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Canyonlands National Park and Orange Cliffs Unit of Glen Canyon National Recreation Area Environmental Assessment for Backcountry Management Plan

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CANYONLANDS NATIONAL PARK
and
ORANGE CLIFFS UNIT
of
GLEN CANYON NATIONAL RECREATION AREA

ENVIRONMENTAL ASSESSMENT
for
BACKCOUNTRY MANAGEMENT PLAN



December 1993

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NEED FOR THE PLAN

Introduction

Whether on foot, bicycle, horseback, or in vehicles, most visitors come to Canyonlands National Park (Canyonlands) to experience solitude or to "get away from people." Yet visitation to Canyonlands has risen exponentially over the past five years (Figures 1 and 2). Visitation is expected to continue to rise. As a function of this increase in number of visitors, adverse impacts to Canyonlands' resources have increased and the visitors' ability to find solitude has decreased. Since the mandate of the National Park Service (NPS) is to balance visitor access to the parks with preservation and protection of natural and cultural resources, rising visitation to Canyonlands has necessitated a new Backcountry Management Plan (Plan). In 1992, 396,911 visitors entered Canyonlands. Only 15,629 of these visitors, or 4 percent, spent one or more nights in the backcountry. It is visitors accessing the backcountry that will be most affected by this change in management policy.

Since the goal of this Plan is to prevent significant damage to resources, provide for public use, and protect scenic values and a sense of solitude in backcountry areas, the ways visitors use Canyonlands will be affected. This draft Plan is presented as an Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). Following NEPA regulations, this EA includes a brief discussion of the need for the Plan, a No Action section describing the present policies, proposed changes presented under Preferred and Other Alternatives, and a section describing the Environmental Consequences of the alternatives described.

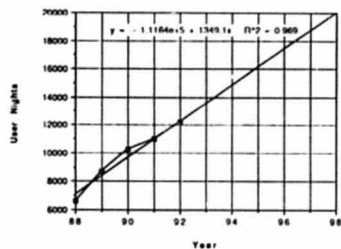
Management alternatives are presented below, no final decisions have been made at this point. Based on comments received from the public, this EA will be modified, and final management alternatives will be selected. The final Plan is expected to be ready by February 1994, and will be implemented as soon as the NEPA process is completed, pending funding. The Plan will provide management direction for the backcountry for the next five years. Current policy for backcountry use is presented as the No Action Alternative; proposed changes are presented as the Preferred and Other Alternatives section. Where a clear preferred alternative has not been selected, or if other policies are also being considered, other choices are presented. Finally, the section on Environmental Consequences describes how the various alternatives affect natural, cultural, and socioeconomic resources.

Definition of Backcountry. The area encompassed by this Plan includes all lands that are not designated as front country, as shown in Figure 6. For this Plan, backcountry is defined as all land in Canyonlands that is not two-wheel-drive roads (paved and dirt surfaces) and their adjacent shoulders, ditches and culverts, administrative buildings, and the Squaw Flat and Willow Flat Campgrounds.

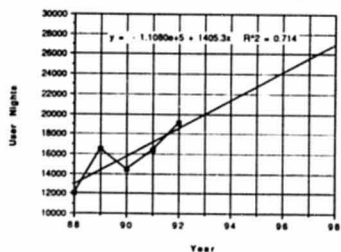
Backcountry also includes the Orange Cliffs Unit (Orange Cliffs) of Glen Canyon National Recreation Area (Glen Canyon). Orange Cliffs is north of Clearwater Canyon and west of the

Figure 1. Increasing Visitation by District.

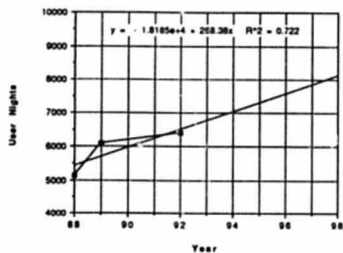
ISLAND-IN-THE-SKY BACKCOUNTRY USER NIGHTS, 1988-1998



NEEDLES BACKCOUNTRY USER NIGHTS, 1988-1998



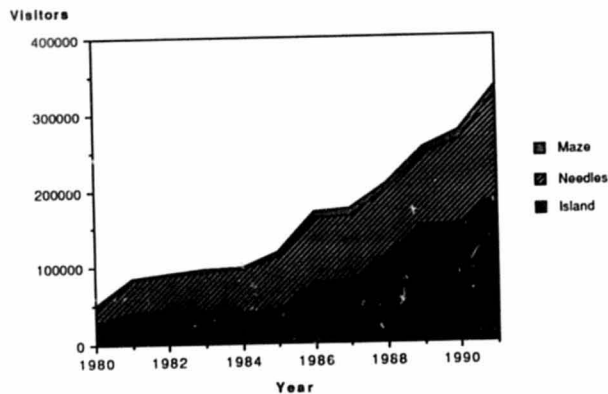
MAZE BACKCOUNTRY USER NIGHTS, 1988-1998



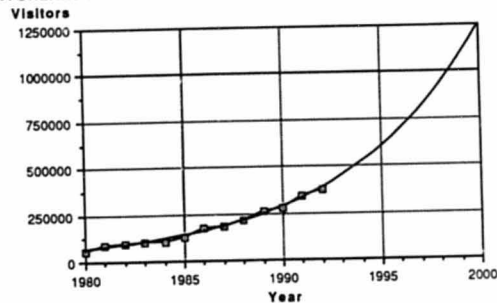
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Figure 2. Increasing Visitation Parkwide.

CANYONLANDS VISITATION BY DISTRICT



CANYONLANDS VISITATION, EXPONENTIAL REGRESSION CURVE



3

Maze District of Canyonlands. Aside from the presence of cattle, visitors find it difficult to differentiate Orange Cliffs from the Maze. To increase consistency, Orange Cliffs will be managed in the same manner as the Maze District of Canyonlands, except for mandated differences such as the continuation of existing grazing permits.

Planning Area. Canyonlands (337,570.43 acres) and Glen Canyon's Orange Cliffs (75,200 acres) are both located in southeastern Utah (Figure 3) in the Colorado Plateau physiographic province. Canyonlands is managed as part of the Southeast Utah Group, which also includes Arches National Park and Natural Bridges National Monument. Canyonlands is divided into four management districts formed by the Green and Colorado Rivers (also referred to as the rivers). The Island-in-the-Sky District (132,437 acres) forms the northern part of Canyonlands in the "Y" above the confluence of the rivers. The Maze District (73,000 acres) and Glen Canyon's Orange Cliffs lie to the west of the rivers, and the Needles District (128,848 acres) lies to the east. The River District encompasses the rivers and the land area up to the high water line of the rivers. Management of the River District is addressed separately in the River Management Plan (finalized December, 1981 and scheduled to begin revision in 1994), and will not be discussed here. Otherwise, management of all backcountry will be covered by this plan.

Lands adjacent to Canyonlands and Orange Cliffs are administered by the Bureau of Land Management and the State of Utah. The gateway communities to Canyonlands and Orange Cliffs include Moab, Monticello, Green River, and Hanksville, Utah.

Planning Process

The goal of this Plan is to provide management strategies which will protect park resources, provide for high quality visitor experiences, and be flexible enough to deal with changing conditions over the next five years. To meet these goals, the first step in the planning process was to define the purpose and significance of the backcountry.

Purpose and Significance. Canyonlands National Park was established by Congress "to preserve an area...possessing superlative scenic, scientific, and archeological features for the inspiration, benefit, and use of the public...." Canyonlands' backcountry is significant as one of the last, large, relatively undisturbed areas of the Colorado Plateau.

Within the scope of the enabling legislation for Glen Canyon National Recreation Area, the Orange Cliffs Unit was to be "maintained as a critical backdrop for Canyonlands National Park and as a major vantage point for spectacular views into the park." The Orange Cliffs were to be managed "to maintain a relatively primitive, undeveloped atmosphere," and to provide "year-round access to Panorama Point."

Balancing the public's demands to see, access and enjoy the backcountry with NPS's mandates to preserve, protect, and pass on unimpaired the resources of Canyonlands is the primary goal of this Plan.

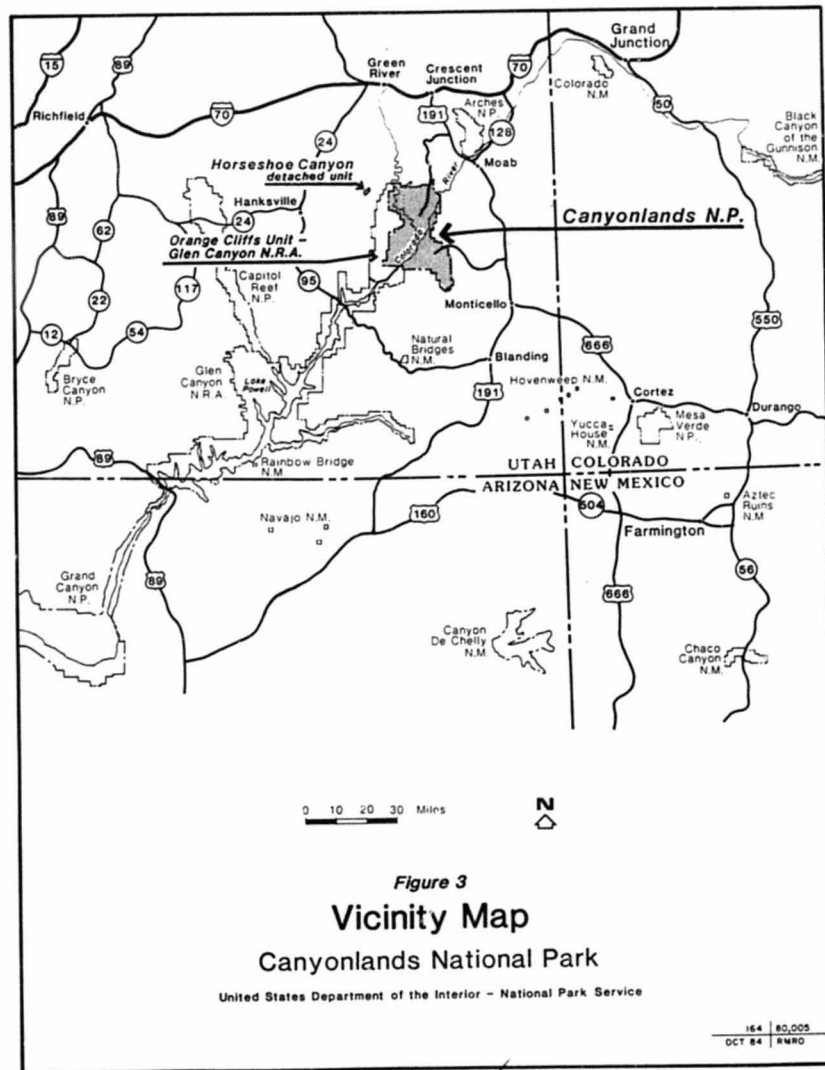


Figure 3

Vicinity Map

Canyonlands National Park

United States Department of the Interior - National Park Service

Public Participation. The second step in the planning process was to ask backcountry users what issues and topics should be covered by the Plan. Canyonlands published a Notice of Intent to Prepare the Plan in the Federal Register. Press releases were sent to newspapers, television and radio stations. Scoping questionnaires were distributed throughout the park and in response to phone calls and mail requests. Over 100 responses were received requesting that Canyonlands address issues and topics which are listed in Table 1. As shown, most of the issues concern specific recreational activities such as rock climbing or mountain biking.

The public was then asked to suggest ways to address these issues in a scoping newsletter and six public meetings were held throughout the region. Over 200 letters suggesting a range of management options were sent to Canyonlands by February 1993, and many more have been received since.

If near consensus of respondents suggested one option or alternative over another, and if the alternative met with NPS mandates and policies, as well as park purpose and significance, then public preference determined the Preferred Alternative.

Native American Consultation. Many Native Americans have special concerns with historic preservation issues. At this point, those tribal entities with historic affiliation to the environment being evaluated have not been consulted to determine if there are ethnographic resources being affected. At this stage, Native Americans will be invited to participate as interested parties as defined in the National Historic Preservation Act and the American Indian Religious Freedom Act. Letters and EAs will be sent to more than 30 Native American groups. Should any of these entities have knowledge of the likelihood of potential sites, arrangements will be made to consult with them to identify those sites and assess potential impacts.



Table 1. Topics and Issues Raised by the Public (Scoping).

RECREATION	Aircraft and overflights Bicycling Caching supplies Camping Commercial filming, concession tours Education of visitors Four-wheel driving Hiking and backpacking Noise Pets Rock climbing Saddle and pack stock use Wilderness and solitude
NATURAL RESOURCES	Springs and pothole water sources Threatened and endangered species Cumulative impacts caused by increased backcountry use
CULTURAL RESOURCES	Access and preservation
FACILITIES AND MANAGEMENT	Designated campsites Fires Permits Park access Road maintenance Signs, information, and communication Toilets and human waste Trail maintenance

NO ACTION ALTERNATIVE

Under the No Action Alternative, visitation will continue to increase over the next five years (see Figures 1 and 2), but management policies will remain unchanged. In this section, present management policies are described for topics and issues raised by the public (Table 1). Topics are presented alphabetically. Environmental impacts and other problems expected to result and accumulate from a continuation of present management policies are projected for the next five years in the section on Environmental Consequences.

Aircraft and Overflights

Flights over Canyonlands and Orange Cliffs are governed by the United States Federal Aviation Administration (FAA). The FAA has issued an advisory asking pilots to maintain an altitude of 2,000 feet above ground level over parks, wilderness areas and wildlife refuges. An advisory asks for voluntary compliance and carries no force of law. The advisory is regularly disregarded by private aircraft and sightseeing tour operators. Powerless flights are prohibited.

Bicycles

Bicycles are considered vehicles and must stay on designated roads. All overnight bicycle users in Canyonlands must obtain a backcountry permit and camp in a designated vehicle campsite. Permits are not required and sites are not designated in Orange Cliffs. Bicyclists using the backcountry during the day are unlimited in number and group size and do not need a backcountry permit.

Bicycle use at Canyonlands has risen dramatically over the past eight years. Between 1989 and 1992, the total number of overnight bicycle tours on the White Rim Road increased from 461 in 1989 (37 commercial trips included) to 632 trips in 1992 (75 commercial trips). This corresponds to a total of 2,117 cyclists in 1989, and 3,489 in 1992. During the spring and fall season, overnight use on the White Rim Road is at capacity. Bicycling in the Needles and Maze Districts is growing in popularity, although the White Rim Road continues to be the single most popular location.

Caches

Caches or unattended property are allowed by permit only.

Camping

Permits are required for all backcountry overnight stays in Canyonlands. Issuing permits

provides Canyonlands with statistics and enables park staff to educate visitors about park rules and regulations. Camping policies differ for designated campsites, at-large camping, and reservation campsites. Permits have not been required for Orange Cliffs.

At-large Camping. Camping outside designated sites is called "at-large camping." In Orange Cliffs, all camping is at-large. There have been no limits to numbers camping or size of groups. In Canyonlands, only backpackers camp at-large, and then by permit only. Numbers of permits issued to backpackers have not been limited, with the exception of the popular Chesler Park area in the Needles District, which has been limited to a total of 50 campers per night. Group size has been limited to 12 people. At-large campers are required to camp out of sight of roads and trails, 300 feet away from standing water sources and archeological sites, and 100 feet from running water. All backpackers must vacate their campsite after 7 nights during the busy season and 14 nights in the off season. In Chesler Park, campers must camp in designated zones.

Areas specifically closed to camping are the Confluence and Colorado River Overlooks, the upper two miles of Elephant Canyon, Virginia Park, the Joint Trail, Fort Bottom, Jasper Canyon, and Horseshoe Canyon. The portion of the South Fork of Horse Canyon visible from the Maze Overlook is closed to camping.

Designated Camping. The only designated campsites are in Canyonlands and are for bicycle and motor vehicle users. Designated campsites are limited in number. Available campsites are currently limited to 15 people with a maximum of 3 motor vehicles in some sites, or 10 people with a maximum of 2 motor vehicles in others. Designated campsites that are determined to be in a flood plain will be relocated when possible, or removed. Preliminary results of a flood survey indicate that Bates Wilson, Angel Arch and lower Peekaboo sites are in a flood plain. Campers must vacate their campsite after three nights during the busy season, and seven nights during the off-season. Chesler Park, a backpacking area, has designated zones for camping, but not designated sites. Most designated campsites are allocated on a first-come first-served basis. Due to increasing demands, designated campsites along the White Rim Road in the Island-in-the-Sky District are allocated on a reservation system described below.

Camping Reservations. The only reservations currently available are for designated vehicle campsites along the White Rim Road in the Island-in-the-Sky District of Canyonlands. Reservation requests for campsites along this route are accepted at the Island-in-the-Sky visitor center. Each confirmed reservation request requires a \$20 non-refundable fee. The fee directly funds the reservation system and partial operational costs associated with maintaining the White Rim Road and facilities. Reservation requests are accepted beginning the second Monday in July for the following year. No more than 20 percent of the campsites may be reserved by concession tour operators. Currently, more requests for reservations are being received than can be filled. Visitors without a reservation wishing a White Rim Road campsite (walk-ins) are accommodated if a campsite is not previously reserved or if a reserved permit has not been picked up by 11 a.m. The reservation fee also applies to walk-ins.

Commercial Uses

Filming. Commercial filming within NPS units is administered through established NPS guidelines. Each request for filming is evaluated on the specifics of the proposed project and is granted or denied based upon established criteria. A film permit is issued on demand if it does not involve potential resource damage or conflict with other visitor and NPS activities.

If a commercial filming permit is authorized, special stipulations are included to ensure that the experiences of other park visitors are not unreasonably intruded upon and park resources are not damaged. All park regulations do apply to commercial film permittees. Based on visitor use and wildlife values, permits are not authorized for aerial filming in sensitive areas of Canyonlands. There were nine film permits issued in 1991 for backcountry locations in Canyonlands and only five issued in 1992. Requests for film permits in backcountry locations are expected to increase.

Commercial Operations. Commercial use is identified by any one of the following characteristics: a fee in excess of actual costs is charged; actual costs are not shared equally by all participants; or public advertising for participants is involved.

Commercial visitor services which require carefully controlled safeguards against unregulated and indiscriminate use are authorized by a limited number of highly restrictive concession permits. There are currently three concession permits issued for backcountry vehicle tours, one for guided saddle and pack stock tours, and five for guided overnight mountain bike tours.

The three backcountry vehicle tour operators served an average of 2,735 clients per year from 1990 to 1992. Seventy-four percent of those clients were on one-day trips to the Island-in-the-Sky District; 18 percent were on one-day trips and 7 percent were on overnight trips to the Needles; less than 1 percent were on overnight trips to the Maze.

Between 1990 and 1992, the saddle horse and pack stock concessioner took no trips into Canyonlands.

By 1993, the number of commercial bike tour operators was decreased from 18 commercial use licenses to five concession permits authorizing guided overnight backcountry mountain bike trips. Day use by commercial mountain bike groups has not been regulated under current concession permits, contributing to increased day use on the east side of the White Rim Road.

Other commercial tours are authorized by an unlimited number of commercial use licenses which are available on request during an open season. Thirteen companies hold commercial use licenses to provide backpacking trips as of the end of 1993. Between 1990 and 1992, there was no appreciable change in the number of commercial backpack companies (13 per year average), trips (41 per year average), clients (331 per year average), or overnight stays (1,814 per year average). Most commercial backpacking trips have been done by companies specializing in wilderness education, self-sufficiency, and leadership training, such as National Outdoor

Leadership School and Colorado Outward Bound School. Together they averaged 64 percent of all commercial backpacking trips, 65 percent of all passengers, and 68 percent of all commercial visitor days for the past three years. Between 1991 and 1992, the total number of all backpackers (commercial and non-commercial combined) increased 23 percent in the Needles District and 15 percent in the Maze District. Throughout the park, commercial backpackers accounted for 6 percent of the average number of backpackers during 1991 and 1992.

Two companies hold commercial use licenses to provide rock climbing excursions in 1993. Past use has been negligible: one licensee, no trips, no clients in 1992; two licensees (only one of whom actually took trips), two trips, eight clients in 1991; and three licensees (only one of whom actually took any trips), three trips and six clients in 1990.

The number of companies wanting to provide backpacking and rock climbing trips in 1994 has more than doubled. Several companies are contemplating relocating closer to the park to increase efficiency of business operations.

Day hiking in the backcountry has not been regulated as a commercial activity primarily to allow front country bus tour groups to access the fringes of the backcountry on their unregulated multi-park tours. This policy has resulted in formation of commercial groups other than bus tours who camp in areas outside park boundaries and hike into more remote sections of the park on a day basis.

Limits on commercial allocations may be made if conditions warrant. For example, currently, on the White Rim Road, mountain bike tour operators and backcountry vehicle tour operators may have only 20 percent of available designated sites. In 1992, 5 percent of all overnight trips on the White Rim Road were commercial operations. No separate campsites, overflow areas, or reservation systems exist for commercial tour operators.

Day-to-day commercial use is regulated by a Commercial Visitor Services Operating Plan which must incorporate provisions of this Backcountry Management Plan. Overall direction of commercial services is guided by the Commercial Visitor Services Management Plan.

Day Use

Day use is defined as all activities requiring one day or less to complete. The most common day use activities are hiking, four-wheel driving and mountain biking. Saddle and pack stock use is rare due to the lack of water. Except for horse and pack stock use, and technical rock climbing, permits are not required for day use of Canyonlands.

Aside from NPS restrictions (for example, not collecting natural or cultural specimens, and not entering archeological sites) and normal ethical backcountry use (for example, staying on trails, not touching rock art or leaving graffiti, etc.), day use is largely unrestricted. All use is temporarily prohibited in two relict areas, Virginia Park and Jasper Canyon, pending permanent

decisions as a result of this Plan. Because these areas were ungrazed by domesticated animals and are virtually unimpacted by humans in modern times, they provide unique control areas for scientific studies. These relict areas allow for a comparison of impacted areas to healthy areas.

Education

Educating backcountry users, and instilling a preservation and conservation ethic in them, has always been the key to allowing public access while preserving and protecting the park. An 11-minute video on minimum impact use is shown regularly to backcountry users at the visitor centers. Rangers are available daily at visitor centers to answer questions, explain regulations, and issue backcountry permits. The park map, brochures, wayside exhibits, sales items, and information on bulletin boards are used to orient and educate visitors. Rangers present introductory talks and campfire programs that provide information about appropriate ways to enjoy the park.

Issuing backcountry permits not only provides the park with use statistics, but also with opportunities to educate overnight backcountry visitors about park regulations and minimum impact methods. Park regulations, including those presented in this Plan, are designed to minimize adverse impacts to resources while allowing visitor safety and enjoyment of the park.

Facilities

Fires, Campfire Grates, and Firepans. Open fires are allowed in designated campsites with permanent metal fire grates or in portable fire pans. Pack stock users may light fires in portable fire pans they have packed in. Permits are required for fires at any other location. Firewood or charcoal must be brought from outside the park. No wood may be collected. Ashes and charcoal must be carried out. Backpackers may not light fires since it is unrealistic for them to pack in fire pans and firewood, and to pack out fire debris. In Orange Cliffs, building fires and collecting dead and downed wood is allowed, but discouraged.

Garbage Cans. All users are required to pack out all items brought into the backcountry. Garbage or trash cans are not provided.

Roads. Backcountry roads are maintained to be passable to high clearance, four-wheel-drive vehicles without use of winches. The exception to this is the road from the head of the Flint Trail to Panorama Point in Orange Cliffs, which is maintained to allow high clearance two-wheel-drive vehicle traffic. Roads may be temporarily impassable as a result of weather conditions. Some roads require experienced four-wheel-drive operators. Major ruts are smoothed out or filled in, road shoulders are brushed and ditches cleared to prevent erosion. Repairs must be performed with natural-looking material.

Signs. Directional signs are placed along roads and trails, and at junctions and other points that

may be confusing. Backcountry signs are manufactured in "NPS Rustic" style, generally with routed letters on unstained wood for backcountry trail signs, and on wood painted red or brown with white letters for backcountry road signs.

Tables. In the backcountry, picnic tables are only provided at the Lathrop Canyon day use area and designated four-wheel-drive campsites in the Needles District.

Toilets and Human Waste. Vault toilets are provided along road corridors in the Needles and Island-in-the-Sky Districts. In the absence of toilets, backcountry visitors must bury feces in "catholes," which are holes six to eight inches in depth, 100 feet from water sources, campsites, roads and trails. Toilet paper, feminine hygiene products, and disposable diapers must be packed out.

Trails. Designated trails are routinely patrolled and re-cairned as needed. The more popular trails are cairned to accommodate less experienced hikers. Other than re-cairning, and some trail work by Youth Conservation Corps crews in the summer of 1993, trails have not been maintained in Canyonlands since 1987.

Trail maintenance policy is that they remain free of slides and obstructions. Dips are graded for drainage control and drainage culverts are kept open. Rock walls and barriers may be constructed and maintained for visitor safety.

Noise

Creating or sustaining unreasonable noise is prohibited under NPS regulations, which also state that operating motorized equipment, machinery, or audio devices above established decibel levels is prohibited. No motorized equipment is allowed outside road corridors. Generators may not be used in the backcountry.

In addition, Utah traffic codes prohibit excessive or unusual motor vehicle noise. Every motor vehicle is required to have a muffler or other effective noise-suppressing system in good working order and in constant operation. Muffler cutout, bypass or similar devices are prohibited.

Pets

Pets are not permitted in backcountry roadless areas or on hiking trails. Pets may be in motorized vehicles on backcountry roads. Pets are also excluded from Horseshoe Canyon. In road corridors and at designated backcountry vehicle campsites, pets must be on a leash not more than six feet in length and be walked within view of the parked vehicle. Pets may not be led outside the road corridor. Pet excrement must be disposed of using human waste disposal guidelines.

Pets may be left unattended if they are secured at a location where they will not interfere with wildlife or with normal travel by other visitors, and in a manner which will avoid resource damage. Pets may not be left unattended overnight, or during the day if temperature or conditions could endanger the pet's health or if they bark excessively or exhibit aggressive behavior.

In Orange Cliffs, pets may be transported in vehicles or taken hiking but they must be on a leash at all times when outside of a vehicle.

Rock Climbing

Technical rock climbing is defined as any use of ropes or protection devices to ascend or descend by individuals possessing appropriate special skills. In Canyonlands, all climbers must obtain a backcountry permit. There were 118 permitted rock climbers in 1991, and 206 in 1992. However, summit registers indicate a greater number of technical rock climbers. In Orange Cliffs, permits are not required for climbs, and there are no restrictions on locations for climbing. Currently, there is little interest in climbing in Orange Cliffs.

Climbing Prohibitions. Use of motorized drills is prohibited. The Salt Creek Archeological District (Figure 4) in the Needles District is closed to climbing to protect National Register listed archeological sites. Airport Tower is closed to climbing from January 1 through June 30 to protect raptor nesting sites. Any arch or natural bridge named on the United States Geological Survey topographic map, with the exception of Washer Woman Arch in the Island-in-the-Sky District, is closed to climbing. The use of white chalk is prohibited.

Climbing Recommendations. Climbers are encouraged to use dull-colored webbing at anchor points and belay stations, use chalk that closely matches the color of the rock, and practice minimum impact hiking and camping to access climbs.

Saddle and Pack Stock Use

Use of saddle and pack stock, including horses, burros, mules and llamas, requires a permit. Current rules allow horses to travel on four-wheel-drive roads, in Butler Wash, Salt Creek and its tributaries, and Lower Red Lake Trail in the Needles District, and through Horseshoe Canyon and the main Horse Canyon drainage in the Maze District. Pack goats are prohibited. Saddle and pack stock groups are limited to 20 people/20 animals for day use, and 12 people/15 animals for overnight use. Manure must be removed from water sources and scattered. Animals must be tethered away from water sources and archeologic sites. No grazing is allowed; all feed must be carried in.

There were 22 people traveling by horse in 1991 within Canyonlands, and 37 in 1992. Most of this use occurred in the Needles District. In Orange Cliffs, pack and saddle stock use is

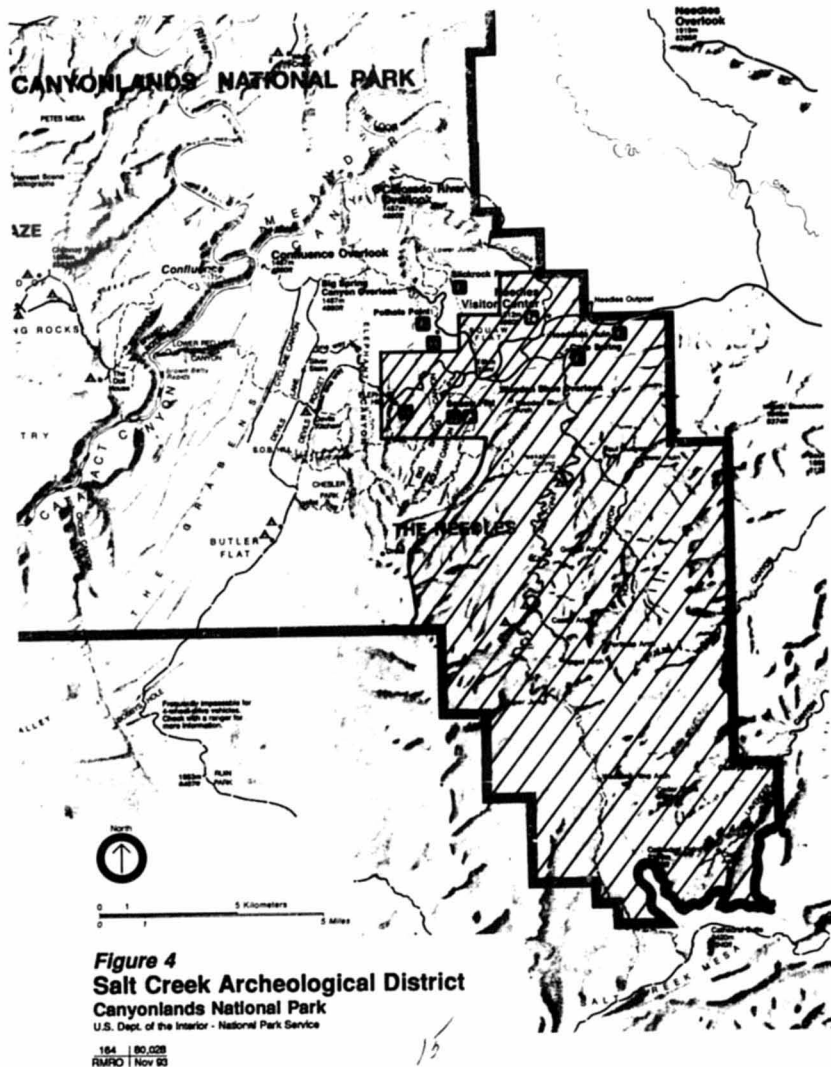


Figure 4
Salt Creek Archeological District
Canyonlands National Park
U.S. Dept. of the Interior - National Park Service

allowed and permits are not required. Little or no pack and saddle stock use occurs in this area.

Water Use Regulations

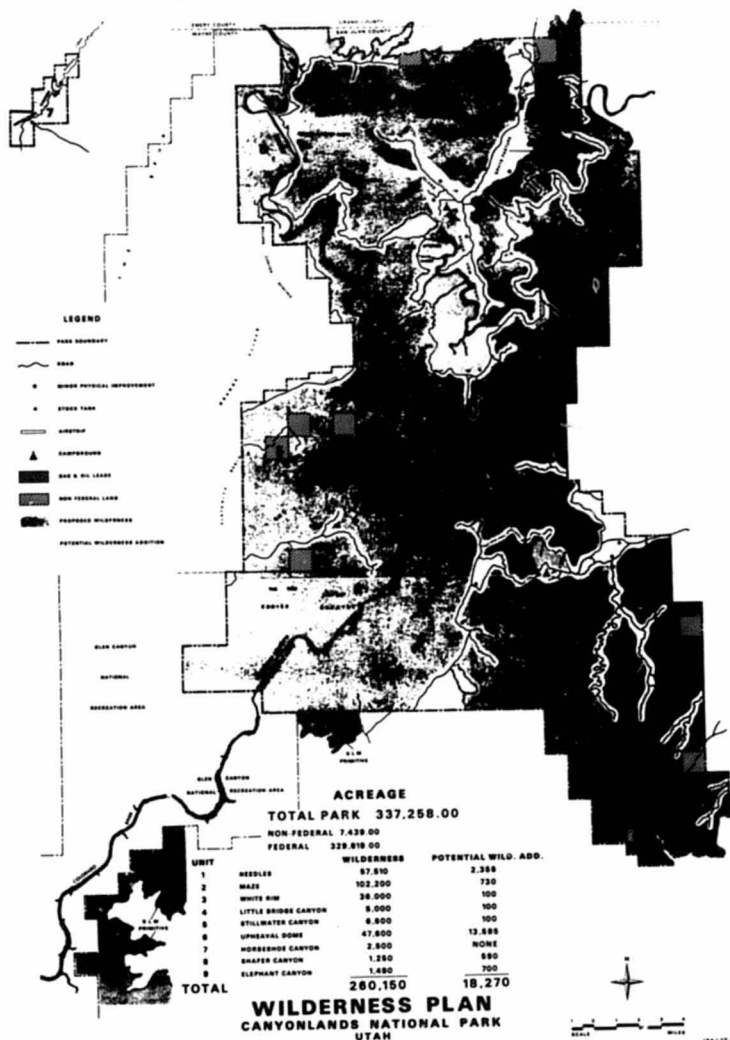
Current regulations provide guidelines for use of water sources and the area surrounding the water source. As discussed under camping, at-large campsites must be at least 300 feet from non-flowing water such as springs or seeps, and 100 feet from flowing water such as streams. Horses and pack stock must be tethered at least 300 feet from non-flowing water sources and 100 feet from continuously flowing water. Use of biodegradable soaps is recommended. Swimming and bathing is prohibited in catch basin potholes, but is allowed in pools which are continuously supplied.

Wilderness and Solitude

Outside the road corridors, all of Canyonlands' backcountry is recommended wilderness under the Wilderness Act of 1964 (see Figure 5). Orange Cliffs is zoned partially as a Recreation and Resource Utilization (RRU) area, and some as a Natural Zone. Generally, the RRU-zoned lands within Orange Cliffs are on the upper mesas and cliffs, with the Natural Zone lands comprising the lands below and adjacent to the Maze District. RRU-zoned lands are managed for the maintenance of natural processes, as well as for outstanding recreational values. Natural Zone lands are managed for the maintenance of isolation and natural processes. All Natural Zone lands within the Orange Cliffs Unit of Glen Canyon have been recommended for inclusion into Glen Canyon's wilderness areas.

The NPS is mandated to treat all proposed wilderness as wilderness until the proposal has been acted upon by Congress. Under the No Action Alternative, backcountry would continue to be managed as a wilderness area; however, opportunities for solitude and a "wilderness experience" will continue to be impaired by rising visitation.

Figure 5. Canyonlands Recommended Wilderness Area Map



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PREFERRED AND OTHER ALTERNATIVES CONSIDERED

The Preferred Alternative uses a zonal approach to distribute use to those areas most capable of withstanding visitor impacts. After presenting the zone scheme, specific actions for each issue raised by the public are presented.

For each topic the Preferred Alternative is presented first. Then, where other separate alternatives are also being considered, they are labelled Alternative A, Alternative B, etc. It is this public comment period that will help establish which alternative will be chosen for the final plan.

Zones

Preferred Alternative. Areas of the backcountry were evaluated for fragility of natural and cultural resources, uniqueness, historic and projected use or importance to visitors, and ranges of visitor experiences. Zones were defined based on these factors, and a maximum number of "user nights" per zone was established. "User nights" are defined as the number of people multiplied by the number of nights they stayed. In most cases, the maximum user nights allotted per zone are based on 1992 use levels. Actual numbers of overnight groups allowed to use each zone at one time are listed in Tables 2, 3, and 4. Zone boundaries are shown on Figure 6.

Tables 2, 3, and 4 also include past visitation statistics, and potential use allowed by this proposal. Proposed user nights are the number of permits allowed in that zone multiplied by the average number of people in a group, multiplied by 30 days for a month, or 365 for a year. This method shows the probable potential level of use. Seasonal fluctuations, with lower use seasons, are expected to continue.

A backcountry camper may spend up to three consecutive nights per zone, then must move to another zone. This will allow other groups access to that zone.

Currently, backcountry visitation is seasonally variable, with highest use in spring and fall. With implementation of this Plan, and with projected increases in visitation, limits on user nights will likely be reached in spring and fall. Currently, off season use (January, February, July, August, and December) is approximately 21 percent of backcountry use. If user nights in the off season increase to more than 25 percent of total backcountry visitation and associated resource impacts increase, this Plan will be altered to retain an off-season period by limiting use in those months.

Setting limits also may result in displacement of people to zones that have not traditionally received heavy use. New resource impacts in the lightly used zone may be substantial. To reduce this displacement impact, zones that have been very lightly used in the past will have fewer permits available, or permits available less often for their use.

PROPOSED ISLAND-IN-THE-SKY DISTRICT ZONING

Table 2. Proposed Island-in-the-Sky District Zoning.

ZONE NAME	PROPOSED USE			ACTUAL USE		COMMENTS
	4x4 camping	# of permits at one time	month	April '92	April '93	
Island Top Zone	no	0	0	0	0	day use only in this zone
White Rim Road East	yes	7/day	1,050	904	1,150	bighorn concerns, no backpack camping in this zone (ave. group 5 in this zone)
White Rim Road West	yes	11/day	1,650	1,015	1,578	no backpack camping in this zone (ave. group size 5 in this zone)
Shafer Area	yes	1/day	102	94	85	no backpack camping in this zone, high day use area
Taylor Canyon	yes	2/day	204	27	76	zone includes 1 vehicle permit and 1 backpacking permit
Bighorn Mesa	no	0	0	0	0	relict area, closed to camping
Buck and Steer Mesas	no	1/week	41	0	0	has not been open to camping in the past
Murphy Point *	no	1/day	102	0	0	designated campsite, has not been open to camping in the past
Trail Canyon	no	1/day	102	4	14	bighorn concerns
Syncline Loop*	no	1/day	102	49	18	camping only in designated site in this zone
Upheaval Canyon Trail	no	1/day	102	29	82	
Fort Bottom	no	1/day	102	0	0	cultural resource concerns
Potato Bottom Basin	no	1/day	102	5	1	
Holeman Spring Basin	no	1/day	102	2	2	
Soda Spring Basin	no	1/day	102	0	8	
Murphy Basin	no	1/day	102	18	22	
Confluence Triangle	no	1/month	9	0	5	bighorn concerns
Monument Basin	no	1/week	41	31	5	
Gooseberry Trail	no	1/day	102	2	15	bighorn concerns
Upper Lathrop Canyon	no	1/day	102	10	16	bighorn concerns, camping only below Chinle slopes and mines
Lower Lathrop Canyon	no	1/day	102	7	16	bighorn concerns, no camping within site or sound of picnic area
TOTALS			4,321	2,197	3,093	
<p>Note: 1992 & 1993 use is actual use in user nights (number of people multiplied by number of nights they stayed). Proposed use is number of permits multiplied by average group size (3.4 for the Island District), multiplied by frequency of permit. (Monthly use of 1/week = 4 permits a month x 3.4 group size x 3 nights.) Proposed maximum group size is 6 backpackers, 15 at vehicle campsites, with a proposed stay limit of 3 nights per zone. April is a high use month. An * indicates backpacking zone with designated campsites.</p>						

PROPOSED NEEDLES DISTRICT ZONING

ZONE NAME	PROPOSED USE			ACTUAL USE		COMMENTS
	4x4 camping	# of permits at one time	month	April '92	April '93	
Lavender Canyon	no	1/week	32	0	33	in Salt Creek Archeological District
Davis Canyon	no	1/week	32	1	39	in Salt Creek Archeological District
Horse Canyon	no	0	0	18	49	in Salt Creek Arch. District, visitation above Tower Ruin by guided tour only
Mid Salt Creek *	yes	6/day	486	714	646	Arch. District, road closed at Peekaboo, 3 vehicle sites, 3 backpacking permits
Upper Salt Creek *	no	3/day	243	429	260	in Salt Creek Archeological District
Lower Salt & Big Spring	no	1/week	32	2	3	very sensitive bighorn area, note closures on map
West Fork Salt	no	1/week	32	2	6	in Salt Creek Archeological District
West Side Canyons	no	1/week	32	5	6	in Salt Creek Archeological District
East Canyon *	no	2/day	162	400	253	in Salt Creek Archeological District, high day use area
Squaw Canyon *	no	2/day	162	220	370	in Salt Creek Archeological District, high day use area
Big Spring Canyon *	no	1/day	81	265	279	in Salt Creek Archeological District, high day use area
Upper Elephant Canyon *	no	1/day	81	484	335	high day use area
Mid Elephant Canyon	no	1/day	81			in Salt Creek Archeological District, high day use area
Lower Elephant Canyon	no	1/week	32	4	13	
Chesler Park *	no	8 max./day	648	481	691	fragile vegetation, maximum of 8 permits or 30 people, high day use area
Devils Kitchen Trails	no	1/day	81			
Butler Flat/Chesler Wash	no	1/day	81	23	34	
Grabens	no	1/week	32	3	0	
Roaded Grabens	yes	10/day	810	564	481	10 designated vehicle campsites, no backpack camping in this zone
Y & Cross Canyons	no	1/week	32	0	0	
Virginia Park	no	0	0	0	0	relict area, closed to entry
Lower Red Lake	no	2/day	162	102	79	see map for area closed to all use Dec. 1- Feb. 28 for bald eagle protection
Northeast Sections	no	1/week	32	0	0	
TOTALS			3366	3717	3577	

Table 3. Proposed Needles District Zoning.

Note: 1992 & 1993 use is actual use in user nights (number of people multiplied by number of nights they stayed). Proposed use is number of permits multiplied by average group size (2.7 for the Needles District), multiplied by frequency of permits. (Monthly use of 1/week = 4 permits a month x 2.7 group size x 3 nights.) Proposed maximum group size for backpacking is 6 people, 8 at vehicle campsites, with a proposed stay limit of 3 nights per zone. April is a high use month. An * indicates a zone with designated backpack campsites.

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PROPOSED MAZE DISTRICT AND ORANGE CLIFFS ZONING

ZONE NAME	PROPOSED USE			ACTUAL USE		COMMENTS
	4x4 camping	# of permits at one time	month	Apr '92	Apr '93	
Ernie's Country	no	1/week	36	27	55	cultural resource concerns
Range Canyon	yes	1/week	36			
Fins Canyons	no	1/week	36	52	31	
Standing Rocks/ Doll House	yes	6/day	540	747	566	6 vehicle campsites, cultural, human waste disposal concerns, no backpack camping
Confluence Overlook	no	1/week	36	0	35	cultural resource concerns, heavy day use area
Shot and Water Canyons	no	1/week	36	61	24	riparian area, bighorn habitat, heavy day use area
Middle Forks	no	2/day	180	300	290	areas closed to camping, heavy day use, cultural & riparian resource concerns
South Fork	no	2/day	180	221	200	
Horse Canyon	no	1/week	36	17	13	riparian resource concerns, bighorn habitat
Maze Overlook Bench	yes	4/day	360	261	240	2 vehicle campsites, 2 backpacking permits, Elaterite Bench closed to camping
Jasper Canyon	no	0	0	53	5	relict area: Jasper Canyon closed to entry
Horseshoe Canyon	no	0	0	0	0	National Register cultural sites, day use only
Spanish Bottom	no	1/day	90	9	20	no camping in Surprise Valley
Horsethief	no	1/month	30			there will be a 10 night limit in this zone, rather than 3
Millard Canyon	no	1/month	30	5	6	10 night limit for backpacking in this zone
Millard & Horse Benches	yes	2/day, 1/week	216			2 vehicle sites, 1 backpacking permit in this zone
North Point & Spur	yes	5/day	450			4 vehicle campsites, 1 backpacking permit
Deadhorse Canyon	no	1/day	90			bighorn habitat
North Trail & Elaterite Basin	yes	3/day	270			1 vehicle site, 2 backpacking permits
Gordon Flats & Big Ridge	yes	3/day, 1/week	306			3 vehicle campsites including 1 group site, 1 weekly backpacking permit
Happy Canyons	no	1/week	36			
Teapot/ Waterhole	yes	1/day, 2/month	150			1 vehicle camp, 2 monthly backpacking permits with a 10 night limit
TOTALS			3144	1753	1485	
Orange Cliffs Unit use totals			1488	644	791	
				2397	2276	

Note: 1992 & '93 use is in user nights (number of people multiplied by number of nights they stayed). Past use in the Orange Cliffs unit has not been recorded by zone. Proposed use is number of permits multiplied by average group size (3 people in the Maze District), multiplied by frequency of permit. (Monthly use of 1/week = 4 permits a month x 3 group size x 3 nights.) Proposed maximum group size is 4 backpackers, 8 at vehicle sites, with a proposed stay limit of 3 nights per zone unless noted. One large campsite (for up to 16 people) will be available in the Big Ridge zone. April is a high use month.

Table 4. Proposed Maze District and Orange Cliffs Unit Zoning.

Figure 6. Proposed Zones for Canyonlands and Orange Cliffs Unit

See fold-out map in back pocket.



Aircraft and Overflights

Preferred Alternative. Since noise from unregulated and unrestricted low flying aircraft adversely impacts wildlife and park visitors, Canyonlands' staff will work within the provisions of the National Parks Overflight Bill and with the FAA to attempt to influence Congress to protect the natural quiet and solitude provided in Canyonlands' backcountry. Meanwhile, Canyonlands will continue to encourage pilots to observe the FAA advisory asking them to maintain an altitude of 2,000 feet above ground level over Canyonlands. Powerless flights will continue to be prohibited. In Orange Cliffs, the mesa top areas above 6,000 feet in elevation are Recreational and Resource Utilization (RRU) zoned. Overflights in this area are less restricted.

In the event of legislation that allows for charging fees for scenic flights and air taxi services over NPS areas, Canyonlands and Glen Canyon will put this into effect.

Bicycles

Preferred Alternative. Bicycle use is limited to designated roads. All overnight bicycle users must acquire a backcountry permit and camp in a designated vehicle campsite. Day use bicyclists are not limited in number or group size and do not need a backcountry permit.

NPS is mandated to protect wilderness values in Proposed Wilderness Areas by the Wilderness Act of 1964. All areas of the backcountry outside the road corridors are Proposed. In keeping with wilderness mandates, and to be consistent with wilderness management policies of the NPS, possession of mountain bikes (mechanized means of travel) off the roads or out of developed campsites will be prohibited.

Caches

Preferred Alternative. Caching of water and food supplies for extended trips will be allowed with permission of the district ranger and as stipulated on the backcountry permit. No damage to resources, such as burying, will be allowed in securing a cache. The date the cache will be collected and name and address of the owner must be clearly visible on the cache. If the cache is not picked up within a week of the pickup date, rangers will bill the owner for cleanup costs and/or issue a violation notice and fine for abandoning property in Canyonlands.

Camping

Preferred Alternative. Table 5 shows the maximum group size proposed for each area. These limits are larger than average historic group size for the districts. The average overnight group size for the Island-in-the-Sky District is 3.4 people, for the Needles District 2.7 people, and for the Maze District 3 people. Maximum length of stay in the backcountry is 14 days per permit during March through June and September through November, and 21 days December through February and July and August. Maximum stay in any zone is three nights.

Table 5. Proposed Camping Maximum Group Sizes.

	Island-in-the-Sky	Needles	Maze & Orange Cliffs
vehicle camping	15 people 3 vehicles	8 people 2 vehicles	8 people 2 vehicles
backpacking	6 people	6 people	4 people
day use	unlimited	unlimited	unlimited

Proposed maximum group size for vehicle campsites is based on current size limits, average size of actual groups using the campsites, size of available campsites and fragility of the resources around the campsites.

Proposed maximum group size for backpack camping is based on the criteria used for vehicle campsites and a social criteria. During the initial scoping phase of plan development, informal surveys were taken. People were asked how many other people or other groups they would be comfortable meeting in a day. Solitude is an important resource to many backpackers and meeting too many other people in the backcountry is not what they want from their Canyonlands experience. A few groups, not exceeding about six people each, meets most peoples needs and meets the Park's need to preserve natural and cultural resources. In addition, the Maze District has been set aside to provide a more primitive experience with fewer human encounters. Therefore, group size is smaller in the Maze District and Orange Cliffs Unit.

Designated Campsites--Preferred Alternative. While most designated vehicle campsites will remain in their current locations, campsites in flood plains have been or may be relocated based on a hydrological study conducted in 1993. Bates Wilson (one site), Angel Arch (two sites), and the lower Peekaboo campgrounds (three sites) have been determined to be located in a flood plain. Relocated vehicle campsites are listed in Table 6. Those listed for the Needles District will replace existing sites that need to be closed. Most of the proposed sites do not have natural shade, so small primitive shade structures may need to be built. The site listed for the Maze District will replace the Indian Cave campsite in the Standing Rocks area which was closed in the spring of 1993 to protect archeological resources. Pending resource clearance, all designated

vehicle campsites will be located in the vicinity of traditional campsites in Orange Cliffs (Table 7). One site, the Flint Seep camp, will be designated a group site and will hold up to 16 people and 4 vehicles. See Figure 6 for locations of these sites. If changes in visitation patterns can be accommodated by changing the location of campsites without significant resource damage, changes in campsite locations may occur. To restrict the zone of impacts to a reasonable size, all camping activities in vehicle campsites must take place within 50 feet of the post identifying the site.

Use in the Salt Creek/Horse Canyon area is further addressed in the following Day Use discussion.

Table 6. Proposed Relocated Vehicle Campsites.

ISKY	Maze	Needles
	Millard Canyon, near river, 1 site	Upper Peekaboo, 1 site
		Picnic area near Silver Stairs, 2 sites
		Cyclone Canyon, 1 site

Table 7. Proposed Designated Vehicle Campsites in Orange Cliffs.

ZONE NAME	CAMPsites
Teapot / Waterhole	Sunset Pass
North Trail / Elaterite	Golden Stairs
Gordon Flat / Big Ridge	The Neck Flint Seep (Group Site)
North Point and Spur	High Spur French Spring Cleopatra's Chair Panorama Point
Millard & Horse Benches	Ekker Butte

To reduce adverse resource impacts and to allow visitors to comply with complex camping regulations, some zones will have designated backpacking and climbing campsites. In zones with designated backpack campsites, no at-large camping will be permitted. For example, designated campsites are needed in upper Salt Creek where it is difficult for visitors to comply with past regulations to select campsites 300 feet from water sources, archeological sites, and out of sight of trails. Zones that will have designated backpack and climbing sites are listed in Table 8. See Figure 6 for locations of these zones. Climbing camps will be located to reduce impacts associated with accessing climbs and to facilitate quick access to climbs. Backpackers travelling in the two zones with designated climbing camps will be allowed to camp at-large as long as they do not camp within one-half mile of the climbing camp or the climb itself. In order to keep impacted areas confined, backpack camping activities will be restricted to within 15 feet of the post identifying the campsite.

In Chesler Park, the most popular Needles District destination, eight campsites will be designated. However, there will be a further stipulation that if the number of people camping in Chesler Park reaches 30 for any one night, no more permits will be issued. The current regulation which allows for up to 50 people per night has resulted in an unacceptable accumulation of human waste. In some zones, more backpack campsite may be designated than are listed in tables 2, 3 & 4, but only the number listed will be granted a permit on any night. Having a range of campsite available will facilitate planning trips and will reduce build up of human waste.

Table 8. Zones with Proposed Designated Backpacking and Climbing Campsites.

ISKY	Maze	Needles
Taylor Canyon, climbing camp, 1 site		Chesler Park, 8 campsites
Gooseberry, climbing camp, 1 site		Upper Elephant Canyon, 1 campsite
Syncline Loop, 1 campsite		Lost Canyon, 2 campsites
Murphy Point, 1 campsite		Squaw Canyon, 2 campsites
		Big Spring Canyon, 1 campsite
		Upper Salt Creek, 3 campsites
		Mid Salt Creek, 3 campsites

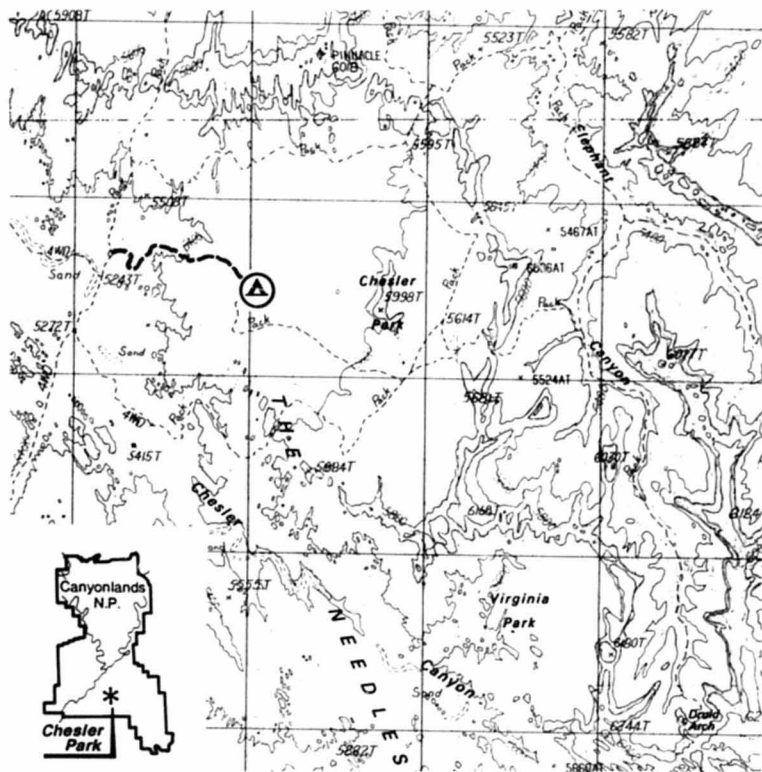
Alternative A. Excessive human waste in Chesler Park suggests the need to install a vault toilet. Designated backpacking campsites would be moved to the vicinity of the old road between Butler Flat and Chesler Park. A portion of the disused road would become a service road to allow the toilet to be pumped (Figure 7).

Alternative B. To facilitate vehicle use in a greater range of areas in Orange Cliffs, campsites will be added at Red Cove (Range Canyon Zone), Bigwater (North Trail and Elaterite Zone), and an additional site at High Spur (North Point and Spur Zone). These are in addition to those listed in Table 7. This would potentially add 270 user nights per month to the Orange Cliffs. See Figure 8 for locations of these sites.

At-large Camping--Preferred Alternative. Camping for backpackers in all zones without designated campsites will remain at-large. See Tables 2, 3, and 4 for distribution of camping permits. Table 9 outlines the regulations for choosing at-large camping sites. Group sizes for backpacking are listed in the Designated Camping section above.

Table 9. Proposed Regulations Governing Choice of At-large Campsites.

-campsites must be 300 feet away from water sources
-campsites must be 300 feet away from all cultural sites
-campsites must be at least one mile from a trailhead or a parked vehicle
-campsites must be within the zone for which the permit was issued
-campsites must not be in areas closed to camping (see Figure 6)
-campsites must be left with no evidence of use, and no environmental degradation
-campsites should be accessed by and selected on rock surfaces, or surfaces without cryptobiotic soil crusts or vegetation




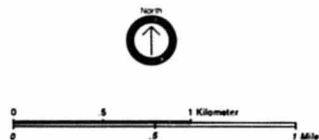
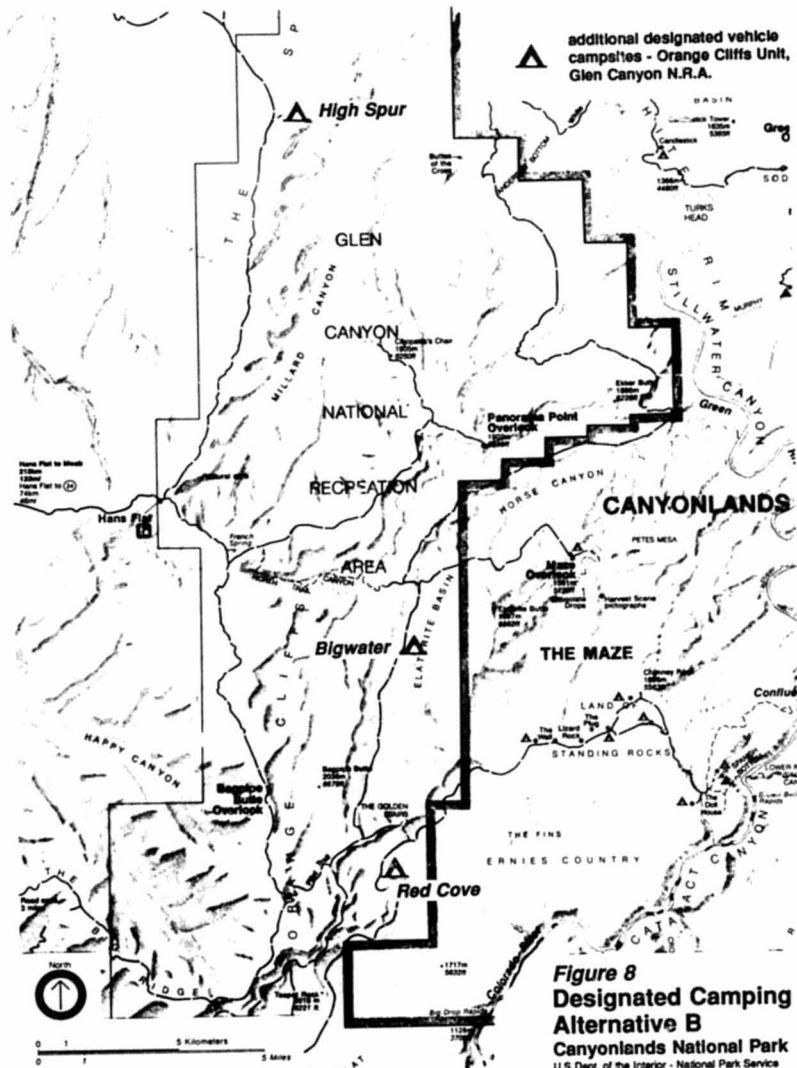
 designated backpack campsites (4) & maintenance access to Chesler Park

Figure 7
Designated Camping
Alternative A
 Canyonlands National Park
 U.S. Dept. of the Interior - National Park Service

164 | 80,026
 RMFO | Nov 93



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 additional designated vehicle campsites - Orange Cliffs Unit, Glen Canyon N.R.A.

Figure 8
Designated Camping
Alternative B
 Canyonlands National Park
 U.S. Dept. of the Interior - National Park Service

164 | 80,027
 RMFO | Nov 93



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Camping Reservations--Preferred Alternative. A reservation system, modeled after the White Rim Road Reservation System, will provide advanced reservations for all backcountry permits including designated and at-large camping. This will allow for advanced planning of trips. Backcountry permits will be issued at the district visitor centers. Walk-ins will be accommodated if space is available. Costs associated with the reservation system will be borne by users of the system. The established fee will be non-refundable when the trip is confirmed. Park visitors and commercial operators will both have access to the reservation system. Maximum commercial use limits are discussed below in the Commercial Use section. Details of the reservation system will be outlined in a separate document.

Alternative A. The same system as described above would be implemented, with the exception that 10 percent of all permits will be reserved for walk-in visitors. The non-refundable fee would still apply. No campsites on the White Rim Road would be held for walk-ins.

Camping Restrictions--Preferred Alternative. Special camping restrictions for the Needles District are as follows. Areas closed to entry will be closed to camping (see the Day Use section below for more discussion). The Roaded Grabens Zone will be closed to at-large camping, with camping permitted only in the designated vehicle campsites. This will help to separate area with vehicle traffic from backpack use areas. The Horse Canyon Zone will be closed to camping to protect archeological resources. This also includes unguided day use above Tower Ruin (see Day Use discussion below). See Figure 6 for locations.

Special camping restrictions for the Maze District are as follows: no camping is permitted within sight of the Maze Overlook in the South Fork of Horse Canyon or in the heavy day use area between the Maze Overlook and Chimney Rock. No at-large camping is allowed in the Standing Rocks Zone, to keep backpack use separated from the areas with more vehicle traffic. Two relict areas in the Maze, Pete's Mesa and Elaterite Butte, will be closed to camping to reduce potential resource impacts. Horseshoe Canyon will continue to be closed to camping. See Figure 6 for locations.

Special camping restrictions in the Island-in-the-Sky District are as follows: The Mesa Top, Bighorn Mesa and Shafer Area zones are closed to camping. The White Rim Road East and White Rim Road West are open only for camping in designated vehicle campsites. This will help to separate high day use and vehicle use areas from the backpacking areas. The Bighorn Mesa Zone will also be closed to camping to protect its relict vegetation. See Figure 6 for locations.

All zones with designated backpacking campsites will be closed to at-large camping.

Commercial Operations

Filming--Preferred Alternative. Public comments during the scoping period for this Plan indicate that some park visitors find commercial filming to be incompatible with other backcountry experiences. However, regulatory and policy guidance exists to manage commercial filming requests and permits in a manner that is sensitive to the qualities of the backcountry.

In Canyonlands, current guidelines will be followed with a more restrictive interpretation in areas where backcountry values are higher. All restrictions imposed by the Plan will apply to all commercial film activities in the backcountry. No area or activity will be permitted for commercial filming that is not available to the general public on an equal basis.

Only powered aircraft will be permitted in Canyonlands, but not in areas or times of critical resource concern (critical wildlife habitat, unstable rock features, etc.). Aircraft shall maintain an altitude of 2,000 feet above surface level with the term "surface" defined as the highest terrain within 2,000 feet laterally and vertically of the flight route at all times. Flight routes will be approved in advance. Aerial acrobatics will be prohibited. Aircraft may not take off or land within the park.

In Orange Cliffs, all commercial filming activities will be managed in accordance with the "GLCA Commercial Filming Guidelines," which utilize Glen Canyon's 1991 Statement for Management, NPS Management Policies, NPS-21 Guidelines, Filming Guidelines, Glen Canyon's Enabling Act, and Title 36 of the Code of Federal Regulations, Part 5.5, as well as Title 43, Part 5, as tools for enforcement and management of the permitting system. These guidelines were developed as a plan to manage commercial photography and filming in a positive and efficient way, while providing for resource preservation and protection in a cost-effective manner. It is the policy of Glen Canyon to accommodate photography and filming to the fullest extent possible in a manner consistent with the protection of the park resources and to ensure the enjoyment of those resources by the park visitors.

All potential filming activities within the boundaries of Glen Canyon and Canyonlands are subject to well-established permit procedures that include pre-approval of all filming locations and activities; recognition of FAA regulations regarding management of airspace and waivers thereof; and close monitoring of all filming activities, insurance requirements, security bonds, and the initiation of the authority of the NPS to recover all costs associated with the issuance and monitoring of filming permits. Glen Canyon acknowledges the valid concerns surrounding filming activities in NPS areas, and specifically the allowance of aircraft use in areas of natural and cultural sensitivity. Serious consideration will be given prior to the approval of any aerial filming below 2,000 feet above surface level in Glen Canyon.

Commercial Use Operations. Commercial licenses are currently issued to backpacking and rock climbing guide services and are not limited in number. Limited numbers of concession permits have been issued to vehicle, bicycle, and pack and saddle stock tour operators. See the No Action Commercial Use section for more details on past use.

General--Preferred Alternative. All commercial backcountry tour operators must comply with provisions of the Plan. All company employees will be included in the total group size. Further restrictions will be imposed through allocating only a portion of limited resources (campsites, backcountry permits, etc.) to commercial use.

The park will decide which commercial visitor services are necessary and appropriate for public use and enjoyment within the constraints of preserving park resources unimpaired for future generations. Limited numbers of concession permits or contracts will authorize commercial visitor services when it is determined that safeguards must be implemented to prevent unregulated and indiscriminate use from impairing park values. The park will formulate the terms and conditions under which a commercial tour operator must provide such services.

Vehicles and Bicycle Tours--Preferred Alternative. Through 1993, two backcountry vehicle tour concessioners offered one-day as well as overnight trips. One concessioner, by choice, offered only one-day vehicle trips. This ratio will be formalized through the concession permit renewal process currently underway. If this Plan results in mandatory guided vehicle tours in Horse Canyon, a new concession permit may be offered for this particular service.

Upon expiration of the current concession permits for overnight mountain bike tours in 1996, new permits will be issued which would include day biking in the front country as well as backcountry, as an authorized service to be provided only by one or more mountain bike tour concessioners.

Advanced reservations for vehicle campsites will be allocated based on an historic ratio between commercial and private use. Each concessioner may occupy only one vehicle campsite per night per district. The total number of vehicle campsites in a district reserved each night for all commercial operators will not exceed:

- 20% of all vehicle campsites in the Island-in-the-Sky District (5 sites)
- 7% of all vehicle campsites in the Needles District (1 site)
- 9% of all vehicle campsites in the Maze District and Orange Cliffs (2 sites)

No more than two commercial groups will be given an advanced reservation for a campground containing three or more campsites. Only one commercial group will be given a reservation for a campsite in a campground containing two sites. Walk-in reservations may be made the day of the trip on the same basis as non-commercial groups and would not be counted against the

number of campsites already obtained in advance by the tour operator. This system already exists and will be continued for advance vehicle campsite reservations on the White Rim Road in the Island-in-the-Sky District.

Backpacking Tours--Preferred Alternative. Demand for commercial guided backpack excursions seems to come from the outfitters who want to provide such trips or from alumni of wilderness education courses who write letters in support of their program. It is not known if the general public needs the services of backpack guides and, if so, whether wilderness leadership and self-sufficiency education should be emphasized over a more traditional, less rigorous interpretive sightseeing tour. While Canyonlands receives written requests for information on other types of services, virtually none are received from potential park visitors seeking backpacking guide services. Twice as many companies were interested in obtaining access to the park to provide backpacking trips of all types in 1994 as there were in 1990 through 1993.

An unlimited number of commercial use licenses were offered for backpack trips during calendar year 1994. Requests for licenses to do trips in 1994 were accepted between October 1 and October 15, 1993. Thirteen licenses were issued as a result. The licenses require compliance with all provisions approved in this backcountry management plan.

Through the end of calendar year 1994, the commercial backpack groups operating under commercial use licenses must obtain backcountry permits on the same basis as the general public, i.e., if an advance backcountry permit reservation system is not yet operating for roadless areas, then the backpack tour operator must obtain the backcountry permit when the group arrives in the district. Backcountry permits would be available to commercial tour operators as well as the general public on a first come first served basis. One commercial tour operator may hold only one backcountry permit per district at one time.

If an advance backcountry permit reservation system is operating for roadless areas in 1994, commercial access would be allocated based on the historic ratio between commercial and private backpacking use. A backpack tour operator may hold one permit per district at any one time. The total number of campsites or zones authorized by all commercial backcountry permits in a district would not exceed the historic ratio between commercial and private backpacking use, which is:

- 0% of all backpack permits in the Island-in-the-Sky District (0 permits)
- 6% of all backpack permits in the Needles District (1 of the 1 per week permits, 2 of the 1 per day permits)
- 8% of all backpack permits in the Maze District and Orange Cliffs Unit (1 of the 1 per week permits, 3 of the 1 per day permits)

After 1994, commercial use licenses to do backpack tours will no longer be available. Instead, backpack tours will be authorized by a limited number of concession permits. The concession permit would regulate the quality and type of service (i.e., a wilderness education, leadership, self-sufficiency course, versus a less rigorous interpretive sightseeing tour focusing on natural and/or cultural resources of the park). Backcountry permits would be allocated to backpacking concessioner(s) on the same ratio as described above.

Alternative A. A limited number of concession permits will authorize commercial backpack tours. Maximum group size of up to 12 people, including guides, will continue to be allowed. Maximum group size for all other backpackers will remain at 6 people for the Island-in-the-Sky and Needles Districts and 4 people for the Maze District and Orange Cliffs Unit, as stated in the Preferred Alternative for Camping.

Alternative B. Backpack tours are not necessary and no commercial backpack tours will be allowed.

Saddle and Pack Stock Tours--Preferred Alternative. Upon expiration of the current concession permit for saddle horse and pack stock trips in December 1994, this service will not be resumed unless at some future time such service is deemed necessary to attain transportation or interpretation goals of the park.

Rock Climbing Tours--Preferred Alternative. Although very little commercial rock climbing has occurred in the past (14 events between 1990 and 1992), for 1994, twice as many companies expressed interest in obtaining access to the park to provide such trips as were licensed in 1993. Due to lack of public demand, no commercial use licenses or concession permits for rock climbing will be issued.

Day Use

Preferred Alternative. Day use activities will be unrestricted except for special locations described below. The Preferred Alternative is described first, with other alternatives listed for each section.

Closure of Two Relict Areas--Preferred Alternative. In April of 1993, the Superintendent of Canyonlands temporarily closed Jasper Canyon and Virginia Park, two of Canyonlands' 14 relict areas. Relict areas look very much like any other area of the park. Only to the trained eye are they vastly different from areas around them. The species composition and diversity of relict areas are critically important to understanding how other areas, altered by more than one hundred years of grazing and modern human activity, should look. The subsurface composition

and activity are important to understanding how the ecosystem works. Only through this understanding will managers be able to reclaim damaged lands and to make informed decisions regarding future land use.

Relict areas are extremely fragile and only a few people trampling them causes alterations which destroy valuable information. Increasing visitation to these areas, especially as a result of recent non-NPS publications encouraging visitation, has resulted in multiple trails and trampling, vegetation and soil damage, and an invasion of exotic plants. Virginia Park and Jasper Canyon are unique in that there is fairly easy access by humans to these areas. Other relict areas in the park are inaccessible or can be accessed only with great difficulty.

The Preferred Alternative is to permanently close Jasper Canyon (approximately 1,250 acres) and Virginia Park (203 acres), totalling .4 percent of Canyonlands, to all non-scientific human uses. Closure of these relict areas would preserve these unique and scientifically irreplaceable areas. Portions of the areas closed to camping in the Camping Restrictions section above include relict areas. Relict areas that receive day use activities may be signed to educate visitors about the importance of relict areas and describe ways to use the areas without damaging them.

Island in the Sky District Day Use--Preferred Alternative. Day use activities will be permitted in the entire district. In compliance with the Canyonlands General Management Plan, the Murphy Point Road will end at the current trailhead and a hiking trail will be created to replace it. This new section of trail, added to the trail that exists will make the hike to Murphy point approximately one and one-quarter miles. This will give access to the designated campsite in this zone.

Needles District Day Use--Preferred Alternative. In the Needles District, the area along the Colorado River south of the Lower Red Lake Trail will be closed to use from December 1 through February 28 to protect wintering bald eagles. Lower Big Spring and Lower Little Spring Canyons, Lower Salt Creek, and Lower Elephant Canyon will be closed to all entry. These canyons are narrow, with little escape terrain for bighorn, and are important bighorn sheep habitat. The bighorn sheep herd in the Needles District has experienced a die-off, with an estimated 40 sheep remaining. Lamb survival rate has been minimal--one to two lambs per year for the past two to three years. The closure is intended to minimize disturbance to sheep activity which is centered in these canyons. The Cyclone Canyon road will terminate at the new designated campsite described in the above Preferred Alternative Designated Camping section and will become a hiking trail. Davis and Lavender Canyons will remain open as in the No Action section.

Alternative A. Since vehicles keep driving beyond the end of the roads in Davis and Lavender Canyons, effectively elongating the roads, and since camping violations continually occur in these canyons, closing the roads into Davis and Lavender Canyons at the Canyonlands boundary

is suggested. All access into the canyons would be by foot.

Salt Creek and Horse Canyon, Needles District--Preferred Alternative. Much discussion arose over the balance between the public demand for vehicular access and public demand to preserve riparian and cultural resources in the Salt Creek drainage. Presently, this is seen as the best option, but other alternatives are presented below.

The Salt Creek Road will remain open to the Peekaboo campground and the road will be rerouted around the standing water at Peekaboo Spring. Beyond this point, the road will be closed to vehicle traffic. This would result in closing the Bates Wilson and Angel Arch campgrounds to vehicle camping. The lower campsites at Peekaboo would be removed as well. These three camping areas have been determined to be in the flood plain and would need to be removed or replaced even if the road is not closed. Campsites closed would be replaced by those listed in Table 6. To protect the archeological resources and prevent adverse impacts to Horse Canyon resulting from increasing use and the road closure at Peekaboo, the Horse Canyon road will be gated beyond Tower Ruin. All access beyond the gate, both pedestrian and vehicular, will be by guided tour only. Guides could be a combination of commercial outfitters and NPS staff. Frequency and size of tours will be determined by demand and availability of guides. No camping will be allowed in the Horse Canyon Zone.

Alternative A. The Salt Creek Road would be closed at the Horse Canyon junction below Peekaboo Spring. Designated vehicle campsites at Peekaboo, Angel Arch, and Bates Wilson would be closed, and some of them would be relocated. Horse Canyon will be closed at the Tower Ruin spur road with further access allowed by guided tour only. No camping will be allowed in the Horse Canyon zone. Day use would likewise be prohibited beyond Tower Ruin. A parking area would be established near Cave Springs for hiking in the Salt Creek drainage, adding another 3.5 miles of pedestrian travel for access to Salt Creek. Parking at the closure cannot be provided due to potential flooding. Day hiking in Salt Creek would be unlimited.

Alternative B. Roads in Salt Creek and Horse Canyon would be closed to vehicle traffic at the present Salt Creek gate or at Cave Springs. A parking area would be established at the closure to facilitate day and overnight pedestrian use. Pedestrian day use in Salt Creek will be unlimited. Pedestrian day use in Horse Canyon would be prohibited beyond Tower Ruin except with guide services. Guided vehicle tours would be allowed in Horse Canyon.

Alternative C. Roads in Salt Creek and Horse Canyon would be closed to vehicle traffic at the present Salt Creek gate or at Cave Springs. A parking area would be established at the closure to facilitate day and overnight pedestrian use. Pedestrian day use in Salt Creek would be unlimited. Pedestrian day use in Horse Canyon would be prohibited beyond Tower Ruin except with guide services. There would be no vehicle access to Salt Creek and Horse Canyon.

Maze District Day Use--Preferred Alternative. All hikers and backpackers in the Doll House/Surprise Valley area will be required to stay on designated trails. NPS will upgrade its marking of the trails to make them easier to use. There is heavy use in this area as it is accessed by hikers, vehicles and boating parties. The River Management Plan, scheduled to be updated in 1994, may address use of Spanish Bottom campsites and could further alter use of the Doll House area. River runners who wish to backpack into the Doll House area, or any other section of Canyonlands and Orange Cliffs away from the river corridor, will be required to have a backcountry permit for campsites or zones they will use. Otherwise, river runners may continue to day hike to the Doll House area without restrictions.

Horseshoe Canyon, Maze District--Preferred Alternative. Horseshoe Canyon contains the most magnificent rock art in North America. Each year vandalism to the rock art has increased. This year, a full-time ranger is stationed in the canyon, but vandalism is still occurring at a rate of about one to two incidents per week. The following management strategies may be implemented in conjunction with each other, depending on funding.

Entry to Horseshoe Canyon will be by guided hike only. Guides may be a combination of NPS staff and commercial guides. Fees may be charged for some or all guide services. The number of ranger patrols will be increased. This will help to assure preservation of the rock art. Structures guiding visitor traffic, such as walkways, viewing platforms, and low barriers, will be erected.

Alternative A. Increase the number of ranger patrols. Limit the hours the canyon is open to entry, with the area being closed to entry except by permit December 1 through February 28. Structures guiding visitor traffic, such as walkways, viewing platforms, and low barriers, will be erected.

Alternative B. Limit group size and composition. Group size will be limited to eight. Since children appear to be responsible for most of the damage to the rock art, there will be an adult to child ratio of 1:4. Children are defined as everyone under the age of 18.

Alternative C. Major physical protection devices. Permanent barriers or enclosures will be erected at the Great Gallery, Horseshoe Shelter, and the Alcove site to prevent damage from graffiti and touching of rock art. Signs will be erected to educate visitors about the rock art and to help reduce graffiti and vandalism.

Education

Preferred Alternative. Many public comments were received during and after the public scoping period suggesting increased public education be used to reduce impacts to the park and gain compliance with park regulations. A variety of means will be used to heighten the awareness level in both front country and backcountry visitors.

Several efforts are now underway. New exhibits for the visitor centers at Needles and Island-in-the-Sky Districts are in preparation and will educate visitors on the protection of park resources while interpreting the park's natural and cultural history. New wayside (roadside) exhibits located primarily at the trailheads in the Needles will stress protection of cryptobiotic soil crusts and cultural resources. The staff plans to revise or replace, based on availability of funding, the current 11-minute, minimum-impact video, making the program more specific to the regulations and policies of backcountry travel at Canyonlands. An NPS visitor newspaper will be re-instituted beginning in the summer of 1994 with sections on resource protection. A review of all current literature offered to park visitors will be conducted to determine if messages can be strengthened. Rangers will continue to personally issue backcountry permits and require the backcountry parties to be familiar with policies and regulations. The expansion of the backcountry reservation system will allow us to communicate more information to visitors prior to their arrival so they will arrive better prepared and with a clearer understanding of the park's rules and regulations. A new "Guide to Canyonlands National Park" (sales item) is being planned for 1995 by Canyonlands Natural History Association that will emphasize appropriate use and protection of features. Other measures to educate visitors will be implemented as needed to better inform visitors.

To educate visitors on the changes and implementation of this new Plan, an educational effort will be used. News releases, news coverage, signing, bulletin board notices, among other strategies, will be used over the next season or two.

Facilities

Fires, Campfire Grates, Firepans--Preferred Alternative. All wood fires will be prohibited, while allowing charcoal fires. Charcoal and a firepan will be provided by the visitor. No campfire grates will be provided by NPS. All firepans, ashes, charcoal and debris will be carried out by the visitor. See Environmental Consequences Vegetation section for an explanation.

Alternative A. Campfire grates will be provided in designated campsites in the Island-in-the-Sky and Needles Districts. Visitors will be allowed to light charcoal fires only. The ashes, charcoal and debris will be carried out by the visitor. At least one campfire grate will meet accessibility

standards.

Alternative B. Except for campstoves, all fires will be prohibited.

Garbage Cans--Preferred Alternative. All users are required to pack out all items brought into the backcountry. Garbage or trash cans will not be provided. This is the same as the No Action Alternative.

Roads--Preferred Alternative. Current policies on maintenance of backcountry roads will continue. Specific backcountry road maintenance schedules and limits on construction and maintenance activities will be detailed in a written Maintenance Plan that will be prepared by the park's Maintenance Division. The goal is minimal maintenance, keeping roads passable to high clearance four-wheel-drive vehicles.

Specific changes in roads proposed in the Preferred Alternative include closing the Salt Creek Road at the Peekaboo campsite for protection of riparian resources and allowing only guided vehicle tours beyond Tower Ruin in Horse Canyon (see Preferred Alternative, Day Use above). The Cyclone Canyon road would be closed and converted to a hiking trail since it is redundant with a parallel road in the next graben and little used (see Preferred Alternative, Camping above). The Murphy Point road would end at the current trailhead to allow for backpack camping in that zone.

Signs--Preferred Alternative. Directional signs will continue to be maintained at strategic points to facilitate travel on backcountry trails.

Educational signs or register boxes containing educational information may be placed in the backcountry to help protect sensitive resources, such as relict areas and cultural sites. Register boxes provide visitors with opportunities to leave their marks or comments inside the box and not on canyon walls and rock art sites. Visitors can expect to see more signs or register boxes in the backcountry.

Tables--Preferred Alternative. Picnic tables will be provided at the Lathrop Canyon day use area in the Island in the Sky District and at vehicle campsites in the Needles District. Tables will not be placed in other backcountry locations. At least one backcountry picnic table in the day use area, and one in the Needles District campsites will meet accessibility standards.

Toilets and Human Waste--Preferred Alternative. Increasing amounts of human waste from backcountry visitors have necessitated the installation and maintenance of backcountry toilets. Vault toilets will be provided at the Needles District and Island-in-the-Sky District backcountry vehicle campsites to manage the increasing amounts of human waste and to reduce resource impacts. Toilets may also be provided in areas with considerable day use. At least one

backcountry toilet per district will meet accessibility standards.

In the Maze District where pumper access to vault toilets is extremely difficult, vehicle campers will be required to use a portable toilet and carry out solid waste. Portable toilet systems have been used successfully by river runners for years. New systems that conform to new Environmental Protection Agency (EPA) standards are being tested and put into use. EPA requires that human waste be deposited in facilities that receive sanitation processing rather than in landfills.

Several companies are planning to rent new portable toilets to private river users who may not want to purchase their own. These same systems can be rented by vehicle campers. Canyonlands will not provide or rent portable toilets.

Human solid waste from backpackers will continue to be buried in "catholes," as defined under the No Action Alternative. The "catholes" will be six to eight inches deep, 300 feet from water sources, arroyos and campsites and in organic soil (soil that supports vegetative growth). Backpackers will be required to pack out toilet paper, feminine hygiene products, and disposable diapers. The NPS recommends carrying self-sealing plastic bags for packing out used toilet paper and sanitary supplies. Burning toilet paper has resulted in several catastrophic fires in Canyonlands and will continue to be prohibited.

In frequently used backpacker campsites, multiple trails created by people looking for a private place is a heavy impact. In high use seasons, locations become used up so that old excrement is dug up when people dig their "cathole." Where campsites are designated, this could continue to be a problem. If reducing the total number of people camping at one time does not solve these resource problems, other solutions will be tried. Other possible solutions include: mandatory carry-out of human waste by backpackers; establishment of backcountry toilets (contents would be removed by helicopter or pack stock); or establishing more designated campsites than will be permitted nightly, and rotating use in these sites to allow for decomposition of human waste.

Excessive human waste in Chesler Park may necessitate installation of a vault toilet. Designated backpacking campsites would be moved to the vicinity of the old road between Butler Flat and Chesler Park. The disused road would become a service road to allow the toilet to be pumped. See Figure 7 for this location. This alternative is presented under Designated campsites, Alternative A.

Trails--Preferred Alternative. As with roads, defined levels of trail maintenance need to be addressed in a written Maintenance Plan that will be prepared by the park's Maintenance Division. The goal of trail maintenance is to perform the minimal maintenance necessary to keep the trail reasonably passable, and to minimize resource damage caused by multiple trailing

from impassable or unrecognizable trails.

The only changes in trails in the Preferred Alternatives are in Salt Creek, Cyclone Canyon and Murphy Point. The road in Salt Creek will be converted to a foot trail above Peekaboo (see Preferred Alternative Day Use section above). The road in Cyclone Canyon will be converted to a trail south of the campsite to be designated in that graben (see Preferred Alternative, Camping section above). In the Murphy Point zone, the road will end at the Murphy Trail trailhead, the remaining road will be converted to a trail to facilitate backpack camping and hiking in that zone.

In accessing untrailed zones or areas, visitors must travel by the least-impacting route (for instance, on rock, in washes, and off cryptobiotic soils).

Noise

Preferred Alternative. Current management strategies will be maintained. Under this alternative, creating or sustaining unreasonable noise is prohibited. Since "unreasonableness" is subject to individual interpretation, NPS regulations set decibel levels for operating motorized equipment, machinery, or audio devices at 60 decibels on the A-weighted scale at 50 feet. Neither visitors nor park staff may exceed these levels. No generators will be allowed to operate in the backcountry. An exception may be made for generators needed for medical purposes if prior approval of the district ranger is obtained.

In addition, Utah traffic codes prohibit excessive or unusual motor vehicle noise. Every motor vehicle is required to have a muffler or other effective noise-suppressing system in good working order and in constant operation. Muffler cutout, bypass or similar devices are prohibited.

Pets

Preferred Alternative. Due to the fact that backcountry users regularly violate existing pet regulations, causing problems with pet excrement and disturbing wildlife, and due to the fact that frequent complaints are received about pets, all pets will be prohibited in the backcountry. Pets may not be left unattended, tied, or physically confined in the front country to facilitate backcountry travel.

In Orange Cliffs, pets will be permitted inside vehicles or may be restrained on leashes six feet or less in length only on the mesa top above 6,000 feet. The area where pets will be allowed coincides with grazing allotments. Otherwise, Canyonlands' regulations will apply.

Guide or assistance dogs accompanying a visually or hearing impaired person are not considered pets and will not be prohibited.

Alternative A. Pets will be allowed in vehicles in the backcountry for day use only. They must be contained within a vehicle, or they may be walked on roads within 100 feet of their parked vehicle on a leash six feet or less in length. Solid waste from pets must be packed out or disposed of in the manner described for backpackers in the Preferred Alternative, Toilets and Human Waste section above.

Rock Climbing

Preferred Alternative. Permits will not be required for rock climbing. Any climb requiring an overnight backcountry stay will be subject to all provisions found under the Preferred Alternative for camping. The number of available overnight permits will be subject to the total available for the backcountry zone where the overnight stay occurs. Known destination climbs may have designated camping sites identified and located in close proximity to the climbing area.

Climbing Prohibitions. Climbing within Canyonlands shall be either free climbing or clean aid climbing. No new climbing hardware may be left in a fixed location. However, if an existing bolt or other hardware item is unsafe, it may be replaced. This will limit all climbing to existing routes or new routes not requiring the placement of fixed anchors. If evidence of non-compliance or a proliferation of new routes using fixed anchors is observed, climbing zones and/or routes will be designated and climbing permits will be required. The use of hammers for aid climbing is prohibited.

The Salt Creek Archeological District, the detached Horseshoe Canyon unit of Canyonlands, the Orange Cliffs Unit, the Maze District, and the Needles District would be closed to climbing. Any arch or natural bridge named on the United States Geological Survey 1:62,500 topographic map of Canyonlands National Park and Vicinity, with the exception of Washer Woman Arch, would be closed to climbing. Climbing, ascending, descending, or traversing an archeological or cultural resource would be prohibited.

The intentional removal of lichen or plants from rock faces will be prohibited. The physical altering of rock faces such as chiseling, glue reinforcement of existing holds, and gluing of new holds, will be prohibited. The use of motorized power drills will be prohibited.

Climbing Recommendations. Where not prohibited, equipment that is left in place shall match the rock surface or be dull in color when possible. Where possible and reasonable, rock surfaces should be dry to avoid exfoliation and associated climbing impacts.

Alternative A. Climbing routes would be designated where climbing could occur. Applications would be accepted yearly for establishing new climbing routes. Applications would be reviewed for impacts to park resources, available access, impacts to other park users, and need for the route.

All other provisions of the Preferred Alternative not in conflict would apply.

Alternative B. Climbing routes would be established where climbing could occur. No new climbing routes would be established. All other provisions of the Preferred Alternative would apply.

Saddle and Pack Stock Use

Preferred Alternative. Saddle and pack stock use will continue to include horses, burros, mules and llamas. Pack goats will continue to be prohibited. Group size will be limited to six animals. Only day use will be permitted. Use is restricted to four-wheel-drive corridors, except the portion of Salt Creek Road between Horse Canyon and Peekaboo which will be closed to pack and saddle stock use. Overnight use will be prohibited. For the duration of the trip, and for 48 hours in advance, all animals must be fed pelletized feed to eliminate the establishment of exotic plants through the spread of seeds.

An exception to this policy will be the Orange Cliffs mesa top above 6,000 feet where overnight camping will be allowed. The weed-free feed policy will be in effect. Group size will be limited to six animals for day use, and four people with seven animals for overnight use. (Four people corresponds to the overnight group size for backpack camping). Overnight permits will fall under the availability and zone restrictions allocated for backpacking. Reservations will be available for permits for overnight saddle and pack stock use in this area. All camping regulations for at-large camping will apply. In addition, during travel or where animals are tethered, manure must be scattered, keeping it at least 300 feet from water sources.

Water Use Regulations

Preferred Alternative. Use and protection of water sources will be guided by regulations listed in Table 10.

Table 10. Proposed Water Use Regulations.

Campsites must be at least 300 feet from water sources
Saddle horses and pack stock must be tethered at least 300 feet from water sources
Only biodegradable soaps may be used and they must be used at least 100 feet away from standing water sources
Swimming, bathing, and immersing human bodies in water sources is prohibited (except in the Green and Colorado Rivers)
Rinsing dishes or other equipment directly in water sources is prohibited
Water sources may not be emptied or depleted for human use

Alternative A. Current provisions (see the No Action Alternative) will remain in effect. In addition, all bathing and use of soaps must be at least 100 feet from the water source. Biodegradable soaps are required. Swimming in running water sources will continue to be allowed. More emphasis will be placed on educating users and enforcing the requirements. Effects of human body oils, sun tan lotions, hair sprays, etc., on aquatic life in the potholes and springs is unknown. Physical disturbance of these water sources is damaging to aquatic life. If studies requested by the NPS show that there is damage to organisms by use of water sources, this use will be discontinued.

Wilderness and Solitude

By zoning Canyonlands and Orange Cliffs backcountry and redistributing use into zones most capable of withstanding visitor impacts, visitors are ensured opportunities for solitude. Under all alternatives, Canyonlands' backcountry will continue to be managed as wilderness until Congress acts on Proposed Wilderness Areas. Visitor recommendations that new roads or structures be created cannot be entertained.



TOPIC	NO ACTION	PREFERRED ALTERNATIVE
Zones	none	entire park zoned, see fig. 6
Aircraft	2,000' advisory	2,000' advisory
Bicycles	allowed on roads	allowed on roads
Caches	allowed with permit	allowed with permit, fine for nonrecovery
Camping	unlimited # of permits	# of permits limited by zone
designated	all vehicle camps	some backpacking, see fig. 6 all vehicle camps, some camps relocated
at-large	all backpacking	some backpacking, see fig. 6
reservations	only for White Rim Road	for all overnight permits
Commercial Filming	ok only if impact to resources and other visitors is minimal	ok only if all aspects of this Plan followed and impact minimum
Commercial Activities	unlimited # of commercial use licenses for backpacking & climbing, limited # of concession permits for bicycle, 4x4 & stock tours	limited # of concession permits for vehicle, 4x4 & backpack tours, eliminate rock climbing & pack & saddle stock tours
Day Use	unlimited #, 2 relict areas closed	unlimited #, 2 relict, 1 bighorn area closed, some of Horse Canyon open only to guided tour, Salt Creek open only to foot traffic beyond Peekaboo, restricted access in Horse Canyon
Horseshoe Canyon	ranger stationed in area during busy season, guided hikes available on weekends	entry will be by guides hike only, some fees may apply, low, guiding structures may be constructed
Education	displays, rangers, video, written material	new displays, updated video & written material, information with reservations
Facilities firegrates	at Needles & ISKY vehicle campsites	only charcoal fires, provide own pan
garbage cans	none provided	none provided
roads	maintained to high clearance 4x4 standard	same maintenance, Murphy Point Road closed at Trailhead, Salt Creek Road closed at Peekaboo, Cyclone Canyon Road closed at new campsite

Figure 11. Summary of Alternatives.

TOPIC	NO ACTION	PREFERRED ALTERNATIVE
signs	directional signs at strategic locations	at strategic locations, educational signs may be added
tables	at Needles vehicle camps & Lathrop Canyon picnic area	at Needles vehicle camps & Lathrop Canyon
toilets	on White Rim & Needles vehicle camps	on White Rim & Needles vehicle camps
human waste	buried where no toilet	backpacker bury, vehicle campers in Maze & Orange Cliffs pack out
trails	minimal maintenance	need maintenance standard, new trail sections on closed roads
Noise	cannot exceed set decibel levels	cannot exceed set decibel levels
Pets	ok only with vehicles, on leash	not allowed, except on mesa top in Orange Cliffs on a leash
Rock Climbing	permit needed, a few areas closed to climbing	no permit needed, no new climbing hardware may be left in a fixed location, no climbing in Needles, Maze or Orange Cliffs
Pack/Stock	ok on 4x4 roads & some drainages, group size limits	ok only on 4x4 roads, day use group size of 6, no overnight use except on mesa top of Orange Cliffs
Water	camp 300' from standing, 100' from flowing, ok to swim in flowing	camp 300' from water, all soap used 100' from water source, no swimming except in Green & CO rivers
Wilderness	roadless areas recommended for & managed as Wilderness	zoning and limited permits will help ensure solitude & Wilderness values

Figure 11. Summary of Alternatives, continued.

TOPIC	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Zones			
Aircraft			
Bicycles			
Caches			
Camping			
designated	move Chesler Park camps, install vault toilets	add 3 more vehicle campsites in the Orange Cliffs Unit	
at-large			
reservations	allow reservations for 90% of backcountry permits, keep 10% for walk-in visitors		
Commercial Filming			
Commercial Activities backpack tours	limited # of concession permits for backpacking. maximum group size for 12 for backpack tours, 4 or 6 for other visitors	no commercial backpack tours will be allowed	
Day Use	close Davis & Lavender Canyons to vehicle traffic, close Salt Creek to vehicle traffic at Horse Canyon Jct, guided tours in Horse beyond Tower Ruin	close Salt Creek & Horse Canyons at Cave Spring, guided vehicle tours in Horse Canyon	close Salt Creek & Horse Canyons at Cave Spring, no vehicle access in either
Horseshoe Canyon	closed Dec.1-Feb. 28 except by permit, open limited hours, placement of low barriers, walkways to control visitor use, increased patrols	group size will be limited to 8, with an adult:child ratio of 1:4	permanent barriers or enclosures will be erected at major panels, signs will be used
Education			

Figure 11. Summary of Alternatives, continued.

TOPIC	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Facilities firegrates	grates will be provided at Needles and Island vehicle campsites for charcoal fires only	except for campstoves, all fires will be prohibited	
garbage cans			
roads			
signs			
tables			
toilets	install vault toilet on edge of Chesler Park		
human waste			
roads			
trails			
Noise			
Pets	allowed in vehicles for day use only		
Rock Climbing	no permit needed, climbing only on established routes, yearly application to establish new routes	no permits would be required, climbing only on established climbing routes	
Pack/Stock			
Water	all scaps must be bio-degradable & used 100' from water, swimming will be allowed in running water		
Wilderness			

Figure 11. Summary of Alternatives, continued.

ALTERNATIVES CONSIDERED BUT REJECTED

Some alternatives recommended by visitor comment, such as closing all roads or closing all roads in one or another district, were considered but rejected. Given current mandates and policies, alternatives were selected which maximized the range of activities in the backcountry while meeting mandates to preserve and protect natural and cultural resources.

Since alternatives minimizing the range of visitor opportunity were rejected, proposals to eliminate all at-large camping were rejected in favor of designating campsites only in problem areas. If some campsites can be designated and resource impacts reduced or eliminated, then at-large camping can continue.

An alternative was considered to make the road from the Maze District to Hite one way so all visitors to the Maze would enter through Hans Flat where they could receive a backcountry permit and educational materials. This was logistically unworkable.

Alternatives suggested by public comment and considered included closing all or sections of the roads in the Maze District. These options included closing the Standing Rocks Road, or the section of this road from Chimney Rock to the Doll House area, or closing the road to Millard Canyon. These alternatives were rejected as unworkable at this time due to the popularity of vehicle camping and use.

An alternative was considered to require day users to have a permit and to limit day use numbers in areas receiving heavy impact, social overcrowding, and resource damage. For example, areas with day use problems are the Shafar Trail, the east side of the White Rim Road, Salt Creek and Horse Canyon, Chesler Park and associated trails, Lost, Squaw and Elephant Canyons and Elephant Hill roads. However, the cost of administering such a system is prohibitive and overly restrictive given the possibilities of improvements resulting from this Plan. If the management actions proposed here do not result in better protection of the backcountry, then day use may well become restricted in the future.

An alternative considered, but rejected as inconsistent, was to close the Salt Creek and Horse Canyon Roads to vehicles but allow horse and pack stock use along with hikers and backpackers. Horses and pack stock adversely impact riparian resources by introducing exotic weeds from their feces, by trampling aquatic invertebrates with their hooves, by impacting both natural and cultural resources by improper tethering locations, and by depositing manure on trails which has associated flies and smell. Furthermore, given the low demand for saddle and pack stock use, and given the rising numbers of human foot travelers, it seemed inappropriate to encourage saddle and pack stock use on foot trails.

ENVIRONMENTAL CONSEQUENCES

Consequences of the various alternatives are described for critical park resources in the following sections. Impacts of the alternatives on natural resources are described first, followed by cultural resources, and socioeconomic resources. Finally, for complex issues with multiple alternatives, the impacts of the various alternatives are described separately.

Affected Environment, Natural Resources

Geology. The many layers of visible and colorful rock are a major attraction to Canyonlands and Glen Canyon. The geology is characterized by sedimentary rock, which has been deformed into anticlines, synclines and monoclines, and have been eroded. Erosion processes have formed a system of canyons and mesas, spires, buttes and arches. The exposed rocks range in age from the Jurassic to the Pennsylvanian at the bottom of the section, including: Navajo, Kayenta, Wingate, Chinle, Moenkopi, Cutler, White Rim, Organ Rock, Cedar Mesa, Elephant Canyon, Honaker Trail and Paradox Formations. Weakly developed soils and sand dunes have formed in some areas.

Soils. Much of the planning area has bedrock surfaces, making soil an important resource. Where soils exist, they are generally weakly developed and highly erodible. Cryptobiotic crust is growing in and stabilizing the soils. This soil crust, composed of cyanobacteria, lichens, algae and mosses, is essential for normal nutrient cycles and to prevent erosion.

Vegetation. Vegetation of Canyonlands and the Orange Cliffs Unit is in the Upper Sonoran Life Zone. Vegetative communities vary with soils, elevation and available moisture. Plant communities include: grasslands, blackbrush, sagebrush/saltbrush, pinyon-juniper/shrub, saltbush, variable shrubland, tamarisk/willow/cottonwood (or riparian community) and hanging gardens. Exotic species replace natives when disturbances cause native plants to disappear.

Threatened and Endangered Plants and Animals. In Canyonlands and the Orange Cliffs Unit, threatened and endangered animals include peregrine falcon (*Falco peregrinus anatum*), bald eagles (*Haliaeetus leucocephalus*), Southwest willow flycatcher (*Empidonax traillii extimus*) and the Mexican spotted owl (*Strix occidentalis lucida*). Plant species proposed under Category 2 for threatened and endangered status include pinnate spring parsley (*Cymopterus beckii*), alcove bog orchid (*Habenaria zothecina*), alcove rock daisy (*Perityle speculicola*) and Jones cycladenia (*Cycladenia humilis*).

Wildlife. Canyonlands and Orange Cliffs are desert in the Upper Sonoran Life Zone. Canyonlands and Glen Canyon contain very important habitat for desert bighorn sheep. Other

mammals include the coyote, western pipistrel bat, gray fox, whitetailed antelope squirrel, Colorado chipmunk, canyon mouse, deer mouse, pinyon mouse, desert woodrat, porcupine, blacktailed jackrabbit, desert cottontail and mule deer. Common bird species include turkey vulture, red-tailed hawk, American kestrel, mourning dove, nighthawk, whitethroated swift, Northern flicker, violet-green swallow, scrub jay, pinyon jay, common raven, plain titmouse, cactus wren, solitary vireo, dark-eyed junco, and white-crowned sparrow. Some of the common herptofauna species include red-spotted toad, great basin spadefoot toad, collared lizard, plateau striped whiptail, eastern fence lizard, western whiptail, gopher snake, western terrestrial garter snake and the midget-faded rattlesnake.

Water and Riparian Resources. Aside from the Colorado and Green Rivers (management of which are addressed in the River Management Plan), the only permanent running water in the area covered by this Plan is Salt Creek. This stream is a significant riparian resource forming critical habitat for fish, amphibians, aquatic insects, plants, and mammals. Limited numbers of springs, seeps and ephemeral potholes comprise the other available surface water.

Air Quality and Visual Quality. Many visitors come to Canyonlands for its magnificent vistas and clear night skies. Without lights and pollution from major metropolitan areas, clean air is a major park resource. Scenic views are the most important part of most visitors' experiences (Littlejohn, 1990). Based on a 1990 survey of both front and backcountry visitors (Littlejohn, 1990), scenic views are important to 94 percent of the surveyed visitors, with clean air the next most important issue to surveyed visitors.

Affected Environment, Cultural Resources

Less than three percent of the 337,570 acres in Canyonlands have been inventoried for cultural resources, so our knowledge of affected cultural resources is limited. As of 1993, some 1,208 sites have been documented in the park. (Sites are defined as discrete and interpretable loci of human behavior.) Documented sites range in age and cultural affiliation from the Paleoindian period, through the Archaic, Formative, Protohistoric, Ethnohistoric and Historic. A wide variety of site types from each time period are found within Canyonlands, but park visitors are most interested in rock art (Archaic, Formative, Historic) and structures (Formative, Historic).

Sites are not evenly distributed across the Canyonlands landscape, rather, they are clustered in areas where water, firewood, and raw materials for manufacture of stone tools were available. The greatest density of sites (58 sites per square mile) is located in the Salt Creek Archaeological District in the Needles District of the park. Areas most consistently and most heavily impacted by visitors are the Salt Creek Archaeological District and Horseshoe Canyon. The most common visitor impacts are graffiti, looting, collecting, displacing artifacts into collector piles, wall building and wall destruction, and trampling.

Environmental Consequences to Natural Environment

Geology. Selection of one alternative over another should have little effect on bedrock geology. For example, under both the No Action and Preferred Alternatives, existing trails will be maintained, which will help stabilize talus slopes. Geologic formations receive minor impacts from rock climbers leaving protection devices in the rock but, under the Preferred Climbing Alternative, no new bolts or webbing will be allowed. Under Climbing Alternative A, climbers make application to bolt new routes. Selection of Alternative A would result in new minor impacts to rock formations in the park, but the permitted new routes would be carefully reviewed for impacts prior to issuing the permit. Overall, there appears to be only limited impacts on geology from this Plan.

Soils. Protection of fragile soils of Canyonlands and Orange Cliffs was a major factor in determining the Preferred Alternative. Trampling is having a major impact on most of this planning area. Any activities that occur off designated routes (some occurring illegally), including hiking, bicycling, driving vehicles, and use of pack stock, destroy cryptobiotic crusts that bind the soil in place. This results in increased wind and water erosion and the loss of vegetation. As soil is lost, biotic species are adversely impacted.

In 1987 a campsite inventory and monitoring system was begun to measure impacts in campsites in Canyonlands. Some campsites have been monitored regularly in the intervening years, but no thorough analysis has been possible because of a shortage of staff and higher priority work. Canyonlands has no measurable data on amounts of trampling, soil loss or other impacts over the entire park. A system for measuring these types of impacts is being developed for Arches National Park, and will be implemented in Canyonlands as well, if staffing levels permit. Observations by rangers and research by Dr. Jayne Belnap indicate many more areas are being trampled by increasing numbers of backcountry users. Trampling causes serious and long lasting damage to the ecosystem.

Another result of trampling is soil compaction, which results in greater runoff and less infiltration of rain water. Microbial populations are also greatly decreased in trampled areas; consequently, normal nutrient cycles are disrupted. As the crusts are lost, surviving plants are nitrogen deficient. Animals which rely on the plants for food then become deprived of needed nitrogen. Consequently, trampling can affect the entire ecosystem.

If the No Action Alternative is selected, soils will continue to erode due to unlimited camping, large group size, at-large camping in sensitive areas, off-trail use, and limited knowledge about low impact use relating to this environment.

Under the Preferred Alternative, trampling and damage to soils will decrease. By designating more campsites, trampling will increase in these designated areas but will decrease overall across

Canyonlands and Orange Cliffs. By controlling the numbers and size of groups camping in the backcountry, trampling will decrease in fragile zones. Competition for campsites will be reduced so there should be less off trail travel while people look for suitable sites. The closure of two relict areas to all entry will eliminate all trampling in these areas, and will keep these areas as an undisturbed plant community. However, even with the Preferred Alternative, day use numbers will most likely increase, along with the possibility of increased trampling. The Preferred Alternative also will allow a growth of use in the Island-in-the-Sky District and Orange Cliffs, and similar amounts of use as in the past in the Needles and Maze Districts. Some trampling impacts associated with any use will continue.

Increased education will train more people to use minimum impact techniques and to understand the basic ecology of the areas they are entering. The effect will be to lessen negative impacts on soils, such as trampling, cryptobiotic soil damage, erosion, and impacts to soil microbial communities.

Vegetation. Under the No Action Alternative, rising visitation will continue to result in trampling, which in turn results in reduced numbers of native plants and increased exotic or non-native species. With no action, people will continue collecting firewood and burning vegetation for kindling and fuel.

Under the Preferred Alternative and Alternative A charcoal fires, but no wood fires would be allowed. Vegetation and downed wood will be spared. Under Alternative B no fires would be permitted, which would result in even greater protection of vegetation. The main issue in selection of one of the fire alternatives over the other is that people are not willing to comply with the present, no action, regulations. This issue is important because downed wood provides habitat for smaller animal species, stabilizes soil, and returns nutrients to the soil as it decays.

Under the Preferred Alternative (allocating visitors to zones most capable of withstanding impacts, increasing numbers of designated campsites, and educating visitors on minimum impact backcountry use), impacts to soils will be reduced and, concomitantly, impacts to vegetation will be reduced. With reduced trampling and increased controls over visitor distribution, native species will have more opportunities to compete with exotic species. The closure of two of the relict areas to entry will preserve the native communities of vegetation within. Some heavily impacted areas need active intervention to eliminate exotics and encourage native species. Increasing day use, not restricted under the Preferred Alternative, and the potential for growth in overnight use in the Island-in-the-Sky District will continue to impact vegetation through trampling.

Under Day Use, Needles District, Alternative A, current impacts to vegetation resulting from people driving beyond the ends of the road will stop with the elimination of vehicle traffic from Davis and Lavender Canyons.

Threatened and Endangered Plants and Animals. While threatened and endangered species are protected under all alternatives, overflights and aircraft flying below the FAA advisory level can adversely impact sensitive bighorn sheep and threatened and endangered raptors like the peregrine falcon. Low-flying aircraft frighten raptors off their nests and lead to broken eggs; desert bighorn running from aircraft can suffer heat exhaustion, panic, and lose their lambs.

Through uncontrolled growth in backcountry users as in the No Action Alternative, the nesting areas of the Mexican Spotted Owl may be disturbed. The Preferred Alternative limits numbers of campers, and designates campsites in areas whose resources can better handle the use. These precautions will help keep human disturbances away from Mexican Spotted Owl habitat.

Wintering Bald Eagle will be protected by a closure of the river bank to foot traffic below the Lower Red Lake Trail from December 1 to February 28. This will prevent hikers from disturbing these birds during a sensitive time of year.

While not an officially threatened and endangered species, desert bighorn sheep are a sensitive species. Under the No Action Alternative, desert bighorn sheep will continue to be displaced from critical habitat due to increasing numbers of backcountry users. One example of this is the increased numbers of users on the White Rim Road, which is bighorn sheep habitat. Under the No Action Alternative, sheep will be displaced or will continue to become habituated to humans. Loss of habitat will reduce numbers. Habituation could lead to a zoo like atmosphere where wildlife have lost some survival instincts.

The Preferred Alternative has been selected to balance demands of visitors to access all areas of the backcountry with protection of bighorn sheep and threatened and endangered species. For example, the Preferred Alternative is to close Lower Big Spring, Little Spring, and Elephant and Salt Creek Canyons. Bighorn sheep in the Needles District have been experiencing a severe die-off and it is estimated that approximately 40 animals remain. By ensuring the sheep will not be startled or confronted by humans while lambing, feeding, resting, and rutting, an increased number of bighorn sheep should survive.

If use of backcountry interferes with any of these species, areas or activities in conflict with visitors would be closed to avoid endangering these populations, in compliance with the Endangered Species Act.

Wildlife. Under the No Action Alternative, wildlife will continue to be impacted due to degradation or loss of habitat. (Habitat losses are addressed under previous sections.) Wildlife will continue to be displaced from critical habitat such as water sources due to the rising numbers of humans and pollution due to unregulated water source use.

The Preferred Alternative, especially the zones and allocated numbers of users, and increases

in designated campsites, have been selected to protect wildlife and critical wildlife habitats. Water source regulations proposed under the Preferred Alternative were devised to allow wildlife greater opportunities to access pure and clean water sources.

Pets and domesticated animals, including pack stock, are major impacting agents of wildlife. The Preferred Alternative of no pets in the backcountry will protect wildlife (and other visitors). Alternative A, which allows pets in the backcountry in vehicles during the day, would also protect wildlife; however, compliance with pet regulations is low.

Water and Riparian Resources. The rarity and importance of water resources and riparian communities, as well as the mandates to protect wetlands (such as Executive Order 11990), make the No Action Alternative unacceptable.

Under the No Action Alternative, people will continue bathing in potholes and springs, rinsing insect repellents, oils and suntan lotions off their bodies and into aquatic ecosystems. Under the No Action Alternative, people will continue to camp too close to Salt Creek and other water sources, preventing wildlife from reaching water and increasing fecal coliform in the water. Under the No Action Alternative, people will continue to drain and deplete small, non-replenished, water sources, excluding wildlife from water.

Under the No Action Alternative, people will continue to drive vehicles in Salt Creek. The road passes through many pools of water and many miles of riparian habitat. A former jeep tour guide reports that even seven or eight years ago he saw fifty-eight vehicles in one day in Salt Creek. Macroinvertebrates are aquatic life forms living in these pools that form the foundation of the riparian ecosystem. Macroinvertebrates and aquatic vegetation will continue to be killed by driving on them, by destroying their habitat with vehicle tires and by washing oil, tar and vehicles fluids into the water. There have been documented cases of vehicles with broken crankshafts or transmissions that have lost their entire contents in Salt Creek. Research into the effects of humans on riparian systems (Mitchell & Woodard) has indicated a definite change in flora and fauna below the Bates Wilson Camp (which marks the end of the road) and the hiking trail above that point. Vegetation will continue to be impacted by people driving off road and wildlife access to water will continue to be diminished with increasing use.

Even under the No Action Alternative, designated campsites in flood plains will be moved to allow Canyonlands to comply with Executive Order 11988. This order requires federal agencies to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare. Thus, campsites formerly located in flood plains at Lathrop Canyon, Taylor Canyon, and Upheaval Bottom have been moved out of the flood plain. Other campsites determined to be in flood plains (Bates Wilson, Angel Arch, and 3 Peekaboo campsites) will also be relocated.

Under the Preferred Alternative, water quality will improve by eliminating bathing and

swimming in potholes and water sources. Under the Preferred Alternative, designated campsites in Upper Salt Creek and other zones will reduce water pollution. While the Salt Creek Road has not been fully closed to vehicles it will be closed beyond Peekaboo, allowing NPS to comply with mandates to protect water resources. The road will be rerouted out of the spring. This will impact some willow and tamarisk vegetation in the vicinity, macroinvertebrates and aquatic life in the spring will be less impacted. Contamination introduced by vehicles and the physical disturbance caused by them will be reduced but will continue in the sections of Salt Creek that remain open. The other alternatives for Salt Creek that are presented increase the protection of the riparian habitat, but further reduce recreational (driving and vehicle camping) opportunities in the Salt Creek drainage.

Elimination of saddle and pack stock use in riparian areas such as Salt Creek will lower the fecal coliform count and reduce impacts on macroinvertebrates and other components of the aquatic ecosystem. By regulating methods of human waste disposal, water quality will be less likely to be contaminated. Under the Preferred Alternative, people will no longer be able to drain and deplete small water sources.

Air Quality and Visual Quality. Under all alternatives, threats to air quality will remain the same since the greatest impacts to air quality are from external sources such as power plants, local communities and urban areas. However, air and visual quality are somewhat degraded when soils are trampled and eroded and dust is transported into the air and onto rock surfaces. By confining trampling to designated trails and campsites, and by educating visitors about dust and its adverse impacts, air and visual quality will be maintained, as required by the Clean Air Act.

Under the Preferred Alternative, the zones and the allocation of visitors to zones were chosen partially based on the ability of the area to hide people and preserve other's views and solitude. Those zones whose topography could hide more people were allocated greater user numbers than open areas where vehicles, tents, and other human intrusions are highly visible. Likewise, due to visitor complaints about the intrusiveness of rock climbing hardware, climbing is restricted to existing routes in the Preferred Alternative for Rock Climbing.

Under the Preferred Alternative for facilities, new development and new facilities are limited to preserve views. For example, some visitors object to the modern vault toilets being installed in the backcountry. However, a far greater proportion of visitors continue to vociferously object to the rising concentrations of human waste in the backcountry. While vault toilets are not pretty, they are a necessary intrusion. Likewise, while some visitors object to the existing directional signs in the backcountry, signs have been placed at trail junctions where the potential for getting confused is higher. Sign styles will retain a rustic character, while providing information and communicating with visitors.

Environmental Consequences, Cultural Resources

Based on a 1990 survey (Littlejohn, 1990), 41 percent of Canyonlands' visitors came to visit cultural sites. In 1990, viewing cultural sites was the fourth most important activity for Canyonlands' visitors, after viewing scenery (99%), day hiking (65%), and picnicking (42%). In 1990, 41 percent of the total visitation was 115,638 people but, by 1992, 41 percent of the total visitation rose to 162,734 people. While the rising numbers of visitors to cultural sites indicates the pressure the sites are under, observations of visitors to cultural sites show specific subpopulations are responsible for most site damage (Gale and Jacobs, 1987). These subpopulations are children, persons travelling in large organized tours, and local residents living within daily reach of a site (Gale and Jacobs, 1986). Under all alternatives, management strategies are in place to protect cultural sites from pressure from increasing numbers of visitors and from damage caused by high-risk visitor subpopulations.

Cultural Management Strategies Under All Alternatives. Under all alternatives, the management of the cultural resource protection program will comply with the National Historic Preservation Act (NHPA) and the Archaeological Resources Protection Act (ARPA) and the American Indian Religious Freedom Act (AIRFA). Under NHPA, and ARPA federal agencies can only disclose locations of cultural sites if site preservation and protection is guaranteed. To Canyonlands, guaranteed preservation and protection means having ongoing programs of stabilization, maintenance, ranger patrols, or the presence of physical protection devices such as signs, barriers, register boxes, pathways, etc.

In Canyonlands' site disclosure policy, sites which have a long history of visitor use are marked on USGS topographic maps, are well-known to visitors, and are available for people to visit. Since these "Class I" sites receive the greatest impacts from visitors, they receive the greatest direct physical protection.

Class II sites are defined as more fragile and vulnerable to visitor impacts than Class I sites. Visitors may request directions to a specific Class II site but, in addition to receiving locational information, visitors are told how to behave to preserve sites. When visitors are told how to find rock art sites they are told not to touch the rock art or leave any marks or graffiti. Directions to structural sites include instructions not to enter structures, not to lean or climb on walls, to leave artifacts in place, to stay on existing trails, etc. Ongoing monitoring records changes and impacts to Class I and II sites.

The majority of cultural sites are completely vulnerable to visitor impacts. Visitors are welcome to discover these sites on their own, but "Class III" sites are not stabilized or maintained, so their locations cannot be disclosed. Fewer people visit these sites, and they generally show less visitor related impacts.

Maintaining the site disclosure policy allows Canyonlands to balance demands of visitors to access cultural sites with mandates to preserve and protect sites. The site disclosure policy relates to other programs of direct and indirect physical protection.

Cultural Management Strategies that Vary By Alternative. In the Day Use, Salt Creek and Horse Canyon section, the Preferred Alternative is to close the Salt Creek Road to vehicle traffic at Peekaboo, and to gate the Horse Canyon Road above Tower Ruin. There is concern that by eliminating vehicle traffic in much of Salt Creek, traffic would be diverted to Horse Canyon, impacting the archeological sites in this portion of the Salt Creek Archeological District. Unlimited vehicle traffic to Tower Ruin will continue, but only guided tours will be permitted beyond this. Use in this area by guided tours will have little additional impact on the resources and will provide an opportunity to educate people interested in visiting archeological sites. Other alternatives formulated to protect cultural resources include prohibitions on climbing in the Salt Creek Archeological District and working with the FAA to regulate low overflights.

Ethnographic Resources. Inventories for ethnographic resources have not been undertaken. Native Americans with special concerns in the Canyonlands region will be invited to participate in this plan as interested parties. Ethnographic resources are defined by the NPS as any natural or cultural resource, landscape or natural feature that is linked to a cultural community by ongoing practices of that community.

Socioeconomic Resources

Regional Economy. Tourism to Canyonlands, combined with tourism to the complex of public lands in southeast Utah, contribute significantly to the economics of gateway communities. Based on a 1990 survey (Littlejohn, 1990) of visitors to Canyonlands (front and backcountry), the average visitor group expenditure for the day was \$114, the average individual visitor expenditure per day was \$46. The greatest proportion of money spent was on food (32%), with the remainder of expenditures evenly distributed between lodging, travel, and other expenses. With inflation, these expenditures can be expected to rise under all alternatives.

Under the Preferred Alternative of zoning and limits that will affect numbers of backcountry users during peak seasons (spring and fall), grocery expenditures might decrease, while lodging and restaurant expenditures might increase, since visitors might shift from backcountry overnight camping to front country day use. As Orange Cliffs management strategies allow for some growth in visitation, there should be little effect in the associated economics. It is important to note that while Canyonlands visitation reached 396,911 in 1992, only a small number (15,629 or 4% in 1992) of users spend the night in the backcountry. Overnight visitors will be most affected by the Preferred Alternative; some day users will also be affected. Any negative economic effect is anticipated to be negligible as proposed use levels approximate 1992 use. The

proposal presented by the Preferred Alternatives will not allow unrestrained future growth, but provides for sustained use. Some of the use not accommodated in Canyonlands and Orange Cliffs will continue to be displaced to other public lands and to local communities.

Visitor Experience and Use. Based on a 1990 survey (Littlejohn, 1990) asking what features were important to their Canyonlands visit, scenic views and clean air were important to over 90 percent of surveyed visitors, while solitude and wilderness were the next most important features. In addition to these survey results, visitor comments on this plan indicate the majority of backcountry users want NPS to manage the backcountry so solitude is available. Under the No Action Alternative, visitation will continue to rise and the visitors' experiences in the backcountry will continue to degrade due to crowding, trampling, and degradation of natural and cultural resources.

Under the Preferred Alternative of zoning and designated campsites, visitors' freedom of movement will be constrained, but the goal of the zonal scheme and designated campsites is to maximize the range of recreational opportunities available to visitors while ensuring visitors have opportunities for solitude and a "wilderness experience." An advanced reservation system will ensure visitors access to an area if a reservation is obtained. Other people may be frustrated if they do not plan in advance, or if the area they wish to visit is full.

Under the Preferred Alternative for saddle and pack stock use, opportunities to ride or use pack stock will be reduced. However, based on 1990 statistics (Littlejohn, 1990), less than 1 percent of Canyonlands' visitors use saddle horses or pack stock. This is the least-common visitor activity in Canyonlands and, with rising competition for use of trails or roads with other users, the Preferred Alternative should result in improved visitor experiences for the majority of visitors who are hiking, four-wheel driving, or bicycling visitors.

Under the Preferred Alternative for facilities, designated roads and trails which allow visitors to access the backcountry will continue to be maintained. Some visitors have objected to current levels of maintenance. The Preferred Alternative is to prepare a written document guiding Maintenance Divisions in acceptable levels maintenance for roads and trails. The Preferred Alternative for accessing untrailed zones is that visitors must travel by the least impacting route. In those untrailed zones where resources continue to degrade, designated trails may be established. This will limit visitor freedom, but will result in greater resource protection.

Under the Preferred Alternative for facilities, charcoal fires will still be allowed to provide for traditional barbecuing and Dutch oven cooking. Those preferring the atmosphere created by burning wood will be impacted. Under Alternative B where no fires would be permitted, cooking would take place solely on campstoves. These alternatives reduce impacts to natural resources but may be less appealing to visitors.

Under the Preferred Alternative for rock climbing, existing routes will remain in use but new routes will be prohibited. If the climbing Alternative A of yearly applications for new routes is selected, non-climbing visitors might object to the impacts of new hardware, webbing, etc., left on the new climbs.

Under all alternatives, campsites in flood plains will be moved. Since flood plains are where trees and shade are located, and where most visitors prefer to camp, moving the campsites will result in less attractive but safer campsites.

Under all alternatives, numbers of day users will remain unlimited, with the exception of Horse Canyon and possibly Horseshoe Canyon. This will impede visitors' ability to experience solitude. It may also result in increased noise levels, crowding, and impaired scenic views due to the presence of too many people. Increasing day users will burden existing facilities such as roads, trails, and toilets. However, it will allow all people entering the park access to backcountry recreation.

Solitude and Silence. Studies show that solitude and silence are much valued by the Canyonlands visitor. Increases in visitation are seen to be contrary to these needs. The Preferred Alternative, by establishing zones, by creating advanced reservations, and by distributing permits and designating some campsites, provides opportunities for overnight backcountry users to experience different levels of these resources, depending on the zone accessed. The minority of visitors who prefer unlimited access over solitude or silence may be impacted. All alternatives allow for unlimited amounts of day use and, in popular areas during the busy season, it is predicted that there will be significantly reduced opportunities to experience these resources.

Commercial Issues. Filming. Although the park derives little benefit from film activities, and public input on the scoping phase for this Plan revealed high support for banning or highly restricting such activities, the local communities actively promote and support the film industry. The Preferred Alternative would curtail activities that were previously authorized; however, historical instance of filming in the backcountry is low.

If a more permissive interpretation of filming guidelines results in more filming, more backcountry users may be exposed to disruption of their park experience, and administering permits would absorb more park staff time.

Commercial Operations. When visitors were asked to rate important features in their 1990 Canyonlands visit, commercial tours were the least important feature. A full 84 percent of surveyed visitors ranked commercial tours as not important or somewhat important to them. It is important to understand, however, that visitors who arrive at the park with a commercial tour operator are still bona fide park visitors whose experience is as important to them as any

other visitor experience.

Between 1990 and 1992, commercial backcountry land tour operators of all types served approximately 1 percent of all park visitors. The Preferred Alternative which reduces group size, limits access to zones and campsites, and closes certain roads, combined with the cost of doing business (insurance, repairs, reservation fee payments, etc.), will have a negative impact on the profitability of some commercial backcountry tours. Institution of mandatory commercial guide service in Horse Canyon or elsewhere would guarantee a commercial market; however, to make the service profitable (which is necessary in order to be viable), costs to visitors would increase. Expansion of commercial tours could displace some non-commercial visitors.

Other Agencies. There are concerns from agencies administering land adjacent to Canyonlands that limiting visitation in peak months would push visitors onto adjacent lands, resulting in resource impacts (see Cumulative Impacts section). However, the goal of the Preferred Alternative for campsite reservations and the zonal system, is to disperse visitors temporally and spatially so that adjacent public lands remain unimpacted. It is, however, anticipated that there will be additional impacts possible to adjacent lands. The need to address the same issues identified in this document on other federal lands in southeastern Utah on a regional basis is under discussion and initial planning.

Cumulative Impacts

Cumulative effects of the proposed alternative will reduce much of the growth of impacts that are currently effecting natural resources.

- Trampling of vegetation and soil crusts will be reduced by capping the number of permits allowed per zone per night. This will reduce crowding during the peak seasons and fewer revegetated areas (campsites) will form. Designated campsites in areas of concern will also reduce the formation of multiple new campsites and trampled areas. Some trampling will continue with rising numbers of day users traveling off trail.
- A reservation system will allow visitors to know before arriving at Canyonlands if camping is available. A new reservation system, along with the new limits on permits, may initially result in more "overflow" to public lands adjacent to NPS units. Once the system is widely known, it will result in fewer visitors arriving without definite plans for accommodations. Past overflow impacts result from large numbers of parties camping near the Lockhart Basin road, the Davis Canyon road, the Lavender Canyon road, and Indian Creek Canyon. "Overflow" camping is most concentrated on busy spring weekends. Not all campers in these regions are "overflow," some have chosen the BLM area as their destination. The major impacts resulting from camping and recreational use in these areas include: collection of firewood, remains of ground fires, and the destructions of cryptobiotic soil crusts and ground vegetation from off-road activities.
- Joint planning with Glen Canyon National Recreation Area on the Orange Cliffs Unit will mitigate overflow from the Maze District and disperse users in a way that will keep resource damages low.
- Water sources are further protected with a prohibition against washing, use of soaps, and swimming. With driving in Salt Creek limited to the road below Peekaboo, accumulation of vehicle fluids in water sources will be minimized.
- Cumulative effects to riparian areas will be reduced with the removal of seven miles of four-wheel-drive roads and with controlled numbers of campers in designated sites in the Salt Creek riparian area.
- The tolerance of wildlife to impacts was considered in designating the numbers of permits allocated per zone and the zone boundaries. This proposed strategy will reduce cumulative impacts from overnight users. Increasing day use will continue to affect wildlife in day use areas.

AGENCIES CONTACTED

Other federal agencies have been involved in this planning process. These include:

United States Forest Service
Monticello District

Bureau of Land Management
Grand Resource Area
San Juan Resource Area
Henry Mountain Resource Area

National Park Service
Glen Canyon National Recreation Area
Grand Canyon National Park
Navajo National Monument
Canyon de Chelly National Monument
Wupatki National Monument

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LIST OF PREPARERS

Sarah Marshall, Planning Technician
Larry Thomas, Chief of Resource Management
Tony Schetzle, Chief Ranger
Nancy Coulam, Archeologist

PLANNING TEAM

Canyonlands National Park

Walt Dabney, Superintendent, Southeast Utah Group
Larry Thomas, Chief of Resource Management
Tony Schetzle, Chief of Visitor Protection
Larry Frederick, Chief of Interpretation
Sandra Holloway, Chief of Concessions
Jayne Belnap, Research Ecologist
Nancy Coulam, Archeologist
Craig Hauke, Resource Management Specialist
Sarah Marshall, Planning Technician
Andy Nettell, Park Ranger, Island-in-the-Sky District
Gary Cox, Park Ranger, Maze District
Cynthia Beyer, Park Ranger, Maze District
Paul Hays, Maintenance Leader, Maze District
Fred Patton, District Ranger, Needles District
Brian Coulter, Maintenance and Operations Foreman, Needles District

Glen Canyon National Recreation Area

John Lancaster, Superintendent
Larry May, Assistant Superintendent
John Ritenour, Chief of Resource Management
Victor Knox, Chief of Professional Services
Ken McMullen, Environmental Specialist
Kerry Haut, Hite Subdistrict Ranger