

National Park Service  
U.S. Department of the Interior

Grand Canyon National Park  
Grand Canyon, Arizona



# Colorado River Management Plan







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# Grand Canyon

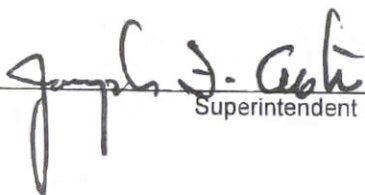
## *Colorado River Management Plan*

Grand Canyon National Park  
P.O. Box 129  
Grand Canyon, Arizona 86023

Produced by the Office of Planning and Compliance  
Grand Canyon National Park

U.S. Department of the Interior

Approved: \_\_\_\_\_

  
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# Introduction

*This 2006 Colorado River Management Plan (CRMP) is a visitor use management plan that specifies actions to conserve park resources and visitor experiences while enhancing river running recreational opportunities on the Colorado River through Grand Canyon National Park (GRCA).*

*This document also provides overall guidance for implementing the 2006 CRMP by 1) describing the management decisions and actions analyzed in the 2005 Final Environmental Impact Statement/Colorado River Management Plan (CRMP FEIS) and mandated by the 2006 CRMP Record of Decision (CRMP ROD), and 2) providing frameworks for how those decisions will be implemented.*

## Background

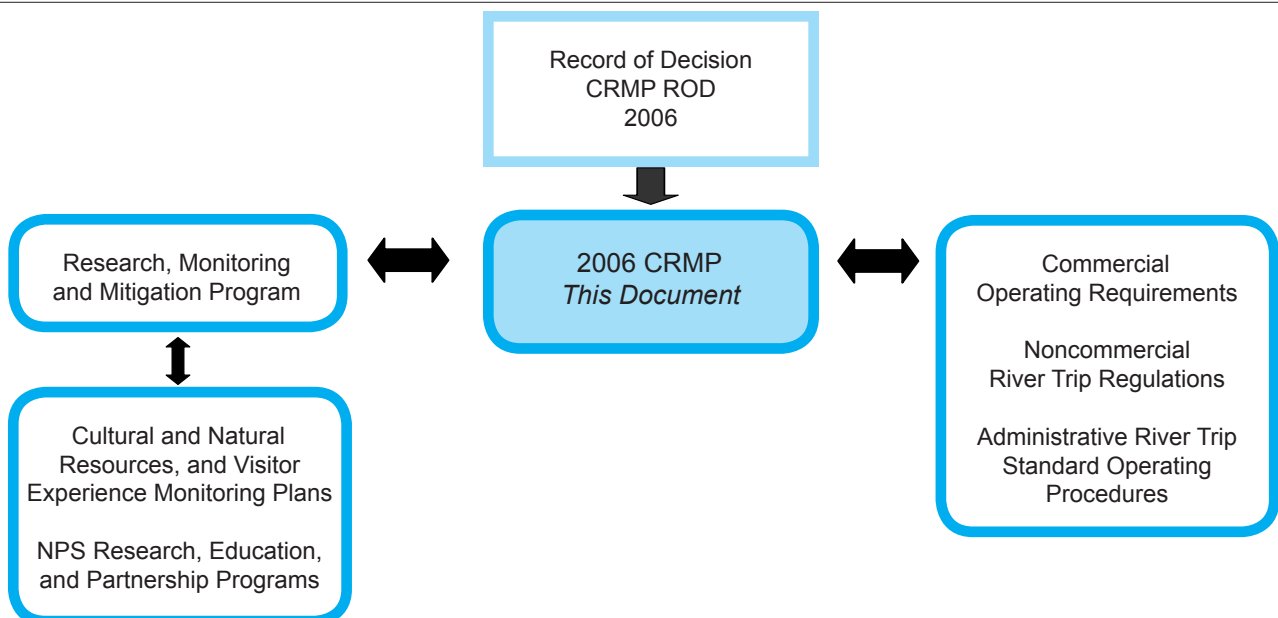
This 2006 CRMP replaces the 1989 CRMP as the visitor use management plan for the Colorado River through Grand Canyon National Park. This CRMP is intended to have a life of at least ten years. This document describes management decisions set by the CRMP ROD, and describes implementation strategies and programs. This plan includes the launch-based system of managing river use for the Lees Ferry to Diamond Creek section, a Lower Gorge river management plan, the noncommercial river permit system, protocols for managing administrative trips, and a framework for a resource education, monitoring, and mitigation program.

The CRMP FEIS dated November 2005 addressed long-standing and recent issues identified by the NPS and the public concerning

visitor-use levels, resource preservation and wilderness character; quality of visitor experience; allocation of use between commercial and noncommercial groups; levels of motorized use; and the noncommercial permit system.

The CRMP Record of Decision signed on February 17, 2006 (Appendix A) is the legal decision document for this CRMP, completing the environmental compliance process under the National Environmental Policy Act (NEPA). The CRMP ROD summarized elements of the final decision, and described public and agency involvement, the decision-making process, the statement of decision, the basis for the decision, and findings on impairment of park resources and values. Figure 1 summarizes the relationship of this CRMP and other implementation documents.

**Figure 1**  
**Relationship of CRMP and Implementation Planning Documents**







Solitude at Deer Creek Falls

## Overview

### *Colorado River Management Vision Statement*

*The Colorado River corridor in Grand Canyon National Park will be managed to provide a wilderness river experience in which visitors can intimately relate to the majesty of the Grand Canyon and its natural and cultural resources.*

*Visitors traveling through the canyon on the Colorado River will have the opportunity for a variety of personal outdoor experiences, ranging from solitary to social, with as little influence from the modern world as possible.*

*The Colorado River corridor will be protected and preserved in a wild and primitive condition.*

### **Description of the Management Area**

The management area includes the 277-mile Colorado River corridor as it passes through Grand Canyon National Park in northwestern Arizona. The Colorado River in Grand Canyon provides a unique combination of thrilling whitewater adventure and magnificent vistas of a remarkable geologic landscape including remote and intimate side canyons. The river is a corridor of desert and riparian habitats a mile beneath the rim's coniferous forests. Plants and animals inhabiting the inner canyon are beautifully adapted to the canyon environment. The river corridor also holds hundreds of archeological and historical sites, evidence of long human occupation. Over 1.1 million acres of GRCA is proposed for wilderness designation, and approximately 29,280 acres have been identified as potential wilderness including the Colorado River corridor. In accordance with NPS policy, GRCA will manage proposed and potential wilderness as wilderness until Congress acts to designate or remove it from consideration.

Distance along the river corridor is measured in river miles (RM), beginning near GRCA's eastern boundary at Lees Ferry with RM 0, and ending near GRCA's western boundary at the Grand Wash Cliffs with RM 277. Most river trips begin at Lees Ferry, approximately one mile upstream from GRCA's boundary, in Glen Canyon National Recreation Area (NRA). Most trips end at the only place within the 277-mile river corridor where boats can be de-rigged and transported out of the steep-walled canyon: Diamond Creek RM 226 (via the Diamond Creek Road across the Hualapai Reservation).

The fifty-one miles of river from below Diamond Creek (RM 226) to the river's entry into Lake Mead (RM 277) is called the Lower Gorge. River trips continuing past or beginning at Diamond Creek take out at South Cove on Lake Mead, 18 miles beyond Grand Wash Cliffs. Prior to 2001, trips took out at Pearce Ferry on Lake Mead, three miles beyond Grand Wash Cliffs. Drought

conditions and low water levels beginning in 2001 and continuing to the present (2006) have made the Pearce Ferry takeout inaccessible.

A variety of river trips are available on the Colorado River through Grand Canyon, and differ by craft, trip type, duration, season, group size and other variables. Visitors may participate on an outfitter-guided trip (commercial) or a self-guided (noncommercial) trip and travel on motorized or nonmotorized rafts. On a motorized trip, boats are powered by 25- to 40-horsepower, four-stroke engines, and each boat typically carries 8 to 23 people. Nonmotorized trips are human powered by oar or paddle. Common nonmotorized craft include rafts, dories, kayaks and catarafts. Additionally, on motor-supported trips (also known as hybrid trips) predominant transportation is human powered (oar or paddle boat), but a motorized vessel(s) is used to carry gear (only during motor months). Although at least one vessel on these trips is motorized, the group is allowed to move only at the speed (trip length) of a nonmotorized trip. Conversely, a permit holder or commercial operator is not allowed to add a paddle or oar boat to a motorized trip for the purpose of traveling at the nonmotorized trip speed.

Depending on the type of trip and season, visitors may participate in trips up to 16 days in summer and 25 days in winter. River trip participants desiring shorter trips may leave or enter the canyon along various routes. Noncommercial trip participants can hike in or out anywhere in the canyon, but most exchange at Phantom Ranch (RM 88) via the Bright Angel or South Kaibab Trails. Commercial passengers launching at Lees Ferry may only exchange at Phantom Ranch or Whitmore (RM 187).

Types and levels of recreational use in the Lower Gorge vary greatly from those above Diamond Creek (RM 226), primarily due to road and boat access to the river by way of the Hualapai Reservation and Lake Mead. Lower Gorge trips include commercial day and overnight trips run by the Hualapai Tribe, as well as noncommercial



*Sunrise at 202*

overnight trips, trips continuing from Lees Ferry and trips traveling upriver from Lake Mead. Trips run by the Hualapai Tribe disembark and occasionally exchange passengers via helicopter in the Quartermaster Canyon area (RM 262.5). Passengers are also flown in from Grand Canyon West on the Hualapai Reservation to the launch facilities at the Quartermaster Canyon area to take a short pontoon-boat tour. Helicopter trips from Grand Canyon West occur over Hualapai land; the National Park Service (NPS) has no authority over transportation options located outside the park boundary.

The planning area includes over 200 camping beaches and numerous attractions along the river corridor. Attraction sites include side canyons (particularly those with perennial streamflow), archeological and paleontological sites, historic locations and properties, caves, waterfalls, springs and hiking trails. Most recreational use occurs close to the river; however, river runners often explore side canyons within the park's backcountry and may venture beyond the park boundary onto adjacent tribal or non-NPS federal lands where permits may be required.

The Colorado River corridor borders tribal lands for nearly half the distance from the put-in at Lees Ferry to the last take-out on Lake Mead. The Navajo Indian Reservation borders GRCA along the eastern bank of the Colorado River from RM 0 (zero) near Lees Ferry to RM 61.5 at the confluence with the Little Colorado River.

The Havasupai Indian Reservation boundary along the river corridor is within Havasu Can-

yon. The Hualapai Indian Reservation borders the river corridor for approximately 108 miles from upstream of National Canyon (RM 164.5) to approximately RM 273. Coordination with these park neighbors is necessary to address resource-management and visitor-use concerns along shared NPS/tribal boundaries. Access permits from the Navajo Nation, Havasupai Tribe or Hualapai Tribe are required by each respective tribe to access that tribe's lands.





Hiking along the Colorado River near Palisades of the Desert

# Management Direction

## Introduction

For the purposes of the 2006 CRMP, the Colorado River is divided into two geographic sections: 1) the Lees Ferry to Diamond Creek section and 2) the Lower Gorge (Diamond Creek to Lake Mead). These sections were further divided into management zones (Map 1) established to represent diversity of recreational settings and opportunities in different river reaches as follows:

- Zone 1 Lees Ferry to Diamond Creek (RM 0 to RM 226)
- Zone 2 Diamond Creek to Quartermaster Canyon (RM 226 to RM 260)
- Zone 3 Quartermaster Canyon to Lake Mead NRA boundary (RM 260 to RM 277)
- Zone 4 GRCA boundary to Lake Mead take-out areas (RM 277 on) managed by Lake Mead NRA

Collectively, Zones 2, 3 and 4 are considered the Lower Gorge of the Colorado River. These zones are based on Recreation Opportunity Spectrum (ROS) framework representing the diversity of recreational settings and opportunities. The river management zone descriptions, settings and desired resource conditions are described in the Research, Monitoring and Mitigation Program (RM&MP) section of this document.

The following sections describe key management decisions set forth by the CRMP ROD for Zone 1, Lees Ferry to Diamond Creek and for the Lower Gorge, Zones 2 and 3, Diamond Creek to Lake Mead boundary.

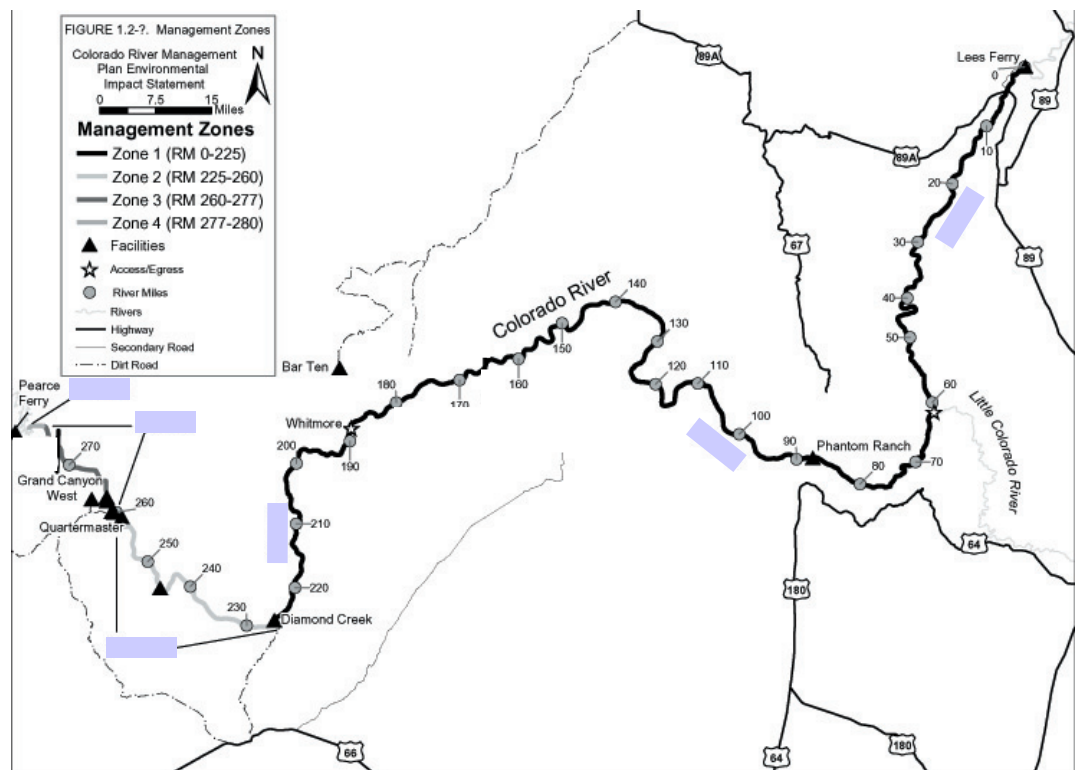
## Lees Ferry to Diamond Creek (Zone 1)

### River Use Allocation

The split allocation system apportions recreational use between commercial and noncommercial trips. This is accomplished by establishing daily and seasonal launch limits for the various types of commercial and noncommercial trips. In addition to launch limits, commercial use is capped at 115,500 user days (e.g. one person on the river for any portion of the day). User-day limits are not applied to noncommercial trips. Administrative use (trips that focus on scientific research, education, resource management, visitor protection, etc.) is not included in the recreational-use allocation.

Commercial river outfitters under contract with the NPS are authorized to provide a range of trip types in accordance with the National Park Service Concessions Management and Improvement Act of 1998 (16 USC 5961). Permits for noncommercial river trips are distributed through the Weighted Lottery System which replaces the former Waitlist permit system (See Noncommercial Permit System).

Map 1. Grand Canyon River Management Zones



**Recreational Use Levels and Distribution**

The 2006 CRMP prescribes management of recreational use by establishing limits on the number of daily launches, group size, trip length and motorized and nonmotorized use periods. The maximum commercial-group size is set at 32, and an additional small noncommercial group size of eight has been established. The maximum trip length of 16 days combined with the even launch pattern also provides an

increased number of noncommercial launches in the summer months (May through August). The no-motors period extends through the winter and early spring. Whitmore exchanges will be allowed for commercial trips launching April 1 through September 15. Components of the 2006 CRMP are summarized in Table 1.

Tables 2, 3, 4, and 5 provide a detailed comparison of key changes from the 1989 CRMP (Old Plan) and 2006 CRMP (This Plan).

**Table 1  
Lees Ferry to Diamond Creek (Zone 1) Component Summary**

Lees Ferry to Diamond Creek Component Summary			
Mixed-Use Season	5.5 months (April 1 through September 15)		
No-Motor Season	6.5 months (Sept 16–March 31)		
Whitmore Exchanges (months allowed)	April-Sept		
Maximum Group Size (Guides included in the commercial group size)			
Commercial Motor and Oar Noncommercial Standard Noncommercial Small	32 participants (May–Aug) / 24 participants (Remainder)		
	16 participants		
	8 participants		
Maximum Trip Length to Diamond Creek	Summer	Shoulder Seasons	Winter
Commercial Motor	10 days	12 days	N/A
Commercial Oar	16 days	18 days	N/A
Noncommercial Motor	12 days	12 days	N/A
Noncommercial Oar	16 days	18 days (Sept 1-15), 21	25 days
Maximum Number of Launches per Day	6	4 (April 16–30), 6 (Sept 1–15), 3 (Remainder)	1
Estimated Yearly Totals	User Days 228,986		Recreational users 24,657
Estimated Maximums	Trips at One Time (TAOT) 60		Passengers at One Time (PAOT) 985

An exciting day in the canyon





**Table 2**  
**Key CRMP Changes In Visitor Use Levels and Distribution (Zone 1)**

<b>Use Levels and Distribution</b>	<b>Old Plan</b>	<b>2006 Plan</b>
<i>Year Round Overall Use</i>		
Estimated number of recreational users	22,461	24,567
Estimated number of launches	893	1,101
Estimated number of user-days	169,950	228,986
<i>Seasonal Use Periods</i>		
March – April	Secondary	Spring Shoulder
May – August	Primary	Summer
September/October	Primary/Secondary	Fall Shoulder
November – February	Secondary	Winter
<i>Maximum Group Size (includes guides)</i>		
Commercial motor trips	43	32 (summer) 24 (shoulders)
Commercial oar trips	39	32 (summer) 24 (shoulders)
Noncommercial Standard Noncommercial Small	16	16 8
<i>Maximum Trip Lengths (in number of days)</i>		
Commercial motor trips	Same for all trips: <i>18 days:</i> Apr 16 – Oct 15 <i>21 days:</i> Oct 16 – Nov 30 Mar 1 – Apr 15 <i>30 days:</i> Dec 1 – Feb 29	10 (summer) 12 (shoulders) 0 (winter)
Commercial oar trips		16 (summer) 18 (shoulders) 0 (winter)
Noncommercial oar trips		16 (summer) 18 (Sept 1-15) 21 (shoulders) 25 (winter)
Noncommercial motor trips		12 (summer) 12 (shoulders) 0 (winter)
<i>Mixed Use/Nonmotorized Use Periods</i>		
Mixed-use (motorized and nonmotorized) period	Dec 16 – Sept 15 9 months	Apr 1 – Sept 15 5.5 months
Nonmotorized use period	Sept 16 – Dec 15 3 months	Sept 16 – Mar 31 6.5 months
<i>Passenger Exchanges</i>		
Phantom Ranch	No restrictions	Guides required for hike in and out
Whitmore	No restrictions	Apr 1- Sept 15 before 10 a.m.

**Table 3**  
**Comparison of Use Levels by Season: Number of Recreational Launches (Trips) (Zone 1)**

Estimated Number of Recreational Launches (Trips)	Old Plan	2006 Plan
Maximum number of Daily Launches – Primary Season	9	6
Maximum number of Daily Launches – Shoulder Season	7	6
Summer (May – August)		
Commercial Launches	534	476
Motorized Trips	417	369
Nonmotorized/Oar Trips	117	123
Noncommercial Launches	129	185
Standard Group Size Trips	129	123
Small Group Size Trips		62
TOTAL Summer Launches	663	661
Shoulder (March/April & September/October)		
Commercial Launches	106	122
Motorized Trips	56	60
Nonmotorized/Oar Trips	50	62
Noncommercial Launches	97	199
Standard Group Size Trips	97	184
Small Group Size Trips		15
TOTAL Shoulder Launches	203	321
Winter (November – February)		
Commercial Launches	0	0
Noncommercial Launches	28	120
TOTAL Winter Launches	28	120
Estimated Total Recreational Trips Year Round	893	1,101

*Vermilion Cliffs*





**Table 4**  
**Comparison of Use Levels by Season: Number of Recreational Users (Zone 1)**

Estimated Number of Recreational Users	Old Plan	2006 Plan
<b>Summer (May – August)</b>		
Commercial Passengers	16,245	14,385
Motorized Trips	12,970	11,511
Nonmotorized/Oar Trips	3,275	2,874
Noncommercial Trip Participants	1,883	2,270
Standard Group Size Trips	1,883	1,901
Small Group Size Trips		369
TOTAL Summer	18,128	16,655
<b>Shoulder (March/April and September/October)</b>		
Commercial Passengers	2,646	3,221
Motorized Trips	1,517	1,666
Nonmotorized/Oar Trips	1,129	1,556
Noncommercial Trip Participants	1,370	2,926
Standard Group Size Trips	1,370	2,836
Small Group Size Trips		90
TOTAL Shoulder	4,016	6,145
<b>Winter (November – February)</b>		
Commercial Passengers	0	0
Noncommercial Trip Participants	318	1,855
TOTAL Winter	318	1,855
Estimated Total Recreational Users – Year Round	22,461	24,567





**Table 5**  
**Comparison of Use levels by Season: Recreational User Days\* (Zone 1)**

Estimated Number of Recreational User-days	Old Plan	2006 Plan
<b>Summer (May – August)</b>		
Commercial	92,568	91,909
Motorized Trips	65,682	67,329
Nonmotorized/Oar Trips	26,886	24,580
Noncommercial Trips	29,301	32,408
Standard Group Size		27,142
Small Group Size		5,266
<b>Shoulder (March/April and September/October)</b>		
Commercial	20,515	23,591
Motorized Trips	8,578	9,584
Nonmotorized/Oar Trips	11,937	14,007
Noncommercial Trips	22,588	46,992
Standard Group Size		45,547
Small Group Size		1,445
<b>Winter (November – February)</b>		
Commercial Use	0	0
Noncommercial Use	6,159	34,087
<b>Total Commercial User-days Limits</b>	<b>115,500</b>	<b>115,500</b>
<b>Total Noncommercial User-day Limits</b>	<b>54,450</b>	<b>None</b>

\*User days equal one person on the river for any portion of a day







Kayakers in Grand Canyon

## The Launch Management System

### Launch Patterns

The launch-based system of managing river use replaces the daily passenger limits set in previous plans. The number and types of daily and seasonal launches is based on the carrying capacity of the Colorado River corridor. Primary factors determining carrying capacity are:

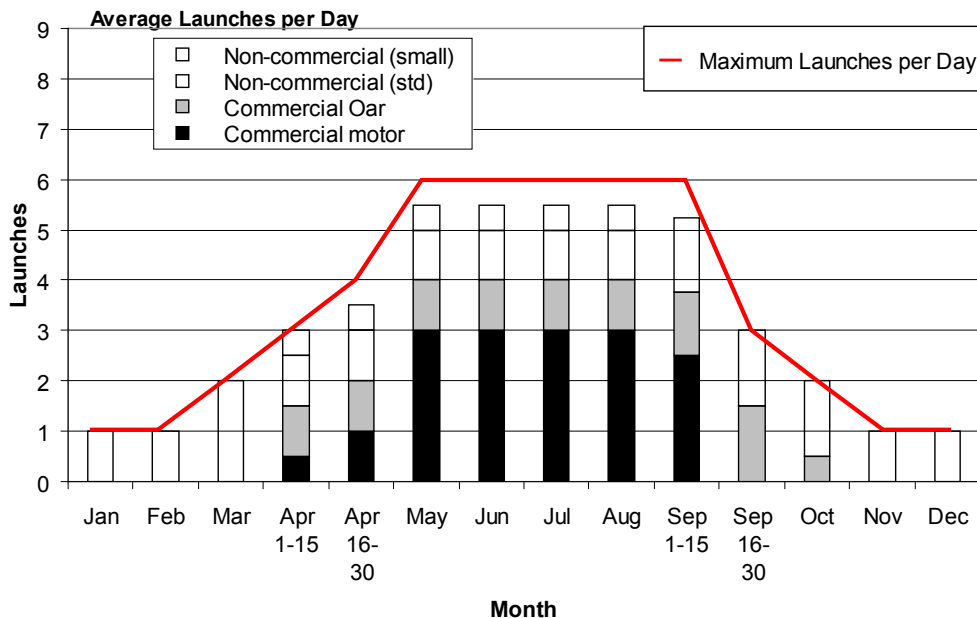
- physical variables the number, size and distribution of camping beaches;
- resource variables the number, types and condition of natural and cultural resources;
- social variables on-river and attraction site encounters, campsite competition, the number of trips at one time (TAOT), and the number of people at one time (PAOT) in the corridor.

The 2006 CRMP sets the maximum number of daily launches at six every other day (or 5.5 average), the projected maximum number of TAOT at 60, and the projected maximum number of PAOT at 985 in the peak use period of May through August. Launches are assigned by trip type (e.g. commercial, noncommercial, motor and/or oar) on a daily basis, and vary by season. Distribution by trip type, trip length and season provides a range of opportunities and visitor experiences while protecting park resources. Figure 2 and Table 6 illustrate daily and seasonal launch patterns. A sample recreational launch calendar is included as Appendix B.

### Launch Scheduling

Recreational river trips will not be scheduled more than two years in advance, and will be distributed in accordance with the launch prescriptions described in the CRMP ROD. Commercial operators must schedule trips in accordance with requirements outlined in their concession contracts. Noncommercial trips are scheduled annually through the weighted lottery permit system. As part of the transition from the waitlist system, approximately one-half of the noncommercial launch dates through 2011 were distributed in 2006. Administrative trips may be approved up to one year in advance and will be scheduled to minimize impacts to recreational trips.

**Figure 2**  
Allowable Launches per Day, Lees Ferry



**Table 6**  
**Daily Launches by Trip Type per Season (Zone 1)**

	Commercial Motor	Commercial Oar	Noncommercial Standard (16)	Noncommercial Small (8)	Total per day
Spring Shoulder					
March	0	0	2	0	2
April 1-15	0.5	1	1	0.5	3
April 16-30	1	1	1	0.5	3 or 4
Summer					
May 1- Aug 31	3	1	1	0.5	5 or 6
Fall Shoulder					
Sept 1-15	2 .5	1 .25	1.5	0	5 or 6
Sept 16-30	0	1.5	1.5	0	3
October	0	0.5	1.5	0	2
Winter					
Nov 1– Feb 29	0	0	1	0	1
.5 launch    launch every other day, .25 launch    launch every 4 <sup>th</sup> day					

**Commercial and Noncommercial Operating Requirements**

New operating requirements applicable to Zone 1 established by this CRMP include:

- Recreational passengers are limited to one river trip per year from Lees Ferry to Diamond Creek
- To improve safety, commercial passengers must be accompanied by a NPS-approved guide on all trip-related hikes including hiking exchanges into and out of the canyon
- Visitation at the mouth of Tapeats and Kanab Creeks by river runners is restricted to day-use only
- To protect humpback chub and critical habitat, no boats will be allowed to enter or park in the Little Colorado River (LCR), and visitation at the southern half of the LCR is restricted seasonally (March 1 to November 30).

- To protect Kanab ambersnail habitat, upper Elves Chasm will be closed to recreational access from March through October each year.

Operating requirements may change or be modified based on future resource conditions, safety or environmental concerns or new information. Commercial Operating Requirements applicable to all commercial river services launching from Lees Ferry (All Zones) are attached as Appendix C. Noncommercial River Trip Regulations (All Zones) are attached as Appendix D.

A visitor enjoys time along the Colorado







Diamond Peak

### Lower Gorge River Management (Zones 2 and 3)

The 2006 CRMP represents the first formal river management plan that prescribes recreational-use limits for the variety of river activities in the Lower Gorge of the Colorado River from Diamond Creek to Lake Mead. The plan sets the maximum group size and trip length for commercial and noncommercial groups launching from Diamond Creek, allows upriver travel from Lake Mead to Separation Canyon, restricts the number of daily jet-boat pickups and establishes parameters for types and levels of motorized commercial opportunities in the Quartermaster area. Motorized and nonmotorized river trips are allowed year-round. Key management actions for the Lower Gorge are described below.



Agave Utahensis

### River Use Allocation, Lower Gorge (Zones 2 and 3)

The split allocation system is also adopted for the Lower Gorge. The apportionment of use between commercial and noncommercial use is based on daily and seasonal launch limits and group size. Included in this apportionment are the commercial and noncommercial trips launching from Lees Ferry and continuing into the Lower Gorge.

The Hualapai Tribe offers a variety of commercial river trips in the Lower Gorge. As set forth by the CRMP ROD, the NPS intends to award the Hualapai Tribe a concession contract for Lower Gorge operations. Noncommercial river permits are available from the NPS on a first-come, first-served basis. Should the demand for use in Lower Gorge increase, the NPS may implement a lottery system for trips launching from Diamond Creek. There is no distinction between noncommercial and educational special-use trips in the Lower Gorge. Educational groups can apply as a noncommercial trip. Permits for access to Hualapai Tribal lands are also required.

### Recreational Use Limits for River Trips launching from Diamond Creek

- Three types of recreational trips launch from Diamond Creek:
- 1) One-day commercial trips operated by the Hualapai Tribe,
  - 2) Overnight commercial trips operated by the Hualapai Tribe, and
  - 3) Noncommercial (or educational) river trips.

In addition to recreational trips, administrative trips approved by the NPS and the Hualapai Tribe are conducted in the Lower Gorge.

The Lower Gorge provides a one-to-three day river-excursion opportunity for visitors. During the peak season (May through September), the number of one-day trips run by the Hualapai Tribe is variable within the prescribed group size and passenger launch limits. The maximum group size limit is 40 people (including guides); the maximum number of passengers per day is 96. During the non-peak months of October through April, the daily limits for one-day trips run by the Hualapai Tribe is two launches of 35 people.

Overnight trips run by the Hualapai Tribe and noncommercial trips are subject to daily launch limits and trip lengths. During the peak season, three trips run by the Hualapai Tribe (maximum group size of 20 people) and two noncommercial river trips (maximum group size of 16 people) are allowed to launch each day. During the non-peak season, one overnight trip run by the Hualapai Tribe (20 people) and two noncommercial/educational trips are allowed to launch each day. This information is summarized in Table 7.

This 2006 CRMP establishes trip length limits in the Lower Gorge that apply to all trips launching from Diamond Creek and for trips launching from Lees Ferry that continue into the Lower Gorge. Trip length limits are based on the number of camps and vary by season. This

**Table 7**  
**Diamond Creek Launch Limits and Group Size (Zones 2 and 3)**

	Hualapai One-day	Hualapai Overnight	Noncommercial
Peak Season: May through September			
Daily Launches	96 passengers/day	3	2
Group Size	40	20	16
Non-peak Season: October through April			
Daily Launches	2	1	2
Group Size	35	20	16

**Table 8**  
**Lower Gorge Trip Length Limits (Zones 2 and 3)**

Trip Length Limits: Number of Nights		
	Peak Season	Non-peak Season
Diamond Creek to Separation Canyon (Zone 2)	1	1
Separation Canyon to RM 260 (Zone 2)	1	2
RM 260 to Lake Mead (Zone 3)	1	2

information is summarized in Table 8. In addition, the CRMP allows for establishment of three additional campsites on the south bank below Separation Canyon to accommodate commercial trips run by the Hualapai Tribe.

**Upriver Travel from Lake Mead**

Trips launching from Lees Ferry and continuing into the Lower Gorge often employ jetboat or powerboat services to move people and/or rafts across the smoothwater sections of the Lower Gorge. Upriver travel from Lake Mead is permitted to Separation Canyon. The number of commercial river passenger pick-ups is limited to four per day during the peak season and one per day during the non-peak season. Motorized tow-outs for noncommercial trips are also allowed.

**Quartermaster Area Operations**

The Quartermaster area includes the 17-mile segment of the Colorado River within Zone 3. The Hualapai Tribe offers a variety of recreational activities on tribal lands including helicopter sightseeing tours. Pontoon tours originating from the Quartermaster area are limited to 480 passengers per day with a total of five boats at one time. In accordance with the CRMP ROD, these daily limits may increase to 600 based on favorable performance reviews and resource monitoring data. The Hualapai Tribe may be installing a floating dock to facilitate passenger loading and unloading for their whitewater and pontoon operations.

**Commercial and Noncommercial Operating Requirements (Zones 2 and 3)**

Commercial Operating Requirements applicable to all commercial river services launching from Diamond Creek are attached as Appendix E. The commercial and noncommercial operating requirements for trips launching from Lees Ferry are also applicable in the Lower Gorge.

**Resources Monitoring, Mitigation and Adaptive Management Overview**

The NPS will implement a Research, Monitoring and Mitigation Program to ensure that the CRMP management objective of minimizing impacts to resources while providing quality river experiences is met. An integrated monitoring and mitigation program will focus on the effects of recreational use on park resources and values. The framework for the Research, Monitoring and Mitigation Program is outlined in this document. Specific monitoring protocols will be developed for various resources, and mitigation actions taken, based on monitoring program results and findings.

Adaptive management provides systematic feedback to park management and allows adjustments or modifications to mitigate unplanned or undesirable implementation outcomes. Adaptive management will allow resource managers to change management prescriptions and mitigation actions when necessary conditions arise, based on resource monitoring results.

Lower Gorge, Grand Canyon





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*Up-to-date detailed information on the annual lottery will be available to the public and lottery applicants on the park's website at [www.nps.gov/grca/planyourvisit/whitewater-rafting.htm](http://www.nps.gov/grca/planyourvisit/whitewater-rafting.htm)*

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River runners on the Colorado River in Grand Canyon National Park

## Noncommercial Permit System

### Introduction

The Weighted Lottery System replaces the Waitlist for obtaining noncommercial river trip permits that launch from Lees Ferry and take-out at Diamond Creek or Lake Mead. This section describes the new Weighted Lottery System as set forth by the CRMP ROD, and outlines the application process, permit award and cancellation policy. Up-to-date detailed information on the annual lottery will be available to the public and lottery applicants on the park website at [www.nps.gov/grca/planyourvisit/whitewater-rafting.htm](http://www.nps.gov/grca/planyourvisit/whitewater-rafting.htm)

The Weighted Lottery System is designed to meet the following objectives: 1) offer opportunities for new noncommercial users to succeed in obtaining a permit, 2) favor requests from those who have been unsuccessful in previous years, 3) minimize application process complexity, 4) preserve the group character of noncommercial trips (those who want to travel together), and 5) encourage people to apply for launches only in years when they are really interested in going.

### Transition to Weighted Lottery System

As outlined in the CRMP FEIS and ROD, a three-stage expedited transition for former noncommercial waitlist members took place during the first six months after the CRMP ROD was signed in 2006. Key aspects of the transition include:

- A total of 1,200 launch dates from 2007 through 2011 were made available to waitlist members through Stage 1 and 2 of the transition process. Most of these dates were claimed, and will remain unavailable through the lottery system.
- Many waitlist members were given extra chances in exchange for transitioning off the waitlist and into the Weighted Lottery System. These extra chances are in addition to the standard chances others get in the lottery, can be re-used year after year, and expire only when the former waitlist member goes on a commercial or noncommercial trip or is awarded a trip through the lottery.
- The NPS will monitor the progress of former waitlist members who chose extra chances in Stage 3 of the transition and apply regularly through the lottery but continue not to obtain a permit. The NPS may apply adaptive management measures to ensure wait times of those people do not excessively increase beyond what they would have waited under the old waitlist and allocation system.

## The Weighted Lottery System

### Overview

Each year, a weighted lottery will award noncommercial launches for the following year (e.g. 2006 lottery awards launches for calendar year 2007). Chances in the lottery will vary depending on whether applicants have been on a commercial or noncommercial Grand Canyon river trip within the past five years and whether applicants received additional chances in transitioning to the lottery from the former waitlist system.

### How the Weighted Lottery System Works

Lottery applications for noncommercial river trips launching at Lees Ferry will be accepted over the internet; alternative application methods will be available for those without internet access. Applicants will be required to list key identification information about all potential alternate trip leaders (PATL) on the lottery application. This PATL list cannot be modified at any later time, and all the potential leaders must be a minimum of 18 years old by the time of launch. Individuals may be listed as potential leaders on a maximum of one trip per year. All individuals listed on a lottery application as potential alternate trip leaders are automatically eligible to qualify as alternate trip leaders. Thus, if the original trip leader must drop out, the rest of the group can continue their plans. Applications can include requests for any or even all launch dates throughout the year, though only five launch dates will receive initial consideration.

Each application's chance of being drawn through the Weighted Lottery System will vary depending on the minimum number of years it has been since any potential leader for that trip has won through the lottery or participated in any part of another Lees Ferry to Diamond Creek river trip. The following list illustrates standard chances each application will get based on the most recent time any potential leader listed on the application has won through the lottery or been on a commercial or noncommercial river trip.

<u>Most Recent Time any Potential Leader Participated on a Trip</u>		<u>Chances</u>
Never	=	5 chances
5 or more calendar years before application	=	5 chances
4 calendar years before application	=	4 chances
3 calendar years before application	=	3 chances
2 calendar years before application	=	2 chances
1 calendar year or less before application	=	1 chance

As mentioned above, some applicants will get extra chances in the Weighted Lottery System. These extra chances were given to waitlist members in exchange for transitioning off the waitlist and into the Weighted Lottery System. These extra chances are in addition to the standard chances listed above, can be re-used year after year, and expire only when the former waitlist member goes on a commercial or noncommercial trip or obtains a launch date through the lottery. Unlike the standard chances that every application gets as listed above, these extra chances are cumulative; all extra chances held by each PATL listed on the application will be added to the main applicant's extra chances and benefit the applicant.

Each application may list up to five dates. As soon as an application is drawn through the Weighted Lottery System, these five dates will be considered in the order requested. If a launch date is available and the nonrefundable trip deposit is successfully received, the applicant will be awarded the trip. If none of the five launch dates requested can be awarded to the applicant, another application will be considered. The process will continue until all launches have been awarded.

If launches remain available after considering all applications, or later become available due to trip cancellations, the process will be repeated with additional runs of the lottery. Permits that continue to be unclaimed through the lottery 30 days before the launch date may be awarded on a first-apply, first-served basis.

Permits may not be deferred or swapped but may be passed to a PATL listed on the original application. Trip leaders will continue to have the freedom to change their list of participants up to within three weeks of launch.

Noncommercial River Trip Regulations and other procedures will be maintained and modified as necessary by the NPS to implement the noncommercial permit system provisions described in the CRMP ROD. Noncommercial River Trip Regulations (All Zones) are in Appendix D.

**Monitoring and Adaptive Management of the Noncommercial Permit System**

The NPS will monitor the Weighted Lottery System to ensure management objectives are attained. As described in the waitlist transition process, the NPS will monitor the progress of former waitlist members who chose extra chances and continue to be unsuccessful in obtaining a permit or who participate on a river trip. Through adaptive management, the NPS may implement measures to ensure the wait times of those people do not excessively increase beyond what they would have waited under the old waitlist and allocation system. These measures may include heavier weighting for some applicants, noncompetitive awarding of some launches, and/or other management actions as needed to meet the objectives of the Weighted Lottery System.

Spencer Trail







River runners pass under the bridges at Marble Canyon

## Education and Outreach

Educating Grand Canyon river users on park stewardship is essential to successful CRMP implementation. Visitor actions directly influence resource protection and wilderness preservation. In many instances, visitors are unaware that their behavior may adversely affect the very resources they came to enjoy. Education and public outreach is one of the most powerful tools available to NPS managers and a primary means of mitigating recreational river-use impacts. Table 9 summarizes educational program topics and initiatives suggested by the public, tribal agencies and park staff during the 2006 CRMP comment period.

In the CRMP ROD the NPS committed to creating a multi-media educational program for all users that teaches river safety and etiquette, permitting requirements (on NPS and adjacent lands), park regulations, ways to avoid impacts to natural and cultural resources, crowding at camps and attraction sites, minimum-impact practices, camping protocols (campsite map), appropriate uses in management zones, tribal/agency boundaries and appropriate behavior at sacred sites.

### Website and DVD

To keep river users informed, the NPS will continue to update the CRMP and river websites at [www.nps.gov/grca](http://www.nps.gov/grca). As part of an enhanced visitor education program, the NPS envisions developing a tutorial on this website. The tutorial will describe appropriate visitor behavior and low-impact camping techniques. In addition, the NPS sends a DVD to all noncommercial permit holders prior to their Colorado River trip. Users who enter at Diamond Creek also receive the DVD. The DVD addresses many issues listed above. The NPS also envisions sharing research, monitoring and mitigation planning progress and results through an annual or biannual forum.

Noncommercial river runners will continue to receive an orientation at the Lees Ferry launch area, and the educational program will continue to be reviewed and updated. Additionally, educational materials will continue to be provided in the noncommercial river permit packet.

Commercial outfitters are required, per their concessions contracts, to provide a visitor orientation that addresses safety, environmental protection procedures and appropriate low-impact behavior for commercial river users. Commercial river guides also provide on-river interpretation and act as stewards to ensure that resource impacts are minimized and parties adhere to the Commercial Operating Requirements (Appendix C and E). In cooperation with guides, outfitters, researchers and other partners, NPS will provide updated educational materials to all commercial river-running outfitters.

### Campsite Atlas

In cooperation with the U.S. Geological Survey (USGS) Grand Canyon Monitoring and Research Center (GCMRC), the Hualapai Tribe and other researchers, the NPS will compile a campsite atlas that documents Colorado River campsites from Lees Ferry to Lake Mead. This will enable researchers and park managers to better understand trends in campsite conditions, size and location. Information compiled in the inventory will include: location, campsite boundaries, campsite capacity, information from historic studies and campsite attributes such as boat-mooring areas and resource-condition class. This atlas will serve as the official inventory of camping beaches along the Colorado River and assist river users with campsite selection based on group size and trip itinerary.

### Education Initiatives Related to Culturally Affiliated Indian Tribes

To enhance interpretation of Grand Canyon from a Native American perspective, and in accordance with 36 Code of Federal Regulations (CFR) subsection 51.17(b)(2), the NPS included, in the prospectus for commercial river-running concession contracts, a secondary selection factor calling for the interpretation of Grand Canyon from the perspective of American Indian tribes that have historical ties to the canyon and are culturally affiliated with it.

**Table 9**  
**Education Topics and Initiatives (All Zones)**

<b>Natural Resource Topics</b> <i>Educate private and commercial guides and passengers about procedures to protect natural resources including:</i>	<b>Initiative(s)</b>
Kanab ambersnail, desert tortoise, condors, brown pelicans, southwest willow flycatcher, humpback chub and other native fish, bald eagles, special status species, bats, rattlesnakes; soils and vegetation impacts; exotic and invasive species including New Zealand mudsnail; aquatic resources; water quality; air quality; caves; minimum impact practices and river etiquette.	<ol style="list-style-type: none"> <li>1. Develop an educational DVD and/or web-site available to all boaters</li> <li>2. Include in orientation</li> <li>3. Enhance educational contact of ranger patrols</li> <li>4. Include in operating requirements</li> </ol>
<b>Cultural Resource Topics</b> <i>Educate people about</i>	
Minimum-impact practices to address cultural resource impacts for all users at all launch and exchange points including site visitation etiquette, appropriate behavior at sacred sites, laws protecting sites, and the vulnerability and cultural context of resources	<ul style="list-style-type: none"> <li>● Items 1-4</li> </ul>
<b>Tribal Topics</b> <i>Educate people about tribal topics including</i>	
Tribal and agency boundaries and permitting processes; Low-impact ethics, camping protocols, appropriate visitor behavior and Diamond Creek launch-ramp management; trespass, intentional resource damage, and disregard of tribal laws and regulations.	<ul style="list-style-type: none"> <li>● Items 1-4 plus: Affiliated tribes will be invited to participate in educational material development related to tribal concerns. Every effort will be made to incorporate tribal perspectives into interpretive information, whether provided through the NPS or concessionaires.</li> </ul>
<b>Visitor Experience Topics</b> <i>Educate people about</i>	
Campsite-capacity, and encourage small groups to use smaller beaches; river etiquette; old high-water zone sensitive-resource impacts; Park regulations and minimum-impact ethics; Environmental and rafting regulations; Potential conflicts between recreation users and researchers.	<ul style="list-style-type: none"> <li>● Items 1-4 plus: Develop campsite atlas, include capacity and resource attributes</li> </ul>
<b>All Topics</b>	
Issues identified through resource monitoring	<ul style="list-style-type: none"> <li>● Adaptive management</li> </ul>







Social trail before (above) and after (below) rehabilitation



# River Management Responsibilities

## Introduction

As described below, NPS river operations and management responsibilities are shared by various NPS work units (divisions).

The NPS has management responsibility for 277 miles of the Colorado River corridor through Grand Canyon National Park from Lees Ferry (RM o) to the Lake Mead NRA boundary (RM 277). Although the Lees Ferry, Pearce Ferry and South Cove launch areas are not within the park, Grand Canyon National Park staff are stationed at these sites and coordinate river management activities with Glen Canyon NRA (Lees Ferry) and Lake Mead NRA (South Cove).

The NPS will work cooperatively with the Hualapai Tribe, Navajo Nation and Havasupai Tribe on issues concerning river management along the park's respective boundaries. The NPS will work cooperatively with Hualapai Tribe especially in the Lower Gorge (See Lower Gorge section below).

## Resource Management

Grand Canyon National Park Science Center  
The Grand Canyon Science Center (Division of Resources Management and Research Coordination) has the primary responsibility for implementing research, inventory and monitoring and resource management programs for the river corridor. Science Center resource specialists will develop a scientifically-based Research, Monitoring and Mitigation Program that focuses on visitor-induced impacts within the river corridor. These programs will be implemented in close coordination with other park divisions, tribes, federal agencies and other partners. In cooperation with park rangers, trail crew and other park staff, resource management specialists will design and implement projects to address resource concerns and impacts, including visitor impacts on vegetation, cultural resources, wildlife habitat, water quality and campsite condition.

All research conducted along the river within the park is reviewed and authorized through the Science Center. This includes the long-term research and monitoring program undertaken through the Glen Canyon Dam Adaptive Management Program primarily through the USGS Grand Canyon Monitoring and Research Center. Although the Glen Canyon Dam Adaptive Management Program (GCD/AMP) focuses on impacts from Glen Canyon Dam operations, the NPS and involved agencies will coordinate research and monitoring projects. For example, the NPS and USGS will update the campsite inventory to reflect flow-induced effects (i.e., sedimentation depletion) and the effects of visitation at campsite and attraction sites.

## River Operations and Permits

The Division of Visitor and Resource Protection  
*River Ranger Activities*  
NPS river rangers are responsible for on-river operations that include safety and visitor education, law enforcement, concession-operation evaluations and support for maintenance, education, research and resource-management activities. River patrol frequency is based on seasonal recreational-use levels. Under this plan, recreational use increases in the spring, fall and winter months requiring year-round river patrol operations. Patrols will be conducted frequently from May through September and less frequently October through April, unless more frequent patrols are deemed necessary. Patrols conducted during summer months will focus on visitor education, concession-operation evaluations and support of resource-management activities. Patrols conducted during shoulder and winter months will focus on visitor education, resource management and maintenance activities.

### *Lees Ferry Operations*

Grand Canyon river operations at Lees Ferry are accomplished under a cooperative agreement with Glen Canyon NRA. Lees Ferry rangers oversee management of commercial and noncommercial river launches, visitor education, concession-operation evaluations and noncommercial river-trip orientations. The Lees Ferry ranger station will be operational year-round to accommodate the increased number of launches in spring and winter. This operation will be adequately staffed to manage river trip launch operations, disseminate requisite river-use information and educate visitors on Grand Canyon resources, current issues and other topics.

### *Meadview/Lower Gorge Operations*

Grand Canyon National Park rangers stationed at Meadview are responsible for NPS river operations in the Lower Gorge (Diamond Creek to Lake Mead). Management responsibilities are discussed in the Lower Gorge Operations section below.

### *River Permits Program*

The Backcountry Information Center manages the noncommercial river permits system through the backcountry permit program. This office will track and document all river use, including commercial, non-commercial and administrative use through a centralized database. The new noncommercial permit system was described earlier in this document.





Above: NPS archaeologists at work  
Below: NPS camp at South Canyon



### Visitor Education

#### The Division of Interpretation and Resource Education

Interpretive rangers and environmental education staff work with other park divisions, universities, nonprofit organizations and other groups to provide educational opportunities on the river, develop curricula and written interpretive materials and conduct service projects tied to Science Center projects along the river corridor. Interpretive staff members will provide interpretive training for river outfitters, guides, noncommercial boaters and other groups. This division will provide expertise for developing educational programs and materials for river users.

### Trails and Facilities

#### Division of Maintenance and Facility Management

The park trail crew maintains all designated trails and routes including those accessible from the river to popular destination sites and rapid-scouting areas. Trail crew conducts routine maintenance and rehabilitation of established backcountry trails and routes, assists with restoration projects and maintains primitive toilets in backcountry areas. Trail crew will conduct river trips for trail maintenance projects in Zone 1, Lees Ferry to Diamond Creek. Trail, campsite and/or facility maintenance in Lower Gorge will be conducted in cooperation with the Hualapai Tribe.

### Planning and Compliance

The Office of Planning and Compliance (OPAC) OPAC provides leadership in developing interdisciplinary systems and processes for planning and project compliance to preserve and protect the park's historical, natural and cultural resources and visitor experiences. In close cooperation with Science Center resource-program managers and staff from other park divisions, this office is responsible for developing management plans, including this CRMP.

### Commercial Services

The Division of Concessions Management The Concessions Division manages concessions contracts for commercial river trips operating in the park. The division develops contracts, administers fees, oversees operations and sets rates for services provided under these contracts. River rangers will conduct on-river operational evaluations with oversight from concession management specialists. The Concessions Division also issues commercial use authorizations (CUAs) for river trip support services (e.g., equipment rental and shuttles).



**Lower Gorge River Operations and Management (Diamond Creek to Lake Mead)**

NPS river rangers, Science Center staff and trail crew will work in cooperation with the Hualapai Tribal resources and river operations department to implement management actions set forth in the CRMP ROD. These management activities are typically coordinated through the Lower Gorge river ranger located at the Meadview Ranger Station.

The NPS and the Hualapai Tribe will work cooperatively to implement the Research, Monitoring and Mitigation Program in Lower Gorge. The RM&MP identifies specific research needs that address visitor preferences and satisfaction with the recreational river activities in Zones 2 and 3, as well as specific research needs that address natural and cultural resource conditions.

NPS river patrol operations include visitor education, law enforcement, maintenance and resource-management activities. NPS river patrols will be conducted year-round due to the level and variety of Lower Gorge river-based recreation activities. Lower Gorge river patrols may be supplemented by patrols launching from Lees Ferry and continuing through Lower Gorge.

Table 10 summarizes CRMP implementation elements, designates the responsible office and timeframe.

South Cove river trip takeout and lake launch ramp on Lake Mead





Passenger exchange at Whitmore, RM 187

**Table 10**  
**Implementation Elements, Responsible Office and Timeframe**

Implementation Elements	Responsible Office	Potential Partners	Implementation Timeframe
Noncommercial Permit Waitlist Transition to Weighted Lottery System	River Permits Office	Noncommercial river runner groups	2006
Weighted Lottery System	River Permits Office	Noncommercial groups, Federal agencies	2006 & 2007
Review progress on ex-wait list members with extra chances	River Permits Office	Noncommercial groups	2007 & ongoing
Commercial Operating Requirements and Noncommercial River Trip Regulations	River District Concessions Management Science Center	Guides, outfitters, noncommercial groups, U.S. Fish and Wildlife Service, Arizona Game and Fish, GCMRC	2007, and updated through life of plan
Commercial River Contracts	Concessions Management	Washington Office NPS	2006 – 2007
Launch-based River Management System	River Permits Office, River District, Science Center, Concessions Management	Guides, outfitters, noncommercial groups	2007
Administrative Use Procedures	River Protocols Team	Researchers, educational institutions, GCMRC, and other partners	2006, and updated through life of plan
Research, Monitoring and Mitigation Program	Science Center, River District, Trails, Environmental Education	Researchers, educational institutions, GCMRC, and other partners	2007, and updated through life of plan
Lower Gorge Camps and Facilities Upgrade	Hualapai Tribe, NPS OPAC	River District, Science Center, Trails	2007+
Lower Gorge Concession Contracts	Concessions Management	Washington Office NPS	2007+





Bighorn ram along the Colorado River

# Administrative River Use

## Introduction

Administrative river trips are authorized at the discretion of the park superintendent. Administrative river use includes NPS-authorized trips that focus on resource management, scientific research, education, visitor protection, maintenance, and tribal issues. Administrative trip types are summarized in Table II.

## Administrative Trip Procedures

Administrative trips are subject to a review and screening process established by the NPS River Protocols Team (RPT). The RPT includes representatives from the Science Center, River District, Trail Crew and Environmental Education program. The RPT serves as the first-line review of administrative trip applications prior to consideration and/or approval by the superintendent. Additional administrative permits may be required and are discussed below.

## Minimum-Requirement Analysis

The administrative river-trip evaluation and approval process includes Minimum-Requirement Analysis (MRA). In accordance with NPS wilderness management policy, all parks with wilderness resources must evaluate administrative activity effects on wilderness values and character. The minimum-requirement analysis is applied as a two-step process that documents:

- (1) A determination whether or not a proposed management action is appropriate or necessary for administration of the area as potential wilderness, and does not pose a significant impact to wilderness resources and character
- (2) If the project is appropriate or necessary in potential wilderness, selection of the management method (tool) that causes the least amount of impact to physical resources and experiential qualities (character) of wilderness.

The park's Minimum-Requirement Analysis Form is included as Appendix F.

## Administrative Trip Types and Procedures

### NPS River Trips

NPS river trips must follow the Protocol For Administrative River Trips Standard Operating Procedure (SOP) developed by the RPT. The SOP is reviewed annually and updated as needed. The objectives of the administrative river trip review process are to 1) ensure that all administrative-trip requests follow the same procedure and receive equal and impartial review, 2) ensure all NPS work units, partners and agencies complete resource projects using approved NPS methods, and 3) minimize the number of trips and prevent duplication between NPS work units and/or other agencies or researchers. The SOP is included in Appendix G.

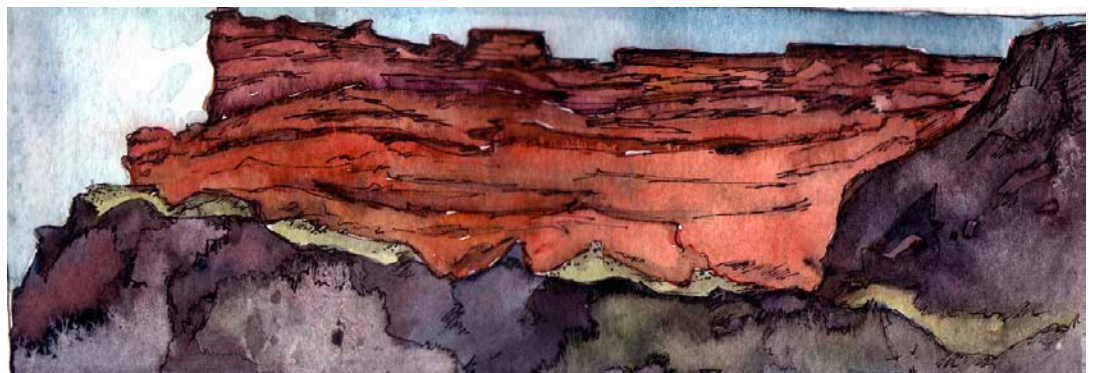
### Scientific Research Trips

The superintendent approves all research in Grand Canyon National Park. Research projects must be approved prior to obtaining a river trip permit. The research-project review process typically requires 30 to 90 days, and includes evaluation of requested river and/or backcountry trips. Research projects are subject to minimum-requirement analysis to evaluate appropriateness of research activities and methods. The NPS RPT evaluates research-trip effects on recreational use, and works with the River Permits Office to minimize scheduling conflicts before forwarding the recommendation to the superintendent. NPS research guidelines may be found at <http://science.nature.nps.gov/research>.

### The Glen Canyon Dam Adaptive Management Program

The Glen Canyon Dam Adaptive Management Program (GCD/AMP) directs long-term monitoring and research of Colorado River resources affected by dam operations. Involved agencies include the USGS, the NPS, Bureau of Reclamation, U.S. Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (AZGF). The Grand Canyon Monitoring and Research Center coordinates the majority of administrative trips for the GCD/AMP in cooperation with other agencies and individual researchers. The GCD/AMP long-term monitoring and research

Tapeats





Trail crew maintaining backcountry facilities accessed by river

**Table 11**  
**Administrative River-Trip Types**

Trip Type	Entity	River Management Activities
Resource Management	NPS GRCA Science Center Natural and Cultural Resource Management and Social Science Programs	Scientific research, wildlife monitoring, campsite inventory and monitoring, vegetation management including site rehabilitation and restoration, exotic plant removal, soundscape monitoring, water quality monitoring, archeological site monitoring and mitigation, consultations and monitoring with affiliated American Indian tribes
Visitor Protection	NPS GRCA Visitor and Resource Protection River Patrols	Visitor education, commercial and noncommercial river trip evaluations; support of park resource management, education and maintenance activities
Maintenance	NPS GRCA Division of Maintenance Trails and Facilities	Backcountry trail maintenance and management of primitive backcountry toilets and designated camp areas
Glen Canyon Dam Adaptive Management Program	<ul style="list-style-type: none"> <li>•Grand Canyon Monitoring and Research Center, USGS</li> <li>•Bureau of Reclamation</li> <li>•U.S. Fish and Wildlife Service</li> <li>•Arizona Department of Game and Fish</li> </ul>	Research and monitoring of resources affected by Glen Canyon Dam: river system sediment, endangered native fish, Kanab ambersnail population and habitat, nonnative fish management, terrestrial and aquatic resources, monitoring and mitigation of cultural and tribal resources
Scientific Research	Approved Researchers	Various
Tribal	Grand Canyon Affiliated Tribes	Government-to-government consultations, resources monitoring
Partners and Volunteers	NPS Solicited and Selected	Resource stewardship and/or applied research projects that require river travel
Education	Approved Accredited Education Institutions and Nonprofits	Educational focus on Grand Canyon. Resource stewardship projects that require river travel.



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*The NPS Volunteers-In-Parks (VIP) program may also meet resource program needs. Individuals interested in volunteer opportunities should visit the websites at [www.volunteer.gov/gov](http://www.volunteer.gov/gov) [www.nps.gov/volunteer](http://www.nps.gov/volunteer) or [www.gcvolunteers.org](http://www.gcvolunteers.org)*

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Studying frogs in a tributary of the Colorado River in Grand Canyon

projects are subject to the NPS research project guidelines and permit requirements. The NPS coordinates scheduling of these river trips to be consistent with RPT guidelines and objectives.

#### **Tribal Trips**

Tribal trips are conducted as part of government-to-government consultation and for tribal access to, and monitoring of, traditional cultural properties. Some tribal trips are conducted to monitor and address impacts of Glen Canyon Dam through the GCD/AMP. Tribal trips may or may not include NPS staff.

#### **Educational Trips**

Educational institutions and organizations participate in commercial and noncommercial river trips. Administrative permits for educational river trips will be evaluated based on the following criteria:

- River/backcountry educational trip opportunities will be available only to accredited educational institutions and non-profit organizations that serve and provide educational opportunities to high-school or older students. Opportunities will focus on educational values and learning activities available only at GRCA.
- All river/backcountry educational trips must a) focus on the educational value of being at the park with activities that can only be conducted at GRCA, and b) have a service-project component. (The service component should be beneficial to both student and park and have educational value directly linked to the program's focus. This differs from partnerships as the park seeks partnerships to assist with a project as the first priority. Educational trips are viable educational programs first with a secondary service component.)

For information on educational river/backcountry trips, consult approved Appendix G.

#### **Partnership Program Trips**

Partnerships accomplish projects within and beyond park boundaries. The NPS has a process for recruiting and selecting partners to accomplish resource stewardship and/or applied research projects that require river travel. The objectives ensure open and impartial selection, and foster a program that benefits the park.

Educational trips, as described above, focus on educational opportunities with a service component as a secondary (but important) factor; administrative river-based partner programs focus on NPS resource management and/or research program needs as its first priority.

NPS resource-program managers identify an approved project and develop criteria for partner selection specific to program needs. The program manager establishes the group's qualifications and/or abilities for conducting work. Project managers advertise their programs on the NPS and park partner website ([www.nps.gov/partnerships](http://www.nps.gov/partnerships) or [www.nps.gov/gettinginvolved/partnerships/index.htm](http://www.nps.gov/gettinginvolved/partnerships/index.htm)) to facilitate a transparent and fair recruitment process.

Once the appropriate partner is selected, the project manager submits a river-trip application following the RPT process, and develops a written partnership agreement. This may be a formal cooperative agreement, task order or interagency agreement that outlines NPS and partner roles and responsibilities, and addresses liability issues.

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#### **Guidelines for Administrative River Trips**

- All administrative trips are approved by the park superintendent.
- The management action or activities conducted on river trips must be appropriate and necessary for the administration of Grand Canyon National Park, and must be consistent with law and policy.
- Management actions and activities will be evaluated to ensure that methods and modes of transportation are the minimum required and cause the least impact to wilderness resources and values.
- Research projects must be approved prior to seeking river and/or backcountry permits.
- Applicable tribal, backcountry or special-use permits must be obtained prior to seeking river trip approval.
- Administrative trips may be scheduled up to one year in advance. Launch dates are selected in consideration of recreational use launch patterns, and are not included in the recreational use allocations. Administrative launches will be included on launch calendars available to the public.
- Administrative trips must adhere to standard operating requirements, and may be required to use secondary camps and restrict visitation to attraction sites depending on season and use levels.
- Protocols and procedures for educational, research, and partnership trips are reviewed annually.









Tributary hiking

# Research, Monitoring and Mitigation Program

## Introduction

To determine and address effects of the 2006 CRMP recreational use limits and launch patterns on park resources, the NPS is developing a Research, Monitoring and Mitigation Program (RM&MP). Elements of the program are described below and include an overview of management settings, program objectives, conceptual models for evaluating recreational-use effects and the framework for monitoring and addressing these effects. The NPS, along with input from partner agencies and organizations, will develop and implement the RM&MP.

The CRMP FEIS Biological Opinion identified conservation measures involving research to examine recreational-use effects on federally listed Threatened and Endangered species in specified locations. The NPS natural, cultural and visitor experience monitoring programs will be developed and implemented to determine condition trends of selected resources with focus on the effects of recreational use. The RM&MP and other implementation strategies will incorporate general mitigation measures prescribed by the CRMP ROD and priority mitigation actions required by law. Some mitigation measures reduce adverse effects on multiple resources and help ensure quality visitor experience. The primary implementation strategies will be outlined in resource monitoring and annual work plans developed by park staff.

### Colorado River Management Settings

The CRMP established the following management zones to represent the diversity of recreational settings and opportunities in different sections of the river from Lees Ferry to Lake Mead:

- Zone 1 Lees Ferry to Diamond Creek (RM 0 to RM 226)  
*Primitive Setting*
- Zone 2 Diamond Creek to Quartermaster (RM 226 to RM 260)  
*Semi-Primitive Setting*
- Zone 3 Quartermaster to Park Boundary (RM 260 to RM 277)  
*Rural Natural Setting*

The characteristics for these three Management Zones are primarily based on the Recreational Opportunity Spectrum (ROS) classification system (USDA FS 1986). Each management zone's defining characteristics are described in three categories: social, resource and managerial settings (See Table 12). Social setting reflects the amount and type of contact between individuals or groups, and indicates opportunities for solitude, interactions with a few selected individuals, or large group interactions. Resource setting reflects natural and cultural environments encountered and impacted by the visitor including wildlife and federally listed Threatened or Endangered species, vegetation and soil types, archaeological sites and traditional cultural properties (TCPs). Managerial setting reflects the amount and kind of management practices, on-site regimentation and controls placed on people's actions by the administering agency and the effects of those actions.

Management zone descriptions include setting characteristics and desired resources conditions. This component of the framework guides development of monitoring plans by identifying acceptable and achievable resource conditions. A detailed description of setting characteristics will be included in the monitoring plans. Table 12 summarizes setting characteristics and desired conditions for management zones established by this 2006 CRMP.

Grand Canyon wildflowers



**Table 12**  
**Setting Characteristics for Colorado River Management Zones based on the ROS Classification System**

	<b>Zone 1 Primitive Setting</b>	<b>Zone 2 Semi-primitive Setting</b>	<b>Zone 3 Rural Natural Setting</b>
<b>Social Setting</b>	<p>High probability of isolation from sights and sounds of humans (except during summer months at activity nodes), independence, closeness to nature, tranquility, and self-reliance through application of outdoor skills in an environment that offers a high degree of challenge and risk.</p> <p>Encounters with other groups are infrequent, with the exception of Lees Ferry, Phantom Ranch, Whitmore, and Diamond Creek.</p> <p>Recreational activities include rafting, kayaking, camping and hiking.</p> <p>Opportunities for motorized and nonmotorized forms of recreation are possible, with motorized rafting and helicopter exchanges (Whitmore area) April 1 through September 15.</p>	<p>Moderate probability of isolation from sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through application of outdoor skills in an environment that offers challenge and risk. Opportunity for a high degree of interaction with the natural environment.</p> <p>Concentration of user groups is generally low, with the exception of Diamond Creek and the approach of Quartermaster area.</p> <p>Recreational activities include rafting, kayaking, camping and hiking for continuation river trips and river trips beginning at Diamond Creek, and upriver travel from Lake Mead to Separation Canyon.</p> <p>Opportunities for motorized and nonmotorized forms of recreation are possible, with motorized opportunities year-round.</p>	<p>Probability for affiliation with individuals and groups is prevalent, as is opportunity to interact with the natural environment. Practice and testing of outdoor skills are of less importance, with the exception of overnight river trips, for which challenge and risk-taking are important elements.</p> <p>Concentration of user groups is generally moderate to high at Quartermaster area and Lake Mead, especially during summer months.</p> <p>Recreational activities include rafting, kayaking, jet boat pick-ups and tow-outs, upriver travel from Lake Mead to Separation Canyon, camping and hiking for continuation trips and river trips beginning at Diamond Creek.</p> <p>Opportunities for motorized and nonmotorized forms of recreation are possible, with motorized opportunities, pontoon and helicopter operations (at Quartermaster area) year-round.</p>
<b>Resource Setting</b>	<p>Characterized by a predominately natural environment, with the exception of the modified launch areas (Lees Ferry and Diamond Creek) and Phantom Ranch.</p> <p>Adverse effects from recreational use are typically localized at attraction and camp sites and can range from negligible to major. New CRMP prescriptions seek to minimize these effects by reducing crowding and congestion.</p>	<p>Characterized by a natural to modified natural-appearing environment due to the influence of Lake Mead, the modified environment and higher use levels approaching the Quartermaster area.</p> <p>Adverse effects from recreational use are typically localized at attraction and camp sites and may spread into the desert scrub at low-to-high levels) and can range from negligible to major. CRMP prescriptions seek to minimize these effects by reducing crowding and congestion.</p> <p>Camping beaches are limited in the first 18 miles and below Separation Canyon.</p>	<p>Characterized by a modified natural-appearing environment due to the influence of Lake Mead, the modified environment and higher use levels at the Quartermaster area and Lake Mead.</p> <p>Adverse effects from recreational use are typically localized at attraction and camp sites and can range from negligible to major. Considerable impacts in desert scrub may be observed at particular camp and attraction sites. CRMP prescriptions seek to minimize these effects by reducing crowding and congestion.</p>
<b>Managerial Setting</b>	<p>With the exception of Lees Ferry and Phantom Ranch, there are no visitor facilities in this primitive zone.</p> <p>NPS management activities include resource monitoring, research, and ranger patrols. Natural- and cultural-resource monitoring programs are conducted on a cyclic and seasonal basis.</p>	<p>With the exception of Diamond Creek and Spencer Canyon, there are no visitor facilities in this semi-primitive zone.</p> <p>NPS management activities are less frequent and include resource monitoring, research and ranger patrols. The Hualapai Tribe periodically conducts resource monitoring and other administrative activities in this zone.</p>	<p>The Hualapai maintains rustic recreational facilities including shade structures and composting toilets at Quartermaster area for the safety and convenience of users.</p> <p>NPS management activities continue in this zone and ranger patrols are conducted routinely throughout the year due to higher use levels year-round.</p>





Equisetum

### Research, Monitoring and Mitigation Program (RM&MP) Objectives

CRMP management objectives emphasize managing river recreation to minimize impacts to resources while providing a quality river visitor experience. To ensure these salient objectives are met, the NPS must determine, through a research, monitoring and mitigation program, what impacts are occurring, how these impacts alter resource condition, and how adverse impacts can be effectively mitigated. A detailed plan will be developed to include individual and integrated resource-monitoring components. The program framework is described in this section.

#### RM&MP Objectives

- Determine status and condition trends of selected resources
- Establish reference points and provide data to compare resource condition with unaltered environments
- Understand and identify meaningful resource condition change associated with river use
- Provide early warning of deteriorating resource conditions that trigger mitigation (management action toward restoration)
- In response to monitoring results, identify appropriate changes to management practices
- Assess efficacy of management and restoration techniques
- Develop most effective approach to impacted-site mitigation and restoration

#### Recreation Effects Conceptual Model

To understand river recreation effects on river corridor resources, it is helpful to visualize these interactions using a conceptual model—a simplified visual representation of a working system. Figure 3 organizes information on the effects of river recreation on park resources and provides a model for the Research, Monitoring and Mitigation Program.

Figure 3 is a stressor model designed to describe relationships between stress sources, system components and effects. The objective is to identify system stressors, responses and attributes affected. In Figure 3, river use is the stressor and the attributes are the natural, cultural and visitor-experience resources. Some examples of river-use effects on these resources include: plants and soils damage, wildlife and cultural site disturbance, air and water quality degradation, archaeological and paleontological feature and artifact theft and attraction-site crowding and congestion. The NPS recognized potential adverse impacts in the 2005 CRMP FEIS, and committed to developing mitigation actions in the RM&MP to address these impacts.

#### Limits of Acceptable Change Framework

The Limits of Acceptable Change System (LAC) (Stankey, G. H., et. al. 1985) is a framework developed for managing recreation impacts in a backcountry and wilderness setting. This process has been successfully used in many backcountry areas including the Grand Canyon 1988 Backcountry Management Plan. The framework has been adapted to river recreation in Hells Canyon NRA on the Snake River (University of Idaho 1990) and in the Oregon State Parks on the Deschutes River (Shelby 1986). LAC was also adopted in the 1989 CRMP, and guided the 2006 CRMP planning process and FEIS analysis.

This framework’s premise is that recreational use changes resource conditions, and that there is some level beyond which this change is unacceptable and possibly detrimental. Figure 3 represents potential changes of resource conditions from recreational use. In LAC, the amount of change allowed to occur, without serious resource detriment, is defined by quantitative standards. The LAC process consists of four major

Figure 3  
Recreational Effects Conceptual Model

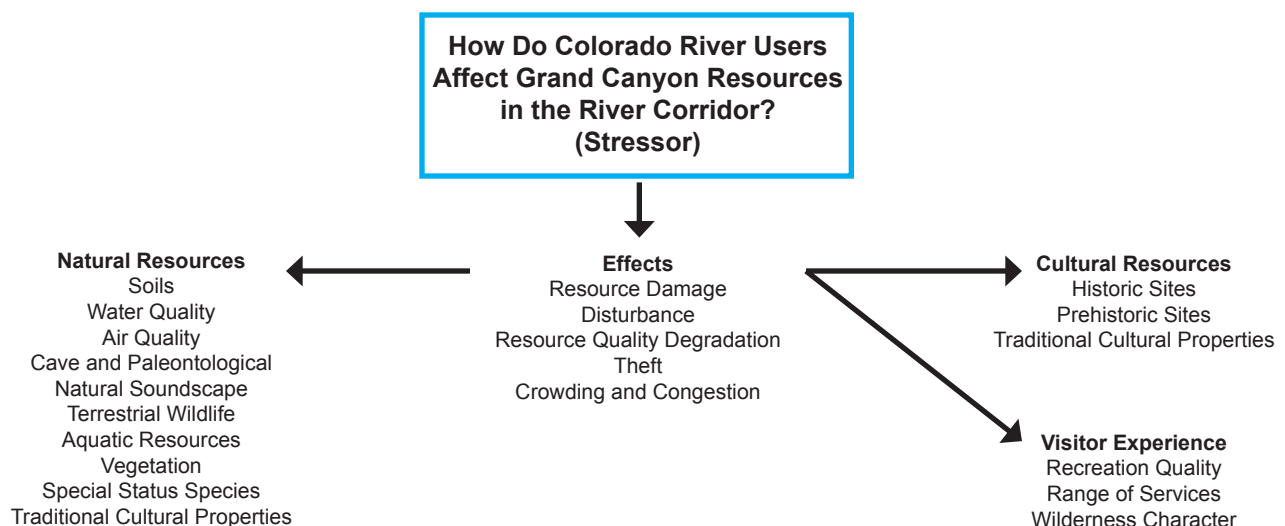
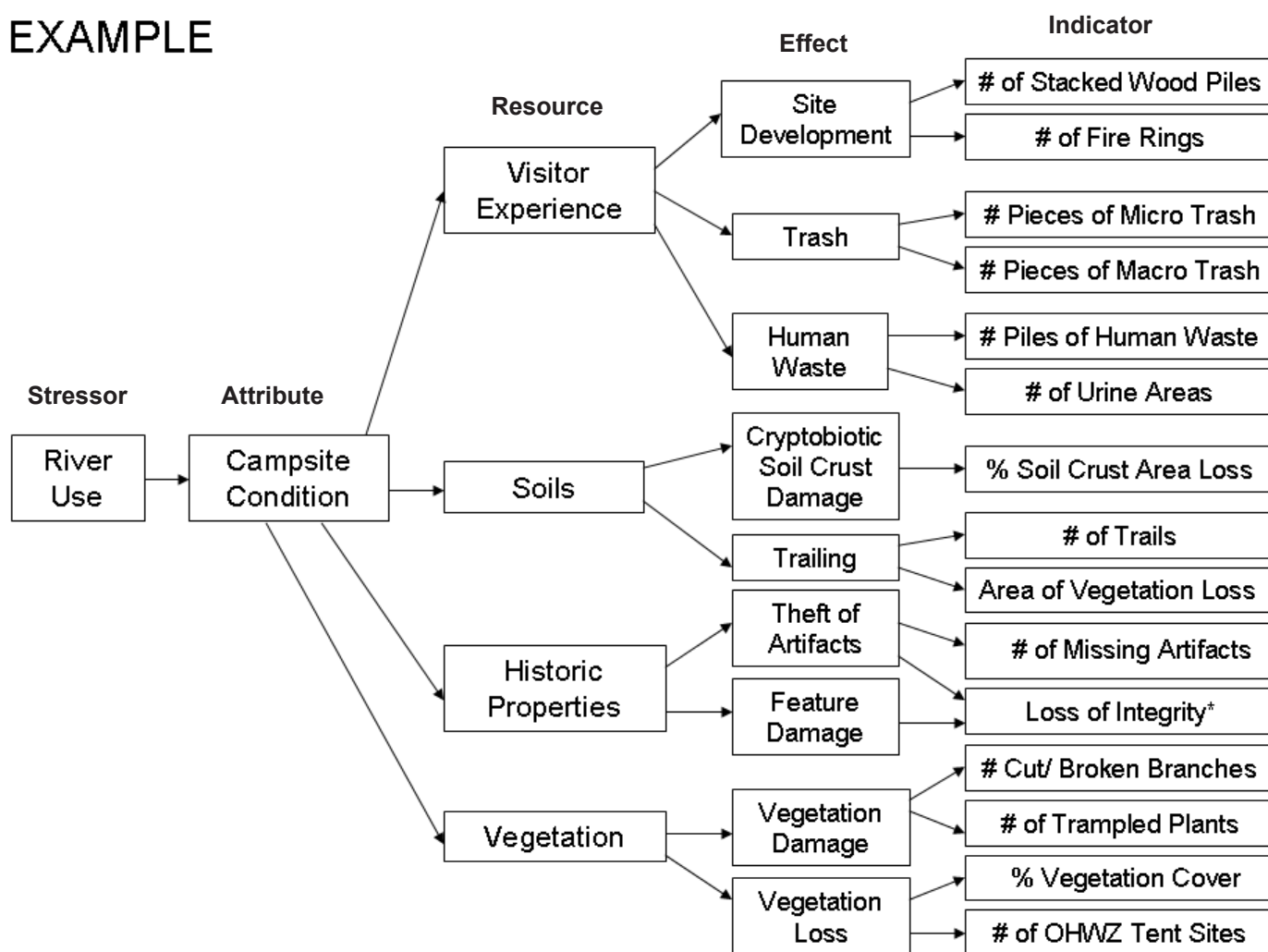


Figure 4  
Campsite Condition Monitoring, Conceptual Model

## EXAMPLE



\*Integrity is the ability of a historic property to convey its significance. To be listed in the National Register of Historic Places, a property must not only be shown to be significant under the National Register criteria, but must also have integrity. To retain historic integrity, a property will always possess several, if not most, of the seven aspects of integrity. The retention of specific aspects of integrity is paramount for a property to convey significance. The seven aspects are: location, design, setting, materials, workmanship, feeling and association.

components: 1) specification of acceptable and achievable resource and social conditions (standards) defined by a series of measurable parameters (indicators), 2) analysis of the relationship between existing conditions and those judged acceptable, 3) identification of management actions necessary to achieve these conditions, and 4) a program of monitoring and evaluation of management effectiveness.

Figure 4 is an example of the first steps of the LAC process. The NPS and other agencies have monitored campsite condition since the 1970s. Figure 4 illustrates indicators used to quantify change in campsite condition over time. These indicators help NPS managers measure effects of river use (as described in Figure 3) on visitor experience, and natural and cultural resources.

Using focused management questions and the conceptual models outlined above, indicators, standards and detailed data-collection methodologies will be developed. Table 13 is an example of a monitoring plan matrix that will be used to develop details of the Research, Monitoring and Mitigation Program. Non-renewable resources, such as archaeological sites and paleontological resources, will have a lower threshold of impact acceptability. For some resources, little information on recreation effects exists, so research studies will be designed to answer a question like, "How does river recreation affect this resource?" For resources which the park has extensive baseline data, the NPS may retain indicators and standards already established in previous studies. The NPS will explore approaches to integrating multiple resources to reduce cost and increase efficiency.



**Table 13**  
**Example of Monitoring Plan Matrix**

Management Question	FEIS Impact Rating	Indicator	Standard	Measurement Method	How often? What needed	Location	Action Plan Mitigations
Natural Resource: Do rock dams created by visitors in tributary streams affect migrating fish and downstream flow?	Negligible to moderate, localized, short-long term, adverse	Presence of dams or rock piles in streams  Number of stranded fish	Zero	Presence or absence whenever NPS employees visit an aquatic attraction site  Visual counts of number of stranded fish	Continuously throughout the high-use season	Various aquatic attraction sites	NPS will break down human-made stream impediments and scatter the rocks  Visitor Education
Visitor Experience: How do new management prescriptions affect encounters at attraction sites?	Localized, adverse, short-long term, negligible, but minor in the first two weeks of Sept.	Number and location of attraction site encounters  Visitor satisfaction levels	100 people or less a day  75% visitor satisfaction	River trip logs (commercial and noncommercial)  Stratified random sampling of river users using Hall and Shelby methods  Post river trip mail-in surveys	Random sampling per season for three years  Periodic random sampling per season thereafter	Popular attraction sites including Redwall Cavern, Little Colorado River, Elves Chasm, Deer Creek, Havasu, Travertine Falls, Bridge Canyon, Spencer Canyon	Restrict/limit time spent at sites and the number of trips at one time allowed to visit. Limit visits to one to three hours
Cultural Resources: How does visitation affect historic properties?	Adverse, localized, long-term, year-round, minor to moderate	Changes to site condition and integrity	Threat to or loss of integrity resulting in a disturbance level of moderate or higher	Size/type/density of artifacts  Level/type of use  Structural integrity and fabric  Number of collection piles  Inappropriate deposits  Number, depth, and width of social trails  Barren core areas and compaction  ARPA violations  Evidence of breach of trail obliteration or re-trailing	Seasonal (high- and low-use times)  Consistent six months-five-year site-specific schedule	All sites.  Sample high and low visitation sites that are attraction, ancillary, and non-visited categories in corridor and side canyon areas	Baseline data collection  Education  Increased monitoring  Data recovery  Site restrictions  Stabilization  Re-trailing  Re-vegetation  Law Enforcement Patrols



105 Mile Camp

### Adaptive Management

Adaptive management provides systematic feedback to park management and allows activity adjustment to mitigate unplanned or undesirable plan implementation outcomes. Adaptive management allows resource managers to change management prescriptions and mitigation actions as conditions arise, based on scientific monitoring results.

The adaptive management process is an integral component of the LAC process and is illustrated in Figure 5.

The ultimate goal is that a resource condition meets standards established by resource managers, and that the trend is stable or improving.

When a resource condition meets the standard, but the overall trend is declining, resource managers will identify why conditions are declining, initiate management actions that are non-restrictive to users and increase monitoring frequency. Non-restrictive management actions may include education and site restoration. When resource conditions do not meet the standard, resource managers will identify why the standard is not being met, implement management actions including actions restrictive to users that will correct the situation and increase monitoring frequency. Restrictive management actions may include seasonal site restrictions or closures. An example of how the adaptive management process would work might be:

Figure 5  
Adaptive Management Concept

#### Limits of Acceptable Change



Created by Lori Crystal





**LAC INDICATOR**

Number of trails from mooring site through campsite to old high-water zone

**LAC STANDARD**

In Zone 1, no more than one trail from mooring site through campsite to old high-water zone

**MONITORING RESULTS**

At Zone 1 campsite, five trails lead from mooring site through campsite to old high-water zone



The NPS will strive to implement the least restrictive management action. Based on past monitoring results and declining resource conditions, the NPS has implemented closures and restrictions to protect sensitive resources. The following section describes additional management actions required to mitigate effects of increased year-round recreational use.

**Mitigation Actions and Legal Obligations**

The RM&MP and other implementation strategies will incorporate general mitigation measures prescribed by the CRMP ROD and priority mitigation actions required by law. The general mitigation measures and key management strategies involve increased NPS presence to ensure resource protection, enhanced educational programs, an inventory, monitoring and research program, and cyclic resource management of camps, attraction sites and trails (e.g. site-specific restoration, invasive plan management and trail maintenance). The NPS is required by law to work in cooperation with other agencies and American Indian tribes to develop mitigation actions reducing adverse recreational impacts to specific natural and cultural resources described below and in the CRMP ROD.

**Natural Resources**

**USFWS Biological Opinion**

As a result of section 7 consultation with the U.S. Fish and Wildlife Service per the Endangered Species Act of 1973, as amended, the CRMP Biological Opinion outlined specific conservation measures and reasonable and prudent measures to be implemented by NPS to mitigate adverse impacts to federally listed species found in the river corridor (see Appendix A, ROD Attachment A).

The NPS will implement seasonal restrictions to protect humpback chub and humpback chub habitat in the Little Colorado River, and Kanab ambersnail habitat at upper Elves Chasm. These actions are implemented through the Commercial Operating Requirements and Noncommercial River Trip Regulations. The NPS will also conduct research to determine recreational-activity impacts on the humpback chub in the Little Colorado River and on the Kanab ambersnail

at Vaseys Paradise. The Biological Opinion also prescribes conservation measures for the bald eagle, California condor, Mexican spotted owl, Southwestern willow flycatcher and other federally listed species. These conservation measures will be incorporated into the Research, Monitoring and Mitigation Program.

#### **Environmental Protection Agency (EPA) Water Quality**

The EPA has encouraged the NPS to cooperate with the Hualapai Tribe to develop and implement best management practices to prevent oil spills and waste discharges associated with Lower Gorge recreational activities. NPS will work with the Hualapai Tribe, state and other partners to obtain baseline and periodic water-quality monitoring information so that activities affecting water quality can be adaptively managed.

#### **Cultural Resources**

##### **Programmatic Agreement**

In accordance with section 106 of the Historic Preservation Act of 1966, as amended, a Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation, Arizona State Historic Preservation Office, Hualapai Tribe and Navajo Nation was developed to address cultural resource impacts. (Appendix H). The NPS will develop an ongoing CRMP historic property monitoring and management program (CRMP Historic Property Program) to assess impacts to site condition and integrity from visitor use within the area of potential effect (APE) and determine and implement treatments to avoid, minimize or mitigate these effects. This CRMP Historic Property Program will be developed and implemented in consultation with all signatories and concurring parties to the programmatic agreement, as appropriate, and will provide a link to the ongoing Glen Canyon Dam Adaptive Management Program.

Launch day, Lees Ferry







## List of Abbreviations and Acronyms

APE	Area of Potential Effect
AZGF	Arizona Game and Fish Department
CFR	Code of Federal Regulations
CRMP	Colorado River Management Plan
CRMP FEIS	Colorado River Management Plan Final Environmental Impact Statement
CRMP ROD	Colorado River Management Plan Record of Decision
CUA	Commercial Use Authorization
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
GCD/AMP	Glen Canyon Dam Adaptive Management Program
GCMRC	Grand Canyon Monitoring and Research Center
GRCA	Grand Canyon National Park
LAC	Limits of Acceptable Change
LCR	Little Colorado River
MRA	Minimum-Requirement Analysis
NEPA	National Environmental Policy Act
NPS	National Park Service
NRA	National Recreation Area
OPAC	Office of Planning and Compliance
PAOT	People at One Time
PATL	Potential Alternate Trip Leaders
RM&MP	Research, Monitoring and Mitigation Program
RM	River Mile
ROD	Record of Decision
ROS	Recreational Opportunity Spectrum
RPT	River Protocols Team
SOP	Standard Operating Procedure
TAOT	Trips at One Time
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VIP	Volunteer-in-Park Program



Top: The Ross Wheller  
 Middle: Dory View  
 Bottom: Ready for Horn Rapid

## Appendices

Appendices to this document are found in a separate file at [www.nps.gov/grca](http://www.nps.gov/grca)

A	CRMP Record of Decision
B	Sample Recreational Launch Calendar
C	Commercial Operating Requirements (All Zones)
D	Noncommercial River-Trip Regulations (All Zones)
E	Lower Gorge Commercial Operating Requirements (Zones 2 and 3)
F	Minimum-Requirement Analysis Form
G	Protocol for Administrative River Trips Standard Operating Procedures
H	Programmatic Agreement

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