Introduction

The traditional lands of the Southern Paiute people are bounded by more than 600 miles of the Colorado River from the Kaiparowits Plateau in the north to Blythe, California in the south. Southern Paiute people were given a special supernatural responsibility to protect and manage this land and water and all that is upon and within it.

Today the Colorado River flows through Grand Canyon National Park and Glen Canyon National Recreation Area, and the Navajo, Havasupai, and the Hualapai reservations. The Bureau of Reclamation (BOR) completed the construction Glen Canyon Dam on the Colorado River in 1963. It is responsible for administering water releases from the dam. U.S. federal law requires that Glen Canyon Dam be operated with minimal impact to the natural, recreational, and cultural resources of the *Colorado River Corridor,* the region of the Colorado River between Glen Canyon Dam and Lake Mead that is potentially impacted by flows from the dam. The National Historic Preservation Act mandates that the impacts of any federal undertaking that will negatively affect historic and traditional cultural properties be evaluated and monitored. The Grand Canyon Protection Act and the Environmental Impact Statement for the Operation of the Glen Canyon Dam (GCDEIS) establish a program of long-term research and monitoring of the effects of the dam on these resources.

In 1991, three Southern Paiute tribes – the Kaibab Band of Paiute Indians, the Paiute Indian Tribe of Utah (representing Shivwits Band of Paiute Indians), and the San Juan Southern Paiute Tribe – agreed to participate in studies to identify cultural resources impacted by Glen Canyon Dam and to recommend strategies for their protection. In 1993, the Kaibab Band of Paiute Indians and the Paiute Indian Tribe of Utah created the Southern Paiute Consortium (SPC) to ensure more effective government-to-government interactions between the tribes and the BOR. The SPC took over the cultural resource studies being conducted under the GCDEIS.

The BOR and National Park Service (NPS) developed a Programmatic Agreement (PA) on Cultural Resources for Glen Canyon Dam Operations. On February 9, 1994, the PA was signed by the Advisory Council on Historic Preservation, the Arizona State Historic Preservation Office, the BOR, the NPS and the Hopi Tribe, the Hualapai Tribe, the Navajo Nation, the Paiute Indian Tribe of Utah, the Kaibab Band of Paiute Indians, the San Juan Southern Paiute Tribe, and Zuni Pueblo.

The PA lays out a plan for agency compliance with Section 106 of the National Historic Preservation Act through the development of monitoring and management protocols for cultural resources in the *Colorado River Corridor*. It directs the BOR and NPS to develop and implement a plan for monitoring the remedial actions and to develop a Historic Preservation Plan (HPP) for long-term monitoring and management.

In 1995, the GCDEIS was completed and transition to the Adaptive Management Program called for in the Grand Canyon Protection Act was begun. At that time, the SPC expanded the research activities it began under the GCDEIS to include assessing potential

environmental impacts, developing monitoring procedures, and interacting with the BOR and other PA signatories. It established the Colorado River Monitoring and Environmental Education program. The basis for the program and the results of its initial development and implementation are fully discussed in the report*, Itus, Auv, Te'ek (Past, Present, Future): Managing Southern Paiute Resources in the Colorado River Corridor (*Stoffle, Austin, Fulfrost, Phillips, and Drye 1995). The results of each succeeding year's activities are reported in annual reports to the BOR.

The 2002 program had six goals. (1) Implementation of the SPC's monitoring program; (2) training and education of Southern Paiute monitors; (3) education of Southern Paiute tribal members and the general public; (4) modification and further development of the archival program and multimedia database; (5) consultation among Southern Paiute tribal members to determine the future objectives of the SPC monitoring program on the Colorado River; (6) active science and environmental education for tribal youth participants. All of these goals were accomplished during 2002. Regular monitoring activities were conducted during a ten-day trip between Lees Ferry and Diamond Creek.

The report summarizes the activities of the SPC undertaken as part of its responsibilities to protect and manage the land, water, and resources with Southern Paiute traditional territory and as a PA signatory. Chapter One, "Cultural Resources Evaluation," describes the results of the SPC's annual river trip to monitor SPC cultural resources, gather information for tribal members and leaders, and otherwise conduct activities deemed necessary for fulfilling those responsibilities. Education and training are critical facets of the SPC program to ensure that the Southern Paiutes can continue to fulfill their responsibilities into the future. Chapter Two summarizes the results of the education and training components of the SPC program. There are many groups with many interests involved in the Adaptive Management Program, and much time is spent in meetings and conferences where information is shared. Chapter Three describes the SPC's participation in those meetings and the other activities it undertakes to enhance its ability to successfully carry out its responsibilities. That chapter ends with recommendations for the future.

Chapter One
Cultural Resource Evaluation

The 2002 Southern Paiute Consortium (SPC) Colorado River Corridor cultural resource monitoring program operated between October 2001 and September 2002. While other SPC activities are detailed in Chapter Three, a key piece of the monitoring program is the annual SPC monitoring river trip. This year's trip included pre-river preparation, one river trip between Lees Ferry and Diamond Creek, data entry and analysis, and report preparation. The purpose of the program was to continue tribal monitoring as recommended by the Glen Canyon Dam Environmental Impact Statement and Record of Decision. The monitoring program included training and was conducted at the same time as the environmental education program (see Chapter Two). This chapter summarizes the activities of the trip into the Colorado River Corridor and provides recommendations for the 2003 cultural resources monitoring program.

The SPC monitoring program was developed to evaluate the effects of Glen Canyon Dam on cultural resources that have been identified by Southern Paiute consultants within the Colorado River Corridor. Southern Paiutes have worked with the Bureau of Reclamation (BOR) to investigate cultural resource issues since 1992. In 1995, the SPC, on behalf of the Kaibab Band of Paiute Indians and the Paiute Indian Tribe of Utah (PITU), began the development and testing of a cultural resource monitoring program, and that program now operates through the Grand Canyon Monitoring and Research Center. The SPC designed the 2002 monitoring research efforts to advance the existing program.

Methodology

The modifications that were made to the SPC monitoring program in 1996 were continued in 2002 (see Austin, Osife, Fulfrost, Drye, and Rogers 1996 for details). These included the use of: (1) one composite cultural resource monitoring form; (2) site-specific monitoring checklists; (3) the SPC Monitoring Training Program; (4) an SPC plant reference guide; and (5) a monitoring program manager's handbook. In addition, the Southern Paiute River Guide was distributed to river trip participants.

The focus of the 2002 monitoring program was a river trip into the Colorado River Corridor. Prior to that trip, the SPC monitoring team worked together to coordinate monitoring program plans. The trip included Southern Paiute Consortium monitoring of sites located between Lees Ferry and Diamond Creek; it began on June

22 and ended on July 2. The monitoring was carried out by the SPC Coordinator, three SPC monitors, one Southern Paiute elder, one Southern Paiute environmental specialist, on Community Health Representative (CHR), nine youth participants, one SPC consulting ethnobotanist, and two University of Arizona educational research specialists.

Site Discussions

In this section, site-by-site discussions describe findings at each site that was monitored during the 2002 river trip into the Colorado River Corridor. The summaries of the sites include descriptions of plants, rock art, archaeology and other cultural properties, plus any recommendations for revisions to the monitoring program or for actions to be taken by management agencies regarding the site. For detailed site descriptions, please refer to Stoffle, Austin, Fulfrost, Phillips, and Drye (1995). During 2002, the SPC monitors and consultants followed the six-year plan for the twenty sites in the SPC monitoring program (see Table 1.1). No changes were made to the monitoring program this year. Figure 1.1 displays the sites to be monitored in 2003.

Table 1. Sites Monitored During 2002

Site #	Site name	Date monitored	Features monitored	Next monitoring
4	Jackass Canyon	June 22	Plants, Beach	2003 (Plants, Beach)
5	South Canyon	June 23	Beach	2003 (Beach)
6	Nankoweap	June 23,24	Plants	2003 (Plants, Archaeology)
7	Lava-Chuar	June 25	Archaeology	2005 (Archaeology)
8	Tanner Canyon	June 25	Archaeology	2005 (Archaeology)
10	Deer Creek	June 28	Plants, Rock Art, Beach	2003 (Plants, Rock Art, Beach)
11	Kanab Creek	June 29	Plants, Beach	2003 (Beach)
12	Vulcan's Anvil	June 31	Cultural	2003 (Plants, Cultural)
13	Whitmore	June 31	Plants, Rock Art, Beach	2003 (Rock Art, Beach)
16	Spring Canyon	July 1	Plants, Rock Art,Archaeology	2003 (Plants, Rock Art, Archaeology)
18	Pumpkin Spring	July 1	Beach and Spring	2003 (Beach and Spring)
20	Granite Park	July 2	Tree	2003 (Tree)

Jackass Canyon Site #4

Orientation and monitor training was carried out at Jackass beach. Exercises were conducted to train river trip participants in matching photos, using the compass, and running transects.

South Canyon Site #5

Though monitors visited the archaeology sites on the upper bench at South Canyon, only the beach was officially monitored in 2002. Steps placed by the NPS along the lower trail appear to have decreased erosion.

Beach

There were few changes since the site was last monitored in 2001. There was no evidence of flooding, as the dry gravel was not noticeably damaged. However, tamarisk does seem to be thicker along the bank than indicated in previous years.

Recommendations:

Hikers continue to be a concern at this site. Because hikers use the same trail to get in and out of the canyon that is used to reach the cultural site, visitors should be introduced to the sensitivity of this site and concerns about visitor behavior through pamphlets, articles in the boatmen's Quarterly Journal and/or boatmen's training sessions. Additionally, during our visit to South Canyon, five backpackers who were staying near the water at the lower end of the upper beach were unaware of NPS rules about human waste. Extra effort should be made to make sure hikers entering the canyon are aware of appropriate rules and regulations.

Nankoweap—Monitoring Site #6

Ethnobotanical monitoring was conducted at this site. The three plant transects at Nankoweap are read on a three-year rotation; Transect 1 was read this year, and plant conditions were recorded.

Plants

Transect 1 is located atop the downstream unstable bank of Nankoweap Creek, running to the river. The transect is in two distinct parts. The upper part is stable, in the old high water zone (OHWZ), and has not flooded in many years. The position of the creek at normal flow during this monitoring period has been along this bank; a major Nankoweap flood could erode the bank and possibly affect the transect.

The lower part of the transect, separated by a rocky steep divide about one meter high, has very different vegetation, primarily coyote willow *(Salix exigua)*, Emory seepwillow *(Baccharis salicifolia)*, and tamarisk *(Tamarix chinensis)*. This area is flooded by the river at moderate to high normal releases, but has been mostly above river level for several years. It has developed a stand of willows that has become dense and stabilized, replacing a cattail marsh as the beach has dried out under a regime of low releases. A scouring experimental flood could remove these willows and the sediment which has been deposited around them (by Nankoweap Creek in part), and return the beach to a marsh situation with small pools between cobbles and small boulders.

The main change noted since 1999 is that the percent cover of coyote willow has more than doubled. The lower portion of the transect is now a dense willow thicket. Cattail *(Typha latifolia)*, which had been decreasing over time, is now absent from the transect. Seepwillow and tamarisk have decreased, probably due to intense competition with coyote willow.

A notable change this year is that a branch of Nankoweap Creek now flows across the transect near the bank that separates the two portions. There is no evidence that the change in the location of the creek was the result of a flood during the past year, and in fact the change may have occurred prior to 2002 since Transect 1 was last read in July 1999. The creek is contained within a shallow channel and has little effect on the vegetation community.

Transect 1 1999

Transect 1 2002

Lava Canyon - Chuar Creek Site #7

SPC monitors the site at Lava-Chuar every three years. In 2002, SPC monitors observed impacts from the wash but did not enter the site directly.

Archaeology

Side canyon erosion continues but has not cut into the site since last monitoring. However, there is a new gully cutting to the creek bed originating on the site itself. This has begun to impact the site and may have serious consequences if erosion continues.

Plants

Mesquite trees are healthy and protecting the site from the top. Severe drought has adversely affected brittlebush and other shrubs on slope. Some will not survive.

Recommendations:

The SPC will consult with NPS to find out what is being done at the site. If there is no NPS monitoring in place, SPC monitors will go back in one year and do more careful assessment of the impact of the gully going into the site.

Tanner Canyon Site # 8

Archaeological monitoring was done at Tanner Canyon in 2002, at the lower site and the two upper rock shelter sites. Additionally, monitors noticed that the severe drought had adversely affected brittlebush, possibly killing some plants.

Archaeology

Monitors noticed increased multiple trails at the site. The trail was eroded about three inches and exposed more of Boulder #1. Additionally, monitors noted and dispersed collection piles at the uppermost rock shelters. The upper sites appears to have gotten more use over the past year, and it looks like people may be camping at the far site.

Recommendations:

The SPC will consult with NPS to determine what monitoring is being conducted at the uppermost site. Additionally, SPC will consider adding the upper shelters as a monitoring site. If the site is added, SPC will visit in one year to set up monitoring.

Deer Creek Site # 10

Rock art, plants, and visitors were monitored at this site in 2002. SPC monitors were present at this site from early morning until late afternoon. Visitors were monitored at five different points along the trail. Several river trips arrived at the site during our monitoring visit. Some visitors stopped at the bottom of the creek and others hiked up to the panels and up to the water source.

Plants

The condition of the plants in the plot is generally good to excellent, and recovery from the effects of the 1994 fire is essentially complete. The increase in height of the two coyote willows *(Salix exigua)* and the catclaw acacia *(Acacia greggii)* has leveled off as they have reached maturity.

The two cottonwoods in the plot have grown too tall to measure directly, so beginning in 2001 their height was extrapolated by holding a tape 2 meters in height next to the tree and calculating the height from a photograph. Using this method, growth of 1 to 2 m was determined since the 2001 reading, to a height of 7.4 m and 8.0 m.

The largest Deer Creek agave plant was sending up a flowering stalk at the time of our visit; it was 3.2 m tall and still growing. This is the first time it has flowered since 1995. This plant will die after flowering, and one of the 10 offsets around it will "take

over" and become the dominant plant of the group. A second small plant was discovered this year about 8 m from the main cluster.

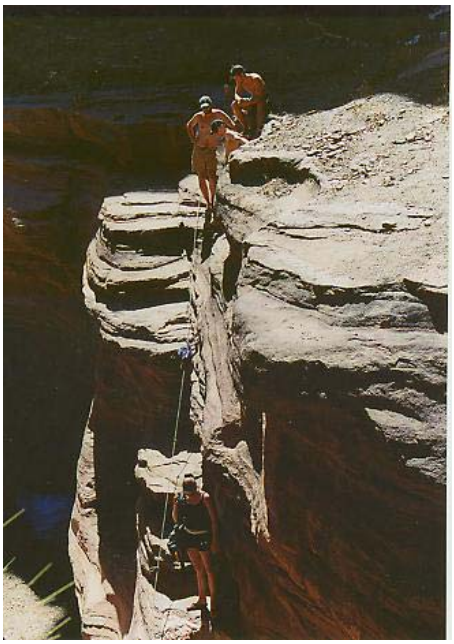
The packrat that was active in 2000 and appeared to have left in 2001 has apparently returned during the past year. There was midden debris about 0.5 m deep around the main plant, as well as some evidence of eaten leaves.

A scientific description naming this plant as *Agave phillipsiana* was published in late 2001 by Wendy Hodgson of the Desert Botanical Garden (Hodgson 2001). The plant is extremely rare and is known from only four sites within the Grand Canyon, ranging in number of plants from 1 to 30. Hodgson describes *A. phillipsiana* as "an ancient, relictual cultivar, one of four agaves intentionally introduced and farmed by pre-Columbian people for food and fiber north of the Mexican border." Its origin was probably in northern Mexico, but the parent plant has never been found. The plant was named for A. Phillips, an author of this report, who first observed the plant at Deer Creek in 1974 and has monitored it annually as a participant in the SPC Grand Canyon monitoring program.

The two herbaceous plants in the plot continue their decline, and the sacred datura *(Datura meteloides)* has apparently died. The locoweed *(Astragalus praelongus)* flowered and produced pods this year, but is still much reduced from its immediate post-fire condition. Both of these species are common and often growing vigorously in Deer Creek Valley; the individuals in the plot suffer from competition and shading by the trees and shrubs.

Rock Art

Rock art at Deer Creek was found to be in good condition. The only recent impacts observed were several new mud dauber's nests. Previously documented vandalism was present, but is fading with time and exposure.



Visitor Monitoring

Five separate groups conducted visitor monitoring for two hours along the trail up to and through the gorge. Ten boats of rafters stopped and visited Deer Creek while SPC monitors were present. A large number of the visitors were observed climbing or repelling down into the gorge. Additionally, monitors noted that many visitors were loud and rambunctious.

Recommendations:

Because of the importance of this place to Paiute people, SPC would prefer visitors to stay out of the gorge. To this end, visitors should be introduced to the sensitivity of the site and of the rock art panels through the boatmen's Quarterly Journal and perhaps a boatmen's training session. Additionally, SPC would like to do a presentation on the topic at the boatmen's Annual Meeting.

Evaluation of the plants in the Deer Creek plant plot should be continued on an annual basis as it provides valuable information on the recovery of desert and riparian plants following a fire. Immediately after the fire the position of the trail was a concern, but during the past few years it has become established far enough away from the plot to cause no adverse influence from hikers. The trees that fell across the trail now lie on the ground so people can now step over them instead of having to climb over them.

Kanab Creek Site # 11

The plants and beach was monitored at this site in 2002. Archaeology was not monitored this year, but monitors noted erosion of the trail impacting a hearth site. The trail passes through the hearth/roaster on the downstream end, near the point where the trail goes up on the bench from the canyon floor. This trail has eroded deeply, up to one meter, and it is now so deep that the trail has moved out of the gully to a new adjacent location.

We saw five mountain sheep at this site. A ram, an ewe, and a lamb came up the slope looking for shade in the rock shelter where the transect starts while monitors were working. Another ewe with a lamb were observed by monitors near the bank of the river.

Beach

The rocky beach at this site was little changed from last year.

Plants

Plant communities along the river are somewhat diverse at Kanab Creek, and include marshy areas a short distance up the creek from the Colorado River and riparian areas along the river. Following the pattern consistently noted along the river this year, plants along the shore have increased in number and density as a result of low releases and small fluctuations.

There is a single plant transect at Kanab Creek, located on a sandy desert slope that contains archeological materials and ethnobotanically important plants about 100 m upstream from the river. The lower edge of this slope is a steep, unstable bank which could potentially be affected by high flows when the river extends up Kanab Creek this far. The steep terrain along the transect and the unstable sandy soil create a potential for damage to the habitat from accessing and reading the transect, so it is read only every three years using a minimum number of investigators.

There were a few changes in plants along the transect, mostly the death of a number of plants and the pruning back of some prickly pears on the flats at the lower end of the bench due to drought during the past year. The plants that showed the greatest decreases were grasses and perennial herbs.

Recommendations:

The trail should be diverted to minimize erosion near archaeological sites and current erosion of the trail should be monitored for further impacts to hearth/roaster site. Reading of the transect should continue once every three years.

Vulcan's Anvil Site # 12

The SPC participants monitored the Vulcan's Anvil, which is sacred to the Southern Paiute people. The river flows had not affected the Anvil, and there were no signs of vandalism in 2002.

Whitmore Wash—Monitoring Site #13

Plants, Beach, Rock Art and Archaeology were all monitored at Whitmore Wash in 2002.

Rock Art and Archaeology

Two new instances of graffiti were documented on the Rock Art panel at Whitmore Wash in 2002. Both were light scratches on the panel. Erosion along the trail and in the rock shelter site is present, but did not appear to have increased from last year.

Plants

Following the protocol that was developed in 1998, multiple transects perpendicular to the river were laid from a baseline transect parallel to the river The position of the transects along the baseline was determined randomly. Data indicated plant competition was occurring with mesquite trees *Prosopis glandulosa* var. *torreyana)* replacing arrowweed *(Tessaria sericea)*. Arrowweed showed an increase since the last reading in 1999, but this was probably due primarily to the placement of randomly located transects. Horsetail *(Equisetum laevigatum)* and camel-thorn *(Alhagi camelorum)* increased near the shore as a result of stable conditions due to low water releases.

Large areas of dense arrowweed are senescent or dying off due to drought conditions and lack of substrate and nutrient recharge from the river. Arrowweed requires periodic renewal in order to sustain a healthy condition.. Nearly impenetrable thickets full of dead wood, coupled with rapid increase in young mesquite trees, make access to the baseline, and reading of the upper portions of the transects, very difficult.

There was some concern with monitoring procedures for vegetation at this site. The baseline transect was relocated with little difficulty, but it was very hard to set due to dense mesquite and dead arrowweed. The six transects were additionally difficult to set and running the tape caused some damage and incidental trailing. The baseline was initially set at some distance from the shoreline in order to monitor erosional retreat of the position of the shore, but this may be accomplished by measuring the distance from a couple of fixed points and concentrating the monitoring on the more dynamic riparian and marsh communities along the river.

Beach

The shoreline has stabilized since the last monitoring due to relatively steady low flows. The bank is heavily vegetated, mostly with *Equisetum*, and vegetation extends onto sand bars a short distance into the river. These are perpetually wet sand and support rabbit-foot's grass *(Polypogon monspeliensis)*, *Juncus*, and sedges (*Carex* sp.).

Recommendations:

Vegetation in the area needs renewal by reworking sand, removing dead wood, and nutrient recharge. Walking from the upper bench to the lower bench creates trails and erodes the bench, and therefore should be avoided.

SPC will consider changing monitoring protocol for vegetation at this site. Setting the baseline is very difficult, and the baseline is far enough from the shore that upper parts of transects—through senescent seepwillow and vigorously growing mesquite—do not show much change. The main interest at this site is in monitoring changes along the shoreline.

Ompi Cave- Monitoring Site #15

This site was visited for spiritual and ceremonial reasons, but monitoring involved only visual inspection.

Spring Canyon – Monitoring Site # 16

Monitoring of plants was completed this year. The rock shelter and rock art sites at Spring Canyon were visited and inspected visually, but no photo matching was done this year.

Plants

Vegetation along the creek has become so dense that photos no longer cover the entire streambed. Most of the rapid increase in vegetation during the past two years is due to rapid growth of seepwillow *(Baccharis salicifolia)*, which has grown 2-3 m tall and formed dense thickets along the floor of the wash. Some rocks on the canyon floor have been moved by flooding and it is not possible to use them to relocate photo points exactly. The photo matching protocol was designed to use points on walls for relocating photopoints and matching photos, but these have become difficult to see due to the height and density of vegetation.

2000

2001

2002

The lower end of the channel has now down cut 1.5 m deep to a point beyond the area covered by photos and now extends across the creek. There is

also entrenchment at places upstream along the creek. The floor is cemented by travertine at least to the depth of entrenchment. Downcutting and entrenchment have increased considerably in the past year, moving gradually upstream.

We have been surprised at the rapid rate at which recovery along the creek has occurred following the last scouring flash flood. Riparian communities and their constituent plants are adapted to recover rapidly following catastrophic disturbance. When the flood occurred in 1997 we thought it might be many years before the dense vegetation along the canyon floor recovered; instead, it has taken less than 5 years. The difficulty we have had in developing a consistent long-term vegetation monitoring program is the result of the dynamic, rapidly changing nature of the site.

Recommendations:

We continue to have difficulty with the monitoring program for this site. Additional photo stations could be added if time allows, in order to supplement coverage of the canyon where dense vegetation has obscured the view between existing photo stations. The vegetation along the canyon floor has become so dense that the entire canyon is no long covered and some plant points are difficult to locate because photos do not show much beyond foreground. The original photo points and photos can be maintained if scouring flood occurs between now and next visit. Otherwise monitors should repeat the matched photos and add additional photo stations if time allows.

Indian Canyon Monitoring Site # 17

Indian Canyon is an important site because this was a living area for Southern Paiute people. Though not an official monitoring site in 2002, SPC monitors conducted rapid assessment of the archaeological site to check the status of vandalism/graffiti and trailing noted in previous years. The rerouting of the trail continues to be successful, and exposure to natural elements is gradually reducing the vandalism.

Recommendations:

The rerouted trail should continue to be maintained, and SPC will continue regular visitation to assess trailing.

Pumpkin Spring—Monitoring Site #18

The spring and surrounding vegetation were monitored in 2002, and no major changes or impacts were observed.

Granite Park—Monitoring Site #20

The historic Goodding willow at the Granite Park site is visited by SPC every year. In 2002, monitors did not go ashore at the site because the beach was crowded by other trips. Instead, the condition of the willow was monitored from the river. While the tree

appears to be in similar condition to last year, SPC was concerned about the rafts tied to the trunk. Three rafts had tied to the trunk of the tree when we arrived. Given the historic value and current fragility of the tree, monitors were concerned about the impacts of the boat ties.

The general condition of the tree appeared to have changed little since our last visit. Beaver damage noted in 2001 did not appear to have continued this year.

Recommendations:

NPS should remind boatmen of the historic and cultural significance of the Goodding willow and discourage them from tying their rafts to the tree.

Chapter Two
Education and Training

The 2002 Southern Paiute Consortium Colorado River Corridor Education and Training Program was specifically designed to provide education about the annual research monitoring and education program to tribal members and youth from the tribes of the Southern Paiute Consortium: the Kaibab Band of Paiute Indians and the Paiute Indian Tribe of Utah (PITU). This aspect of the program is necessary to inform and educate future tribal leaders and train tribal monitors (see Austin, Fulfrost, Osife, Drye, and Rogers 1996). Additionally, this year's river trip included a rigorous activity-based environmental education program for tribal youth participants. The educational component of the program continues to be supported within the University of Arizona (U of A) and is expected to remain an important element of the overall program. The Shivwits Band of the Paiute Indians continues to support this program through use of their own funds.

Program Activity Discussion

Meetings and River Trip Participants

Each year, the SPC prepares information about the annual monitoring trip and shares this information with the participating tribes. The tribes then select trip participants. The Tribal and Band Council of the Kaibab Tribe and the Shivwits Band were informed about the trip at their respective council meetings in Spring 2002. The Tribal Councils submitted names of trip participants to the SPC Director and Outreach Coordinator, and these individuals were contacted by the SPC and sent information about the upcoming trip.

Summary of Activities

The SPC held meetings with the trip participants on their reservations. At these meetings, the SPC Director and Outreach Coordinator went over the plans for the trip, the exact dates, the gear list, and provided information about the Grand Canyon and the SPC cultural resources program.

Additional meeting were held with youth participants from both the Kaibab and Shivwits reservations. During these meetings, youth were provided with information about the cultural significance of the Grand Canyon and reminded of culturally appropriate behavior at that sacred place. Additionally, youth participants received training and instruction in the use of camping and rafting gear.

Recommendations

River trip preparation is a key component of the education and training program. Going into the Colorado River Corridor, Southern Paiutes are entering a place rich with spiritual and cultural meaning. Although there is no way to fully prepare for the

experience, through stories and discussions trip participants can gain the information they need to make themselves ready for the trip and get the most out of the experience. In the past, pre-river camping trips have been used in addition to organizational meetings to prepare participants for their time in the Grand Canyon. If time allows, these camping trips should be used again in the future.

Plant Reference Guide

Southern Paiutes have a special relationship to plants, and the monitoring program reflects the stewardship role of the Paiute people. To assist tribal monitors and other trip participants in carrying out the monitoring activities and to facilitate learning about the plants that are culturally significant to Southern Paiutes, a plant reference guide was developed in 1997. The guide includes over 125 pages of plants with photos; Paiute, scientific, and common plant names; and information about the significance of the plants in Southern Paiute culture. It was created using presentation software so each page can be accessed individually for editing and updating information.

Southern Paiute River Guide

Based on recommendations from 1997, the SPC began development of the *Southern Paiute River Guide* for use by monitors and trip participants. The guide includes overview maps of Southern Paiute territory and has a location finder on each page that shows the reader where s/he is along the river and within the larger territory. This feature was included because of the difficulty of relating one's location along the river with the traditional territory and known places on the north rim. The guide also has space for note taking so participants can record information they wish to remember about places and events that occur along the river. The guide was used during the 2002 downriver trip; participants corrected errors and suggested revisions and additions. Interest in the guide by boatmen, and by scientists and researchers on other monitoring trips in the Grand Canyon, has led to discussion about producing a public version of the *Southern Paiute River Guide.*

The Multimedia and GIS Learning Project

The Southern Paiute Consortium continued to take responsibility for much of the development and updating of the multimedia database and archive. The SPC office on the Kaibab reservation is the location at which most of the scanning and archiving of multimedia materials takes place. The U of A continues to be integral to the overall multimedia and GIS program, and SPC representatives come to the university to compile the information and produce the annual report. As in the past, this year's youth participants wrote stories about their experiences on the river, and these are included in the database for past and future participants to access.

The Downriver Trip

Summary of Activities

The downriver trip took place from June 22- July 2, 2002, and the education and training component occurred in conjunction with the monitoring trip (see Chapter One). The education component of the trip included (1) specialized training in monitoring skills and techniques, (2) direct information about Paiute culture provided by elders and Southern Paiute interpreters, (3) learning through participation in Southern Paiute traditional practices and in monitoring activities, (4) information about policy and management related to the Glen Canyon Dam, (5) education about how cultural resources along the Colorado River are being protected, and what policies exist and requirements are needed for receiving protective designation of cultural resources, and (6) activity- and field experiment-based environmental education. Because this year's river trip included many youth participants, the educational activities and monitoring training exercises were designed to emphasize the development of basic skills in math and science and familiarity with scientific principles and methodology.

As in past years, the tribal educators were an integral component of the education program, sharing information about past as well as present connections between Southern Paiutes and the Colorado River Corridor. The education program was fully integrated into the monitoring program, and the trip schedule and activities is provided in Table 2.1. One tribal elder, the SPC Coordinator, a tribal environmental specialist, a community health representative, three experienced SPC monitors, the SPC consulting ethnobotanist, and two U of A education research specialists all shared their unique knowledge and perspectives with the nine tribal youth participants on this year's river trip.

Environmental education was an important component of the 2002 river trip. In addition to the training youth participants received in site monitoring procedures and the use of monitoring equipment, activities designed to teach general ecological knowledge and science skills were included in this year's program. Youth participants were responsible for water quality monitoring conducted throughout the trip. The SAHRA (Sustainability of semi-Arid Hydrology and Riparian Areas) program at the U of A loaned the SPC the equipment necessary for this monitoring. Temperature, PH, and turbidity were assessed at regular intervals. Additionally, youth participants learned how to test for dissolved oxygen and the relationship among these variables. Regular water quality monitoring allowed all of the youth a chance to participate and become comfortable with procedures for working with chemicals, proper sampling methodology, and data recording and interpretation.

Additional environmental education activities included an exercise designed to explain the importance of biodiversity and the potential threats of invasive species, a mock-excavation intended to introduce the concepts of stratigraphy and chronology, wildlife and plant observation and illustration, and a water rights activity to stimulate discussion of the policies and problems regarding water distribution in the Southwest and the role of Native Americans in that process.

The downriver trip was a success. The critical elements of this success are: (1) active participation of tribal elders who accompany participants to culturally significant sites and share traditional knowledge with them; (2) active participation of tribal monitors who work directly with participants to complete activities and share information about the cultural significance of the sites; (3) a training program specifically tailored to the needs of Southern Paiute monitors in training; (4) active participation of educational and environmental specialists with experience in environmental/outdoor education and knowledge of environmental policy and the cultural, social, and political history of the area; and (5) active youth participation in environmental education activities designed to stimulate interest in tribal resource protection and development of basic math and science skills. Each of these elements enhances the entire program so program participants receive a comprehensive education about the region impacted by Glen Canyon Dam.

Table 2.1 Downriver Trip Schedule and Education Activities

Date	**Site**	**Activities Completed**
June 22	Jackass Canyon	River safety orientation and monitor training Water quality monitoring
June 23	South Canyon	Southern Paiute interpretation Assist monitors—beach
June 23, 24	Nankoweap	Southern Paiute interpretation and cultural transmission Assist monitors—plants Water quality monitoring
June 24	Little Colorado River	Southern Paiute interpretation Water safety instruction Water quality monitoring
June 24	Salt mines	Southern Paiute interpretation and cultural activities
June 25	Lava Chuar	Assist monitors—plants and archaeology Invasive species/Biodiversity educational activity Water quality monitoring
June 25	Tanner	Assist monitors—archaeology Traditional craft activity Topography activity Cultural hike
June 25	Unkar Delta	Southern Paiute interpretation
June 26	Phantom Ranch	Group Activity Water quality monitoring
June 27	Elves Chasm	Group activity

Date	Site	Activities Completed
June 28	Deer Creek	Paiute interpretation and cultural activities Assist monitors—rock art and plants Visitor behavior monitoring Water quality monitoring Cultural hike Stratigraphy educational activity
June 29	Kanab Creek	Southern Paiute interpretation Assist monitors—beach and plants Sketchbook activity Water Quality monitoring
June 29	Havasupai Creek	Group Activity
June 30	Vulcan's Anvil	Southern Paiute interpretation, cultural transmission, and visit
June 30	Whitmore Wash	Assist monitors—beach, rock art, plants Water Quality monitoring
June 30	Ompi Cave	Paiute cultural transmission
July 1	Spring Canyon	Water Rights educational activity and discussion Assist monitors—plants
July 1	Indian Canyon	Southern Paiute interpretation Cultural hike
July 1	Granite Park	Southern Paiute and botanist interpretation
July 1	Pumpkin Spring	Southern Paiute interpretation Assist monitors—beach and spring Water Quality monitoring Group Activity
July 2	Diamond Creek	Take out

Using the model developed in 1996, participants gathered each evening in a circle to share thoughts and feelings about the day's experiences and prepare for the following day's work. Information shared during these group meetings included stories about the places and the culturally appropriate behaviors expected there. All participants discussed what they know about the places and shared their feelings about visiting them. The SPC Coordinator and educational consultant provided additional information about other groups and historical/political events related to places, as requested. The evenings ended with time for prayer and reflection.

Throughout the trip, participants recorded stops and activities in their river guides and notebooks. Youth participants were additionally provided with sketchbooks for illustrating plants, animals, or other significant experiences in the Canyon. Prior to entering any site, the trip leaders would gather the participants together and help prepare for any ceremonies or ritual practices appropriate to the situation. In general, at each site some participants would assist the monitors as they completed monitoring tasks and recorded the condition of the site. Youth not involved in site monitoring activities would conduct multiple tests to monitor water quality or participate in planned site-specific

environmental education activities. Other individuals would remain with the elder and SPC Coordinator to listen to stories and information the elder wanted to share, spend time in quiet reflection, or discuss policy issues. At large and complex sites, monitors and participants would divide into two or more teams to gather all the necessary information in a timely manner. All participants gathered together again at the end of the monitoring tasks. Trip participants demonstrated their mastery of the skills needed for site monitoring and water quality monitoring by taking greater responsibility for the monitoring tasks as the trip progressed.

Recommendations

Trip participants must be carefully selected and include, if possible, two elders, at least two monitors, an individual responsible for the trip's itinerary and logistics, and additional participants who are aware of the difficulties of working on the Colorado River Corridor and have prepared for the experience through participation in pre-trip study and events. Individuals who join the trip at the last minute due to cancellations are inadequately prepared and more likely to lose interest in the activities taking place.

Program participants must have sufficient opportunities to learn skills needed for the trip and to practice those skills. The skills should be introduced, practiced, and mastered prior to the river trip so critical time on the trip is not spent in basic instruction in monitoring techniques. In years when the trip is scheduled for early in the season, and it is not possible to have an orientation session prior to the trip, time must be allocated at the first stop on the river for the review and practice of monitoring techniques. Once on the river, each individual should have assigned tasks that involve the participant in achieving the goals and objectives of the trip. Even with adult participants, the trip requires careful coordination to ensure that the necessary tasks are accomplished and all participants perceive themselves to be important contributors to the effort. Participants who desire time for independent work and reflection can inform the trip leader when they wish to be excused from their assigned tasks.

All participants must be kept informed of the daily schedule and tasks. Each participant was provided with a trip schedule and two river guides for recording the day's events and looking ahead to the next day's activities. The addition of the Paiute river guide was of tremendous help in orienting trip participants. This practice should be repeated in the future. Still, due to the uncertainty of the camp sites and the changing conditions of the river environment, the schedule changed frequently. In addition to the evening circle during which information is shared and emotions are expressed, at least one individual should be prepared to present information about sites along the river during boat travel. As soon as individuals leave the boat, a group leader should describe the activities to take place at the site, expectations about who is responsible for what tasks, and an estimated time of stay.

Chapter Three
Meetings, Conferences, and Other Activities

Much of the work conducted under the PA during FY2002 was done in committees and meetings. This chapter summarizes the interactions between the Southern Paiute Consortium (SPC) and others with an interest in cultural resources in the Colorado River Corridor.

Meetings and Conferences

The Southern Paiute Consortium was represented at meetings of the PA Signatories, the Adaptive Management Work Group (AMWG), Technical Work Group (TWG), and the Grand Canyon Monitoring and Research Center (GCMRC). The SPC and its member tribes, the Kaibab Band of Paiute Indians and the Paiute Indian Tribe of Utah, participated in consultation with federal agencies that are PA Signatories. All of these activities are informed by the data and information that the SPC gathers during its annual Colorado River trips. The SPC Director is responsible for ensuring that the information is passed between the Southern Paiutes and the federal managers responsible for operations of the Glen Canyon Dam and the resources within the Colorado River Corridor.

PA Signatories

The meetings of the PA Signatories continued to focus on developing the Historic Preservation Plan (HPP) and defining Traditional Cultural Properties (TCPs). The SPC supports the development of the HPP, contributed to the Draft HPP prepared in 1997, and has worked with other PA Signatories to provide input in the current development process. Regarding TCPs, the Southern Paiute Consortium maintains its position that the Grand Canyon is a significant cultural landscape for and is vital to the physical and spiritual well being of Southern Paiute people (see Stoffle, Halmo, and Austin and 1997).

Adaptive Management Work Group and Technical Work Group

The SPC Director attended AMWG meetings at which there were presentations made about the proposed experimental flood and the Environmental Assessment. The SPC has not yet received a copy of the Environmental Assessment to review. Another topic of special interest to the SPC is the proposed removal of non-native fish by electroshocking. Representatives from the BOR and the USGS/GCMRC made presentations to the leaders of the Kaibab and Shivwits Bands of Paiute Indians regarding this issue.

The TWG continues to work on developing the strategic plan and has been preparing the proposed science experimental flood plan. The SPC Director participated in TWG meetings and will make a presentation to the TWG in November 2002. As part of this process, the Director worked with a representative of the Bureau of Indian Affairs to develop text regarding tribal consultation. That effort has been consolidated with the

work of the Hualapai Cultural Resources program to develop a consultation plan for the Glen Canyon Dam Adaptive Management Program.

Consultation and Meetings with Federal Agencies

Nancy Coulam of the Bureau of Reclamation and Denny Fenn, Steve Gloss, and Mike Lewinski of the GCMRC visited the leaders of the Kaibab and Shivwits Bands of Paiute Indians to discuss the GCMRC's plan to electroshock non-native fish within the Colorado River Corridor. Tribal leaders oppose electroshocking as a means of fish population control.

A representative of the SPC accompanied Jan Balsom and other NPS officials from Grand Canyon National Park for a NAGPRA consultation. The problem was resolved to the satisfaction of the SPC. The SPC will continue to communicate with the NPS on this issue.

Another representative of the SPC accompanied the NPS *Tamarisk* removal team to remove *Tamarisk* saplings from Kanab Creek and other sites within the Colorado River Corridor.

Meetings and Interaction with Tribal Leaders and Members

The SPC Director and Outreach Coordinator prepared a presentation for the Annual Meeting of the Kaibab Band of Paiute Indians. They also provided reports to the Kaibab Tribal Council and made a presentation at a meeting of the Shivwits Band Council.

Other Activities

The SPC has participated in two major activities that are beyond the scope of the PA but further the SPC's efforts to protect Southern Paiute cultural resources in the Colorado River Corridor. These include continued development of the SPC Education and Outreach Program and participation in the GCMRC's Terrestrial Ecosystem Program.

Education and Outreach

Education is an important component of the SPC program on the Colorado River. Southern Paiutes who have participated in the program have learned much about their heritage, the Grand Canyon, cultural resource policy and management, and themselves. A valuable body of information now exists on the cultural significance of the Colorado River Corridor to the Southern Paiute people, including cultural uses of specific places and of native plants and minerals, and the Colorado River monitoring and education program has served as an invaluable opportunity for Paiute heritage to be discussed, recorded, and preserved for future generations of Southern Paiute people. The SPC continues the education and outreach program begun in 1999 to reach Southern Paiutes and non-Paiutes

with information about Southern Paiute culture, cultural resources in the Colorado River Corridor, and the Monitoring and Environmental Education Program. The program's objectives are:

1. Continue to increase the awareness of Paiute and non-Paiute youth and adults of the Southern Paiute use and management of the Colorado River corridor, with emphasis on plant and animal resources, by preparing educational materials, conducting workshops, and making presentations to classrooms, organizations, and professional meetings.
2. Increase the awareness of Southern Paiute youth and adults of the historical and recent Southern Paiute use and protection of the Colorado River Corridor, with emphasis on the concept of cultural affiliation and its importance in policy and management, by preparing educational materials and conducting workshops at Southern Paiute gatherings.
3. Increase the awareness of non-Paiute individuals of the long history of interactions between Southern Paiutes and the land and resources of the Colorado River Corridor, with emphasis on the concept of cultural affiliation and its importance in policy and management, by preparing educational materials and making presentations to classrooms, clubs and organizations, and professional meetings.

The Outreach Coordinator provides reports to the GCMRC and makes presentations to agency and other groups. Funds for this program were not made available to the SPC until September 2002. Therefore, the program was severely restricted in scope for most of the year. The Outreach Coordinator worked with the Utah State Museum on a Southern Paiute display for the 2002 Winter Olympics. She developed a display for the Kaibab Band of Paiute General Membership meeting and assists with the Kaibab language and culture program.

Terrestrial Ecosystem Program

The Terrestrial Ecosystem Program (TEP) of GCMRC began fieldwork in 2001, combining in one program the monitoring of all terrestrial biological resources along the river. The purpose of this program is to coordinate monitoring efforts that were previously in disparate projects under one, eliminating inconsistencies and duplication of effort. The SPC was invited to participate in the TEP and took the opportunity to investigate whether and how the TEP and SPC's other activities would complement one another. The SPC produced a report in 2001; work for 2002 was delayed because funds were not made available until September 2002. The SPC intends to continue to participate in this effort.

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