

## Glen Canyon Dam Technical Work Group Meeting

June 28-29, 2011

**Conducting:** Shane Capron, Chairperson

**Convened:** 8:15 a.m.

Facilitator: Mary Orton, The Mary Orton Company ([June 28 only](#))

### Committee Members/Alternates Present:

Jan Balsom, NPS/GRCA  
Cliff Barrett, UAMPS  
Kerry Christensen, Hualapai Tribe  
Jerry Lee Cox, Grand Canyon River Guides  
Bill Davis, CREDA  
Kurt Dongoske, Pueblo of Zuni  
Paul Harms, NM Interstate Stream Commission  
Norm Henderson, NPS  
Garry Cantley, BIA  
John Jordan, Federation of Fly Fishers  
Robert King, UDWR

Glen Knowles, U.S. Bureau of Reclamation  
Ted Kowalski, CWCB  
Tricia McCraw, ADWR  
Gerald Myers, Federation of Fly Fishers  
Don Ostler, UCRC (~~alternate for WY~~)  
Clayton Palmer, WAPA  
LeAnn Skrzynski, Southern Paiute Consortium  
Bill Stewart, AGFD  
Jason Thiriot, Colo. River Commission/NV  
Marc Wicke, USFWS  
Michael Yeatts, Hopi Tribe

### Committee Members Absent:

Charley Bulletts, Southern Paiute Consortium  
Christopher Harris, Colorado River Board/CA  
Amy Heuslein, BIA  
Tony H. Joe, Jr., Navajo Nation  
Rick Johnson, Grand Canyon Trust

John Shields, Wyoming State Engineer's Office  
Pam Sponholtz, USFWS  
Larry Stevens, Grand Canyon Wildlands Council

### Interested Persons:

Perri Benemelis, ADWR  
David Bennion, WAPA  
Todd Chaudhry, NPS/GRCA  
Mary Daugherty, USGS/GCMRC  
Helen Fairley, USGS/GCMRC  
Dave Garrett, M<sup>3</sup>Research/Science Advisors  
Pam Garrett, M<sup>3</sup>Research  
John Halliday, DOI  
Chris Hughes, NPS/GLCA

Leslie James, CREDA  
John Jordan, Federation of Fly Fishers  
Ted Melis, USGS/GCMRC  
~~Mary Orton, The Mary Orton Company~~  
Jack Schmidt, Utah State University  
Sam Spiller, USFWS  
Dave Trueman, USBR  
Scott Vanderkooi, USGS/GCMRC  
Randy Van Haverbeke, USFWS

**Meeting Recorder:** Linda Whetton

**Welcome and Administrative.** Shane said Lori Caramanian would be joining the meeting via [eatelephone](#) this morning to answer questions the TWG might have on policy issues to be elevated to the AMWG.

Approval of the March 8-9, 2011, Meeting Minutes. Without objection, the minutes were approved pending the addition of Paul Harms as a member of the Core Monitoring Ad Hoc Group, not Paul Grams.

Review of Action Items The action items were updated (**Attachment 1**).

### Old Business.

Ad Hoc Group Updates: Shane provide the following updates:

- Budget AHG – The BAHG report was distributed in preparation for today's budget discussion.
- Cultural Resources AHG – This group hasn't had any assignments for some time.
- Species of Concern AHG – The AMP [3-Goal 3](#) report will be presented at tomorrow's meeting.

- Core Monitoring AHG – Draft criteria ~~was were~~ developed at the last meeting and the task is to rewrite Appendix B for inclusion in the Core Monitoring Plan. He has been waiting for the new GCMRC chief to come on board because he feels it's really important ~~that~~ the TWG work closely with GCMRC in developing the General Core Monitoring Plan.
- ~~Socioeconomics~~ Socioeconomic AHG – An update will be provided at tomorrow's meeting.

Reports/Assignments from AMWG. Shane said the only thing that came up was a question from Helen Fairley about whether the base case and change case analyses could be used to inform the LTEMP. If so, what would be TWG's role in determining base case and change case analyses that would be evaluated in FY12-? Shane said this would be folded into further discussion tomorrow.

GCMRC Knowledge Assessment Workshops Schedule. Dr. Melis said the Aquatics Expert Workshop was held June 1-3 in Flagstaff. As a courtesy to the TWG, he provided copies of a disk that contains detailed notes, discussions, and PPT presentations with preliminary results. Upcoming workshops:

- July 11-12 at GCMRC - Physical Resources, Sediment, and Water Quality Resource Issues
- Week of August 29 – Hydropower and Economics Workshop in Flagstaff
- ~~Last week during~~ Oct 24-28 or Oct 31-Nov 4 for the Knowledge Assessment (2-2.5 days)

He has received comments from people about holding workshops at Saguaro Lake Ranch. He reminded the group the ADWR conference rooms are free of charge and asked if there were other locations people wanted to consider.

**Action Item:** Linda will query the group on other options besides meeting at Saguaro Lake Ranch.

#### New Business.

~~Dr. Melis said there was a change for the recreation and cultural resources workshops.~~

**Action Item:** Linda will query the TWG for availability for ~~a late September/early the TWG~~ October meeting.

TWG Facilitation. ~~Mary Orton left the room for this agenda item.~~ Shane said Mary Orton has been providing facilitation assistance to the CMAHG and BAHG. ~~In trying to keep up with To help Shane properly execute his~~ TWG chair duties and related assignments, Reclamation has agreed to allow the TWG Chair funds ~~(which are not being utilized by the TWG Chair)~~ to be used for TWG facilitation needs. It would cost approximately \$5,000 to have Mary facilitate four meetings and the BAHG process. Dr. Garrett said the SAs would support using Mary in order to allow Shane to accomplish what he needs to do with the TWG and concurred that Mary does an excellent job.

Guidelines for Productive Group Interaction. Mary distributed and reviewed copies of a handout, "Guidelines for Productive Group Interaction" (**Attachment 2**) and said it would serve as a good reminder of how to make sure every voice has the ability to be heard and respected, ~~and for the group to truly benefit from working together as a group.~~

FY 2012 Budget and Workplan. Mary reviewed the desired outcomes for today's discussion. She referenced Ms. Castle's March 31, 2011, memo (**Attachment 3a**) and said comparison of the original budget process table that was approved by AMWG last year and this year indicates USGS is working more closely with DOI in developing consensus before bringing anything to the TWG. She and Shane have worked on identifying the technical issues and said the TWG will decide what issues will be discussed by DOI and the AMWG will discuss broader policy issues.

Dr. Melis said the FY12 part of the FY11-12 budget was officially recommended by the AMWG ~~but based in August 2010, and then was approved by the Secretary of the Interior. Based~~ on direction from DOI, they have been looking at possible revisions. ~~Mary said when AMWG approved the FY11-12 workplan, the Secretary accepted the workplan. Clayton said that wasn't what had occurred and that the~~

~~budget had been reviewed and then DOI asked GCMRC to change the plan according to her budget priorities.~~

Shane said there is an approved FY11-12 budget with a review of the second year and the summary of proposed revisions to the FY2012 workplan and budget are identified in the memo from USGS and Reclamation to Ms. Castle dated May 3, 2011 (**Attachment 3b**). It includes a table with the changes and rationale for those changes (**Attachment 3c**). Shane said the BAHG discussed policy vs. technical issues at the June 13, 2011, meeting and those were captured in the BAHG meeting minutes. The BAHG developed a draft report (**Attachment 3d**) which included core policy issues and technical issues. Those issues were forwarded to Lori Caramanian who was directed by Ms. Castle at the last AMWG meeting to help the TWG differentiate between the two levels. He said some issues may get addressed and some may not, but the TWG won't have another opportunity to review. He asked Mary to talk about the decision rules and then go to Lori's response.

Mary reviewed the desired outcomes for today's meeting:

- Resolve TWG member's technical differences with the proposed FY12 budget with Reclamation and GCMRC, as possible.
- Agree on unresolved concerns with the FY12 budget that will be addressed by DOI (technical issues).
- Agree on unresolved concerns with the FY12 budget that TWG will forward to AMWG (policy issues).
- Identify potential budget development process recommendations for future years.

Shane said Lori would be joining the call in the next 40 minutes so it would be important to get through all the DOI responses to the BAHG first. He reviewed the technical issues:

Technical Issues (page 3 of BAHG report).

1. Economics (project 32): Cancel economist position, set aside \$25K for SEAHG support, savings of about \$73K. The BAHG felt it was too soon to hire a full-time economist and the SEAHG should complete its plan and then circle back and determine what resources are needed and then provide the \$25K. In talking with Lori, Shane said DOI wants the economist first and feels the expertise is needed at GCMRC.
2. Science Advisor budget (project 44): Add \$67K back in plus another \$30K for LTEMP participation. There were no objections. Shane said that DOI funding of \$25K has been identified in the SA budget in FY11 with addition of another science advisor. GCMRC feels the SAs are fully funded. As far as the LTEMP process, there is lack of clarity. DOI is interested in having the SAs involved in the LTEMP but Lori wants to know ~~is~~ what the expectations of the SAs will be, what reviews will be needed, and time frames. Glen said there is funding in the compliance line item for LTEMP work.

Clayton said there is nothing in attachment one that says DOI will be commenting on BAHG recommendations. He felt it was unproductive to have the BAHG, consisting of six or seven members, develop comments on the budget that in the past were brought to the TWG. The TWG would then discuss the matters with DOI representatives in the room and changes would be made. For the record, he doesn't feel it's productive to have DOI respond to BAHG recommendations but should wait and respond to TWG recommendations on TWG technical issues.

Policy Issues (page 1 ~~of~~ BAHG report).

1. Sediment Monitoring. Shane said the impetus for this policy issue came out of the DFCs as one of the priorities provided by Ms. Castle and requested the AMP be reviewed in relation to those DFCs and new DOI priorities, and the projects be reconsidered based on those. It's his

understanding the review would occur in FY12 but isn't sure people have thought through when the budget would be changed. He and Lori spent a lot of time talking about impacts to the FY12 budget and things that would be considered in the FY13 and FY14 work plans. Once the framework for the Core Monitoring Plan is approved then the major program areas will be developed. It makes sense to the CMAHG and DOI to make the sediment individual core monitoring plan be one of the first ones that come up for review in FY12.

2. Terrestrial Monitoring. Shane said DOI is very sensitive to this issue and feel this recommendation is premature. John Halliday should be given time to work with the tribes in developing a proposal that DOI could consider. A preliminary report would go directly to the AMWG for their August meeting.
3. Nonnative Fish Control. Shane said there isn't anything specifically in the budget to do non-native fish control. It was changed and agreed to by GCMRC and BOR. It was one thing the program could do to mitigate that issue. Reclamation mailed letters today for determining eligibility and effect for historic properties and TCPs to the tribes and SHPOs. That starts the process of working with the tribes to get to resolution of effect on both the HFE Protocol EA and the Non-native Fish Control EA. They are also looking into utilizing an NHPA special facilitator to get that resolution of effect and will be working with the tribes to set up additional tribal consultation meetings and also put resolution of effect meetings later this summer.
4. Archeological Site Monitoring. Glen said Reclamation has sent out letters of eligibility and effect for the EA undertakings. ~~This feeds into the old 1994 PA as part of stipulation one to do that so progress has been made under the old PA.~~ They intend to meet with the tribes to find resolution of effect for the two EA undertakings and possibly do a new PA and utilize an NHPA facilitator. The new regional archeologist will report for duty mid-August.

Clarifying Questions. Shane said there would only be 15 minutes to talk with Lori. If there are any disagreements with DOI responses, he suggested the TWG focus on where they think movement might be with DOI or what they might need to know to be able to make the motion that needs to go to the AMWG.

Clayton asked how Reclamation is going to complete its 106 compliance requirement on the operation of Glen Canyon Dam from 1995. Glen told him they have dealt with the two EAs and are approaching 106 compliance separately, but there is overlap. They have identified historical properties and traditional cultural properties affected by the two undertakings which is also part of stipulation one under the old 1994 PA. They intend to have meetings with the tribes on mitigation and resolution of adverse effects and plan to set up meetings with the tribes and SHPOs to start talking about resolution of effect. They also want to do that in the context of the old PA and operations of the Dam and look at the potential for developing a new PA.

Norm said the request was made by Kurt to reinstate the \$200K for the treatment plan in year two of the budget. It was his understanding that in order to make changes in the second year workplan, there had to be sound, scientific reasoning for doing so. He sees the cultural resource monitoring development that GCMRC has been trying to establish for the last several years as having been unilaterally truncated. He feels it's a big policy issue for the group.

Cliff said he was concerned about the DFCs being integrated into the Core Monitoring Plan. As TWG Chair, Shane said he wanted a solid commitment from the DOI that they're headed in the right direction and feels he got that from DOI, but suggested Cliff ask Lori directly about that.

Shane said he wanted to complete the discussion on technical issues and then move to policy level issues. Mary brought up the BAHG report as the starting point for the discussion.

Lori Caramanian joined the call at 10:30.

*C: Believe this comment deserves a longer period of time for discussion. My first comment has to do with the BAHG proposal to cancel the economist position in #32. We don't have a problem with GCMRC hiring. The group discussed the hiring of an economist, but knowing by GCMRC. Several concerns were expressed, including*

- *More discussion is needed.*
- *How necessary it is to have clear understanding about the degree to which an economist is useful and what.*
- *The kind of economist that is hired. We needed won't know be known until the socioeconomic report is complete and evaluate/evaluates the requirements of the position. (Palmer)*

*R: I agree with you that this is a discussion that needs more than 15 minutes. My first response is that it's a chicken and egg situation. GCMRC can't hire an economist until the SE report has been done. Not having the economist in this year's budget puts it off until 2013. We need to have this person on board in support of the LTEMP. A Notice of Intent was signed and should be published in the Federal Register (Attachment 4) shortly. There will be a role for the economist. I ask for TWG input on that and how we should focus on economic expertise. (Caramanian)*

*Q: The economist position could help with the LTEMP but tweaks to the budget in articulating the priorities, it doesn't seem to be the appropriate time in light of those priorities and wonder if you could speak to that specifically. (Kowalski)*

- *A: Ms. Castle Doesn't seem to be in line with the priorities as outlined by the Secretary's Designee.*

*Lori agreed that this needed more discussion, and explained that DOI wanted the economist on board to support the LTEMP. She also said that she felt the economist is needed in order to complete the socioeconomic report. She noted that, while the Secretary's Designee identified four priorities but, she also made it clear that doesn't they would not preclude us the program from addressing other issues. It's important to understand the , and the program needs to have a deeper understanding of power economics and the socioeconomic. We think this is She said she thought it was the right time to make this hire that position. (Caramanian).*

*Q: What is the role of the AMP for*

*The issue of cultural resources broadly? Certainly we have the original PA and the 106 that is being initiated for the two EAs that are going away. Those are compliance issues. But beyond that, what is the role for trying to manage, monitor, and track the traditional was also discussed, and the role of the AMP in the cultural resources broadly— whether they're archaeological sites or things such as the terrestrial resources that have traditional value to the tribes. There are a lot of cultural resources down there that the program isn't really addressing. Certainly the tribal monitoring programs are looking at the cultural values for resources beyond archaeological sites. That isn't being well integrated so how will that be done, the big policy question, and then the specific question on the PA work which is 103, 106 actions that are going on. What's going to happen with that? It seems like it's all ended. Those are my big policy questions. Where is the cultural program? (Yeatts)*

*A: I'm not sure I can do your question justice at this point and I'll ask Glen to weigh in as well. Cultural resources is a very important issue, arena. Lori noted that this was an important issue, and that Reclamation has recently hired a new regional archeologist so that will help us move forward archeologist. She asked Glen to respond in more detail. Glen, were you able to talk about the plans moving forward with the PA? (Caramanian)*

*R: I did, but Mike's question was pretty broad. I did talk about the fact that we just sent out said the Section 106 letters yesterday or regarding the HFE Protocol EA and the Non-native Fish Control EA, determining eligibility and effect, and were sent yesterday, and they laid out the process we Reclamation would use to try and get it addressing the potential adverse effects of the two EAs, finding resolution and effect with the tribes, the SHPOs, and Advisory Council. I also mentioned that we were thinking about. They are considering hiring an NHPA facilitator subject matter expert to assist us in doing with that task, and how we would be setting will set up meetings with the tribes and other important participants in that process later on this in the summer. Reclamation is also talked about how we planned planning a similar process to look at determine how to address the old 1994 PA and see where we want to go in the future with that same group of folks including an NHPA facilitator. (Knowles).*

*C: Western supports the response we got about policy issue #1 related to review of the sediment program. I just want to clarify that we, one of the sponsors of that budget comment, had no intent to upstage the sediment*

*program in 2012. The notion that it be reviewed in 2012 for a possible change in the 2013 and 2014 is fine with us. I just wanted to clarify for the record that when the BAHG met to describe its conceptual concerns on change to the FY12 budget, we said the sediment program ought to be reviewed given the changes and the AMWG DFCs and the response from GCMRC was that we've heard nothing to tell us that there is a need to modify or review the program, to change the paradigm. This BAHG resolution on the budget was in response to GCMRC's reply to our original motion at the BAHG to say that the sediment program ought to be reviewed for its relevance to the DFCs of the AMWG. (Palmer)*

*R: I appreciate that and what I heard is that GCMRC is supportive of us taking a step back. It's not just for the sediment program. I think it's fair to take a step back and take an overall look at what our spending priorities are. I think a good place to do that is through the core monitoring program, which may need a little push to get it completed and have a real debate about what we should be focusing our resources on. I have not heard from GCMRC that they're opposed to that. (Caramanian)*

In response to a comment suggesting the sediment program should be reviewed in light of the Secretary's Designee's priorities, Lori said that it would be good to review the entire program in light of spending priorities and constraints.

Lori said the BAHG did a great job going through the issues and credited Shane and Mary for keeping the process focused. She reminded people that Ms. Castle said this is a work in progress and ~~that they can do better in getting~~ DOI could disseminate information ~~to people~~ in a more timely manner. ~~She Before hanging up, she~~ thanked everyone for their participation and said she'd be available this afternoon if there were additional questions.

Shane said there were two things to be considered in crafting a motion: 1) a set of policy issues that may or may not go to AMWG, and 2) possibly additional technical issues for AMWG's DOI's consideration. He suggested going through the issues one more time. The following was noted from earlier meetings:

Policy Issues – to be addressed at this meeting as necessary

1. Sediment monitoring → moved to Resolved Issues. This is a high priority to be addressed in the Core Monitoring Plan process in FY12. Shane will follow up with the new GCMRC chief and Ted will affirm that the FY12 budget supports the fish, sediment, and core monitoring plan development. Per Clayton, add after FY12 on the first sentence, "as to its relevance to DFCs and DOI priorities."
2. Terrestrial monitoring → concerns remain
3. Non-native Fish Control → concerns remain
4. Archaeological Site Monitoring → concerns remain

Technical Issues – sent to DOI from the BAHG

- Project #32 (economist position) → concerns remain. A draft motion will be prepared during the lunch hour. See discussion above.
- Project #44 (SA budget) → concerns remain. Kurt said he feels adequate funding for the SAs is critical and is a policy issue because the program needs the independent academic peer review. If the budget is cut, he feels there is a restriction on the focus of certain aspects of the program. Also, he's concerned about the cultural program that's being gutted and that there aren't adequate representatives on the SAs to review cultural aspects. Shane said \$25K was added to the SA program. Based on the SAs contract period, GCMRC believes that although the budget is cut back for FY12, the FY11 budget for the SAs is fully funded up to their contract limit. Ted said the SA budget is not funded in FY11 to the full level that the bid was made but is funded in FY11 to the full extent that it was originally approved plus the additional costs of adding a new member. The modification has been made so the total funding for FY11 is what's been approved on page 270 plus \$25K. The contract period for the FY11 funding doesn't end on Sept. 30<sup>th</sup> but extends to the mid-February 2012. They believe the FY11 need is fully supported as it was originally approved with the additional money as requested by DOI for a new member. In FY12, his best estimate is that from the remainder of FY12, from mid-February thru September 2012, that's about 63% of the contract year but only part of what is considered part of the contract period. He feels there is a need for an

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additional \$25K in FY12 to continue supporting the additional SA member. The funds were reduced from what was originally approved for FY12. If looked at proportionately, \$122K plus \$20K, that would be enough to at least fund it through the physical cycle. He said the TWG would need to identify what the need and the budget would be for FY13 and FY14. Several members expressed concern about the SAs budget being cut, and that SAs should be fully funded.

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Dr. Garrett added that the SA contract runs under a 5-year competitive bid. The budget was cut in the first year and also reduced last year (by 50K). However, \$20K was added in to do another job that wasn't in last year's budget. This year the budget is proposed to be cut again (\$67,000) but a new increment of the budget is being added for a SA. If the \$67K were added back in, \$25K would be added back in to take care of the new work. Shane clarified the SA budget would be fully funded through September 2012, but the FY13 budget would have to be increased to what is currently in the FY12 budget. Ted said the bid for SA work has never been fully funded, but that at \$142,446 they believe it would be equal to what was originally approved through September but not through the following first and second quarter of FY13. He said money could still be added through modifications to the contract if there is additional need that is approved by the budget process. Dr. Garrett said he felt the additional \$25K and a new SA position should be kept separate. He reiterated that the program has been downsized in two years of approximately \$400K. In that same period of time, the LTEMP EIS process has been added along with double the amount of reviews which will create a shortage in the SA budget in FY11 and FY12. Shane said it was his understanding that DOI intends to fully fund the SAs to the amount in the FY12 budget that covers the SAs' budget that runs from Feb 2011 to Feb 2012, and additionally fund from that same level from mid-February 2012 through September FY12 which is the FY12 fiscal year with funds that are currently identified. Starting in FY13 more money may be needed. Ted said that by October 2012, the SAs are out of money so the need and budget will need to be established for the next funding cycle which would be FY13. If there is additional need in FY12, it can be funded through modifications in the contract but there needs to be agreement where the money will come from. Shane said he was satisfied with the explanations offered and that the LTEMP work could come out of Reclamation's compliance line item. He asked the TWG if they still wanted to make a policy statement or offer a technical statement.

Kurt said there are a lot of issues the Pueblo of Zuni has with regards to the program and are not comfortable with the science explanations from Reclamation or GCMRC. They value the SAs input as an objective, independent review of the science. Given all the issues coming forward, he wants to know if Dave Garrett and the SAs are going to be adequately funded to meet program needs. Robert said the group needs to look at the role of the SAs and then make a budget policy statement as to whether there is sufficient funding their work.

Shane said he wanted to move this to a policy issue and have people work on a statement to be brought back after lunch. He sees a change in process in which DOI wants to be more directly involved in deciding what the TWG does and don't have to go through AMWG like it did in the past. If determining what the role of the SAs is in this program is something the TWG wants to work on, he felt they could develop a statement that could go to Lori directly and get permission to start working on that as a group. Or if they wanted to make a policy statement and ask the Secretary to work on this, then it would go to the AMWG. He said Lori would like feedback from the TWG on what the SAs role should be in the LTEMP process.

Kurt said the TWG's Operating Procedures are set up to provide recommendations to the AMWG and not directly to the DOI. If DOI is going to be making decisions about the program prior to coming to the meetings, then he questioned why the TWG should put the time and effort in reviewing materials and providing comments when decisions have already been made. The history of representing a tribe in federal agency consultation is the way it usually goes with the federal agency already having decided what they're going to do and then just come to the tribe to check a box about consultation. He finds it very frustrating. Shane said he expressed those same concerns to Anne Castle. He said the group could look at it from two perspectives: (1) a change that differs from the Operating Procedures, or (2) developing a new policy and approach. He thought it could be very beneficial with the TWG having

influence on things directly to DOI that they didn't have before. He asked Kurt and Robert to write a policy statement and bring back after lunch.

Policy Issues (continued):

Kurt said 75% of the policy issues defined by the BAHG deal with tribes, tribal issues, tribal concerns, etc., in Grand Canyon. The responses from DOI are unacceptable. They've heard those responses for the last 10 years and nothing is happening, especially with terrestrial monitoring. A lot of the tribal concerns for this program are not being adequately considered. For example, the way DOI has handled the Zuni issue with killing non-native fish. It's been a less than acceptable way they've dealt with Zuni concerns. The policy issue is to combine 2, 3, and 4, and that there is a continuation in this program to gut cultural resources and in so doing, it has the effect of furthering the marginalization and disenfranchises Native Americans from this program. He feels everyone should be concerned about that.

Mary asked Kurt if he could put his concerns in the form of a motion. He said the Pueblo of Zuni has been pretty specific about what they wanted in terms of consultation with Reclamation. Their message hasn't changed in 24 months of consultation. He said he could construct language, but it would be a futile effort until the folks in DOI change their attitude and perspective towards the tribes, tribal values, and tribal interests in the Grand Canyon resources. Mary reminded him the TWG could make that recommendation to the Secretary.

Mike said the policy issues could be separated to get to the tribal concerns. He said in #4 he would separate it out with the portion that deals with compliance and consider line item 27 as a separate topic. There are two big issues: (1) the broader question of integration of tribal values, concerns, into the program, and how resources are managed, understood, etc., and traditional knowledge the tribes are monitoring; but (2) line item #27 is very specific and includes the treatment of sites. Shane reminded the group that a budget motion needs to be prepared today and if things don't get written down, then items won't be considered. Several members volunteered to craft motions and present after lunch.

Shane In addition, cultural resources issues were expressed, specifically with regard to terrestrial monitoring, killing fish, marginalizing the views of the tribes, integration of tribal values into the program, and line item #27 regarding the treatment of sites.

Shane asked those concerned to draft policy statements in the form of motions to be considered after lunch. He recapped what the TWG had decided: 1) not to move any technical issues to DOI, 2) rolled upto frame the two technical issues toas policy issues, 3) removed to remove the sediment policy to the "resolved" list, and said they were now ready to focus on policy statement language for possible.

The following motions were made regarding the budget:

The following policy statements were made:

**Motion (proposed by Kurt Dongoske): The TWG recommends that adequate funding for the SAs be a high priority for the AMP. TWG further recommends that AMWG task the TWG with developing a recommendation for AMWG on the roles and expectations of the Science Advisors with regard to the Adaptive Management program and the related LTEMP. -Based on the definition of the Science Advisors' role that AMWG ultimately adopts, TWG recommends that budget priorities for FY13-14 then reflect support to accomplish these responsibilities of the Science Advisors.  
Passed by consensus.**

**Motion (proposed by Kurt Dongoske): The TWG recommends that AMWG make a recommendation to the Secretary on the following questions: How should the program fairly treat**

**conflicts of cultural values, specifically those involving Native American perspectives? How will tribal values be monitored and tracked in this program?**  
Passed by consensus.

**Motion (proposed by Clayton Palmer): TWG recommends that AMWG recommend to the Secretary that Reclamation implement the process that has been identified in Reclamation's 2007 Treatment Plan to comply with the requirements of NHPA Section 106 for the operation of Glen Canyon Dam.**

Passed by consensus.

**Motion (proposed by Kurt Dongoske): TWG recommends that AMWG recommend to the Secretary that Reclamation identify what it will do in FY12 to mitigate effects at the 53+ archaeological site identified in Reclamation's 2007 Treatment Plan.**

Passed by consensus.

~~Kurt wants to know how the \$500K will be used to identify and treat the sites. He said the TWG and AMWG agreed to research and monitor development of archaeological sites and cultural resources that GCMRC was putting together. The development of that monitoring program has been truncated. In FY12 it will only take place in Glen Canyon area, which is not really where it's most needed (in Grand Canyon). The program spent three years developing that program and established protocols for making changes to a second year workplan and Kurt isn't satisfied with the justification from GCMRC for truncating their archaeological site monitoring program based on the fact that DOI changed their priorities. He feels the money should be put back into developing the full program and working within Grand Canyon as well.~~

The following motion was considered: **TWG recommends that AMWG recommend to the Secretary that full funding be restored for GCMRC's cultural monitoring development, and that it be expanded to the entire Colorado River ecosystem.**

~~Jan said this was a project the old CRAHG discussed but there wasn't support among the members about the protocol that was being developed and couldn't see how they would be implemented on a systemwide basis. There are other cultural resource components that aren't being vested in Park Service's archaeological site monitoring program. The thought of shifting to a protocol development using Glen Canyon sites to be more accessible and possibly develop protocols for it seemed like a way to wrap up some of the protocol testing which was still in play and as the managing agency downstream didn't see that this would give them anything and preferred to see the Treatment Plan implemented.~~

~~Kurt said using Glen Canyon to develop a protocol limits the evaluation of the protocols for doing cultural monitoring as the geomorphology in Grand Canyon is very different from what is in Glen Canyon. It was his understanding they would work with not only using information that Helen was developing with her program in terms of trying to quantify change in archaeological sites and somehow determine whether they're linked to dam operations or not, plus looking at the results of data recovery where you can understand and reconstruct the geomorphological history to better understand what occurred before and after occupation. Initially he didn't support Helen's program but when the TWG decided it had merit, he went along with their decision. However, now he wonders what utility they're getting from it and now just stopping and focusing on Glen Canyon. He is concerned about objectively monitoring archaeological sites and to quantify all data that is objective and not subjective. He said it was his understanding that GCMRC was going to implement a pilot monitoring program for a year and asked why they don't evaluate the efficacy of that monitoring program once it's in place.~~

~~Dr. Garrett said it would be important to record some detailed information as to why there were changes in the program. Without knowing this information, it needs justification and not just clarification.~~

Mary suggested the following addition:

**~~TWG recommends that AMWG recommend to the Secretary that full funding be restored for GCMRC's cultural monitoring development, and that it be expanded to the entire Colorado River ecosystem; or that justification be provided to the AMWG for the change.~~**

Responding to Don's question on what the full funding was and what would be the impact to the budget, Shane said the reduction (\$267,171) was applied to other parts of the budget to balance it. He said the treatment plan was for \$500K and there is no knowledge how Reclamation is going to use the money. He felt that until Reclamation informs them what they're going to do with FY2012 under the treatment plan, there is some money. Kurt offered a change to the above language to read:

**~~TWG recommends that AMWG recommend to the Secretary that full funding be restored for GCMRC's cultural monitoring development, and that it be expanded to the entire Colorado River ecosystem; or that credible, scientific justification be provided to the AMWG for the change.~~**

Clayton said he wanted to know what GCMRC's cultural monitoring program is supposed to accomplish. Shane said as it's written, it's a technical (specific) issue that would go to Lori for consideration. But if it gets framed in the larger (general) policy issue, then he feels it should go to AMWG for further After discussion.

**~~Motion (Proposed by Clayton Palmer): The TWG recommends that the AMWG recommend that the Secretary of Interior consider a review of the GCDAMP programs related to archaeological site monitoring and compliance with NHPA section 106 and the GCPA, to clarify how DOI (and the GCDAMP) is achieving compliance with both NHPA section 106 and the GCPA and what is specifically necessary to do so.~~**

Mary asked if there was any objection to consensus.

Kurt asked if the group just accepts the reduction in scope of GCMRC's archaeological site monitoring development program and accept the explanation they received from GCMRC, or do they make a recommendation to AMWG to reinstate the development of that full program. Mary said the prior, the motion would be sent to Lori as a technical issue, but the TWG could tell Lori or DOI that they would like to reinstate that money. Kurt said his policy statement was how a program that was approved by the stakeholders for its development and had been funded for 3-5 consecutive years is suddenly slashed. He feels it's a big policy issue the TWG should discuss and should ask what their role is in terms of consulting with in terms of agreeing or making recommendations back on whether a program should be cut or not.

Shane said it sounded like there were two statements Kurt wanted to make: (1) that program should be fully funded back at the level that we agreed to for the last couple of years, and (2) the policy one that came out of the BAHG. He said it might be helpful to be specific, but in his mind the monitoring component is being taken away. He doesn't understand all the things they're doing and how, as a program, they're meeting both GCPA and Section 106, Treatment Plan needs, and how the things all fit together. This is being attacked from both sides, what is desired in FY12 and the longer policy issue.

Mary advised completing the technical issue first.

**~~TWG recommends that DOI restore full funding for GCMRC's cultural monitoring development (Project 25), taking funding from the Treatment Plan line item, Project 27, and that the scope be expanded to the entire Colorado River ecosystem; or that credible scientific justification be provided to the AMWG for the change.~~**

In responding to Don's question on how the CRE language relates to dam operations, Helen said that when GCMRC developed the program it was originally intended to try and simultaneously address both the need to understand dam effects relative to GCPA as well as 106 which was asking for monitoring dam effects at archaeological sites and to potentially monitor the effects of treatments that might be implemented in the future. They tried to develop a program that was comprehensive in nature. They were also trying to develop it for the ecosystem as a whole. The original intent of their plan was to look at all the sites in a rotating schedule, but for the pilot part of the program they figured they should at least start with a random sample that could look at archaeological sites that were representative for the system as a whole and that's what they were proposing to do this year.

Hearing there wasn't consensus on the was revised motion (below), and a roll call vote was taken, as follows:

<b>Motion: TWG recommends that DOI restore full funding and the full scope of GCMRC's cultural resources monitoring development (Project 25), taking the funding from the Treatment Plan line item, Project 27; or that credible scientific justification be provided to the AMWG for the change.</b>		
<b>Representative</b>	<b>Stakeholder Entity</b>	<b>Vote</b>
<b>Bill Stewart</b> / Andy Makinster	Arizona Game and Fish Department	A
<b>Tricia Crawford</b> / Perri Benemelis	<a href="#">ARIZONA</a> Arizona	Y
Amy Heuslein / <b>Garry Cantley</b>	Bureau of Indian Affairs	A
<b>Glen Knowles</b> / Marianne Crawford	Bureau of Reclamation	A
Christopher Harris	<a href="#">CALIFORNIA</a> California	absent
<b>Ted Kowalski</b> / Jennifer Gimbel	<a href="#">COLORADO</a> Colorado	A
<b>Bill Davis</b> / Leslie James	CREDA	Y
<b>Gerald Myers</b> / John Jordan	Federation of Fly Fishers	Y
<b>Jerry Lee Cox</b> / Sam Jansen	Grand Canyon River Guides	Y
Rick Johnson / Nikolai Lash	Grand Canyon Trust	absent
<b>Larry Stevens</b>	Grand Canyon Wildlands Council	absent
Mike Yeatts	Hopi Tribe	Y
<b>Kerry Christensen</b> / Loretta Jackson-Kelly	Hualapai Tribe	N
<b>Norm Henderson</b> / Chris Kincaid	National Park Service - GLCA	A
<b>Jan Balsom</b> / Todd Chaudhry	National Park Service - GRCA	N
Tony Joe	Navajo Nation	absent
McClain Peterson / <b>Jason Thiriot</b>	<a href="#">NEVADA</a> Nevada	Y
<b>Paul Harms</b> / Don Ostler	<a href="#">NEW MEXICO</a> New Mexico	Y
Kurt Dongoske	Pueblo of Zuni	Y
Charley Bullets / <b>LeAnn Skrzynski</b>	Southern Paiute Consortium	Y
Robert King	<a href="#">UTAH</a> Utah	Y
Pam Sponholtz / <b>Sam Spiller</b>	U.S. Fish and Wildlife Service	A
Cliff Barrett	UAMPS	Y
<b>Clayton Palmer</b> / David Bennion	Western Area Power Administration	A
John Shields / <b>Don Ostler</b>	<a href="#">WYOMING</a> Wyoming	Y
	<b>Total Yes</b>	<b>12</b>
	<b>Total No</b>	<b>2</b>
	<b>Total Abstain</b>	<b>7</b>
	<b>Total Voting</b>	<b>14</b>

#### Motion Passes

Abstentions count toward the quorum, but not the vote. For example, if 20 TWG members are present then a quorum is present (quorum=16). If the vote is 3-0-17 (that is 3 yeas, 0 nays, and 17 abstentions), the motion passes because ~~abstentions are non-votes for all purposes other than to establish a quorum. To explain further, the simple majority or two-thirds majority is based on all votes minus the abstentions. Those abstaining have chosen not to vote.~~

~~Mary read the policy statement: The TWG recommends that the AMWG recommend that the Secretary of the Interior consider a review of the GCDAMP programs related to archaeological site monitoring and compliance with NHPA section 106 and the GCPA, to clarify how DOI (and the GCDAMP) is achieving compliance with both NHPA section 106 and GCPA and what is specifically necessary to do so.~~

~~John Halliday suggested the review be performed not to clarify just how DOI and AMP are achieving compliance but also to ensure there is no duplication and everything is being coordinated among the federal agencies.~~

~~Kurt said there was an agreement signed on April 17, 2006, between Reclamation, NPS, and USGS ([Attachment 5](#)) which addressed development of the monitoring program to deal with the cultural resources under each of those agencies compliance responsibilities. Since there wasn't a termination date on the document, he assumed it's still in effect.~~

**Motion: (made by Kurt Dongoske):** The TWG recommends that the AMWG recommend that the Secretary of the Interior consider a review of the GCDAMP programs related to archaeological site monitoring and compliance with NHPA section 106 and the GCPA, to clarify how DOI (and the GCDAMP) is achieving compliance with both NHPA section 106 and GCPA and what is specifically necessary to do so.

Passed by consensus.

Ted Kowalski said his small group discussed the concept of hiring an economist and felt it was important to complete the socio-economic program first. He read the following recommendation:

**The TWG recommends that the AMWG recommends that the Secretary direct the SEAHG to develop a proposal for an AMP Socio-Economic (SE) Program in FY 2012. AMP stakeholders and DOI agencies may provide members to serve on this committee, especially people who have expertise in economics of electrical power and recreational economics. The SEAHG should be chaired by someone who has expertise in one of these fields and who has experience with the GCDAMP. The work for the SEAHG should be administratively supported (i.e., preparation for meetings, collecting comments and revising documents) and facilitated. Since this task involves the development of a new program of value to the AMP stakeholders, and often involves the stakeholders advocating for their agencies or interests, the GCMRC (as the scientific agency supporting the AMP) should not oversee the development the SE Program. The SE Program should be provided to the Scientific Advisors (SA) for review. If an SA member has been involved in the development of the SE program, then that person should not participate in the SE review. The SE program should be initially focused on a robust and scientifically-based program dealing with power economics and market based recreational economics.**

~~Shane read the charge given to the TWG from the AMWG and said he doesn't have the expertise to provide the leadership to the SEAHG on the information needs. He has asked Lori to provide that expertise and that's the conversation they had earlier about providing Dave Harpman in the short term and an economist in the long term. He said he's confused with what they're trying to do because most of the work has already been done. Ted said that it didn't seem prudent to hire an economist at \$100K a year when they don't have a socioeconomic program. Mary reminded the TWG that the BAHG had recommended not hiring an economist, but Lori said the Department still wanted to hire one.~~

~~Clayton said it's premature to have a staff member at GMCRC help develop a socioeconomic program because it puts them in an advocacy position where it shouldn't be. Cliff didn't feel an economist should be hired until a need has been established.~~

~~The members revised the language and then did a hand vote:~~

~~After discussion, the members revised the language and voted by raising hands:~~

**Motion:** The TWG recommends that the AMWG recommends that the Secretary direct GMCRC to consider hiring an economist only after the AMWG approves a Socio-Economic Implementation Plan; and provide a chair for the TWG Socioeconomic Ad Hoc Group who has expertise in economics from the Science Advisors; and TWG further recommends that AMWG direct TWG to focus the socio-economic program initially on a robust and scientifically-based program dealing with power economics and market based recreational economics.

**Hand Vote Results:** Yes = 10 No = 5 Abstain = 3

**Motion passes.**

Mary read the entire budget motion. ~~HearingBecause~~ there ~~wasn't~~ was not consensus, a roll call vote was taken.

**Motion:** The TWG recommends to AMWG the USGS and Reclamation FY12 Budget and Work Plan as approved by the Secretary of the Interior on September 22, 2010, with changes described in the May 3, 2011 memorandum from Ted Melis and Glen Knowles to Anne Castle, with the following policy recommendations:

1. The TWG recommends that the AMWG recommend that the Secretary of Interior consider a review of the GCDAMP programs related to archaeological site monitoring and compliance with NHPA section 106 and the GCPA, to clarify how DOI (and the GCDAMP) is achieving compliance with both NHPA section 106 and the GCPA and what is specifically necessary to do so.
2. The TWG recommends that adequate funding for the SAs be a high priority for the AMP. TWG further recommends that AMWG task the TWG with developing a recommendation for AMWG on the roles and expectations of the Science Advisors with regard to the Adaptive Management Program and the related LTEMP. Based on the definition of the Science Advisors' role that AMWG ultimately adopts, TWG recommends that budget priorities for FY13-14 then reflect support to accomplish these responsibilities of the Science Advisors.
3. The TWG recommends that AMWG make a recommendation to the Secretary on the following questions: How should the program fairly treat conflicts of cultural values, specifically those involving Native American perspectives? How will tribal values be monitored and tracked in this program?
4. TWG recommends that AMWG recommend to the Secretary that Reclamation implement the process that has been identified in Reclamation's 2007 Treatment Plan to comply with the requirements of NHPA Section 106 for the operation of Glen Canyon Dam.
5. TWG recommends that AMWG recommend to the Secretary that Reclamation identify what it will do in FY12 to mitigate adverse effects at the 53+ archaeological sites identified in Reclamation's 2007 Treatment Plan.
6. The TWG recommends that the AMWG recommends that the Secretary direct GCRM to consider hiring an economist only after the AMWG approves a Socioeconomic Implementation Plan and provide a chair for the TWG Socioeconomic Ad Hoc Group who has expertise in economics from the

**Science Advisors; and TWG further recommends that AMWG direct TWG to focus the socioeconomic program initially on a robust and scientifically-based program dealing with power economics and market based recreational economics.**

Representative	Stakeholder Entity	Vote
Bill Stewart / Andy Makinster	Arizona Game and Fish Department	absent
<b>Tricia Crawford</b> / Perri Benemelis	<a href="#">ARIZONA</a> Arizona	Y
Amy Heuslein / Garry Cantley	Bureau of Indian Affairs	absent
<b>Glen Knowles</b> / Marianne Crawford	Bureau of Reclamation	A
Christopher Harris	<a href="#">CALIFORNIA</a> California	absent
<b>Ted Kowalski</b> / Jennifer Gimbel	<a href="#">COLORADO</a> Colorado	Y
<b>Bill Davis</b> / Leslie James	CREDA	Y
<b>Gerald Myers</b> / John Jordan	Federation of Fly Fishers	Y
<b>Jerry Lee Cox</b> / Sam Jansen	Grand Canyon River Guides	N
Rick Johnson / Nikolai Lash	Grand Canyon Trust	absent
<b>Larry Stevens</b>	Grand Canyon Wildlands Council	absent
Mike Yeatts	Hopi Tribe	Y
<b>Kerry Christensen</b> / Loretta Jackson-Kelly	Hualapai Tribe	Y
<b>Norm Henderson</b> / Chris Kincaid	National Park Service - GLCA	A
<b>Jan Balsom</b> / Todd Chaudhry	National Park Service - GRCA	A
Tony Joe	Navajo Nation	absent
McClain Peterson / <b>Jason Thiriot</b>	<a href="#">NEVADA</a> Nevada	Y
<b>Paul Harms</b> / Don Ostler	<a href="#">NEW MEXICO</a> New Mexico	Y
Kurt Dongoske	Pueblo of Zuni	Y
Charley Bullets / <b>LeAnn Skrzynski</b>	Southern Paiute Consortium	Y
Robert King	<a href="#">UTAH</a> Utah	Y
Pam Sponholtz / <b>Sam Spiller</b>	U.S. Fish and Wildlife Service	A
Cliff Barrett	UAMPS	Y
<b>Clayton Palmer</b> / David Bennion	Western Area Power Administration	Y
John Shields / <b>Don Ostler</b>	<a href="#">WYOMING</a> Wyoming	Y
<b>Total Yes</b>		<b>14</b>
<b>Total No</b>		<b>1</b>
<b>Total Abstain</b>		<b>4</b>
<b>Total Voting</b>		<b>15</b>
<b>Motion Passes</b>		

Abstentions count toward the quorum, but not the vote. For example, if 20 TWG members are present then a quorum is present (quorum=16). If the vote is 3-0-17 (that is 3 yeas, 0 nays, and 17 abstentions), the motion passes because ~~abstentions are non-votes for all purposes other than to establish a quorum. To explain further, the simple majority or two-thirds majority is based on all votes minus the abstentions.~~ those abstaining have chosen not to vote.

**Adjourned:** 4:55 p.m.

**Glen Canyon Dam Technical Work Group Meeting**  
June 28-29, 2011

**Conducting:** Shane Capron, Chairperson

**Convened:** 8:15 a.m.

**Committee Members/Alternates Present:**

Jan Balsom, NPS/GRCA  
Cliff Barrett, UAMPS  
Kerry Christensen, Hualapai Tribe  
Jerry Lee Cox, Grand Canyon River Guides  
Bill Davis, CREDA  
Kurt Dongoske, Pueblo of Zuni  
Paul Harms, NM Interstate Stream Commission  
Norm Henderson, NPS  
Garry Cantley, BIA  
Rick Johnson, Grand Canyon Trust  
John Jordan, Federation of Fly Fishers  
Robert King, UDWR

Glen Knowles, U.S. Bureau of Reclamation  
Ted Kowalski, CWCB  
Tricia McCraw, ADWR  
Gerald Myers, Federation of Fly Fishers  
Don Ostler, UCRC (alternate for WY)  
Clayton Palmer, WAPA  
LeAnn Skrzynski, Southern Paiute Consortium  
Larry Stevens, Grand Canyon Wildlands Council  
Bill Stewart, AGFD  
Jason Thiriot, Colo. River Commission/NV  
Marc Wicke, USFWS  
Michael Yeatts, Hopi Tribe

**Committee Members Absent:**

Charley Bullets, So. Paiute Consortium  
Christopher Harris, Colorado River Board/CA  
Amy Heuslein, BIA  
Tony H. Joe, Jr., Navajo Nation

John Shields, Wyoming State Engineer's Office  
Pam Sponholtz, USFWS

**Interested Persons:**

Perri Benemelis, ADWR  
David Bennion, WAPA  
Todd Chaudhry, NPS/GRCA  
Mary Daugherty, USGS/GCMRC  
Helen Fairley, USGS/GCMRC  
Dave Garrett, M<sup>3</sup>Research/Science Advisors  
Pam Garrett, M<sup>3</sup>Research  
John Halliday, DOI  
Chris Hughes, NPS/GLCA

Leslie James, CREDA  
John Jordan, Federation of Fly Fishers  
Ted Melis, USGS/GCMRC  
Jack Schmidt, Utah State University  
Sam Spiller, USFWS  
Bill Swan, Irrigation District  
Dave Trueman, USBR  
Scott Vanderkooi, USGS/GCMRC  
Randy Van Haverbeke, USFWS

**Meeting Recorder:** Linda Whetton

**Welcome and Administrative.** Shane asked for comments regarding yesterday's process for passing the budget motion. The following comments were made:

- This trend that appears DOI is willing or making decisions before the TWG or AMWG even meets to discuss or make a recommendation on some of those budget issues is a great concern to me. I would much prefer that they wait, let the process work and provide recommendations to them, and then make their decision. We've seen them make decisions based upon input from a TWG ad hoc group before the TWG or AMWG had a chance to discuss it or make a recommendation. I don't think that's productive for this group. If that's the way they want to operate, then it calls into question whether this group should meet. (Ostler)
- In the past we've asked people why they voted no or abstained. We didn't do that yesterday because we were rushed. It may be something we want to do in the future. (Balsom)
- One of the biggest bumps we had yesterday was about the processes set up. We identified policy issues and technical issues which were really numbered budget issues. The budget issues were sent right away to DOI for comment and if we didn't like their answer, we had two choices to send it back to them the way it

was or recast it as a policy issue and run it up through the AMWG. As a result, we had to do a lot of rewriting yesterday afternoon as a result of that budget process. I think that's a problem. (Barrett)

- DOI is taking the results of an Ad Hoc Group and responding to them, without waiting for TWG or AMWG to act. Some felt that it made the TWG and AMWG less relevant.
- Those who voted no or abstained should be asked their reasoning.
- The process of technical and policy issues caused the group to do a lot of rewriting yesterday.

Shane said he didn't think there would be time on today's agenda to review the project descriptions that Dr. Melis had prepared. As such, a WebEx would be scheduled for GCMRC to present and field questions from the TWG.

**Action Item:** Linda will query the TWG for their availability to participate in a WebEx conference call to discuss the following projects (**Attachment 6**):

1. BIO 2.Rxx: Mainstem juvenile humpback chub monitoring (including Marble Canyon sampling).  
New Cost (NFFCF); informs removal decisions near the Little Colorado River, and
2. BIO 2. E18, 11, 12: Formerly: Detection of rainbow trout movement from the upper reaches of the Colorado River below Glen Canyon Dam – Revised: as Natal Origins of Rainbow Trout in Marble Canyon/LCR Confluence Area

**Sediment Update.** Dr. Paul Grams gave a PPT presentation (*via phone*), "Update on Sand Mass Balance with Modeling" (**Attachment 7**). He provided the following results:

- The relatively high volume dam releases of winter-spring-summer 2011 (~ 17,000 → 24,000 cfs) do not permit sand retention
  - Measured sand export from January 1, 2011 to May 2, 2011:
    - ~0.7 million tons loss from upper Marble Canyon (RM 0 to 30)
    - ~0.15 million tons loss from lower Marble Canyon (RM 30 to 61)
    - ~1.05 million tons loss from eastern Grand Canyon (RM 61 to 87)
    - ~0.2 million tons loss from central and western Grand Canyon (RM 87 to 225)
- Model-predicted sand export from May 2, 2011 to October 1, 2011:
  - ~1.0 million tons loss from upper Marble Canyon (RM 0 to 30)
  - ~0.6 million tons loss from lower Marble Canyon (RM 30 to 61)
  - ~0.6 million tons loss from eastern Grand Canyon (RM 61 to 87)
  - No model prediction for central and western Grand Canyon (RM 87 to 225)
- Sand is moving out of upper Marble Canyon by deflation (the "new" pile of sand delivered by Paria in Fall 2010, is shrinking and being transported through the downstream reaches in suspension, not moving downstream as a "wave" on the bed)

*Q: This is the first time we've had these high flows since the model was developed with high export of sand loss, I'm wondering if any work was done to compare the predicted model loss of sand with actual sand loss during the entire sand export conditions and how that looked. (Ostler)*

*A: Slide 3 is entirely on observation and slide 4 is entirely modeling. We haven't had the chance yet to compare the model with observation because it's only been run in the past month. That will happen later this summer or early fall. Right now you're looking at the best comparison we've got. (Grams)*

*Q: Was there any attempt to answer to questions, Paul said:*

- No comparison of modeling to actual has yet been done.
- GCMRC did not look at alternatives to these alternative operations to see if you could minimize the amount of sediment transport? (Henderson)

*A: No, there was not. There wasn't much flexibility. (Grams)*

- Q: So I add up the total in the table above shows about 4 million metric tons of sediment lost this water year. Is that right? (Johnson) moved through the system during this time period.

*A: If you add up the numbers on the table, that would be right. (Grams)*

*Q: The SAs have asked if it possible to conduct some predictive 20-year assessments of sand balance in the system given these existing, new administrative requirements such as equalization and the knowledge that we now have on long-term inputs into the system? Is that in the planning at GCMRC? (Garrett)*

*A: It might be something Scott Wright used to do. We can't predict what the hydrology is going to do. It quickly becomes an exercise based on extreme assumptions and the approach Scott took was to say we have these huge uncertainties so why don't we take a look at the best case scenario and see what that is and then you can use the outcome of that to make decisions and judgments about what other things would do. (Grams)*

- Because it is impossible to predict the hydrology, GCMRC has not done long-term (20-year) predictive assessment of sand balance.

**2012 Hydrograph Development Status.** Dave Trueman gave a PPT presentation (**Attachment 8a**) and provided copies of the "DOI and DOE Operating Hydrograph Recommendations for Glen Canyon Dam (2012 Water year)" dated June 6, 2011, (**Attachment 8b**). As He said that as a result of DOI and DOE discussions, they adopted the targeted method over doing the original 2011 hydrograph in 2012:

#### 2011 Hydrograph Method

- Monthly volume may vary +/- 100 kaf from average of remaining balance
- 16,000 cfs limit up to 11.0 maf annual release
- 22,000 cfs limit above 11.0 maf annual release
- No limits if needed for equalization
- ROD limits apply

#### Targeted Method

- August releases are limited using percentage method to conserve sediment inputs
- Sept/Oct low-steady releases also conserve sediment
- No limits on other months
- No limits if needed for equalization
- ROD limits apply

Q: Is there any prospect that in answer to questions, Dave said:

Reclamation is pressed to complete the steady flows in Sept/Oct will change as a result of water for equalization and turbine capacity, 15K or 16K rather the previously lower number? (Jordan)

- A: That's what we've been planning in our 24-month study. When you look at the EA for the experiments, it envisioned higher releases in higher annual release years for the Sept/Oct steady flows. Frankly, under our equalization requirements, we release flows, and so they are moving water through at powerplant capacity and it's just serendipitous that we have a maintenance schedule that helps keep those flows lower in September and October. At 14,900 that's considerably less than the 24,000 if we didn't have the maintenance schedule. We're pressed to complete our equalization as quickly as possible and that generally means powerplant capacity. (Trueman)

Q: What do you foresee in a range of months would be the end of equalization that might occur? (Jordan)

- A: Our The latest 24-month study shows continuing at powerplant capacity into the next calendar year for at least a couple of months. It's pretty obvious the June runoff hasn't been as high as the Weather Service predicted and we're expecting their forecast will drop off a bit. Even under a fairly, extreme drop in in-flow it's still very high this year so it might have us at powerplant capacity and maybe into into November and December. (Trueman)

Q: When looking at the water year for Oct 2011 to Oct 2012, it looks like the median was 800,000, is that right? (Johnson)

A: It was about 400,000. (Trueman)

Q: So what you're projecting would be the loss of both, 500,000 metric tons? (Johnson)

- A: We've While we have become very accustomed to 8.23 maf releases and frankly that's, they are not normal. This is the driest 10-year period on record. We can expect this kind of variation in the system I suspect. Higher flows are not an unusual event, although this is pretty unusual. This is a pretty massive input. (Trueman)

Q: If there were no sediment inputs, would you expect that blue line to continue on the same track? (Henderson)

A: I suppose it might be 400,000 less. Just quick math says that if the inputs on the blue line were 400,000 a year, if there are none, then it's got to be 400,000 less. (Trueman)

Shane asked if there was anyone who would be voting against the motion ~~listed on the agenda.~~

~~Cliff said he didn't have a problem with the hydrograph but did with what was described in the paper so he might offer some changes. Clayton said DOI-DOE spent a lot of time putting the hydrograph together, but the description of it was developed by Reclamation and Western hadn't seen it. However, he felt WAPA would be open to changes in the description. Rick said he wasn't going to propose an alternative hydrograph.~~

Proposed Motion as proposed: The TWG recommends to AMWG for their approval the DOI-DOE Proposed Hydrograph for Water Year 2012.

Cliff's objection was language under the section "Purpose." It really focuses only on sediment and that's not the whole goal of this whole program. He said it's a hydrograph and not a scientific document and doesn't need all the background material. He suggested deleting from the second sentence in the last paragraph on page one through Science Principles.

Shane said comments and/or potential changes would be captured in the minutes and then Reclamation, DOI, and DOE could consider before the document goes to the AMWG. As far as the motion to be considered, he said there is language that focuses on the proposed operating parameters of that document.

Shane said he preferred the TWG request DOI consider the comments seriously and note that people were pretty focused on the parameters of the hydrograph. Cliff said if that's what they're voting on, he was okay with the motion. Shane said there would be a de-briefing with Lori following the TWG meeting and he would convey those concerns to the Department.

John expressed concern that if sand is compared to power on the national scene, sand is going to lose every time. Robert said he was concerned about setting a precedent for a hydrograph based on sediment and whether the TWG is restricting itself. Sediment may be the driving force right now, but he doesn't want it to be the only driving force in the future.

**Revised Motion (Proposed by Kerry Christensen, seconded by Robert King): The TWG recommends to AMWG for their approval the DOI-DOE Proposed Hydrograph for Water Year 2012 as described in the Proposed Operating Parameters of the June 6, 2011, document.**

Speaking against the motion, Rick said the models are suggesting 4 million metric tons of sediment will be lost out of the Grand Canyon this year. He couldn't support a proposal that's likely to create a significant loss of sediment out of the system. He also doesn't feel it's within the spirit of the GCPA. Robert said he was sympathetic to Rick's concerns but felt that hydrology is really running the system and the constitutional constraints on water delivery in the Colorado River basin.

After discussion, the group acted on the following motion:

**Motion (Proposed by Kerry Christensen, seconded by Robert King): The TWG recommends to AMWG for their approval the DOI-DOE Proposed Hydrograph for Water Year 2012 as described in the Proposed Operating Parameters of the June 6, 2011, document.**

Representative	Stakeholder Entity	Vote
<b>Bill Stewart</b> / Andy Makinster	Arizona Game and Fish Department	A
<b>Tricia Crawford</b> / Perri Benemelis	<a href="#">ARIZONA</a> Arizona	Y
Amy Heuslein / <b>Garry Cantley</b>	Bureau of Indian Affairs	Y
<b>Glen Knowles</b> / Marianne Crawford	Bureau of Reclamation	Y
Christopher Harris	<a href="#">CALIFORNIA</a> California	absent
<b>Ted Kowalski</b> / Jennifer Gimbel	<a href="#">COLORADO</a> Colorado	Y
<b>Bill Davis</b> / Leslie James	CREDA	Y
<b>Gerald Myers</b> / John Jordan	Federation of Fly Fishers	Y
<b>Jerry Lee Cox</b> / Sam Jansen	Grand Canyon River Guides	A
Rick Johnson / Nikolai Lash	Grand Canyon Trust	N
<b>Larry Stevens</b>	Grand Canyon Wildlands Council	A
Mike Yeatts	Hopi Tribe	A
<b>Kerry Christensen</b> / Loretta Jackson-	Hualapai Tribe	Y

Kelly		
<b>Norm Henderson</b> / Chris Kincaid	National Park Service - GLCA	A
<b>Jan Balsom</b> / Todd Chaudhry	National Park Service - GRCA	A
Tony Joe	Navajo Nation	absent
McClain Peterson / <b>Jason Thiriot</b>	<a href="#">NEVADA</a> <del>Nevada</del>	Y
<b>Paul Harms</b> / Don Ostler	<a href="#">NEW-MEXICO</a> <del>New Mexico</del>	Y
Kurt Dongoske	Pueblo of Zuni	Y
Charley Bullets / <b>LeAnn Skrzynski</b>	Southern Paiute Consortium	Y
Robert King	<a href="#">UTAH</a> <del>Utah</del>	Y
Pam Sponholtz / <b>Marc Wicke</b>	U.S. Fish and Wildlife Service	A
Cliff Barrett	UAMPS	Y
<b>Clayton Palmer</b> / David Bennion	Western Area Power Administration	Y
John Shields / <b>Don Ostler</b>	<a href="#">WYOMING</a> <del>Wyoming</del>	Y
	<b>Total Yes</b>	<b>15</b>
	<b>Total No</b>	<b>1</b>
	<b>Total Abstain</b>	<b>7</b>
	<b>Total Voting</b>	<b>16</b>
	<b>Motion Passes</b>	
Abstentions count toward the quorum, but not the vote. For example, if 20 TWG members are present then a quorum is present (quorum=16). If the vote is 3-0-17 (that is 3 yeas, 0 nays, and 17 abstentions), the motion passes because <del>abstentions are non-votes for all purposes other than to establish a quorum. To explain further, the simple majority or two-thirds majority is based on all votes minus the abstentions. Those abstaining have chosen not to vote.</del>		

~~Shane asked if anyone wanted to speak to their abstentions.~~

~~Jan says it gets back to the DOI agencies being ex-officio voting members on the AMWG. She feels the TWG should operate under same voting policy as the AMWG. It's awkward if they vote differently from how their AMWG member would vote.~~

~~**Follow-up from Budget Motion** - Since the budget motion was passed late yesterday, Shane asked if anyone wanted to speak to their abstention or negative votes. Jerry Cox said he voted no was because he didn't feel there was sufficient time to discuss the motion regarding excluding comments on the Socioeconomics report. He said the BAHG did a really good job on framing the issues and Shane did a great job on the SEAHG. However, he feels more expertise is needed for the USGS to help push the program along.~~

~~**BOR Updates on EAs** - In the interest of time, Glen said he wouldn't make a PPT provided copies of his PowerPoint presentation (**Attachment 9**) but provided copies of it to the group. Reclamation is in the midst of a Cooperating Agency Review which ends today. They intend to revise the two EAs based on comments received and then have a 2-week public comment period for the HFE Protocol EA and a 3-week comment period for the Non-native Fish Control EA. Once that process is completed, the two EAs will be finalized. Another step was added to the process and that was to do NHPA 106 Compliance. Letters were sent to the SHPOs on eligibility and effect. They did determine sites that were eligible for consideration and determined there was an adverse effect to sites for both undertakings and are in the process of setting up meetings with the appropriate parties to conclude Section 106 compliance with the goal of finding a resolution for adverse effect, especially with the five tribes, SHPO, and the Advisory Council. Assuming that can be done, they'll complete ESA consultation with the FWS on the two undertakings and get a biological opinion on the two proposed actions. They could get to a decision notice this summer and if they can get to a FONSI on both EAs, they may be able to implement the HFE Protocol in time to consider an HFE in the fall provided there are sediment inputs.~~

Dr. Melis said GCMRC intends to review the comments from the SAs in completing the science plans which will be included as appendices in the EAs.

LTEMP EIS Update. Glen said a Notice of Intent was signed to begin the EIS process and it should be published in the Federal Register within the next two weeks. Scoping will get started and Reclamation will begin working with people to get the cooperating agencies and agreements in place with their co-lead agency, the National Park Service.

Shane said the TWG has been asked to comment on is the potential role of the SAs in the LTEMP process. He asked Dr. Garrett how the SAs could help that process and when reviews of products could be done. Because the TWG wants to look at trade-off analysis and incorporating both biophysical and socioeconomic cultural impacts and trade-off assessments, Dr. Garrett said the SAs would be looking at those areas. Dr. Melis referenced page 236 in the FY11-12 workplan (**Attachment 10**) for work the SAs will be doing. Shane said it would be important for the TWG to provide input to DOI on how the SAs should be involved in the LTEMP process or DOI will make that decision. The following suggestions were captured:

- Two roles for the SAs: 1) be involved as plans are being put together so they understand what went into them, and 2) be independent evaluators or observers so that when they do an evaluation, they understand what was developed rather than just looking at it from what's on the paper.
- The SAs could be useful by: 1) making some presumptions that there are DFCs to be met, constructing a set of alternatives all of which are targeted at meeting those DFCs while keeping within the law and keeping a proper balance among the resources, and 2) GCMRC as the science arm of the AMP would be involved in describing one alternative or another alternative actually has a likelihood to accomplish the DFCs while keeping the balance. The SAs would look at their evaluations of how and whether the alternatives would achieve this and whether the experimentation that is inevitable lead part of the LTEMP and the monitoring programs are robust enough to tell the decision-makers whether the implementation of some alternative is actually achieving the goals.
- Need for sufficient DOI funding for the SAs involvement.
- The Department needs to report back to the AMWG on the status of the DFCs. That work product from the AMWG is a critical element of the LTEMP. The 1995 EIS cost over \$100 million.
- Need for adequate representation on the SAs for peer review of how cultural resource issues and Native American issues are addressed.

Core Monitoring Update. Shane said this item was covered in yesterday's discussion. The next step is for him to work with Jack Schmidt to bring a revised draft to the next meeting and the CMAHG to complete Appendix B.

Species of Concern Update. Larry Stevens distributed copies of the "GCWD Draft White Paper: Draft 6/15/2011 AMP Goal 3 White Paper" (**Attachment 11a**) and his PPT presentation (**Attachment 11b**). The white paper is still in draft and comments are still welcome. The charge from the AMWG was to develop a list of which species had been lost in post-dam time and perhaps being able to assemble enough information to understand why they might be considered in this effort. He said there is no commitment for funding from the AMP to restore extirpated or declining species.

Two Larry said that two administrative issues emerged from this analysis that haven't been discussed by the AMWG. First, many TMC taxa of management concern (TMC) were recognized from the CRE that may warrant management attention, if not by the AMWG, then by other managing agencies. A total of 47 (54 percent) of the 85 TMC considered in here had potential restoration scores > 50 percent (Table 2; Appendix A). Also, many species with scores <50 percent lacked critical information on distribution,

habitat use, or population status. There appears to be considerable opportunity for improving the quality of basic information on TMC.

Second, AMWG monitoring recommendations currently focus primarily on HBC, as well as flow and sediment transport, with minor attention to KAS. However, at least 5 species (1 plant, 1 lizard, and 3 non-listed fish) scored higher than HBC in our analysis. Concern for the 3 non-listed CRE fish arose from the desire of the Committee to prevent those species from becoming federally endangered. The zebra-tailed lizard scored above HBC because it would be such an inexpensive and easily-accomplished restoration action. AMWG may choose to engage in further discussion of the restoration potential of these TMC, and we hope that the information provided here contributes to those discussions and to improved stewardship of the CRE.

**Motion (Proposed by Ted Kowalski, seconded by Mike Yeatts): TWG recommends that AMWG consider the report of the Species of Concern Ad Hoc Committee entitled, "Assessment of Taxa of Management Concern in the Colorado River Ecosystem, Glen and Grand Canyons, Arizona, USA: Habitat Needs, Availability, and Ecosystem Roles" dated 15 June 2011, which meets the criteria set forth in the AMWG motion of April 2009, calling for "a review of information about an assessment of the status of habitat needs and availability, and ecosystem roles" of native species of management concern. Passed by consensus.**

**Socioeconomic's Socioeconomic Ad Hoc Group Update.** Dr. Helen Fairley said the key piece of the report is the need for resolution on the information needs in a broad sense, not just hydropower. They've run into the issue of how that discussion should be guided and having the appropriate expertise on board. She noted that Anne Castle's perspective is that there is no need or obligation that it be strictly the members who are the TWG representatives here to be part of the ad hoc ~~committees~~ committee, that there is room for expertise to be brought in from other parts of a given agency. For example, the Park Service has an economist that they could bring to be part of the discussion. Other organizations might have economists that aren't sitting at the table but could be part of that committee to help refine those INs. Even though they don't have the expertise, they have a work plan for this year that they're trying to move forward at some level. They've had discussions among Park Service and WAPA in terms of how to make incremental progress. One piece they're going to do in the context of the Knowledge Assessment is the GTMax review as described in the FY11 workplan. It's serving a number of different ~~purpose~~ purposes, but one of the more important ones from the TWG's perspective is that it's an opportunity for everyone that wants to know more about that model to get a much more in-depth understanding of it because that's the model that WAPA is proposed as a main method for making assessments of effects under different operations. They also want outside expertise to help in the review. That will be done in the context of the workshop at the end of August and then move right into the actual Knowledge Assessment Workshop.

The other piece is the Park Service undertaking the economic study. They are planning to move forward with doing economic analyses of different components of the recreational use in the Colorado River. As an interim measure to build on that work and expand it to incorporate more attention to this program, they proposed providing them with some additional funding from the small amount of money that was set aside for recreational fisheries work this year to supplement and expand upon what they're proposing to do in FY11-12. The idea was to expand on the scope of the sample of fishermen that would be included in the survey. Originally they were proposing to look specifically at the people that are going upstream into the Lee's Ferry Reach to fish from boats and using fishing guides. They suggested it might be valuable to incorporate more of the walk-in fisherman and people who aren't necessarily boat supported, people that are coming in from the reservation side of things as well as just coming in at the ramp and walking downstream in order to get a bigger and more comprehensive picture of the people that are using that fishery. In combination with other TWG input, there may be additional questions in the context of that survey.

*Q: How much money has been spent on the GTMax review? It seems like this is the model that was developed by WAPA to model their operations attached to their pocketbook. I don't understand why so much effort would be presented in this group to review that model where it's probably been peer reviewed, checked, and double-checked. If it doesn't work, it's causing them damage. (Ostler)*

*A: The model was developed to serve a specific purpose for WAPA and now it's being proposed to be used in the broader context for additional purposes potentially in this program. It's set up to look at how power production values can be maximized within a given context of a system that is defined as different ways for different operating groups, groups of operating hydroelectric facilities together. Now we're proposing to use that specifically to understand the effects of changes the operation of Glen Canyon Dam on hydropower values and broader economic values. We need to look at that and see if that isn't the most appropriate model to be using for that purpose or are there other models potentially that would more appropriate (Fairley)*

*C: I don't believe there is or has ever been any intention to use the GTMax for broader economic values. GTMax was used for power economics. That shouldn't be a concern. (James)*

*C: The GTMax model has been around a long time and has been peer reviewed so don't think we need it. (Barrett)*

*C: This is not our position at WAPA that we'd hold a panel where the GTMax model would be reviewed for its applicability. It is not Western's position that we're going to subject the GTMax model to a peer review as to its applicability in this case. We are very enthusiastic about the roll-out in which we describe how it's used, what its inputs are, and describe how it being used, what its inputs are, what its outputs are, and how those outputs are used, and whether the WCC is in market should be used to determine economic values or whether that should be internally incorporated into the model, that is should the model be an open model or a closed model. Any reports produced would be subject to GCMRC's peer review process, not Western's. (Palmer)*

*R: You're talking Dave Garrett and McClain Peterson, right. I made that request specifically for Dave Garrett and the SAs to DOI before that Survey Instrument work was on the table. My intention and hope at the last AMWG meeting was that that task was going to be broader, to be all the economics work, but Anne chose to focus it on just that one thing. Then follow up with Lori I was told that Dave Garrett wouldn't be made available to do the work so that led to the budget motion to again request that. We really need the expertise and hope the TWG will be supportive of that at the next AMWG meeting. If people want McClain and Dave to serve on the SEAHG, then they should talk with McClain before the next AMWG meeting. Also, it would be good to inform DOI of this prior to the next AMWG meeting. (Capron)*

*C: I thought what Don suggested was a good idea. It's a degree of specificity more than what was passed as a budget motion yesterday. Let's have this noted in the minutes so it continues on to AMWG. Have Dave Garrett and McClain Peterson as the co-chairs of the SEAHG. That's different than what you're talking about. (Palmer)*

Some members indicated that they didn't feel the GTMax model needed to be reviewed by GCMRC.

**Survey Instrument Ad Hoc Group Report.** Dr. Garrett distributed copies of his report and PPT presentation (**Attachment 12**). He said it was great working with McClain and others who support the SIAHG's work. He said the group didn't review the survey instruments because it couldn't be accomplished. However, they looked at the questions being asked in the Survey Instrument and added some information needs the TWG and other participants wanted to see in that document. Upon submittal of the report to Ms. Castle, he requested and received permission to make today's presentation. He said Ms. Castle liked the report and is handling interactions with the Park Service. He said there were two issues that came up: (1) Are the INs for the SEAHG program fully developed, and can INs be added. There was a concern the INs that they were given were not fully developed. He said they agreed to allow the committee members to add INs and or questions if they saw that was needed. (2) They also felt a definition was needed to clarify how input from the ad hoc group related to future findings of the NPS survey and how that should be interpreted. They decided to use the SEAHG report as guidance in developing additional INs.

The SIAHG only dealt with issues related to the Lee's Ferry area of sports fishery and boating, and boating through the Grand Canyon. In addition to new questions they proposed, they felt strongly about making some statements about how the Park dealt with the unique characteristics of the Canyon and the fishing anglers and how they reference Lee's Ferry against other sports fishery locations in the Southwest. They felt there were two areas that were really missed, the sports fishery at Lee's Ferry and the walk-in anglers. They asked the Park to look into clarification of those. The group had a discussion

that Native Americans utilize walk-in and specifically the walk-in the lower mile of that region. They may have been possibly impacted by changes in regulations and access. They posed a question on that. Also missing from the survey was the half-day float trips which they also added into the SIAHG report. Dave said Ms. Castle advised that he could talk with Bruce Peacock regarding recommendations from the SIAHG on the survey.

Helen said the TWG may want to provide information on how recreational values may change under different flow regimes.

**Public Comments:**

John Jordan: It would be very helpful if there was an e-mail sent with the dates for upcoming meetings and workshops.

**Adjourned:** 2:00

**Attachment 13:** A Review of the GCMRC Report on An "Analysis of Biophysical and Socio-cultural Impacts of Four Experimental Options".

Respectfully submitted,

Linda Whetton  
Upper Colorado Regional Office  
U.S. Bureau of Reclamation

### General Key to Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources  
AF – Acre Feet  
AGFD – Arizona Game and Fish Department  
AIF – Agenda Information Form  
AMP – Adaptive Management Program  
AMWG – Adaptive Management Work Group  
AOP – Annual Operating Plan  
BA – Biological Assessment  
BAHG – Budget Ad Hoc Group  
BCOM – Biological Conservation Measure  
BE – Biological Evaluation  
BHBF – Beach/Habitat-Building Flow  
BHMF – Beach/Habitat Maintenance Flow  
BHTF – Beach/Habitat Test Flow  
BIA – Bureau of Indian Affairs  
BO – Biological Opinion  
BOR – Bureau of Reclamation  
CAHG – Charter Ad Hoc Group  
CAPA – Central Arizona Project Association  
GCT – Grand Canyon Trust  
CESU – Cooperative Ecosystems Studies Unit  
cfs – cubic feet per second  
CMINs – Core Monitoring Information Needs  
CRBC – Colorado River Board of California  
CRAHG – Cultural Resources Ad Hoc Group  
CRCN – Colorado River Commission of Nevada  
CRE – Colorado River Ecosystem  
CREDA – Colorado River Energy Distributors Assn.  
CRSP – Colorado River Storage Project  
DAHG – Desired Future Conditions Ad Hoc Group  
DASA – Data Acquisition, Storage and Analysis  
CWCB – Colorado Water Conservation Board  
DBMS – Data Base Management System  
DOE – Department of Energy  
DOI – Department of the Interior  
EA – Environmental Assessment  
EIS – Environmental Impact Statement  
ESA – Endangered Species Act  
FACA – Federal Advisory Committee Act  
FEIS – Final Environmental Impact Statement  
FRN – Federal Register Notice  
FWS – United States Fish & Wildlife Service  
FY – Fiscal Year (October 1 – September 30)  
GCD – Glen Canyon Dam  
GCT – Grand Canyon Trust  
GCMRC – Grand Canyon Monitoring & Research Ctr.  
GCNP – Grand Canyon National Park  
GCNRA – Glen Canyon National Recreation Area  
GCPA – Grand Canyon Protection Act  
GLCA – Glen Canyon National Recreation Area  
GRCA – Grand Canyon National Park  
GCRG – Grand Canyon River Guides  
GCWC – Grand Canyon Wildlands Council  
HBC – Humpback Chub (endangered native fish)  
HMF – Habitat Maintenance Flow  
HPP – Historic Preservation Plan  
INs – Information Needs  
KA – Knowledge Assessment (workshop)  
KAS – Kanab ambersnail (endangered native snail)  
LCR – Little Colorado River  
LRRMCP – Lower Colorado River Multi-Species Conservation Program  
LTEP – Long Term Experimental Plan  
MAF – Million Acre Feet  
MA – Management Action  
MATA – Multi-Attribute Trade-Off Analysis  
MLFF – Modified Low Fluctuating Flow  
MO – Management Objective  
MRP – Monitoring and Research Plan  
NAU – Northern Arizona University (Flagstaff, AZ)  
NEPA – National Environmental Policy Act  
NHPA – National Historic Preservation Act  
NPS – National Park Service  
NRC – National Research Council  
O&M – Operations & Maintenance (USBR funding)  
PA – Programmatic Agreement  
PEP – Protocol Evaluation Panel  
POAHG – Public Outreach Ad Hoc Group  
Powerplant Capacity = 31,000 cfs  
R&D – Research and Development  
RBT – Rainbow Trout  
RFP – Request For Proposals  
RINs – Research Information Needs  
ROD Flows – Record of Decision Flows  
RPA – Reasonable and Prudent Alternative  
SA – Science Advisors  
Secretary – Secretary of the Interior  
SCORE – State of the Colorado River Ecosystem  
SHPO – State Historic Preservation Office(r)  
SOW – Scope of Work  
SPAHG – Strategic Plan Ad Hoc Group  
SPG – Science Planning Group  
SSQs – Strategic Science Questions  
SWCA – Steven W. Carothers Associates  
TCD – Temperature Control Device  
TCP – Traditional Cultural Property  
TES – Threatened and Endangered Species  
TWG – Technical Work Group  
UCRC – Upper Colorado River Commission  
UDWR – Utah Division of Water Resources  
USBR – United States Bureau of Reclamation  
USFWS – United States Fish & Wildlife Service  
USGS – United States Geological Survey  
WAPA – Western Area Power Administration  
WY – Water Year (a calendar year)

**Q/A/C/R = Question/Answer/Comment/Response**

Updated: May 12, 2010