

**From:** Marcia Lamkin <mlamkin@npgcable.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Fri, Feb 23, 2007 7:51 PM  
**Subject:** Scoping Comments on Glen Canyon Dam Long Term Plan

Dear Sirs,

Thank you for the opportunity to comment on the Glen Canyon Long Term Plan. It is time to finally do what is necessary to protect and restore the downstream habitat of the Colorado River running through the Grand Canyon.

We live in close proximity to the Canyon and have done a lot of hiking and backpacking in the canyon over a number of years, even before we moved to Flagstaff. We have not yet traveled by boat down the canyon but still hope to do that one day. Even if we never get a chance to do that, we feel strongly about the canyon and wish it to be restored to its natural state.

The beaches and the downstream plants and animals have suffered from the operation of the dam and a long term plan that addresses the restoration of the downstream ecosystem is sorely needed. This is an important habitat in dry Arizona, and is a local, national, and international treasure. This is also a world renowned recreational area.

The flow from the dam should be regulated in such a way to mimic the natural high and low waters and to restore the beaches. The seasonal temperature changes of the water, which are natural to the river, should be instituted. And all of the plants and animals which were there pre-dam should be restored. The non-native fish and other plants and animals should be eliminated so that the native flora and fauna can again thrive.

Thank you for your time and attention.

Marcia and David Lamkin  
999 W. Coy Drive  
Flagstaff, AZ 86001

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FEB 27 '07

Mr. Rick Gold  
Regional Director, Bureau of Reclamation  
Upper Colorado Region  
Attn: UC-402  
125 South State Street  
Salt Lake City, Utah 84138-1147

22 February, 2007

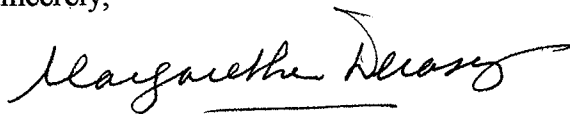
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Dear Mr. Gold,

This letter is on behalf of the Grand Canyon and the remaining four native fish species. It is regarding the Long-Term Experiment Plan. It is to ask you to change course and consider the fish and the river as more important than Glen Canyon Dam, to act upon the already available research, and to preserve and restore the river ecosystem.

The river is meant to be there forever and is irreplaceable. The dam has a limited life and its storage and energy benefits can be achieved in other ways. As you know, I hope, John Weisheit of Living Rivers could be an invaluable guide in this endeavor. Please do not wait to correct the course of your ship.

Sincerely,



Margaretha Derasary  
7281 Sayre Drive  
Oakland, CA 94611  
510-339-2282

**GCDExpPlan GCDExpPlan - Long Term Environmental Plan Public Comments**

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**From:** "Marieke Taney" <rmtalces@hotmail.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** 2/28/2007 11:19:47 AM  
**Subject:** Long Term Environmental Plan Public Comments  
**CC:** <gcr@infomagic.net>

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To whom it may concern -

My name is Marieke Taney, I have been an active river guide in Grand Canyon for 8 years and am currently holding the position as president of Grand Canyon River Guides. I would like to add my comments on the development of alternatives for a Long Term Experimental Plan Environmental Impact Statement.

First of all, anything and everthing done concerning the LTEP should keep in mind the Grand Canyon Protection Act of 1992. This act is in place to keep the environmental health and longevity of this National Park intact which is the most important aspect. The GCPA states that the protection of downstream environmental, cultural and recreation values HAVE PRECEDENT over power generation as long as operations do not interfere with the allocation of water governed by the Law of the River. In recent years this has not been the case, power generation has lobbied hard enough to seemingly become the primary force of dam operations - This NEEDS to be addressed.

One of the main detriments to the environmental health of the Grand Canyon River Corridor is the depletion of sand, beaches and backwater eddies. During my relatively short 8 years in the canyon I have seen a drastic change in beach size and the amount of sand in the canyon. If you take a trip past Diamond Creek to Lake Mead you will travel through an impressive sand canyon past the Grand Wash Cliffs where lakem water had been. In my mind this is a testament to the urgent concern we have on our hands regarding the loss of sand, beaches and backwater eddies. Any considered alternative in the LTEP should include Sediment-triggered and well-defined Beach Habitat Building Flows (BHBF) as a common element. It should also include a range of flows and flexibility for the BHBF. These flows are of the upmost importance for a magnitude of downstream resources.

The LETP should re-focus the Adaptive Management Program (AMP) and the Department of the Interior on ecosystem resources, not program administration. The focus of these programs and agencies should serve the Grand Canyon Protection Act, focusing on the environmental health of Grand Canyon based on current science recommendations.

Thank you for the opportunity to provide comments. I just urge you to do what is best for Grand Canyon.

Sincerely,

Marieke Taney

306 W. Juniper, Flagstaff, AZ 86001 (928)226-7417 [rmtalces@hotmail.com](mailto:rmtalces@hotmail.com)

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**From:** Mark Allen <markstewartallen@gmail.com>  
**To:** <GCDExpplan@uc.usbr.gov>  
**Date:** Thu, Jan 4, 2007 6:51 PM  
**Subject:** Grand Canyon and Glen Canyon Dam Impact Study

Dear Bureau Representative,

As a former river guide on Cataract and the Grand Canyon I recognize the great need that the Grand Canyon has for sediment replenishment. I appreciate the fact that long term EIS is being done to help provide guidance to protect this resource and replenish that which has been lost due to the construction of the Glen Canyon Dam.

Although it would be expensive the only method to get ample sediment to the ecosystem in my view is to have a sediment carrying canal or pipeline from Cataract down to below the Dam which can provide tons of sediment each day and can be regulated. The elevation loss from Cataract to Glen Canyon would allow for gravity feed of this sediment.

The Canyon needs to be preserved in a natural state. To do so after the impact of the dam will require concerted efforts and funding, to continue to put band aids on the situation will not take us where we need to be. In order to be proper stewards we need to do something as large to protect the Grand Canyon as was done when the Glen Canyon Dam was built and funded.

Build a sediment bypass pipeline which will be several hundred miles in length, but will provide the materials necessary to preserve and protect and rebuild the canyon habitats.

Thank you,

Mark Allen

**CC:** Mark Allen <MarkStewartAllen@gmail.com>

**From:** <lurchl@ix.netcom.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Thu, Jan 25, 2007 7:16 PM  
**Subject:** LTEP EIS Scoping Comments

Dear Mr. Gold,

Thank you for the opportunity to submit the following scoping comments for the Environmental Impact Statement on the Long-term Operations for the future operations of Glen Canyon Dam. The river ecosystem in Grand Canyon National Park has suffered immensely over the past forty years due to the operations of Glen Canyon Dam, and it's vital that a fresh look at the problem be undertaken. I have concerns, however, that the EIS as envisioned is destined to fail in this regard unless a number of critical issues are addressed.

First, I would like to express my tremendous dismay with the Department of Interior's handling of the recovery efforts in Grand Canyon National Park over the past 40 years, and that the information presented so far by the Bureau of Reclamation in this EIS promises more of the same.

While new plans for ongoing investigation and experimentation can be beneficial, they are useless when the commitment to implement those plans is virtually non-existent. We've already experienced this with the completion of the first EIS twelve years ago, and there's nothing outlined in the purpose and need for this EIS process to indicate things will be any different once this process concludes. For this exercise to yield any meaningful outcome, the EIS process must be reconceived incorporating the following:

1. Restructuring the focus of the EIS on the recovery.

The principal objective should not be the long-term operation of Glen Canyon Dam, but the ingredients necessary to bring about the recovery and preservation of endangered species within the Colorado River corridor of Grand Canyon National Park. While the Dam and species preservation may not be mutually exclusive, this has yet to be proven, and preservation should supersede dam operation. The focus must first address the ingredients necessary to restore the natural process to Grand Canyon's river ecosystem, and secondly how, and at what costs, the Glen Canyon Dam/Lake Powell reservoir system can be operated in order to achieve this. The restoration ingredients must include:

The return of river flows consistent with the Colorado River's natural discharge into Grand Canyon.

The re-establishment of a water temperature consistent with seasonal temperature variations of the Colorado River in Grand Canyon.

The re-establishment of sediment inputs into Grand Canyon consistent with the amount that would be received in a dam-free environment.

The elimination of non-native species, which have taken hold in the artificial riverine environment created by Glen Canyon Dam operations.

2. Evaluate the Decommissioning of Glen Canyon Dam

The no-dam alternative must be evaluated as one means of achieving the restoration of the natural process to recover and preserve endangered species in Grand Canyon's river corridor. The no-dam alternative provides a valuable base line from which to evaluate other operational alternatives. Additionally, in light of the climate and human induced changes affecting flows into Lake Powell, and thus the viability of the dam to meet perceived water supply and hydroelectric benefits, BoR has additional incentive to examine a decommissioning or no-dam alternative consistent with the Council on Environmental Quality guidelines.

### 3. Replace the Working Groups of the Adaptive Management Program.

Despite being given specific instructions twelve years ago as outlined in the 1995 EIS on Glen Canyon Dam operations, the Glen Canyon Dam Adaptive Management Program (AMP) has failed to deliver in almost every respect, causing Grand Canyon's river ecosystem to endure further damage. Many of AMP's failings were spelled out in the United States Geological Survey's SCORE Report of October 2005. It was precisely these failings that have compelled BoR to undertake this new EIS process as part of its settlement agreement with environmental groups last year. Absent any structural changes to the AMP, any recommendations coming out of this EIS process will be of little value, as there are no mechanisms to ensure they won't be ignored as were those from the EIS twelve years ago.

Dominated by water supply and hydroelectric power interests, it's not surprising that the AMP has been unwilling to address the true needs for endangered species recovery in Grand Canyon. Scientific, not political and commercial interests, should be the sole advisors to the Secretary of the Interior on how Grand Canyon's river ecosystem should be studied, monitored and managed consistent with the recovery objectives.

Therefore, the AMP should be replaced by an independent body of research and advisory scientists, where the monitoring and research data are consistently and thoroughly peer-reviewed prior to formulating any recommendations to the Secretary of the Interior.

We're closing in on 50 years of ecological destruction in Grand Canyon National Park due to the operations of Glen Canyon Dam. For much of this time the public has been asking that this destruction be remedied. We continue to lose valuable time and species as the BoR procrastinates and resists the public's desire to put the resource first. While there are plenty of substitutes to achieve the benefits Glen Canyon Dam may provide, there will never be another Grand Canyon. It's time for the BoR to stop thwarting the public's interest to protect it.

Sincerely,

Mark Bohrer  
18479 McCoy Avenue  
Saratoga, CA 95070

CC: <lurchl@ix.netcom.com>, <ltepcments@livingrivers.org>

**From:** <Marksalomon@aol.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Fri, Jan 26, 2007 10:25 PM  
**Subject:** I support Decommissioning of Glen Canyon Dam

Mr. Rick Gold  
Regional Director, Bureau of Reclamation  
Upper Colorado Region  
Attn: UC-402

125 South State Street  
Salt Lake City, Utah 84138-1147

Dear Mr. Gold,

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First, I would like to express my tremendous dismay with the Department of Interior's mishandling of the recovery efforts in Grand Canyon National Park over the past 40 years, and that the information presented so far by the Bureau of Reclamation indicates that this EIS promises more of the same.

While new plans for ongoing investigation and experimentation can be beneficial, they are useless amidst a backdrop where the commitment to implement those plans is virtually non-existent. We've already experienced this with the completion of the first EIS twelve years ago, and there's nothing outlined in the purpose and need for this EIS process to indicate things will be any different once this process concludes. For this exercise to yield any meaningful outcome, the EIS process must be reconceived incorporating the following:

1. Restructuring the focus of the EIS on the recovery.

The principal objective should not be the long-term operation of Glen Canyon Dam, but the ingredients necessary to bring about the recovery and preservation of endangered species within the Colorado River corridor of Grand Canyon National Park. While such objectives may not be mutually exclusive, this has yet to be proven, and as such, one should precede the other. The focus must first address the ingredients necessary to restore the natural process to Grand Canyon's river ecosystem, and secondly how, and at what costs, can the Glen Canyon Dam/Lake Powell reservoir system be operated in order to achieve this.

The restoration ingredients must include:

- \* The return of river flows consistent with the Colorado River's natural discharge into Grand Canyon.
- \* The re-establishment of a water temperature regime consistent with seasonal temperature variations of the Colorado River in Grand Canyon.
- \* The re-establishment of sediment inputs into Grand Canyon consistent with the amount that would be received in a dam-free environment.
- \* The elimination of non-native species, which have taken hold in the artificial riverine environment created by Glen Canyon Dam operations.

2. Evaluate the Decommissioning of Glen Canyon Dam.

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perceived water supply and hydroelectric benefits, BoR has additional incentive to examine a decommissioning or no-dam alternative consistent with the Council on Environmental Quality guidelines.

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Sincerely,

Mark Salamon

18 Shore Drive

Harwich, MA 02645-1603

508-432-2064

**From:** "Mark Steffen" <steffentlyrod@lycos.com>  
**To:** "CREDA" <creda@qwest.net>  
**Date:** Tue, Feb 27, 2007 7:13 PM  
**Subject:** [RE]Glen Canyon scoping comments

**CC:** "GCDExpPlan GCDExpPlan" <GCDExpPlan@uc.usbr.gov>, "Bradley Warren" <WARREN@wapa.gov>, <jshiel@state.wy.us>, <creda@qwest.net>

Hi Leslie and others,

This is OK with me. However, the daily flow fluctuations expressed in this come closer to Alternative A variation. Particularly the 8,000cfs daily variation in September- November. I think Alternative A did not increase daily variations except in winter and summer. However, I believe that modest (or even substantial) increases in daily fluctuations will benefit the AFB and of course improve power generation and flexibility so I am OK with it, especially as an experiment to see what the effects are and hopefully we can avoid ANY steady flows which would be detrimental to the AFB.

For those who have not seen them, I am attaching the comments that I sent in last week, which includes 14 hypotheses.

Thanks,  
Mark Steffen FFF/NAF

-----[ Received Mail Content ]-----

Subject : Glen Canyon scoping comments

Date : Tue, 27 Feb 2007 17:47:14 -0700

From : "CREDA" <creda@qwest.net>

To : "GCDExpPlan GCDExpPlan" <GCDExpPlan@uc.usbr.gov>

Cc : "Bradley Warren" <WARREN@wapa.gov>, <steffenflyrod@lycos.com>, <jshiel@state.wy.us>, <creda@qwest.net>

Please see attached letter and acknowledge receipt. Thank you.

Comments for the EIS for a Long Term Experiment Plan (LTEP) for Glen Canyon Dam. From Mark Steffen, Federation of Flyfishers / Northern Arizona Flycasters, 2-20-2007. Att: Mr. Rick Gold, Regional Director, Bureau of Reclamation, Upper Colorado Region Att: UC-402.125 South State Street, Salt Lake City, Utah 84138-1147

Randy Peterson (BOR) in response to a question from Norm Henderson (NPS) at the Phoenix scoping meeting (1-04-07) stated that "Core or Key Hypotheses" need to be identified for a "solid science program". Therefore my comments here are in the form of hypotheses with clarifying comments and in some cases suggested experiments.

Hypotheses to be investigated:

Hypothesis number one:

The often reported conclusion that there was a steep decline in the Grand Canyon humpback chub population between 1987 and 1994 may be inaccurate and the magnitude of the decline has certainly been grossly overstated.

-Evidence for this hypothesis has been presented at TWG meetings on at least one occasion by USFWS biologist Tom Czaplak indicating that due to extensive "tag Shedding" in the 1980's the humpback chub population was grossly overestimated.

Hypothesis number two:

The conclusion in 2002 that the Grand Canyon humpback chub population had declined to approximately 1000 individuals was a gross underestimation and completely inaccurate.

-Evidence for this hypothesis also comes from data presented to the TWG by Tom Czaplak of the USFWS. Further explanation for this inaccurate population estimate needs to be presented because multiple Trout killing and Trout suppression projects were established in part based on this inaccurately low humpback chub estimate.

Hypothesis number three:

If the Grand Canyon humpback chub population did decline during the period of 1987 to 1992 it should have been expected and it should have been attributed to the drastic experimental EIS flows in 1990-1991 that destroyed the aquatic food base and also starved to death almost the entire Trout population in Glen Canyon and Marble Canyon. The humpback chub population should have been expected to decline although to a lesser extent than trout because of the humpback chub's reliance on temporary or permanent residence in the warm water of the Little Colorado River.

**-Evidence for this hypothesis can be found by investigating the hydrograph of the 1990-1991 EIS experimental flows, which will show that they were designed extremely poorly and could not have been planned any better if the objective was to destroy the Colorado River aquatic ecosystem. We can only hope retrospectively that some scientists were fired for that debacle. The largest problem was the often repeated three or four day period of very low flows (steady 5,000cfs for aerial photos) in between each experimental flow. The 1995 FWS B.O. also asked for an investigation of the disastrous EIS flows and aquatic food base damage in the last page of the appendix.**

**Hypothesis number four:**

**Humpback chub population estimates can be inaccurately low in any year if humpback chub from the Colorado River do not spawn every year in the Little Colorado River, exhibiting the behavior known as "skip spawn".**

**-Because the government agencies responsible for estimating the size of the Grand Canyon humpback chub population rely entirely on counting fish in the Little Colorado River including counting the chubs that migrate from the Colorado River to spawn in the Little Colorado River, population estimates can vary widely if as identified by SWCA biologist, Rich Valdez, chubs can often skip spawning for reasons unknown but likely to be associated with poor condition related to food availability, or their long life span (35 years plus?). Thus in years when population estimates were low they may have been inaccurate if conditions in the Colorado River were poor and many chubs did not go into the Little Colorado River to spawn and to be counted. A good example would be the years of 1990-1993 when the aquatic food base of the Colorado River had been destroyed by the EIS flows. Many humpback chub residing in the Colorado River may have skipped spawning in the Little Colorado River during those years, thus not having been counted and leading to inaccurately low population estimates in those years, suggesting a "population decline". Other examples might be years when extremely high Paria and Little Colorado River sediment inputs led to long and extended periods of high turbidity, drastically reducing aquatic food base production and food base standing crop and again leading to skip spawn and inaccurate low population estimates.**

**-Numbers of humpback chub migrating to spawn in the Little Colorado River may be a function of Colorado River aquatic food base quality and productivity and may be reduced by excessive turbidity.**

**-Evidence for this could be found in the EIS experimental flows hydrograph and from investigating Paria and Little Colorado River hydrographs to see if periods of high Colorado River turbidity correlate with years of low chub Little Colorado River population estimates.**

**-Adult humpback chub need to be in good condition to migrate and spawn in the Little Colorado River. We should be very concerned about current aquatic food base conditions**

in the Colorado River that have apparently declined significantly (since the 2004 BHBF) judging by large unexplained reductions in trout numbers in Glen Canyon and Marble Canyon in all areas where the government was not actively killing them. We should be very concerned that the USFWS captures such high numbers of spawning male humpback chub relative to extremely low numbers of females in their LCR humpback chub monitoring trips.

**Hypothesis number five:**

USFWS and AGF techniques for capturing humpback chubs in the LCR are dependant on humpback chub desiring to enter nets as cover during clear water conditions or when the nets are baited and the nets apparently vastly disproportionately catch small chubs and male chubs. Does this influence accuracy of humpback chub population estimates? Monitoring of humpback chub is too intensive. Netting and handling fish four times per year by the USFWS and once per year by the AGF is excessive.

**Hypothesis number six:**

Because non-native fish (carp, catfish, bullheads, sunfish, etc.) in the Little Colorado River do not enter FWS nets but are witnessed, claims by the FWS that non-native fish are a small percentage of the fish in the Little Colorado River do not seem to be credible. Warm water non-native fish in the warm Little Colorado River are likely to be a much greater threat to humpback chub than trout residing in cold water in Bright Angel Creek.

-Stop killing trout in the cold water of Bright Angel Creek and START killing the non-native warm water fish living in the Little Colorado River, the warm water home of the warm water humpback chub in the Grand Canyon.

**Hypothesis number seven:**

The Colorado River ecosystem below Glen Canyon Dam has adapted and evolved into a highly productive "tidal" ecosystem created by daily fluctuating flows resulting from meeting hydropower generation demands. Glen Canyon Dam improved the Colorado River for humpback chub and trout, by reducing turbidity, increasing flows in summer, fall and winter, increasing productivity and diversity of the aquatic food base, increasing the size and number of riparian areas and driving out the predominant warm water non-native channel catfish (which may have eventually extirpated humpback chubs and likely did extirpate razorback suckers, pikeminnows and bonytail chubs). Cold Water released from Glen canyon dam also has prevented the invasion of stripped bass, smallmouth bass and other warm water non-native fish from Lake Mead.

-Winter water temperatures are much warmer post-dam than pre-dam. Fluctuating flows in winter prevent shoreline water from freezing due to freezing air temperatures. Steady flows in winter would lead to freezing shoreline water temperatures and young humpback chub would leave shore for warmer deeper water and be more subject to predation (including cannibalism by adult humpback chubs).

-Glen Canyon Dam provides benefits to recreational rafting (extended and predictable season and beach cleansing from daily flow fluctuations) and recreational fishing.

#### Hypothesis number eight:

Experimental flows have generally done more harm than good. The aquatic food base (algae, plants, insects etc.) and the sand bars and beaches reach an equilibrium state with daily fluctuating flows that has frequently been disrupted by experimental flows of all types (beach building flows, trout spawn suppression flows, steady flows, aerial photo flows, etc.) generally with unintended negative consequences.

-Past experiments have been extreme in deviation from flows established by the 1995 EIS. For example the Non-native Fish Suppression flows (NNFSFs) of 2003-2005, were an extreme deviation, increasing daily fluctuations up to 150% in the months of March and April (from 6,000 cfs daily fluctuation to 15,000 cfs fluctuation). The beach building flood in 2004 increased the river flow by 500%.

-Experimental EIS flows in 1990 and 1991 were very extreme and should not be repeated. Extreme damage was done to the aquatic food base. Trout at Lees Ferry and throughout the Grand Canyon slowly starved to death (humpback chub likely also). The Lees Ferry trout fishery had to be sustained by stocking catchable sized trout versus the fingerling sized trout usually stocked at that time.

#### Hypothesis number nine:

The 1995 EIS ROD was an overreaction and imposed excessive restrictions on Glen Canyon Dam hydropower generation and flexibility. Minor increases in daily flow fluctuations and ramp rates versus the 1995 ROD restrictions could enhance tidal ecosystem benefits producing even more *Cladophora* (adapted to an unstable environment) as a percentage of aquatic plants, more upright diatoms (preferred food of fresh water shrimp) versus adnate diatoms, more fresh water shrimp, more drifting aquatic plants and insects, fewer inedible New Zealand mud snails, less "rock snot" algae and less opportunity for invasion of the new non-native *Quagga* mussels.

-Focus AFB experiments on diatoms, the main food source for fresh water shrimp and an important food source for fish when ingested with *Cladophora*.

-Future flow experiments should be moderate, “tweakings” of the Modified Low Fluctuating Flows (MLFF) established by the 1995 EIS.

-Moderate increases in daily flow fluctuations and ramping rates should be acceptable experiments. Increased flow fluctuations should focus on enhancing the tidal benefits on the aquatic food base and camping beach sanitation and should improve and restore hydropower generation capacity and flexibility to the extent possible without undue hazards to angling, boating and rafting

-Give some recognition to and study WAPA’s voluntary initiation of “No Drop” flows that have prevented excessively low minimum flows on Saturday and Sunday nights which WAPA is allowed to do under the 1995 ROD. This no drop strategy protects the aquatic food base and improved boating and rafting conditions.

-Also recognize and include in this EIS process the aquatic food base experimental concepts developed by WAPA, Argonne National Laboratory, AZGF and FFF/NAF.

#### Hypothesis number ten:

Steady flows of any duration will have disastrous consequences for the “tidal” ecosystem created by the daily flow fluctuations from Glen Canyon Dam. Cladophora (algae host plant for diatoms, the food source for fresh water shrimp) relies on flow disturbances for reproduction by fragmentation. Steady flows would create ideal habitat suitable for massive expansion of invasive inedible non-native New Zealand Mudsnails, invasive Rock Snot algae and the new invasive Quagga mussels.

-Any steady flow experiments should include a brief, daily spike of at least 5,000cfs in order not to destroy the highly productive tidal ecosystem created by fluctuating flows from Glen Canyon Dam. The spike could be of short enough duration to attenuate to the steady flow desired by the USFWS in the proximity of the Little Colorado River (approximately 80 miles downstream).

-Seasonally Adjusted Steady Flows as proposed by the USFWS as a “Reasonable and Prudent Alternative” are ridiculously simplistic, absurdly expensive, rife with potential for unintended negative aquatic food base consequences (drastic monthly volume changes and non-native species invasion) and inappropriate for a complex ecosystem that has benefited from and become adapted to fluctuating flows.

-Most proposed steady flow scenarios have drastic sudden monthly changes that would cause stranding and destruction of the aquatic food base.

-Colorado River flows naturally vary daily by 1,000 cfs to 5,000 cfs or more (see USBOR Lake Powell inflow gauge data). So a seasonally adjusted steady flow would not be a natural flow.



**Hypothesis number eleven:**

**Sediment augmentation should not be seriously considered because of the negative affect of turbidity on the aquatic food base as pointed out repeatedly at TWG meetings by Carl Walters. Natural periods of high turbidity lead to reduced food supplies for fish (trout and chubs, etc.) in Marble Canyon and Grand Canyon. Excessive turbidity could cause a decrease in humpback chub condition, could lead humpback chub to skip spawning, stay in the main Colorado River and cause fewer fish to be counted by scientists in the Little Colorado River and produce inaccurately low population estimates.**

**-Could this be an explanation for the very low numbers of female chubs versus male chubs captured in the Little Colorado River by the USFWS?**

**Hypothesis number twelve:**

**Re-introduction of supposedly "extirpated" razorback suckers and bonytail chubs should be given no consideration due to the negative consequences of hybridization with flannelmouth suckers and humpback chubs.**

**Hypothesis number thirteen:**

**BHBFs are not a panacea for all resources. BHBFs create unstable beaches and make all existing beaches less stable and more prone to erosion. Under a stable version of fluctuating flows beaches achieve an equilibrium state. It is inaccurate that humpback chub benefit from floods or that the aquatic food base becomes senescent and needs to be trimmed by a BHBF. Senescent algae is removed daily by daily flow fluctuations.**

**.-The fall 2004 BHBF caused damage to the aquatic food base that did not recover for almost two years.**

**-Consider BHBFs in the summer when the aquatic food base is strongest and the change in flow will not be as pronounced as in the spring.**

**-Consider much briefer BHBFs. The 1996 BHBF was 7 days, 2004 BHBF was 60 hours, why not 10 hours, or less?**

**-Would a brief BHBF of 10 hours build beaches in Marble Canyon but attenuate and not affect beaches further downstream?**

**-Power plant capacity flows ("Habitat Maintenance Flows" HMFs) should be considered as an alternative to "Beach Habitat Building Flows" (BHBFs) that exceed power plant capacity. HMFs would be much less expensive and may be less damaging to the aquatic food base.**

Hypothesis number fourteen:

A Temperature Control Device probably should not be built because the cost is too extravagant. Negative and positive consequences are too complicated to predict. Warm water non-native fish (Catfish, striped bass, smallmouth bass etc.) would become a very serious problem for humpback chub. Some additional drowning may occur due to increases in the amount of swimming.

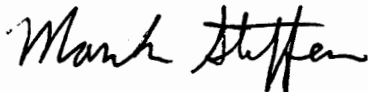
**OTHER PERTINENT COMMENTS:**

-Focus some future experiments on understanding why the Lees Ferry trout fishery has declined in the last ten years, and focus on ways that the trout fishery can be improved, including development of plans to stock trout when necessary or to compensate for any unintended negative consequence from experiments or natural causes or a repeat of the low dissolved oxygen in GCD releases.

-Water years with releases higher than 8.23 million acre feet should be planned to avoid damaging the aquatic food base from a high steady flow (25,000cfs) followed by low fluctuating flows (7,000-13,000cfs) and stranding the aquatic food base above 13,000cfs by sudden permanent de-watering.

-Stop killing trout in the cold water of Bright Angel Creek where warm water humpback chub do not live. Start killing non-native warm water fish (carp, catfish, shiners, bullheads, sunfish etc.) in the Little Colorado River, the warm water home of humpback chub in the Grand Canyon.

Respectfully submitted by:



Mark Steffen  
Federation of Flyfishers  
Northern Arizona Flycasters  
11475 Homestead Lane  
Flagstaff, Arizona, 86004  
(928) 522-0617  
steffenflyrod@lycos.com

ORIGINAL

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Date	To
	FOR

Mark W. Belles  
 9318 Willard Street  
 Rowlett, Texas 75088  
 glen.canyon@verizon.net

Regional Director  
 Bureau of Reclamation, Upper Colorado Region  
 Attn: UC-402  
 125 South State Street  
 Salt Lake City, Utah 84318-1147

08 January 2007

Dear Director,

Regarding the Notice of Intent to prepare an environmental impact statement (EIS) and notice to solicit comments and hold additional public scoping meetings on the adoption of a Long-Term Experimental Plan for the operation of Glen Canyon Dam and other associated management activities under the authority of the Secretary of the Interior (Secretary) (Federal Register, Vol. 71, No. 238), please place my name on the mailing list. Also please confirm via USPS or email that my name has been placed on the mailing list.

I am very pleased to read this Notice of Intent. I participated in the proposal for the Glen Canyon Dam Temperature Control Device NEPA process that occurred back in 1999-2000 and am glad to see that the process has not only been restarted, but also extended in general to encompass a Long-Term Experimental Plan.

I look forward to reading the scoping material. Would it be possible to obtain a copy of the material presented at the public meetings held during the first week of January?

Thank you for the opportunity to participate in this process,





# Grand Canyon River Runners Association

preserving public access to the Colorado River

## **Comments on the development of alternatives for a Long Term Experimental Plan Environmental Impact Statement**

Grand Canyon River Runners Association, a 501(c)(3) organization incorporated in 2004 in the State of Arizona, represents the nearly 19,000 professionally outfitted boaters who experience the Colorado River through Grand Canyon annually. Part of our mission statement is, "To promote the highest ideals of resource stewardship and responsible, sustainable use of the Grand Canyon's Colorado River corridor as fully consistent with maintenance of the area in an unimpaired natural condition." We take this very seriously.

The forthcoming EIS on the Long Term Experimental Plan for management of Glen Canyon Dam is of huge importance to us and to the future of the river corridor. If the downstream effects of Glen Canyon Dam are to be corrected and/or mitigated it is essential that the volumes of good science produced in the region be utilized to their fullest. It is time to begin using the cumulative knowledge of the many hard working scientists who have spent several decades studying and documenting the detrimental effects of the Dam on the river corridor, and to heed their recommendations.

- Grand Canyon River Runners Association embraces the Grand Canyon Protection Act and urges that the EIS include alternatives that reflect the spirit of this act, which would positively impact native species, ecosystems, sediment, cultural resources and visitor use.
- We ask that the National Park Service act as a joint lead agency in the EIS process.
- Grand Canyon does not require further scientific study for the purposes of the EIS. Use the good science already available as the basis for all alternatives for environmental restoration.
- LTEP alternatives must include legally required protection for endangered species and for preservation of cultural resources.
- Beach Habitat Building Flows must be common to all alternatives. Sediment triggers should be utilized based on scientific data, not on the needs of special interest stakeholders.
- All alternatives should include a Selective Withdrawal Device for temperature regulation and improvement of water quality.

Thank you for your consideration of these comments.

Respectfully submitted by the Board of Directors of Grand Canyon River Runners Association.

*Board of Directors*  
*Mari Carlos - president Pam Whitney - vice president/treasurer Kristen Ross - secretary*  
*Catharine Cooper Linda Kahan Robert McConnell B. Dwight Sherwood*

P.O. Box 1833 Flagstaff, AZ 86002 [www.gcriverrunners.org](http://www.gcriverrunners.org)

**From:** <Meapeak@aol.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Thu, Jan 4, 2007 6:27 AM  
**Subject:** Glen Canyon EIS comments

As a longtime fan of the Grand Canyon, I am deeply concerned that the Glen Canyon EIS reflect the spirit of the Grand Canyon Protection Act - which at its core is meant to preserve and protect the areas below Glen Canyon Dam. The Grand Canyon has suffered immeasurably from the presence of the dam and how it has been operated since inception - including the lack of sediment, destruction of native species and habitat. It's bad enough that the dam destroyed one of the wildest and most beautiful places in our country - Glen Canyon . . . let's make sure it doesn't permanently damage the areas downstream also.

I would also recommend that the NPS serve as a joint lead agency for this EIS process. National Park values and resources downstream of Glen Canyon Dam are strongly influenced by dam operations. LTEP alternatives must be scientifically credible with well-defined scientific hypotheses – don't just develop a plan and then try to fit the science to it. Science FIRST, please, specifically based on an ecosystem approach. The economic analyses should not be restricted to the impacts to hydropower, but should also include the impacts to other resources including recreation, local economies, and non-market values.

I would also like to see a beach habitat building flow in early 2007 in order to provide urgently needed data to inform this Long Term Experimental Plan. This process should be included in all LTEP alternatives, utilizing sediment triggers with specified frequency based on best scientific data. I also support the development of a selective withdrawal device for temperature control and improved water quality as a common element to all alternatives.

Thank you-

Mary Ellen Arndorfer  
Flagstaff, AZ

**From:** "Matt Herrman" <mateoboneo@earthlink.net>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Wed, Feb 14, 2007 9:13 PM

Hi ya,

Regarding the LTEP, you're going to have to deal with the dam sooner or later, let's consider doing away with it now.

--- Matt Herrman  
Flagstaff, AZ  
--- mateoboneo@earthlink.net

ORIGINAL

ad630207-32

MAR 02 '07

February 22, 2007

Mr. Rick Gold  
Regional Director  
Bureau of Reclamation  
Upper Colorado Region  
Attn: UC-402  
125 South State Street  
Salt Lake City, UT 84138-1147

ENV-6.00
GC
# 3834548
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Subject: Comments on Glen Canyon Dam EIS

Dear Mr. Gold:

Thank you for allowing us the opportunity to submit comments for the Environmental Impact Statement on the Long-term Operations for the Future Operation's of Glen Canyon Dam. Studies completed in 1996 by the Bureau of Reclamation and other Federal, State, Tribal and academic entities documented that the river ecosystem has been significantly impacted since 1956 due to the operations of Glen Canyon Dam. The 1996 Record of Decision and the Grand Canyon Protection Act promised that the river environment of the Grand Canyon would improve. Unfortunately we continue to see a decline in the ecological integrity of the river system.

It is unclear from the information presented in the scoping meetings how the implementation of the Long-term operations plan will remedy or rectify the situation that exists today. The new plans for ongoing investigation and experimentation may be beneficial for gathering new data however it is unclear how this information will be integrated and implemented into changes in the Glen Canyon Dam operations that will allow for listed fish species to recover.

The following comments should be implemented in order to allow for a future in the Grand Canyon that meets the requirements of the Grand Canyon Protection Act.

**1. Restructure the Focus of the EIS on Native Fish Recovery.**

Of the four endangered fish species that historically existed in the Grand Canyon, only the humpback chub remains. Three of the native listed fish species have been extirpated from the Grand Canyon and the humpback chub remains however population numbers have dropped to perilously low levels. When evaluating the long-term experimental plan for the future operations at Glen Canyon Dam it is important that the information learned be applied to protecting and restoring the species and habitats in the Grand Canyon. It is clear from data collected by the Grand Canyon Monitoring and Research Center that continuing operation business as usual will continue to lead to negative impacts in the Grand Canyon. Therefore it is recommended that a new suite of operation options be included in the review in the EIS:

- An evaluation of a natural flow regime operation scenario.
- The implementation and re-establishment of a water temperature regime consistent with seasonal temperature variation for the Colorado River in Grand Canyon.
- The implementation and re-establishment of seasonal sediment inputs into Grand Canyon at a level that would provide cover for native fish and provide for the build up of sands and silts necessary for building beaches and backwater habitats.
- Aggressive non-native species control including plants, birds, and fish.

## **2. Impacts on Lake Powell and Glen Canyon**

The anticipated management of the Colorado River includes a large probability that flow regimes will be reduced due to reduced snowpack and lowered runoff volume. This probability should be acknowledged in the EIS and addressed through alternative scenarios for evaluation of the impacts to the Grand Canyon environment. Changes in the operations of Glen Canyon Dam will have a direct and immediate impact on flow patterns. The long-term monitoring plan should address how this potential will be addressed. Specific recommendations include:

- Identify potential flow regimes that may occur as a result of changing drought operation patterns at Glen Canyon Dam.
- Identify potential changes in the elevation levels of Lake Powell and how this will potentially impact the limnological conditions in the reservoir and the resulting quantity and quality of releases to the Grand Canyon.

## **3. Long-Term Experimental Plan**

The long term should provide the basis for each scientific study that is to be conducted in the Grand Canyon and in Lake Powell. Special interest science can be as bad as special interest decisions in that critical research and data collection is not collected, often at the loss of more important information. Specific actions that should be included in the EIS include:

- Is the USGS the appropriate entity to run the science program in the Grand Canyon?
- Identification and priority of research. It should be inherently clear and transparent as to how specific science programs are agreed to and the process to get timely data to decision-makers.
- Adequacy of support to Native American tribes in protecting their resources in the Grand Canyon.

## **4. Adaptive Management Program**

The Glen Canyon Dam Adaptive Management Program was administratively initiated when the Record of Decision was signed by Secretary of Interior Babbitt in the fall of 1996. The intent of the program was to build on the success of the Glen Canyon Environmental Studies and to more fully integrate operational decisions at the dam with



the increasing scientific information. In October 2005 the U.S. Geological Survey's SCORE report on the success of the Adaptive Management Program was reviewed. The SCORE review did not reflect favorably on the Adaptive Management Program IF the intent was to meet the requirements of the Grand Canyon Protection Act and the intent of the EIS.

Of concern with the Adoption of a Long-Term Experimental Plan for the Future Operations of Glen Canyon Dam is that it appears that the SCORE report has not been taken into consideration or actions to resolve some of the primary scientific issues identified. The current set up of the Science Program and identified review process does not take into consideration that we cannot continue business as usual if we are to meet the requirements of the Grand Canyon Protection Act and the recovery of species and their habitats in the Grand Canyon.

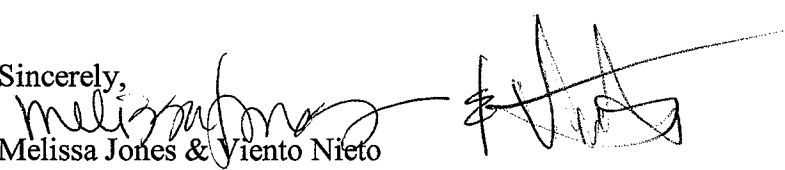
The EIS scope should include the following:

- An independent review of the existing Adaptive Management Program with recommendations of actions necessary to make it more effective.
- A review of the current peer-review process and Scientific Advisory Program. The concept of "conflict of interest" should be addressed to the program head and the group involved in the review.
- A revision of the membership organization for the Adaptive Management Program to provide balance between development and management interests and conservation interests. The current organization is unfairly tipped in the favor of water and power special interest groups.

The Grand Canyon Protection Act (1992) and the initial EIS on Glen Canyon Dam in 1996 provided a great opportunity for Reclamation to step forward and be a leader in the management of the Colorado River. The past ten years have not provided the information or the process that was envisioned in 1996 and needs to be reviewed and revised in the current EIS process.

Thank you for consideration of these comments.

Sincerely,

  
Melissa Jones & Viento Nieto  
1123 Windsor Place  
South Pasadena, CA 91030

**From:** <Toofastm@cs.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Sat, Feb 10, 2007 3:59 PM  
**Subject:** Glen Canyon Dam EIS

To whom it may concern, It is obvious to the most casual observer that the operation of the Glen Canyon Dam has had multiple negative impacts on it's downstream neighbor, the Grand Canyon. While I don't advocate de-commissioning the dam, I do strongly support measures that could help restore the river corridor through the G.C. The technologies to warm the water, rebuild the once magnificent beaches, and irradicate non-native plant species, are in existence. The policy to reverse man-made damage to one of God's finest creations is not. I urge you to think of not only present, but future generations in your consideration of this matter.

Very truly yours,

Michael K. Arnett  
2094 Zermatt Ln. unit D  
Vail, CO 81657  
(970) 827-5970

# RECLAMATION

*Managing Water in the West*

U.S. Department of the Interior  
Bureau of Reclamation

— Comment Card —

COMMENTS DUE BY WEDNESDAY, FEBRUARY 28, 2007

PLEASE PRINT

Date: 1/17/07

Name: NANCY HORNEWER Title (if applicable): \_\_\_\_\_

Telephone: 928-556-7275 Fax: 928-556-7112

Organization/Business (if applicable): USGS E-Mail: njhornew@usgs.gov

Address: 2255 N. Gemini Drive

City: Flagstaff State: AZ Zip: 86001

Yes, I would like to be added to your mailing list: E-Mail  US Mail

The Bureau of Reclamation is seeking public comment on the adoption of a Long-Term Experimental Plan for the future operation of Glen Canyon Dam and other associated management activities. Your input on the scope of the project and the issues and alternatives that should be analyzed is greatly appreciated. Please write legibly.

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Please submit your comments in the space provided, fold the card in half, tape the edges, and mail the completed card back to:  
Regional Director, Bureau of Reclamation, Upper Colorado Region, Attention: UC-402, 125 South State Street, Salt Lake City, Utah 84138-1147.  
**Comments must be received by February 28, 2007.**

**From:** <webmaster@cnha.org>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Mon, Jan 29, 2007 3:07 PM  
**Subject:** LTEP EIS Scoping Comments

Dear Mr. Gold,

Thank you for the opportunity to submit the following scoping comments for the Environmental Impact Statement on the Long-term Operations for the future operations of Glen Canyon Dam. The river ecosystem in Grand Canyon National Park has suffered immensely over the past forty years due to the operations of Glen Canyon Dam, and it's vital that a fresh look at the problem be undertaken. I have concerns, however, that the EIS as envisioned is destined to fail in this regard unless a number of critical issues are addressed.

First, I would like to express my tremendous dismay with the Department of Interior's mishandling of the recovery efforts in Grand Canyon National Park over the past 40 years, and that the information presented so far by the Bureau of Reclamation indicates that this EIS promises more of the same.

While new plans for ongoing investigation and experimentation can be beneficial, they are useless amidst a backdrop where the commitment to implement those plans is virtually non-existent. We've already experienced this with the completion of the first EIS twelve years ago, and there's nothing outlined in the purpose and need for this EIS process to indicate things will be any different once this process concludes. For this exercise to yield any meaningful outcome, the EIS process must be reconceived incorporating the following:

1. Restructuring the focus of the EIS on the recovery.

The principal objective should not be the long-term operation of Glen Canyon Dam, but the ingredients necessary to bring about the recovery and preservation of endangered species within the Colorado River corridor of Grand Canyon National Park. While such objectives may not be mutually exclusive, this has yet to be proven, and as such, one should precede the other. The focus must first address the ingredients necessary to restore the natural process to Grand Canyon's river ecosystem, and secondly how, and at what costs, can the Glen Canyon Dam/Lake Powell reservoir system be operated in order to achieve this. The restoration ingredients must include:

The return of river flows consistent with the Colorado River's natural discharge into Grand Canyon.

The re-establishment of a water temperature regime consistent with seasonal temperature variations of the Colorado River in Grand Canyon.

The re-establishment of sediment inputs into Grand Canyon consistent with the amount that would be received in a dam-free environment.

The elimination of non-native species, which have taken hold in the artificial riverine environment created by Glen Canyon Dam operations.

2. Evaluate the Decommissioning of Glen Canyon Dam.

The no-dam alternative must be evaluated as one means of achieving the restoration of the natural process necessary for the recovery and preservation of endangered species in Grand Canyon's river corridor. The no-dam alternative provides a valuable base line from which to evaluate other operational alternatives. Additionally, in light of the climate and human induced changes affecting flows into Lake Powell, and thus the viability of the dam to meet perceived water supply and hydroelectric benefits, BoR has additional incentive to examine a decommissioning or no-dam alternative consistent with the Council on Environmental Quality guidelines.

### 3. Replace the Working Groups of the Adaptive Management Program

Despite being given specific instructions twelve years ago as outlined in the 1995 EIS on Glen Canyon Dam operations, the Glen Canyon Dam Adaptive Management Program (AMP) has failed to deliver in almost every aspect, causing Grand Canyon's river ecosystem to endure further damage. Many of AMP's failings were spelled out in the United State's Geological Survey's SCORE Report of October 2005. It was precisely these failings that have compelled BoR to undertake this new EIS process as part of its settlement agreement with environmental groups last year. Absent any structural changes to the AMP, any recommendations coming out of this EIS process will be of little value, as there are no mechanisms to ensure they won't be ignored as were those from the EIS twelve years ago.

Dominated by water supply and hydroelectric power interests, it's not surprising that the AMP has been intransigent toward addressing the true needs for endangered species recovery in Grand Canyon. Scientific, not political and commercial interests, should be the sole advisors to the Secretary of Interior on how Grand Canyon's river ecosystem should be studied, monitored and managed consistent with the recovery objectives.

Therefore, the AMP should be replaced by an open source and independent body of research and advisory scientists, where the monitoring and research data are consistently and thoroughly peer-reviewed prior to formulating any recommendations to the Secretary of Interior.

We're closing in on 50 years of ecological destruction in Grand Canyon National Park due to the operations of Glen Canyon Dam. For much of this time the public has been asking that this be remedied. We continue to lose valuable time and species as the BoR procrastinates and resists the public's mandate to put the resource first. While there are plenty of substitutes to achieve the benefits Glen Canyon Dam may provide, there will never be another Grand Canyon. It's time for the BoR to stop thwarting the public's interest to protect it.

Sincerely,

Neal Herbert  
1940 W. Highland Drive  
Moab, UT 84532

CC: <ltepcments@livingrivers.org>

**From:** <laughingmoon77@hotmail.com>  
**To:** <GCDExpPlan@uc.usbr.gov>  
**Date:** Fri, Jan 26, 2007 7:30 PM  
**Subject:** LTEP EIS Scoping Comments

Dear Mr. Gold,

Thank you for the opportunity to submit the following scoping comments for the Environmental Impact Statement on the Long-term Operations for the future operations of Glen Canyon Dam. The river ecosystem in Grand Canyon National Park has suffered immensely over the past forty years due to the operations of Glen Canyon Dam, and it's vital that a fresh look at the problem be undertaken. I have concerns, however, that the EIS as envisioned is destined to fail in this regard unless a number of critical issues are addressed.

First, I would like to express my tremendous dismay with the Department of Interior's mishandling of the recovery efforts in Grand Canyon National Park over the past 40 years, and that the information presented so far by the Bureau of Reclamation indicates that this EIS promises more of the same.

While new plans for ongoing investigation and experimentation can be beneficial, they are useless amidst a backdrop where the commitment to implement those plans is virtually non-existent. We've already experienced this with the completion of the first EIS twelve years ago, and there's nothing outlined in the purpose and need for this EIS process to indicate things will be any different once this process concludes. For this exercise to yield any meaningful outcome, the EIS process must be reconceived incorporating the following:

1. Restructuring the focus of the EIS on the recovery.

The principal objective should not be the long-term operation of Glen Canyon Dam, but the ingredients necessary to bring about the recovery and preservation of endangered species within the Colorado River corridor of Grand Canyon National Park. While such objectives may not be mutually exclusive, this has yet to be proven, and as such, one should precede the other. The focus must first address the ingredients necessary to restore the natural process to Grand Canyon's river ecosystem, and secondly how, and at what costs, can the Glen Canyon Dam/Lake Powell reservoir system be operated in order to achieve this. The restoration ingredients must include:

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The no-dam alternative must be evaluated as one means of achieving the restoration of the natural process necessary for the recovery and preservation of endangered species in Grand Canyon's river corridor. The no-dam alternative provides a valuable base line from which to evaluate other operational alternatives. Additionally, in light of the climate and human induced changes affecting flows into Lake Powell, and thus the viability of the dam to meet perceived water supply and hydroelectric benefits, BoR has additional incentive to examine a decommissioning or no-dam alternative consistent with the Council on Environmental Quality guidelines.

### 3. Replace the Working Groups of the Adaptive Management Program.

Despite being given specific instructions twelve years ago as outlined in the 1995 EIS on Glen Canyon Dam operations, the Glen Canyon Dam Adaptive Management Program (AMP) has failed to deliver in almost every aspect, causing Grand Canyon's river ecosystem to endure further damage. Many of AMP's failings were spelled out in the United State's Geological Survey's SCORE Report of October 2005. It was precisely these failings that have compelled BoR to undertake this new EIS process as part of its settlement agreement with environmental groups last year. Absent any structural changes to the AMP, any recommendations coming out of this EIS process will be of little value, as there are no mechanisms to ensure they won't be ignored as were those from the EIS twelve years ago.

Dominated by water supply and hydroelectric power interests, it's not surprising that the AMP has been intransigent toward addressing the true needs for endangered species recovery in Grand Canyon. Scientific, not political and commercial interests, should be the sole advisors to the Secretary of Interior on how Grand Canyon's river ecosystem should be studied, monitored and managed consistent with the recovery objectives.

Therefore, the AMP should be replaced by an open source and independent body of research and advisory scientists, where the monitoring and research data are consistently and thoroughly peer-reviewed prior to formulating any recommendations to the Secretary of Interior.

We're closing in on 50 years of ecological destruction in Grand Canyon National Park due to the operations of Glen Canyon Dam. For much of this time the public has been asking that this be remedied. We continue to lose valuable time and species as the BoR procrastinates and resists the public's mandate to put the resource first. While there are plenty of substitutes to achieve the benefits Glen Canyon Dam may provide, there will never be another Grand Canyon. It's time for the BoR to stop thwarting the public's interest to protect it.

Sincerely,

Nikki Holladay  
1470 Red Oak Ct  
Rockford, IL 61107

**CC:** <laughingmoon77@hotmail.com>, <ltepcments@livingrivers.org>

G R A N D C A N Y O N T R U S T

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*Counselor*  
*Jemez Springs, NM*

February 28, 2007

Rick Gold, Regional Director  
Bureau of Reclamation  
Upper Colorado Region  
Attention: UC-402  
125 South State Street  
Salt Lake City, UT 84318-1147

Dear Director Gold:

Please find attached the Grand Canyon Trust's *Scoping Comments on the Long-Term Experimental Plan Environmental Impact Statement*.

Sincerely,

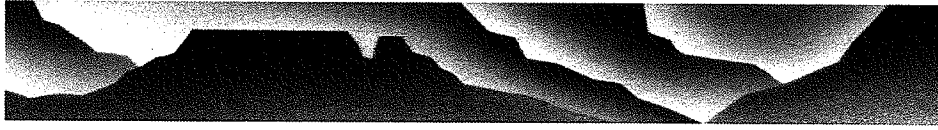


Nikolai Ramsey  
Senior Program Director, AMWG representative  
Grand Canyon Trust





# GRAND CANYON TRUST



## **Scoping Comments on the Long-Term Experimental Plan Environmental Impact Statement**

Development of legally and scientifically defensible alternatives in the Long-term Experimental Plan (LTEP) will not be an easy task of short duration. However, park resources continue to decline under current dam operations and a change is needed now. It is critical that the LTEP alternatives consist of alternative dam operating criteria (in concert with other management actions) designed to meet the intent of the Grand Canyon Protection Act (GCPA).

In addition to the GCPA, alternatives must be consistent with the many laws and policies that govern water releases, park resources and values, and hydropower production. Because of the trade-offs inherent in managing these resources, Congress has established priorities by enacting the GCPA. The GCPA makes it clear that dam operations must be guided first by meeting the legal requirements for water delivery to the lower basin, and then by the need for protecting park resources and values. All other considerations, including hydropower production, are a lower priority.

The Colorado River Ecosystem (CRE) has been drastically altered by the presence and operation of Glen Canyon Dam and other changes, and achieving the resource objectives for the CRE will require bold action. Thankfully, there is a tremendous pool of scientific information from the CRE and other river systems that is available for developing and testing alternative dam operations and other management actions to meet the intent of the GCPA.

The Grand Canyon Trust has been involved with the management of Grand Canyon since the Trust's founding on a Colorado River trip twenty years ago. The Trust was instrumental in passage of the GCPA and has been involved in the Glen Canyon Dam Adaptive Management Program (AMP) since its inception ten years ago. As stakeholders in the AMP, and as concerned citizens, we offer our time and expertise to assist in any way possible. We fervently hope that this process can develop and implement an alternative that will demonstrate leadership in environmental stewardship, and meet the AMP's vision of, "a stewardship worthy of the Grand Canyon."

## **The Long-Term Experimental Plan**

The intent of the Long-Term Experimental Plan, mirroring language in the GCPA, is stated in the Federal Register notice as follows (USDI 2006):

1. The purpose of the Long-Term Experimental Plan is to increase understanding of the ecosystem downstream from Glen Canyon Dam and to improve and protect important downstream resources.
2. The proposed Long-Term Experimental Plan is intended to ensure a continued, structured application of adaptive management in such a manner as to protect, mitigate adverse impact to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use, consistent with applicable Federal law.

The need for the LTEP is clear—park resources and values have continued to decline under the Modified Low Fluctuating Flows (MLFF) alternative selected in the 1995 Record of Decision (ROD) on the operation of Glen Canyon Dam. We offer the following comments.

### **The alternatives must be consistent with the Grand Canyon Protection Act.**

The Grand Canyon Protection Act was signed into law on 30 October 1992. The GCPA states: “The Secretary shall operate Glen Canyon Dam in accordance with the additional criteria and operating plans specified in section 1804 and exercise other authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use.”

The intent of the GCPA is unambiguous: to operate the dam in a manner that protects park resources and values. On the floor of the Senate, Senator McCain stated: “The erratic release of water from the dam to meet peak electric power demands [has] destroyed Colorado River beaches, and harmed other natural, cultural, and recreational resources. Somewhere along the line, we forgot our obligation to the canyon and to [t]he future generations for whom we hold it in trust. In response, I introduced the Grand Canyon Protection Act to reorder those priorities—to stop the damage and legally require the dam to be operated in a manner which will protect park resources (Congressional Record—Senate).”

Making clear Congress’ intent to prioritize Grand Canyon resources over power generation, Senator McCain had the following exchange with Senator Bill Bradley on the floor of Congress. Senator McCain asked, “Is it the Senator’s understanding that the

Grand Canyon Protection Act rejects the policy that power generation has any priority or primacy over protection of downstream environmental, recreation, or cultural values?"

Senator Bradley replied, "Yes" and clarified by stating, "Under the Grand Canyon Protection Act, all aspects of Glen Canyon Dam operations should be governed by the goal of protecting the downstream resources so long as those operations do not interfere with the allocation, apportionment, and deliveries provided for in the Colorado River compact resources (Congressional Record—Senate)."

Completion of the Environmental Impact Statement (EIS) on the Operations of Glen Canyon Dam was mandated by the GCPA, and the Record of Decision (ROD) was signed in October 1996. The ROD was intended to implement: "... an alternative dam operating plan that would permit recovery and long-term sustainability of downstream resources while limiting hydropower capability and flexibility only to the extent necessary to achieve recovery and long-term sustainability."

Research and monitoring during the last decade of ROD operations clearly demonstrate that the current ROD flows (i.e., MLFF) do not meet the intent of the GCPA (Gloss, et al. 2005). MLFF has been implemented since 1996, and the relatively similar Interim Flows were in effect from 1991 to 1996. Throughout this time, there has been a large number of research and monitoring projects, and numerous independent and in-house reviews and assessments. Although our knowledge of the CRE is certainly incomplete, and always will be, it is clear that new operating criteria are needed. MLFF did not go far enough to "stop the damage" and bring about the predicted "recovery and long-term sustainability" of park resources and values.

**The alternatives should represent a combination of annual dam operating criteria and other management actions that are designed to meet the intent of the GCPA.**

The alternatives in the EIS should identify revised dam operating criteria (and other management actions) that are likely to meet the intent of the GCPA. It would be irresponsible to conduct more research and monitoring on the effects of a flawed policy decision (i.e., ROD flows). And it would be deceitful to claim that we need to maintain MLFF while we conduct more research based on the premise that we do not know enough about the ecosystem to design plausible alternatives for meeting the intent of the Grand Canyon Protection Act.

The 1996 Record of Decision initiated an adaptive management approach for dealing with the inherent scientific uncertainty in ecosystem management. As stated by Melis et al. (2006), "An adaptive management effort is based on the premise that ecosystem responses to management actions are highly complex and often unpredictable. By embracing these uncertainties and approaching management actions as experimental 'treatments,' scientific outcomes can provide new information to managers regarding the range of possibilities for achieving resource conservation objectives." MLFF is an experimental treatment that has failed to meet its objectives (i.e., the intent of the GCPA). It is now critical to use the

information gained from this test (as well as other research) to identify revised operating criteria (and other management actions) that are most likely to meet the intent of the Grand Canyon Protection Act.

The intent of the adaptive management approach in the AMP is to provide for changes in dam operations. The EIS states, "It is intended that the ROD will initiate a process of 'adaptive management,' whereby the effects of dam operations on downstream resources would be assessed and the results of those resource assessments would form the basis for future modifications of dam operations." The ROD states, "This commitment includes the establishment of an Adaptive Management Workgroup, chartered in accordance with the Federal Advisory Committee Act; and development of a long-term monitoring, research, and experimental program which could result in some additional operational changes." The charter for the Adaptive Management Program is clear that the program will provide advice and recommendations to the Secretary of Interior on how best to meet the intent of the Grand Canyon Protection Act through advice on necessary research and monitoring as well as changes in dam operations.

In addition to a large-scale field experiment (i.e., testing new operating criteria), additional information can be derived from modeling and laboratory experiments. These three approaches should occur concurrently. In particular, the ecosystem model has languished over the last several years, and it should be updated with current information.

**The EIS needs to clearly identify the "park resources and values" downstream of Glen Canyon Dam that will be affected by the alternatives.**

The National Park Service is required to manage for park resources and values. Furthermore, the Grand Canyon Protection Act requires the Secretary of Interior to operate Glen Canyon Dam to "protect, mitigate adverse impacts to, and improve" park resources and values. To meet the intent of the LTEP, and provide the information needed for the Secretary of Interior to select the most appropriate alternative, park resources and values need to be clearly defined and the impacts of the different alternatives needs to be assessed against park resources and values.

Park resources and values arise from the National Park Service (NPS) Organic Act of 1916 and subsequent statutes (e.g., General Authorities Act of 1970, "Redwoods Act" of 1978). Park resources and values are defined in the 2006 Management Policies and Director's Order #55. The 2006 Management Policies states, "The 'park resources and values' that are subject to the no-impairment standard include: the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals; appropriate opportunities to experience

enjoyment of the above resources, to the extent that can be done without impairing them; the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and any additional attributes encompassed by the specific values and purposes for which the park was established.”

Park resources and values identified in the Management Policies are used as the foundation for the various management plans for Grand Canyon National Park (e.g., General Management Plan, Resource Management Plan, Draft Wilderness Management Plan, Colorado River Management Plan), and Glen Canyon National Recreation Area (e.g., 2005 Glen Canyon five-year strategic plan). Using these documents, it is clear that park resources and values for both Grand Canyon National Park and Glen Canyon National Recreation Area that may be affected by the alternatives include:

1. The natural distribution and abundance of natural communities and species (e.g., terrace and sand beach riparian communities, spring communities, humpback chub and other native fish).
2. Natural biological processes (e.g., genetic structure and diversity; incidence of predation, competition, diseases, parasites).
3. Natural physical processes (e.g., hydrology, water quality, sediment storage), that act upon the natural communities and species.
4. *In situ* maintenance of archeological resources.
5. Appropriate opportunities to experience enjoyment of the above resources to the extent that can be done without impairing them.

**Alternatives must be targeted at conserving park resources and values.**

The primary purpose of the EIS must be on developing and assessing alternatives to “protect, mitigate adverse impact to, and improve” park resources and values. It would not be appropriate to develop alternatives that may impair park resources and values.

Actions intended to favor resources that are not park resources and values may be included in an alternative only to the extent that they are compatible with conserving park resources and values. For example, generating hydropower at Glen Canyon Dam is not a park value, and cannot be favored at the expense of park resources and values, or “balanced” with park resources and values. The relative priority for generating hydropower revenues is provided by the GCPA and its legislative history. Consistent with the legislation, the intent of the 1996 Record of Decision on operation of Glen Canyon Dam is to, “...permit recovery and long-term sustainability of downstream resources while limiting hydropower capability and flexibility only to the extent necessary to achieve recovery and long-term sustainability.”

### **Alternatives must to be consistent with the Endangered Species Act.**

In accordance with the Endangered Species Act of 1973 (ESA), the alternatives need to conserve listed species *and their habitat*. The purpose of the ESA is to, "...provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved..." and to "provide a program for the conservation of such endangered species and threatened species...."

The endangered species most likely to be impacted by the alternatives is the humpback chub (*Gila cypha*). Southwestern willow flycatcher (*Empidonax traillii extimus*), and Kanab ambersnail (*Oxyloma haydeni kanabensis*) may also be impacted to some extent. In addition, there are endangered species that have been extirpated from this reach. They include: bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), and razorback sucker (*Xyrauchen texanus*).

Designated critical habitat below Glen Canyon Dam that must be conserved includes both the mainstem below the Paria River as well as the lower reach of the Little Colorado River. Humpback chub critical habitat that would be impacted by the alternatives is: 1) The lower eight miles of the Little Colorado River, and 2) the Colorado River from Nautiloid Canyon (about RM 34) to Granite Park (about RM 209). Razorback sucker critical habitat that would be impacted by the alternatives is the Colorado River and its 100-year flood plain from the confluence with the Paria River to Hoover Dam including Lake Mead to the full pool elevation. The 2006 Management Policies state that the NPS shall, "manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species."

The 1994 Final Biological Opinion (BO) on the Operation of Glen Canyon Dam found that MLFF, "...is likely to jeopardize the continued existence of the humpback chub and razorback sucker and is likely to destroy or adversely modify designated critical habitat." Although the Reasonable and Prudent Alternative (RPA) contained in the 1994 BO requires the attainment of riverine conditions that support all life stages of endangered and native fish species, Reclamation has not made sufficient progress in their responsibility to do so (USFWS 2002). All alternatives should be designed to meet Reclamation's responsibility to attain appropriate habitat conditions for endangered fish.

In addition to Reclamation's responsibilities under the RPA, it is the responsibility of all involved Federal agencies to help craft an LTEP that will aid in the recovery of endangered species and their habitat. The ESA states, "It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act."

### **Alternatives must to be consistent with the Clean Water Act.**

The alternatives must comply with all relevant provisions of the Clean Water Act (CWA), and be consistent with the Supreme Court's recent holding in S.D. Warren Co. v. Maine Board of Environmental Protection, 126 S. Ct. 1843 (2006). In the Warren case, the Court held that hydroelectric dam operation does raise a potential for a "discharge" into navigable waters of the United States, and that "[any] federal license under § 401 of the Clean Water Act requires state certification that water protection laws will not be violated." Id. at 1846.

**Alternatives should be consistent with an ecosystem management approach.**

The 2006 Management Policies, NPS management plans, U.S. Fish and Wildlife Service (USFWS) policy, and the AMP Strategic Plan all mandate an ecosystem management approach to managing park resources and values. For example, the 2006 Management Policies state, "Natural resources will be managed to preserve fundamental physical and biological processes, as well as individual species, features, and plant and animal communities. The Service will not attempt to solely preserve individual species (except threatened or endangered species) or individual natural processes; rather, it will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems."

It is the policy of the USFWS to, "... develop and implement recovery plans for threatened and endangered species in a manner that restores, reconstructs, or rehabilitates the structure, distribution, connectivity and function upon which those listed species depend. In particular, these recovery plans shall be developed and implemented in a manner that conserves the biotic diversity (including the conservation of candidate species, other rare species that may not be listed, unique biotic communities, etc.) of the ecosystems upon which the listed species depend."

In the AMP Strategic Plan, Principle #4 states, "An ecosystem management approach, in lieu of an issues, species, or resources approach, will guide our efforts." Similarly, Principle #6 of the AMP Strategic Plan states, "Dam operations and management actions will be tried that attempt to return ecosystem patterns [e.g., the abundance and distribution of species and communities] and processes [e.g., hydrology, sediment flux, water quality] to their range of natural variability."

An ecosystem management approach is also appropriate for protecting archaeological resources because the priority is to protect them *in situ*. The 2006 Management Policies state, "Archeological resources will be managed *in situ*, unless the removal of artifacts or physical disturbance is justified by research, consultation, preservation, protection, or interpretive requirements."

**Alternatives should represent the large-scale changes that are needed to protect park resources and values.**

There have been major changes in the riparian and riverine ecosystems since the construction of Glen Canyon Dam, and there will need to be major changes in dam operations, in concert with other management activities, to restore park resources and values.

The alternatives must be bold to detect a response in the ecosystem for several reasons including: 1) data on the response of large, complex ecosystems is inherently “messy;” and 2) ecosystem processes typically need to surpass critical thresholds to elicit a change in ecosystem patterns. For example, water temperature in excess of 18°C is necessary to provide rearing habitat for humpback chub (Gorman and Van Hoosen 2000). Actions that increase water temperature only a few degrees from the typical 9-10 °C dam releases obviously will not be sufficient for successful rearing to occur. In addition, several ecosystem processes may need to be altered concurrently to detect a change in an ecosystem pattern (e.g., to detect a change in native fish recruitment, non-native fish control may need to take place simultaneously with warming).

**Alternatives should explicitly state the predicted outcomes for park resources and values and other resources.**

Providing the predicted outcomes for each alternative allows comparison with NPS targets for ecosystem patterns and processes and facilitates the selection of the most appropriate alternative. Although the AMP Strategic Plan has not progressed to the point of identifying specific targets for park resources and values and other resources, the National Park Service has developed draft targets. In addition, the 2006 Management Policies and NPS management plans direct movement of ecosystem patterns and processes towards the generic target of “... the closest approximation of the natural condition when a truly natural system is no longer attainable.”

It is also essential to provide the predicted outcome for other resources including non-native species (e.g., tamarisk (*Tamarix spp.*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), catfish (*Ictalurus punctatus*), New Zealand mudsnails (*Potamopyrgus antipodarum*), quagga mussels (*Dreissena bugensis*), etc.), hydropower (e.g., capacity, generation, and revenue), and non-use values. The inclusion of a thorough non-use values analysis is especially critical.

**Alternatives should focus primarily on priority park resources and values.**

There is no end to the potential research that could be conducted on park resources and values. The priority, however, should be on park resources and values that are declining (e.g., sediment, humpback chub, and archaeological resources). Focus on improving these



three resources may have a positive influence on several other park resources and values as well.

### *Sediment*

The overall mass balance of sediment in Grand Canyon is negative due to a reduction in mainstem sediment supply and an increase in sediment transport. The majority of the sediment supplied to the CRE was historically derived from the watershed above the dam. That sediment is now being trapped in Lake Powell. The rate of sediment transport in the CRE has increased due to clear water releases from Glen Canyon Dam and the high daily fluctuations in dam releases as compared to pre-dam conditions.

The alternatives should attempt to:

1. Maintain a positive mass balance of sediment in Marble and Grand canyons over annual and longer time periods.
2. Provide the sediment distribution needed to restore near-shore native fish habitat and native sand beach community.
3. Determine whether sediment augmentation can significantly mitigate for the reduced sediment supply (by supplying sediment for building beaches and near-shore habitat, and providing a level of turbidity that may increase the survival of native fish in the mainstem).

### *Humpback chub*

The distribution and abundance of humpback chub has been sharply curtailed. Historically, the vast majority of humpback chub in the Grand Canyon area probably occurred in the Colorado River mainstem throughout Marble and Grand Canyons, and in the Little Colorado River within the Little Colorado River Canyon. Humpback chub probably also occurred to a limited extent in the mainstem above Marble Canyon and below Grand Canyon, in the Little Colorado River as far upstream as Grand Falls, and (at least seasonally) in tributaries other than the LCR.

Today, humpback chub are distributed mainly in the LCR and LCR inflow reach, and the abundance of humpback chub has declined. Although monitoring data only go back as far as 1989, the population has decreased from perhaps 12,000 adults in 1989 to about 5,000 today. Although the decline in distribution and abundance is certainly due to several factors, the main factors are probably the loss of mainstem spawning and rearing habitat, and an increase in predation rates.

The alternatives should attempt to:

1. Restore an abundant and widely distributed population of humpback in the mainstem.
2. Provide mainstem flow and sediment conditions that are likely to provide appropriate near-shore spawning and rearing habitat.

3. Provide the combinations of reservoir level, flow regime, and Temperature Control Device (TCD) operation that are likely to result in temperatures needed for native fish rearing.
4. Provide the level of non-native species (e.g., trout, catfish) control that is likely to allow native fish rearing in the mainstem.

#### *Archaeological resources*

Archaeological resources are often located in the terrace zone and have survived throughout the years by being buried in sediment. Although incipient gullies (naturally formed by runoff during thunderstorm events) have always had the potential to erode archaeological sites, gully erosion was historically counteracted by infilling from aeolian (i.e., wind) transport of high and dry sediments deposited during flood events.

Today, archaeological resources are being lost at an increased rate in Grand Canyon. The supply of high and dry sediment needed for aeolian transport has been reduced mainly because these deposits are no longer being created by flood events during sediment-enriched conditions. In addition, beach sediments have been colonized by vegetation (e.g., tamarisk) that reduces aeolian transport rates.

The alternatives should attempt to:

1. Preserve, *in situ*, all archaeological resources.
2. Provide the high and dry sediment needed to counteract arroyo formation (through subsequent wind transport).

#### *Other park resources and values*

Although the focus of the LTEP should be on the high priority resources, opportunities to simultaneously gather information that would aid in the eventual restoration of lower priority park resources and values should not be overlooked. Park resources that would benefit from additional research include extirpated species (e.g., river otter (*Lutra canadensis*), razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail (*Gila elegans*)), terrace zone riparian communities (i.e., Old High Water Zone), and water quality (e.g., mercury, salinity, selenium).

#### **Alternatives must not allow the impairment of park resources by the trout fishery.**

The alternatives must strive to eliminate the possibility of impairment. Recreational trout fishing is allowed in the park units only so long as it does not impair park resources and values. The 2006 Management Policies are clear that, "when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant." Currently, the trout fishery is probably impairing native fishes through competition and predation.

Regardless of the whether impairment is occurring, the alternatives should not seek to improve trout habitat, even in the Lee's Ferry reach. The 2006 Management Policies make it clear that, "[h]abitat manipulation for harvested species ... will not include the artificial manipulation of habitat to increase the numbers of a harvested species above its natural range in population levels."

**Alternatives must not include actions that are inconsistent with park values.**

The alternatives should not include actions to test the efficacy of management actions such as hatchery augmentation and "grow-out" ponds because they are contrary to park values (e.g., use of an ecosystem approach to management, and maintenance of the natural genetic structure and diversity) and USFWS policy (USFWS and NOAA 2000). In addition, these actions can also negatively affect behavior of released fish and introduce novel diseases and parasites.

Similarly, it would not be appropriate to "test" the effects of changes in dam operating criteria for increasing hydropower capacity, generation and/or revenues. For example, increasing the ramping rates that are currently allowed under the ROD would increase hydropower revenues, but it would not be appropriate to expend the time and energy on "testing" the effects of ramping rates while so many park resources and values are in poor condition. However, testing operating criteria that is thought to meet the intent of the GCPA and result in an increase in hydropower revenues clearly would be consistent with the GCPA.

**The GCT/GCRG and an "RPA" alternative should be evaluated in the EIS.**

The EIS should represent the full range of alternatives for meeting the intent of the GCPA. Two alternatives that should be considered are the AMP's "Alternative B" and an alternative that mirrors the 1994 Reasonable and Prudent Alternative (USFWS 1994).

The Grand Canyon Trust and Grand Canyon River Guides suggested what became known as Alternative B in the Adaptive Management Program. Alternative B was based upon the RPA and modified in part to reflect the results of research and monitoring since the RPA was developed. It also represents an approach to identify the period of time that stable flows are required to support spawning and rearing in the mainstem.

The Grand Canyon Monitoring and Resource Center analyzed the effects of Alternative B and the other AMP alternatives on park resources (GCMRC 2006). Although we sympathize with the difficulty in conducting the analysis given the amount of time and level of detail provided, we believe that the benefits to park resources and values from Alternative B was minimized in this analysis. Regardless, Alternative B was still predicted to be much more favorable for park resources and values than the other alternatives.

The RPA calls for the, “[a]ttainment of riverine conditions that support all life stages of endangered and native fish species....” To achieve this, the RPA requires, in part, the testing of Seasonally-Adjusted Steady Flows (SASF). The RPA states, “[a] program of experimental flows will be carried out to include high steady flows in the spring and low steady flows in summer and fall during low water years (releases of approximately 8.23 maf) to verify an effective flow regime and to quantify, to the extent possible, effects on endangered and native fish. Studies of high steady flows in the spring may include studies of habitat building and habitat maintenance flows. Research design and hypotheses to be tested will be based on a flow pattern that resembles the natural hydrograph....”

The testing of SASF was to be initiated in 1997, and if the Service later concluded that sufficient progress was not being made in testing these flows, then SASF was to be implemented during spring through fall (April to October) beginning in 1998. Unfortunately, in violation of the RPA, no comprehensive test of SASF flows has been implemented despite low water years occurring in 2001-2006, Reclamation has not made sufficient progress in their responsibility to do so (USFWS 2002), and SASF has not been implemented during April to October as intended.

The science underpinning the RPA and Alternative B has been well known for many years (e.g., Angradi, et al. 1992, Clarkson, et al. 1994, Valdez and others 2000), and additional research and synthesis (Melis, et al. 2006) has only further confirmed the validity of this approach. There is no excuse to further delay a robust test of steady flows.

**Alternatives should consider alterations of the current annual and monthly release volumes.**

Alternatives should utilize the inherent flexibility in the Colorado River compact for designing water releases. The compact does not require a particular annual release volume, but rather, it requires that the “...states of the upper division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years reckoned in continuing progressive series beginning with the 1<sup>st</sup> day of October next succeeding the ratification of this compact.” In addition, there are no legal requirements mandating particular monthly release patterns over a given year.

Monthly and annual release volumes could be designed to help manage sediment, near-shore habitat stability, temperature, spawning cues, etc. In addition, mimicking the natural variability in annual and monthly releases may be a useful tool in managing against non-native species that are adapted to the flow and temperature regime in the post-dam environment.

**Alternatives should consider implications of reduced inflows to Lake Powell.**

Alternatives should anticipate the predicted reduction in Lake Powell inflows. The reduced inflows are likely to have a significant impact not only on release volumes, but also on the

water quality of the releases. Water quality parameters that could be affected include temperature, nutrients, heavy metals, salinity, and dissolved oxygen. Although water quality has not been a major concern in the past, these forthcoming changes could have profound impacts on both human and ecosystem health in the CRE.

**The NPS should be designated as a joint lead agency.**

Although impairment issues are relevant regardless of whether NPS is a co-lead in developing the EIS or merely a cooperating agency, we strongly recommend having NPS serve as a joint lead agency for the following reasons:

1. The dam is located within the Glen Canyon National Recreation Area.
2. Park resources and values downstream of the dam in Glen Canyon National Recreation Area and Grand Canyon National Park are strongly influenced by dam operations (e.g., flows and water temperature).
3. Several of the non-flow actions being considered in the EIS will be undertaken by NPS (e.g., Bright Angel weir), or require concurrence by NPS (e.g., non-native fish removal, translocation, etc.).
4. The National Park Service has the expertise in evaluating whether the decision on the experimental plan will lead to a derogation of park resources and values.
5. The 2006 Management Policies state, "The Service cannot conduct or allow activities in parks that would impact park resources and values to a level that would constitute impairment. To comply with this mandate, park managers must determine in writing whether proposed activities in parks would impair natural resources."
6. The courts and the Council on Environmental Quality have expressly sanctioned the joint lead approach in situations where more than one agency is integrally involved in a project.

The need to comprehensively address park resources and values strongly supports designating the National Park Service as a joint lead agency.

**The Adaptive Management Program should not manage the experiment.**

Testing of the selected alternative should not be dependent upon decisions by the Adaptive Management Work Group. Although the AMWG clearly should be continuously apprised of monitoring and research results, decisions on implementing components of the test should be determined by criteria in the EIS rather than left to the political whims of the AMWG.

Although important monitoring and research has been conducted since the beginning of the AMP, the program itself is a failure. The failure is amply illustrated by monitoring results that demonstrate a declining trend in several park resources and values since the program began, and either a token response by the AMWG, or no response at all. Recently, despite

a recommendation by the Technical Work Group in favor of a crucial test of a BHBF, the AMWG recommended against it, and Interior accepted that recommendation. The failure of the program is not from a lack of monitoring and research, it is from an unwillingness to “adapt” to opportunities and information in a manner consistent with the GCPA.

## **Summary**

It is critical that the LTEP alternatives consist of alternative dam operating criteria (in concert with other management actions) designed to meet the intent of the Grand Canyon Protection Act while being consistent with other laws including those regarding water delivery, endangered species, cultural resources, wilderness, and water quality. The alternative selected as best meeting these criteria should then be tested for the appropriate number of years to achieve the desired level of confidence in the results.

The LTEP provides a very public opportunity for Interior and the responsible agencies to rectify the on-going failure to meet the intent of the Grand Canyon Protection Act. To do this, the LTEP must be intellectually honest, legally defensible, scientifically credible, and reflect the high value the public places on the integrity of the natural, cultural, and recreational resources in our National Parks.

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**Date:** Wed, Feb 28, 2007 5:01 PM  
**Subject:** NPS LTEP EIS scoping comments

Enclosed are consolidated NPS scoping comments on the LTEP EIS. If you have any questions please contact me.

(See attached file: NPS LTEP Scoping comments.doc)

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**NATIONAL PARK SERVICE  
SCOPING COMMENTS  
FOR  
THE LONG-TERM EXPERIMENTAL PLAN (AND EIS)  
FOR THE OPERATION OF GLEN CANYON DAM AND  
OTHER RELATED MANAGEMENT ACTIONS**

**February 28, 2007**

1. Economic impact analysis of LTEP alternatives must include the direct and indirect cost/benefit to all resources evaluated within the EIS including hydropower, recreation, natural and cultural.
2. Given the proposed action is intended to benefit NPS resources downstream of Glen Canyon Dam, the EIS should consider adopting NPS NEPA implementing policies including the development of impact thresholds and impairment determinations. (Without adoption of NPS NEPA implementing policies, the NPS may be required to prepare supplemental NEPA analysis.)
3. An MOU should be developed between the BOR and NPS (as a cooperating agency) specifying how and when NPS expertise and input will be utilized to make impact determinations, select the preferred alternative, develop mitigation strategies, and drafting/recommending the proposed ROD (sent to the Secretary for signature).
4. In specifying the above and in recognition of the unique nature of this EIS, the NPS should be fully integrated into the EIS development process.
5. The impacts of the proposed action on Lake Mead resources must be fully considered including how warm water releases will affect water quality especially during low water conditions.
6. How will the LTEP alternatives be affected by the ROD for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead?
7. Include the findings of the 2007 NAS report entitled "Colorado River Basin Water Management: Evaluating and adjusting to hydroclimatic variability" into the LTEP impact analysis. Specifically, the impact of sustained drought (beyond what we have experienced previously) on the implementation of the alternatives.
8. The alternatives should clearly delineate what activities are considered part of the experiment and those considered management actions. Experimental activities should be contained within a clear (peer reviewed) experimental design that answers specific science questions/hypotheses.
9. Related to 8 above, each alternative should clearly specify the number and type (season, volume, duration etc.) of beach habitat building flows (bhbfs) needed for the duration of the LTEP (15 years).
10. The LTEP science questions/hypotheses posed in the LTEP should be incorporated as high priority into the GCMRC Monitoring and Research Plan.
11. How will the alternatives affect the temperature budget for Lake Powell? Will it be changed enough to affect the biota?
12. How will warmer temperatures affect non-native fish, i.e., trout below the dam?

13. What will happen when there are layers of low dissolved oxygen waters in Lake Powell?
14. How will overall productivity below Glen Canyon Dam be affected by warmer temps?
15. Will structural modifications to the dam be undertaken to prevent the spread of non-native species downstream (especially zebra and quagga mussels)?