

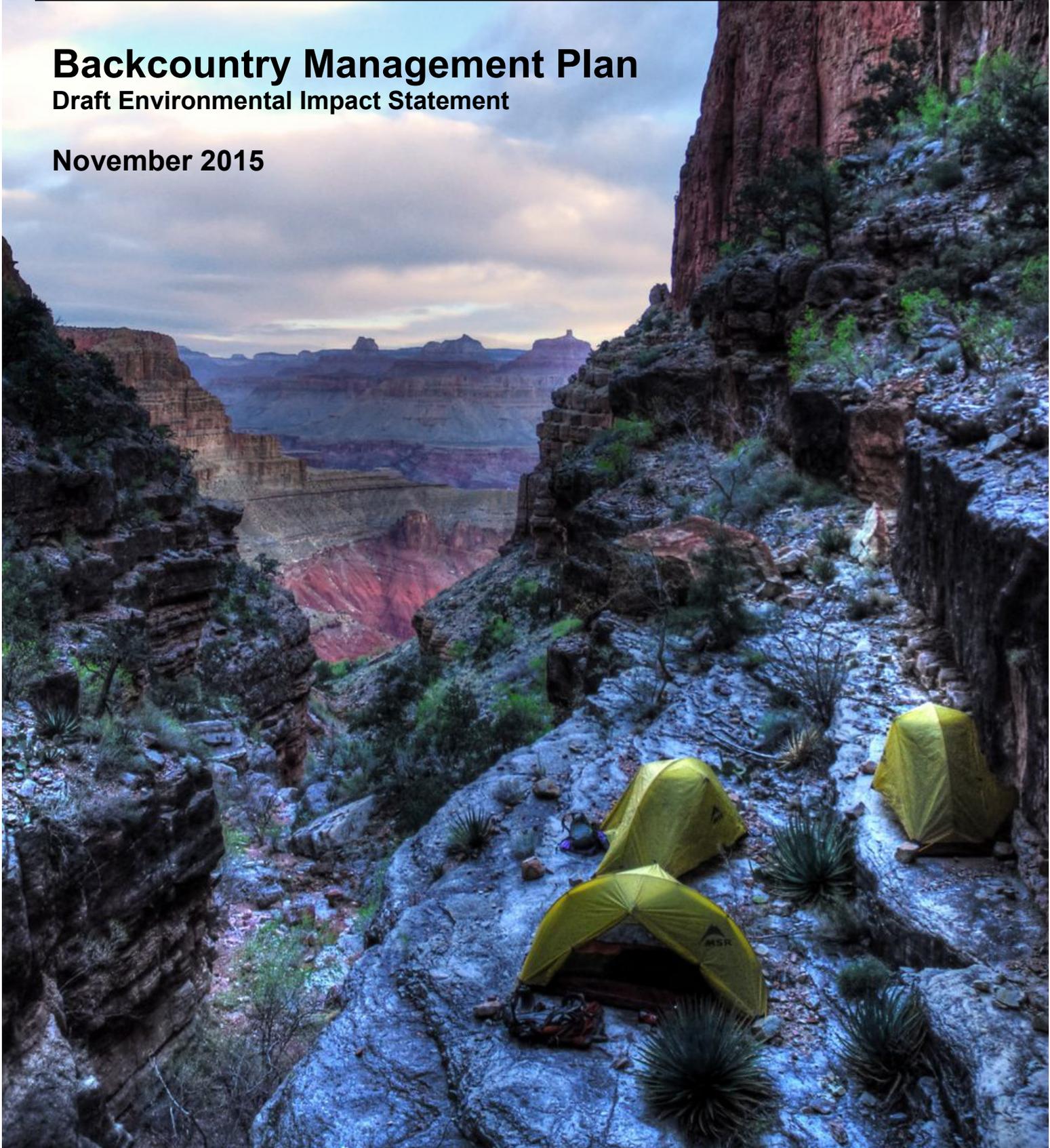
**National Park Service
U.S. Department of the Interior
Grand Canyon National Park**



Backcountry Management Plan

Draft Environmental Impact Statement

November 2015



Cover: National Park Service image

**UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
GRAND CANYON NATIONAL PARK
BACKCOUNTRY MANAGEMENT PLAN / DRAFT ENVIRONMENTAL IMPACT
STATEMENT**

Lead Agency: National Park Service (NPS), U.S. Department of the Interior

This Grand Canyon National Park Backcountry Management Plan / Draft Environmental Impact Statement (plan/DEIS) evaluates the impacts of a range of alternatives for managing backcountry use in Grand Canyon National Park in a manner that protects and preserves natural and cultural resources and natural processes and provides a variety of visitor experiences while minimizing conflicts among various users.

This plan/DEIS evaluates the impacts of the no-action alternative (Alternative A) and three action alternatives (Alternatives B, C, and D). Alternative A would allow backcountry use levels to remain similar to current, commercial use would not be capped and would continue to be managed under commercial use authorizations, and emerging uses such as canyoneering and extended day hiking and running (rim-to-rim) would not be managed. Under all action alternatives (B, C, and D) an adaptive management process would be used to manage climbing, canyoneering, extended day hiking and running, Tuweep day use, Use Area management and human waste management, and commercial overnight backpacking would be managed through concession contracts instead of commercial use authorizations. Alternative B, the NPS preferred alternative, would reduce group size for overnight backpacking in the two most remote backcountry zones, manage river-assisted backcountry travel using 31 route-based river sections, and limit commercially guided services; overnight use in the backcountry is expected to decrease by 1%. Alternative C would manage river-assisted backcountry travel using 11 river sections, allow greater access to the backcountry through retention of large groups and development of campsites in the Corridor, and limit commercially guided services; overall, overnight use in the backcountry is expected to increase by 5%. Alternative D, the environmentally preferable alternative, would concentrate backcountry use in non-wilderness areas, reduce group size for overnight backpacking in all zones outside of the Corridor, and limit commercial use and only allow it in non-wilderness areas; overall, overnight use in the backcountry is expected to decrease by 3%.

The review period for this document will end 90 days after publication of the U.S. Environmental Protection Agency Notice of Availability in the Federal Register. During the 90-day comment period, comments will be accepted electronically through the NPS Planning, Environment and Public Comment (PEPC) website and in hard copy delivered by the U.S. Postal Service or other mail delivery service or hand-delivered to the address below. Comments will also be accepted during public meetings on the plan/DEIS. Comments will not be accepted by fax, email, or in any format other than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will also not be accepted.

For further information, visit <http://parkplanning.nps.gov/grcabmp> or contact:
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Backcountry Management Plan Draft Environmental Impact Statement

**National Park Service
U.S. Department of the Interior**

NOVEMBER 2015

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EXECUTIVE SUMMARY

This Draft Environmental Impact Statement (plan/DEIS) for the Backcountry Management Plan (BCMP) at Grand Canyon National Park (Grand Canyon or the park) analyzes a range of alternatives for management of the park's backcountry. The plan/DEIS assesses the impacts that could result from implementation of any of the three action alternatives, and assesses the impacts that would occur if the park were to take no action at all (no-action alternative).

Upon conclusion of the plan/DEIS and EIS process, the alternative selected for implementation will become the Backcountry Management Plan, which will specifically address types and levels of use appropriate for the backcountry, most of which is proposed for Wilderness designation under the Wilderness Act.

Background

Grand Canyon's backcountry encompasses over 1.1 million acres, most of which are proposed for Wilderness designation. The backcountry is currently managed under the 1988 Backcountry Management Plan. Since that time, National Park Service (NPS) Wilderness regulations and policies have been updated, visitors are participating in new recreation activities in the park, and site specific issues and concerns have been identified. There is a need to revise the 1988 Backcountry Management Plan.

Purpose of the Plan

The purpose of this plan/DEIS is to analyze and determine the appropriate type, extent, and location of backcountry use in Grand Canyon. The plan/DEIS will establish an up-to-date adaptive management framework that allows the public to experience the park's unique backcountry and Wilderness resources and values while preserving them for the enjoyment of future generations.

Need for Action

The primary need for a revised BCMP is to address issues concerning visitor experience and resource protection in the park's backcountry including

- Current 1988 Backcountry Management Plan is not consistent with the park's 1995 General Management Plan (GMP) or NPS Wilderness Policy
- Commercial backcountry services have not been analyzed to determine if they are necessary and appropriate
- Some Use Areas in Wilderness have degraded resources and wilderness character which need to be addressed
- Cottonwood Campground capacity limits cross-canyon overnight opportunities
- Emerging recreational uses put demands on park resources un-envisioned in the 1988 Plan
 - Rim-to-rim and rim-to-river day use (hiking and running) has become popular and resulted in issues which need to be addressed including human waste and trash along trails, overused toilets, complaints from other Corridor users, trail etiquette problems, declining opportunities for solitude, and crowding at trailheads and Phantom Ranch
 - Impacts to resources from river-assisted backcountry travel, canyoneering, and climbing are not well understood and need to be addressed
- An adaptive management process has not been developed to guide decision-making for ongoing and emerging issues and concerns
- Increased visitation to the Tuweep area has exceeded the capacity established in the 1995 GMP and needs to be addressed
- Tribes have expressed concerns related to culturally significant places and access across tribal lands

Goals and Objectives in Taking Action

GOALS

- Protect and preserve the park's natural and cultural resources and values and integrity of wilderness character
- Provide a framework and programmatic guidance for consistent decision making in managing backcountry
- Provide a variety of visitor opportunities and experiences for public enjoyment in a manner consistent with park purposes and preservation of park resources and values
- Provide for public understanding and support of preserving fundamental resources and values for which Grand Canyon was established

OBJECTIVES

Visitor Use and Experience

- Provide opportunities for visitors to experience and be inspired by Grand Canyon's backcountry and Wilderness resources and values while ensuring resource protection
- Establish levels and types of visitor opportunities, non-commercial and commercial, to enhance visitor experience and minimize crowding, conflicts, and resource impacts

Resources

- Manage backcountry use to protect wildlife populations and habitat by minimizing human-caused disturbances and habitat alteration
- Manage backcountry use to minimize impacts to native vegetation, reduce exotic plant species spread, and preserve fundamental biological and physical processes
- Manage use to enhance wilderness character and values
- Develop and implement an adaptive management process that includes monitoring natural, cultural, and experiential resource conditions and responding when resource degradation has resulted from use levels
- Preserve and protect natural soil conditions by minimizing impacts to soils from backcountry recreational activities
- Manage recreational use to minimize adverse chemical, physical, and biological changes to water quality in tributaries, seeps, and springs
- Manage recreational use to preserve cultural resource integrity and condition

Coordination and Cooperation

- Work with park neighbors including tribes, federal land managers, park partners, gateway communities, and other stakeholders to improve coordination and communication regarding backcountry use
- Work with adjacent tribal land managers to improve access to the park's backcountry

Park Management and Operations

- Establish recreational use levels sustainable for both resource protection and park operations
- Comply with all laws, regulations and policies related to backcountry management

Purpose and Significance of Grand Canyon National Park

National park system units are established by Congress to fulfill specified purposes. A park's purpose provides the foundation for decision-making as it related to the conservation of park resources and

providing for the enjoyment of future generations. As stated in the 2010 Grand Canyon National Park Foundation Statement (NPS 2010)

As a place of national and global importance, the park will be managed to

- preserve and protect Grand Canyon's unique geologic, paleontologic, and other natural and cultural features for the benefit and enjoyment of the visiting public
- provide the public opportunity to experience Grand Canyon's outstanding natural and cultural features, including natural quiet and exceptional scenic vistas
- protect and interpret Grand Canyon's extraordinary scientific and natural values

Grand Canyon is one of the planet's most iconic geologic landscapes. During the last six million years, the Colorado River carved Grand Canyon; these same erosional and tectonic processes continually shape the canyon today. Grand Canyon's exposed layers span more than one third of Earth's history, and record tectonic and depositional environments ranging from mountain-building to quiet seas. Taken as a whole, Grand Canyon, with its immense size, dramatic and colorful geologic record exposures, and complex geologic history, is one of our most scenic and scientifically valued landscapes.

The force and flow of the Colorado River along with its numerous and remarkably unaltered tributaries, springs, and seeps provide plants and animals opportunity to flourish in this otherwise arid environment. These vital resources represent transmission of local aquatic recharge from high-elevation rims to the arid inner canyon. There are hundreds of known seeps and springs throughout the park, and probably more to be discovered.

Wilderness landscapes are an important current resource and future preserve. Park boundaries extend beyond canyon walls to include 1,904 square miles (1,218,376 acres), of which 94% is managed as Wilderness. When combined with additional contiguous public and tribal lands, this area comprises one of the largest undeveloped areas in the United States. Grand Canyon offers outstanding opportunities for visitor experiences including extended solitude, natural quiet, clean air, dark skies, and a sense of freedom from the mechanized world's rigors.

Grand Canyon contains a superlative array of natural resources. Much of this diversity can be attributed to the park's dramatic topographic spectrum. This elevational variety provides microhabitats for natural processes supporting rare and endemic plant and wildlife species. These diverse habitats serve as a living laboratory for scientific research in numerous fields that contribute greatly to our understanding of the relationship between biotic communities and abiotic environments.

The human-Grand Canyon relationship has existed for at least 12,000 years. The canyon is an important homeland for native people and a place of historic Euro-American exploration and discovery. Today that relationship continues, both for ongoing American Indian associations and millions of visitors who visit the canyon and its surrounding landscapes.

Grand Canyon's immense and richly colored scenic vistas, enhanced by a natural setting, inspire a variety of emotional, intellectual, artistic, and spiritual impressions. Its unsurpassed natural beauty is a source of profound inspiration for people worldwide.

Issues and Impact Topics

Issues associated with implementing a Backcountry Management Plan at Grand Canyon were initially identified by the Grand Canyon Backcountry Management Plan EIS Planning Team (consisting of park

staff) along with other park staff during internal scoping and were further refined through public scoping and consultation with cooperating agencies.

This plan/DEIS analyzes the following impact topics which are discussed in more detail in Chapters 1 and 3.

<ul style="list-style-type: none"> • Natural Resources <ul style="list-style-type: none"> ○ Soils ○ Water Resources ○ Soundscape ○ Cave Resources ○ Vegetation ○ Wildlife ○ Special Status Plant Species ○ Special Status Wildlife Species 	<ul style="list-style-type: none"> • Cultural Resources <ul style="list-style-type: none"> ○ Archaeological Resources ○ Historic Structures ○ Traditional Cultural Properties and Ethnographic Resources ○ Cultural Landscapes 	<ul style="list-style-type: none"> • Visitor Use and Experience • Socioeconomic Environment • Park Management and Operations • Adjacent Lands • Wilderness Character
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ALTERNATIVES

The National Environmental Policy Act (NEPA) requires federal agencies to explore a range of reasonable alternatives that address the purpose of and need for the action. Action alternatives may originate from the agency proposing the action, local government officials, or members of the public at public meetings or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies. Action alternatives analyzed in this document were developed based on the results of internal and public scoping, workshops with park staff, and meetings with tribes other federal agencies. These alternatives meet the management objectives of the park, while also meeting the overall purpose of and need for the plan/DEIS. Dismissed from further analysis were alternative elements that were considered but were not technically or economically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts to resources, and/or conflicted with the overall management of the park or its resources. A complete list of the alternatives considered, as well as those considered but dismissed from further analysis, is provided in Chapter 2 of the plan/DEIS. The elements of all four alternatives are detailed in Table ES.1a, b, and c. How each of these alternatives meets the objectives of the plan/DEIS is detailed in Table ES.2 at the end of this summary.

NO-ACTION ALTERNATIVE

Alternative A

Alternative A would continue existing management practices, resulting in a continuation of current trends in resource conditions and visitor opportunities. Analysis of a no-action alternative is required by Council on Environmental Quality (CEQ) regulations.

ACTION ALTERNATIVES

Common to All Action Alternatives (B, C, and D)

Action alternatives (B, C, and D) propose changes to current backcountry management.

Some proposed changes to existing backcountry management practices apply to all action alternatives and include

- Two additional management zones to improve resource management of backcountry roads and areas along the Colorado River
- Determination of necessary and appropriate backcountry commercial services
- Administrative use guidelines
- Commercial filming guidelines
- Arizona Trail use
- Bicycling
- Tribal lands and interests
- Adaptive management process for addressing increasing demand for recreational access and uncertainty of how different recreational uses impact park resources. The adaptive management process would be applied to
 - Climbing
 - Canyoneering
 - Extended day hiking and running
 - Tuweep day use
 - Use area management
 - Human waste management

Specific to Individual Alternatives (A, B, C, and D)

Topics covered under all action alternatives include

- Maximum group size limits for overnight backpacking
- RABT management
- Commercial services including overnight backpacking, day hiking, and backcountry vehicle tours at Tuweep
- Backcountry roads, trails, and routes
- Tuweep facilities
- Corridor zone camping
- Deer Creek/Tapeats Creek Complex
- Deer Creek Narrows
- Hance Creek, Cottonwood Creek, and Cremation Use Areas

Alternative B NPS Preferred

Alternative B focuses on providing a variety of recreational activities and a high level of protection for natural and cultural resources and wilderness character. This alternative would place limits on currently unlimited activities to protect resources and enhance visitor experience. Guided services would be allowed in certain backcountry areas while other areas would remain free of guided services. This alternative increases the number of Primitive Zone Use Areas where visitors can expect increased opportunities for solitude and minimal infrastructure and maintenance activities.

Alternative C

Alternative C focuses on recreational activities and expanded opportunities for these activities. This alternative would increase opportunities for primitive and unconfined recreation through less management restrictions. Guided services would be allowed in more Use Areas throughout the backcountry when

compared with other action alternatives. Alternative C would result in increased overall use due to additional Threshold Zone Use Areas and Corridor Zone campsites.

Alternative D

Alternative D focuses on resource protection and opportunities for solitude. This alternative would allow for recreational use, but would prioritize preservation of natural and cultural resources and wilderness character. Recreational use would be concentrated in non-wilderness areas with limited facility improvement. Similarly, guided services would be limited to two non-wilderness zones: Corridor and a proposed Road Natural. For overnight backpacking, large groups would be allowed in the Corridor Zone, but not in zones in Wilderness (Threshold, Primitive, and Wild). These actions would allow for self-exploration and increased opportunities for solitude in Wilderness. Overall, this alternative would result in decreased use due to increased Primitive Use Areas, minimal increase in Corridor Zone campground capacity, and decreased group size limits.

Environmental Consequences

Impacts of the alternatives were assessed in accordance with Director’s Order 12 and Handbook: Conservation Planning, Environmental Impact Analysis and Decision-Making. This handbook requires that impacts on park resources be analyzed in terms of their context, duration, and intensity. The analysis provides decision makers and the public with an understanding of the implications of backcountry management actions in the short and long-term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists.

For each impact topic, methods were identified for measuring potential changes to the park’s resources in each proposed action alternative. Intensity definitions were established for each impact topic to help in understanding the severity and magnitude of changes in resource conditions, both adverse and beneficial. A detailed description of how these impacts were analyzed across proposed action alternatives can be found in Chapter 4. Table ES.3, at this end of this summary, summarizes the results of the impact analysis for the impact topics that were assessed.

Table ES.1a Elements of Alternatives Common to All Action Alternatives (B, C, and D)

Alternative A		Common to All Action Alternatives (B, C, and D)
Management Zones		
	<ul style="list-style-type: none"> • Corridor Zone • Threshold Zone • Primitive Zone • Wild Zone 	Same as A and add <ul style="list-style-type: none"> • Road Natural Zone • River Zone
Recreational Use		
Arizona Trail	<ul style="list-style-type: none"> • No flexible permitting available to Arizona Trail through-hikers • South Rim camping at Mather Campground or outside park boundary on USFS land • No bicycle use on Arizona Trail’s North Rim segment 	<ul style="list-style-type: none"> • Flexible permit system allows through-hikers to obtain Corridor Zone backcountry permits • NPS considers designating walk-in Arizona Trail camping possibly near South Kaibab Trailhead • Bicycles allowed on Arizona Trail’s North Rim segment
Bicycling	<ul style="list-style-type: none"> • Non-commercial bicycling allowed in backcountry on park roads open to private vehicles • No bicycle use allowed on Arizona Trail’s North Rim segment 	<ul style="list-style-type: none"> • Roads currently open to bicycling become part of proposed Road Natural Zone (see Map 2.4a-d) • Arizona Trail’s North Rim segment open to bicycle use

<p>RABT</p>	<ul style="list-style-type: none"> • Day use not allowed • RABT not identified on overnight backcountry permits • PFDs (Type III or V) required to be worn while on the river • 5-mile limit 	<ul style="list-style-type: none"> • Limited day use by permit • Activity identified on overnight backcountry permits • PFDs (Type III or V) required to be worn while on the river • RABT watercraft carried in and out by user during the permitted itinerary • Maximum RABT group size six persons • Identifies river sections closed to RABT • Allowable mileage varies by individual action alternative B, C, D
<p>Tribal Lands and Interests</p>		
	<ul style="list-style-type: none"> • NPS works with traditionally associated tribes to educate visitors about access to the park's backcountry through tribal lands, and consults with tribes regarding protection and treatment of archaeological and ethnographic resources 	<p>Same as A and</p> <ul style="list-style-type: none"> • NPS works with backcountry users to insure awareness regarding backcountry access across tribal lands requires permits from appropriate tribal offices • NPS works with Havasupai Tribe re: access across Great Thumb on pilot program to permit ten small groups (1-6 people) across Great Thumb to the park's backcountry March-May. Permit conditions include: tribal escort, two vehicle maximum, four-wheel drive/high-clearance, assigned parking • Hematite Mine (adjacent to the Colorado River) closed to visitation • NPS works with Traditionally Associated Tribes to determine appropriate protection including access and use of culturally significant sites
<p>Administrative Use</p>		
	<ul style="list-style-type: none"> • Backcountry administrative users (resource management, maintenance, interpretation) generally obtain overnight backcountry permits. NPS and outside researchers must also obtain research permits. Wilderness activities evaluated through minimum requirement analysis (MRA) 	
<p>Guided Services Non-commercial</p>		
<p>NPS</p>	<ul style="list-style-type: none"> • NPS backcountry interpretive day hikes to Cedar Ridge and North Rim locations; Environmental Educational Program overnight trips (1-3 times/year) 	<p>Same as A or may increase (subject to further analysis)</p>
<p>Cooperating Association Programs</p>	<ul style="list-style-type: none"> • NPS Cooperating Association¹: Grand Canyon Field Institute (GCFI) programs reviewed annually by NPS managers to assure course material appropriate and in keeping with NPS mission and trips require backcountry permits 	<ul style="list-style-type: none"> • Continue annual review and GCFI subject to Requirements For Permitted Backcountry Operators outlined in Appendix F and require backcountry permits
<p>Guided Services Commercial</p>		
<p>Overnight Backpacking</p>	<ul style="list-style-type: none"> • Allowed in all existing backcountry zones • Authorized by commercial use authorization (CUA) • No caps 	<ul style="list-style-type: none"> • Not allowed in Wild Zone • Majority managed by contract and limited opportunity for CUA • Proposed caps on groups/night/Zone vary by action alternative B, C, D • Other elements of Commercial Overnight Backpacking Services vary by individual Alternative B, C, D • Subject to Requirements For Permitted

¹ Cooperating associations are mission-driven nonprofit organizations incorporated under state law. They operate under a signed standard agreement with the NPS to provide program and financial assistance for interpretation, education, and research in national parks through production and sale of educational media to the public

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		Backcountry Operators outlined in Appendix F
Day Hiking	<ul style="list-style-type: none"> • Unlimited number of CUAs issued • Day hiking locations and distances limited 	<ul style="list-style-type: none"> • Not permitted in Wild Zone • Other elements of Commercial Day Hiking Services vary by individual Alternative B, C, D
Bicycling	<ul style="list-style-type: none"> • Allowed to Tuweep and Point Sublime • Maximum group size of 14 includes guides. All groups maintain ratio of no less than 1 guide for 1 to 6 clients, and 2 guides for 7 to 12 clients 	<p>Same as A and</p> <ul style="list-style-type: none"> • Arizona Trail North Rim segment open to commercial bicycle tours
Backcountry Vehicle Tours	<ul style="list-style-type: none"> • Group size limited to 15 people and one vehicle • 22-foot-vehicle length maximum • Commercial Vehicle Tours only at Tuweep • Up to two trips per day per operator 	<p>Same as A and</p> <ul style="list-style-type: none"> • Trip number per day vary by individual action alternative B, C, D
Commercial Filming		
	<ul style="list-style-type: none"> • Park policy does not specifically address commercial filming in backcountry 	<ul style="list-style-type: none"> • Filming purpose must meet necessary and appropriate Wilderness test • No commercial activity in Wild Zone • Wilderness commercial filming requests evaluated under MRA

Table ES.1b Summary of Elements Common to Action Alternatives (B, C, and D) Subject to Adaptive Management

	Alternative A	Adaptive Management	
	Current Conditions (No Adaptive Management)	Implement on BCMP Adoption	Implement as Needed Through Adaptive Management
Climbing	<ul style="list-style-type: none"> No current park anchor policy Climbing not identified on permits No power drills in Wilderness 	<ul style="list-style-type: none"> Decision framework for new anchor placement Overnight backcountry permit identifies activity Monitor use and resource impacts through backcountry permitting process and field surveys Decision framework for new anchor placement No power drills in Wilderness Minimum impact climbing education 	<ul style="list-style-type: none"> Day use permit required and identifies climbing route Use limits for specific locations <ul style="list-style-type: none"> restrict number of groups by day or season (overnight and day use) change maximum overnight group size (decrease or increase) seasonal or permanent restrictions for natural and/or cultural resource protection Climbing Management Plan developed
Canyoneering	<ul style="list-style-type: none"> No current park anchor policy Canyoneering not identified on permits Limited educational information No power drills in Wilderness 	<ul style="list-style-type: none"> Decision framework for new anchor placement Overnight backcountry permit identifies activity Monitor through backcountry permitting process and field surveys No power drills in Wilderness Maximum group size 6 Minimum impact canyoneering education 	<ul style="list-style-type: none"> Day use permit required and identifies canyoneering route Use limits for specific locations <ul style="list-style-type: none"> restrict number of groups by day or season (overnight and day use) change maximum overnight group size (decrease or increase) seasonal or permanent restrictions for natural and/or cultural resource protection Canyoneering Management Plan developed
Extended Day Hiking and Running	<ul style="list-style-type: none"> No current park policy No day use permits 	<ul style="list-style-type: none"> Day use permits required seasonally for area in Table 2.5 and Map 2.6 Minimum cost \$5/person/day 	<ul style="list-style-type: none"> Limit group size (e.g., 30) Daily use limits (e.g., 250) <ul style="list-style-type: none"> designated days for groups or individuals policy for other trails Day use permits required year-round
Tuweep Day Use	<ul style="list-style-type: none"> GMP set goal to <i>provide uncrowded and primitive experience</i>, and day use capacity at 85 people or 30 vehicles at one time 	<ul style="list-style-type: none"> Develop Tuweep day use visitor information. May include road signs and existing local and regional visitor centers No more than one commercial stock trip/day 	<ul style="list-style-type: none"> Tuweep day use permit or reservation system Limits for vehicle number per party Designated days for group events
Use Area Management	<ul style="list-style-type: none"> Hermit (BM7): illegal camping outside designated camp area Granite Rapids (BL8): impact levels exceeded Deer Creek/Tapeats Creek Complex: use limits commonly exceeded due 	<ul style="list-style-type: none"> Hermit (BM7): designate new campsite along Hermit Trail Granite Rapids (BL8): group limit decreased from 3 to 2 Deer Creek/Tapeats Creek Complex: redefine Use Areas (Table 2.8a/Map 2.7) 	<ul style="list-style-type: none"> Decrease or increase Use Area limits and/or designate sites Variable seasonal use limits (e.g., higher in winter, lower in spring) Change camping designations: at-large to

	Alternative A Current Conditions (No Adaptive Management)	Adaptive Management	
		Implement on BCMP Adoption	Implement as Needed Through Adaptive Management
	to off-itinerary hiking		designated sites or designated to at-large <ul style="list-style-type: none"> • Redefine Use Area boundaries (e.g., split large Use Areas, identify complexes like Deer/Tapeats Creeks, Hermit/Monument) • Seasonal or permanent closures at specific locations
Human Waste Management	<ul style="list-style-type: none"> • Facilities located at designated campsites • Bury excrement, carry out toilet paper in areas without facilities 	<ul style="list-style-type: none"> • Human waste carry-out required at River Zone backcountry sites by all users (RABT, hikers, etc.) • Commercially guided backpacking trips required to carry out human waste in Use Areas without toilets 	<ul style="list-style-type: none"> • Replace existing toilets • Remove toilets • Install toilets at other sites • Specific zones or Use Areas require year-round or seasonal human waste carry-out • All Use Areas require seasonal or year-round human waste carry-out

Table ES.1c Summary of Elements Specific to Action Alternative B, C, or D

Element	Alternative A (Current)	Alternative B	Alternative C	Alternative D
Backcountry User Nights (Commercial and Non-Commercial)				
		Percent Change from Current by Zone²		
Corridor	53,821	55,531 (+3%)	59,421 (+10%)	54,846 (+2%)
Threshold	17,078	14,332 (-16%)	19,328 (+13%)	13,426 (-21%)
Primitive	20,698	20,770 (0.3%)	17,844 (-14%)	20,650 (-0.2%)
Wild	2,463	2,266 (-8%)	2,463 (0%)	2,266 (-8%)
Other	217	217	217	217
Total	94,277	93,116 (-1%)	99,273 (+5%)	91,405 (-3%)
Maximum Group Size for Overnight Backpacking by Zone (Commercial and Non-Commercial) (large/small)				
Corridor	11/6			
Threshold	11/6			
Primitive	11/6	6	11/6	6
Wild				
Commercial Overnight Backpacking				
Zone Allowed	All	Corridor, Threshold, limited Primitive	Corridor, Threshold, Primitive	Corridor
Authorization	Unlimited CUAs	Majority managed by contracts and limited opportunity for CUAs		
Permitting	<i>Commercial trips currently</i>	Percent of trips available to concessioners one year in advance:		
		100%	50%	75%
		<i>CUA holders would</i>	<i>Remaining percent available to concessioners and CUA holders to</i>	
	<i>make reservations through public backcountry reservation system up to four months in advance (same as non-commercial users)</i>			
		<ul style="list-style-type: none"> • CUAs limited to one permit/week and no more than 100 group nights/year • CUA use allowed up to 3 trips/year per operator • CUA holders could charter additional trips with contract holders 		
Caps	No Caps	Proposed Caps		
Corridor Zone	Current Use (2012) Number of Groups/Night			
Bright Angel	Up to 5/night	2/night; 4/month can be large		3/night; 6/month can be large
Indian Garden	Up to 4/night	1.5/night (max 2/night 2 nights of 4); 3/month can be large	1/night; 3/month can be large	2/night; 3/month can be large
Cottonwood	Up to 4/night			
Threshold Zone	Up to 6/night	2 small/night; 6 nights max in any Use Area/month 3 nights/month can be large	3 small/night; 9 nights max in any Use Area/month 3 nights/month can be large	0
Primitive Zone	Up to 7/night	1 small/night with max 3 nights in any Use Area/month	2 small/night with max 6 nights in any Use Area/month	0
Wild Zone	Up to 18/year (no more than 1/night)	0	0	0

² Projected user nights were calculated using specific Use Area changes proposed in alternatives (i.e., Granite, Deer Creek Complex, Hance, Cottonwood, additional Corridor Zone campsites, etc.) and with the assumption that if group sizes are reduced from 11 maximum to 6 maximum (as in Alternatives B and D for some zones), groups formerly 7-11 people would become 6. Projections are based on calendar year 2012 data for each night in each Use Area.

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Element	Alternative A (Current)	Alternative B	Alternative C	Alternative D
Commercial User Nights³	Current (2012) User Nights	Projected⁴		
Corridor	5011 (9.3%)*	6593 (11.9%)	5938 (10.0%)	9371 (17.1%)
Threshold	1572 (9.2%)	1572 (11.0%)	2359 (12.2%)	0
Primitive	1861 (9.0%)	786 (3.8%)	1572 (8.8%)	0
Wild	94 (3.8%)	0	0	0
Total	8538 (9.1%)	8952 (9.6%)	9869 (9.9%)	9371 (10.3%)
*Commercial user nights (percent of overall use)				
Commercial Day Hiking				
Group Size	11, minimum of 1 guide to 7 clients (2 guides with 9 clients)			
Allowed to	Recommended Limits	Limited To		
	<ul style="list-style-type: none"> Bright Angel Trail to Three-Mile Resthouse South Kaibab Trail to Cedar Ridge North Kaibab Trail to Supai Tunnel Hermit Trail to Santa Maria or Dripping Springs Grandview Trail to designated turnaround at Coconino Saddle Tanner Trail to Escalante Saddle (75-Mile Canyon Overlook) 		<ul style="list-style-type: none"> Same as Alternatives A and B AND Bright Angel Trail to Indian Garden South Kaibab Trail to Skeleton Point 	<ul style="list-style-type: none"> Bright Angel Trail to Three-Mile Resthouse South Kaibab Trail to Cedar Ridge North Kaibab Trail to Supai Tunnel
Commercial Backcountry Vehicle Tours (Tuweep)				
Maximum Trips/Day	<ul style="list-style-type: none"> Up to 2 trips/operator/day M-F Up to 1 trip/operator/day Sa-Su 	<ul style="list-style-type: none"> Up to 2 trips/day all operators combined 	<ul style="list-style-type: none"> Up to 3 trips/day M-F; 2 trips/day Sa-Su all operators combined 	<ul style="list-style-type: none"> Up to 1 trip/day all operators combined
Non-commercial River-assisted Backcountry Travel (RABT)				
River Travel	5-mile limit	31 river sections	9 river sections	11-mile limit
Day Use	Not permitted	Allowed with day use permit		
Backcountry Roads, Trails, and Routes				
South Rim Trails and Routes (Map 2.1)				
Eremita Mesa (1.8 miles)	Unmaintained hiking route	Same as A	Class 1 Wilderness Trail ⁵	Same as A
Cape Solitude (12.4 miles)		Class 1 Wilderness Trail		
Boundary Road (14 miles)		Same as A	Boundary Road open to vehicles, stock, bicycles and hikers	Same as A
Roads (Map 2.4a)				
Pasture Wash Vehicle Access	Roads across USFS, and Havasupai lands with access fee		Same as A and Boundary Road open (see above)	Same as A

³ User night: one hiker in the backcountry for one night.

⁴ Projected user nights assumes maximum booking in prime season and same booking as 2012 off-season.

⁵ See Appendix D, Trail Class Standards.

Element	Alternative A (Current)	Alternative B	Alternative C	Alternative D
North Rim Trails and Routes (Map 2.1)				
Tiyo Point (6.3 miles)	<ul style="list-style-type: none"> Unmaintained hiking routes No stock use 	<ul style="list-style-type: none"> Class 1 Wilderness Trail No stock use 	<ul style="list-style-type: none"> Class 4 Wilderness Trail Day stock use 	Same as A
Francois Matthes Point (4.7 miles)		Class 1 Wilderness Trail		
Walhalla Glades (7.3 miles)		Class 1 Wilderness Trail		
Komo Point (5.2 miles)		Same as A	Class 1 Wilderness Trail	
Roads (Map 2.4b)				
Basin Road, Kanabownits Swamp and Fire Point Roads	Open to vehicles, stock, bicycles, and hikers	Open to vehicles, stock, bicycles, and hikers as part of proposed Road Natural Zone		
Kanab Plateau Roads (Map 2.4c)	Road access to Kanab and SB Points, 150 Mile Canyon, and Schmutz	Road access to Kanab and SB Points, 150 Mile Canyon, and Schmutz as part of Road Natural Zone	Same as B, and convert 12 miles of former Kanab Plateau ranch roads to Class 1 Wilderness Trail	Same as B
Tuweep Road (Map 2.4d)	Open to vehicles, stock, bicycles, and hikers	Open to vehicles, stock, bicycles, and hikers as part of proposed Road Natural Zone		
Tuweep Facilities (Map 2.2 and Map 2.8)				
Vulcans Throne Road	Open to vehicles to rim	Convert to Class I trail; use road junction as parking/turnaround	Same as A	Same as B
Overlook Parking	Adjacent to Toroweap Overlook	Move close to campground as recommended in GMP		
Corridor Zone Camping (Groups/Night)				
Indian Garden	15 small/1 large campsites		15 small/2 large	Same as A
Bright Angel	30 small/2 large			
Cottonwood	11 small/1 large	up to 15 small/1 large	15 small/2 large	up to 13 small/1 large
Roaring Springs	Day use only		2 campsites	Same as A
Deer Creek/Tapeats Complex (Groups/Night)				
Esplanade (AY9)	2 small/1 large	3 small	2 small/1 large	2 small
Surprise Valley (AM9)	1 small/1 large	Use area split between Deer Creek, Upper Tapeats, and Bonita Creek		
Deer Creek (AX7)	2 small or 1 large	2 small	Same as A	2 small
Upper Tapeats (AW7)	2 small/1 large	3 small	3 small/1 large	3 small
Lower Tapeats (AW8)	1 small/1 large	Use area combined with Bonita Creek		

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Element	Alternative A (Current)	Alternative B	Alternative C	Alternative D
Bonita Creek (AW9)	Doesn't exist	2 small	1 small/1 large	1 small
Total Groups in Complex	12	10	11	8
Deer Creek Narrows				
Narrows Closure	As in Compendium, reviewed annually	Permanent restriction	Unrestricted access	Same as B AND restrict patio to one river trip at a time
Hance Creek/Cottonwood Creek/Cremation (Groups/Night)				
Hance Creek BE9/Primitive	2 small/1 large	3 small	Same as A	Same as B
Cottonwood Creek BG9/Primitive	2 small/1 large	3 small	Same as A	
Cremation BJ9/Primitive	2 small/1 large	3 small	1 small/1 large plus 1 small or large group at new designated site	
Hance Creek/Cottonwood Creek/Cremation Use Area Changes				
Hance Creek BE9/Primitive	None	None	Convert Primitive to Threshold Zone; as Threshold, consider adding toilets, change at-large to designated camping	None
Cottonwood Creek BG9/Primitive			Portion to designated campsite	
Cremation BJ9/Primitive				

Table ES.2 How Alternatives Meet Objectives

Objective	Alternative A: No-Action	Alternative B: NPS Preferred	Alternative C	Alternative D
Visitor Use and Experience				
Provide opportunities for visitors to experience and be inspired by Grand Canyon’s backcountry and Wilderness resources and values while ensuring resource protection.	Meets objective to a moderate degree because there is a variety of recreational opportunities in the park’s backcountry.	Meets objective to a moderate degree because it allows additional opportunities to camp in the Corridor Zone and participate in RABT trips.	Meets objective to a moderate degree because it allows for private stock use on the Tiyo Point Trail, additional opportunities to camp in the Corridor Zone, and increased flexibility with RABT trips.	Meets objective to some degree because it allows additional opportunities to camp in the Corridor Zone and participate in RABT trips. However, group sizes are less outside the Corridor Zone, decreasing the number of opportunities for overnight backpacking in other zones.
Establish levels and types of visitor opportunities, non-commercial and commercial, to enhance visitor experience and minimize crowding, conflicts, and resource impacts.	Meets objective to some degree because levels of overnight use have been established, but not separately for commercial and non-commercial. Crowding, conflicts, and resource impacts would continue.	Meets objective to a large degree because a commercial services analysis would determine the necessary and appropriate types and levels of commercially guided services; conflicts and crowding from extended day hiking and running would be addressed through adaptive management; and resource impacts would be reduced from the decrease in number of groups at Granite, number of groups in the Deer Creek/Tapeats Creek Complex, and group size in Primitive and Wild Zones.	Meets objective to a large degree because a commercial services analysis would determine the necessary and appropriate types and levels of commercially guided services; conflicts and crowding from extended day hiking and running would be addressed through adaptive management; and resource impacts would be reduced from the decrease in number of groups at Granite and number of groups in the Deer Creek/Tapeats Creek Complex.	Meets objective to some degree because conflicts would likely still exist in the Corridor Zone between commercial and non-commercial groups. Similar to B and C, the commercial services analysis would determine the necessary and appropriate types and levels of commercially guided services; conflicts and crowding from extended day hiking and running would be addressed through adaptive management; and resource impacts would be reduced from the decrease in number of groups at Granite, number of groups in the Deer Creek/Tapeats Creek Complex, and group size in Threshold, Primitive and Wild Zones.
Resources				
Manage backcountry use to protect wildlife populations	Meets objective to some degree; backcountry use	Meets objective to some degree, greater than	Meets objective to some degree, less than A, because	Meets objective to some degree, greater than

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and habitat by minimizing human-caused disturbances and habitat alteration.	does impact wildlife through noise and vegetation disturbance.	Alternative A and C, because there would be smaller groups in Primitive and Wild Zones and adaptive management would consider impacts to wildlife and implement actions such as seasonal restrictions to canyoneering and other activities in sensitive wildlife habitats.	group sizes for overnight backpacking would remain the same as current, private stock use would be allowed to Tiyo Point, and the Boundary Road would be developed. Adaptive management would consider impacts to wildlife and implement actions such as seasonal restrictions to canyoneering and other activities in sensitive wildlife habitats.	Alternative A and C, because there would be smaller groups in Threshold, Primitive and Wild Zones and adaptive management would consider impacts to wildlife and implement actions such as seasonal restrictions to canyoneering and other activities in sensitive wildlife habitats.
Manage backcountry use to minimize impacts to native vegetation, reduce exotic plant species spread, and preserve fundamental biological and physical processes.	Meets objective to some degree, backcountry use does impact native vegetation through direct vegetation modification and also increases spread of exotic plant species.	Meets objective to a moderate degree because group size for overnight use would be reduced, the Road Natural Zone prescribes a maximum number of vehicles by location, and there are reduced numbers of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex.	Meets objective to some degree because large groups would still be allowed in all zones, private stock use would be allowed on Tiyo Point trail, and the Boundary Road would be developed, all of which would increase impacts to native plant species and encourage exotic plant species to spread.	Meets objective to a moderate degree because there would be smaller groups in Threshold, Primitive, and Wild Zones, and decreased numbers of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex.
Manage use to enhance wilderness character and values.	Meets objective to some degree, but not fully because toilets are located in Wilderness, helicopters are used for toilet maintenance and emergency services, and there is not a specific park plan that implements NPS Wilderness Policy.	Meets objective to a large degree because of the reduced group size in the Primitive and Wild Zones, converts two Use Areas from Threshold to Primitive, and this plan would implement NPS Wilderness Policy.	Meets objective to a moderate degree because this plan would implement NPS Wilderness Policy, but also would convert two Use Areas from Primitive to Threshold which could result in the addition of designated campsites and toilets in Wilderness.	Meets objective to a large degree because of the reduced group size in the Threshold, Primitive, and Wild Zones, converts two Use Areas from Threshold to Primitive, converts the fewest miles of old road bed to trail, and this plan would implement NPS Wilderness Policy.
Develop and implement an adaptive management process that includes monitoring natural, cultural, and experiential resource conditions and responding when resource degradation has resulted from use levels.	Does not meet objective because there is not an adaptive management process in place.	Meets objective to a large degree because an adaptive management process is outlined.	Meets objective to a large degree because an adaptive management process is outlined.	Meets objective to a large degree because an adaptive management process is outlined.

<p>Preserve and protect natural soil conditions by minimizing impacts to soils from backcountry recreational activities.</p>	<p>Meets objective to some degree, backcountry use does impact soils through soil compaction at campsites, social trailing, and erosion.</p>	<p>Meets objective to moderate degree because of the reduced group size in Primitive and Wild Zones and restoration of old road beds.</p>	<p>Meets objective to some degree, soils would be impacted through the development of the Boundary Road.</p>	<p>Meets objective to moderate degree because of the reduced group size in Threshold, Primitive, and Wild Zones and restoration of old road beds.</p>
<p>Manage recreational use to minimize adverse chemical, physical, and biological changes to water quality in tributaries, seeps, and springs.</p>	<p>Meets objective to some degree, backcountry use does impact water resources through direct contamination of water sources (bathing, washing dishes, etc.), increased sediment, and social trailing.</p>	<p>Meets objective to moderate degree because of the reduced group size in Primitive and Wild Zones, and human waste carry out in the River Zone and by commercial groups in areas where toilets are not available, and decreased number of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex.</p>	<p>Meets objective to some degree, greater than Alternative A because although group sizes would remain the same throughout all zones, human waste carry out would be required in the River Zone and by commercial groups in areas where toilets are not available, and there would be a decrease in number of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex.</p>	<p>Meets objective to moderate degree because of the reduced group size in Threshold, Primitive, and Wild Zones, and human waste carry out in the River Zone and by commercial groups in areas where toilets are not available, and decreased number of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex.</p>
<p>Manage recreational use to preserve cultural resource integrity and condition.</p>	<p>Meets objective to some degree, backcountry use does impact cultural resources through camping impacts in and near archaeological sites, social trailing through sites, vandalism, and collection piles.</p>	<p>Meets objective to some degree, greater than Alternative A because although impacts would continue to cultural resources these impacts would be reduced from the decrease in group size in Primitive and Wild Zones, decrease in number of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex, and increased education specifically for commercial guides.</p>	<p>Meets objective to some degree, similar to A because group size would remain the same throughout the backcountry, the Boundary Road would be developed and impact cultural resources, and at the same time there would be a decrease in number of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex, and increased education specifically for commercial guides.</p>	<p>Meets objective to some degree, greater than Alternative A because although impacts would continue to cultural resources these impacts would be reduced from the decrease in group size in Threshold, Primitive and Wild Zones, decrease in number of groups in the Granite Use Area and Deer Creek/Tapeats Creek Complex, and increased education specifically for commercial guides.</p>
Coordination and Cooperation				
<p>Work with park neighbors including tribal entities, federal land managers, park partners, gateway communities, and other stakeholders to improve</p>	<p>Meets objective to some degree because NPS does work with park neighbors.</p>	<p>Meets objective to a moderate degree because communication and coordination would be improved, specifically with</p>	<p>Meets objective to a moderate degree because communication and coordination would be improved, specifically with</p>	<p>Meets objective to a moderate degree because communication and coordination would be improved, specifically with</p>

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<p>coordination and communication regarding backcountry use.</p>		<p>tribes.</p>	<p>tribes.</p>	<p>tribes.</p>
<p>Work with adjacent tribal land managers to improve access to the park's backcountry.</p>	<p>Does not meet objective because under Alternative A, there would be no access across Great Thumb to the park's backcountry.</p>	<p>Meets objective to a moderate degree because under all action alternatives, 10 small groups would be allowed access across Great Thumb to the park's backcountry and the park would continue to communicate with the tribe about this access.</p>	<p>Meets objective to a moderate degree because under all action alternatives, 10 small groups would be allowed access across Great Thumb to the park's backcountry and the park would continue to communicate with the tribe about this access.</p>	<p>Meets objective to a moderate degree because under all action alternatives, 10 small groups would be allowed access across Great Thumb to the park's backcountry and the park would continue to communicate with the tribe about this access.</p>
<p>Park Management and Operations</p>				
<p>Establish recreational use levels sustainable for both resource protection and park operations.</p>	<p>Meets object to a minimal degree because the current levels of use can overtask park staff, specifically the inner canyon rangers and emergency services personnel.</p>	<p>Meets objective to some degree because overnight use would decrease a small amount (1%) and adaptive management would be used to manage activities that currently overtask staff, such as extended day hiking and running.</p>	<p>Meets object to a minimal degree because overnight use would increase by 5%, an additional camp area would be established in the Corridor at Roaring Springs and require staff, and adaptive management would be used to manage activities that currently overtask staff, such as extended day hiking and running.</p>	<p>Meets objective to some degree because overnight use would decrease a small amount (3%) and adaptive management would be used to manage activities that currently overtask staff, such as extended day hiking and running.</p>

Table ES.3 Impact Summary

	Alternative A	Alternative B	Alternative C	Alternative D
Soils	<p>Under Alternative A, minor to moderate, adverse, localized, short and long-term impacts to soils would result from recreational use in areas from climbers, canyoneers, and RABT users; campsite expansion by large groups in all Use Areas; continued inappropriate human waste disposal in high use areas; damage related to Corridor Zone trail congestion associated with extended day hiking and running; and visitor impacts at Tuweep.</p> <p>Minor to moderate, beneficial, localized, short and long-term impacts would result from continuation of passive and active restoration of closed roads, and management activities such as trail maintenance and social trail obliteration.</p> <p>Cumulative impacts would be major, adverse, localized to regional, short and long-term of which Alternative A would contribute a small amount.</p>	<p>Under Alternative B, including actions described under Impacts of Elements Common to All Action Alternatives, moderate, adverse, localized, short and long-term impacts to soils would result from increased use and more users with time to explore at Cottonwood Campground, and new soil disturbance from relocation of the Toroweap overlook parking area.</p> <p>Moderate, beneficial, localized, short to long-term impacts would result from continuation of closed road passive and active restoration, exclusion of large groups in Primitive and Wild Zones, reductions in group size and number in the Deer Creek/Tapeats Complex and Hermit and Granite Rapids Use Areas, River Zone waste carry-out, and recovery of former road and overlook parking at Tuweep. Beneficial impacts would also come from increased education in trail etiquette and Leave No Trace from commercial backpacking and day hiking guides, and monitoring and education of climbers, canyoneers, and RABT users through the permitting process.</p> <p>Cumulative impacts would be moderate to major, adverse, local to regional, short and long-term of which Alternative B would contribute a small amount.</p>	<p>Under Alternative C, including actions described under Impacts of Elements Common to All Action Alternatives, major, adverse, localized, short to long-term impacts to soils would result from increased users with time to explore at new campsites at Cottonwood, Roaring Springs and Indian Garden Campsites, stock use on the Tiyo Point Trail, construction impacts and traffic on the Boundary Road, return of users to Deer Creek Narrows, and potential camp and toilet construction activities at Hermit, Granite and Cremation Use Areas.</p> <p>Minor, beneficial, localized, short to long-term impacts would result from continued passive and active closed road restoration; group size and number reduction in the Deer Creek/ Tapeats Creek Complex; focus of impacts on designated sites in Hermit, Cremation, and Granite Rapids Use Areas; River Zone waste carry-out; increased education in trail etiquette and Leave No Trace techniques from commercial backpacking and day hiking guides; and monitoring and education of climbers, canyoneers and RABT users through the permitting process. Minor to major beneficial, localized, long-term impacts would result from adding toilets to Hance and Cottonwood Use Areas which would be managed in the Threshold Zone.</p> <p>Cumulative impacts would be major, adverse, localized to regional, short and long-term of which Alternative C would contribute a small amount.</p>	<p>Under Alternative D, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, localized, short and long-term impacts to soils would result from trailing in new areas associated with climbing, RABT, and canyoneering; trail construction and maintenance; and impacted area expansion in the Corridor Zone and at Tuweep.</p> <p>Moderate, beneficial, localized, short and long-term impacts to soils would occur from continuation of passive and active closed road restoration, creation of single trails from Wilderness routes, restriction of commercial day hikes to three segments, exclusion of large groups outside the Corridor Zone, group size and number reductions in the Deer Creek/Tapeats Creek Complex and Hermit, Granite Rapids, and Cremation Use Areas, River Zone waste carry-out; recovery of former road and Overlook parking at Tuweep; increased education in trail etiquette and LNT techniques from commercial backpacking and day hiking guides, and education of climbers, canyoneers, and RABT users.</p> <p>Cumulative impacts would be moderate to major, adverse, local to regional, short and long-term of which Alternative D would contribute a very small amount.</p>
Water Resources	<p>Under Alternative A, minor to moderate, adverse, short and long-term, local and regional impacts to water resources would result from recreational uses and would include chemical and bacterial contamination from bathing and human waste disposal, increased soil runoff and turbidity from destabilized banks and soil disturbance, and accumulation of litter and trash in water features.</p> <p>Minor, beneficial, local to regional, short and long-term impacts would result from educating visitors on minimum impact practices and the passive restoration or recovery of old roadbeds.</p> <p>Cumulative impacts to water resources would be major, adverse, localized to regional, and long-term of which Alternative A would contribute a very small amount.</p>	<p>Under Alternative B, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, short and long-term, local and regional impacts to water resources would result from recreational uses would be perceptible and measurable including the addition of Corridor Zone campsites, camping (at-large or designated) adjacent to perennial streams, and climbing or canyoneering in narrow canyons with seeps, springs and other water resources. These impacts include chemical and bacterial contamination from bathing and human waste disposal, increased soil runoff and turbidity from destabilized banks and soil disturbance, and accumulation of litter and trash in water features.</p> <p>Minor to moderate, beneficial, localized and regional, short and long-term impacts would result from smaller group sizes, closing Deer Creek narrows, converting old roadbeds to trails, the proper type and placement of backcountry toilets and increased visitor education on minimum impact practices.</p>	<p>Under Alternative C, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, short and long-term, local and regional impacts to water resources would include the addition of up to eight Corridor Zone campsites, large and small group camping (at-large or designated) adjacent to perennial streams, and climbing or canyoneering in narrow canyons including Deer Creek Narrows. Impacts include chemical and bacterial contamination from bathing and human waste disposal, increased soil runoff and turbidity from destabilized banks and soil disturbance, and accumulation of litter and trash in water features.</p> <p>Minor, beneficial, short and long-term, localized and regional impacts would result from converting old roadbeds to trails, the proper type and placement of backcountry toilets and increased visitor education on minimum impact practices.</p> <p>Cumulative impacts to water resources would be</p>	<p>Under Alternative D, including actions described under Impacts of Elements Common to All Action Alternatives, minor, adverse, short and long-term, localized and regional impacts to water resources would result from recreational uses include the addition of Corridor Zone campsites, camping (at-large or designated) adjacent to perennial streams, and climbing or canyoneering in narrow canyons with seeps, springs and other water resources. These impacts include chemical and bacterial contamination from bathing and human waste disposal, increased soil runoff and turbidity from destabilized banks and soil disturbance, and accumulation of litter and trash in water features.</p> <p>Minor to moderate, beneficial, short and long-term, localized and regional impacts would result from smaller group sizes in Wilderness Zones, closing and limiting visitation at Deer Creek narrows area, converting old roadbeds to trails, the proper type and placement of backcountry toilets and increased visitor education on minimum impact.</p>

	Alternative A	Alternative B	Alternative C	Alternative D
		Cumulative impacts to water resources would be major, adverse, localized to regional, and long-term of which Alternative B would contribute a very small amount.	major, adverse, localized to regional, long-term and year-round of which Alternative C would contribute a small amount.	Cumulative impacts to water quality would be major, adverse, localized to regional, and long-term of which Alternative D would contribute a very small amount.
Soundscape	<p>Under Alternative A, minor to moderate, adverse, localized and short-term impacts would result from continued administrative use of aircraft for backcountry toilet servicing, resource management, and boundary patrols; recreational and administrative vehicle use on park roads, and hand and/or mechanized tools used for trails and roads maintenance. While some of these noise sources are louder and more intense during the time they are present, they are present for short times, and are infrequent.</p> <p>Cumulative impacts would be moderate to major, adverse, localized and regional, short to long-term impacts of which Alternative A would contribute a small amount.</p>	<p>Under Alternative B and elements common to all action alternatives, minor to moderate, adverse, localized and short-term impacts would result from administrative use of aircraft for backcountry toilet servicing; recreational and administrative vehicle use on park roads, and hand and/or mechanized tools used for development of Class 1 trails and road maintenance; and from concentrating use by relocating Tuweep day use parking from the overlook to an area adjacent to the campground.</p> <p>Minor beneficial, short and long-term localized impacts would result from human waste carry-out requirements, designated camping with vehicle limits in the Road Natural Zone, and potential for establishing vehicle limits at Tuweep.</p> <p>Cumulative impacts would be moderate to major, adverse, localized and regional, short to long-term impacts of which Alternative B would contribute a small amount.</p>	<p>Under Alternative C and elements common to all action alternatives, minor to moderate, adverse, localized and short-term impacts would result from administrative use of aircraft for backcountry toilet servicing; the development of the Boundary Road and recreational and administrative vehicle use on park roads, and hand and/or mechanized tools used for development of Class 1 and 4 trails and road maintenance.</p> <p>Minor beneficial, short and long-term localized impacts would result from human waste carry-out requirements, designated camping with vehicle limits in the Road Natural Zone, separation of day use parking near the overlook, and potential for establishing vehicle limits at Tuweep.</p> <p>Cumulative impacts would be moderate to major, adverse, localized and regional, short to long-term impacts of which Alternative C would contribute a small amount.</p>	<p>Under Alternative D and elements common to all action alternatives, minor to moderate, adverse, localized and short-term impacts would result from administrative use of aircraft for backcountry toilet servicing; recreational and administrative vehicle use on park roads, and hand and/or mechanized tools used for such activities as trail and road maintenance; and from concentrating use by relocating Tuweep day use parking from the overlook to an area adjacent to the campground.</p> <p>Minor beneficial, short and long-term localized impacts would result from human waste carry-out requirements, designated camping with vehicle limits in the Road Natural Zone, and potential for establishing vehicle limits at Tuweep, and increased number of unmaintained trails and routes in Wilderness.</p> <p>Cumulative impacts would be moderate to major, adverse, localized and regional, short to long-term impacts of which Alternative D would contribute a small amount.</p>
Cave Resources	<p>Under Alternative A, minor to major, adverse, local, short and long-term effects to cave resources would result from users who enter caves while on backcountry itineraries or day hikes and degrade the resources through direct contact (e.g., breakage or removal) or through indirect means such as reducing the quality of water in caves and disturbing cave-dwelling bats.</p> <p>Minor to major, beneficial, localized, short and long-term impacts would result from administrative actions for mitigation and restoration (e.g., trail obliteration), or those which limit unauthorized access to caves.</p> <p>Cumulative impacts would be major, adverse, regional, and short to long-term of which Alternative A would contribute a large amount because backcountry users are the source of most impacts to cave resources.</p>	<p>Under Alternative B, including actions described under Impacts of Elements Common to All Action Alternatives, minor to major, adverse, localized and both short and long-term impacts to cave resources would result from the increased number of canyoneering routes accessed using RABT under Alternative B, and the likely increase in users in proximity to cave resources with equipment necessary to explore them.</p> <p>Minor, beneficial, localized, short to long-term impacts would result from reduced group size in Primitive and Wild Zones, a decrease in number of groups in the Deer Creek/Tapeats Creek Complex, minimum impact education for climbing, canyoneering, RABT users, Implementation of adaptive management would also contribute to these beneficial impacts.</p> <p>Cumulative impacts would be major, adverse, short and long-term, and localized of which Alternative B would contribute a medium amount.</p>	<p>Under Alternative C, including actions described under Impacts of Elements Common to All Action Alternatives, minor to major, adverse, local short and long-term impacts to cave resources would result from the increase in visitors near known cave resources near Roaring Springs with the creation of campsites in the area. Minor to major adverse short and long-term impacts would also result from the potential introduction of human waste into karst systems from toilets in the Hance, Cottonwood, and Cremation Use Areas.</p> <p>Negligible to minor, beneficial, localized, short to long-term impacts would result from a decrease in number of groups in the Deer Creek/Tapeats Creek Complex, minimum impact education for climbing, canyoneering, RABT users, Implementation of adaptive management would also contribute to these beneficial impacts.</p> <p>Cumulative impacts would be major adverse, short and long-term, and localized to regional of which Alternative C would contribute a large amount.</p>	<p>Under Alternative D, including actions described under Impacts of Elements Common to All Action Alternatives, minor to major, adverse, localized, short to long-term impacts to cave resources would result from the increase in RABT segment length to a maximum of 11 miles. This increase would allow exploration of more routes to caves.</p> <p>Minor, beneficial, localized impacts to cave resources would occur because of the decrease in numbers and group size allowed outside the Corridor Zone, the Deer Creek/Tapeats Creek complex, and the Hance, Cottonwood, and Cremation Use Areas; minimum impact education provided to climbing, canyoneering, and RABT users and the monitoring of their numbers and distribution to inform management via the permitting process. Implementation of adaptive management would contribute to these beneficial impacts.</p> <p>Cumulative impacts would be major, adverse, short and long-term, and localized to regional of which Alternative D would contribute a medium amount.</p>
Vegetation	Under Alternative A, moderate, adverse, regional, short to long-term impacts to vegetation would result	Under Alternative B, including actions described under Impacts of Elements Common to All Action	Under Alternative C, including actions described under Impacts of Elements Common to All Action	Under Alternative D, including actions described under Impacts of Elements Common to All Action

	Alternative A	Alternative B	Alternative C	Alternative D
	<p>from general recreational use and include: vegetation trampling, soil compaction, and direct damage to vegetation. Adverse impacts would also result from the import and spread of exotic plant species. Beneficial impacts from vegetation recovery on closed roads and other administrative actions would be negligible.</p> <p>Cumulative impacts to vegetation would be adverse, major, localized to regional, long-term, and year-round of which Alternative A would contribute a small amount.</p>	<p>Alternatives, minor to moderate, adverse, regional, short to long-term impacts to vegetation would result from general recreational use and would include vegetation trampling, soil compaction, addition of up to four campsites at Cottonwood, and direct damage to vegetation. Adverse impacts would also result from the import and spread of exotic plant species.</p> <p>Minor, beneficial, regional long-term impacts would result from decreases in group size in Primitive and Wild Zones, decrease in number of groups in Granite and Deer Creek/Tapeats Creek Complex, vegetation recovery on closed roads, and active site restoration.</p> <p>Cumulative impacts to vegetation would be major, adverse, localized to regional, long-term, and year-round of which Alternative B would contribute a small amount.</p>	<p>Alternatives, moderate, adverse, regional, long-term impacts to vegetation would result from general recreational use and include vegetation trampling, soil compaction, addition of up to eight campsites at Cottonwood, Roaring Springs and Indian Garden, use of stock on the Tiyo Point trail, creation and maintenance of the Boundary Road, and direct damage to vegetation. Adverse impacts would also result from the import and spread of exotic plant species.</p> <p>Minor, beneficial, regional, long-term impacts would result from vegetation recovery on closed roads and active site restoration.</p> <p>Cumulative impacts would be adverse, major, localized to regional, long-term, and year-round of which Alternative C would contribute a small amount.</p>	<p>Alternatives, minor to moderate, adverse, regional, short to long-term impacts to vegetation would result from general recreational use and would include vegetation trampling, soil compaction, addition of up to two campsites at Cottonwood, and direct damage to vegetation. Adverse impacts would also result from the import and spread of exotic plant species.</p> <p>Minor beneficial, regional long-term impacts would result from decreases in group size, some Use Area changes, vegetation recovery on closed roads, invasive plant management, vegetation inventory, and active site restoration.</p> <p>Cumulative impacts would be adverse, major, localized to regional, long-term, and year-round of which Alternative D would contribute a small amount.</p>
Wildlife	<p>Under Alternative A, minor to moderate, adverse, regional and localized, short and long-term impacts would result from the majority of backcountry use by visitors continuing to occur in the spring, summer and fall and from current patterns of the administrative use of helicopters in the backcountry. Under some conditions impacts from habitat modification at campsites, and disturbance or displacement from camping would be observable and measurable. Conversely, campsites, rest houses, and high use trails could also attract and habituate certain species of wildlife. In addition, disturbance and displacement along high use trails would be observable.</p> <p>Minor, beneficial, localized, short and long-term impacts would result from administrative restoration activities, continued closure and restoration of former roads, and educational programs from NPS and partner organizations.</p> <p>Cumulative impacts would moderate, adverse, regional to localized, adverse, short to long-term, seasonal to year-round of which Alternative A would contribute a small amount.</p>	<p>Under Alternative B, including the actions described under Impacts of Elements Common to All Action Alternatives, minor, adverse, localized, short and long-term impacts would result from administrative use helicopter flights, continued high visitor use in the Corridor Zone, construction activities associated with increased campsite numbers in the Corridor Zone, and an approximate increase of 3% in overnight users in the Corridor Zone.</p> <p>Minor, beneficial, localized, short and long-term impacts would come from conversion, closure and restoration of former backcountry roads and the Toroweap Overlook road, reductions in group sizes in the Deer Creek/Tapeats Creek Complex and other Use Areas, reductions in group sizes for Primitive and Wild Zones and for all climbing, canyoneering and RABT use, overall slight decrease (1%) in overnight backcountry users, training requirements for commercial guides, and Leave No Trace education for hikers, canyoneers, and day users. When impacts of backcountry use on wildlife (e.g., abandonment of nest sites, roosting sites, or foraging areas, unnatural aggregations of scavengers, etc.) exceeds acceptable levels, actions implemented under adaptive management would have minor, beneficial local and long-term impacts on wildlife.</p> <p>Cumulative impacts would be moderate, adverse, regional, and short to long-term of which Alternative B would contribute a small amount.</p>	<p>Under Alternative C, including the actions described under Impacts of Elements Common to All Action Alternatives, minor, adverse, localized, short and long-term impacts would result from disturbance from administrative use helicopter flights, interactions between stock and wildlife on the Tiyo Point trail, construction of large campsites and increased numbers of users in the Corridor Zone, and construction activities and increased traffic on the Boundary Road. An overall increase of 5% for overnight use in the backcountry would occur under this alternative, with impacts described in the Potential Day and Overnight Use Impacts to Wildlife section.</p> <p>Minor, beneficial, localized, short and long-term impacts would come from closures of some backcountry roads and restoration in those areas, Leave No Trace and etiquette education for climbers, canyoneers, RABT users, extended day hikers and clients of the NPS, its cooperators and commercial guides. When impacts of backcountry use on wildlife (e.g., abandonment of nest sites, roosting sites, or foraging areas, unnatural aggregations of scavengers, etc.) exceeds acceptable levels, actions implemented under adaptive management would have beneficial impacts on wildlife as well.</p> <p>Cumulative impacts would be moderate, adverse, regional, and short to long-term of which Alternative C would contribute a medium amount.</p>	<p>Under Alternative D, including actions described under Impacts of Elements Common to All Action Alternatives, minor, adverse, localized, short and long-term impacts would result from disturbance caused by administrative use helicopter flights, continued use of some backcountry roads, construction associated with increasing campsite numbers in the Corridor Zone and increased numbers of overnight users in those areas.</p> <p>The impacts of overnight use are described in the Potential Day and Overnight Use Impacts to Wildlife Section. Minor, beneficial, localized, short and long-term impacts would occur due to the prohibition of large groups outside the Corridor Zone, including the Deer Creek/Tapeats Creek Complex, the lack of vehicles on the Vulcans Throne Road, and Minimum Impact and etiquette education for extended day hikers, canyoneers, climbers and RABT users. When impacts of backcountry use on wildlife (e.g., abandonment of nest sites, roosting sites, or foraging areas, unnatural aggregations of scavengers, etc.) exceeds acceptable levels, actions implemented under adaptive management would have beneficial impacts on wildlife as well.</p> <p>Cumulative impacts would be moderate, adverse, regional, and short to long-term of which Alternative D would contribute a small amount.</p>
Special Status Plant Species	<p>Under Alternative A, minor to moderate, adverse, regional, short-to long-term impacts to special status plant species would result from general recreational use and include vegetation trampling, soil compaction, campsite expansion, trail creation, and</p>	<p>Under Alternative B, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, localized to regional, short to long-term impacts to special status plant species would result from general recreational</p>	<p>Under Alternative C, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, localized to regional, short to long-term impacts to special status plant species would result from general recreational</p>	<p>Under Alternative D, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, localized to regional, short to long-term impacts to special status plant species would result from general recreational</p>

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	<p>direct damage to special status plants.</p> <p>Negligible to minor, beneficial, localized, long-term impacts would result from passive restoration on closed roads.</p> <p>Cumulative impacts would be adverse, moderate, localized to regional, long-term, year-round of which Alternative A would contribute a small amount.</p>	<p>use including vegetation trampling, soil compaction, addition of up to four campsites at Cottonwood, trail creation, and direct damage to vegetation.</p> <p>Minor, beneficial, localized, long-term impacts would result from decreases in group size in Primitive and Wild Zones, and decrease in number of groups in Deer Creek Tapeats Creek Complex and Granite Use Area.</p> <p>Cumulative impacts would be adverse, moderate, localized to regional, long-term, year-round of which Alternative B would contribute a small amount.</p>	<p>use and include: vegetation trampling, soil compaction, addition of up to eight campsites at Cottonwood, Roaring Springs, and Indian Garden, trail creation, and direct damage to vegetation.</p> <p>Negligible, beneficial impacts would result from a decrease in number of groups in Deer Creek Tapeats Creek Complex and Granite Use Area.</p> <p>Cumulative impacts would be adverse, moderate, localized to regional, long-term, year-round of which Alternative C would contribute a small amount.</p>	<p>use and include: vegetation trampling, soil compaction, addition of up to two campsites at Cottonwood, trail creation, and direct damage to vegetation. Adverse impacts would also result from the import and spread of exotic plant species.</p> <p>Minor, beneficial, localized, long-term impacts would result from decreases in group size in Threshold, Primitive and Wild Zones, and decrease in number of groups in Deer Creek Tapeats Creek Complex and Granite Use Area.</p> <p>Cumulative impacts would be adverse, moderate, localized to regional, long-term, year-round of which Alternative D would contribute a small amount.</p>
Special Status Wildlife Species	<p>Under Alternative A, minor to moderate, adverse, regional and localized, short and long-term impacts to special status wildlife species would result from the majority of backcountry use continuing to occur in the spring, summer and fall. Impacts from habitat modification at campsites, and disturbance or displacement from camping would occur. Campsites, rest houses, and high use trails could also attract and habituate certain species of special status wildlife and disturbance and displacement along high use trails would occur.</p> <p>Cumulative effects would be moderate, adverse, regional to localized, adverse, short to long-term, seasonal to year-round of which Alternative A would contribute a small amount.</p>	<p>Under Alternative B, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, regional and localized, short and long-term impacts to special status wildlife species would result from continued backcountry use including canyoneering, disturbance or displacement from camping, habitat modification and disturbance from the addition of up to four campsites at Cottonwood.</p> <p>Impacts would be somewhat reduced when compared to Alternative A from decreased group size in Primitive and Wild Zones, decrease in group number and size in Deer Creek/Tapeats Creek Complex, and reduced number groups in the Granite Use Area. Adaptive management under all action alternatives would also benefit special status wildlife.</p> <p>Cumulative effects would be moderate, adverse, regional to localized, short to long-term, seasonal to year-round of which Alternative B would contribute a small amount.</p>	<p>Under Alternative C, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, regional and localized, short and long-term impacts to special status wildlife species would result from continued backcountry use including canyoneering, disturbance or displacement from camping, habitat modification an disturbance from the addition and use of up to eight campsites in the Corridor Zone.</p> <p>A reduction of adverse impacts would occur in the Deer Creek/Tapeats Creek Complex and Granite Use Area where number of groups would be decreased compared to Alternative A. Adaptive management under all action alternatives would also benefit wildlife.</p> <p>Cumulative effects would be moderate, adverse, regional to localized, short to long-term, seasonal to year-round of which Alternative C would contribute a small amount.</p>	<p>Under Alternative D, including actions described under Impacts of Elements Common to All Action Alternatives, minor to moderate, adverse, localized to regional, short to long-term impacts to special status wildlife species would result from general recreational use and include: vegetation trampling, soil compaction, addition of up to two campsites at Cottonwood, trail creation, and direct damage to vegetation. Adverse impacts would also result from the import and spread of exotic plant species.</p> <p>Minor, beneficial, localized, long-term impacts would result from decreases in group size in Threshold, Primitive and Wild Zones, and decrease in number of groups in Deer Creek Tapeats Creek Complex and Granite Use Area.</p> <p>Cumulative impacts would be adverse, moderate, localized to regional, long-term, year-round of which Alternative D would contribute a small amount.</p>
Archaeological Resources	<p>Under Alternative A, minor to major, adverse, regional and both long and short-term impacts would result from use of the backcountry and resultant human disturbances including trailing through archaeological sites, camping on sites, displacement of artifacts and modification of structures, theft of artifacts, graffiti, campfires, inappropriate campsite creation and management within and adjacent to archaeological sites, and improper human waste management. Continued use of the backcountry under Alternative A has the potential for continued and increasing impacts from visitor use, improper waste management and other unpermitted activities.</p> <p>Cumulative impacts would be major, adverse, regional, and long-term of which Alternative A would contribute a medium amount. Under Section 106</p>	<p>Including impacts from elements Common to All Action Alternatives, moderate to major, adverse, regional, short-term impacts to archaeological resources would result from implementation of Alternative B, as a result of road and trail use and maintenance activities, at-large and designated camps located in, or adjacent to, archaeological site boundaries.</p> <p>Minor, beneficial, regional, short and long-term impacts would result from reductions in group size in Primitive and Wild Zone, closures of culturally-sensitive areas, implementation of an adaptive management process for climbing, canyoneering, human waste management and use area management, and implementation of other mitigation measures that promote preservation of</p>	<p>Including impacts from elements common to all action alternatives, moderate to major adverse, regional, short and long-term impacts to archaeological resources would result from implementation of Alternative C as a result of road and trail use, toilet construction, and maintenance activities and at-large or designed camps located in, or adjacent to, archaeological site boundaries.</p> <p>Minor to moderate, beneficial, regional, long-term impacts would result from reductions in the numbers of groups visiting areas at one time, implementation of an adaptive management process for climbing, canyoneering, human waste management and use area management, and implementation of other mitigation measures that promote preservation of archaeological site National Register eligibility.</p>	<p>Under Alternative D and common to all action alternative elements, moderate to major, adverse, regional, short-term impacts would result from continued disturbances to archaeological resources as a result of road and trail use and maintenance activities and at-large or designated camps located in, or adjacent to, archaeological site boundaries. These effects may be reduced by small group sizes in Threshold, Primitive, and Wild use zones.</p> <p>Minor to moderate, beneficial, regional, short and long-term impacts would result from reductions in the numbers of groups visiting areas at one time, implementation of an adaptive management process for climbing, canyoneering, human waste management and use area management, and implementation of other mitigation measures that</p>

	Alternative A	Alternative B	Alternative C	Alternative D
	there would be an adverse effect to archaeological resources.	archaeological site National Register eligibility. Cumulative impacts would be major, adverse, long-term, and regional of which Alternative B would contribute a small amount. Under Section 106 there would be an adverse effect to archaeological resources.	Cumulative impacts would be major, adverse, long-term of which Alternative C would contribute a medium amount. Under Section 106 there would be an adverse effect to archaeological resources.	promote preservation of archaeological site National Register eligibility. Cumulative impacts would be major, adverse, regional, and long-term of which Alternative D would contribute a small amount. Under Section 106 there would be an adverse effect to archaeological resources.
Historic Structures	Under Alternative A, minor to moderate, adverse, localized and regional, short and long-term impacts to the historic structures would result from would result from visitor use disturbances including vandalism (graffiti and structural damage), human waste disposal, littering, and campfires. Cumulative impacts would be moderate, adverse, localized and regional, short and long-term, of which Alternative A would contribute a small amount. Under Section 106, there would be an adverse effect to historic structures.	Under Alternative B and elements common to all action alternatives, minor to moderate, adverse localized and regional, short and long-term impacts to historic structures would result from visitor use disturbances including vandalism (graffiti and structural damage), improper human waste disposal, and development and maintenance of trails. Beneficial effects from smaller group size in Primitive and Wild zones and guide requirements would have minor, localized, and long-term effects on historic structures. Cumulative impacts would be moderate, adverse, localized and regional, long-term of which Alternative B would contribute a small amount. Under Section 106, there would be an adverse effect to the historic structures.	Under Alternative C and elements common to all action alternatives, minor to moderate, adverse localized and regional, short and long-term impacts to historic structures would result from visitor use disturbances including vandalism (graffiti and structural damage), improper human waste disposal, and development and maintenance of trails. Beneficial effects from guide requirements would have a minor, localized, and long-term impact on historic structures. Cumulative impacts would be moderate, adverse, localized and regional, long-term of which Alternative C would contribute a small amount. Under Section 106, there would be an adverse effect to the historic structures.	Under Alternative D and elements common to all action alternatives, minor, adverse localized and regional, short and long-term impacts to historic structures would result from visitor use disturbances including vandalism (graffiti and structural damage), and improper human waste disposal. Beneficial effects from smaller group size in Threshold, Primitive and Wild zones, guide requirements, and management of unmaintained routes would have minor, localized and regional, short and long-term impacts on historic structures. Cumulative impacts would be moderate, adverse, localized and regional, long-term of which Alternative D would contribute a very small amount. Under Section 106, there would be an adverse effect to the historic structures.
Traditional Cultural Properties and Ethnographic Resources	Under Alternative A, minor to major, adverse, regional and both long and short-term impacts would occur from continued use of the backcountry and visitor use disturbances including crowding from large groups, reduced access to resources by the Traditionally Associated Tribes from overuse, trailing, camping on sites and within resource areas, modification of artifacts and structures, unauthorized collecting of artifacts, vandalism, graffiti, vegetation disturbances, disturbances to animals, campfires, inappropriate campsite creation and management, and improper waste management. Beneficial effects result from restrictions at Deer Creek Narrows and ongoing visitor education on trail etiquette and leave no trace camping practices. These impacts are minor to moderate, localized and regional, short and long-term. Cumulative impacts would be major, adverse, regional, short and long-term of which Alternative A would contribute a medium amount to the adverse impact. Under Section 106, there would be an adverse effect to ethnographic resources.	Under Alternative B and elements common to all action alternatives, minor to major, adverse, regional, long and short-term impacts would result from use of the backcountry and visitor use disturbances from small and large groups including crowding, reduced access to resources by the Traditionally Associated tribes from overuse, social trailing, camping on culturally sensitive sites, modification of artifacts and structures, unauthorized collecting of artifacts, vandalism, graffiti, campfires, inappropriate campsite creation and management, and improper waste management. Beneficial effects would result from reductions in group size in the Primitive and Wild Zone, closures of culturally sensitive areas, and implementation of other mitigation measures that promote preservation of ethnographic resource and tribal values. These effects would be minor to moderate, localized and regional, long-term beneficial effects to ethnographic resources. Cumulative impacts would be major, adverse, regional, short and long-term of which Alternative B would contribute a small amount. Under Section 106 there would be an adverse effect to ethnographic resources.	Under Alternative C and elements common to all action alternatives, minor to major, adverse, regional, long and short-term impacts would result from use of the backcountry and visitor use disturbances from small and large groups including crowding, reduced access to resources by the Traditionally Associated tribes from overuse, social trailing, camping on culturally sensitive sites, modification of artifacts and structures, unauthorized collecting of artifacts, vandalism, graffiti, campfires, road maintenance, inappropriate campsite creation and management, and improper waste management. Beneficial effects would result from reductions in group size for canyoneering groups, establishment of campsites outside of boundaries of ethnographic resources and implementation of other mitigation measures that promote preservation of ethnographic resource and tribal values. These effects would be minor to moderate, localized and regional, long-term beneficial effects to ethnographic resources. Cumulative impacts would be major, adverse, regional, short and long-term of which Alternative C would contribute a small amount. Under Section 106 there would be an adverse effect to ethnographic resources.	Under Alternative D and elements common to all action alternatives, minor to moderate, adverse, regional, long and short-term impacts would result from use of the backcountry and visitor use disturbances from small and large groups including crowding, reduced access to resources by the Traditionally Associated tribes from overuse, social trailing, camping on culturally sensitive sites, modification of artifacts and structures, unauthorized collecting of artifacts, vandalism, graffiti, campfires, inappropriate campsite creation and management, and improper waste management. Beneficial effects would result from reductions in group size in the Threshold, Primitive and Wild Zone, closures of culturally sensitive areas, retaining unmaintained routes and allowing old roadbeds to naturally recover, and implementation of other mitigation measures that promote preservation of ethnographic resource and tribal values. These effects would be minor to major, localized and regional, long-term beneficial effects to ethnographic resources. Cumulative impacts would be major, adverse, regional, short and long-term of which Alternative D would contribute a small amount. Under Section 106 there would be an adverse effect to ethnographic resources.

	Alternative A	Alternative B	Alternative C	Alternative D
Cultural Landscapes	<p>Under Alternative A, minor to moderate, adverse, localized and regional, short and long-term impacts to the Cross-canyon Corridor Cultural Landscape would result from visitor use disturbances including crowding, reduced access to park resources from overuse, trailing, and improper waste management.</p> <p>Cumulative impacts would be moderate, adverse, localized and regional, short and long-term, of which Alternative A would contribute a medium amount. Under Section 106, there would be an adverse effect to the Cross-canyon Corridor Cultural Landscape.</p>	<p>Under Alternative B and elements common to all action alternatives, minor, adverse and beneficial, localized and regional, short and long-term impacts would result from the addition of campsites and high day use levels and associated visitor use disturbances including social trailing, vegetation damage and manipulation, soil compaction, and human waste issues within the boundaries of the cultural landscape areas.</p> <p>Cumulative impacts would be moderate, adverse, localized and regional, long-term of which Alternative B would contribute a small amount. Under Section 106, there would be an adverse effect to the Cross-canyon Corridor Cultural Landscape at a lower intensity than Alternative A.</p>	<p>Under Alternative C and elements common to all action alternatives, minor to moderate, adverse and beneficial, localized and regional, short and long-term impacts would result from the addition of campsites and high day use levels and associated visitor use disturbances including social trailing, vegetation damage and manipulation, soil compaction, and human waste issues within the boundaries of the cultural landscape areas.</p> <p>Cumulative impacts would be moderate, adverse, localized and regional, long-term of which Alternative C would contribute a medium amount. Under Section 106 there would be an adverse effect to the Cross-canyon Corridor Cultural Landscape.</p>	<p>Under Alternative D and elements common to all action alternatives, minor, adverse and beneficial, localized and regional, short and long-term impacts would result from the addition of campsites and high day use levels and associated visitor use disturbances including social trailing, vegetation damage and manipulation, soil compaction, and human waste issues within the boundaries of the cultural landscape areas.</p> <p>Cumulative impacts would be moderate, adverse, localized and regional, long-term of which Alternative D would contribute a small amount. Under Section 106, there would be an adverse effect to the Cross-canyon Corridor Cultural Landscape.</p>
Visitor Use and Experience	<p>Under Alternative A, minor, adverse, localized, short to long-term impacts to visitor use and experience would result from increasing levels of day use and associated crowding, dissatisfaction with management of RABT, and restrictions in access to the Deer Creek Narrows.</p> <p>Major, beneficial, long-term, regional, impacts would include providing a diverse range of quality recreation opportunities, establishment of use levels that minimize crowding and conflict (with the exception of day use in some areas), general determination of appropriate types of use not unacceptably impacting visitor experience, and general preservation of opportunities that are appropriate and consistent with the preservation of wilderness character (with the exception of human waste management and roads and trails management in some areas).</p> <p>Cumulative impacts would be minor, adverse localized to regional, and short to long-term and Alternative A would contribute a very small amount.</p>	<p>Under Alternative B, including the impacts described under the Impacts of Elements Common to all Action Alternatives, minor, adverse, localized, short to long-term impacts to visitor use and experience would result from a nominal administrative burden to visitors from a day use permit system in the Corridor, climbing, canyoneering and packrafting activity designations on overnight permits, and restrictions in access to the Deer Creek Narrows. These nominal impacts would potentially be exacerbated by day use permits with limits and seasonal or permanent restrictions to activities in some locations based upon potential future adaptive management actions.</p> <p>Major, beneficial, long-term, regional impacts would include providing a diverse range of quality recreation opportunities, establishment of use levels that minimize crowding and conflict, general determination of appropriate types of use not unacceptably impacting visitor experience, and general preservation of opportunities that are appropriate and consistent with the preservation of wilderness character. These beneficial impacts would potentially be enhanced based upon potential future adaptive management actions.</p> <p>Cumulative impacts would be minor, adverse, localized to regional, and short to long-term and Alternative B would contribute a very small amount.</p>	<p>Under Alternative C, including the impacts described under the Impacts of Elements Common to all Action Alternatives, minor, adverse, localized, short to long-term impacts to visitor experience would include a nominal administrative burden to visitors from a day use permit system in the Corridor and climbing, canyoneering and packrafting activity designations on overnight permits on overnight permits. These nominal impacts would potentially be exacerbated by day use permits with limits and seasonal or permanent restrictions to activities in some locations based upon potential future adaptive management actions.</p> <p>Major, beneficial, long-term, regional, beneficial impacts under Alternative C would include providing a diverse range of quality recreation opportunities, establishment of use levels that minimize crowding and conflict, general determination of appropriate types of use not unacceptably impacting visitor experience, and general preservation of opportunities that are appropriate and consistent with the preservation of wilderness character. These beneficial impacts would potentially be enhanced based upon potential future adaptive management actions.</p> <p>Cumulative impacts would be minor, adverse, localized to regional, and short to long-term and Alternative C would contribute a very small amount.</p>	<p>Under Alternative D, including the impacts described under the Impacts of Elements Common to all Action Alternatives, minor, adverse, localized, short to long-term impacts to visitor experience would include a nominal administrative burden to visitors from a day use permit system in the Corridor, climbing, canyoneering and packrafting activity designations on overnight permits, and restrictions in access at a site specific location. These nominal impacts would potentially be exacerbated by day use permits with limits and seasonal or permanent restrictions to activities in some locations based upon potential future adaptive management actions.</p> <p>Major, beneficial, long-term, regional, impacts under Alternative D would include providing a diverse range of quality recreation opportunities, establishment of use levels that minimize crowding and conflict, general determination of appropriate types of use not unacceptably impacting visitor experience, and general preservation of opportunities that are appropriate and consistent with the preservation of wilderness character. These beneficial impacts would potentially be enhanced based upon potential future adaptive management actions.</p> <p>Cumulative effects would be minor, adverse, localized to regional, and short to long-term and Alternative D would contribute a very small amount.</p>
Socioeconomic Environment	<p>Under Alternative A, beneficial impacts to the socioeconomic environment would result from continued commercial services in the backcountry, at approximately 9% for commercial backpacking, and backcountry visitor spending in local communities. Beneficial impacts would be regional short to long-term and minor. Cumulative impacts would be beneficial, regional, short to long-term and moderate.</p>	<p>Under Alternative B and elements common to all action alternatives, beneficial impacts to the socioeconomic environment would result from continued commercial services in the backcountry at 9.6% and backcountry visitor spending in local communities. Beneficial impacts would be regional short to long-term and minor. Specific commercial operators would experience minor, adverse, short</p>	<p>Under Alternative C and elements common to all action alternatives, beneficial impacts to the socioeconomic environment would result from continued commercial services in the backcountry at 9.9% and backcountry visitor spending in local communities. Beneficial impacts would be regional short to long-term and minor. Specific commercial operators would experience moderate, adverse,</p>	<p>Under Alternative D and elements common to all action alternatives, beneficial impacts to the socioeconomic environment would result from continued commercial services in the backcountry at 10.3% and backcountry visitor spending in local communities. Beneficial impacts would be regional short to long-term and minor. Specific commercial operators would experience moderate, adverse,</p>

	Alternative A	Alternative B	Alternative C	Alternative D
	Alternative A would have a small contribution to this overall adverse effect.	and long-term, localized impacts if interested in offering more than three trips per year and not awarded a contract. Cumulative impacts would be beneficial, regional, short to long-term and moderate. Alternative B would have a small contribution to this overall adverse effect.	short and long-term, localized impacts if interested in offering more than three trips per year and not awarded a contract. Cumulative impacts would be beneficial, regional, short to long-term and moderate. Alternative C would have a small contribution to this overall adverse effect.	short and long-term, localized impacts if interested in offering more than three trips per year and not awarded a contract. Cumulative impacts would be beneficial, regional, short to long-term and moderate. Alternative D would have a small contribution to this overall adverse effect.
Park Management and Operations	<p>Under Alternative A, moderate, adverse, long-term and major, adverse, short-term, localized to regional impacts would result from larger group size management in all zones, the lack of policy for managing extended day hiking and running, management of Tuweep day use, maintenance of backcountry toilets and roads and trails, and illegal use of old road beds, and the need to address direct impacts to natural and cultural resources.</p> <p>Minor beneficial, regional, long-term impacts would result from unmaintained routes in Wilderness and visitor education.</p> <p>Cumulative impacts would be moderate adverse, regional, short to long-term of which Alternative A would contribute a small amount.</p>	<p>Under Alternative B, and common to all action alternatives, minor to moderate, adverse, localized to regional, short and long-term impacts would result from increased overnight use at Cottonwood Campground, management of extended day hiking and running, maintenance of backcountry toilets, conversion of old roadbeds to trails, and maintenance of these trails, day use permits for RABT and Extended Day hiking, day and overnight use at Tuweep, and the need to address direct impacts to natural and cultural resources.</p> <p>Minor to moderate, beneficial, localized and regional, long-term impacts would result from smaller groups in Primitive and Wild Zones, authorizing commercial backpacking trips through concessions contracts and establishing caps for these trips in Corridor, Threshold and Primitive Zones.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term of which Alternative B would contribute a small amount.</p>	<p>Under Alternative C, and moderate to major, adverse, localized and regional, short to long-term impacts would result from larger group size management in all zones, management of extended day hiking and running, backcountry toilets installation and maintenance, conversion of old roadbeds to trails, development or upgrade and maintenance of Class 4 Tiyo Point trail and Boundary Road, day use permits for RABT and extended day hiking and running, Tuweep area management, and the need to address direct impacts to natural and cultural resources.</p> <p>Minor beneficial, regional, long-term impacts would result from unmaintained routes in Wilderness and visitor education.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term of which Alternative C would contribute a medium amount.</p>	<p>Under Alternative D, and common to all action alternatives, minor to moderate, adverse, localized to regional, short and long-term impacts would result from increased overnight use at Cottonwood Campground, management of extended day hiking and running, maintenance of backcountry toilets, conversion of old roadbeds to trails and maintenance of these trails, day use permits for RABT and extended day hiking and running, Tuweep facilities changes, and the need to address direct impacts to natural and cultural resources.</p> <p>Minor to moderate, beneficial, localized and regional, long-term impacts would result from smaller groups in all zones, and limiting commercial backpacking and day hiking to the Corridor Zone, and limits on commercial vehicle and stock use trips at Tuweep.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term of which Alternative D would contribute a very small amount.</p>
Adjacent Lands	<p>Under Alternative A, moderate, adverse, regional, long-term impacts would result from access across adjacent lands, associated campsite and staging impacts, trespass on tribal lands, and direct impacts to natural and cultural resources.</p> <p>Minor, beneficial, long-term, regional impacts would result from conversion of roads in Wilderness.</p> <p>Cumulative impacts would be moderate, adverse, short to long-term, regional of which Alternative A would contribute a small amount.</p>	<p>Under Alternative B and elements common to all action alternatives, minor, adverse, regional, short to long-term impacts would result from access across adjacent lands and associated campsite and staging impacts, some continued trespass onto tribal lands, and direct impacts to natural and cultural resources.</p> <p>Minor to moderate, regional, long-term beneficial impacts would occur from increased education of permit requirements for tribal and other agency lands, increased education about resource stewardship on overnight and day use permits, decreased group size in some zones, and limits on number of people and vehicles for organized groups.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term of which Alternative B would contribute a very small amount.</p>	<p>Under Alternative C and elements common to all action alternatives, minor to moderate, adverse, regional, short to long-term impacts would result from access across adjacent lands and associated campsite and staging impacts, some continued trespass onto tribal lands, and direct impacts to natural and cultural resources.</p> <p>Minor to moderate, regional, long-term beneficial impacts would occur from increased education of permit requirements for tribal and other agency lands, increased education about resource stewardship on overnight and day use permits, and limits set for people and vehicles in organized groups.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term of which Alternative C would contribute a small amount.</p>	<p>Under Alternative D and elements common to all action alternatives, minor, adverse, regional, short to long-term impacts to adjacent lands would result from access across adjacent lands and associated campsite and staging impacts, some continued trespass onto tribal lands, and direct impacts to natural and cultural resources.</p> <p>Moderate, regional, long-term beneficial impacts would occur from increased education of permit requirements for tribal and other agency lands, increased education about resource stewardship on overnight and day use permits, decreased group size in all zones bordering adjacent lands, and limits on number of people and vehicles for organized groups.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term of which Alternative D would contribute a very small amount.</p>
Wilderness Character	<p>Under Alternative A, moderate, adverse, regional, short to long-term impacts to wilderness character would result from large groups in Primitive and Wild Zones, presence of toilet facilities and the effects of toilet maintenance, the absence of an anchor policy, presence and illegal use of old road beds, and direct</p>	<p>Under Alternative B, including the impacts described under the Impacts of Elements Common to all Action Alternatives, minor, adverse, regional, short to long-term impacts would result from large groups in Threshold Zone Use Areas, presence of toilet facilities and the effects of toilet maintenance, and</p>	<p>Under Alternative C, including the impacts described under the Impacts of Elements Common to all Action Alternatives, minor, adverse, regional, short to long-term impacts from larger groups in all use areas, additional designated campsites, presence of toilet facilities and the effects of toilet maintenance, and</p>	<p>Under Alternative D, including the impacts described under the Impacts of Elements Common to all Action Alternatives, minor, adverse, regional, short to long-term impacts would result from presence of toilet facilities and the effects of toilet maintenance, and direct impacts to natural and cultural resources.</p>

	Alternative A	Alternative B	Alternative C	Alternative D
	<p>impacts to natural and cultural resources.</p> <p>Minor beneficial, regional, long-term impacts would result from conversion of roads in proposed Wilderness.</p> <p>Cumulative impacts would be moderate, adverse, short to long-term, localized to regional of which Alternative A would contribute a small amount.</p>	<p>direct impacts to natural and cultural resources.</p> <p>Minor to moderate, beneficial, localized and regional short to long-term impacts would result from a reduction in the maximum group size for canyoneering groups and hikers in Primitive and Wild Zones, prohibition of commercial services and filming in the Wild Zone, a climbing policy that addresses bolting and clean climbing practices, and the conversion of old roadbeds to Class 1 Wilderness trails. These beneficial impacts would potentially be enhanced based upon potential future adaptive management actions.</p> <p>Cumulative impacts would be moderate, adverse, regional, and short to long-term. Alternative B would contribute a very small amount.</p>	<p>direct impacts to natural and cultural resources.</p> <p>Minor, beneficial, localized and regional short to long-term impacts would result from a reduction in the maximum group size for canyoneering groups, prohibition of commercial services and filming in the Wild Zone, a climbing policy that addresses bolting and clean climbing practices, and the conversion of old roadbeds to Class 1 Wilderness trails. These beneficial impacts would potentially be enhanced based upon potential future adaptive management actions.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term. Alternative C would contribute a small amount to this adverse effect.</p>	<p>Minor to moderate, beneficial, localized and regional short to long-term impacts would result from a reduction in the maximum group size for canyoneering groups and hikers in Threshold, Primitive and Wild Zones, prohibition of commercial services and filming in the Wild Zone, a climbing policy that addresses bolting and clean climbing practices, and natural restoration of old roadbeds. These beneficial impacts would potentially be enhanced based upon potential future adaptive management actions.</p> <p>Cumulative impacts would be moderate, adverse, regional, short to long-term. Alternative D would contribute a very small amount.</p>