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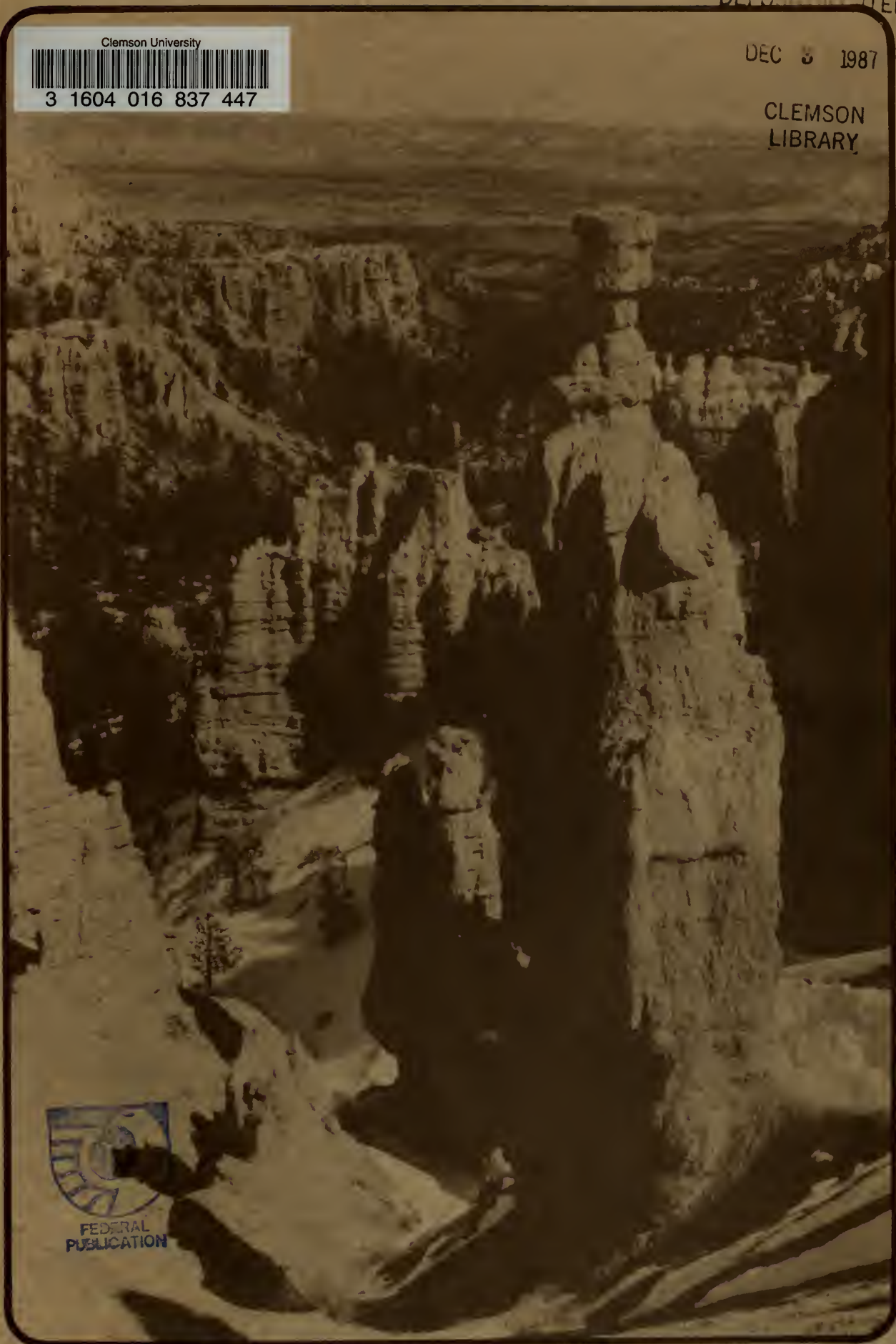
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**GENERAL MANAGEMENT PLAN / DEVELOPMENT CONCEPT PLAN**  
**BRYCE CANYON NATIONAL PARK, UTAH**

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GENERAL MANAGEMENT PLAN  
BRYCE CANYON NATIONAL PARK  
UTAH

Prepared by

Rocky Mountain Regional Office  
and  
Bryce Canyon National Park

National Park Service  
United States Department of the Interior

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Rocky Mountain Regional Office

8-31-87  
Approved  
Date



## SUMMARY

### ISSUES

This General Management Plan identifies the actions and strategies for resolving the following issues:

Level of visitor lodging facilities within the park.

Substandard condition of economy cabins.

Provisions for protecting historic values that may be effected as a result of this planning effort.

Substandard living quarters associated with concession employee living quarters.

Deteriorated and substandard condition of many roadways.

Circulation and congestion at visitor center and overlook areas.

Potential for mass transportation system at Bryce Canyon National Park.

Conflicts between pedestrian and horseback rides on trail systems.

Need for boundary expansion.

Deterioration of natural resources and substandard condition of facilities within the North Campground.

Circulation problems on that portion of State Highway 12 within the park.

### THE PROPOSAL

This General Management Plan provides for the removal of the economy cabins which are being used for concession employees and visitor lodging. The laundry cabin, pumphouse, and three of the economy cabins south of the lodge will be retained and adaptively used for administrative and interpretive purposes. The remaining 38 economy cabins will be removed from the site and disposed of. These units were also eligible for nomination to the National Register and were



recorded according to the Historic American Building survey standards and Section 106 compliance was completed.

The concession employees living over the Bryce Canyon Lodge will also be relocated due to the fire safety problems and conflicts with visitor use activities. As a result of these actions, it was decided that replacement facilities would be constructed in order to maintain the current levels of visitor and employee lodging. These levels as identified in the Proposed Plan section of this document have been established as the maximum capacity for Bryce Canyon National Park in order to preserve park resources, aesthetic values, and minimize conflicts with similar private development outside the park. To further insure that the concession lodging and restaurant operation does not create an impact on the private sector, the concession operation will be restricted to the current season of operation which is May 18 to October 1. If future demand exceeds the availability of lodging and restaurant facilities and the private sector within the region no longer expresses a desire to accommodate such demand, expansion of the concessionaire's season of operation may be considered.

Since the beginning of this planning effort, the group of 23 economy cabins northeast of the lodge were removed to make room for one of the new visitor lodging facilities. These units were eligible for nomination to the National Register and were therefore recorded according to the Historic American Building Survey Standards and Section 106 Compliance was completed. This effort was in accordance with the Record of Decision and FONSI approved on October 26, 1981.

Since the approval of the FONSI, two concession employee dormitories were constructed as well as the required level of visitor lodging facilities. There still remains a need to provide housing for 10 married couples who will be displaced when the above referenced 38 economy cabins are disposed of. A separate environmental assessment will be prepared to address this issue since it was not addressed in the EA for this document. Once facilities for the 10 married couples are provided, the required level of concession employee lodging facilities will be reached. The visitor lodging facilities were constructed by the concessionaire under the terms of the existing 20-year contract which expires on December 31, 2003. The two dormitories for singles employed by the concessionaire were constructed with funds from the Visitor Facility Fund Program.

The 40 western or deluxe cabins southwest of the lodge will be retained for their historic value and continue to be used for visitor lodging. The boys dormitory will be retained for concession employee housing purposes. The recreation hall will also be retained and continue to serve as a recreation facility.

Since the completion of the 1983 Transportation/Economic Feasibility Study public transportation alternatives are being reexamined and the long-term solution has not been determined. The roadway and parking area improvements discussed in the "Transportation" section of this document are based on the 1983 study. These improvements will be contingent upon the reevaluation effort and the results of a Road System Evaluation Study currently under way.

Due to the lack of adequate data a more comprehensive environmental evaluation must be initiated in assessing alternatives for improving circulation along the 3.8 mile section of Highway 12 within the park. Since the majority of use on the subject section is not park related, there is no interest on the part of the NPS to pursue the issue further especially since the interest in energy related developments east of the park has diminished to some degree.

No additional horse trails will be constructed in the park. The Peek-a-Boo Trail will be maintained for horse use and properly signed warning hikers of potential conflicts. The concession operated horse rides will begin and terminate at Sunrise Point.

Modify and rehabilitate the North Campground to minimize impacts on natural resources and provide for flexibility in accommodating various forms of camping equipment.

#### ENVIRONMENTAL CONSEQUENCES AND MITIGATION

The proposal will have long-term beneficial effects on the visitor experience, the living and working conditions of concession employees, and the aesthetic values of the park. These beneficial effects would be achieved with full knowledge that there will be some adverse effects on soils, vegetation, and historic and

wildlife values. Including the recently constructed visitor lodging facilities and concession employee quarters, an additional 14 acres of park land will be moderately to severely impacted by the construction and use of new facilities. This acreage represents 0.04 percent of the total park area. There will be no adverse effect on significant wildlife habitat, water resources, floodplains, wetlands, or air quality.

The 38 economy cabins eligible for nomination to the National Register of Historic Places and scheduled for removal will be significantly impacted. No known archeological sites would be affected; however, archeological surveys have not been completed, and some of the proposed action could have the potential of impacting such resources.

There will be minor socioeconomic effects on adjacent communities. As previously mentioned, the concessionaire's current season of operation will not be expanded; however, should demand exceed availability and the private sector no longer expressed a desire to expand their facilities, then and only then can such an expansion be considered. Such actions would also require public involvement; thereby, eliminating potential economic impacts on the local community.

#### PUBLIC INVOLVEMENT

Overall, there was very little public response to the proposed plan. Approximately 99 percent of those responding were from the immediate community adjacent to the park and concerns were centered around the degree of concession development to be permitted. The proposed plan best addresses the concerns experienced during the public involvement process. None of the actions are highly controversial or cause substantial impacts which cannot be mitigated.



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## **CHAPTER I   PURPOSE AND NEED**



## CHAPTER I - PURPOSE AND NEED

### PURPOSE OF THE GENERAL MANAGEMENT PLAN

The primary purpose of the General Management Plan is to provide managers with parkwide direction for accomplishing the management objectives and resolving those issues presented below. This plan contains both short- and long-range strategies for resource management, visitor use, interpretation, and development of the park. The plan was initiated to fulfill the legal requirement as mandated by Section 604 of Public Law 95-625 and is in compliance with National Park Service management policies, applicable legislation, and executive requirements.

### PARK PURPOSE

Bryce Canyon National Park was originally established as a national monument by Presidential Proclamation No. 1664 on June 8, 1923, that stated in part:

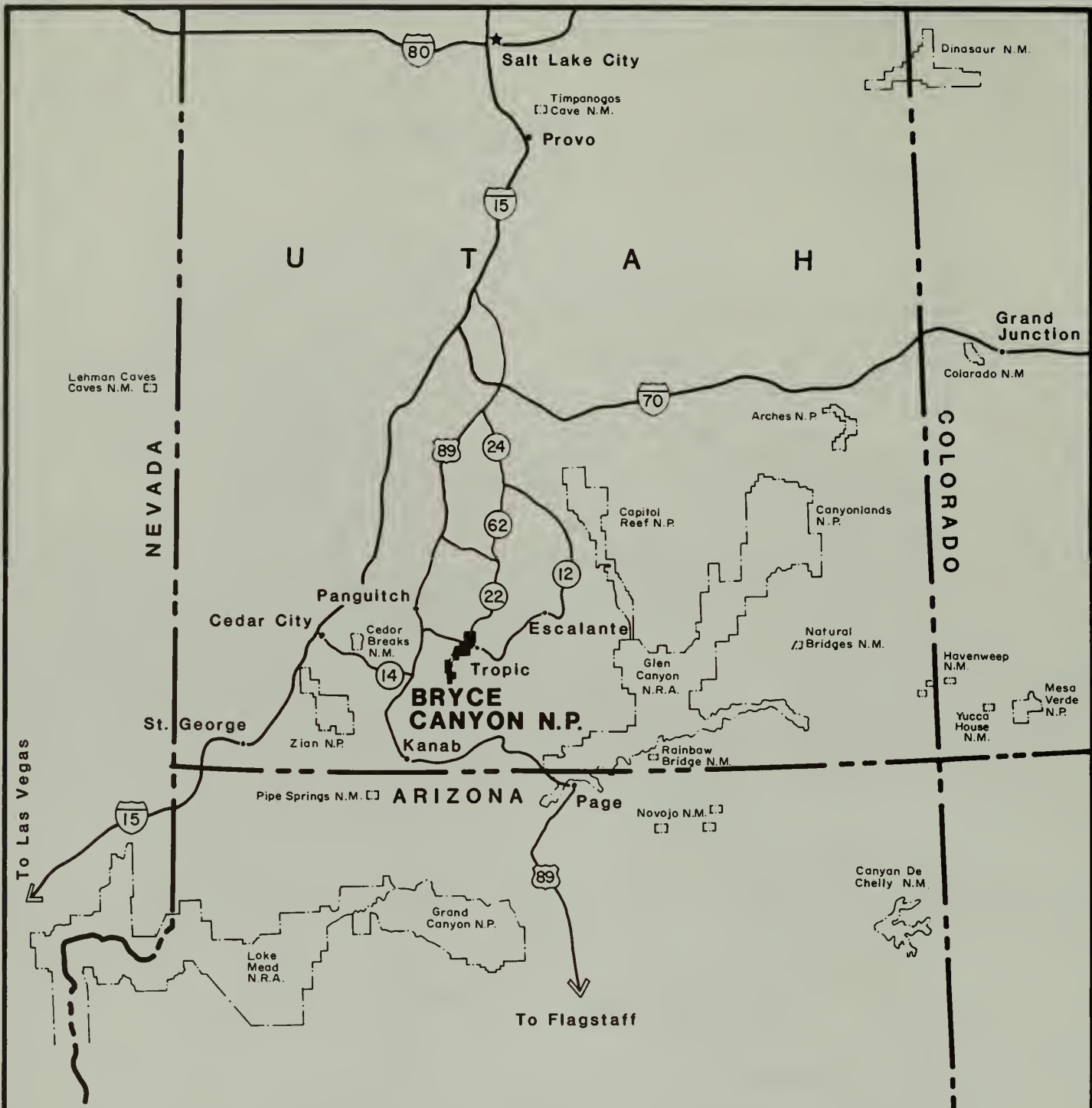
Whereas certain lands within the Powell National Forest in the State of Utah, known as Bryce Canyon, are of unusual scenic beauty, scientific interest and importance, and it appears that the public interest will be promoted by reserving these areas with as much land as may be necessary for the proper protection thereof as a national monument.

On June 7, 1924, Bryce Canyon National Monument was established as Utah National Park for the benefit and enjoyment of the people. On February 25, 1928, Utah National Park was changed to Bryce Canyon National Park and officially established September 15, 1928. (See Appendix A, Park Legislation.)

### PARK DESCRIPTION

Bryce Canyon National Park lies in south-central Utah, about 24 miles south of Panguitch and 70 miles northeast of Zion National Park (see Vicinity Map). The northern part of the park is in Garfield County, and the southern portion in Kane County. The park contains approximately 35,835 acres, and the park ranges between 6,600 and 9,100 feet in elevation.

Main access to the park is from U.S. 89 via Utah 12 and Utah 63. Some visitors also use Utah 22 to Utah 63 and the Utah 12 Grover/ Boulder Road from Capitol Reef National Park.



## Vicinity Map

### Bryce Canyon National Park

U.S. Dept. of the Interior-National Park Service



Public transportation in the immediate vicinity is virtually nonexistent. Cedar City, 80 miles west of the park, is served by Sky West Airlines, as well as buses. Rental cars are available in Cedar City. The Bryce Canyon airfield adjacent to the north boundary of the park, has no scheduled air service.

Bryce Canyon is known internationally for its unusual scenic beauty and scientific interest and importance. These scenic and scientific values are found in the brightly colored and towering formations of limestone, clay, and silt which was created primarily by the erosive forces of water. The formations which range in shades of red and white are a brilliant contrast to the colorful lowlands east of the park and the timbered hillsides and plateaus of the west. The vast, panoramic views from within the park to the outlying valleys and canyons add an outstanding quality to the aesthetic values of the park.

#### PARK MANAGEMENT OBJECTIVES

To secure, through research or other means, adequate information to increase management efficiency and to ensure conservation of park resources.

To cooperate with outside agencies, organizations, and members of the public in (1) assuring, to the greatest extent possible, that nearby lands are developed and managed in ways that are compatible with preserving the park's air and water quality, geological resources, ecological communities, solitude, extreme quite, and the scenery for which the park is famous; (2) minimizing the adverse effects of public use on the park's resources through the provision of recreational lodging, and other visitor service facilities in the park's vicinity; and (3) disseminating information about the park to the general public, with particular emphasis on the regional community.

To protect and enhance the natural and scenic values of the park by maintaining an adequate land base to permit achievement of the park's purpose, and acquiring outstanding mineral interests on the lands providing culinary water supply for the park.

To protect park resources and the safety of park visitors through enforcement of applicable laws, rules, and regulations.

Provide for the visitor's enjoyment and appreciation of park resources through primary interpretive emphasis on the park's geomorphology, but provide also for an understanding of the park's geology, natural history, history, archeology, night skies, and air quality.

Develop a fire management program for the park to facilitate the protection and maintenance of the natural environment including, as necessary, research fire burns to determine the need for, the effectiveness and desirability of, and the problems associated with implementing a prescribed fire management program within the park.

Retain those facilities necessary for visitor use and park management at acceptable standards for health, safety, and comfort and maintain historic structures as near as practicable to their original exterior appearance consistent with the adaptive use of these buildings.

Provide the visiting public, through concession operated facilities, the highest quality of accommodations, food service, and visitor needs consistent with reasonable pricing and comparability with local business.

Insure a representative proportion of minorities and female employees--both seasonal and permanent.

## ISSUES

In each phase of the planning leading up to the preparation of this document, a number of issues concerning the management, development, and use of the park were identified, and alternatives for their resolution were discussed. Following is a list of those issues addressed within this document.

### Lodging Facilities

The economy cabins operated by a concessionaire for visitor and employee lodging are substandard and show signs of substantial deterioration. Since private developments outside and adjacent to the park have shown and continue to exhibit signs of expansion, the need to replace or rehabilitate the economy cabins should be considered. The need for visitor and concession employee lodging within the park should be evaluated.

The concession employee living quarters over the Bryce Canyon Lodge are substandard and present a serious fire hazard. The structure is all wood, and the living quarters are directly over the kitchen area of the restaurant operation. Some efforts have been made to reduce the risk of fire and improve evacuation measures. The improvements, however, did very little to actually improve the situation.

During the public involvement sessions, representatives from the private sector who operate restaurants and lodging facilities within the region indicated they could experience serious economic impacts if the concessionaire was permitted to expand his present season of operation which is May 18 through October 1.

The Bryce Canyon Lodge, western cabins, and economy cabin complex collectively represent the "Bryce Canyon Lodge Historic District." A determination should be made as to what steps will be taken to recognize and protect the historic values of the district.

### Transportation

The majority of the roadway and parking systems were designed during the 1930's with little or no upgrading since their construction. The narrow, paved roadways with dirt shoulders have seriously deteriorated under the impact of the present day forms of recreation vehicles which are heavier and wider than the road systems were designed for. The pavement edge of most of the roads has worn away as a result of vehicles having to use the soft road shoulders when passing oncoming traffic.

To minimize the congestion at overlooks and reduce the safety problems associated with the narrow roads, visitors driving vehicles with a trailer in tow are required to unhook their trailers at the visitor center parking lot before driving through the park. Since the visitor center parking lot was not designed to accommodate this type of use or capacity, serious congestion and safety problems are encountered.

The circulation patterns, especially within the overlook parking areas, are substandard in terms of permitting or even encouraging a logical flow between pedestrians and vehicles. The heavier volume of present-day traffic coupled with poor circulation has created a situation which is jeopardizing the safety of all concerned as well as creating impacts on the site.



Unless alternatives are explored and steps taken to correct the present situation, the problem will be further compounded if visitor use continues to increase.

#### State Highway 12 Improvements

Due to projected increases in traffic volumes associated primarily with energy developments, the Utah Department of Transportation (UDOT) has expressed an interest in developing climbing lanes on that portion of State Route 12 which passes through the northern portion of the park. This road was constructed with National Park Service funds in the early 1960's and traverses approximately 3.8 miles of the park. The road was donated to the National Park Service on October 19, 1960, and is being maintained by the State under a Memorandum of Understanding dated September 4, 1959.

It appears as though substantial cuts and fills would be required if the entire section of roadway was to be increased in width to accommodate a climbing lane. Such action could have serious impacts on the resources and aesthetic values of the area.

#### Trail System Use and Circulation

The Peek-a-Boo Trail receives use by both hikers and horseback riders. Some of the conflicts created by simultaneous use are dust; inconvenience stemming from pedestrians having to wait for long, concession-sponsored horseback parties to pass on the narrow trails; defecation from horses on trails; and the potential safety problems for all concerned. Many of the visitors who have complained about the conflict have indicated that they were not properly advised prior to hiking that there was a potential for conflicts with horseback riders.

The horse concessioner has expressed an interest in expanding opportunities for horseback riders to see some other part of the canyon. Alternatives need to be explored to resolve the conflict between horses and pedestrians and determine other routes for the expansion of horseback riding trails.

#### North Campground Development

The North Campground--consisting of 115 units--was initially constructed in the late 1930's. It has been



expanded a number of times with little regard for existing facilities, topographic features, and present-day campground use. Therefore, the campground is plagued with a number of problems which are as follows.

1. The campground design will no longer accommodate the present forms of recreation use without continuing to create severe impacts on the natural resources of the site.

2. Severe erosion of soils and deterioration of vegetation has occurred creating a negative visual impact on the site.

3. The initial design of the campground reflects little regard for topography and the overall circulation system; therefore, highly erosive slopes were exposed and extensive fills and high retaining walls were required. This is not only extremely costly and difficult to maintain, but it also presents a number of safety hazards to all concerned.

#### Boundary Adjustments

There have been a number of occasions in the past where the need for boundary adjustments were discussed. The primary areas involved U.S. Forest Service lands adjacent to the Southeast and Northwest exterior boundary of the park. Considering the on again/off again interest in these and any other areas it is important to identify the basis for initiating a boundary change.



**CHAPTER II    PROPOSED GENERAL MANAGEMENT PLAN  
AND ALTERNATIVES**





## CHAPTER II - PROPOSED GENERAL MANAGEMENT PLAN AND ALTERNATIVES

### INTRODUCTION

The following constitutes the National Park Service's General Management Plan for Bryce Canyon National Park. The General Management Plan reflects the National Park Service philosophy that each area of the system should be managed as an integrated unit. This plan provides that integration by collectively prescribing complementary and environmentally sound strategies for managing resources and providing for all aspects of park operations, visitor use, interpretation and development. The General Management Plan also describes the management zoning for the park and provides the rationale for the proposed actions. In some cases, additional monitoring, inventories, studies, and research are needed to establish baseline data from which to base management decisions and thereby resolve certain issues. Such needs are identified herein. Information concerning the alternatives to the proposed plan are addressed in this document in the section titled "Environmental Consequences of the Proposed Action and Alternatives."

The following strategies were selected as the best course of action for enabling the National Park Service to accomplish the legislative intent and management objectives of the park. These strategies were also determined to be the best course of action for resolving those issues earlier identified in this document and best respond to the concerns expressed during the various periods of public involvement.

### LAND USE AND MANAGEMENT

Management Zoning, an expression of management strategy, is the method by which the National Park Service categorizes lands and waters within those areas it is responsible for managing. The management and development proposed in the General Management Plan does not affect the existing management zoning of the park (see Existing Management Zoning Map).

The lands within Bryce Canyon National Park will continue to be subdivided into the four basic land classifications as described below.

## Natural Zone

Bryce Canyon National Park is managed primarily as a natural zone. This zone is divided into the two following subzones.

Wilderness Subzone - 62 percent of the park (22,325 acres).

The majority of the park lands are further classified as wilderness subzone to reflect the park's wilderness recommendation. These lands are primarily located below the rim of the canyon. The Bryce Amphitheater and several other parcels of land below the rim are excluded from the wilderness subzone. Management of this zone strictly conforms to the wilderness management policy.

Natural Environment Subzone - 37 percent of park (13,325 acres)

This zone consists of those lands not included in the wilderness subzone that are not yet developed. Most of these lands are above the escarpment rim. Management of these lands is based on preservation; that is, these lands are protected against development and lack true wilderness characteristics.

Development Zone - 7 percent of park (252 acres)








This zone is concentrated near the entrance to the park and includes the major structural improvements including concession buildings, park headquarters, visitor center, maintenance shops, campgrounds, residential areas, and related parking. The parking area and structures on the south end of the park near Yovimpa and Rainbow Points are also identified as a development zone. This zone is managed so as to prevent excessive degradation and to permit expansion within the internal boundaries.

## Special Use Zone

### Private Development Subzone


This area consists of 2-1/2 acres of private lands within the park boundary. These lands are presently undeveloped.

# legend

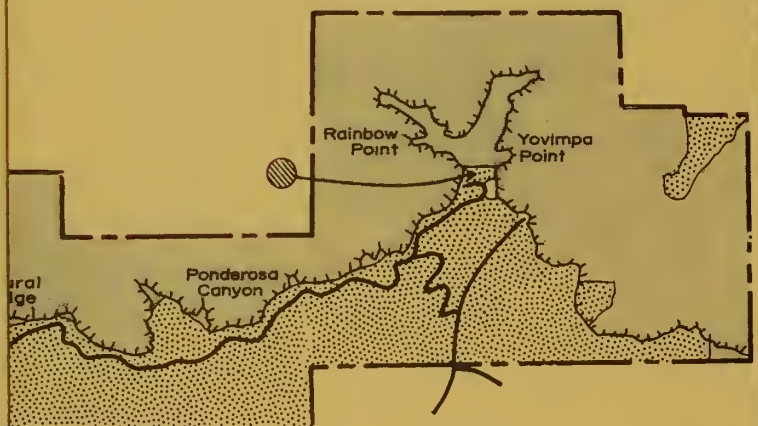
	park boundary
	canyon rim
.1% 	historic zone
.7% 	development zone
<u>natural zone</u>	
37% 	natural environmental subzone
62% 	wilderness subzone
.2% 	private development subzone



0 6000 12,000 feet



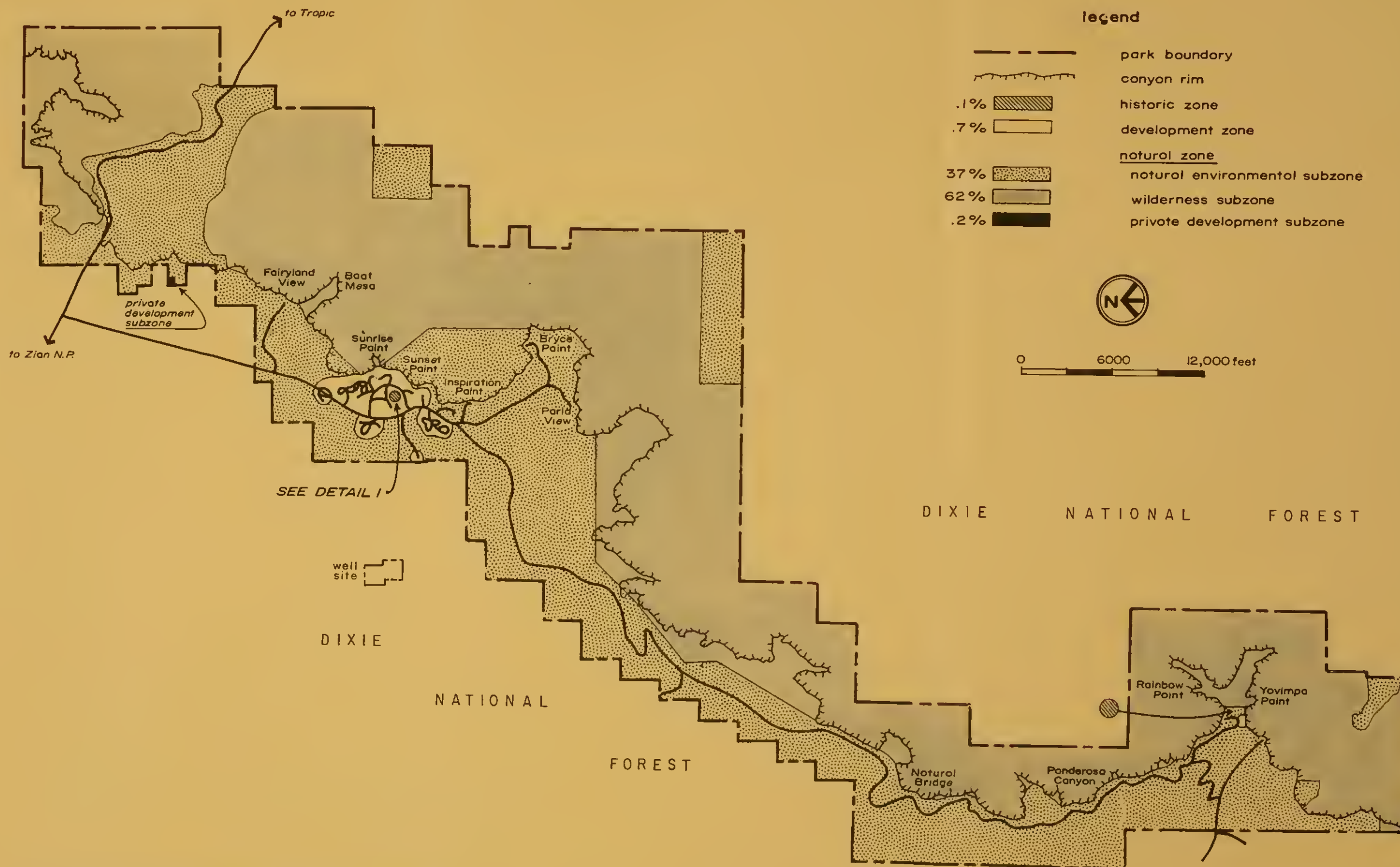
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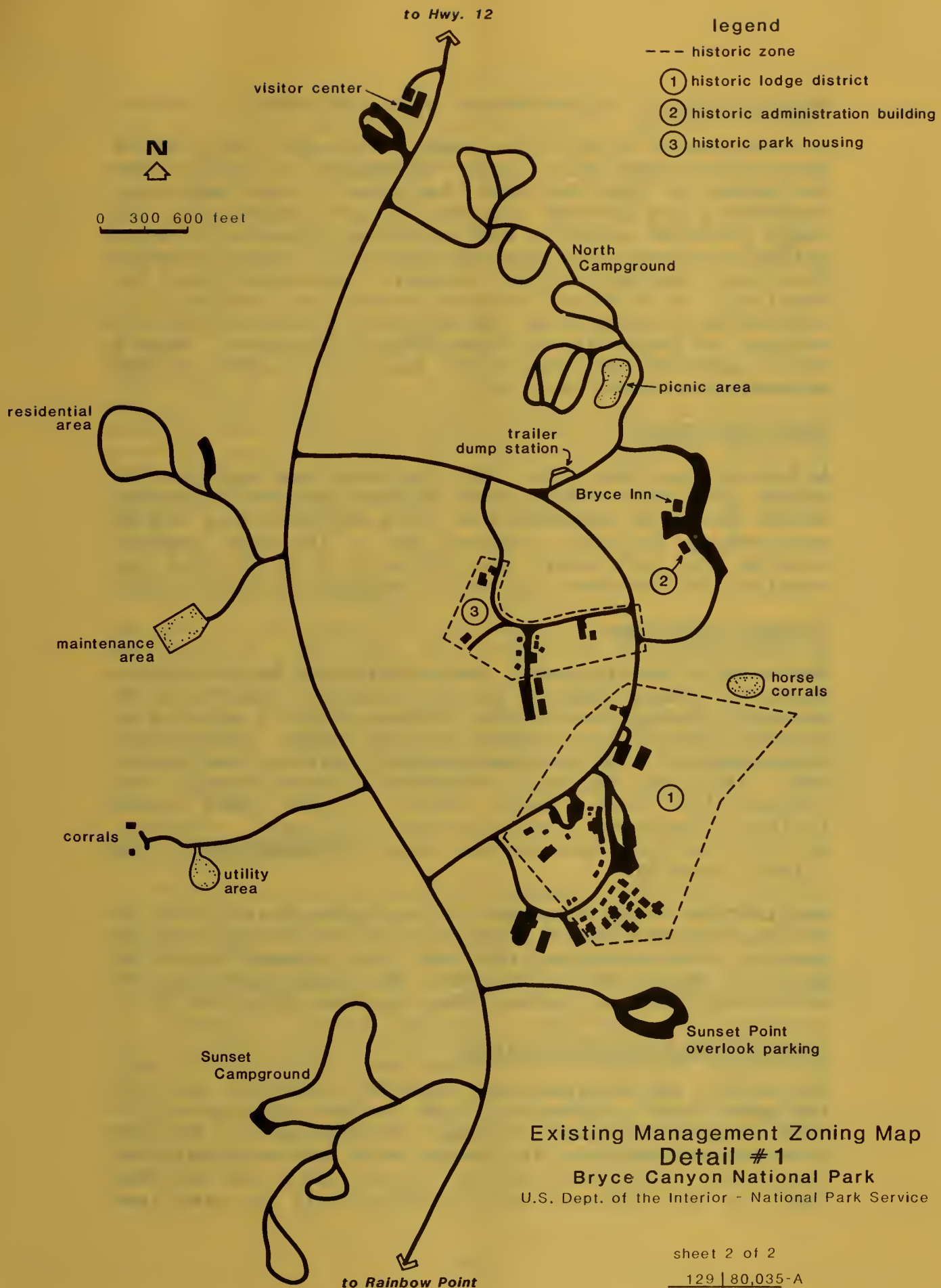
# Existing Management Zoning Map

## Bryce Canyon National Park

U.S. Dept. of the Interior - National Park Service

sheet 1 of 2

129 80,035  
Nov. '83 RMRO



Existing Management Zoning Map  
Detail #1  
Bryce Canyon National Park  
U.S. Dept. of the Interior - National Park Service



### Historic Zone - .1 percent of park (36 acres)

At the present time, this zone includes a total of 74 structures that have been determined eligible for inclusion in the National Register. Most of these structures are divided into two historic districts--the Lodge District and the Old Residence District. Other eligible structures include the Old Administrative Building, Rainbow Point comfort station, and the overlook. A cultural resource survey was completed in 1976 and all properties of cultural significance were entered on the List of Classified Structures. Only a small portion of the park has been surveyed for archeological remains.

### LAND PROTECTION

A land protection plan for the park was approved on April 24, 1985. This plan recommended the following action be taken concerning a 2.5 acre inholding and an outstanding mineral interest on a 100-acre section outside the park where the National Park Service has acquired fee interest for water supply.

#### Private Inholding

The only privately owned land within the boundary is a vacant 2.5-acre parcel (Tract 01-104). The area is currently being used by the landowner for a portion of a trail ride and as cattle grazing land. Present use is compatible with park management practices and goals; but, in the future, conditions may change and incompatible uses could occur. These uses could include building construction, illegal hunting, wildlife habitat destruction, mineral development, and illegal grazing.

Acquisition of an easement to preclude adverse uses is recommended for the 2.5-acre parcel on an opportunity basis. This acquisition can be accomplished by donation, exchange, or purchase--purchase being subject to availability of funds. (See Landownership Map.)

#### Outstanding Mineral Interest

There is an outstanding mineral interest on the 100-acre well section in East Creek approximately 1 mile west of the park (outside the boundary). The fee interest was acquired for location of the main well for the park. There is little chance that the mineral right on the 100-acre well section will be exercised

because of the specific restrictions listed in the deed. If the owner should attempt to explore for or develop oil and gas resources, a plan of operations would have to be submitted for review pursuant to requirements outlined in 36 CFR Part 9B. Approval of this plan could be subject to reasonable conditions necessary to protect the park's water supply. This authority can help minimize damage to park resources, but it cannot totally prohibit mineral activity.

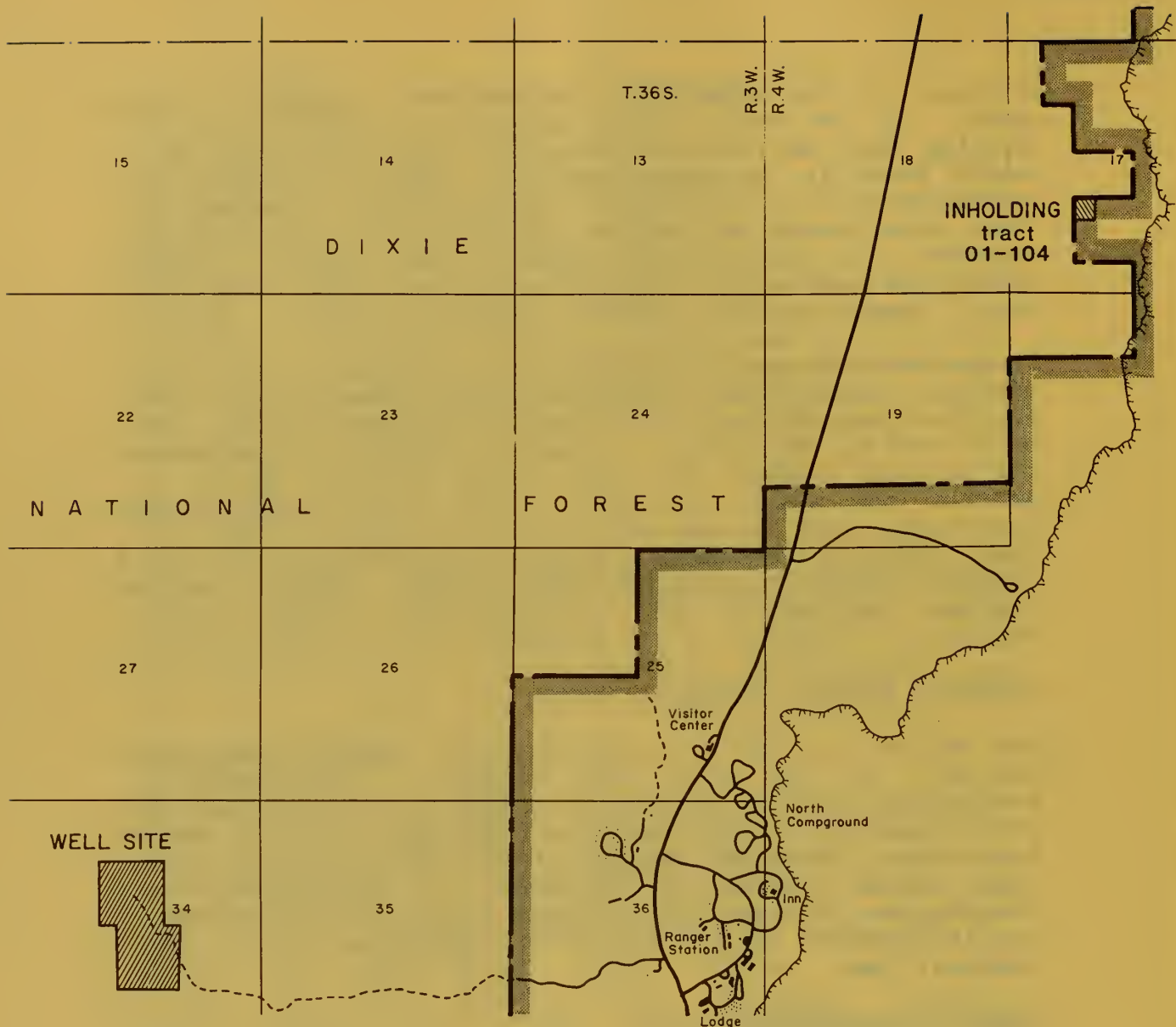
To protect the park's culinary water supply, status of mineral rights of the 100-acre parcel owned by the Los Angeles and Salt Lake Railroad Company should be monitored by the park. If the owner plans to exercise the mineral rights, the park should make an effort to protect the wells or acquire the mineral rights in accordance with 16 USC 1b.2, Act of August 8, 1953, 67 Stat. 495, as amended. This could be accomplished through donation or purchase. Such action would protect the park's only satisfactory culinary water supply.

#### BOUNDARY MODIFICATIONS







Any action to modify in any way the existing exterior boundary of the park will require a comprehensive evaluation of the resources involved and supporting justification for the need to include or exclude such resources. Boundary modifications will also require legislative action by Congress to establish new boundaries. The present acreage appears to complement the legislative intent for establishing the park. (See Boundary Map).

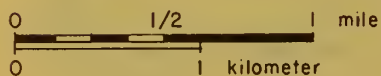
#### RESOURCE MANAGEMENT

Following are the resource management strategies needed to protect, preserve, and perpetuate the natural and cultural resources of the park for the next 5 to 10 years. The strategies identify both immediate actions for the management of various resources as well as areas where research and evaluation is needed in order to formulate future actions. Although the resource values and related management actions are individually identified below there should be a constant awareness of the interrelationship of one resource value to another. The results of all research and evaluation will be used to develop a better understanding of such interrelationships in order to improve management actions.



### Legend

-  park boundary
-  canyon rim
-  improved surface road
-  unimproved surface road
-  N.P.S. land outside park boundary
-  inholding (private land)



## Land Ownership Bryce Canyon National Park

U.S. Dept. of the Interior - National Park Service



legend

- park boundary
- ~ canyon rim
- road

0 4000 8000 feet



well site

to U.S. 89  
and Panguitch

T36S

Fairyland View

Boat Mesa

Sunrise Point

Sunset Point

Tropic

to Escalante

Inspiration  
Point

Bryce Point

Paria View

T37S

R4W R3W

Garfield County  
Kane County

Natural Bridge

Ponderosa Canyon

Rainbow  
Point

Yovimpa  
Point

T38S

T39S

## Boundary Map

Bryce Canyon National Park  
Garfield and Kane Counties, Utah  
U.S. Dept. of the Interior - National Park Service

129	80,030
June 83	RMRO

A natural resource management plan was approved for Bryce Canyon National Park in March 1984. A Cultural Resource Management Plan was approved in August 1982.

### NATURAL RESOURCES

The primary objective in management of the park is to protect and preserve the natural values while continuing to provide for visitor use and enjoyment. The following strategies will be implemented with regard to management of natural resource values and in accordance with all county, State, and Federal regulations associated with management of natural resources.

#### Air Quality, Solitude, and Scenic Resources

Bryce Canyon National Park has been designated a mandatory Class I air quality area (see Appendix D). From the many developed vistas along the canyon rim, visitors have the opportunity to visually experience not only the unique geologic formations within the park but also hundreds of square miles of scenic, undisturbed terrain. Due to the fact that Bryce Canyon is in a Class I air shed and that artificial light is practically non-existent, the beauty of the night sky appears to be amplified, creating a spectacular beauty very seldom seen by the human eye. Minor increases in artificial light and air pollution can seriously jeopardize this resource value which has become one of the most popular elements in the park's interpretive program.

Visibility research has shown that there has been a gradual decrease in the average annual standard visual range in the park. This threat could have a serious, negative impact on the visitor's experience if air pollution and sources of artificial light should continue to increase. Research data confirmed and that the source of pollution is both local and regional. Major local sources include automobile traffic and burning vegetation. Regional sources include power plants, copper smelters, forest fires, and southern California metropolitan areas.

A large percentage of the park is also noted for its extremely low noise level. This has been evaluated and identified as an important park element especially for those visitors seeking opportunities for solitude. The elevation of the park in relation to the surrounding topography makes it highly vulnerable to impacts on



solitude. As development increases, especially outside the park, noise levels as well as sources of artificial light will increase creating impacts on the solitude of the park.

Following are the proposed natural resource management actions to be taken to address threats to air quality, solitude, and visibility (day and night):

Maintain efforts to keep informed of and mitigate threats to park air, solitude, and scenic resources including night skies.

Purchase and install automated air quality and meteorological equipment and arrange for evaluation and storage of data.

Inventory from the public land records energy minerals leases adjacent to the park.

Maintain communications with oil and gas leasing agencies to provide comments on mineral developments adjacent to the park.

Maintain liaison with Regional and Washington Air Quality Offices regarding park air quality values.

Continue to monitor air quality, visibility (day and night), status of vistas, and noise levels.\*

Research methods to implement and enforce protective legislation for park scenic resources on a national level.

Maintain communications with other Federal, State, and county officials to preserve and protect air quality, solitude, and scenic resource values in and surrounding the park.

\*The document prepared by Dr. James D. Foch Jr., titled "Technical Report on Sound Levels in Bryce Canyon National Park and the Noise Impact of the Proposed Alton Coal Mine" published in 1980 will be used as an indication of baseline data.

### Water Resources

The National Park Service is mandated under the Clean Water Act and National Environmental Policy Act (NEPA) (1969) to monitor park waters, developments and use, and to conserve and protect the water resources for the continued preservation of the park ecosystem it

supports. A comprehensive water resource management plan is needed to analyze problems and assist in making management decisions.

The park has identified the following actions as being necessary to properly comply with legislation concerning management of water resources:

Prepare a comprehensive water resource management plan and conduct research that assesses impacts of water removal and its implications for development limitation and possible impacts on other natural resources.

Maintain all water systems to meet local, State, and Federal standards.

Conduct water resource inventory of park and monitor surface water and tributaries for quality and quantity and erosion, pollution, and possible resource damage.

Pursue and secure water rights for the park through State adjudication process.

## Wildlife

General Strategies - Park Service management policies call for the park to perpetuate the native animal life of the park for their essential role in the natural ecosystem. Park wildlife populations are affected to different degrees by man's activities. Some populations appear to be influenced very little by human disturbances while others interact closely with park visitors creating unnatural concentration. Some areas become overpopulated which leads to disease that can effect wildlife populations as well as the safety, health, and well being of visitors.

The following strategies are recommended within the Resource Management Plan to address general wildlife management concerns:

Maintain periodic boundary and poaching patrols, control of visitor-wildlife interactions, wildlife disease control, general wildlife monitoring, and existing wildlife restoration programs.

Monitor and evaluate control of unnatural wildlife concentrations in visitor-use areas and coordinate wildlife programs with other agencies.

Monitor selected species and their habitat, problem rodents, endangered species, and occurrence of unique and common species.

Collect baseline data on wildlife species populations, composition, and trends in relation to habitat.

Conduct research for ways to control unnatural populations of wildlife species in high visitor-use areas.

Peregrine Falcon - An active peregrine eyrie was discovered within Bryce Canyon National Park in July 1982. Since the American peregrine falcon has been identified as an endangered species, the park is required to conduct programs for the conservation of endangered species and insure that actions authorized, funded, or carried out by the park do not jeopardize the continued existence of such endangered species or result in the destruction or modification of habitat of such species.

Strategies necessary to accomplish these responsibilities include the following:

Maintain communication with Peregrine Falcon Recovery Team concerning the park peregrines.

Close nesting site area to visitor use. (This would include climbing, hiking, camping, and so forth.)

Enlist cooperation of all forms of aviation to avoid the eyrie sites.

Monitor eyrie--especially during critical nesting period--and conduct research on the peregrines to determine critical habitat and other parameters needed to support management decisions.

Prairie Dog - Utah prairie dogs (Cynomys parvidens) were reintroduced in the park in 1975 as part of the endangered species recovery program. Populations have expanded since the reintroduction. In the summer of 1981, a town of nearly 100 animals was wiped out by bubonic plague.

The park is working with the Utah Division of Wildlife Resources to determine an optimum population for the park. The relationship between fire and prairie dogs also needs to be better understood.



Strategies for managing this wildlife resource includes the following:

Maintain cooperation and consultation with Utah State Division of Wildlife Resources, U.S. Public Health Service, U.S. Forest Service, and U.S. Fish and Wildlife Service.

Discontinue burrow flea dusting programs unless there is a serious threat to public health.

Develop a management plan for the protection of the prairie dog that would consider impacts on the park as a whole, as well as using fire as a management tool for habitat enhancement.

Limit disturbance of prairie dog colonies by humans.

Monitor prairie dogs for diseases, populations, and distribution.

Conduct research into the relationship of prairie dog populations and wildfires.

#### Backcountry Management

Bryce Canyon National Park maintains a number of primitive backcountry campsites. Seven campsites and one group site are located along the 23-mile long Under-the-Rim Trail. Three campsites and one group site can be found along the 12-mile long Riggs' Spring Trail. These areas are available for use during the spring, summer, and fall.

Under the present program, minor impacts are occurring to the campsites. Data is currently being collected and stored for use in preparing an impact study to determine possible management action needed for each backcountry site. The recommended course of action for managing the back-country areas is as follows:

Maintain present backcountry management program including limitations on use, permit system, and backcountry patrols.

Monitor backcountry use and the impacts of such use on backcountry areas.

Maintain backcountry water quality and availability for visitors.

Develop a Trail Management Plan.

Conduct research to identify archeological resources, and threatened and endangered species along backcountry trails.

Install and maintain appropriate boundary fencing.

### Erosion Control

During the late 1930's, log dams were constructed in gullied areas throughout the park as an erosion control measure. The dams are filled (approximately one-half to three-fourths) with sediment, and bunch grasses are beginning to cover the eroded areas. The old dams, however, are showing signs of major deterioration and are in need of repair if we plan to continue to alter the erosion process and protect the results of past efforts.

During 1981 and 1982, approximately 35 log erosion control dams were constructed on East Creek and there still remains a need to construct additional new structures throughout the park to alter erosion and restore the impacted areas.

Visitor use has caused extensive soil compaction, loss of vegetation, and soil erosion within areas such as campgrounds, overlooks, general lodge area, and along many trails.

To resolve this issue, the following management actions will be taken:

Monitor erosion and/or vegetative change and evaluate the extent of erosion and structure loss, and then develop and implement an erosion control program.

Establish permanent vegetation and soil transects.

Reevaluate facility design and layout and pedestrian/vehicular circulation at campgrounds, overlooks, and lodge area. Use appropriate reinforcement in those areas of high impact and employ special design techniques to control circulation of pedestrians and vehicles.

### Wildland Fires

Recent studies (Buchanan 1981) have shown that plant communities have undergone major unnatural changes as



a result of human activities which include fire suppression, logging, and grazing operations. The exclusion of fire from the ecosystem has resulted in increasing the potential for major wildfires.

The proposed course of action identified in the Natural Resource Management Plan provides for the following resource management actions until a Fire Management Plan is completed. The Fire Management Plan will be based on an evaluation of data relating to soils, vegetation, fauna, archeology, and historical resources, and current park development. The plan will include historical fire trends, meteorological data and probable frequency of natural occurring fires. The plan will also be based on current information for fire management considering the park's fuel load, vegetation, soil types, and other park related resources.

Maintain a wildfire suppression program.

Coordinate wildland fire management program with erosion control program.

Coordinate wildland fire management program with adjacent landowner fire management programs.

Continue long-term monitoring of the parks vegetative communities as they relate to fire.

Conduct fire research for park experimental burning and fire effects upon vegetative trends and composition in each vegetative type.

### Exotic Plant Species

The plant communities of Bryce Canyon National Park support a number of exotic plant species. Protection of the native plants from competition and possible displacement by encroaching exotic plant species will, at times, require management actions. Some exotic species, such as Russian thistle and tamarisk, are aggressive and persistent and could, in the future, pose serious problems in maintaining the natural ecosystem.

The proposed management action to address the exotic plant species issue is as follows:

Develop and implement an exotic plant management program and begin monitoring exotic plant encroachment.

Locate, map, and identify exotic plants in park and address their impact on native plant communities.

#### Plant Parasite, Insect, and Diseases

Native forest insects and diseases are a normal part of the ecosystem. Therefore, populations of native insects and the incidence of native diseases will be allowed to function unimpeded except where control is required.

In view of the presence of various parasites, insects, and diseases within the park, the following actions are prescribed.

Coordinate park plant infestations program with U.S. Forest Service and develop an integrated pest management plan and implement program if necessary.

In coordination with U.S. Forest Service, monitor areas for dwarf mistletoe infestation, limb rot, western bark beetle, and spruce budworm infestation by photo documentations and personal observations.

#### CULTURAL RESOURCES

The management objectives contained in the Statement for Management for Bryce Canyon provide for the preservation, maintenance, and interpretation of the cultural resources within the park. The following strategies will be implemented with regard to management of cultural resources and in accordance with those management policies outlined in the Cultural Resource Management Plan for Bryce Canyon National Park. Furthermore, all development projects involving properties eligible for or on the National Register of Historic Places will be carried out in accordance with the Secretary of the Interior's "Standards for Rehabilitation."

#### Evaluation of Above-Ground Resources

Most of the structures with historic or architectural significance have been evaluated for inclusion on the List of Classified Structures. Some of the structures were declared eligible for the National Register of Historic Places, but the nominations need to be revised due to technical deficiencies.

Until all above ground resources are evaluated and appropriate nominations are made in accordance with the

National Historic Preservation Act of 1966 (as amended 1980), the park will not be in compliance with this act and The Secretary of the Interior Standards and Guidelines. Until the nomination process has been completed for properties that might be impacted, development projects will be delayed. Therefore, the following actions will be taken:

Resurvey to assure that existing survey is completed and accurate and then develop a comprehensive nomination package to resolve technical deficiencies.

#### Survey of Archeological Resources

Only a small portion of Bryce Canyon has been surveyed for archeological resources. The Secretary of the Interior Standards and Guidelines require that the park be surveyed for archeological resources and appropriate action taken to nominate them to the National Register where appropriate.

The following actions have and will be initiated to resolve this issue.

As of this writing, a 10-238 (Development/Study Package Proposal), Package 523 has been prepared and is currently scheduled for "future" years to conduct a parkwide archeological survey.

As soon as funds become available, complete an entire parkwide archeological survey and prepare appropriate forms for nomination to the National Register of Historic Places.

#### Old National Park Service Residential Area

The old residential area was built by the Civilian Conservation Corps in the 1930's. Since that time, several of the structures have been modified on both the exterior and the interior and are presently being used for National Park Service seasonal housing. Future use and management of the structures will be as follows.

The structures will continue to be restored and modified when necessary. This will allow for continued use of the structure and provide needed housing.

If funds become available, an interpretive program will be developed to include these facilities.



### Maintenance of List of Classified Structure Properties

Other than the Bryce Canyon Lodge Historic District, the Old Residential Historic District, the Service Station, the Old Administrative Building, and the Bryce Inn, there are a number of log and frame structures that may have some architectural and historic significance. These buildings are being maintained by the park and adaptively used. The future management and use of these structures has been identified as follows.

The park will continue to adaptively use the structures and perform routine, minimal maintenance until it is no longer cost effective and then they should be recorded and removed.

### Restoration of Bryce Canyon Lodge

The historic Bryce Canyon Lodge was constructed in the period of 1925 to 1929. The structure is a two-story wood frame building of 23,920 square feet. The lodge provides a variety of visitor services and is divided into functional units: kitchen, dining room, lobby, gift shop, auditorium, rest room, and offices on the first floor and dormitory for concession employees on the second floor. As soon as housing facilities are provided for the concession employees, the lodge will no longer be used for housing purposes.

Bryce Canyon Lodge was nominated as a National Historic Landmark in 1986 and accepted as a landmark in 1987. Restoration of the lodge will require work on the interior and exterior. The purpose of this work will be to provide adequate, useful facilities for present and future Park Service and concessioner needs while preserving as much of the original historic fabric and atmosphere of this structure as possible. Primary concerns include organization of available interior space to accommodate concession services for visitors, maintenance and restoration of historic spaces, stabilization of structural features, and development of a fire suppression system.

### Retention of Historic Service Station

There is no immediate prospect for removing or modifying the service station. A decision was required as to how the structure would be preserved and what future use the structure would serve.

A decision was made that present use by the concessionaires would continue with the future prospect of adaptive use. This will satisfy National Park Service policy and historic preservation law as well as reduce funding obligations to a minimum. The structure will be scheduled for renovation. This structure contains approximately 250 square feet of interior space.

#### Rehabilitation of Employee Recreation Hall

This facility will be retained and rehabilitated to serve as an employee recreation facility. The interior and exterior will be rehabilitated to prolong the usefulness of the structure as well as provide more energy efficient materials and reduce maintenance cost and work loads. Rehabilitation work will include rewiring; replacing wall, ceiling, and floor coverings; and installing a flue liner in the fireplace, safety valves on hot water heater, and foundation repair where required. This structure contains approximately 1,780 square feet of usable space.

#### Rehabilitation of Men's Dormitory

This facility will be retained and rehabilitated to serve as men's dormitory for concession employees. The interior of the existing structure (4,078 square feet) will be completely rehabilitated to make more effective use of the space. A fire alarm and sprinkler system will also be installed to meet safety codes.

#### Rehabilitation of Camper Store

The camper store will be retained to serve the park visitors. The interior space (2,975 square feet) and exterior will be rehabilitated. The space which was serving as a laundry for the concessionaire will be renovated to accommodate a deli food service. The concession laundry facilities are now housed in the new motel units. The visitor laundry, rest rooms, and showers that are to remain at the camper store require total upgrading. A fire alarm and sprinkler system will also be installed to comply with safety codes.

#### Management of Other Structures Within the Bryce Canyon Lodge Historic District

The western cabins (40 rooms) will be retained for their historic value and utilized for visitor lodging purposes. The interior of the 40 western rooms were rehabilitated in 1982/1983.



Approximately two of the economy cabins and the first aid cabin will be retained. The two economy cabins will be restored and used for interpretive purposes. The first aid station will also be restored and will continue to be used for first aid purposes and interpretation. The remaining economy cabins will be disposed of and the site rehabilitated. Section 106 Compliance has been completed on all of the economy units.

Other structures to be retained within the subject district includes the stone pump house, adjacent cabin which serves as a laundry storage facility, and the three small storage structures between the recreation hall and Bryce Canyon Lodge.

#### Museum Collection

The collection has not been maintained, or stored according to the standards prescribed by NPS-6, Interpretation and Visitor Services.

This issue will be addressed by programming a 10-238 for proper storage of the collection and by conducting an inventory of all properties. If possible, existing buildings will be used to house the collections, but funding will need to be granted to provide for the adaptation of space needed.

#### Archival-Library

Archival-library material has not been catalogued, maintained, stored, or disposed of according to the standards prescribed by NPS-28 and Museum Handbook, the File Management Handbook, Records Scheduling and Disposition Supplement, and General Services Administration General Records Schedules, Regulation 3, Appendix B.

This will be accomplished by having the park staff program a 10-238 for proper housing of archival-library materials and their cataloguing and disposal. If possible, existing buildings will be used to house the collection, but funding will have to be generated to provide for adaptation of space with the needed controls.

#### Inventory and Classification of Park Collections

The various park collections--photographs, slides, archeological materials, plant materials--have not been completely inventoried and, as appropriate, properly

classified. This will be accomplished by existing personnel. They will inventory and classify the collections as time permits, and consideration will be given to contracting some of this work.

## VISITOR USE AND INTERPRETATION

### Visitor Use

In concert with the legislative intent of the park, one of the primary goals is to develop an understanding and appreciation in the visitor for the unusual scenic beauty and scientific values that were significant in the establishment of Bryce Canyon National Park. As visitors reflect back on their experience at the park, they should have a feeling of pride and ownership and feel confident that the resources of the park are being effectively managed to insure that future generations will also have an opportunity to enjoy them in the same way.

The primary uses which the visitor will have an opportunity to experience include hiking, camping, scenic driving, photography, picnicking, and horseback riding. During the winter months, the park will also be open to visitors for cross-county skiing and snowshoeing.

### Interpretation

The Interpretive Prospectus approved in 1987 identifies the following interpretive themes and goals for the park:

#### THEMES

World Class Erosion. Spectacular scenery, panoramic views, and geologic amphitheaters of Bryce Canyon National Park, recognized as world class examples of erosion, have been embraced and protected in the National Park System since 1928.

The Reasons You Came. A change of pace, peaceful surroundings, and magnificent scenery are the primary benefits visitors find in Bryce's richly hued limestone cliffs, vast panoramas, and clean, fresh air.

Stay a Little Longer. Learning and enjoyment, available to all Bryce visitors, are made easier by the full spectrum of high quality in-park services.

Take a Deep Breath! The integrity of clean air and clear vistas from the Paunsaugunt Plateau to the horizon is the shared responsibility of visitors, park employees, local communities, industry, and State and Federal agencies.

Through Understanding This Park, You Can Help. Support Bryce Canyon National Park by learning about park resources, management practices, and how these relate to local communities and landscapes of the Colorado Plateau.

The Canyons Don't Care. The natural world of Bryce Canyon National Park is neither hospitable nor hostile. Humans are responsible for their own safety, comfort, and environmental depth perception.

Good Information Yields Visitor Satisfaction. The basis for the total visitor experience is information and interpretation, empowering visitors to make intelligent time/activity/location decisions about Bryce Canyon National Park and surrounding recreation and service opportunities.

## GOALS

To help visitors understand that park resources do not end at the park boundaries.

To stimulate visitor and local citizen understanding of and action on external threats to park resources.

To encourage visitor understanding of how Bryce Canyon fits into the Grand Staircase of the Colorado Plateau.

To reduce visitor injury and hazards related to park uses.

To assure appropriate consideration for the physically handicapped in all aspects of park interpretation.

To foster visitor enjoyment through awareness of available activities and services and time needed for each, both within and around the park.

To help visitors appreciate and be aware of their role in maintaining Bryce Canyon's clean air and night skies.



To foster safe, informed, minimum impact foot and horse access to park resources away from roads and other congested areas.

To increase visitor understanding of the plants, animals, and geology of the Paunsaugunt Plateau.

To provoke visitor interest in the cultures and lifestyles, past and present, of the Bryce Canyon region.

To encourage park visitors to stay longer, to visit more of their park, specifically the Yovimpa Point area, and to use the park in all seasons.

To enhance the visitors' stay in the park by providing a smooth transition into a "total visitor experience."

The interpretation and distribution of information will continue to be accomplished through various opportunities and media. The visitor/administrative center will continue to serve as the primary visitor contact medium where visitors can obtain timely and accurate information and orientation. Various publications, audiovisual programs, and exhibits will be used to inform and orient the visitor to the park.

Another important source of information dissemination will be found in the lodge historic district. The 1987 Interpretive Perspectives refers to wayside exhibits as well as interior exhibits in all major buildings of the lodge historic district, and recognizes the importance of concessions staff for direct communications about park resources and activities. Plans to incorporate interpretive exhibits in visitor lodging facilities should reflect consideration for the restriction of the use placed on such structures (refer General Development, Concession Season of Operation Section of this plan). This historic district offers interpretive opportunities and addresses kinds of visitors that are uniquely different from other park locations.

#### GENERAL DEVELOPMENT

A number of alternatives were considered for resolving the general development related issues identified in the "Issues" section of this document. From the alternatives considered, the following preferred actions were selected and judged to be environmentally sound, complementary to the management objectives of the park, and responsive to public concerns expressed



during various public involvement sessions. The rationale for selecting the preferred actions is presented under each of the following issue headings. This section also identifies the function, size, capacity, and location of the facilities to be developed. All comprehensive design plans prepared to implement the proposals contained in this document will reflect appropriate consideration for the physically handicapped.

#### Lodging Facilities (See Development Concept Plan)

The National Park Service will continue to provide visitor lodging facilities in Bryce Canyon National Park at a level not to exceed 110 rooms. For capacity purposes, a room is considered to be capable of containing two double beds. The 40 historic western rooms will be retained for historic and visitor lodging purposes. The historic western cabins and the two new motel units collectively represent the 110-room ceiling for visitor lodging facilities in Bryce Canyon National Park.

This ceiling represents approximately the same number of rooms which were available to the public prior to the preparation of this planning document.

The ceiling on visitor lodging units is based on the following rationale:

1. National Park Service Management Policies, III-8, states that "overnight facilities will be restricted to the kinds and minimum levels necessary to achieve each park's purpose consistent with the protection of park resources, and will be provided only when the private sector or other public agencies cannot adequately provide for them in the park vicinity." Currently, the private sector adjacent to the park is adequately meeting lodging needs and has traditionally expanded to meet public demand.

2. A majority of the public expressed a desire to see the National Park Service continue providing visitor overnight lodging accommodations within the park. However, the majority also expressed the desire that such accommodations not be expanded beyond the present level.

3. Recognizing there is a point of diminishing return beyond which increases in people and development begin to impact the environment and in turn aesthetic values it is important that a site capacity be established.

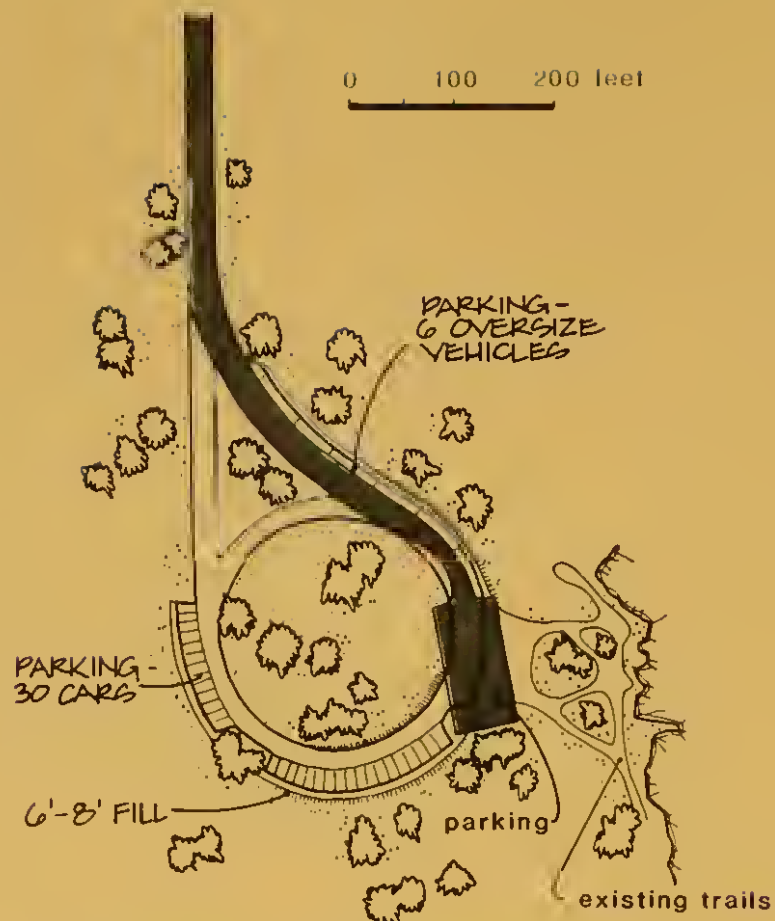
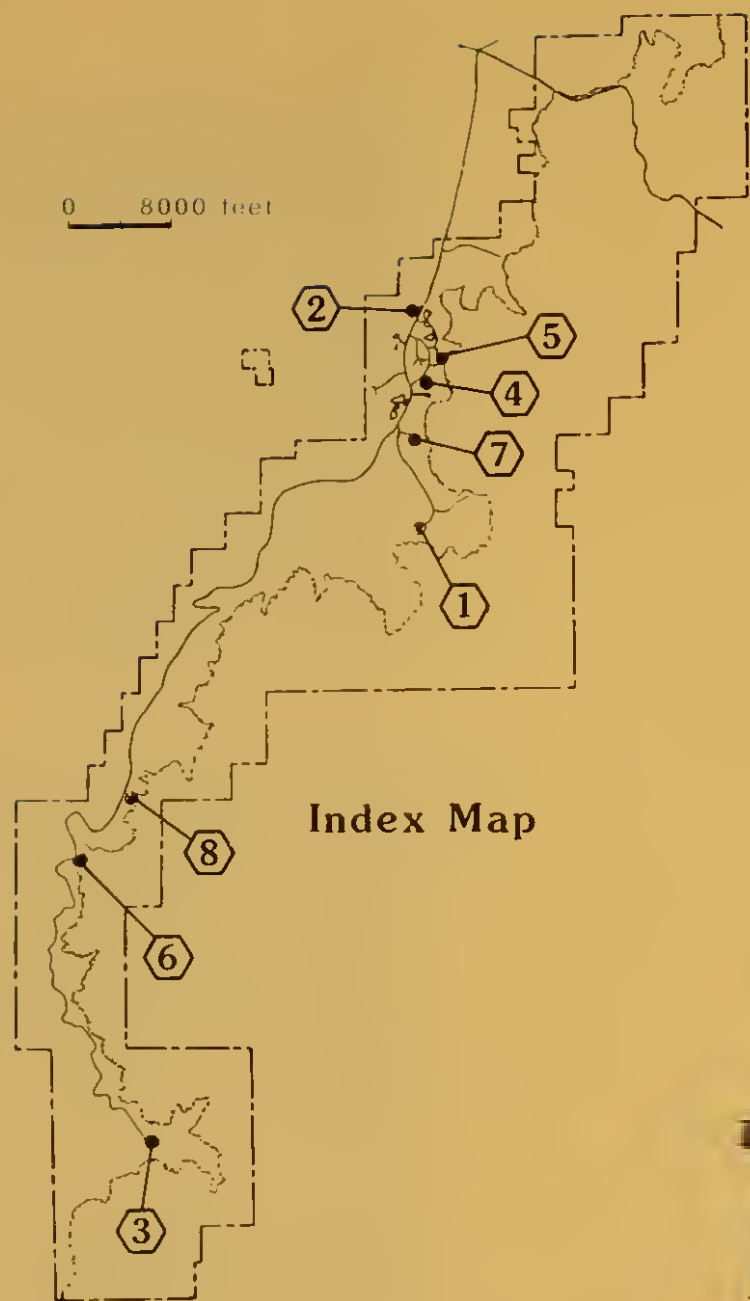
Within the existing development zone there appears to be a complementary balance between the influences of man and natural values. Any increases in structures within the developed area, especially in the vicinity of the concession developments, could jeopardize the existing natural values of the area and have a negative impact in what is now a complementary balance between the humanistic influences and nature.

4. A document titled "Economic Feasibility Study Concessioner Lodging Options, Bryce Canyon National Park" was prepared in 1981-82. The study indicated the total of overnight lodging facilities required for an economically viable operation would be a minimum of 100 overnight units. The additional 10 units included in the 110-unit ceiling will provide an added cushion for profit.

The economy cabins which were being used for both visitor and employee housing will be removed and disposed of with the exception of those necessary for administrative, historic preservation, and interpretive purposes. All such actions will be in compliance with those stipulations outlined in the Memorandum of Agreement approved by the National Park Service, Utah State Historic Preservation Office, and Advisory Council on Historic Preservation (see Appendix B).

Housing in the park for concession and National Park Service employees will continue to be provided (see Development Concept Plan). Two new concession employee dormitories were recently constructed in the park to house 50 employees who were displaced when a decision was made to demolish the substandard and deteriorated facilities when the employees were housed. A separate Environmental Assessment and Finding of No Significance Impact (FONSI) was prepared to cover the construction of the new units. A new dormitory which will house 10 married couples employed by the concessionaire is also planned for construction. These employees are also currently housed in extremely substandard park facilities that are no longer safe or economical to maintain. An Environmental Assessment for the construction of the 10-unit married couples dormitory will be required prior to any action to develop the facilities.

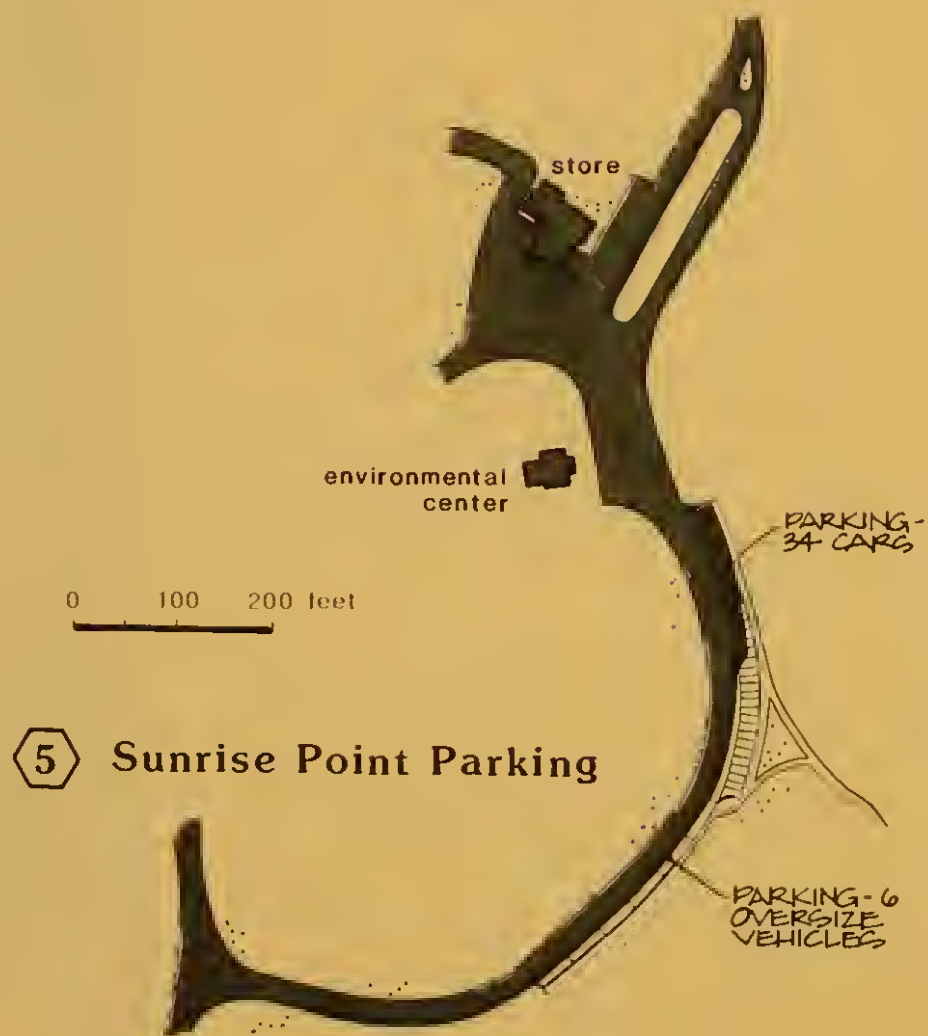
As indicated earlier, the existing dormitory for men will be rehabilitated to accommodate approximately 25 concession employees. This structure along with the three new dormitories identified above will provide housing for approximately 99 concession employees.



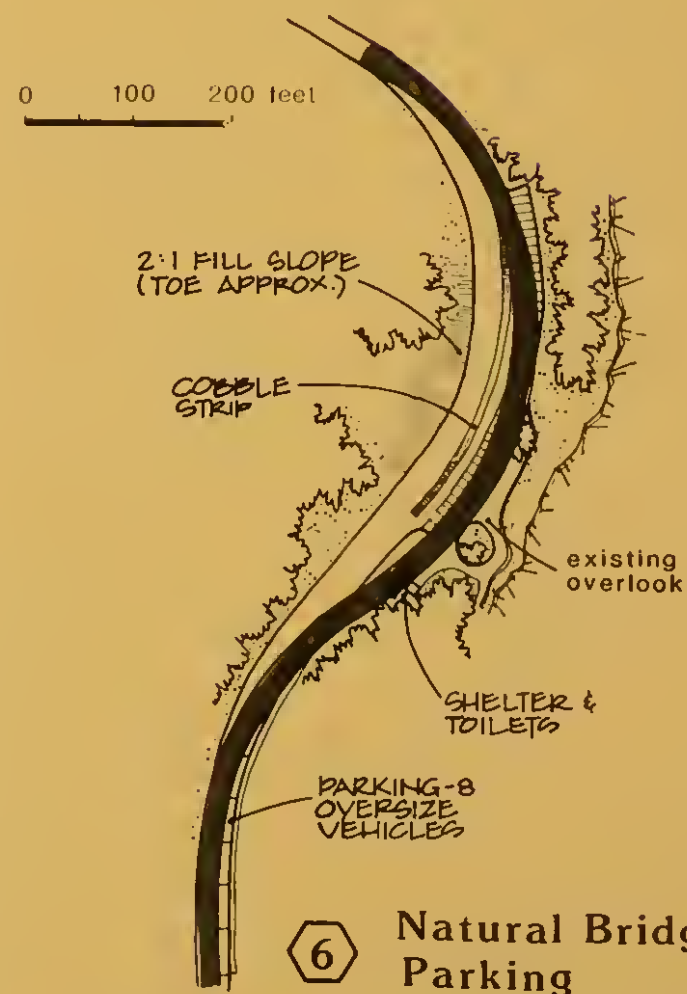
1 Paria View Parking



2 Vis

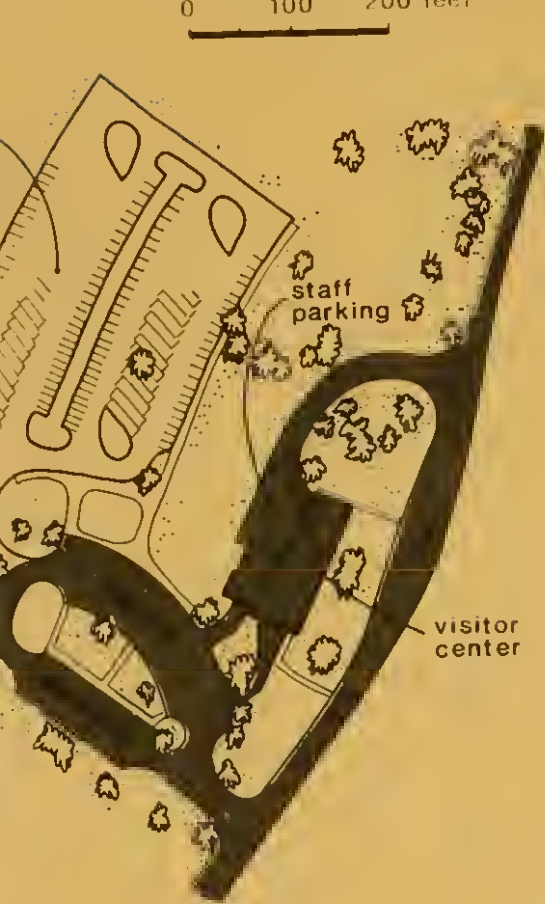


5 Sunrise Point Parking

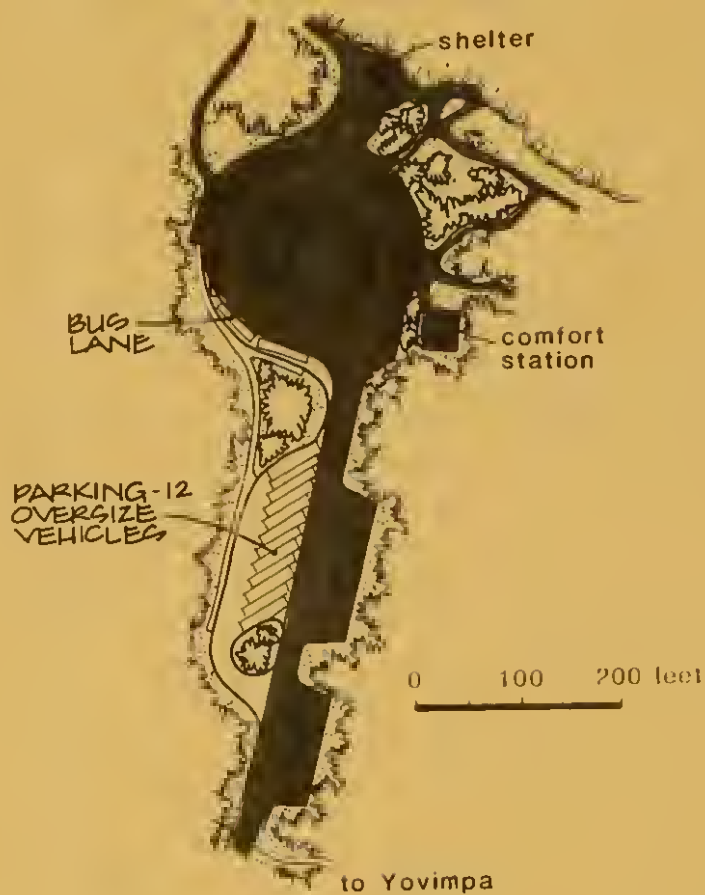


6 Natural Bridge Parking

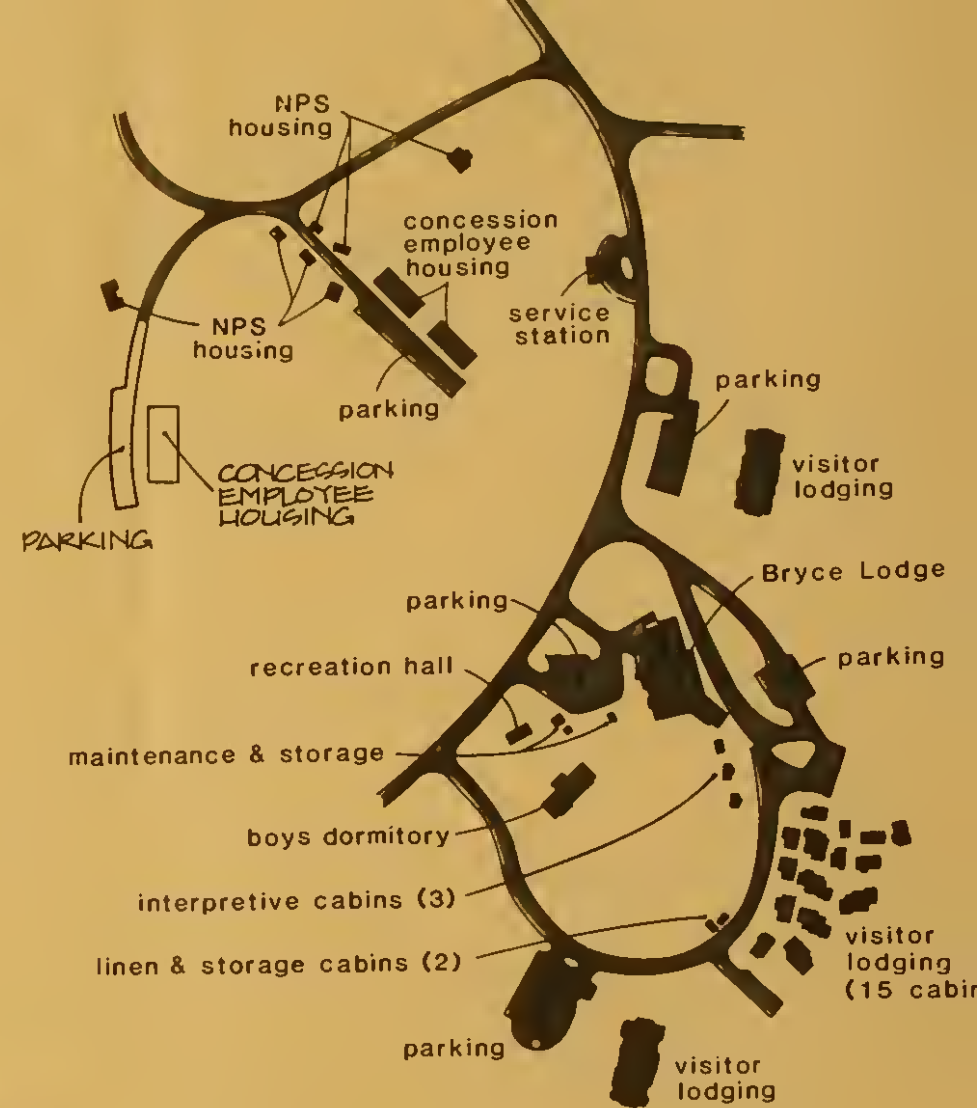




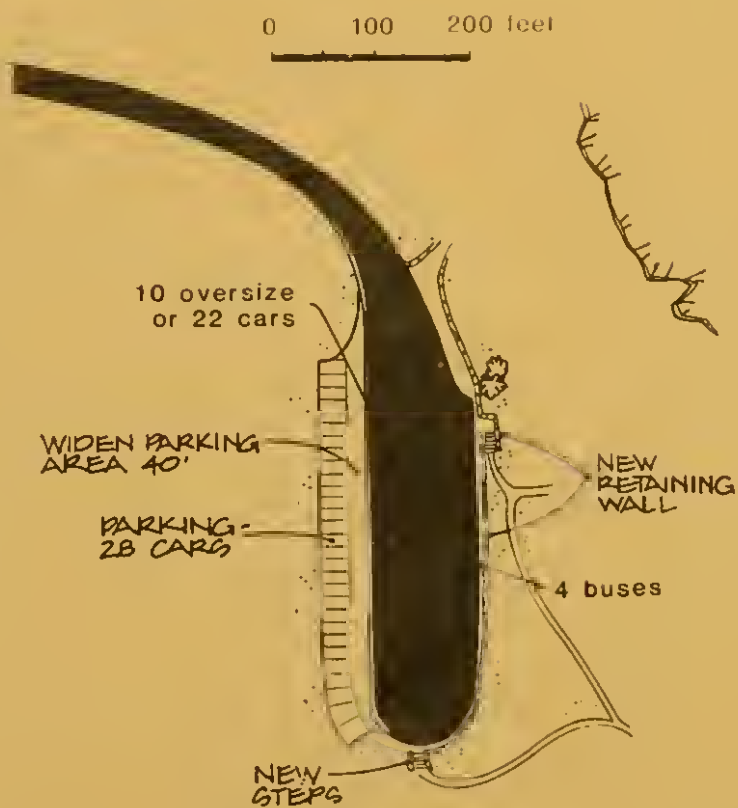
Visitor Center Parking



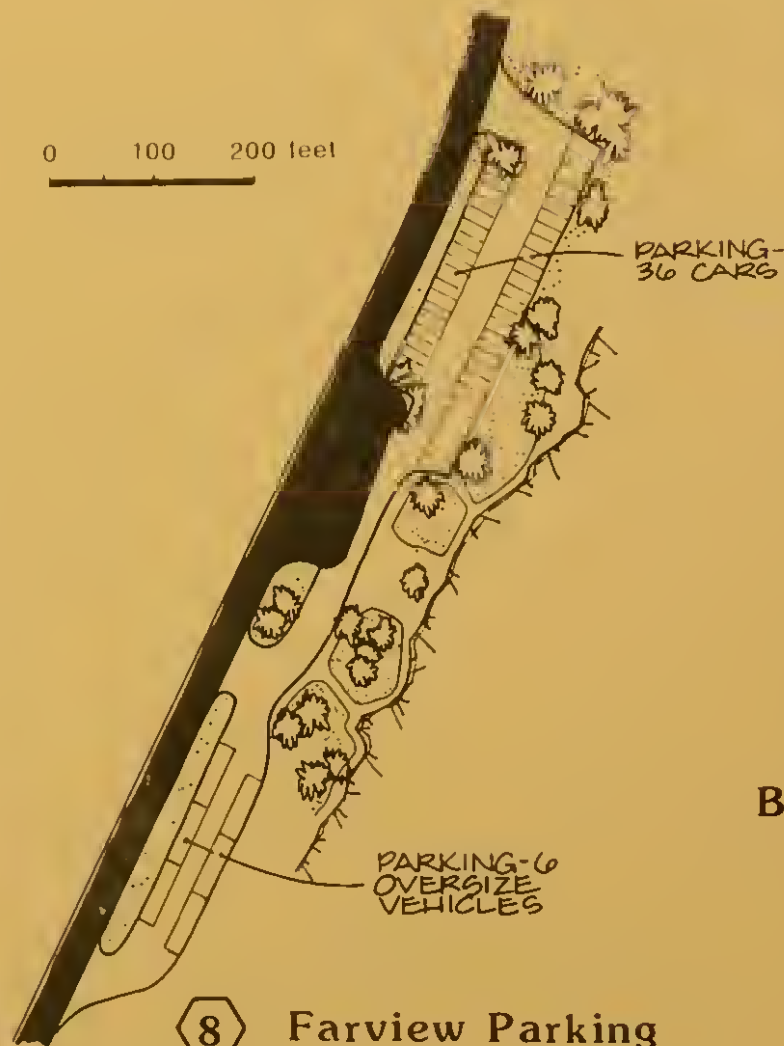
3 Rainbow & Yovimpa Points Parking



4 Bryce Lodge Area



7 Inspiration Point Parking



8 Farview Parking



# Development Concept Plan

## Bryce Canyon National Park

### Utah

United States Department of the Interior  
National Park Service



The park currently has an option to utilize up to four Bureau of Land Management houses located outside the boundary for National Park Service seasonal quarters. These facilities can accommodate up to eight seasonal employees and will be used in the event that additional seasonal quarters are needed. An annual agreement is entered into with the Bureau of Land Management whereby they receive income minus any maintenance cost encountered by the park. If the Bureau of Land Management continues to allow the park to utilize these quarters, they should meet seasonal employee housing needs for the next 10 to 15 years. This proposal is consistent with the Bryce Canyon National Park Quarters Management Plan. Appendix C is a listing of all government quarters in the park and addresses those requirements in NPS-36 for condition, location, income, size, and so forth.

The overall picture concerning housing within the region for both permanent and seasonal employees is extremely dismal. Within a 25-mile radius of the park, there are a number of small communities including Tropic (population 329), Cannonville (population 133), Henrieville (population 145), and Panguitch (population 1,318). Most essential services such as medical, dental, minimal shopping, and hardware stores are available; however, the nearest community to offer a wide range of services at moderate prices is Cedar City approximately 80 miles southwest of the park.

Housing is extremely limited in the smaller communities with some rental housing available in the \$200 to \$400 per month price range. Homes for sale range from \$35,000 to \$60,000. Resale is extremely difficult with most homes staying on the market from 2 to 4 years. Commuting distance to the larger cities such as Cedar City is impractical. The factors of isolation, long winters (8 months), and hazardous driving conditions further compound the problems of locating housing that is convenient and does not present undue hardships.

#### Concession Season of Operation

The concession operation will continue to be restricted to its traditional season of operation--May 18 through October 1. The period of time outside this season of operation, referred to as shoulder months, consistently represents a time in which visitation in the park and region significantly declines. This is a time when the availability of lodging and dining facilities far exceed demand creating an economic strain on related services.

During the public involvement process, both public, private, and political interest expressed their desire to see the park concession operation restricted to its current level of development as well as to its traditional season of operation. This would eliminate potential economic impacts on the private sector especially during the marginal periods of operation. Should future demand exceed the availability of lodging and restaurant facilities during the shoulder months and the private sector within the region no longer express a desire to expand to meet such demand, the parks may consider extending the concessionaire's season of operation. Such actions will be carefully coordinated with the private sector and documented.

#### North Campground

The North Campground will be retained as a service to the visitor; however, it will require major rehabilitation to correct environmental impacts, improve pedestrian and vehicular circulation, and provide a greater flexibility in accommodating various forms of camping equipment. This decision is based on the same rationale as presented in the items 1 through 3 in the previous section titled "Visitor Overnight Lodging." The only difference is that the issue involved campground accommodations rather than visitor lodging units.

Depending on site constraints and design objectives, the rehabilitation could result in a need to realign some sections of roadway, construct new rest rooms and utilities, and totally remove and reconstruct many of the individual camping units. These modifications may also result in a slight reduction in the number of available camping units.

#### Transportation

Based on the document titled "Transportation/Economic Feasibility Study" prepared in 1983 by the Denver Service Center and the 1980 Federal Highway Administration report titled "Roadway Inventory and Needs Study," a decision was made to maintain and upgrade the existing roadway systems and expand a number of overlook parking areas to accommodate current types of vehicles and those traffic volumes projected for 1995. The Transportation/Economic Feasibility Study which also addressed environmental impacts conclude that at this time the cost of implementing a transit system to serve the park visitor would be prohibitive. However, recognizing the values in a



well-thought-out transportation system the option to reevaluate alternatives will remain open. The decision to upgrade the existing roadway and a number of the parking lots will in no way jeopardize future transportation system options and will enable the park to address current demands and impacts on visitors and park resources.

The proposal to maintain and upgrade the existing roadway systems and expand the overlook parking areas is summarized in Table 1. This table lists the type of improvements, roadway and parking areas involved, mileage, and cost for improvements. The table is also divided into those facilities serving the public and those used purely for administrative purposes.

The primary overlook areas which will require parking expansion to meet projected demand are listed in Table 2 and graphically detailed in the Development Concept Plan. To reduce the degree of parking expansion near the overlooks, all motorist towing trailers will be required to leave them in an expanded parking area near the visitor center. The plans for expanding the visitor center parking area will also resolve the traffic circulation problems associated with the existing facility. No significant changes will be required at Fairyland View. Minor enlargement of the parking area at Sunset Point is indicated in Table 2; however, this could be avoided by relocating the picnic area, which will shorten the average length of stay and hence decrease the parking requirements. Parking facilities at Sunrise, Inspiration, Farview, Rainbow, and Yovimpa Points will be expanded with minor modifications. The Paria View and Natural Bridge overlook parking areas will be significantly expanded and will require substantial reconstruction to provide adequate parking and enhance visitor safety.

Considering the rapid deterioration taking place on many of the roadways, a Road Systems Evaluation Study is being developed to determine the future road improvement needs, cost, priorities, and establish the degree of environmental documentation required. Should the results of the Road System Evaluation Study or any future transportation study significantly deviate from the recommendations contained in this document an Environmental Assessment or Environmental Impact Statement would be required prior to any construction activities. Contingent upon the results of the latter documents, appropriate revisions will be incorporated in the Addendums section of this General Management Plan.

## State Highway 12 Improvements

Based on preliminary field assessments, it appears as though the alternative to construct a maximum of approximately 6,600 feet of climbing lane would be the most practical solution for meeting future traffic demands. Other than the status quo alternative where no action would be taken, the alternative to construct approximately 6,600 feet of lane would be the least environmentally damaging. The 6,600 feet of climbing lane would also provide a reasonable number of opportunities for vehicles to pass within the section of roadway and thereby reduce inconvenience to motorists to a reasonable degree.

Due to the lack of adequate base data, a more comprehensive environmental planning effort must be initiated to assess alternatives and their environmental impacts before a final decision is reached. Any further improvements to this section of roadway would primarily be in the interest of nonpark related activities; therefore, it is not in the interest of the Park Service to finance improvements of the roadway during the lifetime of this plan. Should future demands necessitate actions to improve the roadway, the Park Service will retain a voice in the planning, design, and construction of the roadway regardless of any changes in the status of ownership. Such reservations are in the interest of protecting park resources and the safety, health, and well being of individuals.

## Trail System Use and Circulation

The Peek-a-Boo Trail will be retained as a trail for horseback riding and properly signed to warn hikers of potential conflicts. Surveys conducted by the park show a far greater volume of horseback riders than hikers on Peek-a-Boo Trail. Peek-a-Boo Trail is the only trail in the amphitheater area where horse use is permitted; where as, there are a wide range of opportunities for the hikers within the same general area. A monitoring program should be initiated to measure the impacts of horseback riding in the area.

No additional horseback riding trails will be constructed. This will eliminate additional impacts on a very fragile environment and minimize additional cost associated with construction, maintenance, and administration.



TABLE 1

ROADWAY AND PARKING AREA  
CONSTRUCTION PRIORITIES/COSTS

PRIORITY/NAME	NUMBER	MILES	COST
<u>A. ROADWAYS</u>			
1. Rainbow Point/Rim	10(C)	5.7	\$3,705,000
2. Rainbow Point/Rim	10(B)	9.7	4,105,000
3. Bryce Point	100	1.9	445,000
4. Paria View	205	0.4	20,000
5. Inspiration Point	204	0.2	60,000
6. Entrance	10(A)	2.8	840,000
7. Fairyland Point	200	1.1	330,000
8. Sunrise Point	202	0.5	150,000
9. Lodge Parking	207	0.3	60,000
10. Lodge Loop	11	1.0	270,000
11. North Campground	201	1.8	360,000
12. Sunset Campground	206	1.2	240,000
13. Sunset Point	203	0.2	60,000
SUBTOTAL		26.8	\$10,645,000
<u>B. PARKING AREAS</u>			
1. Rainbow/Yovimpa		\$	43,000
2. Natural Bridge			65,000
3. Farview			44,000
4. Paria View			39,000
5. Inspiration Point			29,000
6. Sunrise/Sunset Point			65,000
7. Visitor Center			221,000
8. Fairyland			7,000
SUBTOTAL		\$	513,000
TOTAL NET DEVELOPMENT COST			11,158,000
* TOTAL GROSS DEVELOPMENT COST			14,617,000
(Net cost plus 1.31)			

\* NOTE:

As indicated in the preceding text, a road systems evaluation and engineering study will be required to substantiate the degree of improvement to be made and final cost.

TABLE 2

1995 PARKING REQUIREMENTS

<u>Spaces</u> <u>Location</u> <u>Total</u>	<u>Existing Parking Spaces</u>			<u>Required</u>		<u>Parking</u>
	<u>Autos</u>	<u>Oversize</u>	<u>Total</u>	<u>Autos</u>	<u>Oversize</u>	
Visitor center	77	3	80	170	40	210
Fairyland	22	3	25	23	4	27
Sunrise Point	18	0	18	34	6	40
Sunset Point	102	15	117	113	20	133
Inspiration Point	30	6	36	45	8	53
Bryce Point*	21	5	26	-	-	-
Paria View	13	0	13	30	6	36
Farview	14	0	14	34	6	40
Natural Bridge	12	0	12	42	8	50
Rainbow/ Yovimpa	43	2	45	60	10	70
TOTAL			386			659

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\*Because of environmental considerations, parking at Bryce Point cannot be expanded. The Bryce Point overlook would be closed to visitor traffic during the peak season to prevent undue congestion.

## PLAN IMPLEMENTATION

### Cost Estimating and Programming

The implementation of the Development Concept Plan will require the expenditure of Federal funds for the construction, operation, and maintenance of the park facilities. This section presents estimated cost for construction of additional facilities, staffing requirements after full implementation of the development concept plan, and operation and maintenance cost. Also included is the cost of those structures which were constructed under the Visitor Facility Fund program since this planning process began. These costs are recorded so as to reflect the total cost of the proposed plan. With the exception of those facilities constructed under the Visitor Facility Fund program, the cost of the facilities identified in Table 3 are based on the 1986 Class "C" Estimating Guide. All existing new facilities constructed with Visitor Facility Funds reflect the actual cost of the projects.

TABLE 3

COST ESTIMATE FOR PROPOSED CAPITAL IMPROVEMENTS PROGRAM

I. <u>BUILDINGS/LANDSCAPING</u>	<u>QUANTITIES</u>	<u>COST</u>
A. New visitor lodging unit "A" (38 rooms with laundry)	\$ 21,576 <sup>SF</sup>	\$ 894,000 <sup>2</sup>
B. New visitor lodging Unit "B" (32 rooms)	18,063 <sup>SF</sup>	736,000 <sup>2</sup>
C. New concession employee dormitory "A" (12-bedrooms, supervisor's apartment and recreation hall)	5,658 <sup>SF</sup>	396,000 <sup>1</sup>
D. New concession employee dormitory "B" (12-bedrooms, laundry, and storage)	3,960 <sup>SF</sup>	291,000 <sup>1</sup>
E. Concession employee dormitory "C" (12 married couples)	3,800 <sup>SF</sup>	377,000 <sup>2</sup>
F. Rehabilitate three cabins for interpretive purposes (\$18,000/ cabin)	three cabins	54,000
G. Rehabilitate boy's dormitory (\$32/square foot)	4,078 <sup>SF</sup>	\$ 131,000
H. Rehabilitate Bryce Canyon Lodge	--	1,500,000
I. Rehabilitate camp store	--	300,000
J. Rehabilitate service station	--	30,000
K. Rehabilitate employees recreation hall	--	50,000
L. Landscaping for employee dormitories "A" and "B"	--	52,000 <sup>1</sup>
M. Landscaping for employee dormitory "C"	--	40,000 <sup>2</sup>
N. Landscaping for visitor overnight lodging units "A" and "B"	--	87,000 <sup>2</sup>
O. Landscaping for three cabins	--	9,000



## II. ROADS/TRAILS

A. Improvements to park roads and parking areas	(See Table 1)	11,158,000
B. North campground area rehabilitation (\$9,000/site)	107 sites	963,000
C. Roads and parking for employee dormitories "A" and "B"	--	11,000 <sup>1</sup>
D. Roads and parking for employee dormitory "C"	--	26,000 <sup>2</sup>
E. Roads and parking for visitor lodging units "A" and "B"	--	246,000 <sup>1</sup>
F. Construct paved pedestrian trail between employee dormitories "A," "B," and "C" and lodge (1,700 feet by 6 feet)	\$8/lin. ft.	14,000

## III. UTILITIES

A. Utilities for employee dormitories "A" and "B"	--	\$ 10,000 <sup>1</sup>
B. Utilities for employee dormitory "C"	--	14,000 <sup>2</sup>
C. Utilities for visitor lodging units "A" and "B"	--	20,000 <sup>1</sup>

## IV. MISCELLANEOUS

A. Removal of cabins and site rehabilitation (\$2,000/cabin)	39 cabins	78,000
B. Signing to control pedestrian and horseback riding conflicts (\$200/sign)	5 signs	1,000
C. Furnishings for visitor lodging units "A" and "B" (\$2,000/unit)	70 units	140,000 <sup>2</sup>
D. Furnishings for concession employee lodging units "A" and "B" (\$3,500/unit and laundry and recreation hall)	25 rooms	95,000 <sup>2</sup>

E. Furnishings for concession married employee lodging unit "C" (\$2,000/unit)	12 units	24,000 <sup>2</sup>
F. Furnishings for boys old dormitory (\$2,000/unit)	18 units	36,000 <sup>2</sup>
TOTAL NET DEVELOPMENT COST		\$14,288.000
TOTAL GROSS DEVELOPMENT COST		\$18,718,000
(Net cost times 1.31)		

<sup>1</sup> This cost IS NOT included in the net or gross cost since the facility was constructed after the approval of the environmental review (Record of Decision) and Finding of No Significant Impact.

<sup>2</sup> This cost IS NOT included in the net or gross cost since it is the concessionaires responsibility.

## Staffing Requirements

The park is currently administered and maintained by a Superintendent, a staff of 22 permanent full time employees, 3 subject-to-furlough employees, 2 part time employees, and 23 temporary positions as listed below. Following are the existing positions, grades, and salary totals based on the man years of service required per year. The salary costs are also based on the 1986 pay scale with a 3% increase for GS employees.

<u>Permanent Positions</u>	<u>Grade</u>	<u>Total Man Years</u>	<u>Salary Cost</u>
Park Manager	GS-13/00	1.0	\$41,309
Concession Specialist	GS-09/02	1.0	23,207
Secretary (typing)	GS-04/01	1.0	3,312*
Administrative Officer	GS-09/01	1.0	22,458
Administrative Clerk (typing)	GS-05/06	1.0	17,292
Purchasing Agent (typing)	GS-04/01	1.0	3,312*
Supervisory Park Ranger	GS-11/05	1.0	30,796
Park Ranger	GS-05/03	1.0	3,952*
Supervisory Park Ranger	GS-07/04	1.0	20,194
General Maintenance Foreman	WG-11/05	1.0	35,287
Program Clerk	GS-04/01	1.0	3,312*
R&T Maintenance Foreman	WS-09/05	1.0	33,387
Engineering Equipment Operator	WG-10/05	1.0	26,392
Engineering Equipment Operator	WG-08/05	1.0	24,513
Motor Vehicle Operator	WG-07/00	1.0	24,513
Heavy Mobile Equipment Mechanic	WG-10/02	1.0	5,888*
B&U Maintenance Foreman	WS-08/02	1.0	28,939
General Maintenance Mechanic	WG-09/05	1.0	25,432
Maintenance Worker	WG-05/05	1.0	21,465
Supervisory Park Ranger	GS-11/06	1.0	31,702
Clerk-Typist	GS-03/01	1.0	2,950*
Park Ranger	GS-09/01	1.0	22,458
Supervisory Park Ranger	GS-09/06	1.0	26,203
	SUBTOTAL	23.0	\$478,273
Personal Benefits (12.3 percent of subtotal)			<u>58,828</u>
FERS employees 10/1/86 to 1/1/87)			
	SUBTOTAL		\$537,101
TOTAL COST FOR PERMANENTS (minus FERS employees 1/4/87 to 9/30/87)			\$625,057

### \*Permanent FERS employees 1/4/87 to 9/30/87

Secretary (typing)	GS-04/01	9,936
Purchasing Agent (typing)	GS-04/01	9,936

Park Ranger	GS-05/03	11,858
Program Clerk	GS-04/01	9,936
Heavy Mobile Equipment Mechanic	WG-10/02	17,665
Clerk-Typist	GS-03/01	8,852

SUBTOTAL	\$68,183
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Personal benefits (29 percent of subtotal)	<u>19,773</u>
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TOTAL COST FOR PERMANENT FERS EMPLOYEES 1/4/87 to 9/30/87	87,956
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TOTAL COST FOR ALL PERMANENT FULL-TIME EMPLOYEES	625,057
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Part-Time Positions	Grade	Total Man Years	Salary Cost
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**Custodial Worker	WG-02/02	.8	15,093
*Secretary (typing)	GS-04/01	.9	2,870

SUBTOTAL	1.7	\$17,963
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Personal Benefits (12.3 percent of subtotal)	<u>353</u>
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TOTAL COST FOR PART TIME (minus FERS employee 1/4/87 to 9/30/87)	\$18,316
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Part-Time FERS employee 1/4/87 to 9/30/87

Secretary (typing)	GS-04/01	8,612
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SUBTOTAL	\$8,612
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\*\*Custodial Worker not eligible for retirement  
\*FERS employee

Personal Benefits (29 percent of subtotal)	<u>2,497</u>
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TOTAL COST FOR PART-TIME FERS EMPLOYEE	11,109
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TOTAL COST FOR ALL PART-TIME EMPLOYEES	\$29,425
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Subject-to-Furlough Positions	Grade	Total Man Years	Salary Cost
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*Maintenance Worker	WG-05/01	0.6	\$ -0-
Maintenance Worker	WG-05/04	0.8	16,792
Carpenter	WG-09/03	0.9	21,272

SUBTOTAL	2.3	\$38,064
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Personal Benefits (12.3 percent of subtotal)	4,682
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\*FERS employee



TOTAL COST FOR SUBJECT-TO-FURLOUGH EMPLOYEES (minus FERS  
employee 1/4/87 to 9/30/87) \$42,746

Subject-to-Furlough FERS employee 1/4/87 to 9/30/87

Maintenance Worker WG-05/01 11,462

SUBTOTAL \$11,462

Personal Benefits (29 percent of cost) 3,324

TOTAL COST FOR SUBJECT-TO-FURLOUGH FERS EMPLOYEE  
1/4/87 to 9/30/87 \$14,786

TOTAL COST FOR ALL SUBJECT-TO-FURLOUGH EMPLOYEES \$57,532

GRAND TOTAL COST FOR ALL PERMANENT EMPLOYEES \$712,014

Temporary Positions	Grade	Total Man Year	Salary Cost
Clerk-Typist	GS-03/01	0.9	\$ 11,141***
Park Ranger	GS-05/01	0.4	5,480
Park Ranger	GS-05/01	0.4	5,480
Park Ranger	GS-05/01	0.5	7,250
Park Ranger	GS-04/01	0.6	-0- *
Park Ranger	GS-04/01	0.4	5,588
Park Ranger	GS-04/01	0.5	6,096
Park Ranger	GS-03/01	0.5	5,589
Park Ranger	GS-03/01	0.4	5,160
Park Ranger	GS-03/01	0.4	5,116
Park Ranger	GS-03/01	0.4	5,116
Park Ranger	GS-05/01	0.5	7,469
Park Ranger	GS-04/01	0.3	4,702
Park Ranger	GS-04/01	0.3	4,318
Park Ranger	GS-04/01	0.3	4,318
Park Ranger	GS-04/01	0.3	4,318
Park Ranger	GS-04/01	0.3	4,318
Laborer	WG-03/01	0.5	8,110
Laborer	WG-03/01	0.5	8,110
Laborer	WG-02/01	0.4	7,016
Laborer	WG-02/01	0.4	6,716
Maintenance Worker	WG-06/01	0.4	8,717
Maintenance Worker	WG-05/01	0.4	8,108

SUBTOTAL 10.0 \$138,236

Personal Benefits (7.0 percent of subtotal) 9,677

GRAND TOTAL COST FOR TEMPORARIES \$147,913

\*\*\*Three employees occupied position

\*Paid from WASO, park FTE used

The following changes and additions to the above staffing would be required when the proposed plan is implemented.

<u>Additional Permanent Position</u>	<u>Grade</u>	<u>Total Man Years</u>	<u>Salary Cost</u>
Park Ranger (resource management)	GS-09	1.0	\$25,453
Park Ranger (upgraded position)	GS-11	0.0	1,394
	SUBTOTAL		\$26,847
Personal Benefits (12.3 percent of subtotal)			<u>3,302</u>
<u>GRAND TOTAL COST FOR ADDITIONAL PERMANENT POSITIONS</u>			<u>\$30,149</u>

All of the above positions covered under this section will require a grand total of \$859,927 to cover personal services upon implementation of the proposed plan. As earlier stated, this cost is based on 1986 standards. Over the last 5 years, Bryce Canyon's cost for personal services has averaged 67 percent of their total operation and maintenance (O&M) cost.

## Operation and Maintenance Cost

Once the proposed plan is implemented, funds for operating and maintaining the park must be obligated. Based on the assumption that Bryce Canyons average cost for personal services will continue to represent 67 percent of the O&M cost, a total of approximately \$1,135,000 will be required to operate and maintain Bryce Canyon National Park based on 1986 estimates.

## SUMMARY OF PLANNING NEEDS

As a sequel to the general management planning process, more detailed guidelines and plans are often required for development, use, and management of a particular area of the park. In preparing this document, a number of additional surveys, studies, environmental planning, and legal compliance related actions were identified. There needs are as follows.

### Natural Resource

Survey public land records for oil and gas leases adjacent to the park.

Study effects of fire upon the park and surrounding lands and prepare a Fire Management Plan.

Survey and monitor peregrine falcon eyrie sites.

Monitor prairie dog colonies and develop a Prairie Dog Management Plan.

Survey and monitor surface and subsurface water resources and prepare a Water Resource Management Plan.

Survey, monitor, and study general wildlife populations, compositions, and trends in relation to habitat.

Study ways to control unnatural populations of wildlife in high visitor-use areas.

Monitor use and impacts of back-country areas.

Prepare a Trails Management Plan.

Monitor and begin documentation of noise levels and clarity of night skies.



Survey and monitor erosion and erosion-control dams and prepare an erosion control plan.

Monitor and study impacts of exotic plants and prepare an exotic plant management plan.

#### Cultural Resources

Prepare a parkwide archeological survey.

Prepare a parkwide historic structures survey.

Prepare Historic Structures Maintenance Guide.

Prepare Historic Furnishing Report.

Prepare Collection Management Document.

#### Interpretation

Prepare Wayside Exhibit Plan.

Prepare Museum Exhibit Plan.

#### General Development

Prepare Environmental Assessment for the proposed 10-unit dormitory for married concession employees.

Prepare a Campground Management Plan.

Prepare road system evaluation.

The above summary is not listed in priority order. For priority order, refer to the park's Outline of Planning Requirements which is updated annually. Copies are available at the park headquarters and the Rocky Mountain Regional Office.

#### ALTERNATIVES CONSIDERED

In addition to the preceding strategies presented in this chapter, a number of alternative actions and strategies were considered for each issue including a no action or status-quo alternative. The alternatives for resolving the development related issues are identified in detail in the "Environmental Consequences" section of this document. The alternatives for resolving the natural and cultural resource issues are presented in detail in the Natural Resource Management Plan approved on May 30, 1983, and the Cultural

Resource Management Plan approved on August 16, 1982.  
The two latter documents are on file in the park, Rocky Mountain Regional Office Division of Planning and Compliance, and the Denver Service Center Technical Information Center.





## **CHAPTER III    AFFECTED ENVIRONMENT**



## CHAPTER III

### AFFECTED ENVIRONMENT

#### INTRODUCTION

This chapter summarizes the significant natural and cultural resources of Bryce Canyon National Park likely to be affected by the proposed plan. This chapter also summarizes visitor-use data as well as local and regional land use and facilities.

#### NATURAL RESOURCES

##### Climate

Temperatures in the park range from a record high of 90 degrees fahrenheit to a low of minus 26 degrees fahrenheit. Frequent, torrential-type rainstorms occur during the summer months. Snow depths of 8 to 10 feet are common especially on the south end of the park which is over 9,100 feet in elevation. The annual precipitation is approximately 16.5 inches.

##### Geology and Soils

Bryce contains numerous spectacular natural amphitheaters cut into the pink cliffs on the eastern edge of the Paunsaugunt Plateau. Along this 20-mile escarpment, erosion has carved a multitude of delicate ridges, pinnacles, spires, and monuments from the soft limestones of the Wasatch formation. The intricate badland forms are mainly the work of running water cutting down through hard and soft strata along an extensive system of vertical cracks called joints. Water from summer storms and winter frost wedging widens and deepens the joints into canyons.

Differences in rock hardness account for the minor topographic features of the badlands. Rock layers rich in calcium carbonate form erosion-resistant cliffs, cap rocks, pinnacles, and ledges along canyon walls; beds containing less calcium carbonate are softer and produce slopes, alcoves, and grooves. Colors caused by mineral oxides in the rock are a distinctive characteristic of these badlands. Reds and yellows are produced by iron compounds, and blue and purple are produced by manganese.

Generally, the park's soils are poorly developed, contain very little topsoil, and are not well bound by vegetation. On the plateau, surface soils are



developed from the limestones of the underlying Wasatch formation. These soils are shallow, except where alluvium builds up in swales and major drainages. Because precipitation is low, these soils are unleached and contain a variety of minerals including calcium, iron, potash, phosphate, and magnesium. On steep badland slopes, vegetation is sparse or nonexistent. As a result, debris from eroded and weathered bedrock is swept away by runoff rather than accumulated to form soil. There are large areas of bare rock, talus, and slope wash. Along valley floors at the base of the cliffs, slope angles are low and soil material is moderately thick.

### Vegetation

The park ecosystems range from the Upper Sonoran at 6,600 feet in elevation to the Canadian at 9,100 feet. Three major forest types are represented: At lower elevations pinyon pine and sagebrush predominate, on the plateau are open stands of ponderosa pine, and at the higher elevations are the spruce/fir/aspens forests.

The pinyon/juniper forest is most visible near Utah 12 on the drive into the park. Common species include the Utah juniper, pinyon pine, and sagebrush. Gambel oak is abundant on the lower slopes of the hills.

Between 7,000 and 8,500 feet, just below and above the Bryce amphitheater area, ponderosa pine is abundant in open stands. Limber pine, bristlecone pine, Douglas-fir, and Rocky Mountain juniper are also present. Manzanita and antelope bitterbrush cover the forest floor. The open valleys between the forested slopes are covered with black sagebrush, rabbitbrush, and grasses.

In the southern part of the park--above 8,500 feet--there are dense forests of white fir, blue spruce, and aspen. Toward Rainbow Point, however, the common tree is Douglas-fir. Scattered bristlecone pines also dot the windswept slopes at these elevations.

Between the shrubs and trees are the fragile wildflowers. Some of the species found on the slopes below the red rock formations are blue columbine, twinpod, and goldenweed. Yellow evening primrose, blue flax, painted cup, scarlet gilia, western yarrow, blue penstemon, and sego lily are more abundant on the plateau.

Refer to Appendix E for vegetation species identified as "candidate threatened or endangered species known to occur in Utah Latilong Block 20 which includes Bryce Canyon National Park."

### Wildlife

Principal wildlife species in the park include the mule deer, gray fox, bobcat, squirrels, chipmunks, and small rodents. The most common birds include the Steller's jay, Clark's nutcracker, pigmy nuthatch, white-breasted nuthatch, mountain chickadee, gray-headed junco, hairy woodpecker, and red crossbill. Golden eagles actively nest in the park, and bald eagles are known to inhabit the park during migratory periods.

Several mammals that have been observed in the area are listed as endangered in the Federal Register (January 1981) including the Utah prairie dog (Cynomys parvidens), which has been established within the park. The Bald eagle (Haliaeetus leucocephalus) and American peregrine falcon (Falco peregrinus) occur in Utah. The peregrine falcon is the only endangered species that has been observed nesting in the park--in 1982 near the Rainbow Point area. There is no indication that any of the manage practices or proposed developments identified in this plan will have as adverse effect on threatened or endangered wildlife species. Management of a threatened and endangered wildlife species will be carried out in accordance with the approved Resource Management Plan as summarized in Chapter II Natural Resource Section of this document. Refer to Appendix E for wildlife species identified as "candidate threatened or endangered species known to occur in Utah Latilong Block 20 which includes Bryce Canyon National Park."

### Air Quality and Visual Resources

The primary attraction of Bryce Canyon unfolds before the park visitor in a multitude of high panoramic vista points that enables one to see many hundreds of square miles extending far beyond the park boundary. From these high vista points, even subtle changes in the character of the landscape and the quality of the air are easily noticed. These changes have a potential of creating significant negative impacts on the visitors visual experience.

The importance of visual experience should not be underestimated. Researchers have stated that of our

five senses, 85 percent of the way man receives his impressions of the world around him is through the sense of sight. Therefore, the visual quality of the landscape and air becomes significant factors to the visitor's experience. The relationship between air quality, visual quality, and visitor experience was further substantiated through a visitor survey conducted in Bryce Canyon National Park from mid-June to mid-September 1980. A large portion of the visitors surveyed stated concern about possible changes in visual air quality. Over 95 percent of the survey sample stated that air quality affected their enjoyment of the park especially at vista points.

Current air quality at Bryce Canyon National Park is unique in that it is one of the few areas in the country that remain almost pristine. Due to this condition, even a very small amount of additional pollutants would cause a visible change in the clarity of viewing from vistas within the park. Bryce Canyon is in a Class I airshed.

Energy related development is slowly moving into the region. Within recent years, several large coal-fired generating plants have been proposed. Such developments also bring about the need for roads, power transmission lines, railroads, coal slurry lines, coal mines--both open pit and underground--as well as "boom town" type communities and their associated impacts. Unless appropriate action is taken, such developments will inevitably increase adjacent to the park creating significant impacts on the air and scenic qualities and thereby degrade the visitor's experience.

#### Floodplains and Wetlands

No floodplains or wetlands will be affected by the proposed Development Concept Plan.

#### CULTURAL RESOURCES

Two studies were completed in 1974 and 1979 to identify archeological resources in the park. The headquarters area was partially surveyed in 1974 by the Midwest Archeological Center (F.A. Calabrese and Adrienne B. Anderson); two archeological sites were identified, but no significant cultural remains were found. A second study was completed in 1979 by the Midwest Archeological Center (Ralph J. Hartley), and five archeological sites were identified that transportation alternatives could possibly affect. Sites were



identified at Fairyland, Rainbow Point, and three along the existing roadways in the park (two on the main road between Inspiration Point and Farview).

Historic resources at Bryce Canyon include structures and districts dating from the early development of this scenic area as a national park--commercial establishments, residential areas, and recreational and educational facilities. Design and materials represent typical park architecture of the 1920s and 1930s.

Significant historic resources at the park have been nominated to the National Register of Historic Places. A multiple resource nomination form was prepared by the Office of Historic Preservation, Rocky Mountain Regional Office; the nomination includes two historic districts (the Bryce Canyon Lodge Historic District and the Old Residential District) and two individual historic structures (the Old Administration Building and the Rainbow Point Overlook). Details concerning the significance, description, use, and required legal compliance relating to cultural resources is discussed in Chapter II under the "Cultural Resources" section.

#### VISITOR-USE DATA

The following visitor-use data is presented to help develop a better understanding of the interrelationship between visitor trends and demands on park resources and facilities. This section also reflects what additional demands and impacts may be anticipated by projecting future visitor use.

##### Visitor Origin

The result of a recent visitor-use survey indicated that Bryce Canyon National Park is not only nationally significant but also internationally significant when considering visitor origin. Approximately 13 percent of the total visitation is comprised of foreign visitors. In addition, about 43 percent of the visitors surveyed were from east of the Mississippi River, about 8 percent from Utah, and the remaining 36 percent from the western United States.

##### Visitor Trends

Figure I shows annual visitation from 1976 to 1986 and indicates that visitation has fluctuated significantly. Between 1976 and 1978, there was an overall average increase of 5.3 percent. Between 1978 and 1982, the



park experienced an average decrease of 7.6 percent, between 1982 and 1985 it experienced an average increase of 1.3 percent, and between 1985 and 1986 visitation increased approximately 13 percent. It appears as though the major decreases in visitation have all been associated with those periods when gasoline prices began to increase significantly. As indicated in Figure II, the total overnight use at Bryce Canyon National Park increased an average of 1.6 percent between 1976 and 1985. Camping use has increased an average of 1.4 percent, and concession lodging visits have increased an average of 1.7 percent for the same period. During the main visitor-use season, June through September, campgrounds are filled to capacity and frequently campers are directed to other facilities outside the park. Visitation during the months on either side of the main visitor-use season can be drastically reduced due to the early and late winter-like storms that occasionally hit the area.

Major types of recreation use in the park are hiking, camping, picnicking, scenic driving, and photography. Table 4 shows the percent of visitors surveyed that take part in various activities.

TABLE 4  
VISITOR ACTIVITIES  
(Percent of Visitors Surveyed)

<u>Activity</u>	<u>Percentage of Survey Respondents</u>
Photography	70.9
Took a scenic drive only	69.6
Hiked on specified trail	58.9
Camped at developed campsites	35.1
Visited concessioner's curio shop	32.6
Picnicked	28.5
Concessioner's restaurant	26.3
Nature Study	19.7
Attended campfire programs	15.9
Took interpretive walk	15.4
Attended special program	14.6
Stayed in concessioner's cabins	10.7
Hiked or camped in the backcountry	6.4
Took a horseback ride	5.6
Other	5.8

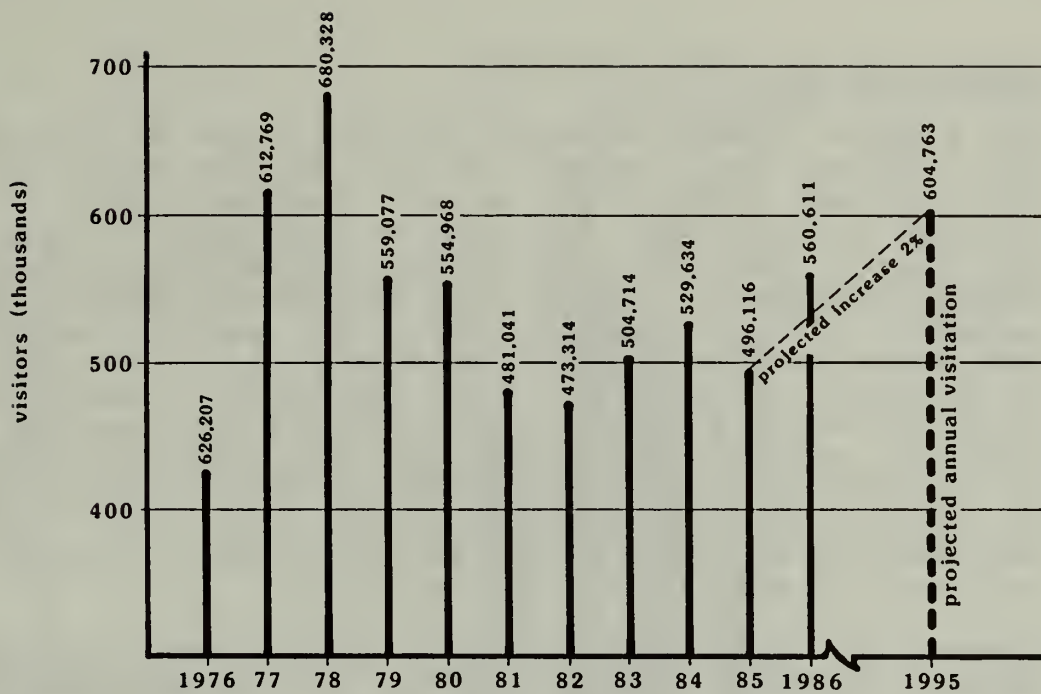


figure I  
Annual Visitation

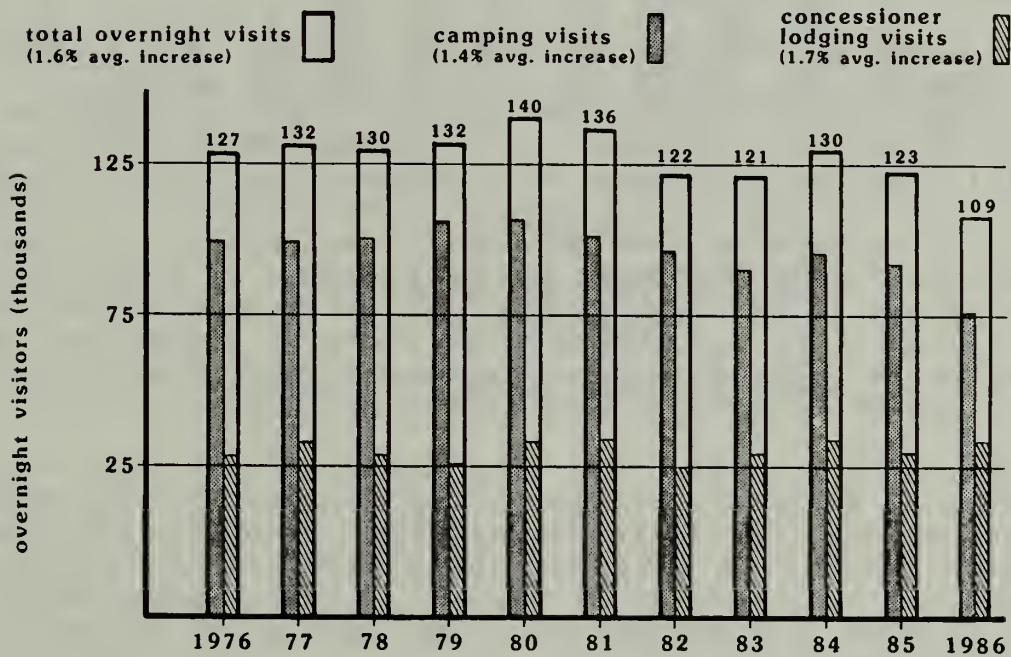


figure II  
Overnight Use

### Seasons of Use

The average monthly visitor-use data shown in Figure III indicates the patterns of use for the period of 1976 through 1986. The actual average number of visitors by month are indicated on the table. Figure III reveals that the peak visitor use season is June through September. During this four-month season, 72 percent (406,700 visits) of the park's yearly visitation occurred. More significant is the fact that 41 percent (231,600 visits) of the yearly visitation occurred during a 2-month period--July 1 to August 31. July has traditionally represented the peak-use month of the peak season with an average of 120,400 visits or 21 percent of the average annual visitation. As indicated in Figure III, the average annual visitation between 1976 and 1986 is 560,600 visits.

Figure III also reflects that the 6-month period between November 1 and April 31 only represents 9 percent (55,700 visits) of the average yearly visitation. This constitutes an average of 9,283 visitors per month or an average of 51 visitors per day during the 6-month period. Over the 10-year period represented by Figure III, the park has had an average of 560,344 visitors per year.

### Projected Visitation

Considering previous visitor-use trends and current circumstances, there is substantial evidence to indicate that visitor use will continue to increase. For projection purposes, it is assumed that visitation will increase a minimum of 2 percent per year through 1995 as indicated in Figure I. The increase is based on the assumption that more Americans will be visiting national parks because of the recent and substantial reduction in gasoline prices and the increasing threat to human life associated with overseas travel due to terrorism. There are also increased efforts by private enterprise to promote tour groups to national parks.

Using the 2 percent per year increase and 1985 as a point of departure, it is estimated that the park will receive 604,763 visits during 1995. Should visitation reach 604,763 in 1995 and the peak-use month of July continue to represent 21 percent of the average annual visitation, the visitation loads identified in Table 5 could be anticipated.

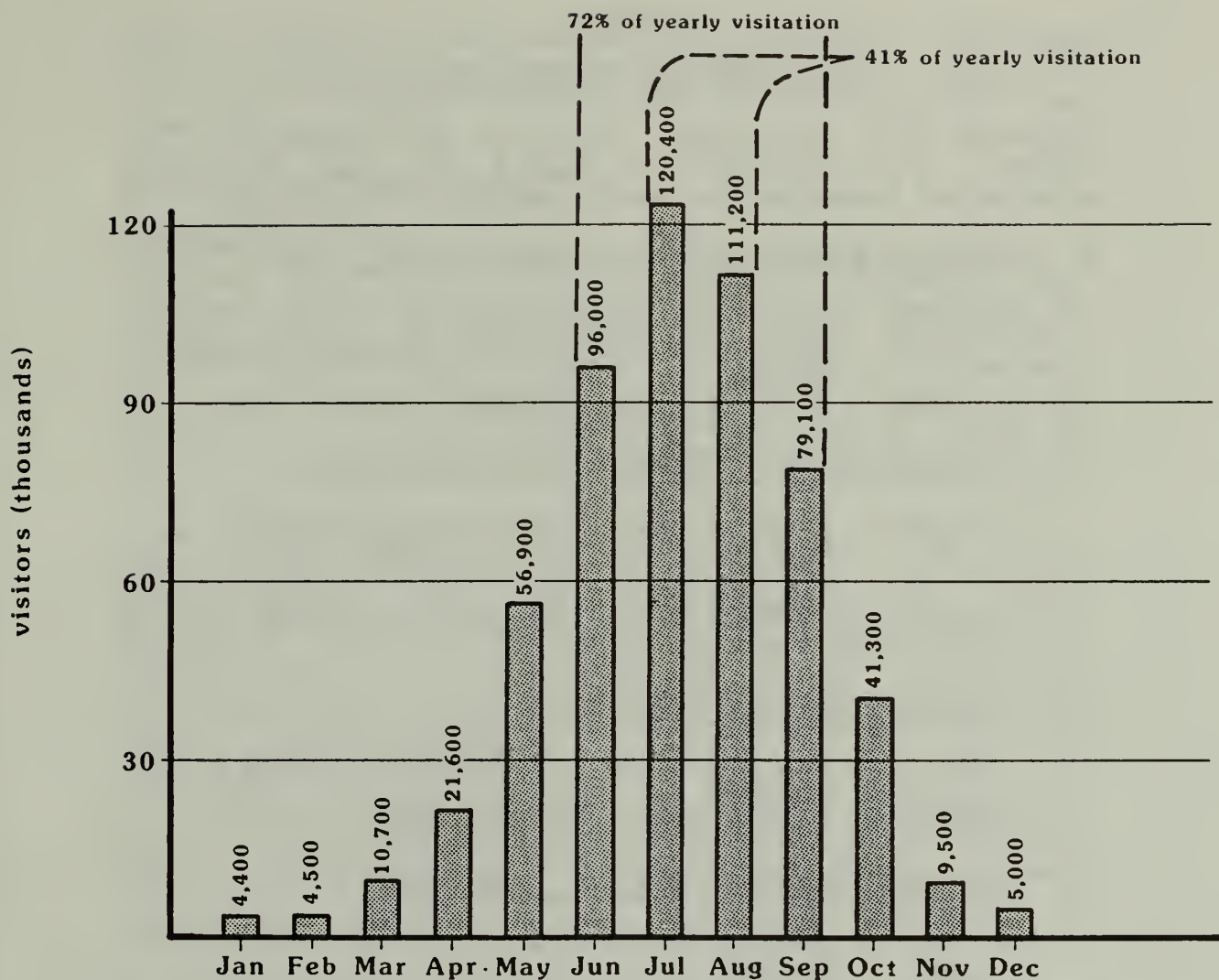


figure III  
**Average Monthly Use**  
**1976-1986**  
**Bryce Canyon National Park**



## TABLE 5

### PROJECTED VISITATION FOR 1995

Assuming that visitation for 1995 will reach 604,763 visits as projected in Figure I, the following visitation loads can be anticipated.

A. Average Peak-Month Use (July) during 1995

604,763	Projected annual visitor use for 1995
<u>.21</u>	Percent of annual visitor use for peak month
127,000	= Average peak-month use during 1995

B. Average Daily Visitation for Peak Month

127,000	Average visitor use for peak month
31	Number of days during peak month

Divide 127,000 by 31 = 4,097 average daily visitation for peak month

C. Peak-Day Use for Peak Month

4,097	Average daily visitation for peak month
<u>1.2</u>	Factor
4,916	= Peak day use for peak month

D. Average Peak-Hour Use for Peak Month

4,097	Average daily visitation for peak month
<u>.20</u>	Factor
820	= Average peak-hour use for peak month

E. Peak-Hour Use for Peak Day

4,916	Peak day use for peak month
<u>.20</u>	Factor
983	= Peak hour use for peak day

## REGIONAL ENVIRONMENT

### Physiographics

Bryce Canyon is in the Colorado Plateau Physiographic Province which contains approximately 130,000 square miles. This area is also referred to as the four corners area since the States of Utah, Colorado, Arizona, and New Mexico all join within the province. The terrain of the region is unique in its display of a wide variety of scenery characterized by canyons,

mesas, plateaus, and precipitous mountains. The park is also on the Paunsaugunt Plateau which ranges in elevation from 7,800 feet to over 11,400 feet above sea level.

### Land Use and Development

Southwestern Utah contains three national parks, a national recreation area, a national monument, two national forests, three state parks, and hundreds of square miles of public domain with outstanding opportunities for public use. Approximately 95 percent of the land surrounding the park is in Federal ownership. The remaining bordering land is owned by the State of Utah and private landowners (see Vicinity Land Use Map).

There are a number of developments within the region which offer recreational opportunities. Reservoirs such as Tropic, Otter Creek, and Panguitch Lake. They are all used for irrigation and have been developed by the State and the U.S. Forest Service for recreation. A number of major attractions which bring many visitors into the region include Glen Canyon National Recreation Area (containing 186-mile-long Lake Powell and 582 campsites), Lake Mead National Recreation Area (with 177 miles of lake and 1,492 campsites), Grand Canyon, Zion, Arches, Canyonlands, and Capitol Reef National Parks. Collectively, these areas received over 12,100,000 visits during 1985 which represent an average increase of 11 percent over 1984.

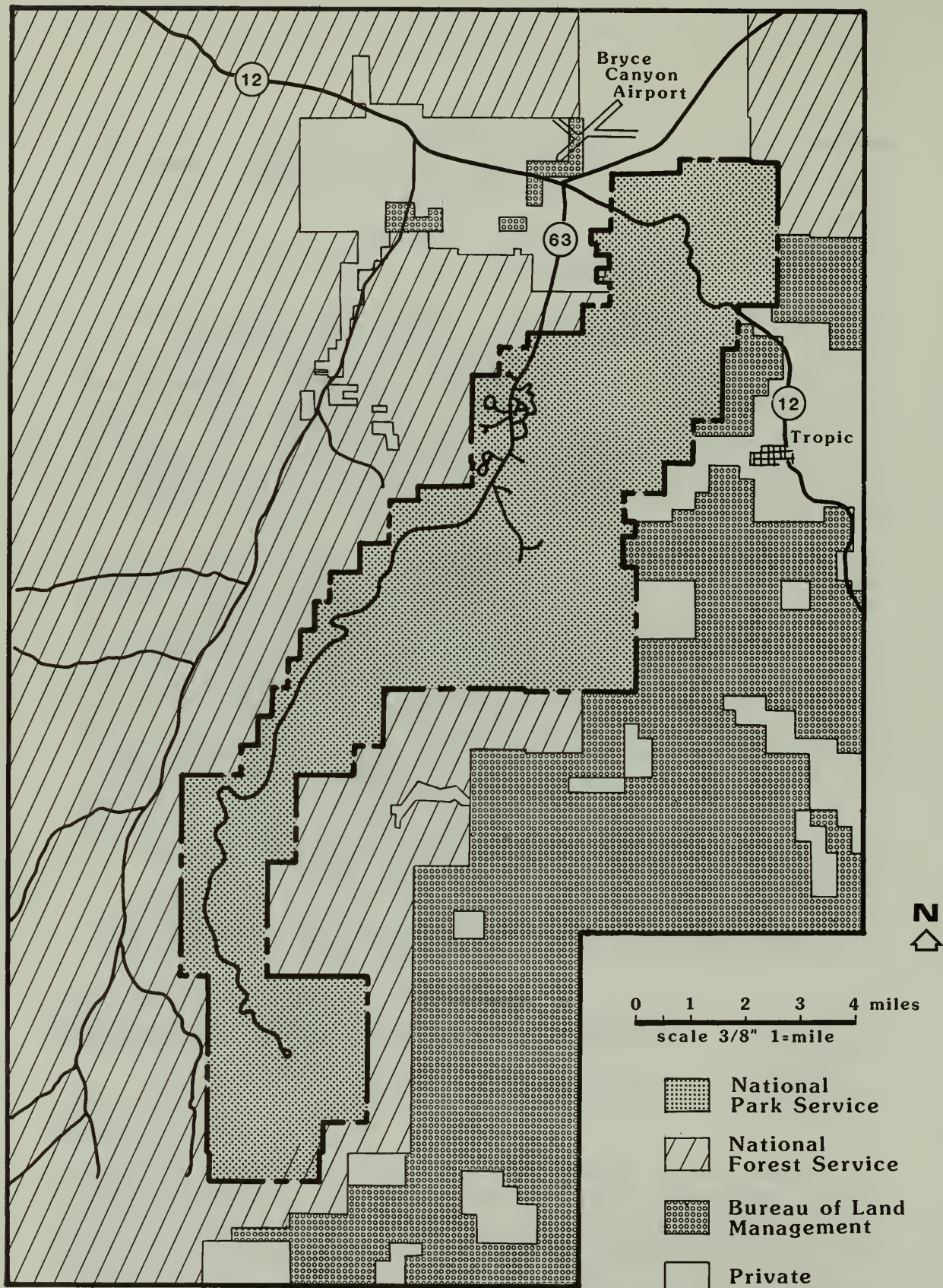
As indicated below, the following privately owned motel accommodations are within a 25-mile radius of Bryce.

<u>Location</u>	<u>Motels</u>	<u>Approximate Rooms</u>	<u>Distance from Bryce Canyon</u>
Bryce Canyon Entrance	3	215	7 miles
Panguitch	8	175	25 miles
Hatch	2	30	26 miles

The three motel developments at the entrance of Bryce Canyon collectively provide a total of 204 camping units. The Dixie National Forest which surrounds the park also provides a total of 506 camping units.

As previously mentioned in this chapter, energy related development is slowly moving into the region. The Navajo Power Plant, approximately 60 miles from the park, is visible from several major overlooks. There have also been recent proposals to develop the Alton





## Vicinity Land Use

### Bryce Canyon National Park

United States Department of the Interior - National Park Service

129 | 80,050  
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open-pit coal mine which is approximately 4 miles south of Yovimpa Overlook. The impacts associated with these energy developments range from socioeconomic to environmental. Such impacts will directly affect Bryce Canyon National Park.

### Socioeconomic Environment

The general economy of two counties in which Bryce Canyon is located is considered to be economically depressed. The per-capita personal income for the two counties is approximately \$4,200.

The main industries of the region are lumber mills, ranching, mining, and tourism industries. The tourism industry is highly seasonal due to the long, harsh winter environment. Therefore, it does not present an adequate year-round economic base or employment opportunities to the local residents.

The Bryce Canyon region is characterized as rural and sparsely populated. The population of Garfield and Kane Counties are approximately 3,500 and 9,500 respectively. These two counties represent a land area of 9,201 square miles with an average population density of 1.65 people per square mile. Within a 150-mile radius of Bryce Canyon National Park, there is a population of approximately 130,000 people.

## FACILITY ANALYSIS

### Buildings

Table 6 and Appendix C is a summary of the structures utilized to facilitate visitor, concessionaire, and administrative activities within the park. The National Park Service has title to all structures within the park. However, the concession currently has possessory interest in the two visitor motel units (building numbers 84 and 85). For future updates on the status of buildings within the park refer to the Fixed Asset Records (Forms 10-559) maintained in the Rocky Mountain Regional Office and in the park.

### Roads and Trails

As previously stated in Chapter I in the "Issues" section, a majority of the roadways and parking facilities are substandard and severely deteriorated. The deterioration is rapidly accelerating due to the heavier and wider forms of recreation vehicles which are using the systems today as opposed to the 1930's



when the roadways were designed. Due to the rapid rate of deterioration and extent of damage to roadway subbase, a road system evaluation and engineering study will be required as previously stated.

For information concerning roadway locations, mileage, and type of construction, refer to drawing number 129-80,000 E maintained in the Rocky Mountain Regional Office and in the park. This drawing number also identifies the location of pedestrian and horseback trails within the park.

### Utilities

In general, all utilities are in good condition. Over the last 12 years, the major problem areas were resolved through repair and replacement.

The primary potable water supply comes from two 100-foot wells on a 100-acre parcel of land approximately 1-1/2 miles outside the west exterior boundary of the park. The land and water rights were acquired by the National Park Service through donation by the Utah Parks Company. A third 100-foot well has also been drilled and capped on the 100-acres for future use.

The Peek-A-Boo Spring and Yovimpa/Rainbow Spring are two water developments that serve remote areas. The Peek-A-Boo Spring is a gravity flow system and the Yovimpa/Rainbow Spring consist of a pumphouse and a 12,500-gallon water storage tank.

TABLE 6  
EXISTING STRUCTURES

NAME	BUILDING NUMBER	FUNCTION	SQUARE FOOTAGE	TYPE	CONDITION
Visitor contact adminis- trative center	144	Visitor orientation & interpretation, exhibit displays audiovisual presenta- tions, associational sales & storage admin- istration offices, conference room, library/ work room, first aid, and general storage	11,200	1-story frame/ stoneface	Good
Utility	142	Carpentry shop, mech- anic shop, equipment storage, general storage, offices, and fire truck storage	10,000	Concrete block	Good
Equipment building	143	Paint storage, vehicle storage, lunch room general equipment storage	1,600	Concrete block	Good
Sand storage shed		Stockpile sand for winter use on roads		Metal	Good
Storage	89	Miscellaneous storage	2,400	Metal	Good
Radio/ Repeater	81	Communications	160	Wood frame	Good
Air moni- toring building	88	Monitors air quality	72	Wood w/ steel siding	Good
Chlorinator house	57	Protects chlorination equipment	100	cast concrete	Good
Pump houses	164 & 165	Protective housing for two pumps at water wells	96 each	cast concrete	Good
Barn	48	Stable area for NPS horses and equipment	2,000	2-story wood frame	Fair
Storage		Miscellaneous storage	220	wood frame	Fair

NAME	BUILDING NUMBER	FUNCTION	SQUARE FOOTAGE	TYPE	CONDITION
Sunrise Nature Center	51	Houses nature center and interpretive work and store room	1,125	Log	Fair
Entrance kiosk	151	Collect entrance fees	64	Wood	Good
Amphi- theaters (two)	152 & 153	Houses audiovisual equipment	100 sq. ft. each	Wood	Fair
Sun Point comfort station	80	Visitor toilet facilities	576	Concrete block	Good
Rainbow Point comfort station	86	Visitor toilet facilities	576	Concrete block	Good
North Campground & comfort stations (two)	103 & 104	Visitor toilet facilities	250 each	Concrete block	Good
North Campground & historic comfort stations (two)	36 & 37	Visitor toilet	300 sq. ft. each	Log	Good
South Campground comfort stations (four)	145, 146, 148, & 149	Visitor toilet facilities	250 each	Concrete block	Good
Rainbow Point overlook shelter	87	Information/Inter- pretation			Good
Garage	108	Vehicle storage	800		Fair
Laundry	109	Employee laundry	180		
Storage buildings (three)	103, 102,& 101	Concessioner use	250, 270,& 140	wood frame wood frame wood frame	Fair

NAME	BUILDING NUMBER	FUNCTION	SQUARE FOOTAGE	TYPE	CONDITION
Lodge	100	Concession operated visitor services	23,920	wood frame	Good
Economy cabins	150, 112, 174 (unit no.)	Interpretation and first aid	240 per unit	wood frame	Poor
Western cabins	200- 214 (unit no.)	Concession operated visitor lodging	360 per unit	Log	Good
Laundry	111	Concession operated	300	Wood frame	Fair
Employee Recreation Hall	105	Concession employee recreation center	1,780	Wood frame	Fair
Boys dormitory	106	Concession employee	4,078	Wood frame	Poor
Camp store	604	Concession operated visitor services (showers, food, laundry, rest rooms)	2,975		Fair
Service station	602	Concession operated visitor services (gasoline)	250		Fair
Visitor lodging motel (38 rooms)	84	Concession operated visitor lodging	21,576	Wood frame	Good
Visitor lodging motel (32 rooms)	85	Concession operated visitor lodging	18,063	Wood frame	Good
Employee dormitory (12 rooms/ supervisor's apartment & recreation hall)	87	Concession employees quarters	5,658	Wood frame	Good



NAME	BUILDING NUMBER	FUNCTION	SQUARE FOOTAGE	TYPE	CONDITION
Employee dormitory (12 rooms, laundry, & storage)	86	Concession employees quarters	3,960	Wood frame	Good
Storage (Old pump- house)	110	Miscellaneous storage			Fair
Entrance Station	82	Fee collection/infor- mation and orientation	55 sq. ft.	Wood frame	Good
Kiosk	78	Visitor information	225 sq. ft.	Log	Good

Refer to Appendix C for information on all National Park Service employee quarters.

**CHAPTER IV ENVIRONMENTAL CONSEQUENCES OF THE  
PROPOSED ACTION AND ALTERNATIVES**



## CHAPTER IV

### ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

This section contains a description of the alternatives considered for resolving the issues identified in Chapter I of this document. Also presented are the environmental factor charts which summarize the impacts and mitigating actions associated with each alternative. For a detailed description of the issues listed below refer to the "Issues" section in Chapter I.

#### ALTERNATIVES/DECISIONS/RATIONALE

##### Issue - Visitor Lodging Facilities

Status Quo - Retain all visitor and employee lodging structures and continue utilizing them in their current condition and for their current purpose.

Alternative A - Retain and upgrade all of the economy and deluxe cabins and continue using them for overnight lodging.

Alternative B, Proposed Plan - Rehabilitate the 40 deluxe cabins for visitor overnight lodging use and those structures essential for administrative/management operations. The 52 economy cabins, approximately 104 units, will be disposed of and replaced by constructing 70-80 new units with parking facilities. The boys dormitory will also be rehabilitated for concessionaire employee lodging.

Alternative C - Rehabilitate the 40 deluxe cabins for visitor overnight lodging use and those structures essential for administrative and management operations. This would entail elimination of the 104 economy cabins with no intention of replacement.

Alternative D - Discontinue providing overnight lodging services and retain only the 40 deluxe cabins for their historic value and potential for future National Park Service use. The economy cabins will be eliminated along with those structures which were supporting elements for the administration and management of the concession operation when deemed necessary by the National Park Service.



Decision and Rationale - Alternative B was selected as the preferred course of action.

The rationale for this decision is based on the general overriding public opinion that concession lodging should remain in the park, but not exceed its present level of development. There was also strong support for restricting the concession lodging and restaurant services to their current season of operation (May 18 to October 1) so as not to conflict with the private interests outside the park.

Based on the 1981 economic feasibility study, the total number of overnight lodging facilities required for an economically viable operation would be a minimum of 100 overnight units.

It is the National Park Service's determination based on the assessment of alternatives, public response, and the 1981 economic feasibility study that the action best takes into consideration public concerns, potential environmental and economic impacts, and the management objectives of the park which are to continue providing for visitor use, and insure the feasibility of operations.

#### Issue - Transportation

Alternative A - Status Quo - Retain the existing roads and parking facilities in their present location with normal, routine maintenance operations. The existing fee collection station would be retained.

Alternative B, Proposed Plan - Upgrade and expand existing roads and parking areas where necessary to accommodate present forms and volumes of traffic. Entrance fees would be collected at the existing fee collection area and campground user fees would be collected within each campground at two manned structures containing minimal quarters. To reduce the degree of parking lot expansion near the rim of the canyon, all vehicles towing trailers will be required to leave their trailers in an improved parking area near the visitor center.

Alternatives C, D, and E - These three alternatives explored preliminary alternatives for locating mass transportation facilities and options for fee collection. These alternatives were expanded and assessed in more detail in the Transportation/Economic Feasibility Study approved March 7, 1983.

Decision and Rationale - Alternative B, excluding the need for two manned structures containing minimal quarters, was selected as the preferred course of action. An unmanned kiosk and parking area (approximately 6 spaces) will be provided at each campground entrance. The kiosk would contain campground self-registration facilities, emergency information, and campground regulations. The decision not to provide living quarters in the campground is based on the rationale that with emergency directions clearly identified and with Park Service rangers living in close proximity to the campground adequate, routine, and emergency services could be provided. There is also the option to take advantage of the volunteer program and have campground VIPs stationed in one or both of the campgrounds to provide immediate assistance.

The decision to upgrade and expand the existing roads and parking areas where necessary to accommodate present forms and volumes of traffic is based on the results of the Transportation/Economic Feasibility Study. The results of the study in summary concluded with a statement that, "...the costs of implementing a full mandatory transportation system to serve all park visitors would be prohibitive." "The cost of developing even a short shuttle transit service at Bryce Point and Paria View would significantly exceed those of the roadway alternative." The "roadway alternative" (identified in the Transportation/Economic Feasibility Study) was identified as the alternative to upgrade and expand the existing roads and parking areas where necessary.

#### Issue - State Highway 12 Improvements

Alternative A - (Status Quo) - Continue to use the existing roadway without climbing lane improvements.

Alternative B - Construct climbing lanes in three areas along the 3.8 miles of Highway 12 in the park. This alternative would provide a total of 3,000 feet of climbing lane.

Alternative C - Construct climbing lanes in two areas along the 3.8 miles of Highway 12 in the park. This alternative would provide a total of 6,600 feet of climbing lane.

Alternative D - Construct a climbing lane along the entire 3.8 miles of Highway 12 in the park.

Decision and Rationale - Alternative C appeared to be the most practical alternative based on preliminary evaluation; however, due to the lack of adequate base data, a more comprehensive environmental planning effort must be initiated to assess alternatives and their potential impacts. Furthermore, since the majority of use along this section of roadway is nonpark related, there is no interest on the part of the National Park Service to pursue planning efforts or participate in funding such improvements during the foreseeable future.

#### Issue - Trail System Use and Circulation

Alternative A, (Proposed Plan) Status Quo - Retain Peek-a-Boo Trail for horse use; however, the trail would be properly signed warning hikers of potential conflicts. No additional horse trails would be constructed.

Alternative B - Retain Peek-a-Boo Trail for horse use and properly sign warning hikers of potential conflicts. Construct 2-1/3 miles of additional horse trail.

Alternative C - Eliminate horse use on Peek-a-Boo Trail and restrict trail use to pedestrian traffic only. Construct the 2.6 miles of additional horse trail.

Decision and Rational - Alternative A was selected as the preferred course of action. It was determined that the conflicts between pedestrians and horseback riders could be satisfactorily mitigated by properly signing to warn pedestrians of horse use on the Peek-a-Boo Trail and thereby give them the opportunity to hike one of many other trails where horse use is restricted.

The rational for not developing new trails for horseback riding is based primarily on the following factors.

The existing trails available for horseback riding are adequate to meet current demands and this alternative will eliminate the need to expand development where the potential for soil erosion is extremely high especially when subjected to horseback traffic.

#### Issue - North Campground Development

Status Quo - Retain the existing campground with no major improvements. Only routine maintenance will be performed.

Alternative A (Proposed Plan) - Totally modify and rehabilitate campground to provide for flexibility in accommodating present forms of camping equipment and provide for rehabilitation of impacted areas.

Alternative B - Totally eliminate the North Campground with no intentions of replacement and rehabilitate the area to as near a natural condition as possible.

Decision and Rationale - Alternative A was selected as the preferred course of action. There was a general overriding public opinion that the present level of campground development should be retained but modified to better accommodate the more modern forms of camping equipment. There has also traditionally been a high demand for camping facilities in the park. Professional assessments of the problem indicate that the safety and environmental issues associated with the campground can be successfully resolved and resulting impacts effectively mitigated. The present capacity of the campgrounds at Bryce Canyon will not be expanded.

#### SUMMARY OF IMPACTS AND MITIGATION

The following environmental factor charts present a summary of the impacts, and mitigation associated with the proposed action and alternatives considered.



TABLE I									
Summary of the results of the experiments									
Experiment	Number of subjects	Number of trials	Number of correct responses	Number of incorrect responses	Number of correct responses per trial	Number of incorrect responses per trial	Number of correct responses per subject	Number of incorrect responses per subject	Number of correct responses per subject per trial
1	10	100	80	20	0.80	0.20	8.0	2.0	0.80
2	10	100	75	25	0.75	0.25	7.5	2.5	0.75
3	10	100	70	30	0.70	0.30	7.0	3.0	0.70
4	10	100	65	35	0.65	0.35	6.5	3.5	0.65
5	10	100	60	40	0.60	0.40	6.0	4.0	0.60
6	10	100	55	45	0.55	0.45	5.5	4.5	0.55
7	10	100	50	50	0.50	0.50	5.0	5.0	0.50
8	10	100	45	55	0.45	0.55	4.5	5.5	0.45
9	10	100	40	60	0.40	0.60	4.0	6.0	0.40
10	10	100	35	65	0.35	0.65	3.5	6.5	0.35
11	10	100	30	70	0.30	0.70	3.0	7.0	0.30
12	10	100	25	75	0.25	0.75	2.5	7.5	0.25
13	10	100	20	80	0.20	0.80	2.0	8.0	0.20
14	10	100	15	85	0.15	0.85	1.5	8.5	0.15
15	10	100	10	90	0.10	0.90	1.0	9.0	0.10
16	10	100	5	95	0.05	0.95	0.5	9.5	0.05
17	10	100	0	100	0.00	1.00	0.0	10.0	0.00
18	10	100	0	100	0.00	1.00	0.0	10.0	0.00
19	10	100	0	100	0.00	1.00	0.0	10.0	0.00
20	10	100	0	100	0.00	1.00	0.0	10.0	0.00
21	10	100	0	100	0.00	1.00	0.0	10.0	0.00
22	10	100	0	100	0.00	1.00	0.0	10.0	0.00
23	10	100	0	100	0.00	1.00	0.0	10.0	0.00
24	10	100	0	100	0.00	1.00	0.0	10.0	0.00
25	10	100	0	100	0.00	1.00	0.0	10.0	0.00
26	10	100	0	100	0.00	1.00	0.0	10.0	0.00
27	10	100	0	100	0.00	1.00	0.0	10.0	0.00
28	10	100	0	100	0.00	1.00	0.0	10.0	0.00
29	10	100	0	100	0.00	1.00	0.0	10.0	0.00
30	10	100	0	100	0.00	1.00	0.0	10.0	0.00
31	10	100	0	100	0.00	1.00	0.0	10.0	0.00
32	10	100	0	100	0.00	1.00	0.0	10.0	0.00
33	10	100	0	100	0.00	1.00	0.0	10.0	0.00
34	10	100	0	100	0.00	1.00	0.0	10.0	0.00
35	10	100	0	100	0.00	1.00	0.0	10.0	0.00
36	10	100	0	100	0.00	1.00	0.0	10.0	0.00
37	10	100	0	100	0.00	1.00	0.0	10.0	0.00
38	10	100	0	100	0.00	1.00	0.0	10.0	0.00
39	10	100	0	100	0.00	1.00	0.0	10.0	0.00
40	10	100	0	100	0.00	1.00	0.0	10.0	0.00
41	10	100	0	100	0.00	1.00	0.0	10.0	0.00
42	10	100	0	100	0.00	1.00	0.0	10.0	0.00
43	10	100	0	100	0.00	1.00	0.0	10.0	0.00
44	10	100	0	100	0.00	1.00	0.0	10.0	0.00
45	10	100	0	100	0.00	1.00	0.0	10.0	0.00
46	10	100	0	100	0.00	1.00	0.0	10.0	0.00
47	10	100	0	100	0.00	1.00	0.0	10.0	0.00
48	10	100	0	100	0.00	1.00	0.0	10.0	0.00
49	10	100	0	100	0.00	1.00	0.0	10.0	0.00
50	10	100	0	100	0.00	1.00	0.0	10.0	0.00
51	10	100	0	100	0.00	1.00	0.0	10.0	0.00
52	10	100	0	100	0.00	1.00	0.0	10.0	0.00
53	10	100	0	100	0.00	1.00	0.0	10.0	0.00
54	10	100	0	100	0.00	1.00	0.0	10.0	0.00
55	10	100	0	100	0.00	1.00	0.0	10.0	0.00
56	10	100	0	100	0.00	1.00	0.0	10.0	0.00
57	10	100	0	100	0.00	1.00	0.0	10.0	0.00
58	10	100	0	100	0.00	1.00	0.0	10.0	0.00
59	10	100	0	100	0.00	1.00	0.0	10.0	0.00
60	10	100	0	100	0.00	1.00	0.0	10.0	0.00
61	10	100	0	100	0.00	1.00	0.0	10.0	0.00
62	10	100	0	100	0.00	1.00	0.0	10.0	0.00
63	10	100	0	100	0.00	1.00	0.0	10.0	0.00
64	10	100	0	100	0.00	1.00	0.0	10.0	0.00
65	10	100	0	100	0.00	1.00	0.0	10.0	0.00
66	10	100	0	100	0.00	1.00	0.0	10.0	0.00
67	10	100	0	100	0.00	1.00	0.0	10.0	0.00
68	10	100	0	100	0.00	1.00	0.0	10.0	0.00
69	10	100	0	100	0.00	1.00	0.0	10.0	0.00
70	10	100	0	100	0.00	1.00	0.0	10.0	0.00
71	10	100	0	100	0.00	1.00	0.0	10.0	0.00
72	10	100	0	100	0.00	1.00	0.0	10.0	0.00
73	10	100	0	100	0.00	1.00	0.0	10.0	0.00
74	10	100	0	100	0.00	1.00	0.0	10.0	0.00
75	10	100	0	100	0.00	1.00	0.0	10.0	0.00
76	10	100	0	100	0.00	1.00	0.0	10.0	0.00
77	10	100	0	100	0.00	1.00	0.0	10.0	0.00
78	10	100	0	100	0.00	1.00	0.0	10.0	0.00
79	10	100	0	100	0.00	1.00	0.0	10.0	0.00
80	10	100	0	100	0.00	1.00	0.0	10.0	0.00
81	10	100	0	100	0.00	1.00	0.0	10.0	0.00
82	10	100	0	100	0.00	1.00	0.0	10.0	0.00
83	10	100	0	100	0.00	1.00	0.0	10.0	0.00
84	10	100	0	100	0.00	1.00	0.0	10.0	0.00
85	10	100	0	100	0.00	1.00	0.0	10.0	0.00
86	10	100	0	100	0.00	1.00	0.0	10.0	0.00
87	10	100	0	100	0.00	1.00	0.0	10.0	0.00
88	10	100	0	100	0.00	1.00	0.0	10.0	0.00
89	10	100	0	100	0.00	1.00	0.0	10.0	0.00
90	10	100	0	100	0.00	1.00	0.0	10.0	0.00
91	10	100	0	100	0.00	1.00	0.0	10.0	0.00
92	10	100	0	100	0.00	1.00	0.0	10.0	0.00
93	10	100	0	100	0.00	1.00	0.0	10.0	0.00
94	10	100	0	100	0.00	1.00	0.0	10.0	0.00
95	10	100	0	100	0.00	1.00	0.0	10.0	0.00
96	10	100	0	100	0.00	1.00	0.0	10.0	0.00
97	10	100	0	100	0.00	1.00	0.0	10.0	0.00
98	10	100	0	100	0.00	1.00	0.0	10.0	0.00
99	10	100	0	100	0.00	1.00	0.0	10.0	0.00
100	10	100	0	100	0.00	1.00	0.0	10.0	0.00

NOTE:

This sheet should remain unfolded to the left in order to review the following charts.

FOOTNOTES FOR MITIGATING IMPACTS OF ALTERNATIVES  
(See Environmental Factor charts)

#1. Disturbed areas will be revegetated immediately upon completion of construction. Construction limits will also be established on the ground to minimize potential impacts outside the construction area.

#2. Areas in and around all facilities and features will be impacted by pedestrian traffic. The primary impact on the soil will be compaction, which will decrease permeability and alter the moisture content of the soil. This in turn will diminish the storage capacity of soils, reduce the rates of water transmission within soils, increase runoff of surface water, and increase soil erosion. Compaction of the soil will be minimized in many areas due to frost action which expands and loosens the soil particles. Construction of paved walkways and the establishment of plant materials will be used to minimize potential impacts generated by pedestrian circulation.

#3. Areas in and around all facilities and features will be impacted by pedestrian traffic. This traffic will cause soil compaction and change the amount of moisture available to plants. The lack of moisture coupled with continuous wear on vegetation, erosion of soils, and exposure of fragile root systems will result in the death of plants. Germination of some species of plants may be inhibited by the soil compaction resulting from pedestrian traffic. The impact of trampling by pedestrian traffic may range from complete exclusion of vegetation to slight shifts in species composition. Plants that invade disturbed areas may become more common. Construction of walkways and the establishment of plant materials will be used to control pedestrian circulation and associated impacts.

#4. Refer to Appendix B for memorandum of agreement stipulations.

#5. Construction of new structures in the historic district will be in compliance with NPS-28, ("Design Compatibility in Historic Zones or Districts"), Chapter 4.

#6. Special design techniques will be employed to minimize erosion of soils on unpaved hiking and horseback trails.

#7. All debris generated during trail construction would be disposed of in such a manner that they would not create a visual impact (such as all trees removed during construction would be hauled out and smaller materials ground up into mulch).

Natural Resources				
geology/topography/soils	air quality	water resources	vegetation	wildlife
impacts	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation

# Alternatives

## VISITOR LODGING FACILITIES

### STATUS QUO

#### ALTERNATIVE A

Rehab economy cabins (52), rehab western cabins (40), rehab boys dorm, rehab and landscape areas around economy cabins and construct additional parking spaces for employees.

#### ALTERNATIVE B (PROPOSED PLAN)

Dispose of all economy cabins (52) and construct 2 new visitor lodging units (total 70-80 new units) with parking lots. Rehab western cabins and boy's dormitory. Rehab site of economy cabins.

#### ALTERNATIVE C

Dispose of all economy cabins (52) and supporting facilities with no intentions of replacing structures or services. Retain the 40 deluxe cabins and upgrade them for visitor use. Rehabilitate site of economy cabins.

#### ALTERNATIVE D

Dispose of all economy cabins (52), boy's dormitory, recreation hall, and other supporting facilities with no intention of replacement. Retain the 40 deluxe cabins for historic purposes only. Park will discontinue providing visitor overnight lodging facilities in the park. The lodge, restaurant, and gift shop will be retained. Rehabilitate all areas where structures are disposed of.

STATUS QUO

2 acres will continue to erode due to pedestrian impact. Total area of impact could increase in size due to continued erosion action.

### ALTERNATIVE A

Rehab economy cabins (52), rehab western cabins (40), rehab boys dorm, rehab and landscape areas around economy cabins and construct additional parking spaces for employees.

Approximately 0.8 acres of the park's topography would be slightly modified due to rehab of the sites and construction of parking lots. There will continue to be a potential for pedestrian impacts on the soil which would result in erosion and loss of soil. Minor short-term erosion will occur as a result of rehabilitation activities (#1 and #2).

ALTERNATIVE B  
(PROPOSED PLAN)

Dispose of all economy cabins (52) and construct 2 new visitor lodging units (total 70-80 new units) with parking lots. Rehab western cabins and boy's dormitory. Rehab site of economy cabins.

Approximately 1.4 acres of the park's topography will be significantly modified due to construction of new visitor lodging units and parking areas. There will continue to be a potential for pedestrian impacts on the soil which would result in erosion and loss of soil materials. Minor short-term erosion will occur as a result of rehab and construction activities (#1 and #2).

### ALTERNATIVE C

Dispose of all economy cabins (52) and supporting facilities with no intentions of replacing structures or services. Retain the 40 deluxe cabins and upgrade them for visitor use. Rehabilitate site of economy cabins

Soil erosion will be reduced significantly. Minor short-term erosion will occur as a result of demolition and rehabilitation activities. (#1 and #2).

ALTERNATIVE D

Dispose of all economy cabins (52), boy's dormitory, recreation hall, and other supporting facilities with no intention of replacement. Retain the 40 deluxe cabins for historic purposes only. Park will discontinue providing visitor overnight lodging facilities in the park. The lodge, restaurant, and gift shop will be retained. Rehabilitate all areas where structures are disposed of.

Same as above

## No change

Minor short-term impacts will occur during rehabilitation of cabins and site around cabins.

Minor short-term impacts will occur during disposal of economy cabins, construction of new visitor lodging units and rehab of economy cabin sites.

Minor short-term impacts will occur during disposal and rehabilitation activities. There will be a long-term reduction in air pollution when overnight lodging facilities are reduced.

Same as above

Continued erosion will impact surface water. Demand on subsurface water supply will remain the same.

Minor short-term increases in surface water turbidity during rehabilitation of cabins and site. Demand for subsurface water will remain the same as existing demands.

Minor short-term increases in surface water turbidity during periods of demolition, construction, and rehabilitation activities. Subsurface water demands will remain the same as existing demands.

Minor short-term increases in surface water turbidity during periods of demolition and rehabilitation activities. Subsurface water demands will be reduced significantly.

Same as above

Denuded area (2 acres) around the cabins will remain void of vegetation with a potential for increases loss of vegetation due to continued erosion of soil.

Construction and rehabilitation and pedestrian circulation will continue to be a potential threat which could lead to a loss of vegetation (#1 and #3).

Vegetation will be restored in the area of the economy cabins (0.9 acre). Vegetation will be removed in the area where new visitor lodging units are to be constructed (1.4 acres) (#1 and #3).

Vegetation will be restored in the area of the economy cabins and supporting facilities (1.2 acres). Potential impacts on vegetation will be reduced significantly with the reduction in overnight facilities (#1 and #3).

Vegetation will be restored in the area of the economy cabins and supporting facilities (1.2 acres). Potential impacts on vegetation will be reduced significantly with the elimination of all overnight lodging facilities.

Undetermined minor reductions of wildlife habitat due to continued erosion of soil and loss of vegetation.

Minor increase of wildlife habitat due to restoration of vegetation (2.0 acres).

Overall minor decrease in vegetation (0.6 acre) for wildlife purposes due to construction activities.

Overall increase in vegetation (1.2 acres) for wildlife purposes due to rehab of areas. Potential impacts on wildlife will be reduced.

Same as above

# Cultural Resources Socioeconomic Resources

prehistoric	historic	regional economy	visitation	esthetics
impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
No known impacts	Cabins will continue to deteriorate unless major rehab work is initiated.	Should deterioration continue and visitation overnight stays decline, sales in the area could also decline affecting the economy of the area	Visitor use of cabin could easily decline as cabins continue to deteriorate. Visitors will be exposed to substandard conditions.	Negative visual impacts will increase as deterioration increases.
No known impacts	No known impacts	Total gross development cost will be \$4,097,000. Substantial investment will be required on the part of the NPS and concessioner.	No known changes	The visitor's comfort and visual impression of the area will improve as a result of rehabilitation and construction efforts.
Same as above	Will impact 52 cabins (104 units) included in or eligible for inclusion in the National Register of Historic Places (#4).	Total gross development cost will be \$4,270,000. Substantial investments will be required on the part of the NPS and concessioner	Same as above	Same as above (#5)
Same as above	Will impact 52 cabins (104 units) plus supporting structures included in or eligible for inclusion in the National Register of Historic Places (#4).	Total gross development cost will be \$1,198,000. The economic feasibility report indicates the concessioner would not be left with an economically viable operation. The demand for similar facilities outside the park will increase. Opportunities for profit by the private sector outside the park will increase.	The visitor overnight lodging capacity of the park will be substantially reduced. There will be an increase in the number of visitors who will be inconvenienced by having to drive a considerable distance for lodging once everything on the plateau is filled. This will also place a greater demand on other private, state, and federal facilities in the immediate area	Elimination of the deteriorating structures and rehab of the impacted areas will improve the aesthetic values of the park.
Same as above	Same as above	Total gross development cost will be \$203,000. The economic feasibility report indicates the concessioner would not be left with an economically viable operation. The demand for similar facilities outside the park will increase substantially. Opportunities for profit by the private sector outside the park will increase.	The visitor overnight lodging capacity of the park will be substantially reduced. There will be an increase in the number of visitors who will be inconvenienced by having to drive a considerable distance for lodging once all lodging in the general community is filled. This will place a greater demand on other private, state, and federal facilities in the immediate area	Elimination of the deteriorating structures and rehabilitation of the impacted areas will improve the aesthetic values of the park.

environmental factors



Natural Resources

geology/topography/soils		air quality	water resources	vegetation	wildlife
impacts	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
<p>Severe erosion of area will continue as impacts go unchecked.</p>	No change	Surface water draining from the area will continue to increase in turbidity due to erosion of soils. Demand for subsurface water will remain the same.	Area will continue to loose vegetation due to pedestrian impact and widespread erosion of supporting soils.	Wildlife habitat will continue to diminish.	
<p>Some camping units will be eliminated and sites restored to blend with natural topo. New camping units will be constructed to minimize modification of existing topo (i.e. retaining walls, and on-grade construction where possible). Eroded areas will be rehabilitated to reduce soil erosion. There will be some minor short-term erosion due to construction and rehabilitation efforts.</p>	There will be minor localized short-term air pollution (dust) generated as a result of rehabilitation and new construction of campground area.	There will be minor localized short-term increase in turbidity of surface water due to construction and rehabilitation efforts. Demand on subsurface water will remain the same.	Vegetation will be restored on those sites to be rehabilitated. There will be some minor loss of vegetation where new camping units are constructed.	Depending on the number of units to be rehabilitated or abandoned and the number to be constructed, the overall increase or decrease in wildlife habitat is uncertain.	
<p>Rehabilitated areas will be restored to their natural topography as near as possible. There will be some minor short-term erosion of soils as a result of the removal and rehabilitation efforts. Existing erosion problems will be reduced significantly.</p>	There will be minor localized short-term air pollution (dust) generated as a result of demolition and site restoration.	There will be minor localized short-term increases in turbidity of surface water due to removal of existing development and rehab of area. Demand on subsurface water will be reduced.	All disturbed areas will be revegetated.	The campground will be removed and the area restored to a natural condition which will increase area available for wildlife habitat.	
<p>Soils on the trail will continue to erode due to the impact of horse traffic.</p>	Very temporary and localized air pollution (dust) will occur as a result of continued horseback use.	No change	No change	No change	
<p>Same as above plus additional soils within the 2.3-mile by 2-foot wide new horse trail will be disturbed due to construction and horseback use (#6).</p>	Same as above plus additional short-term and localized air pollution (dust) will be generated due to construction and horseback use.	Will cause an undetermined increase in the degree of surface water turbidity within the general area due to erosion on unpaved trails.	Existing vegetation within a corridor approximately 2.3 miles by 2 feet wide (0.5 acre) will be removed for horse trail construction.	Same as above plus approximately 0.5 acre of wildlife habitat will be removed.	
<p>Soil erosion impacts on the Peek-a-Boo Trail will be reduced significantly when horseback use is removed. Soil disturbance and erosion will occur within the new 2.6-mile construction corridor (0.6 acre) (#6).</p>	Air pollution (dust) from the horseback trail rides will decrease within the Peek-a-Boo area when horseback use is restricted. Additional short-term and localized air pollution (dust) will be generated due to trail construction and horseback use.	Same as above	Existing vegetation within a corridor 2.6 miles by 2 feet wide (2.6 acres) will be removed for horse trail construction.	Approximately 0.6 mile of wildlife habitat will be removed.	

# Cultural Resources Socioeconomic Resources

prehistoric	historic	regional economy	visitation	esthetics
impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
No known effect	No known effect	Replacement and maintenance cost will increase as site and facilities becomes more deteriorated.	Visitors will continue to be exposed to substandard, deteriorated conditions. Visitors will have a negative impression of NPS management and preservation efforts. Threats to visitor safety will go unchecked.	Esthetic values will decrease as impacts and deterioration increase.
No known effect	No known effect	Long-term maintenance cost will decrease. Modification and rehab cost will be approximately \$1,502,000 (gross).	Action will better accommodate visitors and significantly reduce threats to visitor safety.	Modification and rehab work will improve the appearance of the campground and make it inviting to the visitor.
No known effect	No known effect	Maintenance needs for the area will be eliminated once vegetation is established. Removal of facilities and restoration of the area would cost approximately \$380,000.	Overnight stays in the park would be reduced by 375 visitors per day. This would increase the demand on campground facilities adjacent to the park. This will also place a greater demand on other private, state, and federal facilities in the immediate area.	The area would be restored to a natural setting complementary to the surrounding park area.
No known impacts	No change	Approximately \$1,500 (gross) in federal funds will be required for signing.	Visitors would be informed of mixed use and potential conflicts; thereby giving them an option to hike other trails restricted to horse use. Hikers on the Peek-a-Boo Trail will be subjected to dust generated by trail rides and experience defecation from horses on the trail.	No change
No known impacts	No known impacts	Approximately \$165,000 (gross) in federal funds would be spent for trail construction and signing.	Same as above plus hikers who choose to use the newly constructed 2.3 miles of horse trail will experience the same problems as listed above.	Debris from trail construction could create a visual impact on the area (#7).
No known impacts	No known impacts	Approximately \$183,000 (gross) in federal funds would be spent for trail construction and signing.	Hikers on the Peek-a-Boo Trail will no longer experience conflicts with horseback riders.	Same as above

environmental factors

		Natural Resources				
		geology /topography /soils	air quality	water resources	vegetation	wildlife
		impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
Alternatives	TRANSPORTATION					
	NO ACTION	No change	No change	No change	No change	No change
	ROADWAY IMPROVEMENT ALTERNATIVE	Footnotes #1 and #2 apply to the following impacts on each page.			Footnotes #1 and #3 apply to the following impacts on each page.	
	Repaving of Existing Roadways	Previously impacted soils would be affected.	During construction activities, noise and particulates in the air would increase. Both noise and air quality intrusions would cease after completion of construction.	No change	No change	No change
	Expansion of Existing Parking Areas:					
	Visitor Center	Soils are a silty clay loam and considered poor to very poor for roadfill and roadway construction. Characteristics: moderate to high compressibility; fair compaction; bedrock deeper than 6 feet; load carrying capacity extremely variable; moderate to very high frost heave susceptibility; piping hazard high to very high. Approximately 3.5 acres of soils would be disrupted during construction activities; a portion of the construction would take place in a previously disturbed area. There could be some soil erosion around the perimeter of the parking area.	Same as above	Runoff patterns would be slightly modified due to the construction of the new parking area. Construction techniques would mitigate most adverse effects.	Construction activities would destroy 3.5 acres of vegetation, primarily grasses and small brushes. Seeding and replanting of native vegetation would mitigate some adverse effects.	expansion of the parking area would destroy 3.5 acres of wildlife habitat and disturb or displace some small animals and birds to adjacent areas with the same habitat. The endangered Utah prairie dog ( <i>Cynomys parvidens</i> ), which currently inhabits areas adjacent to the existing parking lot, could be affected.
	Fairyland	Soils are excessively drained gravelly loam underlain by sandstone bedrock at 13-20" and are poor to very poor for roadfill; the erosion potential is moderate. Characteristics: permeability poor to very poor; compressibility moderate to high; compaction fair to good. About 0.1 acre of soils would be disrupted in a partially disrupted area. There could be some soil erosion around the perimeter of the parking area.	Same as above	Runoff patterns would be slightly modified due to construction activities. Construction techniques would mitigate most adverse effects.	Construction activities would destroy 0.1 acre of vegetation, primarily ponderosa pine, sagebrush, manzanita, bitterbrush, and grass. Seeding and replanting of native vegetation would mitigate some adverse effects.	Expansion of the parking area would destroy 0.1 acre of wildlife habitat and disturb or displace some birds and small animals to adjacent areas with the same habitat. The endangered Utah prairie dog ( <i>Cynomys parvidens</i> ), which currently inhabits areas adjacent to the existing parking area could be affected.
	Sunrise	Soils are a silty clay loam and considered poor to very poor for roadfill and roadway construction. Characteristics: moderate to high compressibility; fair compaction; bedrock is deeper than 6 feet; load carrying capacity extremely variable; moderate piping hazard high to very high. Approximately 0.3 acre of soils would be disrupted during construction activities; most construction would take place in a previously disturbed area. There could be some soil erosion around the perimeter of the parking area.	Same as above	Same as above	Construction activities would destroy 0.3 acre of vegetation, primarily brittlecone and ponderosa pine, manzanita, Indian rice grass, Mormon tea, fourwing saltbrush and greasewood. Seeding and replanting of native vegetation could mitigate some adverse effects.	Expansion of the parking area would destroy 0.3 acre of wildlife habitat and disturb or displace some birds and small animals to adjacent areas with the same habitat.
	Sunset Point	Soils are very fine sandy loam and are good to fair for roadfill. Characteristics: compressibility slight to moderate; compaction fair. About 0.4 acre of soils would be disrupted in a partially disturbed area. There could be some soil erosion around the perimeter of the parking area.	Same as above	Same as above	Construction activities would destroy 0.4 acre of vegetation, primarily ponderosa pine, manzanita, and grass. Seeding and replanting of native vegetation would mitigate some adverse effects.	Expansion of the parking area would destroy 0.4 acre of wildlife habitat and disturb or displace some birds and small mammals to adjacent areas with the same habitat.



# Cultural Resources Socioeconomic Resources

prehistoric	historic	regional economy	visitation	esthetics
impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
No change	No change	No change	Congestion would continue at parking areas during peak periods, and safety problems on the narrow roads would persist.	Overcrowding at parking areas would continue to be a visual intrusion during peak use periods.
Archeological sites have been identified along the roadway (one at Fairyland and two along the main road between Inspiration and Farview). An archeologist would be notified before construction.	No historic structures would be affected during construction.	Construction activities would provide short-term increases in employment/wages in the area.	Roadway improvements would reduce congestion and promote visitor safety. There would be short-term inconveniences for visitors.	Short-term visual intrusions would occur during construction activities.
The area was surveyed for archeological resources (Hartley 1979) and none were identified. If any archeological resources were encountered during construction, work would be halted until findings were properly documented.	Same as above	Same as above	Enlargement of the parking facilities at the visitor center would aid in reducing parking and traffic congestion and would improve visitor safety. There would be short-term inconveniences to visitors during construction activities.	There would be minor visual intrusions during construction activities and from new parking facilities. Native vegetation would be used in parking area design to reduce visual impacts. Short-term increases in noise would occur during construction.
Same as above	Same as above	Same as above	Expansion of the parking area would eliminate parking and traffic congestion and improve visitor safety. There would be short-term inconveniences to visitors during construction activities.	Same as above
Same as above	There are no historic structures in the area	Same as above	Same as above	Same as above
Same as above	No historic structures would be affected during construction.	Same as above	Same as above	Same as above

environmental factors



Natural Resources

geology/topography/soils		air quality	water resources	vegetation	wildlife
impacts		impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
<p>Soils are very gravelly loam and clay loam and considered fair for roadfill and roadway construction. Characteristics: shallow; moderate compressibility; good to poor compaction; cobbles in top 4 inches, soft bedrock at 1 to 1½ feet; load carrying capacity low, susceptibility to frost moderate to very high; low stability; very high piping hazard. Approximately 0.4 acre of soils would be disrupted during construction activities; most construction would be in a previously disturbed area. There could be some soil erosion around the perimeter of the parking area.</p>		<p>During construction activities, noise and particulates in the air would increase. Both noise and air quality intrusions would cease after completion of construction.</p>	<p>Runoff patterns would be slightly modified due to the construction of the new parking area. Construction techniques would mitigate most adverse effects.</p>	<p>Construction activities would destroy 0.4 acre of vegetation, primarily ponderosa pine, manzanita, grasses, and small bushes. Seeding and replanting of native vegetation could mitigate some adverse effects.</p>	<p>Expansion of the parking area would destroy 0.4 acre of wildlife habitat and disturb or displace some birds and small animals to adjacent areas with the same habitat.</p>
<p>Paria soils are very cobbly and gravelly loam and are considered fair for roadfill and roadway construction. Characteristics: moderately deep; compressibility slight; good to fair compaction; bedrock 2 to 2½ feet; level carrying capacity high; susceptibility to frost low to moderate. There could be some soil erosion around the perimeter of the parking area. About 0.7 acre of soils would be disturbed in a previously disturbed area.</p>		<p>Same as above</p>	<p>Same as above</p>	<p>Construction activities would destroy 0.7 acre of vegetation, primarily ponderosa pine, manzanita, grasses, and small bushes. Seeding and replanting of native vegetation could mitigate some adverse effects.</p>	<p>Construction of the parking area would destroy 0.7 acre of wildlife habitat and disturb or displace some birds and small animals to adjacent areas with the same habitat.</p>
<p>Soils are very cobbly clay loam and considered poor and shallow for roadfill and roadway construction. Characteristics: bedrock 1 to 1½ feet; load carrying capacity high; susceptibility to frost low to moderate; good to poor compaction; low to moderate stability; low to high piping. Approximately 0.8 acre of soils would be disrupted due to construction activities in a partially disturbed area. There could be some soil erosion around the perimeter of the parking area.</p>		<p>Same as above</p>	<p>Same as above</p>	<p>Construction activities would destroy 0.8 acre of vegetation, primarily ponderosa pine, Douglas-fir, aspen, grasses, and small bushes. Seeding and replanting of native vegetation would mitigate some adverse effects.</p>	<p>Expansion of the parking area would destroy 0.8 acre of wildlife habitat and disturb or displace some small animals and birds to adjacent areas with the same habitat.</p>
<p>Soils are cobbly loam and cobbly sandy clay loam to very cobbly loam. Characteristics: to 2 feet soils good to fair for roadfill and roadway construction, compressibility slight, compaction fair; below 2 feet soils very good to fair for roadfill and roadway construction, compressibility very slight, compaction good; bedrock is deeper than 5 feet; load carrying capacity high; susceptibility to frost heave low to moderate; high to moderate stability; high to moderate piping hazard. About 1.5 acres of soils would be disturbed in a previously undisturbed area. There could be some soil erosion around the perimeter of the parking area.</p>		<p>Same as above</p>	<p>Same as above</p>	<p>Construction activities would disturb 1.5 acres of vegetation, primarily white fir, ponderosa pine, Douglas-fir, aspen, grasses, and small bushes. Seeding and replanting of native vegetation would mitigate some adverse effects.</p>	<p>Expansion of the parking area would destroy 1.5 acres of wildlife habitat and disturb or displace some small animals and birds to adjacent areas with the same habitat.</p>
<p>Soils are loam and gravelly loam (0-17"), gravelly loam (17-36"), and very gravelly loam (36-50"). They are fair to 3 feet, poor below 3 feet for roadfill and roadway construction. Characteristics: compressibility slight; good to fair compaction; bedrock at 5 feet; load carrying capacity high; susceptibility to frost heave none to moderate; high stability; high piping hazard. About 0.6 acre of soils would be disrupted in a partially disturbed area. There could be some soil erosion around the perimeter of the parking area.</p>		<p>Same as above</p>	<p>Same as above</p>	<p>Construction activities would destroy 0.6 acre of vegetation, primarily Douglas-fir, aspen, white fir, grasses, and small bushes. Seeding and replanting of native vegetation would mitigate some adverse effects.</p>	<p>Expansion of the parking area would destroy 0.6 acre of wildlife habitat and disturb or displace some small animals and birds to adjacent areas with the same habitat.</p>

Cultural Resources Socioeconomic Resources				
prehistoric	historic	regional economy	visitation	esthetics
impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
<p>The area was surveyed for archeological resources (Hartley 1979) and none were identified. If any archeological resources were encountered during construction, work would be halted until findings were properly documented.</p>	<p>There are no historic structures in the area.</p>	<p>Construction activities would provide short-term increases in employment/wages in the area.</p>	<p>Expansion of the parking area would eliminate parking and traffic congestion and improve visitor safety. There would be short-term inconveniences to visitors during construction activities.</p>	<p>There would be minor visual intrusions during construction activities and from new parking facilities. Native vegetation would be used in parking area design to reduce visual impacts. short-term increases in noise would occur during construction.</p>
Same as above	Same as above	Same as above	Same as above	Same as above
Same as above	Same as above	Same as above	Same as above	Same as above
Same as above	Same as above	Same as above	Same as above	Same as above
<p>The project area was surveyed for archeological resources (Hartley 1979), and an archeological site was identified east of the parking area at Rainbow. Construction activities should not affect the site. If other sites were identified, mitigating measures would be the same as above.</p>	<p>The Rainbow overlook is proposed to be included on the list of historic structures. Roadway improvements should not affect this site.</p>	Same as above	Same as above	Same as above

environmental factors

Natural Resources

FULL-SERVICE TRANSIT ALTERNATIVE  
(also includes impacts of roadway repaving and upgrading)

Visitor Center

Provide a transit system staging area to accommodate 1,350 vehicles

Soils are a silty clay loam and considered poor to very poor for roadfill and roadway construction. Characteristics: moderate to high compressibility; fair compaction; bedrock deeper than 6 feet; load carrying capacity extremely variable; moderate to very high frost heave susceptibility; piping hazard high to very high. Approximately 22.7 acres of soils would be disturbed. There could be some soil erosion around the perimeter of the parking area.

There would be short-term increases in particulates in the air during construction. The mandatory transit system would reduce the number of autos and emissions throughout the park, but long-term localized increases in emissions from large numbers of autos at the parking area and in particulates from diesel buses would occur.

The expansive parking area could significantly alter runoff patterns, affecting channelization of water and promoting erosion. The north end of the parking area might need to be constructed over a drainage. Existing sewage lagoons at the northwest end of the parking area might need to be relocated. Construction techniques would mitigate most adverse effects.

Construction activities would destroy 22.7 acres of vegetation, primarily ponderosa pine, Douglas-fir, juniper, manzanita, other shrubs and grasses. Seeding and replanting of native vegetation would mitigate some adverse effects.

Expansion of the parking area would destroy 22.7 acres of wildlife habitat and disturb or displace some small animals and birds to adjacent areas with the same habitat.

Fairyland

Provide a transit system staging area at the Fairyland turnoff to accommodate 1,350 vehicles.

Soils are a silty clay loam and considered poor to very poor for roadfill and roadway construction. Characteristics: moderate to high compressibility; fair compaction; bedrock deeper than 6 feet; load carrying capacity extremely variable; moderate to very high frost heave susceptibility; piping hazard high to very high. Approximately 26.7 acres of soils would be disturbed. There could be some soil erosion around the perimeter of the parking area.

There would be short-term increases in particulates in the air during construction. The mandatory transit system would reduce the number of autos and emissions throughout the park, but long-term localized increases in emissions from large numbers of autos at the parking area, and in particulates from diesel buses would occur.

The expansive parking area could significantly alter runoff patterns, affecting channelization of water and promoting erosion. Construction techniques would mitigate most adverse effects.

Construction activities would destroy 26.7 acres of vegetation, primarily ponderosa pine, junipers, grasses, and small bushes. Seeding and replanting of native vegetation would mitigate some adverse effects.

Expansion of the parking area would destroy 26.7 acres of wildlife habitat and disturb or displace some small animals and birds to adjacent areas with the same habitat.

BRYCE POINT/PARIA VIEW SHUTTLE  
(also includes impacts of roadway repaving and upgrading)

Construct a new parking and shuttle staging area to accommodate vehicles using a short shuttle bus route.

Soils are silty loam and silty clay loam and considered poor to very poor for roadfill and roadway construction. Characteristics: compressibility moderate to high; fair compaction; bedrock deeper than 6 feet; load carrying capacity moderate; susceptibility to frost heave moderate to high; moderate stability; high piping hazard. About 8.5 acres of soils would be disturbed. There could be some soil erosion around the perimeter of the parking area. About 8.5 acres of undisturbed soils would be impacted.

Construction of the new parking area would alter runoff patterns and possibly increase channelization and erosion. Construction techniques would mitigate most adverse effects.

Construction activities would destroy 8.5 acres of vegetation, primarily ponderosa pine, manzanita, grasses, and small brushes. Seeding and replanting of native vegetation might mitigate some adverse effects.

Expansion of the parking area would destroy 8.5 acres of wildlife habitat and disturb or displace some birds and small animals to adjacent areas with the same habitat.



# Cultural Resources Socioeconomic Resources

prehistoric	historic	regional economy	visitation	esthetics
impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation	impacts / mitigation
<p>The area was surveyed for archeological resources (Hartley 1979) and none were identified. If any archeological resources were encountered during construction, work would be halted until findings were properly documented.</p>	<p>No historic structures would be affected during construction</p>	<p>Same as above. Seasonal employment opportunities for transit system operation would increase during the visitor season.</p>	<p>Expansion of the visitor center parking area would localize parking, eliminating parking and traffic congestion in the park, and would improve visitor safety. There would be short-term inconveniences during construction activities. Some visitors might feel inconvenienced by a mandatory transit system. Visitors entering the park would receive information and interpretation before seeing the park.</p>	<p>The visitor center parking area would present a visual intrusion on 22.7 acres. This would be partially offset by using native vegetation in the landscaping design. Construction activities would contribute to short-term negative impacts (noise and dust).</p>
<p>Same as above</p>	<p>Same as above</p>	<p>Construction activities would provide short-term increases in employment in the area. Employment opportunities for transit system operation would increase during the visitor season.</p>	<p>Expansion of the Fairyland parking area would localize parking, eliminating parking and traffic congestion in the park, and would improve visitor safety. There would be short-term inconveniences during construction activities. Some visitors might feel inconvenienced by a mandatory transit system. Visitors entering the park would receive information and interpretation before seeing the park.</p>	<p>The Fairyland parking area would present a visual intrusion on about 26.7 acres. This would be offset by using native vegetation in the landscaping design. Construction activities would contribute to short-term negative impacts (noise and dust).</p>
<p>Same as above</p>	<p>Same as above</p>	<p>Same as above</p>	<p>Expansion of the parking area would eliminate parking and traffic congestion in the area and improve visitor safety. There would be short-term inconveniences to visitors during construction activities. Some visitors might feel inconvenienced by a mandatory shuttle system between Bryce and Paria during the main visitor season.</p>	<p>Same as above. The parking area would present a visual intrusion on 8.5 acres.</p>

environmental factors



## **CHAPTER V    CONSULTATION AND COORDINATION**



## CHAPTER V

### CONSULTATION AND COORDINATION

This section contains a listing of the various agencies contacted in the preparation of this document, a summary of the public involvement response, and a list of those involved in the preparation of the document.

### AGENCIES AND SPECIAL INTEREST GROUPS CONTACTED

#### Federal

Advisory Council on Historic Preservation  
    Department of Agriculture  
        Forest Service  
        Soil Conservation Service  
Department of the Army  
    Corps of Engineers  
Department of the Interior  
    Bureau of Land Management  
    Fish and Wildlife Service  
    Geologic Survey  
Environmental Protection Agency

#### State of Utah

State Historic Preservation Officer  
Utah State Clearing House  
Utah Division of Wildlife  
Utah Department of Transportation  
Department of Community and Economic Development  
Utah Travel Council

### SUMMARY OF PUBLIC INVOLVEMENT

Public involvement scoping began with the distribution of the draft Task Directive and approved Statement for Management as background information on the park. These documents were transmitted under a cover memorandum indicating the Park Service was preparing a General Management Plan for the park and would appreciate public involvement throughout the planning process.

Upon completion of the Assessment of Alternatives for the General Management Plan, public workshops were conducted to present alternatives and receive public comments. Workshops were held in the park, Panguitch, Kanab, and Cedar City, Utah. Following the review of public comments, a preferred alternative was selected. This selection was published and distributed for public

review in a document titled "Environmental Review for the General Management Plan Assessment of ALternatives" along with a FONSI. The environmental review was later amended and a FONSI was prepared for the amendment. The amendment dealt with visitor lodging facilities and due to the sensitivity of the issue, public involvement sessions were conducted in the park.

The general overriding public opinion was that concession lodging should remain in the park, but not exceed its present level of development. There was also strong support for restricting the concession lodging and restaurant services to its current season of operation--May 18 through October 1--so as not to conflict with the private interest outside the park during marginal profit periods.

#### LIST OF PREPARERS

Sandra Key, Superintendent, Bryce Canyon National Park

Wayne Gardner, Team Captain, Planner/Landscape Architect, Planning and Compliance, Rocky Mountain Region

George Buckingham, Chief Ranger, Bryce Canyon National Park

Tom Henry, Management Assistant, Bryce Canyon National Park

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Rodd Wheaton, Regional Historic Architect, Cultural Resources, Rocky Mountain Region

Dr. Michael Schene, Regional Historian, Cultural Resources, Rocky Mountain Region

Lori Jean Kinser, Visual Information Specialist, Planning and Compliance, Rocky Mountain Region

Joyce Moe, Editorial Clerk, Planning and Compliance, Rocky Mountain Region



## **APPENDIXES**



BRYCE CANYON NATIONAL MONUMENT—UTAH<sup>1</sup>  
BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 1664—June 8, 1923—43 Stat. 1914]

WHEREAS, certain lands within the Powell National Forest, in the State of Utah, known as Bryce Canyon, are of unusual scenic beauty, scientific interest and importance, and it appears that the public interests will be promoted by reserving these areas with as much land as may be necessary for the proper protection thereof as a national monument;

NOW, THEREFORE, I, Warren G. Harding, President of the United States of America, by virtue of the power in me vested by section two of the Act of Congress approved June eight, nineteen hundred and six, entitled "An Act for the preservation of American antiquities", do proclaim that there are hereby reserved from all forms of appropriation under the public land laws, subject to all prior valid adverse claims, and set apart as a National Monument to be known as Bryce Canyon National Monument, all of the tracts of land in the State of Utah which are shown on the diagram forming a part hereof.

The reservation made by this proclamation is not intended to prevent the use of the lands for National Forest purposes under the proclamation establishing the Powell National Forest, and the two reservations shall both be effective on the land withdrawn, but the National Monument hereby established shall be the dominant reservation and any use of the land which interferes with its preservation or protection as a National Monument is hereby forbidden.

Warning is hereby given to all unauthorized persons not to appropriate, injure, deface, remove or destroy any feature of this National Monument or to locate or settle on any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

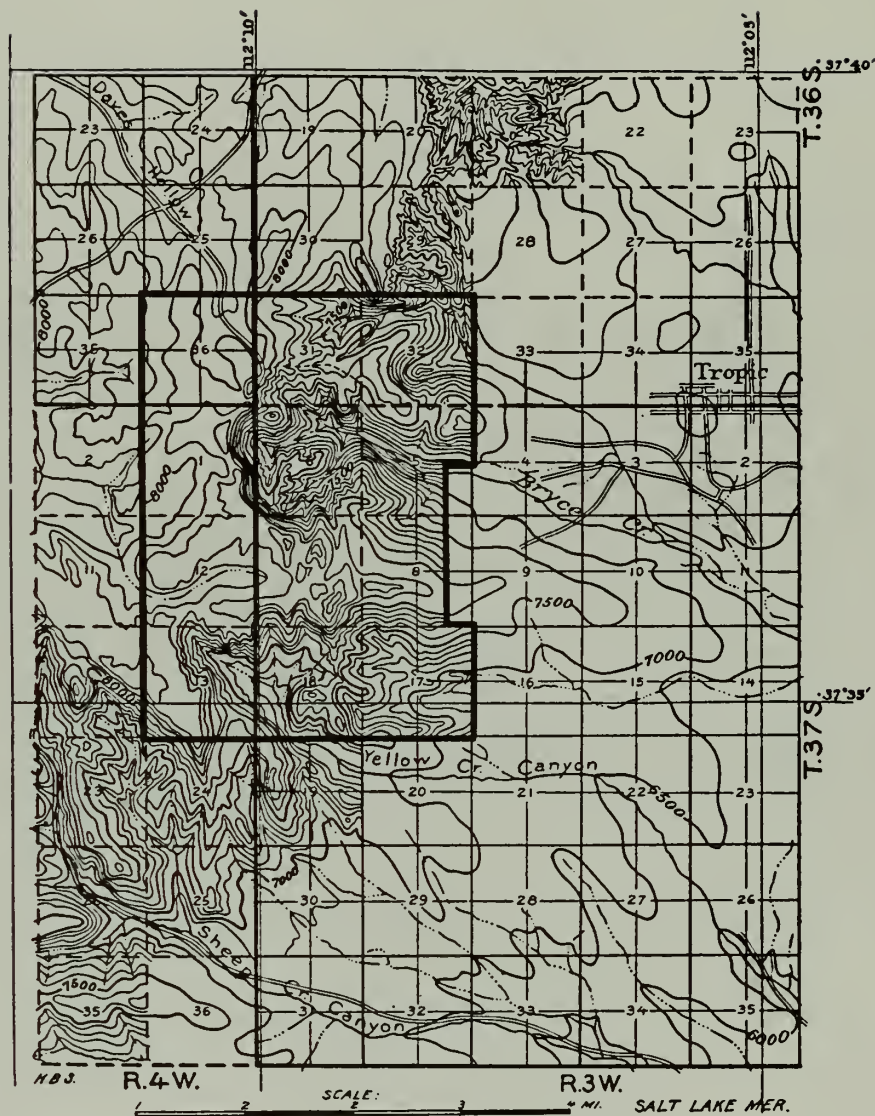
DONE at the City of Washington this eighth day of June, in the year of our Lord one thousand nine hundred and twenty-three, and of  
[SEAL] the Independence of the United States of America the one hundred and forty-seventh.

WARREN G. HARDING.

By the President:

CHARLES E. HUGHES,  
*Secretary of State.*

## II. NATIONAL PARKS—BRYCE CANYON



U. S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
**BRYCE CANYON NATIONAL MONUMENT**  
WITHIN  
**POWELL NATIONAL FOREST**  
**UTAH**

APPROX. AREA - 7,440 ACRES

 National Monument Boundary

DIAGRAM FORMING A PART OF PROCLAMATION DATED JUNE 8, 1923.



An Act To establish the Utah National Park in the State of Utah,  
approved June 7, 1924 (43 Stat. 593)

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there is hereby reserved and withdrawn from settlement, occupancy or disposal under the laws of the United States and dedicated and set apart as a public park for the benefit and enjoyment of the people, under the name of the "Utah National Park," the tract of land in the State of Utah particularly described by and included within metes and bounds, as follows, to wit:

Utah National Park.  
Lands set apart as.  
(Amended by 45 Stat. 147, and 45 Stat. 502. See pp. 261 and 261.)  
Description.

Unsurveyed sections 31 and 32, township 36 south, range 3 west; surveyed section 36, township 36 south, range 4 west; north half, southwest quarter and west half of the southeast quarter of partially surveyed section 5; unsurveyed sections 6 and 7, west half, west half of the northeast quarter, and west half of the southwest quarter of partially surveyed section 8, partially surveyed section 17 and unsurveyed section 18, township 37 south, range 3 west; and unsurveyed sections 1, 12, and 13, township 37 south, range 4, all west of the Salt Lake meridian, in the State of Utah: *Provided*, That all the land within the exterior boundaries of the aforesaid tract shall first become the property of the United States.

*Proviso.*  
Title to be secured.

Administration, etc., under National Park Service.  
Vol. 89, p. 535.  
See p. 9.

No valid claim, etc., affected.

SEC. 2. That the administration, protection, and promotion of said Utah National Park shall be exercised under the direction of the Secretary of the Interior by the National Park Service, subject to the provisions of the Act of August 25, 1916, entitled "An Act to establish a National Park Service, and for other purposes."

SEC. 3. That nothing herein contained shall affect any valid existing claim, location, or entry under the land laws of the United States, whether for homestead, mineral, right of way, or any other purpose whatsoever, or shall affect the rights of any such claimant, locator, or entryman to the full use and enjoyment of his land:

*Proviso.*

*Provided*, That the Secretary of the Interior is hereby authorized to exchange, in his discretion, alienated lands in this and Zion National Park for unappropriated and unreserved public lands of equal value and approximately equal area in the State of Utah outside of said parks. (U.S.C., title 16, sec. 346.)

Exchange of alienated lands in, and Zion Park, for other lands.

An Act To change the name of the Utah National Park, the establishment of which is provided for by the Act of Congress approved June 7, 1924 (Forty-third Statutes, page 593), to the "Bryce Canyon National Park," and for other purposes, approved February 25, 1928 (45 Stat. 147)

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the area within the State of Utah described in the Act of Congress approved June 7, 1924 (Forty-third Statutes, page 593), providing for the establishment of the Utah National Park, shall be, when established as a national park, known as the Bryce Canyon National Park. (U.S.C., 6th supp., title 16, sec. 402a.)

Bryce Canyon  
National Park,  
Utah.

Utah National  
Park to be known  
as.

SEC. 2. That the east half east half section 25, township 36 south, range 4 west; the east half southwest quarter section 20, and all of sections 21, 29, and 30, township 36 south, range 3 west; all of sections 24 and 25, township 37 south, range 4 west; and all of sections 19 and 30, township 37 south, range 3 west, Salt Lake meridian, be, and the same are hereby, excluded from the Powell National Forest and made a part of the Bryce Canyon National Park, subject to the provisions of the aforesaid Act of Congress approved June 7, 1924. (U.S.C., 6th supp., title 16, sec. 402b.)

Vol. 43, p. 593,  
amended. See  
p. 260.

Areas excluded  
from Powell Na-  
tional Forest and  
added to Bryce  
Canyon Park.

SEC. 3. That unsurveyed sections 28 and 33, township 36 south, range 3 west, and section 20, township 37 south, range 3 west, Salt Lake meridian, public lands of the United States, be, and the same are hereby, added to and made a part of the Bryce Canyon National Park subject to the provisions of the aforesaid Act of Congress approved June 7, 1924. (U.S.C., 6th supp., title 16, sec. 402c.)

Other lands  
added to park.

# Advisory Council On Historic Preservation

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1522 K Street, NW  
Washington, DC 20005

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## MEMORANDUM OF AGREEMENT

WHEREAS, the National Park Service has determined that demolition of 104 units of standard and economy cabins and their replacement with 70 new units in the Bryce Canyon Historic District in Utah will have an effect upon properties included in or eligible for inclusion in the National Register of Historic Places and has requested the comments of the Advisory Council on Historic Preservation, pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. 470) and its implementing regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800); and,

WHEREAS, the National Park Service proposes to continue to implement its Cultural Resource Management Plan, Bryce Canyon National Park, approved by the Regional Director on August 16, 1982;

NOW, THEREFORE, the National Park Service, the Utah State Historic Preservation Officer, and the Advisory Council on Historic Preservation agree that these undertakings shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertakings on historic properties.

### Stipulations


The National Park Service will insure that:

1. Examples of the standard and economy cabins are retained, sited, and interpreted to the public in Bryce Canyon Lodge Historic District.
2. The standard and economy cabins are recorded prior to demolition so that there will be a permanent record of their existence, appearance, and relationship to one another and other structures in the Bryce Canyon Lodge Historic District. The Historic American Buildings Survey (HABS) will be contacted to determine what documentation is required. All documentation must be accepted in writing by HABS prior to demolition. Copies of this documentation will be provided to the Utah State Historic Preservation Officer.

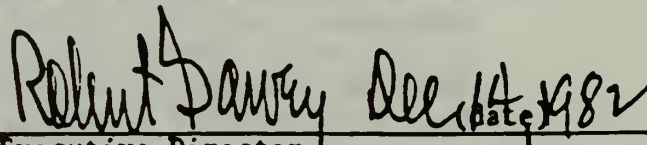


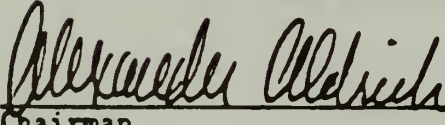
3. The two replacement structures (combined containing 70 units) are designed to be architecturally compatible with the remnants of the Bryce Canyon Lodge Historic District, particularly Bryce Canyon Lodge. The Utah State Historic Preservation Officer will be invited to review and approve the design for these structures.
4. The Utah State Historic Preservation Officer is provided a copy of the "Assessment of Effect" form prior to initiation of any action affecting historic properties in Bryce Canyon National Park and afforded 15 working days in which to raise any objection.
5. Failure to carry out projects in Bryce Canyon National Park within the terms of this Agreement requires that the National Park Service again request the Council's comments in accordance with 36 CFR Part 800. If the National Park Service cannot carry out the terms of the Agreement, it will not take or sanction any action or make any irreversible commitment that would result in an adverse effect with respect to National Register or eligible properties covered by the Agreement or would foreclose the Council's consideration of modifications or alternatives to the undertakings that could avoid or mitigate the adverse effect until the commenting process has been completed.

Execution of this Memorandum of Agreement evidences that the National Park Service has afforded the Council a reasonable opportunity to comment on the replacement of 104 units of standard and economy cabins and the implementation of the Cultural Resource Management Plan for Bryce Canyon National Park and their effects on historic properties and that the National Park Service has taken into account the effects of its undertakings on historic properties.

 (date) 11/14/83  
National Park Service  
Acting Regional Director, RM/R

 (date) 1-31-83  
Utah State Historic Preservation Officer

 (date) Dec 14, 1982  
Executive Director  
Advisory Council on Historic Preservation

 (date) 3/11/83  
Chairman  
Advisory Council on Historic Preservation



EMPLOYEE QUARTERS INVENTORY AND ANALYSIS

QUARTERS #	LOCATION	SQUARE FOOTAGE	RENTAL RATE P/P	YEAR REMODELED	OCCUPANCY (R) REQUIRED (P) PERMITTED	(P) PERM (S) SEAS	POSITION	# BEDRO
MS-1	Historic housing area	840	49.91	1982	P	P	1333-02 Prog. Clerk	1
MS-2	Historic housing area	861	54.63	1983	P	P	1331-10 Admin. Officer	1
MS-4	Historic housing area (Ranger Dorm.)	1584	173.27	1980	P	S	1332-5 Park Ranger	4
							1332-5 Park Ranger	
							1332-5 Park Ranger	
MS-5	Historic housing area	401	39.17	1977	P	S	1333-510 Laborer	1
MS-7	Historic housing area	401	38.39	1972	R	S	1332-510 Park Ranger	1
MS-8	Historic housing area	658	51.07	1979	R	S	1332-511 Park Ranger	1
MS-9	Historic housing area	401	40.86	1977	R	S	1332-512 Park Ranger	1
MS-10	Historic housing area	830	80.70	1977	P	S	1332-520 Park Ranger	1
12	Mission "66" housing area	1330	96.92	1983	R	P	1332-03 Park Ranger	3
							1334-10 Park Ranger	
13	Mission "66" housing area	1330	118.17	1958	R	P	1332-10 Park Ranger	3
14	Mission "66" housing area	1330	89.12	1985	R	P	1333-40 B&U Foreman	3
15	Mission "66" housing area	1330	89.12	1981	R	P	1334-10 Supv. Pk. Rgr.	3
16	Mission "66" housing area	1330	96.92	1982	P	P	1333-05 Conc. Spec.	3
17	Mission "66" housing area	1330	97.73	1981	P	P	1333-42 Carpenter	3
18	Mission "66" housing area	988	65.53	1981	P	P	1334-02 Clerk-Typist	2
19	Mission "66" housing area	1345	91.13	1984	R	P	1332-01 Supv. Pk. Rgr.	3
20	Mission "66" housing area	1345	99.86	1984	R	P	1334-01 Supv. Pk. Rgr.	3
21	Mission "66" housing area	1345	91.13	1984	R	P	1333-01 Facility Mgr.	3
22	Mission "66" housing area	1345	99.05	1984	P	P	1331-01 Superintendent	3
23	Mission "66" housing area	1345	99.05	1985	R	P	1333-11 Equip. Operator	3
24	Mission "66" housing area	1330	96.92	1982	R	P	1333-10 R&T Foreman	3
11A	Mission "66" apart. bldg.	326	38.40	1984	P	S	1333-521 Park Ranger	0
11B	Mission "66" apart. bldg.	326	34.45	1984	P	S	1332-522 Park Ranger	0
11C	Mission "66" apart. bldg.	612	52.84	1983	P	P	1331-12 Purchase Agent	2
11D	Mission "66" apart. bldg.	612	49.93	1983	P	S	Can be perm. residence	1

NOTE: Position numbers used reflect existing required and permitted occupancy. The Superintendent has the discretion of assigning employee housing based on family size, management needs, etc., therefore assignments and positions may periodically vary from this listing.

## AIR QUALITY

### Bryce Canyon National Park

#### I. Legal, Administrative, and Environmental Constraints

##### A. Clean Air Act (42 U.S.C. 7401 et seq.)

Bryce Canyon National Park is designated as a mandatory Class I area to preserve, protect, and enhance the park's air quality. The Secretary of the Interior and the Superintendent of the park have an affirmative responsibility to protect the park's air quality related values (AQRV's), including visibility, plants, animals, water quality, historic and archeological objects and structures, and any other resources that may be sensitive to air pollution. Class I designation places the most stringent constraints on the construction and operation of major air pollution emitting facilities near the park. (Part C - Prevention of Significant Deterioration of Air Quality)

In Section 169A of the Act, Congress established a national goal of remedying any existing and preventing any future man made visibility impairment in mandatory Class I areas. Bryce Canyon National Park has been designed as a mandatory Class I area where visibility is an important value. (40 CFR 81.430) Therefore, visibility regulations promulgated by the Environmental Protection Agency (EPA) apply to Bryce Canyon. (40 CFR 51.301 et seq.) These regulations require the State of Utah to develop a State Implementation Plan (SIP) consistent with the EPA requirements, including provisions for visibility monitoring, new source review, long term strategies, and retrofit control requirements for certain existing air pollution sources.

The Act also places constraints on any park development or management activities which could affect air quality by requiring the park to comply with all Federal, State, and local air pollution control laws and regulations. (Section 118-Control of Pollution from Federal Facilities)

## B. Issues and Concerns

### 1. Resource Management

#### a. Air Quality

The vitality, significance and integrity of many park resources are dependent on good air quality. Air pollution, even at concentration levels below the National Ambient Air Quality Standards, can harm vegetation, degrade visual air quality and diminish visitors' enjoyment. Maintaining pristine air quality and remedying any existing air pollution effects are important management objectives.

Bryce Canyon National Park also includes numerous scenic views which are important resources associated with the park. The EPA visibility regulations gave the Secretary of the Interior an opportunity to identify scenic views from Class I areas of specific landmarks or panoramas located outside the Class I areas that were important or integral to the park visitors' visual experience. The regulations required states such as Utah to include vistas identified by the Secretary before December 31, 1985, in their SIP and to consider the costs and benefits of preventing visibility degradation that might affect those vistas before deciding to permit new air pollution sources within those vistas.

Using Criteria for the Identification of Integral Vistas developed by the National Park Service Air Quality Division, the park prepared a list of integral vistas in 1980. Observation points included Bryce Point, Yovimpa Point, and Paria Overlook. The vistas included the Black Mountains, the Aquarius Plateau, the Kaiparowits Plateau, Navajo Mountain, the Kaibab Plateau, Mount Trumbull, and the White Cliffs. The draft guidelines and preliminary list of intergral vistas were published in the Federal Register in January 1981 (46 FR 3646) and April 1981 (46 FR 23389). The list of vistas was also given to the State of Utah. Although the Secretary of the Interior decided on October 25, 1985, not to publish a final regulation officially designating integral vistas, the National Park Service was directed to work cooperatively with states to ensure protection of scenic views.

In March 1986, Utah's Governor Bangerter appointed a Citizens' Advisory Committee on Visibility to study the question of air quality protection in scenic views. On November 21, 1986, the Governor's Committee presented to the State Air Conservation Committee its preliminary recommendation to list for visibility protection all 17 NPS-identified vistas associated with the five Class I parks in Utah, including the views identified for Bryce Canyon. No final action has been taken by Utah on this recommendation.

The Department of the Interior's Assistant Secretary for Fish and Wildlife and Parks has notified the EPA that there is existing visibility impairment in scenic views associated with the park appears to be reasonably attributable to a specific source or small groups of sources. If Utah adopts requirements for visibility protection in scenic views and ongoing studies determine that visibility impairment in these views is reasonably attributable to specific sources, an analysis of retrofit control strategies will be conducted.



## THREATENED OR ENDANGERED SPECIES

As per Fish and Wildlife Service's memorandum from the Endangered Species Office dated February 6, 1987, the following species are known to occur in Utah Latilong Block 20 which include Bryce Canyon National Park. The species have been placed in either Category 1 or 2. Category 1 signifies those species where "enough data is available to support listing" and Category 2 signifies where the Agency is "seeking additional data."

<u>Plant Species</u>		<u>Category</u>
Autumn buttercup	<u>Ranunculus acriformis</u> var. <u>aestivalis</u>	1
Bear valley milk-vetch	<u>Astragalus lentiginosus</u> var. <u>ursinus</u>	2
No common name	<u>Camissonia exilis</u>	2
Cronquist aster	<u>Xylorhiza cronquistii</u>	2
No common name	<u>Psoralea epipsila</u>	2
Jones golden-aster	<u>Heterotheca jonesii</u>	2
Tumulosa bladderpod	<u>Lesquerella tumulosa</u>	2
Stella's pepper-grass	<u>Lepidium montanum</u> var. <u>stellae</u>	1
Paria scurf-pea	<u>Psoralea pariensis</u>	2
Red canyon beardtongue	<u>Penstemon bracteatus</u>	2
Red canyon catchfly	<u>Silene petersonii</u> var. <u>minor</u>	1
Red canyon catseye	<u>Cryptantha ochroleuca</u>	2
Reveal Indian paint-brush	<u>Castilleja revealii</u>	2
Sand-loving beard-tongue	<u>Penstemon ammophilum</u>	2
No common name	<u>Selaginella utahensis</u>	2
Gumbo milk-vetch	<u>Astragalus ampullarius</u>	2
<u>Wildlife Species</u>		<u>Category</u>
Western snowy plover	<u>Charadrius alexandrinus nivosus</u>	2
Western yellow-billed cuckoo	<u>Coccyzus americanus occidentalis</u>	2
Kanab amber snail	<u>Oxyloma haydeni kanabensis</u>	2
Southern spotted owl	<u>Strix occidentalis lucida</u>	2
Swainson's hawk	<u>Buteo swainsoni</u>	2
Long-billed curlew	<u>Numenius americanus</u>	2
Ferruginous hawk	<u>Buteo regalis</u>	2



## **ADDENDUMS**





## ADDENDUMS

This section is established to record planning addendums that may be approved in the future which would alter the management direction established by this plan. This section will identify its title and approval date of each addendum and present a summary of the approved action and supporting rational. For detailed background data on each of the addendums refer to the documents as referenced below.

Updates of this section will be made available to the general public, and other county, state, and federal agencies upon request.



As the nation's principal conservation Agency, the Department of the Interior has basic responsibilities to protect and conserve land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration. NPS D-33

