POAHG Packet for March 2-3, 2005 AMWG Meeting

Requested Actions from AMWG:

- **Motions in II. Recommendations of POAHG to AMWG (see below).**
- **Authority for continuing projects.**

I. Accomplishments and progress of the committee. Products completed:

- Logo (see packet)

- Catch phrase: "Using Science to Manage River Resources in Grand Canyon"

- Fact Sheets (final, see packet)
    - Adaptive Management Program-Purpose and Goals
    - AMWG-Who's Involved
    - CRSP and AMP
    - Glen Canyon Dam Temperature Control Device

- Outline for stationary display at Glen Canyon Dam (see packet)
    - Display to be consistent with visitor center parameters
    - Visitor Center review committee feedback
    - Reclamation to set up meeting with Ken Rice

- AMP Website (see packet)
    - Partnership focus: AMWG will approve changes to the website as proposed and developed through the POAHG.

    - Visual identity and affiliation: The website will have no apparent affiliation to DOI or Reclamation.

    - Posting and Access: the AMP website will be built and maintained by UC Region staff with POAHG direction.

    - No current plans for an internet chat room on this site.

II. Recommendations of POAHG to AMWG.

Motion #1: "Request AMWG approval of the following:

- Logo
- Catch Phrase
- Fact Sheets (x4)
- Outline of stationary display at Glen Canyon Dam
- AMP Website anonymously hosted by Reclamation www.gcdadaptivemanagment.gov."

Motion #2:
AMWG delegates to POAHG these specific authorities:
1) posting to and updating of AMP website (AMWG would retain review opportunities on new materials via email prior to posting).

2) Identify new topics for Fact Sheets and start creating them.

3) Finalize strategy for Glen Canyon Dam Display with Reclamation review and involvement.

4) Authority is granted to POAHG to speak to media on rapid response items via Secretary's Designee and/or Interior public relations.

5) Develop, finalize and distribute guide resources.

Motion #3:
AMWG authorizes a continuing budget line item of $50,000./year with carryover from year to year.

- POAHG will make decisions on service contracts to complete necessary duties and products.
- POAHG will report public outreach budget details annually to the TWG Budget ad hoc committee for review in a timely manner.

III. Future Actions planned for POAHG

A. New fact sheets as per the above format:

1. Trout Fishery	Rory Aikens, AGF
2. Big River Fish	Rory Aikens, AGF
3. Cultural Resources	Lisa Leap, NAU/PA group
4. Tribal Involvement	Mike Yeatts, Hopi Tribe
5. Impacts to Downstream Resources	Andre Potochnik, GCRG
6. Whitewater Recreation	Andre Potochnik, GCRG
7. Law of the River	Doug Hendrix, Reclamation
8. Hydropower	Leslie James, CREDA

B. River guide resources for education of visitors:

1. Laminated summary sheets of river resources for on river interpretation.
2. Adopt a Beach Program: beach re-photography displays for public meetings.
3. Research summary handouts to all recreation river trip launches.

C. Traveling Display of AMP available to all for various other meetings

D. Long term public outreach plan.

a. POAHG role
b. AMWG role

Logo:

Catch Phrase:

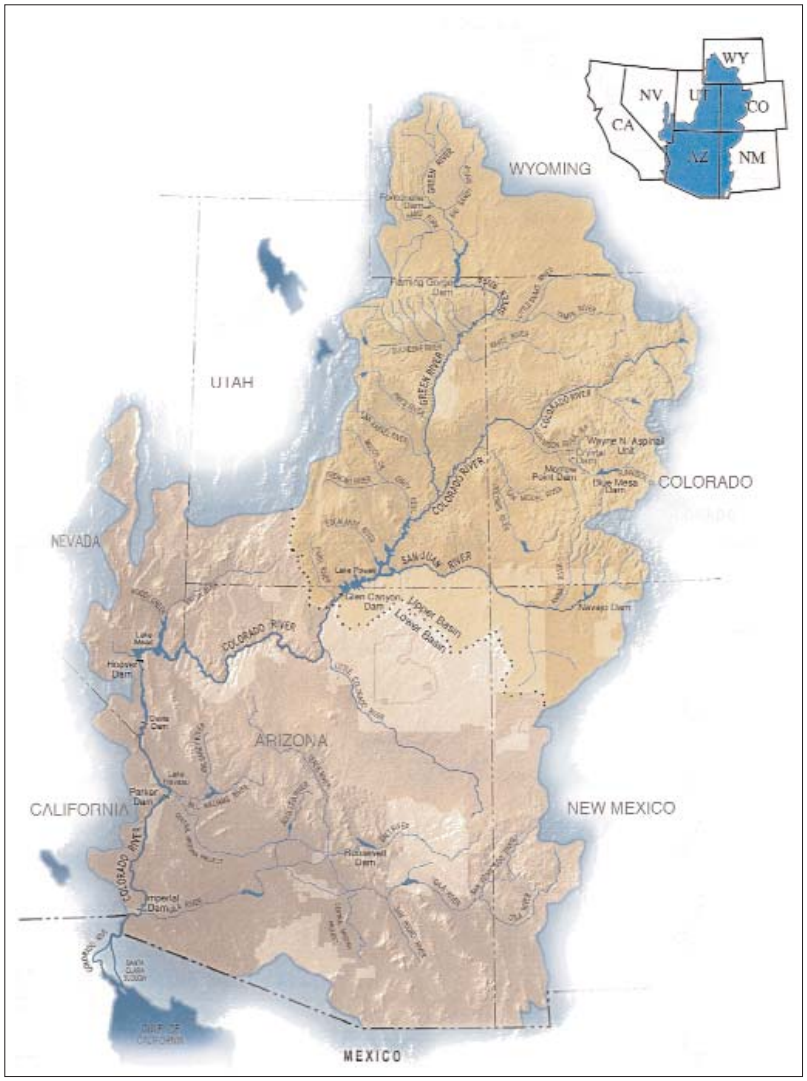
Using Science to Manage River Resources in Grand Canyon

SAMPLE

Adaptive Management Program Purpose and Goals

The Glen Canyon Dam Adaptive Management Program (AMP) was formed in 1997 to advise the Secretary of the Interior on actions to improve resources in Glen and Grand Canyons of the Colorado River in Arizona. The AMP provides a process through which the effects of dam operations on downstream resources are monitored and assessed and operational adjustments are recommended to the Secretary of the Interior based on those assessments. This approach allows for scientific experimentation that adds to the understanding of the effects of the operation of Glen Canyon Dam.

The AMP provides the latest scientific and resource information to Department of the Interior decision-makers and others concerning Glen Canyon Dam operations and protection of the affected resources consistent with existing laws including the provisions of the Law of the River, the Colorado River Storage Project Act and the Grand Canyon Protection Act of 1992. A diverse group of stakeholders with interests in the operation of Glen Canyon Dam and impacts to downstream resources is involved in the AMP.



Colorado River Basin

The AMP focuses on the Colorado River ecosystem and uses the following adaptive management approach and process:

- Models are developed to reveal the potential effects of policies, activities, or practices that are being considered for implementation;
- Questions are formulated as testable hypotheses regarding the expected responses of the Colorado River ecosystem to dam operations and other management actions;
- Experiments are conducted to test hypotheses and answer questions;
- Management activities reveal, through monitoring and evaluation of results, the accuracy or completeness of the earlier predictions; and
- New knowledge and information produced through experimentation are incorporated into management options and recommendations to the Secretary of the Interior

Adaptive Management Work Group (AMWG)

AMWG is a Federal Advisory Committee appointed by the Secretary of the Interior with representatives from federal agencies, states, Native American tribal governments, environmental groups, recreation interests, and contractors for federal electrical power from Glen Canyon Dam. The main responsibilities

of the AMWG are to: 1) annually review long-term monitoring data to determine the status of resources and whether program goals and objectives are being met; 2) develop recommendations to the Secretary for modifying operating criteria for Glen Canyon Dam and other management actions; and, 3) facilitate input and recommendations from interested parties.

Technical Work Group (TWG)

TWG is a subcommittee of the AMWG. This group translates AMWG policy and goals into resource management objectives and establishes criteria and standards for long-term monitoring and research. Additional tasks include providing review and updates, developing resource management questions for research and monitoring, and preparing reports as requested or required by the AMWG.

Grand Canyon Monitoring and Research Center (GCMRC)

GCMRC, a division of the U.S. Geological Survey, is the science arm of the AMP. GCMRC develops and administers plans for long-term monitoring and research of the Colorado River from Glen Canyon Dam through the Grand Canyon to Lake Mead. The GCMRC oversees data collection and analysis and is guided by research needs specified by the AMWG and TWG.

Independent Scientific Review

The AMP incorporates an independent, external peer review process to maintain the highest quality scientific results for the program. The program draws from a pool of external peer reviewers that ensure the scientific integrity of research/ monitoring proposals and reports. An external, permanent board of Science Advisors periodically reviews resource specific monitoring and research programs and makes recommendations to the AMWG and GCMRC regarding monitoring, priorities, integration and management.

SAMPLE

Who is involved in the Adaptive Management Program?

Representatives from the following organizations are appointed by the Secretary of the Interior for a four year term to the **Adaptive Management Work Group**, a Federal Advisory Committee, to represent diverse public interests in the operation of Glen Canyon Dam and impacts to downstream resources:

Federal and State Agencies
Arizona Game and Fish Department
Bureau of Indian Affairs
Bureau of Reclamation
National Park Service
U.S. Fish and Wildlife Service
Western Area Power Administration

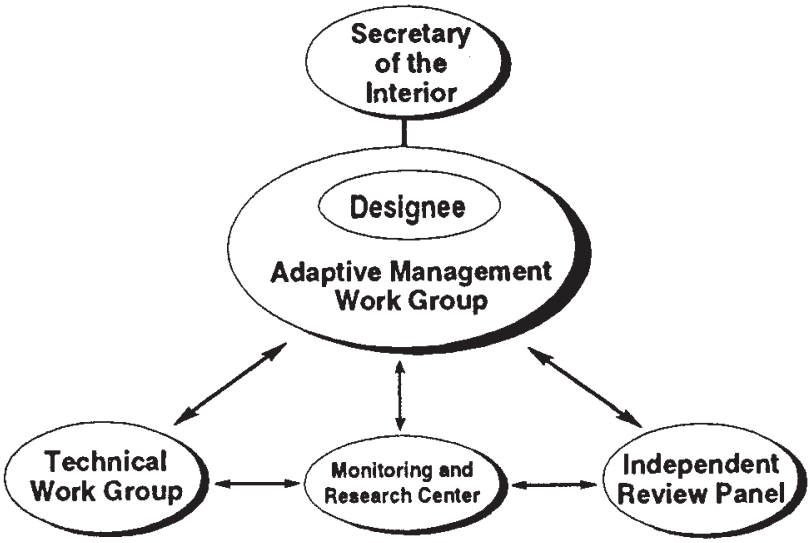
Colorado River Basin states
Arizona
California
Colorado
New Mexico
Nevada
Utah
Wyoming

Native American Tribes
Hualapai Tribe
Hopi Tribe
Navajo Nation
Southern Paiute Consortium
Pueblo of Zuni

Environmental groups
Grand Canyon Trust
Grand Canyon Wildlands Council

Recreational interests
Federation of Fly Fishers
Grand Canyon River Guides

Federal Power Purchase Contractors
Colorado River Energy Distributors Association (CREDA)
Utah Associated Municipal Power Systems (UAMPS)



Organizational structure of the Adaptive Management Program

For contact information for the individual agencies/organizations, go to: **www.gcadaptivemanagement.gov.**

The Colorado River Storage Project and the Adaptive Management Program

The Glen Canyon Dam Adaptive Management Program (AMP) focuses on the operation of Glen Canyon Dam and the effects on Colorado River resources downstream. However, operation of Glen Canyon Dam cannot be viewed in isolation. Completed in 1963, the dam is part of a larger water project in the Upper Colorado River Basin called the Colorado River Storage Project (CRSP). Management of one part of the CRSP can affect other parts of the project, as has been the case with modification of the operation of Glen Canyon Dam and the effects of those modifications elsewhere within the CRSP.

Background on the CRSP

Congress provided for the development, management and long-term storage of water in the Upper Basin in the 1950's and 1960's, beginning with the CRSP Act of 1956 and following up with the Colorado River Basin Project Act of 1968.

The CRSP Act authorized the Secretary of the Interior to construct a variety of dams, reservoirs, powerplants, transmission facilities and related works in the Upper Colorado River Basin. The Act also directed the Secretary to investigate, plan, construct, operate and maintain facilities to mitigate losses of, and improve conditions for, fish and wildlife and public recreational facilities. In a nutshell, the CRSP Act provided states in the Upper Basin (Wyoming, Colorado, New Mexico & Utah) with the storage to meet their downstream water delivery obligations to the Lower Basin states (California, Arizona & Nevada) and still utilize their Upper Basin-apportioned water for agricultural, municipal or industrial purposes.

In 1968, Congress passed the Colorado River Basin Project Act to provide a program for further comprehensive development of the water resources of the Colorado River Basin and the provision of additional and adequate water supplies for use in the upper and lower Colorado River Basins. The 1968 Act authorized the project to:

- Regulate flows of the Colorado River;
- Control floods;
- Improve navigation;
- Provide for storage and delivery of the waters of the Colorado River for reclamation of lands, including supplemental water supplies for municipal, industrial and other beneficial purposes;
- Improve water quality;
- Provide for outdoor recreation facilities;
- Improve fish and wildlife conditions;
- Provide for the generation and sale of hydroelectric power.

Glen Canyon Dam was built and is operated by the Bureau of Reclamation. Its reservoir, Lake Powell, is the largest water storage unit of CRSP. Other storage reservoirs in the CRSP include Flaming Gorge Reservoir on the Green River in Utah, Wayne N. Aspinall Unit reservoirs on the Gunnison River in Colorado (Blue Mesa, Crystal, and Morrow Point), and Navajo Reservoir on the San Juan River in New Mexico. The six CRSP dams have a total storage capacity of about 34 million acre-feet, with Glen Canyon Dam/Lake Powell providing over 26 million acre-feet or about 80 percent of the total storage capacity. An acre foot of water can fill one acre of land, approximately the size of a football field, 1 foot deep. An acre-foot contains 325,900 gallons of water, and can supply the annual indoor and outdoor needs of one to two urban households.

Relationship of the AMP to the CRSP

Since the AMP focuses on operations of Glen Canyon Dam and other Secretarial actions to improve downstream resources in the Grand Canyon, the AMP does not affect the total storage in Lake Powell or the annual releases of water from the Upper Basin to the Lower Basin. However, AMP actions can affect monthly volumes of water released, or daily or hourly release patterns within those monthly volumes, which impacts the hydropower production at the dam.

CRSP generating units supply about 5.9 million megawatt hours of electricity each year. Most of the power - approximately 4.5 million megawatt hours/year - comes from the eight turbines at Glen Canyon Dam. Power produced at CRSP dams is marketed by the Department of Energy's Western Area Power Administration and sold to municipalities, public utilities, Native American tribes and governmental agencies in six Western states. Revenues earned from Glen Canyon Dam power generation provide for the repayment of approximately 81 percent of the CRSP project costs.

Therefore, it is not insignificant when temporary or permanent changes in operations at Glen Canyon Dam occur. The CRSP was first impacted when flows were modified in the early 1990s during development of the Environmental Impact Statement on Operations of Glen Canyon Dam, and again in 1996 with the signing of the Record of Decision on operations and the inception of the AMP. Several flow experiments conducted as part of the AMP - including the 1996 Beach/Habitat Building Flow, the 2000 Low Steady Summer Flow, Non-Native Fish Suppression Flows in 2003 and 2004, and the 2004 Sediment Experiment - have impacted power generation and the rest of the CRSP.

When flows are modified at Glen Canyon Dam, Reclamation frequently adjusts flows at other CRSP dams in order to accommodate altered power capacity at Glen Canyon Dam. For example, when conducting Non-Native Fish Suppression Flows in 2003 and 2004, power production was shifted from Glen Canyon Dam to Flaming Gorge Dam.

Glen Canyon Dam Temperature Control Device

Overview

Prior to completion of Glen Canyon Dam in 1963, the temperature of water flowing through the Grand Canyon each year would warm from the icy, spring run-off to the warm, 85-degree summer-heated flows.

However, once the dam was constructed, the temperature of the water released from the dam - drawn from the depths of Lake Powell and released through the dam's large penstock intakes - ranged between 45 to 50 degrees. Immediately downstream, these cold water releases are good for the introduced trout fishery. But as water moves downstream through the Grand Canyon, it only warms to about 60 degrees - not warm enough to allow the endangered native fish species, the humpback chub, to adequately reproduce or to escape competition and predation from non-native fish in the Colorado River.

Why a Temperature Control Device?

In 1994, the U.S. Fish and Wildlife Service (FWS) issued a biological opinion under the Endangered Species Act recommending that the Bureau of Reclamation study the feasibility of modifying the operation of the dam by adding a temperature control device to the existing dam intake structures. The temperature control device would provide operators of the dam with flexibility to draw water from different depths of the reservoir, including warmer water near the surface of the reservoir during the summer and autumn months, which are critical for the humpback chub.

The goal of the temperature control device would be to provide the right combination of cold and warm water withdrawals to benefit the humpback chub, while protecting the trout fishery and avoid enhancing or increasing the population of non-native, warm-water fish.

Helping Native Fish

Research indicates that increasing the temperature of water flowing from Glen Canyon Dam is a key element in improvement of the status of and habitat for humpback chub and other native fish in Grand Canyon.

Flaming Gorge Dam, upstream on the Green River in Utah, provides an example of the benefits that a temperature control device would provide Glen Canyon Dam. Since 1978, when Flaming Gorge's intake structures were modified to accommodate warm water releases, native fish have done better downstream near the Yampa River, while trout growth rates below the dam increased significantly. Temperature control devices also have been successfully installed and operated on several other Reclamation dams to benefit other fish species.

A temperature control device will allow dam operators to raise and lower water temperatures. This flexibility may assist in efforts to manage competing non-native warm water fishes, such as the channel catfish, and possibly help with the control of various fish parasites or pathogens.

Status of the Temperature Control Device

The temperature control device is currently undergoing a feasibility assessment to satisfy provisions outlined in the FWS biological opinion. A risk assessment has been completed and the Adaptive Management Work Group (AMWG) of the

Glen Canyon Dam Adaptive Management Program has recommended to the Secretary of the Interior that Reclamation move forward to complete National Environmental Policy Act (NEPA) compliance on the device. Reclamation has distributed a scoping letter on a proposal to modify two of the dam's penstocks, test them, and, with review/input of the Adaptive Management Program, determine if more modifications are necessary.

Reclamation is also developing preliminary design parameters that would be needed to maintain cold water flows to cool turbines and transformers at Glen Canyon Dam - should the device be installed - thus allowing the powerplant to continue to operate at full capacity.

Design Features and Cost

Based on late 1990s cost estimates, development and installation of temperature control devices on the penstocks at Glen Canyon Dam could cost between $40 and $100 million, depending upon the type and scale of design. A design study is currently being conducted to update these estimates.

Adaptive Management Program
Stationary Exhibit Proposal

Glen Canyon Dam – Carl Hayden Visitor Center

Overview:

The Adaptive Management Program's (AMP) stationary exhibit will be a photo- and text-based, multi-panel display that will be mounted in the hallway that leads to the tour elevators in the Carl Hayden Visitors Center. The display will feature the components of the Adaptive Management Program including: Program overview, history, application of research/science, endangered species, dam operations and evaluation of recommended courses of action.

Reclamation will develop the display integrating feedback and recommendations that are received from the Adaptive Management Work Group and from members of the AMP's Public Outreach Ad Hoc Group. The display will be produced using in-house design, copy and desktop publishing capabilities.

In general terms, the stationary display at Glen Canyon Dam will include the following themes:

- Explanation of the Adaptive Management Program & Process
  - What is AMP
  - Who's involved
  - What's the Program's Purpose & Goals

- Science-based Process & Approach Used to Develop GCD operational policies and practices

- Implementing Recommended Courses of Action

- Overview of the Recommendations provided to the Secretary of the Interior for Implementation at Glen Canyon Dam

- Concluding Program Thoughts and Vision

Adaptive Management Program

Web Site Development Proposal

Following is the proposed option for developing a partnership-focused Adaptive Management Program web site that does not suggest direct association with Reclamation.

Partnership Focused Web Site with Domain Name/Links Hosted on a Reclamation Server: Should the Adaptive Management Work Group select this proposed option, it would be possible for Reclamation to create and host a partnership-focused Web site and domain similar to what was done for the Utah Reclamation Mitigation Conservation Commission (www.mitigationcommission.gov). This option would have a site address/URL of something like: www.gcadaptivemanagement.gov

This option would provide a completely separate identity for the web site as it would have a non-Reclamation and non-DOI web address, and thus, not be constrained by the visual identity requirements of either entity. Under this option, the Upper Colorado Region can build and maintain the web site directly.

Posting or updating of information on the Web site would be completed based on the feedback and direction provided to Reclamation by the AMWG and/or the Public Outreach Ad Hoc Group.