create much safer conditions for vehicles passing this location. Because the no action alternative would not change the unsafe conditions at this location and not meet the project objectives, it was not chosen as the preferred alternative.

22 I believe that the Burr trail should be improved, surfaced, and widened to allow two way traffic of cars. The area is beautiful and should be seen by many Americans. It is also not an area that will be harmed by road traffic. There are many areas that should be kept natural with no good road connections, but this is not one of them.

I would recommend to you the 'no action' alternative. I like the fact that the burr trail is still relatively untamed and travel is determined by the whims of weather and current maintenance. I think by making it 'safer' and 'easier', you will detract from the qualities that people are attracted to- even if they don't realize it at the time. The proposed 'improvements' will also lead to increased use which will also detract from the sense of remoteness, create safety hazards for bicyclists and other motorists and cause additional headaches to the local ranchers that move cattle on the Burr Trail. It seems that these proposed improvements would be just one step closer to the complete paving of the Burr Trail. I have seen visitation continue to increase and feel that the future is going to bring ALOT more people- it would be nice if this part of Utah wasn't completely 'improved' so we will have a sense of the past for the future.

To Whom It May Concern:

Upon reviewing information regarding the upgrade to the Burr Trail Road, I would like to express my opinion in favor of Plan A.

The Burr Trail Road provides access to some of the most scenic areas of Utah. That access should not be hampered by lack of improvements to the road. It should also not be restricted to just those able to hike in or ride a horse -- or to just those with ATV's.

Darrell Wood
Kearns, Utah

Comment # 22

Concern ID: 10601

CONCERN STATEMENT: Burr trail should be improved, surfaced, and widened to allow two way traffic of cars.

Response:

The disposition of the entire Burr Trail was beyond the scope of this document. The project objective as identified in the *Purpose and Need* section was to “provide for safe travel on an all- weather, maintained, variable- width, unpaved, gravel and native material road” within Capitol Reef National Park. For the one- mile section of road covered by the draft EIS, the road would accommodate two- way traffic of cars in every alternative except the no- action. The project scope also included drainage concerns at the Burr Trail/Halls Creek crossing and at the base of the switchbacks.

Comment # 23

Concern ID: 10617

Representative Quote: The proposed 'improvements' will also lead to increased use which will also detract from the sense of remoteness, create safety hazards for bicyclists and other motorists and cause additional headaches to the local ranchers that move cattle on the Burr Trail.

Response:

Please refer to the response to comment # 17. Because we do not believe there will be increased use, there would therefore be no increase in safety hazard to road users or additional problems for local ranchers driving cattle.

REFERENCES

American Association of State Highway and Transportation Officials (AASHTO)

- 2001 "Policy on Geometric Design of Highways and Streets." Available at <http://www.transportation.org/aashto/home.nsf/FrontPage>. Accessed August 6, 2002.

Belnap, J.

- 1994 Potential role of cryptobiotic soil crust in semiarid rangelands. In: Monsen, S.B., and S.G. Kitchen, eds. Proceedings – Ecology and management of Annual Rangelands. General Technical Report INT-GTR-313. USDA Forest Service, Intermountain Research Station, Ogden, UT. Pages 179-185.

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

- 1989a *Final Environmental Assessment, Boulder-to-Bullfrog Road Improvement Project (Burr Trail), A Supplement to Paving the Boulder-to-Bullfrog Road (1985)*. Cedar City, UT: Cedar City District.
- 1989b *Finding of No Significant Impact and Record of Decision, Boulder-to-Bullfrog Road Improvement Project, Segment 1*. Cedar City, UT: Cedar City District.
- 1989c *Finding of No Significant Impact and Record of Decision, Boulder-to-Bullfrog Road Improvement Project, Segment 3*. Cedar City, UT: Cedar City District.
- 1999 *Grand Staircase-Escalante National Monument Approved Management Plan, Record of Decision, Cedar City, Utah*.
- In prep. *Resource Management Plan for Public Lands and Resources in Garfield, Piute, Sanpete, Sevier, and Wayne Counties*. Cedar City, UT.

Council on Environmental Quality, Executive Office of the President

- 1978 "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act." *Code of Federal Regulations* Title 40, Parts 1500-1508.
- 1980 "Analysis of Impacts on Prime and Unique Agricultural Lands in Implementing NEPA." *Federal Register* 45: 59189.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe

- 1979 *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services. USFWS/OBS-79/31.

REFERENCES

Creamer and Noble Engineers and Five County Association of Governments

- 1984 *Preliminary Engineering Report, Boulder-Bullfrog Scenic Road, A Vital Link in the Grand Circle Adventure.*

Desert Research Institute

- 2001 "Western U.S. Precipitation Frequency Maps by the National Oceanographic and Atmospheric Agency, first published in 1973." Western Regional Climate Center. Available at <http://www.wrcc.dri.edu/pcpnfreq.html>. Accessed July 18, 2002.
- 2002 "Boulder, Utah (420849) Period of Record Monthly Climate Summary." Western Regional Climate Center. Available at <http://www.wrcc.dri.edu/cgi-bin/cliRECTM.pl?utboul>. Accessed July 16, 2002.

Dunne, Thomas and Luna B. Leopold

- 1978 *Water in Environmental Planning.* New York, NY: W.H. Freeman & Company.

Federal Emergency Management Agency (FEMA)

- 2004 Federal Emergency Management Agency Flood Hazard Mapping website, available at http://www.fema.gov/fhm/fq_fldoi.shtm. Accessed March 10, 2004.

Federal Highway Administration

- 1997 "Federal Aid Policy Guide: Subchapter G – Engineering and Traffic: Part 625 – Design Standards for Highways," Available at <http://www.fhwa.dot.gov/legregs/directives/fapg/cfro2625.htm>. Accessed August 6, 2002.
- 2001 *Final Hydrology and Hydraulics Report. Burr Trail Road Settlement of Civil Action No. 2:96-CV-450J, Capitol Reef National Park Garfield County, Utah.* Denver, CO: Federal Highway Administration, Central Federal Lands Highway Division Project Development Hydraulics Section.

Findlay, C. S. T. and Josée Bourdages

- 2000 "Response Time of Wetland Biodiversity to Road Construction on Adjacent Lands." *Conservation Biology* 14 (1): 86-94.

Five County Association of Governments

- 1995 *Garfield County, Utah General Plan: For the Present and Future Needs, Growth and Development of Garfield County.* Panguitch, UT: Division of Community and Economic Development. On file at Garfield County.
- 1998 *Consolidated Plan Update 1998-1999.* Panguitch, UT: Division of Community and Economic Development. On file at Garfield County.

- 2002 "Garfield County, Utah Fact Sheet." Available at <http://www.fcaog.state.ut.us/Factsheets/Garfield.pdf>. Accessed July 27, 2003.
- Forman, Richard T. T.
- 2000 "Estimate of the Area Affected Ecologically by the Road System in the United States." *Conservation Biology* 14 (1): 31-35.
- Forman, Richard T. T. and L. E. Alexander
- 1998 "Roads and Their Major Ecological Effects." *Annual Review of Ecology and Systematics* 29:207-231.
- Frye, Bradford J.
- 1992 *The Boulder-Bullfrog Road: A History*. On file at Capitol Reef National Park, Torrey, UT.
- Garfield County, Utah
- 2003 Personal communication from Brian Bremner, County Engineer, Garfield County, Panguitch, UT, to Parsons, Denver, January.
- 2004 Personal communication from Brian Bremner, County Engineer, Garfield County, Panguitch, UT, to Parsons, Denver, May.
- Grand Circle Association
- 2004 "Grand Circle Association - Destination Utah Travel Routes." Available at http://www.grandcircle.org/destinations/utah/routes/so_utah_backways.htm. Accessed March, 4, 2004.
- Interagency Monitoring of Protected Visual Environments (IMPROVE)
- 2000 "Spatial and Seasonal Patterns and Temporal Variability of Haze and its Constituents in the United States, Report III: May 2000." Available at http://vista.cira.colostate.edu/improve/Publications/improve_reports.htm. Accessed 23 July 2002.
- Kreutzer, Lee
- 2002 Electronic mail message from Lee Kreutzer, Capitol Reef National Park, Torrey, UT, to Parsons, Denver, July 23.
- National Oceanographic and Atmospheric Administration
- 1978 *Precipitation-Frequency Atlas of the Western U.S., Volume VI - Utah*. Silver Spring MD: NOAA Atlas 2, National Weather Service.

REFERENCES

National Park Service, U.S. Department of the Interior

- 1968 *Park Road Standards: National Park Service*. May.
- 1974 *Wilderness Recommendation: Capitol Reef National Park, Utah*. November.
- 1979 *Glen Canyon National Recreation Area General Management Plan*. Page, AZ.
- 1984 *Park Road Standards: National Park Service*. Denver, CO: Technical Information Center, Denver Service Center.
- 1992a *Capitol Reef National Park: A Historic Resource Study*. Prepared by Patrick W. O'Bannon and John Milner Associates, Philadelphia, PA. Denver, CO: Rocky Mountain Region.
- 1992b *Determination of Eligibility, Boulder-to-Bullfrog Road, Garfield County, Utah*. On file at Capitol Reef National Park, Torrey, UT.
- 1993a *Boulder-to-Bullfrog Road Improvement: Archeological Survey in Glen Canyon National Recreation Area and Capitol Reef National Park*, by Betty J. LeFree. Draft manuscript on file at Capitol Reef National Park, Torrey, UT.
- 1993b *Capitol Reef National Park Cultural Sites Inventory*. On file at Capitol Reef National Park, Torrey, UT.
- 1993c *Floodplain Management Guidelines*. Washington D.C.: Special Directive 93-4.
- 1996a *Directors Order #28: Cultural Resource Management*. Washington, D.C.: Directors Order #28.
- 1996b *Ethnographic Resource Inventory and Assessment for the Burr Trail, Capitol Reef National Park, Utah, and Glen Canyon National Recreation Area, Utah, in Cooperation with the Hopi Tribe*. Prepared by Rosemary J. Sucec. Denver, CO: Rocky Mountain Regional Office.
- 1996c *Ethnographic Resource Inventory and Assessment for the Burr Trail, Capitol Reef National Park, Utah, and Glen Canyon National Recreation Area, Utah, in Cooperation with the Kaibab Paiute Tribe, the Kanosh and Koosharem Bands of the Paiute Indian Tribe of Utah, and the San Juan Southern Paiute*. Prepared by Rosemary J. Sucec. Denver, CO: Rocky Mountain Regional Office.
- 1996d *From Barrier to Crossroads: An Administrative History of Capitol Reef National Park, Utah*. Volume II. Prepared by Bradford J. Frye. Denver, CO: Cultural Resources Section, Intermountain Region.
- 1997 "Bullfrog Marina Development Concept Plan as amended from 1985-1997." Prepared by Glen Canyon National Recreation Area. On file at Glen Canyon National Recreation Area, Page, AZ.

- 1998a *Draft Environmental Impact Statement, General Management Plan and Development Concept Plan: Capitol Reef National Park.* On file at Capitol Reef National Park, Torrey, Utah.
- 1998b *Engineering & Landscape Architectural Assessment of the Burr Trail Road from The Post to the East Boundary.* Denver, CO: National Park Service and Federal Highway Administration.
- 1998c *Final Environmental Impact Statement, General Management Plan, and Development Concept Plan: Capitol Reef National Park.* On file at Capitol Reef National Park, Torrey, UT.
- 1998d *Sleeping Rainbow Ranch Adaptive Reuse Plan and General Agreement.* On file at Capitol Reef National Park, Torrey, UT.
- 1999 *Directors Order #41 and Reference Manual #41: Wilderness Preservation and Management.* Washington D.C.
- 2000a *Directors Order #47: Soundscape Preservation and Noise Management.* Washington, D.C.
- 2000b *Management Policies, 2001.* National Park Service D1416. Washington, D.C.
- 2001a *Air Quality Study at Glen Canyon NRA Related to PWC and Boating Activity.* Prepared by J. Ray, National Park Service Air Resources Division. On file at Glen Canyon National Recreation Area, Page, AZ.
- 2001b *Directors Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making.* Washington, D.C.
- 2001c *Record of Decision, General Management Plan and Development Concept Plan: Capitol Reef National Park.* On file at Capitol Reef National Park, Torrey Utah.
- 2002a "Capitol Reef National Park Summary Road Use Data, 1992 through 1997." On file at Capitol Reef National Park, Torrey, UT.
- 2002b "Capitol Reef National Park Website." Available at <http://www.nps.gov/care>. Accessed July 10, 2002.
- 2002c "Capitol Reef National Park Website with Lists of Mammal, Bird, Reptile, Amphibian, and Fish Species." Available at <http://www.nps.gov/care/rm.htm>. Accessed February 20, 2002.
- 2002d "National Park Service Public Use Statistics Office Website." Available at <http://www2.nature.nps.gov/mpur/index.cfm>. Accessed July 23, 2002.
- 2002e Personal communication from Ken Kehrer, Chief Ranger, Capitol Reef National Park, Torrey, UT, to Parsons, Denver, July.

REFERENCES

- 2002f Personal communication from Lee Kreutzer, Cultural Resources Program Manager, Capitol Reef National Park, Torrey, UT to Parsons, Denver, July.
- 2002g Personal communication from Tom Clark, Chief of Resource Management and Science, Capitol Reef National Park, Torrey, UT to Parsons, Denver, July.
- 2002h "Road Modifications for Burr Trail, Environmental Impact Statement, Capitol Reef National Park, UT." *Federal Register* 67 (69):17455-17456.
- 2002i *Directors Order #77-1: Wetland Protection and Procedural Manual #77-1: Wetland Protection*. Washington, D.C.
- no date a "Livestock Trailing Permit." On file at Capitol Reef National Park, Torrey, UT.
- no date b "Matrix of Daily Vehicles." On file at Capitol Reef National Park, Torrey, UT.
- no date c *Visitor Center and Existing Operations Offices Renovation Plan*. On file at Capitol Reef National Park, Torrey, UT.

National Park Service and Bureau of Land Management, U.S. Department of Interior

- 1985a *Environmental Assessment, Paving the Boulder-to-Bullfrog Road*. Denver, CO: National Park Service, Rocky Mountain Region.
- 1985b *Environmental Assessment Supplement, Paving the Boulder-to-Bullfrog Road*. Denver, CO: National Park Service, Rocky Mountain Region.
- 1985c *Finding of No Significant Impact, Paving the Boulder-to-Bullfrog Road*. Denver, CO: National Park Service, Rocky Mountain Region.
- 1993 *Environmental Assessment for Road Improvement Alternatives: Boulder-to-Bullfrog (Burr Trail), Capitol Reef National Park, Glen Canyon National Recreation Area, Escalante Resource Area, Henry Mountain Resource Area, Garfield County, Utah*. Denver, CO: National Park Service, Rocky Mountain Region, RMR-PP.
- 1995 *Finding of No Significant Impact, Road Improvement Alternatives: Boulder-to-Bullfrog Road (Burr Trail), Capitol Reef National Park, Glen Canyon National Recreation Area, Escalante Resource Area, Henry Mountain Resource Area*. Denver, CO: National Park Service, Intermountain Region.

Novotny, Vladimiar, and Harvey Olem

- 1994 *Water Quality Prevention, Identification, and Management of Diffuse Pollution*. New York, NY: Van Nostrand Reinhold.

Secretary of the Interior

- 1992 *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*. Washington, D.C.

- 1996 *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Washington, D.C.
- Trombulak, Stephen C. and Christopher A. Frissell
- 2000 "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities." *Conservation Biology* 14 (1):18-30.
- U.S. Army Corps of Engineers
- 2002 "Regional General Permits." Sacramento District Regulatory Program. Available at <http://www.spk.usace.army.mil/cespk-co/regulatory/RGPs>. Accessed July 17, 2002.
- U.S. Census Bureau, U.S. Department of Commerce
- 2002 "Garfield County, Utah State and County Quickfacts." Available at <http://quickfacts.census.gov/qfd/states/49/49017.thml>. Accessed June 13, 2002.
- University of Missouri
- 1999 "Fugitive Dust: Nonpoint Sources." Agricultural University Extension. University of Missouri-Columbia.
- United States District Court
- 2000 "Memorandum Opinion and Order." District of Utah. Civil No. 2:96-CV-450J. United States of America vs. Garfield County and State of Utah. October 24.
- 2001 *Settlement Agreement*. District of Utah. May 30, 2001.
- United States Code
- 1906 Antiquities Act of 1906. 16 *United States Code* 431-433; June 8, 1906, chapter 3060, 34 Stat. 225.
- 1916 National Park Service Organic Act. 16 *United States Code* 1-4; August 25, 1916, chapter 408, 39 Stat. 535.
- 1918 Migratory Bird Treaty Act. 16 *United States Code* Chapter 7, Subchapter II, *Migratory Bird Treaty*, Sections 703-712.
- 1934 Fish and Wildlife Coordination Act. 16 *United States Code* Chapter 5A, Subchapter I, Game, Fur-bearing Animal and Fish, Sections 661-667e.
- 1935 Historic Sites, Buildings and Antiquities Act. 16 *United States Code* 461-467; August 21, 1935, chapter 593, 49 Stat. 666.
- 1940 Bald Eagle Protection Act. 16 *United States Code* Chapter 5A, Subchapter II, Protection of Bald and Golden Eagles, Sections 668-668d.

REFERENCES

- 1964 Wilderness Act. 16 *United States Code* Chapter 23, National Wilderness Preservation System, Sections 1131-1136.
- 1966 Historic Preservation Act (NHPA). 16 *United States Code* 470-470x-6; Public Law 89-665, 96-515.
- 1970 Clean Air Act. 42 *United States Code* 7401-7671q; Public Law 88-206.
- 1971 An Act to Establish the Capitol Reef National Park in the State of Utah; *Public Law* 92-207. 92nd Congress S 29.
- 1973 Endangered Species Act. 16 *United States Code* Chapter 35, Endangered Species, Section 1531-1544.
- 1979 Archaeological Resources Protection Act of 1979 (ARPA). 16 *United States Code* 470aa-470mm; Public Law 96-96.
- 1996 American Indian Religious Freedom Act (AIRFA). 42 *United States Code* 1996 - 1996a; Public Law 95-341, 103-344.
- 1998 National Park Omnibus Management Act of 1998. 16 *United States Code* 5901-60116; Public Law 105-391.

U.S. Environmental Protection Agency

- 1996 *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*. Available at http://www.epa.gov/compliance/resources/policies/ej/ej_guidance_nepa_epao498.pdf.
- 1999a Information extracted from "Air Quality Related Value." *Federal Register* 43: 15016. Available at <http://www.aqd.nps.gov/ard/flagfree/identflm.htm>. Accessed November 2, 2002.
- 1999b "Regional Haze Regulations: Final Rule." *Federal Register* 40: *Code of Federal Regulations* Part 51. Available at http://www.epa.gov/ttn/oarpg/t1/fr_notices/rhfedreg.pdf. Accessed January 29, 2003.
- 2000 Information extracted from "AP42: Compilation of Pollutant Emission Factors, Volume II: Mobile Sources (AP-42)." Available at <http://www.epa.gov/otaq/ap42.htm>. Accessed November 2, 2002.
- 2001 "National Ambient Air Quality Standards (NAAQs)." Available at <http://www.epa.gov/airs/criteria.html>. Accessed July 23, 2002.
- 2002 "USA Air Quality Nonattainment Areas." Available at <http://www.epa.gov/airs/nonattn.html>. Accessed July 23, 2002.

U.S. Fish and Wildlife Service, U.S. Department of the Interior,

- 1995 *Recovery Plan for the Mexican Spotted Owl: Vol.I.* Albuquerque, NM.
- 2001 “Final Designation of Critical Habitat for the Mexican Spotted Owl.” *Federal Register* 66 (22): 8530-8553.
- 2002 Letter from Henry Maddux to Superintendent, Capitol Reef National Park, Torrey, UT, April.

U.S. Geological Survey and Bureau of Land Management, U.S. Department of the Interior

- 2001 *Biological Soil Crusts: Ecology and Management.* Technical Reference 1730-2.
- 2002 Personal communication from Belnap, U.S. Geological Survey, to Parsons, Denver, July.

Utah Department of Transportation (UDOT)

- 2000 "Garfield County Federal Aid Eligible Routes 1998-2000." Available at <http://www.dot.utah.gov/progdev/stip>. Accessed July 10, 2002.
- 2002 *Statewide Transportation Improvement Plan 2002-2006.* Available at <http://www.dot.utah.gov/progdev/stip>. Accessed May 2, 2002.
- 2004 Utah Department of Transportation 2004 Standards and Specifications. Available at <http://www.dot.state.ut.us/index.php/m=c/tid=728>. Accessed August 9, 2004.

Utah Code – Statutes and Constitution

- 2001 *Utah Code.* Salt Lake City, UT. Available at <http://www.le.state.ut.us/~code/title23/title23.htm>.

Utah Division of Wildlife Resources

- 1988 "Inventory of Sensitive Species and Ecosystems in Utah: Endemic and Rare Plants of Utah, an Overview of Their Distribution and Status." Available at <http://www.utahcdc.usu.edu/ucdc/ViewReports/plantrpt.pdf>.

Utah State University Extension Governor’s Rural Partnership Office

- 2001 “Utah Reach Garfield County/Visitor’s Center/Fast Facts,” Garfield County, Utah. Available at <http://www.utahreach.usu.edu/garfield/visitor/about.htm>. Accessed April 21, 2003.

Utah Quality Growth Commission

- 2002 *Report to the 2002 Legislature.* Available at <http://www.governor.state.ut.us/quality>. Accessed November 2, 2002.

REFERENCES

Yanes, M., J. M. Velasco, and F. Suarez

1995 "Permeability of Roads and Railways to Vertebrates: the Importance of Culverts."
Biological Conservation 71:217-222.

GLOSSARY

Advisory Council on Historic Preservation (ACHP). An independent federal agency with statutory authority to review and comment on federal actions affecting properties listed in or eligible for listing in the National Register of Historic Places.

Airshed. A body of air bounded by topographical and/or meteorological features, in which a contaminant once emitted is contained.

Air quality. A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Alternative. One of at least two proposed means of accomplishing planning objectives.

Archeological resource. Any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research.

Backcountry. All non-developed areas within the park. Generally considered to be all areas beyond developed facilities and visitor use areas, (operational areas, campgrounds, picnic areas, visitor centers, visitor contact stations), developed interpretive areas (view points, wayside orientation exhibits, developed archeological resources with designated trails), and designated trails, trailheads, and roads.

Bentonite. An absorbent clay that under variable weather conditions will shrink or swell. Because of its plasticity, it will become slippery when wet.

Biological soil crusts. Material formed by living organisms and their by-products that create a surface crust of soil particles bound together by organic materials.

Class I Federal Areas. This air-quality classification consists of federally mandated areas that include National Parks that exceed 6,000 acres, wilderness areas, national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. Visibility has been designated as an important value in 156 of these areas, one of which is Capitol Reef National Park, Utah (U.S. Environmental Protection Agency, 1999b).

CMP. Corrugated metal pipe, which often is used for culverts.

Construction. Construction is defined by the Memorandum Opinion and Order, District of Utah (U.S. District Court, 2000) as follows:

“the National Park Service has the power to regulate construction work performed by or at the direction of Garfield County or the State of Utah in connection with Garfield County’s established R.S. § 2477 right-of-way to the extent that right-of-way falls within the existing boundaries of Capitol Reef National Park . . .

GLOSSARY

“that Garfield County, its officers, agents, employees, or contractors, may not perform work constituting “construction” within the meaning of 36 C.F.R. § 5.7 without first obtaining a permit, approval or agreement from the National Park Service, including but not limited to widening, realigning, surfacing, or otherwise significantly altering the road; installing of culverts, or other new structures; or excavating, removing or displacing of rock, soil or other earth materials outside of the existing road and shoulders;”

Cultural resources. An aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource can be a tangible entity or a cultural practice.

Cumulative. The Council on Environmental Quality regulations for implementing the National Environmental Policy Act (1978) define impacts on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such action (40 *Code of Federal Regulations* § 1508.7).

Cyanobacteria. A photosynthetic bacteria formerly called blue-green algae.

Cultural landscape. A geographic area, including cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

Ecosystem. A system made up of a community of animals, plants, and bacteria and its interrelated physical and chemical environment.

Endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range [16 USC §1532(6)].

Environmental impact statement (EIS). Required by the National Environmental Policy Act to examine a range of federal actions and their potential effects on the human environment.

Ethnographic landscape. Areas containing a variety of natural and cultural resources that associated people define as heritage resources.

Ethnographic resource. A site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

Floodplain. A plain along a river, formed from sediment deposited by floods.

Floodway. Areas along a drainage where floodwater is likely to be deepest and fastest.

Geotextile. Highly durable fabrics that have a high resistance to punctures, breakage, and ultraviolet radiation, and provide good filtering. The product is used to help in the prevention of soil loss by allowing water to pass through the fabric while retaining the soil.

Ground-level ozone. A high accumulation of ozone gas or smog found in the lower atmosphere (9 miles or less high) that can be harmful to people, animals, crops, and other materials. Ozone pollution is mainly a daytime problem during summer months because sunlight plays a primary role in its formation. Nitrogen oxides and hydrocarbon compounds must be present and react with sunlight to produce ozone. Sources include cars, trucks, power plants, and factories.

Habitat. A specific set of physical conditions in a geographic area that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

Inlet and outlet protection. Either a concrete splash pad or wire enclosed riprap in conjunction with a cutoff wall to prevent erosion and scour at the inlets and outlets of the culverts and paved fords.

Maintenance. Maintenance is defined by the Memorandum Opinion and Order District Court (U.S. District Court, 2000) as follows:

“that the County has a valid existing right to an R.S. § 2477 right-of-way along the Capitol Reef segment of the Boulder-to-Bullfrog Road; and . . . that Garfield County, its officers, agents, employees, or contractors, may engage in work maintaining the existing roadway so as to preserve the status quo through repair of the wear or damage to existing road surfaces, shoulders, cut and fill slopes; repair, clearing, or replacement in kind of culverts and other structures; maintaining the existing shape and width of the road, grading it as needed to preserve a passable surface in both lanes or similar routine maintenance work, without prior authorization from the National Park Service.”

Mile point. A measurement originating from a single starting point and ending at a second point. For this document, mile points are measured from where the Burr Trail crosses the eastern boundary of Capitol Reef National Park.

Mitigating measures. Constraints, requirements, or conditions imposed to reduce the significance of or eliminate an anticipated impact to environmental, socioeconomic, or other resource value from a proposed action or land use.

Monocline. A step-like bend or fold in otherwise horizontal or gently dipping beds.

National Register of Historic Places (NRHP). The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history, architecture, archeology, engineering, and culture kept by NPS under authority of the National Historic Preservation Act of 1966.

Natural soundscapes. The total ambient acoustic environment associated with a given environment (sonic environment) in an area such as a national park or the total ambient sound level for the park. In a national park setting, this soundscape is usually composed of both ambient sounds and a variety of human-made sounds. This sonic environment is an important resource of many parks; there can also be important relationships between how this environment is perceived and understood by individuals and society.

Nonattainment. When monitored air quality pollutant concentrations exceed the standard a certain number of times over a three-year period, even if at just one monitoring point, the area is designated as a non-attainment area.

Passability. A road surface and/or turning radius wide enough to accommodate two-way vehicle traffic.

GLOSSARY

Point sources. A source of air pollution that stays in one place is considered a "stationary" or point source. Large stationary sources are usually industrial operations that emit large quantities of air pollutants, such as chemical plants, oil refineries, and pulp and paper mills.

Recontour. To modify or change the natural surface elevation or outline of a landform using accepted construction practices such as grading.

Reconstruction. The act of constructing again; to rebuild or to make over.

Rock embankment. A structural component made of rock used to stabilize and provide support, in addition to the secondary benefit of minimizing erosion (e.g., the roadway would be set atop the rock embankment at the side canyon drainage in Burr Canyon).

Scoping. Planning process that solicits people's opinions on the value of a park, issues facing a park, and the future of a park.

Sensitive species. Those plant and animal species for which population viability is a concern.

Slope protection. Typically, arevet mattress of some sort (wire enclosed riprap) that would be used along the stream channel to prevent erosion.

State Historic Preservation Officer (SHPO). An official within each state appointed by the governor to administer the state historic preservation program and carry out certain responsibilities relating to federal undertakings within the state.

Storm Event Design. An engineering practice typically involving the use of a hydrological model to design the size and type of drainage structure needed to convey drainage for a specifically sized storm event. The intent is to reduce the peak discharge from storm events, or the frequency and magnitude of out-of-bank flooding to protect property adjacent to the stream from frequent flooding.

2-year storm event. There is a one in two chance that a storm of this design magnitude will occur each year.

10-year storm event. There is a one in 10 chance that a storm of this design magnitude will occur each year.

25-year storm event. There is a one in 25 chance that a storm of this design magnitude will occur each year.

50-year storm event. There is a one in 50 chance that a storm of this design magnitude will occur each year.

Subwatersheds. A section of a watershed which is the area drained by (or contributing water to) a stream, lake, or other body of water.

Threatened and endangered species. Any species of fish, wildlife, or plant that is listed as threatened or endangered by the U.S. Fish and Wildlife Service.

Traditional cultural property (TCP). A property associated with cultural practices or beliefs of a living community that are rooted in that community's history or are important in maintaining its cultural identity. Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places.

U.S.C. *United States Code*. Contains the general and permanent laws of the United States.

Visitor use. Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

Wetlands. Lands including swamps, marshes, bogs, and similar areas, such as wet meadows, river overflows, mud flats, and natural ponds.

Wilderness area. An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to "the public purposes of recreation, scenic, scientific, educational, conservation, and historical use."

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APPENDIX A

SETTLEMENT AGREEMENT AND MEMORANDUM OF AGREEMENT

SETTLEMENT AGREEMENT

FILED
CLERK, U.S. DISTRICT COURT

30 MAY 01 PM 1:47

DISTRICT OF UTAH

Department of the Interior,

DEPUTY CLERK

This Settlement Agreement ("Agreement") is entered into by and between the United States of America ("United States"), on behalf of the United States Department of the Interior, and the National Park Service, Garfield County, Utah (the "County"), the State of Utah (the "State"), the National Parks Conservation Association ("NPCA") (collectively, the "Parties").

WHEREAS, the Parties have been engaged in litigation concerning a one-mile portion of the Burr Trail within Capitol Reef National Park (the "Park"), in Civil Action No. 2:96-CV-450J, United States District Court, District of Utah, Central Division (the "Burr Trail Litigation");

WHEREAS, on October 24, 2000, the Court issued its Memorandum Opinion and Order ("District Court's Order") which sets forth the relationship between the United States' authority and the County's right-of-way, pursuant to § 2477 of the Revised Statutes of the United States, 43 U.S.C. § 932 (repealed 1976), and the characteristics of these governments' correlative rights concerning Burr Trail through the Park;

WHEREAS, the County and the State would like to make certain improvements to the Burr Trail through the Park from the Post to the east boundary of the Park (the "One Mile Segment");

WHEREAS, the Parties desire to confirm a mutually agreeable procedure, in conformance with the District Court's Order, the National Environmental Policy Act, as well as other legal requirements, for addressing improvements which the County and the State desire to make to the One Mile Segment;

WHEREAS, the County asserts that the First and Fifth Causes of Action set forth in its Counterclaim, dated January 3, 1997 ("County's Counterclaim"), are the only causes of action which were not resolved by the District Court's Order and which the County continues to pursue; and

WHEREAS, the Parties desire to resolve the County's Counterclaim amicably and without further litigation.

NOW, THEREFORE, in consideration of the mutual covenants, conditions and agreements set forth herein, the Parties hereby agree as follows:

1. Memorandum of Agreement Concerning Process for Addressing County and State's Desired Improvements to the One Mile Segment. Concurrently with the execution of this Agreement, the Park Service, the County, the State and NPCA shall execute the Memorandum of Agreement, attached hereto as Attachment 1 ("MOA"), which formalizes a cooperative process for addressing currently proposed improvements the County and the State would like to make to the One Mile Segment, including identification of the proposed improvements, conceptual design, preliminary design and environmental compliance, final design, construction and supervision. Under the terms of the MOA, within 30 days of the Park Service's completion of the conceptual design plan, the County and the State will pay the Park Service the sum of \$25,000 for use in completing preliminary design, including the collection and analysis of the additional data necessary to carry out environmental compliance, as well as for revegetation of the hillside on the eastern entrance of the Park.

2. Dismissal of County's Counterclaim. Concurrently with the execution of this Agreement, the Parties shall execute the Stipulation of Dismissal, attached hereto as Attachment 2 ("Stipulation"), which provides for dismissal of the County's Counterclaim pursuant to Rule 41(a)(1) & (c) of the Federal Rules of Civil Procedure. Upon receipt of fully executed originals of this Agreement, the MOA and the Stipulation, the County shall file the Stipulation with the Court.

3. Satisfaction of Damages and Costs. In consideration of the County's performance of the covenants contained in paragraph 1 (execution of MOA and payment of \$25,000) and paragraph 2 of this Agreement (execution and filing of Stipulation of Dismissal), the United States agrees that the County has satisfied the Order of the Court to pay damages, i.e., the amount, not to exceed \$6,840, of the actual cost of revegetation of the hillside at the eastern entrance of the Park, and agrees to forgo filing a bill of costs in this action.

4. Finality of District Court's Order. The Parties agree that, other than as provided by paragraph 3, nothing in this Agreement affects the relief granted by the District Court's Order. The Parties agree that, the District Court's Order having resolved the claims of the United States and the National Parks and Conservation Association, the State having agreed to dismissal of its Counterclaim during the December 19, 2000 status and scheduling conference, the filing of the Stipulation dismissing the County's Counterclaim is intended by the Parties to resolve all pending claims in this litigation and to make the District Court's Order a final appealable order.

5. No Third Party Rights. This Agreement shall not be construed as creating any right or benefit, substantive or procedural, enforceable at law or in equity by any person or entity not a party to this Agreement against the United States, the County or the State, their agencies, officers or any other person.

6. Reservations. Nothing in this Agreement or in the documents implementing the Agreement, i.e., the MOA and the Stipulation, shall be construed or offered in evidence in any proceeding as an admission or concession of wrongdoing or liability in connection with the County's Counterclaim. This Agreement is executed solely for the purpose of compromising ✓ and settling the County's pending Counterclaim and to confirm a mutually agreeable procedure for addressing improvements which the County and the State desire to make to the One Mile ✓ Segment, and nothing in this Agreement shall be construed as precedent. Nothing in this Agreement shall be construed to deprive a federal official of authority to revise, amend or promulgate regulations. Nothing in this Agreement shall be construed to commit a federal official to expend funds not appropriated by Congress.

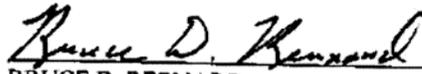
7. Mutual Covenants of Authority. The Parties represent and acknowledge that each of the undersigned is authorized to execute this Agreement and the Stipulation on behalf of the party they represent, and that the indicated signatories of the MOA are authorized to execute the MOA on behalf of the Park Service, the County, the State and NPCA, respectively.

8. Severability. The provisions of this Agreement shall be interpreted to be severable and, if any term or portion of this Agreement shall be determined to be unlawful or otherwise unenforceable, the remainder of the Agreement shall remain in full force and effect.

9. Effective Date. This Agreement shall become effective upon execution by all of the Parties.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the dates set forth below.

UNITED STATES OF AMERICA (including its agencies the United States Department of the Interior and the National Park Service)



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Dated May 30, 2001

GARFIELD COUNTY, UTAH

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Dated _____

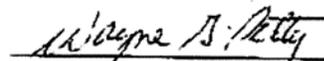
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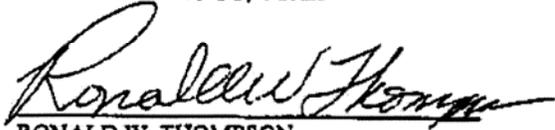
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(801) 521-0250

Dated _____

MEMORANDUM OF AGREEMENT

FILED
CLERK, U.S. DISTRICT COURT
30 MAY 01 PM 1:47
DISTRICT OF UTAH
BY: DEPUTY CLERK

This Memorandum of Agreement ("MOA") is entered into by and between the National Park Service (the "Park Service"), Garfield County, Utah (the "County"), the State of Utah (the "State") and National Parks Conservation Association ("NPCA") (collectively, the "Parties") in order to confirm a mutually agreeable procedure, in conformance with the Memorandum Opinion and Order of the United States District Court for the District of Utah in Civil Action No. 2:96-CV-450J ("District Court's Order"), the National Environmental Policy Act, as well as other legal requirements, for addressing improvements which the County and the State desire to make to the Burr Trail through Capitol Reef National Park (the "Park") from the Post to the east boundary of the Park (the "One Mile Segment").

THE UNDERSIGNED PARTIES MUTUALLY AGREE THAT:

1. Proposed Roadway Improvements. The County and the State have identified certain roadway improvements which they would like to make on the One Mile Segment, as described in Attachment 1, attached hereto and incorporated herein. The Parties agree to address conceptual design, preliminary design and environmental compliance, final design, construction and supervision concerning the proposed improvements as described below.

2. Completion of Conceptual Design by Park Service. Park Service and Federal Highway Administration design personnel will complete a conceptual design plan for the proposed improvements and options concerning those improvements which the Parties have identified. The conceptual design will generally conform to the design guidelines described in the February, 1998 Report of Elizabeth Koreman and Thomas Puto entitled "Engineering &

Landscape Architectural Assessment of the Burr Trail from the Post to the East Boundary," modified, as necessary, by guidance from the 1984 National Park Service road standards. Subject to availability of appropriated funds, the Park Service will bear the costs of preparing the conceptual design plan and will complete the conceptual design plan within 90 days of execution of this MOA.

3. NEPA Compliance. Upon completion of the conceptual design of the roadway improvement options, the Park Service will carry out necessary environmental analysis in a timely fashion consistent with the District Court's Order. The County and the State shall be Cooperating Agencies in the National Environmental Policy Act ("NEPA"). NPCA shall be provided written notice of the scoping process. The Park Service will be responsible for completing the preliminary design. The Park Service will collect and analyze the necessary data with cooperation and financial assistance from the County and the State. The County and State shall pay the Park Service the sum of \$25,000, within 30 days of completion of the conceptual design plan, to be used to cover some of the costs of preliminary design, as well as the costs of revegetation of the hillside on the eastern entrance of the Park (pursuant to 16 U.S.C. § 3a; 19 U.S.C. § 19jj; 31 U.S.C. § 6505). The Park Service will provide the opportunity for the County, the State and NPCA to review and comment on the preliminary design prior to its completion. Upon completion of the preliminary design and identification of the areas of impact of the various alternatives being considered, the Park Service will analyze the environmental impacts of the alternatives and complete the NEPA process.

4. Implementation of NEPA Approved Activities. Approval of the NEPA decision document will constitute written agreement, pursuant to 36 C.F.R. § 5.7, for the County and the State to proceed with improvements authorized by the decision document consistent with the terms and conditions specified by the decision document. The County and State will prepare construction drawings for improvements authorized in the decision document which conform to the preliminary design as authorized by the decision document. The Utah Department of Transportation and the Park Service may assist in the preparation of these construction drawings. Improvements must be designed and implemented in accordance with principles outlined in National Park Service road standards and exemplified by current procedures and processes in place between the Park Service and the Federal Highway Administration concerning construction and improvement of highways. These procedures and processes include rigorous design, control of work using accepted standards for specifications and construction drawings, as well as standard procedures for monitoring and accepting work in progress. The County and State will provide the Park Service the opportunity to review and comment on draft construction drawings and to ensure that the drawings conform to the decision document and the preliminary design and are in sufficient detail to direct construction of the improvements. NPCA shall also be afforded the opportunity to review and comment on draft construction drawings. NPCA shall provide any comments it may have concerning the draft construction drawings to the other parties within 15 days of receipt of such draft drawings. Within 30 days of receipt of construction drawings, the Park Service will notify the County and State whether the drawings are approved. If the Park Service does not approve the drawings, it shall specifically identify necessary modifications or

additional detail required. The County and State will bear the costs of preparing the construction drawings. Upon approval of construction drawings by the Park Service, the County and State may proceed with construction of the improvements as addressed below.

5. Construction Monitoring and Inspection. The County and State will give the Park Service 30 days notice prior to commencing any construction and thereafter sufficient notice throughout the construction project to ensure that the Park Service has the opportunity to have its inspector present. The Park Service will notify the County and State of the personnel assigned to monitor and inspect construction to ensure that construction is carried out in conformance with the plans and specifications. If construction work is performed by contract, the County and the State shall be responsible for the cost of contract administration. In that event, the Park Service will work through a County or State official with contract authority in carrying out its monitoring and inspection of construction work. All costs of construction shall be borne by the County and State, provided, however, that this provision does not prevent the County and State from using State or Federal grant funds to pay for completion of construction drawings or actual costs of the project.

6. Savings Provision. Nothing in this MOA is intended to repeal, amend or otherwise modify any law or regulation of the United States or the State, whether now in force or hereafter enacted or provided; and the mention of specific restrictions, conditions, and stipulations herein shall not be construed as in any way impairing the general powers of supervision, regulation, and control of the United States or the State.

7. No Third Party Rights: This MOA shall not be construed as creating any right or benefit, substantive or procedural, enforceable at law or in equity by any person or entity not a party to this MOA against the Park Service, the County or the State, their officers, employees or any other person.

8. Enforcement. Any party may enforce this MOA by such administrative and/or judicial means or remedies as may be available.

9. Reservations. Nothing in this MOA shall be construed or offered in evidence in any proceeding as an admission or concession of wrongdoing or liability in connection with the County's Counterclaim. This MOA is executed solely for the purpose of compromising and settling the County's pending Counterclaim and to confirm a mutually agreeable procedure for addressing currently proposed improvements which the County and the State desire to make to the One Mile Segment, and nothing in this MOA shall be construed as precedent. Nothing in this MOA shall be construed to deprive a federal official of authority to revise, amend or promulgate regulations. Nothing in this MOA shall be construed to commit a federal official to expend funds not appropriated by Congress.

NATIONAL PARK SERVICE

Dated 5/25/01



KAREN P. WADE
Director, Intermountain Region
National Park Service

GARFIELD COUNTY, UTAH

Dated May 29, 2001

D. Malloy Budds
D. MALLOY BUDDS
Chairman
Garfield County Board of County Commissioners

STATE OF UTAH

Dated May 30, 2001

Gary B. Doxey
MICHAEL O. LEAVITT
Governor
State of Utah
By Gary B. Doxey, General Counsel

NATIONAL PARKS CONSERVATION
ASSOCIATION

Dated _____

GARFIELD COUNTY, UTAH

Dated _____

D. MALLOY DODDS
Chairman
Garfield County Board of County Commissioners

STATE OF UTAH

Dated _____

MICHAEL O. LEAVITT
Governor
State of Utah
By Gary B. Doxey, General Counsel

NATIONAL PARKS CONSERVATION
ASSOCIATION

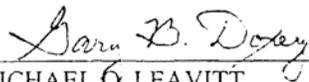
Dated 5/29/01 _____



THOMAS C. KIERNAN
President

STATE OF UTAH

Dated May 30 2001


MICHAEL O. LEAVITT
Governor
State of Utah
By Gary B. Doxey, General Counsel

Proposed Improvements to One Mile Segment of Burr Trail

1. Gravel surfacing – gravel surfacing of travelway from Mile 0.0 to Mile 0.45, and from Mile 0.85 to Mile 0.9 (approximately 300 feet back from Mile 0.9)

Six inch untreated base course

2. Drainage facilities -- New drainage facilities for four crossings of Sandy Creek and two minor wash crossings between Mile 0.0 and Mile 0.6, and improvement of drainage at existing 24 inch culvert at Mile 0.75

Sandy Creek crossings:

Galvanized steel culverts sized for 10 year event
or

Hardened low water crossings constructed of concrete or asphalt and sized for 10 year event

New culverts for two minor wash crossings:

Galvanized steel culverts sized for 10 year event

Improvement of existing 24 inch culvert at Mile 0.75:

Extending length and possibly installing larger diameter galvanized steel culvert

3. Widening of roadway at overhanging rock -- Widening of roadway width to 20 feet at overhanging rock at Mile 0.6

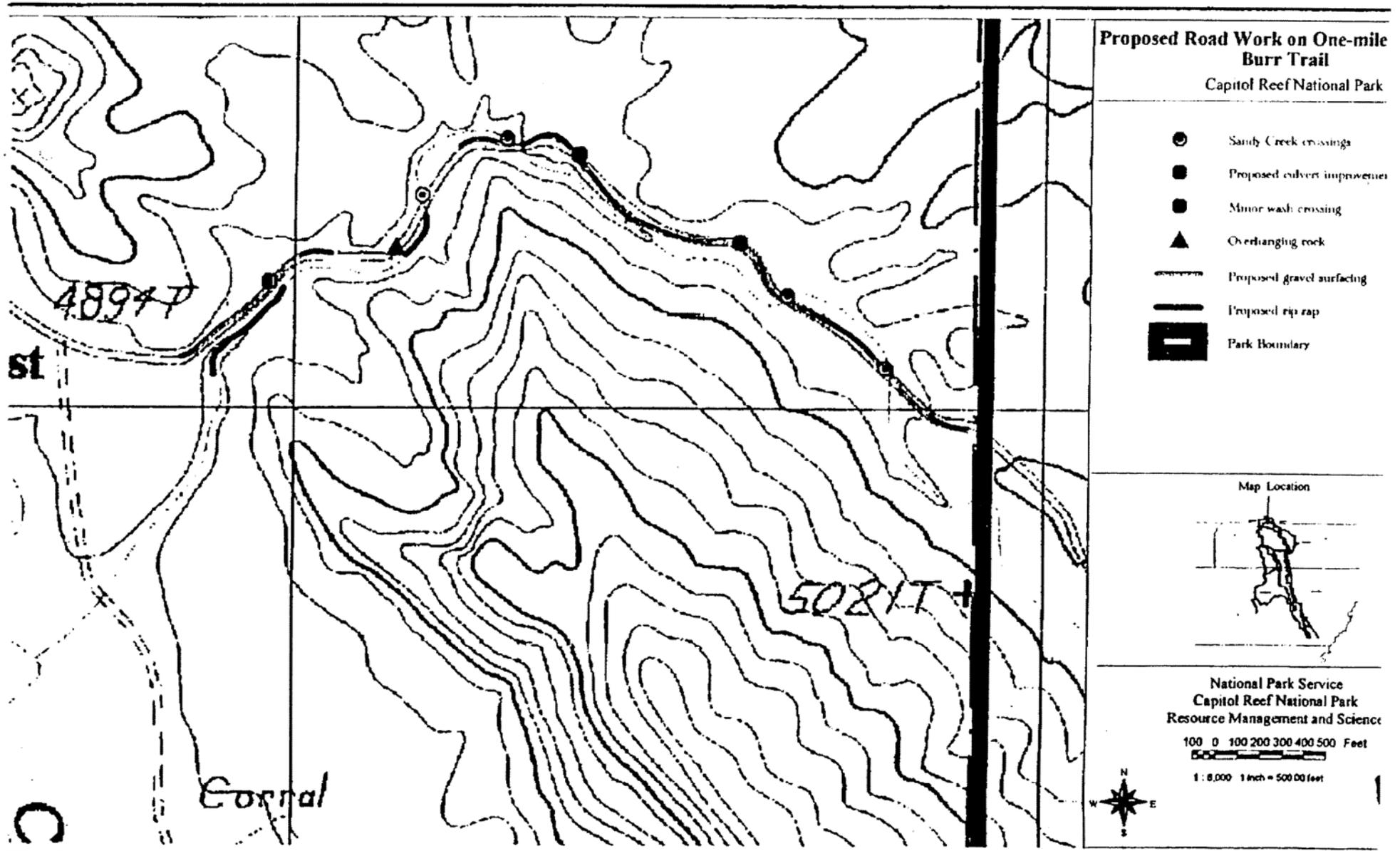
Cutting into rock to accommodate greater roadway width
or

Construction of concrete or rock retaining wall adjacent to Sandy Creek to accommodate greater width

4. Rip-rap -- Addition of rip-rap to bank of Sandy Creek at locations where creek cuts into existing fill slope of road between Mile 0.6 to Mile 0.9

Placing rip rap up to 6 feet up bank

Use of native rock in streambed or previously removed from roadway/rock hauled in from other areas



APPENDIX B

CONCEPTUAL DESIGN PLAN

CONCEPTUAL DESIGN PLAN
Burr Trail Road Improvements

The portion of the Burr Trail Road described below extends from the park's east boundary to The Post (approximately 1 mile). This Conceptual Design Plan relates to roadway improvement proposals made by Garfield County along this portion of the Burr Trail Road. Improvements include gravel surfacing on portions of the road, the installation or improvement of drainage facilities at certain wash crossings, widening of the roadway at an overhanging rock and the installation of riprap along a section of the bank of Sandy Creek adjacent to the road. This Conceptual Design will serve as the basis for undertaking the analysis required by the National Environmental Policy Act (NEPA). Conceptual designs discussed herein will generally conform to the design guidelines described in the February, 1998 Report of Elizabeth Koreman and Thomas Puto entitled "Engineering & Landscape Architectural Assessment of the Burr Trail from the Post to the East Boundary," modified, as necessary, by guidance from the 1984 National Park Service road standards.

Road stabilization is proposed from approximately M.P. 0.0 - 0.45, and from M.P. 0.85 - 0.90. The current bentonite surface is not adequate for all weather travel. Alternatives for the road stabilization could include: A) excavate a portion of the bentonite (blue clay) areas, install fabric barrier and cover with gravel base; B) apply a road stabilizer; C) apply gravel base without a fabric barrier and continue to replace gravel base as needed.

Drainage improvements are proposed at four major Sandy Creek crossing locations and at least two to three minor Sandy Creek tributary wash crossings. While all of the washes are typically dry, all are subject to flooding and associated erosion during flash flood events. Travel across these drainages may be impossible during the flood event itself, and travel may remain difficult for several hours after the flood while the native surface dries. Depending on the severity of any particular flood event, the crossing may remain rough for an extended period until the roadway can be regraded.

Alternatives for the drainage improvements include, A) low water crossings constructed of either concrete or asphalt; B) installation of galvanized steel culverts, or; C) installation of concrete box culverts. Non-reflective surfacing could be used to minimize the visual impact of the galvanized steel culverts. The impacts of each alternative will need analysis at each drainage crossing. The selected alternative may differ from one drainage crossing to the next.

A low spot in the road has developed at approximately M.P. 0.43 due to the current slope of the road surface and subsequent drainage channelization. The bank at the outlet on the south side of the road is being eroded. Alternatives for correction of this problem include regrading the road, installing a check dam at the outlet and rock riprap the outlet slope channel.

An overhanging rock extends above the road surface at M.P. 0.6, causing larger vehicles to move toward the opposing lane when travelling in a westerly direction. The existing roadway is narrow at this location (approximately 14 feet wide) and being on a curve with reduced sight distance compounds the problem. The stream channel is immediately adjacent to the toe of the fill slope adjacent to the overhanging rock. Presently, two vehicles traveling in opposite directions cannot safely pass immediately adjacent to the overhanging rock. Alternatives for road widening in this area include A) cutting into the rock to accommodate greater roadway width, or B) constructing a retaining wall along the present stream edge and shifting the roadway toward the stream on fill placed behind the wall. (This alternative was described in detail in the aforementioned Koreman-Puto Report.)

The section of roadway at approximately M.P. 0.75 - 0.85 is located on a tangent of the stream channel near the fill slope edge. Flash flood events cause erosion at the toe of the fill slope that may eventually undermine the road surface. Alternatives for bank stabilization include A) use rock within the adjacent area or rock gathered from more distant sources as riprap, placed at a sufficient height up to 6 feet along the base of the fill slope, or B) construct retaining walls along the base of the fill slope.

Additional alternatives for each of the improvement proposals may be developed during the scoping that is conducted in conjunction with the NEPA compliance process. Similarly, mitigation measures that might reduce the impacts of any of the alternatives studied will be considered during the compliance process.

APPENDIX C
SCOPING BROCHURE



 OFFICIAL BUSINESS
 PENALTY FOR PRIVATE USE, \$300
 DENVER, CO 80225-0287
 P.O. Box 25287
 Intermountain Support Office, IMDS-PE
 NATIONAL PARK SERVICE
 DEPARTMENT OF THE INTERIOR
 UNITED STATES

Capitol Reef National Park

National Park Service
 U.S. Department of the Interior



Burr Trail Road Modifications
Capitol Reef National Park
 Environmental Impact Statement



Capitol Reef National Park

National Park Service
 U.S. Department of the Interior



BURR TRAIL ROAD MODIFICATIONS
 Environmental Impact Statement

Superintendent's letter

Dear Participant:

The National Park Service, the State of Utah, and Garfield County are reviewing proposed modifications to portions of the Burr Trail (Boulder-to-Bullfrog Road) within Capitol Reef National Park. Capitol Reef National Park is preparing an environmental impact statement (EIS) to evaluate potential impacts to the natural and human environment resulting from actions that would modify segments of the Burr Trail in the park.

An important element of the EIS process is public participation. Therefore, your input on issues and concerns about the project is needed. This brochure describes the road modification project and provides an opportunity for you to comment.

As the Superintendent of Capitol Reef National Park, I invite you to participate in the completion of the Burr Trail Road Modifications EIS.

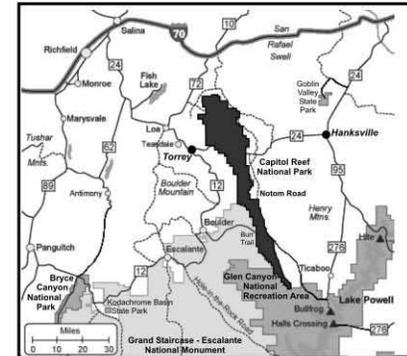
Sincerely,
 Albert J. Hendricks
 Superintendent



PARK LOCATION

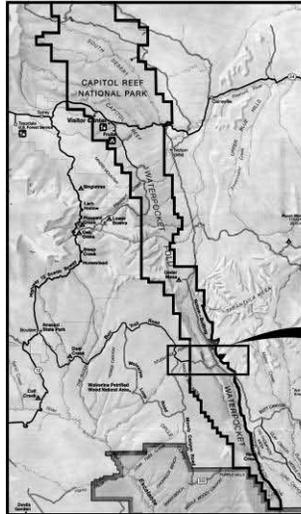
Capitol Reef National Park is in south central Utah. Park Headquarters is in Fruita, approximately 37 miles west of Hanksville and 11 miles east of Torrey, Utah. The area is known for its sedimentary formations, cliffs, monoliths, and an abundance of canyons. The park is known for significant geologic features such as:

- Waterpocket Fold, the largest exposed monocline in North America.
- Colorful cliffs, sometimes known as the "Sleeping Rainbow."
- Cliff-top washes that erupt into spectacular waterfalls following intense summer thunderstorms.
- Cathedral Valley and narrow canyons providing evidence of geologic forces at work.
- Striking scenic views and the opportunity for quiet and solitude on the undeveloped landscape of the Colorado Plateau.

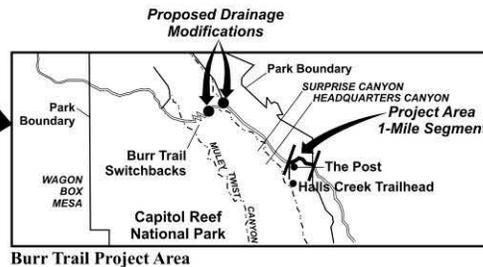


Park Location

PROJECT AREA



The project area includes a one-mile segment of the Burr Trail extending from the eastern boundary of the park to The Post, a drainage at the Burr Trail/Hall's Creek Crossing, and a drainage crossing the road near the base of the switchbacks in Burr Canyon.



Burr Trail Project Area

PROJECT BACKGROUND

The Boulder-to-Bullfrog Road (Burr Trail) is a 66-mile backcountry road that passes through lands administered by two federal agencies, the National Park Service and the Bureau of Land Management. About 8.4 miles of this road pass through the southern portion of Capitol Reef National Park. Under Revised Statute 2477, Garfield County, Utah owns a right-of-way along the road. Since the 1970s and early 1980s, the National Park Service has evaluated various proposals to pave, construct an all-weather road, and other types of alternatives designed to modify the segment of the Burr Trail within the park. The most recent environmental assessment, prepared in 1993 by the National Park Service and Bureau of Land Management, evaluated the impacts of road modifications within the limits of National Park Service and Bureau of Land Management lands.

Garfield County, Utah has proposed road modifications to the Burr Trail within Capitol Reef National Park. Under the provisions of the National Environmental Policy Act (NEPA) of 1969, (as amended), the National Park Service is preparing an environmental impact statement (EIS) to evaluate the effects of that proposal.

The EIS will evaluate potential impacts to the natural and human environment resulting from the proposed road modifications. This effort will identify and evaluate alternatives for proposed road modifications that may include road realignment, resurfacing, and stabilization or drainage modifications along a 1-mile segment of the road.

Two additional separate drainage modifications outside this 1-mile segment of the Burr Trail will address drainage concerns at the Burr Trail/Hall's Creek crossing and a drainage crossing the road near the base of the switchbacks in Burr Canyon. Installation of a National Park Service proposed cattle guard at the park boundary would also be considered.

PURPOSE AND NEED

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Hall's Creek crossing and at a drainage crossing the road near the base of the switchbacks in Burr Canyon. The one-mile segment of the Burr Trail that would be modified extends from the eastern park boundary to The Post. National Park Service management direction within Capitol Reef National Park is currently set by the Final Environmental Impact Statement/General Management Plan/Development Concept Plan (GMP) that was approved in March 2001. Based upon this management direction, Capitol Reef National Park has the following objectives in connection with the proposed action:

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved road of gravel and native surfacing, acknowledging that the road may be occasionally and briefly impassible depending on localized weather conditions,
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park, and
- Protect the natural and cultural resources of the park.

Garfield County has identified safety, stabilization, and improved drainage as the purpose of their proposal. Because alternatives may be considered in one compliance process that alter the direction established in an earlier document, an alternative may be selected in the Record of Decision (ROD) resulting from this process that differs from these stated objectives, effectively amending any earlier ROD(s) that set

RESOURCE ISSUES/TOPICS

Internal scoping identified the following issue/topics:

- Alterations of geologic features, land forms, and terrain
- Biological soil crusts
- Soils
- Vegetation
- Wildlife
- Threatened and endangered species
- Surface water
- Historical, archeological, and ethnographic resources
- Visitor use, safety, and experience
- Wilderness values
- Air quality
- Natural soundscapes
- Park operations

ALTERNATIVES

Alternatives to be considered will include no-action and alternatives that will be developed from a selection of potential treatments to be applied at each location where modification work is proposed. Additional alternative treatments may be considered from proposals developed during the scoping process. The proposed action may include selections from each alternative regarding realignment, resurfacing, stabilization, and drainage modification. Installation of a National Park Service proposed cattle guard at the park boundary will also be considered.

The road modifications would keep the driving experience much as it is today. The conceptual design elements associated with the modifications would include:

- Stabilization of the road surface using gravel base material at locations where the current bentonite surface makes the road inadequate for all weather travel.
- Installation or improvement of drainage facilities at wash crossings (potential alternative solutions to drainage concerns include low water crossings, properly-sized steel culverts, or concrete box culverts).
- Widening the road at milepost 0.6 or altering the size of the overhanging rock at that point to accommodate two-way vehicle traffic.
- Installation of riprap along the northern bank of Sandy Creek, adjacent to the road, from approximately milepost 0.75 to 0.85.

WHAT COMES NEXT

Once the information received from scoping is reviewed, a draft environmental impact statement (EIS) will be prepared. Its availability will be announced with news releases and a *Federal Register* notice. After a 60-day public review period, the final EIS will be announced in the same way. Public meetings are scheduled during the 60-day draft EIS review period. After a 30-day no action period, a record of decision (ROD) will describe the National Park Service decision.

APPENDIX D

CONSULTATION LETTERS



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Capitol Reef National Park
Torrey, Utah 84775

April 12, 2002

Mr. Henry Maddux
Field Supervisor
US Fish and Wildlife Service
2369 West Orton Circle
Suite 50
West Valley City, Utah 84119

Dear Mr. Maddux:

Capitol Reef National Park is preparing an environmental impact statement (EIS) to evaluate potential impacts to the natural and human environment resulting from a proposed action that would modify segments of the Burr Trail in the park.

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Hall's Creek crossing and at a drainage crossing the road near the base of the switchbacks in Burr Canyon. The one-mile segment of the Burr Trail that would be modified extends from the eastern park boundary to The Post. The purpose of the proposed action would be to meet the following objectives.

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved road of gravel and native surfacing, acknowledging that the road may be occasionally and briefly impassible depending on localized weather conditions,
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park, and
- Protect the natural and cultural resources of the park.

The need for the proposed action would be to address proposed road modifications that Garfield County would like to make to the Burr Trail. Completion of the EIS process would fulfill a May 30, 2001 Memorandum of Agreement, which established a mutually agreeable procedure between the National Park Service, the State of Utah, and Garfield County, Utah to conduct compliance on this section of the Burr Trail.

The road modifications would keep the driving experience much as it is today while achieving the three objectives stated above. The conceptual design elements associated with the modifications would include:

- Stabilization of the road surface using gravel base material at locations where the current bentonite surface makes the road inadequate for all weather travel,
- Installation or improvement of drainage facilities at wash crossings (alternative solutions to drainage problems include low water crossings, properly-sized steel culverts, or concrete box culverts),
- Widening and/or realignment of the road at milepost (M.P.) 0.6 or altering the size of the overhanging rock at that point to accommodate two-way vehicle traffic, and

- Installation of rip-rap along the northern bank of Sandy Creek, adjacent to the road, from approximately M.P. 0.75 to 0.85.

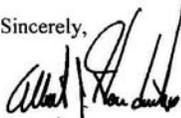
Other alternatives to achieve the purpose and objectives of the proposed action will be developed during the scoping process. Additionally, adverse effects of the alternatives on resources in the park would be minimized through the development and implementation of mitigation measures.

In order to meet our Section 7 consultation requirements for the EIS, we respectfully request that you provide us with the current listing and locations of endangered, threatened, proposed and candidate species and their associated critical habitats specific to Garfield County, Utah.

This letter is the first step of consultation for this project to ensure that the planning effort adequately addresses Section 7 requirements related to the Burr Trail EIS. When the draft EIS is completed, a copy will be sent to you with an official transmittal letter for your review and comment.

We look forward to working cooperatively with you on the planning and implementation of this project.

Sincerely,



Albert J. Hendricks
Superintendent

enclosures (1)

cc: NPS – C. Turk
Parsons Denver – C. Chitwood



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

Capitol Reef National Park

Torrey, Utah 84775

April 12, 2002

Mr. Don Ostler
Utah Department of Environmental Quality
Division of Water Quality
P.O. Box 144870
Salt Lake City, UT
84114-4870

Dear Mr. Ostler:

Capitol Reef National Park is preparing an environmental impact statement (EIS) to evaluate potential impacts to the natural and human environment resulting from a proposed action that would modify segments of the Burr Trail in the park.

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Hall's Creek crossing and at a drainage crossing the road near the base of the switchbacks in Burr Canyon. The one-mile segment of the Burr Trail that would be modified extends from the eastern park boundary to The Post. The purpose of the proposed action would be to meet the following objectives.

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved road of gravel and native surfacing, acknowledging that the road may be occasionally and briefly impassible depending on localized weather conditions,
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park, and
- Protect the natural and cultural resources of the park.

The need for the proposed action would be to address proposed road modifications that Garfield County would like to make to the Burr Trail. Completion of the EIS process would fulfill a May 30, 2001 Memorandum of Agreement, which established a mutually agreeable procedure between the National Park Service, the State of Utah, and Garfield County, Utah to conduct compliance on this section of the Burr Trail.

The road modifications would keep the driving experience much as it is today while achieving the three objectives stated above. The conceptual design elements associated with the modifications would include:

- Stabilization of the road surface using gravel base material at locations where the current bentonite surface makes the road inadequate for all weather travel,
- Installation or improvement of drainage facilities at wash crossings (alternative solutions to drainage problems include low water crossings, properly-sized steel culverts, or concrete box culverts),

- Widening and/or realignment of the road at milepost (M.P.) 0.6 or altering the size of the overhanging rock at that point to accommodate two-way vehicle traffic, and
- Installation of rip-rap along the northern bank of Sandy Creek, adjacent to the road, from approximately M.P. 0.75 to 0.85.

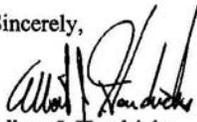
Other alternatives to achieve the purpose and objectives of the proposed action will be developed during the scoping process. Additionally, adverse effects of the alternatives on resources in the park would be minimized through the development and implementation of mitigation measures.

In order to provide a thorough assessment of all resources in the EIS, we respectfully request that you provide us information specific to issues you believe warrant consideration in association with the proposed action in Garfield County, Utah.

This letter is the first step of consultation for this project to ensure that the planning effort adequately addresses potential resource management concerns related to the Burr Trail EIS. When the draft EIS is completed, a copy will be sent to you with an official transmittal letter for your review and comment.

We look forward to working cooperatively with you on the planning and implementation of this project.

Sincerely,



Albert J. Hendricks
Superintendent

enclosures (1)

cc: NPS – C. Turk
Parsons Denver – C. Chitwood



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

Capitol Reef National Park
Torrey, Utah 84775

April 22, 2002

Mr. Max Evans, SHPO
Utah State Historical Society
100 Rio Grande
Salt Lake City, Utah 84101

Dear Mr. Evans:

Capitol Reef National Park is preparing an environmental impact statement (EIS) to evaluate potential impacts to the natural and human environment resulting from a proposed action that would modify segments of the Burr Trail in the park.

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Hall's Creek crossing and at a drainage crossing the road near the base of the switchbacks. The one-mile segment of the Burr Trail that would be modified extends from the eastern park boundary to The Post, a distance of approximately one mile. The purpose of the proposed action would be to meet the following objectives.

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved, gravel and native material road, acknowledging that the road may be occasionally and briefly impassible depending on localized weather conditions,
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park, and
- Protect the natural and cultural resources of the park.

The need for the proposed action would be to fulfill the May 30, 2001 Memorandum of Agreement, which established a mutually agreeable procedure between the National Park Service, the State of Utah, and Garfield County, Utah to address proposed road modifications that Garfield County would like to make to the Burr Trail.

The road modifications would keep the driving experience much as it is today while achieving the three objectives stated above. The conceptual design elements associated with the modifications would include:

- Stabilization of the road surface using gravel base material at locations where the current bentonite surface makes the road inadequate for all weather travel,

- Installation or improvement of drainage facilities at wash crossings (alternative solutions to drainage problems include low water crossings, properly-sized steel culverts, or concrete box culverts),
- Widening the road at milepost (M.P.) 0.6 or altering the size of the overhanging rock at that point to accommodate two-way vehicle traffic, and
- Installation of rip-rap along the northern bank of Sandy Creek, adjacent to the road, from approximately M.P. 0.75 to 0.85.

Other alternatives to achieve the purpose and objectives of the proposed action will be developed during the scoping process. Additionally, mitigation measures would be developed to reduce potential impacts on resources.

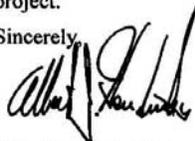
Planning and Section 106 compliance actions conducted by the National Park Service for various road modification proposals for the Boulder - to - Bullfrog Road have been on going since the 1970's. A summary of past cultural resources inventory and American Indian consultation conducted with regard to this road is enclosed for your consideration. On October 23, 1992 the Burr Trail was determined not eligible for the National Register of Historic Places.

This letter is the first step of consultation for the most recent road modification project to ensure that the planning effort adequately addresses Section 106 requirements related to the Burr Trail EIS. Although we do not believe that implementation of this project would have the potential to affect historic properties currently included in or that possibly may be eligible for inclusion in the National Register of Historic Places, we want to be sure you are aware of the continued planning efforts.

When the draft EIS is completed, a copy will be sent to you with an official transmittal letter for your review and comment as provided for in accordance with 36 CFR 800 and with the 1995 Service wide Programmatic Agreement, the Advisory Council on Historic Preservation, and the National Park Service. Copies of the draft EIS will also be sent to affiliated tribes. If you have any questions or concerns, please contact Cultural Resources Program Manager Lee Kreutzer at (435) 425-3791.

We look forward to working cooperatively with you on the planning and implementation of this project.

Sincerely,



Albert J. Hendricks

Superintendent

enclosures (3)

cc: NPS - C. Turk
Parsons Denver - C. Chitwood

Enclosure 2

NHPA Project Summary:

Proposals by Garfield County to modify the Boulder-to-Bullfrog road and/or segments of the road, that traverse through the park have involved on-going planning and evaluation since the 1970s. Each planning action has been accompanied by environmental documents and associated compliance actions undertaken by the National Park Service. The following studies and evaluations were undertaken to support section 106 compliance evaluations for various road modification project proposals.

- In consultation with the Utah State Historic Preservation Officer, the Burr Trail was evaluated for potential eligibility for the National Register of Historic Places in 1992 (NPS 1992). *The roadway was determined not eligible for the register as of October 23, 1992.*
- A Historic Resource Study was completed for Capitol Reef National Park in 1992 (O'Bannon).
- The National Park Service conducted a cultural resources survey along 8.4 miles of the Boulder-to-Bullfrog Road through Capitol Reef National Park and 7.6 miles through Glen Canyon National Recreation Area. This work, undertaken as part of a Section 106 Compliance action, was completed in 1992 by personnel from the National Park Service's Midwest Archeological Center (MWAC), Lincoln, Nebraska under the supervision of Betty LeFree of the Rocky Mountain Regional Office in Denver (LeFree 1993).
 - The survey team documented and evaluated 31 previously unrecorded cultural resources within a 200-meter-wide corridor along the road, the Area of Potential Effect (AOPE) defined for the project at that time (e.g. 100-meters on either side of the road). *Six of these sites later were mitigated in 1995-1996 by Abajo Archaeology, a contract firm hired by Garfield County in cooperation with the National Park Service. That mitigation work was completed before Garfield County began roadwork along the Burr Trail in 1996.*
- During the earlier planning phases in 1993, extensive discussions were held with potentially affiliated American Indian Tribes to identify possible ethnographic resources. Three surveys of the Boulder-to-Bullfrog Road were conducted to acquaint the American Indian tribes with the project area, and *two ethnographic resource inventory and assessment reports were completed* (Sucec 1996a and 1996b).
- No discrete resources were identified as Traditional Cultural Properties. Traditional Cultural Properties are defined by National Register Bulletin 38 (*Guidelines for Evaluating and Documenting Cultural Properties*). However,

Enclosure 2

tribal consultants asserted cultural ties to the area, ascribed religious significance to the entire viewshed between the Burr Trail and the Henry Mountains, and beyond, and identified plant species and mineral types traditionally used by their peoples. They also considered all archeological resources to be ethnographic properties. *Tribal consultants generally preferred that road improvements to Burr Trail be kept to a minimum.*

- In 2002, Cultural Resources Program Manager Lee Kreutzer revisited the current one-mile project corridor, examining an area 20-meters on each side of the existing edge of road. This survey area was designed to cover the project area of potential effect as presently defined. Ms. Kreutzer located a previously undocumented, faint historic inscription on a cliff adjacent to the road, and is currently investigating the possible historic significance of that inscription. Although the inscription is largely illegible, the name "Pectol" is visible, suggesting Ephraim P. Pectol of Torrey, Utah, created it. Mr. Pectol was a local tourism promoter and state legislator who is credited with helping establish Capitol Reef National Monument in 1937.
- Ms. Kreutzer is currently consulting with Pectol descendants on this matter, and will soon make a recommendation to the Utah State Historic Preservation Officer. The inscription is located on a cliff face adjacent to and only a few meters away from a cliff segment that overhangs the road. Road modifications may involve removal of the overhang by blasting, road realignment, or other methods that possibly could affect the nearby inscription.
- Ms. Kreutzer also surveyed the drainage at the base of the switchback where installation of a new culvert is proposed, but she found no cultural remains within the road corridor at that location. An Archaic-style pictograph panel, 42GA1444 exists on a cliff face immediately next to the road a short distance away. This site is outside of the potential area of effect for the culvert installation, but due to its proximity to the road, the National Park Service would monitor construction to ensure that no damage occurs.
- A second culvert installation is proposed for a location a little less than a quarter-mile west of the switchbacks intersection. Ms. Kreutzer resurveyed the area and re-documented a site (42GA0646) originally recorded by Marvin Kay in 1973. That site is well beyond the potential area of effect for this project. No cultural resources were noted within the project area.

REFERENCES

LeFree, Betty J.

1993 *Boulder to Bullfrog Road Improvement: Archeological Survey in Glen Canyon National Recreation Area and Capitol Reef National Park*, with the Projectile Point Analysis by Dennis Danielson. Utah Project Number U92 NA57 N.S. Denver, Colorado. National Park Service, Rocky Mountain Region.

O'Bannon, Patrick W.

Enclosure 2

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Sucec, Rosemary J.

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IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Capitol Reef National Park
Torrey, Utah 84775

April 22, 2002

Governor
Santa Clara Pueblo
Box 580
Española, NM 87532

Dear Mr. Governor:

Capitol Reef National Park is preparing an environmental impact statement (EIS) to evaluate potential impacts to the natural and human environment resulting from a proposed action that would modify segments of the Burr Trail in the park.

The proposed action would modify a one-mile segment of the Burr Trail in Capitol Reef National Park and address drainage concerns at the Burr Trail/Hall's Creek crossing and at a drainage crossing the road near the base of the switchbacks. The one-mile segment of the Burr Trail that would be modified extends from the eastern park boundary to The Post, a distance of approximately one mile. The purpose of the proposed action would be to meet the following objectives.

- Provide for safe travel on an all-weather, maintained, variable-width, unpaved, gravel and native material road, acknowledging that the road may be occasionally and briefly impassible depending on localized weather conditions,
- Retain the winding nature and adventuresome character of the Burr Trail through Capitol Reef National Park, and
- Protect the natural and cultural resources of the park.

The need for the proposed action would be to fulfill the May 30, 2001 Memorandum of Agreement, which established a mutually agreeable procedure between the National Park Service, the State of Utah, and Garfield County, Utah to address proposed road modifications that Garfield County would like to make to the Burr Trail.

The road modifications would keep the driving experience much as it is today while achieving the three objectives stated above. The conceptual design elements associated with the modifications would include:

- Stabilization of the road surface using gravel base material at locations where the current bentonite surface makes the road inadequate for all weather travel,

- Installation or improvement of drainage facilities at wash crossings (alternative solutions to drainage problems include low water crossings, properly-sized steel culverts, or concrete box culverts),
- Widening the road at milepost (M.P.) 0.6 or altering the size of the overhanging rock at that point to accommodate two-way vehicle traffic, and
- Installation of rip-rap along the northern bank of Sandy Creek, adjacent to the road, from approximately M.P. 0.75 to 0.85.

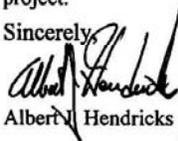
Other alternatives to achieve the purpose and objectives of the proposed action will be developed during the scoping process. Additionally, mitigation measures would be developed to reduce potential impacts on resources.

Planning and Section 106 compliance actions conducted by the National Park Service for various road modification proposals for the Boulder - to - Bullfrog Road have been on going since the 1970's. A summary of past cultural resources inventory and American Indian consultation conducted with regard to this road is enclosed for your consideration.

We want to be sure that you are aware of the continued planning efforts, and we also want to be sure to give you the opportunity to inform us of any ethnographic resources valued by your tribe that may be affected by this project. When the draft EIS is completed, a copy will be sent to you with an official transmittal letter for your review. If you have any questions or concerns, please contact Cultural Resources Manager Lee Kreutzer at (435) 425-3791.

We look forward to working cooperatively with you on the planning and implementation of this project.

Sincerely,



Albert Hendricks

Superintendent

enclosures (3)

cc: NPS - C. Turk
Parsons Denver - C. Chitwood

Enclosure 2

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 - The survey team documented and evaluated 31 previously unrecorded cultural resources within a 200-meter-wide corridor along the road, the Area of Potential Effect (AOPE) defined for the project at that time (e.g. 100-meters on either side of the road). *Six of these sites later were mitigated in 1995-1996 by Abajo Archaeology, a contract firm hired by Garfield County in cooperation with the National Park Service. That mitigation work was completed before Garfield County began roadwork along the Burr Trail in 1996.*
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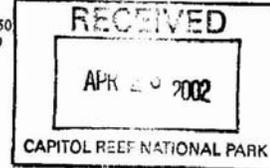
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United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119



In Reply Refer To
FWS/R6
ES/UT

April 24, 2002

To: Superintendent, National Park Service, Capitol Reef National Park, Torrey, Utah 84775

From: Field Supervisor, Fish and Wildlife Service, Utah Field Office, West Valley City, Utah

Subject: Proposed Road Work on the Burr Trail Road

In response to your letter dated April 12, 2002, below is a list of endangered (E), threatened (T), and candidate (C) species that may occur in the area of influence of your proposed action.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Aquarius Paintbrush	<i>Castilleja aquariensis</i>	C
Autumn Buttercup	<i>Ranunculus aestivalis</i>	E
Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>	T
Maguire Daisy	<i>Erigeron maguirei</i>	T
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T
Bonytail ^{4,10}	<i>Gila elegans</i>	E
Colorado Pikeminnow ^{4,10}	<i>Ptychocheilus lucius</i>	E
Humpback Chub ^{4,10}	<i>Gila cypha</i>	E
Razorback Sucker ^{4,10}	<i>Xyrauchen texanus</i>	E
Bald Eagle ³	<i>Haliaeetus leucocephalus</i>	T
California Condor ⁷	<i>Gymnogyps californianus</i>	E
Mexican Spotted Owl ^{1,4}	<i>Strix occidentalis lucida</i>	T
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	C
Utah Prairie Dog	<i>Cynomys parvidens</i>	T

¹ Nests in this county of Utah.

³ Wintering populations (only four known nesting pairs in Utah).

⁴ Critical habitat designated in this county.

⁷ Experimental nonessential population.

¹⁰ Water depletions from any portion of the occupied drainage basin are considered to adversely affect or adversely modify the critical habitat of the endangered fish species, and must be evaluated with regard to the criteria described in the pertinent fish recovery programs.

The proposed action should be reviewed and a determination made if the action will affect any listed species or their critical habitat. If it is determined by the Federal agency, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is complete, and no further action is necessary.

Formal consultation (50 CFR 402.14) is required if the Federal agency determines that an action is "likely to adversely affect" a listed species or will result in jeopardy or adverse modification of critical habitat (50 CFR 402.02). Federal agencies should also confer with the Service on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10). A written request for formal consultation or conference should be submitted to the Service with a completed biological assessment and any other relevant information (50 CFR 402.12).

Candidate species have no legal protection under the Endangered Species Act (ESA). Candidate species are those species for which we have on file sufficient information to support issuance of a proposed rule to list under the ESA. Identification of candidate species can assist environmental planning efforts by providing advance notice of potential listings, allowing resource managers to alleviate threats and, thereby, possibly remove the need to list species as endangered or threatened. Even if we subsequently list this candidate species, the early notice provided here could result in fewer restrictions on activities by prompting candidate conservation measures to alleviate threats to this species.

Only a Federal agency can enter into formal Endangered Species Act (ESA) section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

Your attention is also directed to section 7(d) of the ESA, as amended, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

Please note that the peregrine falcon which occurs in all counties of Utah was removed from the federal list of endangered and threatened species per Final Rule of August 25, 1999 (64 FR 46542). Protection is still provided for this species under authority of the Migratory Bird Treaty Act (16 U.S.C. 703-712) which makes it unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. When taking of migratory birds is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. For take of raptors, their nests, or eggs, Migratory Bird Permits must be obtained through the Service's Migratory Bird Permit Office in Denver at (303) 236-8171.

We recommend use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors, including the peregrine falcon.

The following is a list of species that may occur within the project area and are managed under Conservation Agreements/Strategies. Conservation Agreements are voluntary cooperative plans among resource agencies that identify threats to a species and implement conservation measures to proactively conserve and protect species in decline. Threats that warrant a species listing as a sensitive species by state and federal agencies and as threatened or endangered under the ESA should be significantly reduced or eliminated through implementation of the Conservation Agreement. Project plans should be designed to meet the goals and objectives of these Conservation Agreements.

<u>Common Name</u>	<u>Scientific Name</u>
Aquarius Paintbrush	<i>Castilleja aquariensis</i>
Arizona Willow	<i>Salix arizonica</i>
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>

If we can be of further assistance or if you have any questions, please feel free to contact Laura Romin of our office at (801)975-3330 extension 142.

Sincerely,



Henry R. Maddux
Utah Field Supervisor

RECEIVED
CAPITOL REEF NATIONAL PARK

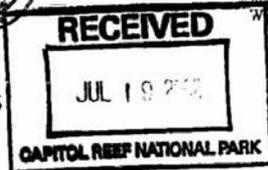
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United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To
FWS/R6
ES/UT



July 16, 2002

To: Superintendent, Capitol Reef National Park, National Park Service, HC 70, Box 15, Torrey, Utah 84775

From: Field Supervisor, Ecological Services, Fish and Wildlife Service, West Valley City, Utah

Subject: Environmental Impact Statement for the Burr Trail Road Modifications

This responds to your letter we received on May 23, 2002 regarding the subject project. We have no comments on the project, as proposed. Should project plans change or if additional information becomes available we may choose to provide comments in the future.

We appreciate the opportunity to review your project. Should you have any questions or need any further information please contact Randy Swilling, Fish and Wildlife Biologist at (801)975-3330 ext. 132.

Sincerely,

Henry R. Maddux
Utah Field Supervisor

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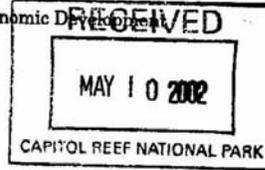
State of Utah

Department of Community and Economic Development
Division of State History
Utah State Historical Society



Michael O. Leavitt
Governor
Max J. Evans
Director

300 Rio Grande
Salt Lake City, Utah 84101-1182
(801) 533-3500 FAX: 533-3503 TDD: 533-3502
ushs@history.state.ut.us http://history.utah.org



May 6, 2002

Albert J. Hendricks
Superintendent
Capitol Reef National Park
Torrey UT 84775

RE: One-Mile Segment of the Burr Trail in Capitol Reef National Park

In Reply Please Refer to Case No. 02-0558

Dear Mr. Hendricks:

The Utah State Historic Preservation Office received the information on April 30, 2002. Thank you for the update concerning this stage of the undertaking, the USHPO concurs with the NPS determination of **No Potential to Effect**, (§36CFR 800.3).

This information is provided to assist with Section 106 responsibilities per §36CFR800. If you have questions, please contact me at (801) 533-3555. My email address is: jdykman@history.state.ut.us

As ever,

James L. Dykmann
Compliance Archaeologist

JLD:02-0558 NPS/NAE

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Preserving and Sharing Utah's Past for the Present and Future



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	VICE-CHAIRMAN	

April 30, 2002

Albert J. Hendricks, Superintendent
National Park Service
Capitol Reef National Park
Torrery, Utah 84775

Dear Superintendent Hendricks,

Thank you for your letter dated April 22, 2002, regarding Capitol Reef National Park preparing an Environmental Impact Statement to evaluate potential impacts resulting from a proposal to modify segments of the Burr Trail. The Hopi Cultural Preservation Office appreciates Capitol Reef National Park's continuing solicitation of our input and your efforts to address our concerns.

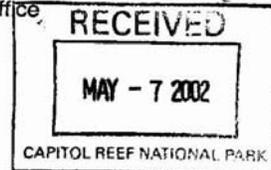
The Hopi Cultural Preservation has reviewed the enclosed National Historic Preservation Act Project Summary. We understand that the 2002 survey of the current, one-mile project corridor identified an Archaic style pictograph panel, 42GA1444, and site 42GA0604, which are both outside the potential area of effect for this proposal. We also appreciate that a Hopi ethnographic resource inventory and assessment was completed in 1996 for this project. Therefore, unless prehistoric cultural resources will be adversely affected, we have no further concerns regarding this proposal.

We also appreciate your patience with our extended review of Rosemary Sucec's Chapter on the Hopi Tribe's Affiliation with Capitol Reef National Park. Please contact Clay Hamilton at the Hopi Cultural Preservation Office should you have any questions or need additional information. Thank you again for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Cultural Preservation Office

xc: Rosemar Sucec, Yellowstone National Park
Clay Hamilton, Hopi Cultural Preservation Office



P.O. BOX 123 — KYKOTSMOVI, AZ. — 86039 — (520) 734-3000

- Installation or improvement of drainage facilities at wash crossings (alternative solutions to drainage problems include low water crossings, properly-sized steel culverts, or concrete box culverts),
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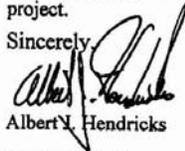
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We look forward to working cooperatively with you on the planning and implementation of this project.

Sincerely,



Albert V. Hendricks
Superintendent

enclosures (3)

cc: NPS - C. Turk
Parsons Denver - C. Chitwood

APPENDIX E

CAPITAL REEF LEGISLATION

PROCLAMATIONS AND RELATED LEGISLATION

12. Capitol Reef National Monument

Establishment: Proclamation (No. 2246) of August 2, 1937.....Page 136

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

(No. 2246 -- Aug. 2, 1937 -- 50 Stat. 1856)

Whereas certain public lands in the State of Utah contain narrow canyons displaying evidence of ancient sand dune deposits of unusual scientific value, and have situated thereon various other objects of geological and scientific interest; and

Whereas it appears that it would be in the public interest to reserve such lands as a national monument, to be known as the Capitol Reef National Monument:

Now, Therefore, I, Franklin D. Roosevelt, President of the United States of America, under and by virtue of the authority vested in me by section 2 of the act of June 9, 1906, ch. 3060, 34 Stat. 225 (U.S.C., title 16, sec. 431), do proclaim that, subject to all valid existing rights, the following described lands in Utah are hereby reserved from all forms of appropriation under the public-land laws and set apart as the Capitol Reef National Monument:

Salt Lake Meridian

T. 28 S.R. 5 E., All of sec. 34 north of the right-of-way of State Hwy.

No. 24;

secs. 35 and 36.

T. 28 S., R. 6 E., sec. 31 and the west half of sec. 32.

T. 29 S., R. 5 E., All of secs. 1 and 2 north of the right-of-way of State Hwy. No. 24.

T. 29 S., R. 6 E., secs. 1 to 4, inclusive;

All secs. 5, 6, 8 and 9 north of the right-of-way of State Hwy. No. 24;

secs. 10 to 15, inclusive; All of sec. 16 north of the right-of-way of State Hwy. No. 24;

secs. 22 to 25, inclusive;

sec. 26, E1/2 and N1/2 NW1/4;

sec. 27, N1/2 N1/2;

sec. 35, NE 1/4;

sec. 36.
T. 30 S., R. 6 E., sec. 1;
sec. 12, E 1/2.
T. 29 S., R. 7 E., secs. 5 to 8, 17 to 20 and 29 to 32, include.
T.30 S., R. 7 E., secs. 4 to 9 and 15 to 17, include.:

- sec. 18, E 1/2 and NW 1/4;
- sec. 19, NE 1/4 and N1/2 SE 1/4;
- sec. 20 N 1/2 and N1/2 SW 1/4;
- secs. 21 to 23, and 26 to 28 include.;
- sec. 29, E 1/2 E1/2;
- secs. 33 to 35, inclusive, containing approximately 37, 060 acres.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of this monument as provided in the act of Congress entitled "An Act To establish a National Park Service, and for other purposes," approved August 25, 1916 (ch. 408, 39 Stat. 535, U.S.C., title 16, secs. 1 and 2), and acts supplementary thereto or amendatory thereof.

Nothing herein shall prevent the movement of livestock across the lands included in this monument under such regulations as may be prescribed by the Secretary of the Interior and upon driveways to be specially designated by said Secretary.

In Witness Whereof, I have here unto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this 2d day of August, in the year of our Lord nineteen hundred and thirty-seven and of the Independence [seal] of the United States of America the one hundred and sixty second.

FRANKLIN D. ROOSEVELT.

By the President:
Cordell Hull.
The Secretary of State.

3 CFR, 1954-8 Comp. p. 160

PROCLAMATION 3249
ENLARGING THE CAPITOL REEF NATIONAL MONUMENT, UTAH

WHEREAS it appears that the public interest would be promoted by adding to the Capitol Reef National Monument, Utah, certain adjoining lands needed for the protection of the features of geological and scientific interest included within the boundaries of the monument and for the proper administration of the area:

NOW, THEREFORE, I, Dwight D. Eisenhower, President of the United States of America, by virtue of the authority vested in me by section 2 of the act of June 8, 1906, 34 Stat. 225 (16 U.S.C. 431), do proclaim that, subject to valid existing rights, (1) the lands now owned by the United States within the exterior boundaries of the following-described tracts of lands are hereby added to and made a part of the Capitol Reef National Monument, and (2) the State-owned and privately-owned lands within those boundaries shall become parts of the monument upon acquisition of title thereto by the United States:

SALT LAKE MERIDIAN

T. 29 S., R. 5 E.,

Sections 1 and 2, these portions not previously included in the Monument.

T. 29 S., R. 6 E.,

Sections 5, 6, 9, and 10, those portions not previously included in the Monument;
Sections 7, 8, and 17, those portions lying north of Sulphur Creek;
Section 26, SW 1/4 and S 1/2 NW 1/4.

T. 30 S., R. 7 E.,

Section 20 NW 1/4 SE 1/4 (except S 1/2 S1/2 NW 1/4 SE 1/4) and NE 1/4 SE 1/2 (except S 1/2 SW 1/4 NE 1/4 SE 1/4),
containing 3,040 acres, more or less.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

Nothing herein shall prevent the movement of livestock across the lands included in this monument under such regulations as may be prescribed by the Secretary of the Interior and upon driveways to be specifically designated by said Secretary.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States of America to be affixed.

DONE at the City of Washington this second day of July in the year of our Lord nineteen hundred and [seal] fifty-eight, and of the Independence of the United States of America the one hundred and eighty-second.

DWIGHT D. EISENHOWER

By the President:

JOHN FOSTER DULLES,
Secretary of State.

THE PRESIDENT

Proclamation 3888

ENLARGING THE CAPITOL REEF NATIONAL MONUMENT, UTAH

WHEREAS, the Capitol Reef National Monument in Utah was established by Proclamation No. 2246 of August 2, 1937, and enlarged by Proclamation No. 3249 of July 2, 1958, to set aside and reserve certain areas possessing significant features and objects of geological and scientific interest; and

WHEREAS, it would be in the public interest to add to the Capitol Reef National Monument certain adjoining lands which encompass the outstanding geological feature known as Waterpocket Fold and other complementing geological features, which constitute objects of scientific interest, such as Cathedral Valley; and

WHEREAS, under section 2 of the act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), the President is authorized "to declare by public proclamation * * * objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected":

NOW, THEREFORE, I, LYNDON B. JOHNSON, President of the United States, under the authority vested in me by section 2 of the act of June 8, 1906, supra, do proclaim that, subject to valid existing rights, (1) the lands owned or controlled by the United States within the exterior boundaries of the following described area are hereby added to and made a part of the Capitol Reef National Monument, and (2) the State-owned and privately owned lands within those boundaries shall become and be reserved as parts of that monument upon acquisition of title thereto by the United States:

SALT LAKE MERIDIAN

- T. 26 S., R. 5 E.,
 - Secs. 25 to 29, inclusive, partly unsurveyed;
 - Secs. 32 to 36, inclusive, partly unsurveyed.
- T. 27 S., R. 5 E.,
 - Secs. 1 to 4, inclusive;
 - Secs. 9 to 16 inclusive;
 - Secs. 21 to 28 inclusive;
 - Secs. 33 to 36 inclusive.
- T. 28 S., R. 5 E.,
 - Secs. 1 to 3, inclusive, partly unsurveyed;
 - Secs. 10 to 15, inclusive, unsurveyed;

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- Secs. 22 to 27, inclusive, partly unsurveyed;
T. 26 S., R. 6 E.,
Secs. 27 to 34, inclusive, partly unsurveyed.
T. 27 S., R. 6 E.,
Secs. 3 to 5, inclusive, partly unsurveyed;
Secs. 8 to 10, inclusive, unsurveyed;
Secs. 15 to 17, inclusive, partly unsurveyed;
Secs. 20 to 22, inclusive, unsurveyed;
Secs. 27 to 29, inclusive, unsurveyed;
Secs. 32 to 36, inclusive, partly unsurveyed.
T. 28 S., R. 6 E., that portion not previously included in the monument, partly unsurveyed.
T. 29 S., R. 6 E.,
Secs. 7, 8, and 17, those portions not previously included in the monument;
Sec. 18, NE 1/4, unsurveyed;
Secs. 20 and 21, partly unsurveyed;
Sec. 27, unsurveyed, those portions not previously included in the monument;
Secs. 28, 29, and 34, partly unsurveyed;
Sec. 35, those portions not previously included in the monument.
T. 30 S., R. 6 E.,
Secs. 2 and 11;
Sec. 12, W 1/2;
Sec. 13.
T. 27 S., R. 7 E.,
Secs. 31 and 32, partly unsurveyed.
T. 28 S., R. 7 E.,
Secs. 2 to 11, inclusive, partly unsurveyed;
Secs. 14 to 23, inclusive, partly unsurveyed;
Secs. 26 to 35, inclusive, partly unsurveyed.
T. 29 S., R. 7 E.,
Secs. 1 to 4, inclusive, partly unsurveyed;
Secs. 9 to 12, inclusive, unsurveyed;
Secs. 13 and 14, that portion north of State of Utah Route 24, unsurveyed;
Secs. 27, 28, 33, and 34, unsurveyed.
T. 30 S., R. 7 E.,
Secs. 3 and 10, unsurveyed;
Secs. 18, 19, 20, and 29, those portions not previously included in the monument;
Secs. 30, 31, and 32.
T. 31 S., R. 7 E.,
Secs. 3 to 11, inclusive, partly unsurveyed;
Secs. 14 to 23, inclusive, partly unsurveyed;
Secs. 27 to 33, inclusive;
Sec. 34, W 1/2.
T. 32 S., R. 7 E.,
Secs. 1 to 18, inclusive;
Secs. 22 to 27, inclusive;

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- Secs. 35 and 36.
- T. 33 S., R. 7 E.,
Secs. 1 and 2;
Secs. 11, 12, 13, 24, and 25, unsurveyed.
- T. 32 S., R. 8 E.,
Secs. 6, 7, 18, and 19;
Secs. 29 to 32, inclusive.
- T. 33 S., R. 8 E.,
Secs. 5 to 8, inclusive, partly unsurveyed;
Secs. 16 to 21, inclusive, partly unsurveyed;
Secs. 28 to 34, inclusive, partly unsurveyed.
- T. 34 S., R. 8 E.,
Secs. 3 to 11, inclusive, partly unsurveyed;
Secs. 13 to 36, inclusive, partly unsurveyed.
- T. 35 S., R. 8 E.,
Secs. 1 to 5, inclusive, partly unsurveyed;
Secs. 8 to 16, inclusive, partly unsurveyed;
Secs. 22 to 26, inclusive, unsurveyed;
Sec. 36.
- T. 34 S., R. 9 E.,
Sec. 19, unsurveyed;
Secs. 30 to 32, inclusive, partly unsurveyed.
- T. 35 S., R. 9 E.,
Secs. 5 to 8, inclusive, unsurveyed;
Secs. 16 to 21, inclusive, partly unsurveyed;
Secs. 28 to 33, inclusive, partly unsurveyed.
- T. 36 S., R. 9 E.,
Secs. 4 to 9, inclusive, unsurveyed;
Secs. 16, 17, and 21, partly unsurveyed.
- Containing 215, 056 acres, more or less.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

Any reservations or withdrawals heretofore made which affect the lands described above are hereby revoked.

Nothing herein shall prevent the movement of livestock across the lands included in this monument under such regulations as may be prescribed by the Secretary of the Interior and upon driveways to be specifically designated by said Secretary.

IN WITNESS WHEREOF, I have hereunto set my hand this twentieth day of January
in the year of our Lord nineteen hundred and sixty-nine and of the Independence of the United
States of America the one hundred and ninety-third.

Lyndon B. Johnson (signature)

[F.R. Doc. 69-899; Filed, Jan. 21, 1969; 10:31 a.m.]

Public Law 92-207
92nd Congress, S. 29
December 18, 1971

AN ACT

To establish the Capitol Reef National Park in the State of Utah.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) subject to valid existing rights, the lands, waters, and interests therein within the boundary generally depicted on the map entitled "Boundary Map, Proposed Capitol Reef National Park, Utah," numbered 158-91, 002, and dated January 1971, are hereby established as the Capitol Reef National Park (hereinafter referred to as the "park"). Such map shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior.

(b) The Capitol Reef National Monument is hereby abolished, and any funds available for purposes of the monument shall be available for purposes of the park. Federal lands, waters, and interests therein excluded from the monument by this Act shall be administered by the Secretary of the Interior (hereinafter referred to as the "Secretary") in accordance with the laws applicable to the public lands of the United States.

Sec. 2. The Secretary is authorized to acquire by donation, purchase with donated or appropriated funds, transfer from any Federal agency, exchange, or otherwise, the lands and interests in lands described in the first section of this Act, except that lands or interests therein owned by the State of Utah, or any political subdivision thereof, may be acquired only with the approval of such State or political subdivision.

Sec. 3. Where any Federal lands included within the park are legally occupied or utilized on the date of approval of this Act for grazing purposes pursuant to a lease, permit, or license for a fixed term of years issued or authorized by any department, establishment, or agency of the United States, the Secretary of the Interior shall permit the persons holding such grazing privileges or their heirs to continue in the exercise thereof during the term of the lease, permit, or license, and one period of renewal thereafter.

Sec. 4. Nothing in this Act shall be construed as affecting in any way rights of owners and operators of cattle and sheep herds, existing on the date immediately prior to the enactment of the Act, to trail their herds on traditional courses used by them prior to such date of enactment, and to water their stock, notwithstanding the fact that the lands involving such trails and watering are situated within the park: *Provided*, That the Secretary may promulgate reasonable regulations providing for the use of such driveways.

Sec. 5. (a) The National Park Service, under the direction of the Secretary, shall administer, protect, and develop the park, subject to the provisions of the Act entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916 (39 Stat. 535) as amended and supplemented (16 U.S.C.1-4).

(b) The Secretary shall grant easements and right-of-way on a nondiscriminatory basis upon, over, under, across, or along any component of the park area unless he finds that the route of such easements and right-of-way would have significant adverse effects on the administration of the park.

Lyndon B. Johnson (signature)
(F.R. doc. 69-899; Filed, Jan. 21, 1969; 10:31 a.m.)



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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