

Glen Canyon Dam Technical Work Group Meeting

April 2-3, 2007 and
Conference Call held April 19, 2007

Conducting: Kurt Dongoske, Chairperson

Convened: 9:42 a.m.

Committee Members Present:

Mary Barger, WAPA
Charley Bullets, Kaibab Band of Paiute Indians
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
Robert King, UDWR
Glen Knowles, USFWS

Dennis Kubly, USBR
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
Don Ostler, UCRC
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Bill Werner, ADWR
Michael Yeatts, The Hopi Tribe

Committee Members Absent:

Steven Begay, Navajo Nation
Christopher Harris, Colo. River Board of California

John Shields, WY State Engr. Office
John O'Brien, Grand Canyon River Guides

Alternates Present:

Don Ostler
Andre Potochnik

For:

John Shields, State Engineers Ofc./WY
John O'Brien, Grand Canyon River Guides

Interested Persons:

Matthew Andersen, GCRM/USGS
Mike Berry, USBR
Wyatt Cross, University of Wyoming
Helen Fairley, GCRM/USGS
Dave Garrett, M³Research/Science Advisors
Andrea Gonzales (Bob Lynch's Office)
John Hamill, GCRM/USGS
Kara Hilwig, GCRM/USGS
Loretta Jackson-Kelly, Hualapai Tribe

Leslie James, CREDA
Ted Kennedy, GCRM/USGS
J.D. Kite, GCRM/USGS
Bill Leibfried, SWCA
Ted Melis, GCRM/USGS
Pam Sponholtz, USFWS
Dave Wegner, Member of the Public
John Weisheit, Living Rivers
Scott Wright, GCRM/USGS

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative. The Chairman welcomed the TWG members, alternates, and interested persons. A quorum (16 members) was established and attendance sheets distributed.

Review of Draft Minutes from August 2-3, 2006, Meeting. Pending one change, the minutes were approved by consensus.

Review of Draft Minutes from November 7-8, 2006, Meeting. Pending one change, the minutes were approved by consensus.

Action Items Tracking Report (Attachment 1). The TWG also discussed the following action items in more detail:

Clarification on Robert's Rules of Order. Kurt said this action item was the result of two competing motions presented at the last TWG meeting. Mary Orton advised him that if a motion was presented and seconded, then it had to be dealt with by the group. If someone wanted to amend the motion, it would have to be done after the vote. She told him the TWG should try to develop motions in a participatory environment in an effort to reach consensus or a compromise. Kurt questioned whether the TWG is better served to make motions or develop alternatives and present those to the AMWG with a statement about their support on each of the alternatives. Randy Seaholm suggested Reclamation may need to take a more direct approach in bringing questions to the TWG. The TWG would consider those questions and if they saw alternatives, would send those back to Reclamation. He sees the TWG as an advisory group and not having to direct everything and that perhaps GCMRC needs more latitude on how to do things but definitely needs clear guidance on recommendations to the AMWG so that when guidance is given, they have an opportunity to do the work and the TWG doesn't second guess how they go about doing the science work.

TWG Operating Procedures. Kurt suggested one way of dealing with the issues was to establish an ad hoc group to review the Operating Procedures with the following in mind: scheduling meetings and how the members work together; creating alternatives vs. motions; and if there is a hybrid of motions and alternatives, determine how they would be handled. He said the members should also avoid introducing competing motions. The other aspect would be to have the TWG Chair poll members on how close they are on certain issues, but he feels that would very time consuming and probably not very effective.

C: The TWG just needs to follow their Operating Procedures. (Persons)

C: I'm supportive of an ad hoc group but feel guidance is needed from the Roles AHG before the ad hoc group can perform.

C: If Roles AHG is going to override anything the TWG does, then it doesn't make any sense to form an ad hoc group. (Johnson)

TWG Meeting Schedule. Kurt presented an overview of the 2007-09 Program Schedule (**Attachment 2**) prepared with assistance from Dennis Kubly and John Hamill. They intend to provide the schedule to the AMWG at their May meeting in an effort to help them establish their schedule for the outyears so the TWG can bracket their meetings around AMWG meetings. He reviewed the current schedule for the LTEP EIS which would culminate in a Record of Decision being signed in December 2008. The MRP update would be revised once the long-term experimental plan was completed and revisions of the MRP would occur in the first quarter of FY09. Randy pointed out the importance of adhering to the federal budget cycle when scheduling meetings. In addition, Kurt said some meetings could be held via conference calls and bring the the TWG together only when necessary. Kurt also asked if the TWG wanted to resume holding half-day meetings before and after AMWG meetings so they could deal with any AMWG assignments immediately.

Science Advisors Report. Dr. Garrett said the Executive Summary (**Attachment 3a**) was accidentally omitted from the meeting packets but copies would be provided this afternoon. Because the agenda was already behind schedule, he went through the PowerPoint presentation (**Attachment 3b**) quickly but emphasized there was strong participation in that program. With GCMRC assistance, the SPG developed three major science planning documents and some long-term experimental plan alternatives in 12 months. He provided recommendations for future use if another science planning or management planning exercise was needed. He then distributed copies of the document, "A Report on Activities and Accomplishments of the GCD AMP Science Planning Group: 2005-2006" (**Attachment 3c**) and the PowerPoint slides (**Attachment 3d**). He was adamant that the AMWG, TWG, GCMRC, the science advisors, and others who work in this organization meet to how they are going to operate according to laws, legislation, and mission and goals. As such, he offered the following recommendations:

1. Establish support for common AMP purposes
2. Establish focus on priority elements of critical goals to gain defined outcomes in explicit time periods
3. Delete use of objectives
4. Reformulate INs into focused science and management questions to guide long and short term program efforts
5. Develop operational clarity for roles and responsibilities of each AMP entity.

He also reviewed recommendations for adaptive management collaboration, for science and management program planning and implementation, and program resources. He said one of the most positive things were memos received from Mark Limbaugh. He stressed the importance of holding an AMP Effectiveness Workshop. He said all parties need to come together in adaptive management and collaboration and agree on the methodologies for accomplishing a common purpose.

Warmwater Non-Native Fish Management Plan Update. Kara Hilwig gave a PowerPoint presentation on the "Invasive Aquatic Species Management Plan Development and Update" (**Attachment 4**). Kara concluded that the most exciting component of the plan is the integration ability between the foodbase program at GCMRC and the non-native program as well. As far as the biogenetics model goes and the data needed to feed the models, the data inputs are quite similar between the foodbase program and the non-native fish program but the end products are slightly different. The response variable for the non-native fish program is going to be humpback chub. The response plan should be available in the fall of 2007.

Q: Will the work with channel catfish and sonic tags be down below Diamond Creek and is there funding in the FY07 budget? (Christensen)

A: Yes, it's below Diamond Creek and there is funding. (Hilwig)

Q: It's great to talk about a model that shows you that competition might be important but there is zero experimental evidence showing anything about competition with any of the fish that you're talking about here in this context. Ignorance is a very large risk assuming the models actually covers the right. Will you address the uncertainty issues in a serious and scientific way? (Stevens)

A: Diet analysis is really going to be the key in that especially in linking some of those. The isotropic data will lend itself quite well to that. (Hilwig)

Q: You mentioned you can only detect large changes in species. How are you dealing with that in your monitoring program so you can improve that detectability? (Davis)

A: The short answer is to continue the monitoring. Lew Coggins is our expert for modeling these population changes. We just monitor occasionally and it's really difficult to see anything but the very large changes. With a continuous monitoring program, I think we're doing a much better job adding to the long-term record that will help us look at any larger changes especially if it's a long-term, ongoing monitoring program for humpback chub. We will certainly continue to collect data on all the species, native and non-native through monitoring on those each year. (Andersen)

Q: Do you have any idea of the percent change that you need to have in order to detect for any of these species? (Davis)

A: Well, with humpback chubs that present its changes relatively small is on the order of 10-30% that we're going to be able to see with an ongoing, multi-year study. I know that you have cited to me in a previous TWG meeting that we need to know 50%. (Andersen)

Q: Something like fathead minnows. How many do you have to have to detect a change? (Davis)

A: We can tell you now that the removal reach, because there has been such intensive sampling there, that rainbow trout removal reach, that HBC are making a big increase. We've also seen big increases in flannelmouth suckers especially in the LCR, probably on the order of 20-30%. (Davis)

Q: Are you going to use any of your sonic tags on those catfish? (Steffen)

A: No. The sonic tag work will all be down below Diamond Creek. (Hilwig)

Q: Could you comment a little more about the scope of what you're going to do. You're going to stay between Glen Canyon and Lake Mead? How far up the LCR are you going? Are you going above Lake Powell? What are your thoughts? (Seaholm)

A: We've addressed all the sources of non-natives to the Grand Canyon. Granted that goes far beyond the jurisdiction of this group so maybe recommendations in the plan would be say Forest Service should be managing non-natives in this particular reach because it drains into the Grand Canyon. I guess the other component to that is also fish coming upstream from Lake Mead or even coming through the dam. All these sources should definitely be at least identified so that they can be addressed by some entity. (Hilwig)

Q: Okay, but how far are you going to go in your effort? Are you going to go to the dam and see perhaps how many are coming through the dam? Are you going to look at the mouth where it goes into Lake Mead? I'm just trying to get a feel for how far you're going to go. Are you going to go look at Green River, Wyoming or down to Yuma? (Seaholm)

A: No, I think it will be in the bounds of what's coming through the dam and what might be coming out of the lake as far as the mainstem Grand Canyon. (Hilwig)

C: I think it's realistic for us to look at the watershed. We recognize that the AMP is not going to be funding work that's outside of the Colorado river ecosystem as defined by this program so it's not incumbent upon the AMP to act on those but it would also be terribly unrealistic for us to stop looking there because we see non-natives coming in especially

from the LCR. I think if we can identify a source, we would point to that but then recognize that that's going to be addressed by some other entity. (Andersen)

Q: Addressed yes, but in terms of where are you going to go look? How far do you need to go look? Can you stop at the dam and just say we're going to look and see what we have in 200 yards below the dam or whatever? (Seaholm)

A: I think Kara's answer was right on there. For the mainstem, I think we're going to go to the dam. (Andersen)

Assignments from AMWG. Kurt said there weren't any specific assignments from the AMWG and that the TWG could read the motions captured in a memo from Mark Limbaugh to the AMWG dated January 26, 2007 (**Attachment 5a**).

Beach/Habitat Building Flow Process. John Hamill said his presentation would focus on what's occurred since the last AMWG meeting (December 2006) and Ted would present on what will happen from this point forward. He reminded the TWG that the AMWG didn't concur with the TWG's recommendation for having a BHBF in 2007 but instead passed a motion that recommended "*the Secretary of the Interior charge GCMRC to develop a science plan for a BHBF that addresses the concerns raised at the AMWG meeting on December 6, 2006, and AMWG further charges the TWG to work with GCMRC to review the Draft Science Plan and make a recommendation to the AMWG.*" Subsequent to that motion, there was a Minority Report filed by several stakeholders and two separate letters sent by the Hopi Tribe and Grand Canyon Trust appealing to the decision that the AMWG had made asking for re-consideration of whether or not a BHBF should in fact occur. John had discussions with Mr. Limbaugh shortly after the AMWG meeting and asked him what his desire was in terms of GCMRC putting together a science plan. He gave John an indication at that time that a BHBF in 2007 was high on his priority list. When the minority reports and letters started coming in, John received a call from the Secretary's Office during the third week of January 2007 telling him that the Secretary had found that the arguments in those letters were fairly compelling and deserved a response. GCMRC went through a 2-3 week period in which they prepared briefing materials for the Secretary on the feasibility of putting together a science plan and getting that plan reviewed, looking at logistics issues, compliance issues, work plan issues, impacts to the LTEP EIS schedule. A variety of different things were considered and a series of conference calls were held between Reclamation, GCMRC, and the Assistant Secretary's Office. Mr. Limbaugh had spoken with most of the AMWG members about whether a BHBF should be done in 2007. John distributed copies of Mr. Limbaugh's letter to the AMWG dated February 2, 2007 (**Attachment 5b**) which captured all that information and his decision to not consider a BHBF in 2007. However, Mr. Limbaugh indicated that he wanted GCMRC to develop an off-the-shelf science plan, something reviewed and approved by the TWG and AMWG, so that if a similar event occurs in future years, they would be in a position to implement that plan. John said he got some indications from people that GCMRC was somehow instigating the reconsideration of a BHBF. He wanted to assure the TWG that GCMRC didn't begin working on a science plan until he received a call from the Secretary's Office at the end of January.

Development of a BHBF Science Plan. Ted Melis said they received direction from Interior in late November/early December in terms of coming up with an integrated BHBF science plan that would eventually be incorporated into some longer term experimental design. They wanted to get a little more sophisticated than what had been attempted in 1996 and even in 2004 by formulating some linkages and integrating bridges between the physical flow and sediment transport which had always driven the BHBF tests and crossing over into the fisheries biology, the food web research as well as the cultural resource and recreation components of the program. They also wanted to look at monitoring of Lake Powell and releases from the dam during the event and afterwards. GCMRC ended up with a draft plan and Ted sent it out on February 3, 2007, to Dave Garrett requesting the science advisors to proceed with their review. The SAs completed their review by February 13. The 80-page document was also reviewed by the cooperators. Because they weren't going to do a BHBF, GCMRC had some additional time to respond to comments, revise the document, and distribute it to the TWG for evaluation. The idea was there were certain elements of those project descriptions and proposals that were very WY07 specific and tied to implementation in March. With more time to reflect on whether it gets implemented next spring or not, some of the time-specific elements in the plan are being revised and reworded into a generic, non-time dependent strategy. One of the questions after the October sand enrichment events from the Paria River was how long that

material would take to move down through the system and a new hypothesis that came out of the 2004 results was the possibility that they might get a more uniform positive response in terms of bar restoration if new sand supplies weren't all stacked up in a very short part of Marble Canyon just below the Paria River, but instead had some time to get partially redistributed downstream through Marble and maybe even into Grand Canyon so that the wave that's released from the dam, which is a fast moving spike wave, would have the benefit of having the sand more spread out and you would get a more uniform bar response than was seen in 2004.

Ted said the first part of the BHBF plan focuses on capturing data on sandbar responses and data useful in the calibration and construction of the sediment transport models as well as some specific Aeolian transport studies related to the faith of new sandbars that would occur along the river and how that new sand might actually be redistributed towards or into archeological preservation sites. The second part of the plan relates to the foodbase research which is tied to the current research Ted Kennedy, Bob Hall, and others from Wyoming are working on and a fisheries component which is substantially being resolved to a new plan in which they hope the next phase will have more information about the use of sonic tags to track fish movements which is a big part of the whole fisheries question when you're doing a BHBF – how well can you document the movement of these fish and their response to the flood tests. The final part is trying to basically upgrade the monitoring that's involved with Lake Powell and the release of dam water that comes out during the BHBF. Ted distributed a Fact Sheet (**Attachment 5c**) which summarizes what they've learned about BHBFs in general and sand dynamics in the system including the 2004 test.

John said one of the things that came out of the discussions between Mr. Limbaugh and members of the AMWG was that some members didn't feel they understood the results of the 2004 test and were asking why another test would be done when they don't even know what happened in 2004. John said he felt that with interaction between GCMRC, TWG, and the SPG, and PEP panels there was really a lot of opportunity to provide those results but apparently that information wasn't getting up to the AMWG. John said the Fact Sheet was written as kind of condensed version of what happened in 2004 so that TWG members could use that as a way to communicate with their AMWG members.

Compliance Responsibilities. Dennis Kubly said NEPA and Section 7 Consultation will be done once it's determined what the hydrograph will be. He said Glen Knowles sent a memo to GCMRC asking to meet with them to review the proposed science plan and ensure the compliance needs are vested within that plan which the TWG will ultimately review. Andre asked how much additional compliance would be required above what was done in anticipation for the November BHBF. Dennis said he would expect another supplemental EA similar to what was done for the November BHBF, however, it wouldn't be as extensive. He said there were some predictions that have been made several times now that need to be looked at, one would be whether there is rejuvenation in nearshore habitats that are used by native fish including HBC.

Addressing the Concerns listed in the TWG Minority Report. Norm Henderson said that at the last AMWG meeting the AMWG recommended to the Secretary that the MRP that had been proposed to them be returned to GCRMC for further deliberations and that they address the minority report (**Attachment 5d**) and bring back a revised MRP document to the AMWG at their summer meeting. He said the minority report breaks down into two basic issues: (1) additional key resource areas that needed to be included more focus on some resource areas needed in the MRP, and (2) there also seemed to be an incomplete process for development of the strategic science questions which were in the MRP. It did not appear that all the RINs that had been previously developed through the AMP Strategic Plan were included in the SSQs list that were considered within the MRP. Norm said that in December and January GCMRC met individually with the minority members to clarify their concerns as required by the AMWG vote and to suggest some changes. Out of those discussions it was decided a crosswalk table be developed showing the relationship between the SSQs and the RINs that were in the AMP Strategic Plan. Gaps would be identified between the existing SSQs and the MRP and the RINs and which ones would need additional focus to develop new SSQs used to fill the gaps, clarify, and focus on critical resource areas. The minority members would review the revised document and provide feedback to GCMRC. In March 2007 the minority members met and

concluded that GCMRC should proceed with the changes agreed to (**Attachment 5e**) and develop a timeline to address the needs and then provide a revised MRP to the AMWG by its summer meeting.

Addressing Concerns about the MRP. John Hamill passed out copies of a document, "Addressing Concerns About the MRP" (**Attachment 5f**). He reviewed the next steps and emphasized that GCMRC will have those discussions with the minority members, suggest changes that are reasonable and prudent, and bring those back to the TWG for review. He said a draft of the proposed changes will be sent out to the TWG with comments due by July 15. Dennis added that the TWG Operating Procedures aren't clear on how minority reports should be developed and distributed. Since Kurt had mentioned forming an ad hoc group to flesh out the issue in the Operating Procedures, he wondered if this wasn't something worth considering. As such, Dennis said he would be willing to draft a process for what a minority report is and include something on the development of a majority report.

ACTION ITEM: Dennis will write a process for what a minority report is and development of a majority report or at least a response to a minority report by the majority and the process of how that is dealt with.

Proposed Core Monitoring Development Process. John Hamill passed out copies of "Core Monitoring Activities" and a PPT handout (**Attachment 6**). GCMRC is getting ready to embark on a core monitoring process as outlined in the Monitoring and Research Plan. Since the Core Monitoring INs Workshop will be held on Wednesday, he wanted the TWG to review the provisions in the MRP and address the recommendations made by the Core Monitoring Team. He said Helen Fairley would present details of what's being contemplated under several of the major categories of the workshop, PEPs planned for FY07, and specific project reports that will come out of that.

General Core Monitoring Proposal. Helen Fairley said this isn't another provisional core monitoring plan but that they're trying to lay out a strategy for getting to a core monitoring plan within the next few years. She provided a preview as to where they're heading and the steps involved. The plan is being organized by the AMP goals since they want it to be responsive to the CMINs that have been identified in the AMP Strategic Plan. However, when she says including Goal 12, she is trying to emphasize that they're also trying to focus on how they want to take the separate goals and create a more integrated approach to monitoring for the future. There are a number of pieces they're trying to implement including the concept of developing a more holistic ecosystem model to help guide their monitoring program as well as some specific projects such as developing their GIS capabilities to do integrated analysis of resource responses over time. They do see it as something that would be implemented incrementally and modified based on their experience of actually doing some of the monitoring work, feedback from PEP reviews, and new information/technology. They're also estimating what types of funding is required to monitor the different aspects of the resources to guide them in their planning. She anticipates the proposal will be available for review this summer and hopefully it will meet the TWG's expectations in terms of what is delivered.

Q: One of the previous slides showed 62% of the budget is going to R&D for core monitoring and my concern is I'm not sure which is going to come first here. Is there going to be some line drawn in the list of these core monitoring programs and when you get below that line and you can't fund it, what happens? (Davis)

A: In developing this core monitoring proposal outline, we're trying to determine where we're heading based on past work and feedback received over the years. It's an estimate of what we think it would take to implement the programs once we've completed the R&D and we're ready to just do it as a routine monitoring activity. (Fairley)

Q: If the appraisal is going to take 75% of your budget, are you going to go with that or are you going to trim it back? Do you have a number to shoot for? (Davis)

A: We've been shooting for 40-60% of the budget to go towards core monitoring. However, I don't know if that's the general agreement of this group anymore. (Fairley)

Q: I don't see a process for categorization of the CMINs into those that were considered truly core and those that would be nice to do. That was a key element in the original process that the core monitoring team was going to go through and it seems critical to be able to pare down a potential project to its most basic needs as far as cost. If you just give priorities, I'm not sure what the PEPs are supposed to do with those. Does that mean they're included or not included? (Henderson)

A: I think having some sideboards and the prioritization of the existing information needs will help to define what needs to be the focus of core monitoring. We are trying to take the previous CMINs as well as the work that the SPG did to try and refine them. It was discussed in the SPG that there were a number of things that had been called for that truly weren't monitoring information needs. They were more of a research need in some cases and in some cases it was simply a management decision that needed to be made so we want to get some clarity from the group as to whether we can move forward or need to revert back what was in the AMP Strategic Plan and work with those. (Fairley)

John asked for feedback from the TWG as to whether or not GCMRC can move forward with some assurance that they're doing what the TWG wants them to do. He feels it's critical to have everybody's general buy-in, recognizing there is no guarantee that they're going to approve the final reports that come forward but at least they're committed to get something done.

C: I would like to see the crosswalks in our Strategic Plan, how the CMINs fit together with the SSP, how the priorities fit in, and how we can adjust those priorities through our various actions. (Seaholm)

R: The crosswalk table was to look at RINs and the SSQs in the MRP. It wasn't to crosswalk with the CMINs. I think we have this covered and the integration with other projects will be used to inform other things. (Hamill)

C: One of the things that happened to us was that the SPG which arose from the Core Monitoring Team ran out of time because we started developing the options for the Long-term Experimental Plan. This part of the SPG's output was never really brought in its totality to the TWG, never was voted on, so there was never any agreement on whether to pursue what the SPG came up with or what GCMRC has now modified. I'm more than willing to go through with the first iteration which is the CMINs prioritization in the workshop but I'd rather not buy into the whole process today. My objection is that part of the process that the SPG laid out was never laid out to the TWG. The TWG is seeing only half of the picture. I'm supportive as long as there is flexibility to enjoin what the SPG brought to the process. (Kubly)

There was general TWG support for having GCMRC move forward with their process. However, Amy Heuslein and Charley Bullets wanted to see how cultural resources would be addressed. John told them that was an oversight and will be added as an element. Amy also felt that tribal monitoring needed to be included and that GCMRC should consult with the tribes as part of their tribal trust responsibility.

Science/Management Updates.

Colorado River Management Plan (Attachment 7). Linda Jalbert introduced herself and said she was one of the lead planners on the recent effort finishing the CRMP and also served as the Park's wilderness coordinator. Her presentation would consist of giving an overview of the CRMP and where they're going with their monitoring programs. She said the CRMP was approved one year ago and the Record of Decision went out March 23, 2006. It is primarily a visitor use management plan with a lot of focus and emphasis on managing the resources in light of the recreational use.

C: It would be good to not have overlap with work being done on the Adopt-a-Beach. (Davis)

Q: Are you going to involve tribal involvement on those monitoring trips? (Heuslein)

A: Yes. (Jalbert)

Q: I thought there was a proposal to do a research project or something for recreational effects on humpback chub? (Henderson)

A: That is part of the biological opinion. There was proposal that came forward last year but the project didn't move forward so but we'll be looking at that again. (Jalbert)

Q: You mentioned monitoring TCPs. Do you have that formally nominated TCP? (Berry)

A: We do not within our program so was wondering if NPS has something we don't know about. (Berry)

R: I don't think so. (Fairley)

Q: How satisfied are you with this process? Do you feel the river is being better managed because of this? And what elements of it are disturbing to you? (Stevens)

A: It was a difficult process in coming up with the capacity issues. This is our first year of implementation. We're going into the high season and we anticipate it's going to take a little time for the use patterns to stabilize. There's always some uncertainty when you make a change or changing a plan that's been in place for over 30 years. The use patterns were very set but we did increase overall use. Most of that increase is actually in the lower use months. For example, between November and March there were approximately 50 launches and now there is a launch every day. We anticipate there will be some new impacts from use in that lower use period but feel we can address those. (Jalbert)

Q: *Do you have an idea of how long you'll be employing your present monitoring efforts before you go through a re-evaluation of that process or adapt to a program based on what you've learned?* (Potochnik)

A: *We anticipate the life of the plan is in the neighborhood of 10 years but in terms of the monitoring, again, we're looking to see when and how the use patterns stabilize. We'll probably have to go through at least a couple of years of data collection to see what's happening but we haven't set any hard time frames on that. We're still developing our monitoring plans as we test some of these methods.* (Jalbert)

Quagga Mussel Invasion. Norm Henderson said quagga mussels were discovered at Lake Mead on January 6, 2007 and have now been found in Lake Mohave and Lake Havasu. Immediately after the quagga were discovered, Lake Mead National Recreation Area developed a draft strategic plan to respond to the threat: an assessment, including a monitoring program around Lake Mead and Lake Mohave; a containment phase with wash stations, education training; and inspection of boats with high priority or high risk boats being taken out of the lakes. One of the other components of the strategic plan is to include Lake Mead into a watershed evaluation by the NPS basically to look at the Colorado River piece of that and how Lake Mead fits into an overall response by the NPS basinwide. Following the Lake Mead development and the plans put in place, Norm said Grand Canyon National Park got pretty nervous when they discovered quagga mussels in Lake Mead and what that portended for Grand Canyon. On February 15, they held a workshop in Flagstaff to discuss the issue and help Grand Canyon come up with a response plan. In early March they proposed a strategic plan for Grand Canyon that included some of the same features that were in Lake Mead (assessment and containment) which they proposed in early March and then by mid-March they released "A Dreissena Risk Assessment for the Colorado River Ecosystem" (**Attachment 8**) by Ted Kennedy which essentially evaluated the risk in Grand Canyon and Glen Canyon saying that the Grand Canyon risk was pretty low for both infection and for any kind of effects on the ecosystem. In the Glen Canyon Reach the risk was relatively high for infection but it seemed that it was sort of unknown but possibly a low risk of any kind of any ecosystem impacts that would be negative. Based on GCMRC's risk assessment, Grand Canyon has now revised its response plan which they're now evaluating. Glen Canyon has had a quagga and zebra mussel plan in effect for several years and this was based on the threat of quagga coming in from the Midwest at the time. Now that they have discovered the mussels in Lake Mead, they've revised that plan to a certain degree and are asking different questions of people coming into the entrance stations and launching boats. Previously they were requiring certain boats to be washed and Norm believes some criteria has been set to still wash boats even though now they're coming from Lake Mead within a certain time frame. He wasn't sure how that was working out because the season is just getting started. At this point they're not focusing on the Lees Ferry Reach and think the largest threat right now is to Lake Powell so they're going to be concentrating on that resource first. The Lake Mead plan did identify the need for a Colorado River watershed-wide response by the National Park Service and they are putting together an "instant commands team" that will meet on April 23 in Fort Collins to develop a specific plan for the NPS on how to respond to this threat throughout the Colorado River basin in particular but also nationwide in general. Following that there should be a specific response plan developed and that will be issued in final format within a month after the team meets.

Bill Persons said the Arizona Game and Fish Department is working on a hazard assessment and critical control plan because there are places where they can best spend their resources to try and prevent the spread of them. He feels a system needs to be in place in which boats and equipment are being cleaned and perhaps even green tagging boats before they get launched.

Ted Kennedy said the much bigger risk is from the quagga mussels getting into the lake upstream so any mussels that get introduced by boats at Lees Ferry are going to be small numbers and even if they establish and are able to get to a size where they can reproduce, it takes them over 20 days for the larvae to develop to adulthood and so basically any population that develops in the river isn't going to contribute to increases in population of those critters in the river because the development time is too long. He said if one was to look at the numbers that could be supplied from boats in the Lees Ferry, it's really insignificant.

Larry took exception to what Ted had said and expressed concern for how the quagga mussels get established and can be spread through a variety of erratic mechanisms. He thinks this is one of the most

invasive species he's heard about and expressed doubts with Ted's findings. Ted advised Larry to read his report and they could talk more after the meeting.

There was additional discussion and the following motion was proposed by Larry Stevens:

Motion: The TWG considers the impacts of quagga mussel invasion to be a serious threat to Colorado River ecosystem and water management facilities throughout the Colorado River Basin. This problem is beyond the geographical and financial responsibilities of the GCD AMP; however, we recognize that all AMP organizations may be negatively affected by this new invasion. Therefore, the TWG requests that the AMWG recommend to the Secretary that he secure resources to direct the development and prompt implementation of risk assessment, education, prevention/containment, and science elements in order to limit the wide-ranging damages that may be caused by quagga mussel invasion of the Colorado River system.

Motion Seconded by: Rick Johnson

Representative	Stakeholder Entity	Vote	
Bill Persons / Scott Rogers	Arizona Game and Fish Department	y	
Amy Heuslein / Garry Cantley	Bureau of Indian Affairs	y	
Dennis Kubly / Randy Peterson	Bureau of Reclamation	a	
Mike Yeatts	Hopi Tribe	y	
Kerry Christensen	Hualapai Tribe	y	
Ken McMullen / Jan Balsom	National Park Service - Grand Canyon	a	
Norm Henderson / Chris Kincaid	National Park Service - GLNRA	y	
Steven Begay	Navajo Nation	absent	
Jonathan Damp	Pueblo of Zuni	y	
VACANT	San Juan Southern Paiute Tribe	absent	
Charley Bullets / LeAnn Skrzynski	Kaibab Band of Paiute Indians	absent	
Glen Knowles	U.S. Fish and Wildlife Service	y	
Mary Barger	Western Area Power Administration (DOE)	y	
Rick Johnson / Nikolai Ramsey	Grand Canyon Trust	y	
Larry Stevens	Grand Canyon Wildlands Council	y	
Mark Steffen / Tim Steffen	Federation of Fly Fishers	y	
John O'Brien / Andre Potochnik	Grand Canyon River Guides	y	
Bill Werner	Arizona	y	
Christopher Harris	California	absent	
Randy Seaholm	Colorado	y	
Phil Lehr	Nevada	y	
Jay Groseclose / Don Ostler	New Mexico	y	
Robert King	Utah	y	
John Shields / Don Ostler	Wyoming	y	
Bill Davis	Colorado River Energy Distributors Association	y	
Cliff Barrett	Utah Associated Municipal Power Systems	absent	
		Total Yes	19
		Total No	0
		Total Abstain	2
		Total Voting	19

Dennis Kubly: I'm abstaining because I think this is basically cherry picking a much larger problem. There is a background decline for example in rainbow trout in the Grand Canyon that's quite large and may well be due to the New Zealand mudsnail and the change in the tropic cascade and energy and we're not doing anything about that. That's what troubles me. I would rather we approach the broader issue but I don't want to hold this up.

Modeling Updates. Scott Wright distributed copies of his report entitled, "Development and Application of a Water Temperature Model for the Colorado River Below Glen Canyon Dam, Arizona (**Attachment 9a**) and his PPT presentation (**Attachment 9b**) which focused on some of the activities related to the physical resources program.

Q: *On your concluding side, how much is two and three dependent upon one happening? Are they connected? (Kubly)*

A: *They're very dependent on that. I think that's one of the reasons why the model didn't get the calibration. I think most people wanted because that interaction wasn't going on. I should also mention that the modeling project and the research and development projects for the data collection were going on concurrently so in fairness to the modeling team, a lot of the data became available towards the end of their project so the timing wasn't optimal. It probably would've been better to have the data collection research projects happen first and then have all that data available before starting the modeling project. (Wright)*

Q: *Go all the way back to Tim Randle's projections and the failed paradigm coming out of the EIS. What were the main shortcomings of that model? Was it dependent on all these cross sections? (Kubly)*

A: *That model was based on the assumption that the sand transport was a function of the discharge only whereas with the newer models it was not only a question of discharge but also how much sand is available on the bed essentially and the particle size of the sand on the bed. So when the tributaries come in, you can have much higher sand transport loads in the mainstem for the same discharge as when there is nothing coming into the tributaries and that wasn't something that was documented in the modeling. It was done by Tim Randle. (Wright)*

C: *The fundamental assumption was that the grain size and the supply in the bed didn't change dramatically over short time periods. In fact, we now know it does over days to weeks both coarsening and in fining and that shifts the rating curves around by order of magnitude or more. (Melis)*

Non-Native Fishes Update. Ken McMullen provided an update on the non-native fishes control program done by the NPS at Bright Angel Creek and also the translocation effort they're going to do later this summer. He passed out copies of a handout (**Attachment 10**) saying this was all preliminary data and a report is due out in October 2007.

Q: *So the Park Service is continuing to facilitate the reproduction of rainbow trout in Bright Angel Creek to make their way into the Colorado River where we then kill them in the program? Is that the scenario? (Kubly)*

A: *Yes, We were not issued a permit to euthanize rainbow trout as we requested in the NEPA process. There are ongoing efforts to work with the AGFD to get a permit to remove all non-natives, not just rainbow trout. The intent is that we will remove all non-natives as per the NEPA document probably starting this month.*

C: *I would rephrase that the NPS and AGFD reached an agreement to not euthanize rainbow trout this year. Is that clear to everybody? (Persons)*

Q: *What's the rationale for not doing rainbows? (Johnson)*

A: *Right now we have no evidence that those rainbow trout from BAC are creating a problem. I think we know how to control non-native fish in streams. You build a barrier to keep them out and you remove them. (Persons)*

C: *Holding this subject up until there is 5 minutes left in the day to bring up this controversial subject. I'm pretty upset about this. This is ridiculous. (Steffen)*

R: *There was a NEPA document out there that explains all of this so all I'm doing is reporting on what we've been doing for the last couple of months. And lastly HBC translocation efforts. We are still trying to do those this summer with movement of small HBC into Shimimu Creek and we're having a meeting this Thursday with the NPS, Wildlands Council, and SWCA. We'll talk about the logistics, the Center for doing that later this year, and compliance issues. We think we have those settled and will likely discuss the implementation and the field procedures we'll use to move those fish. (McMullen)*

Q: *So you're going to remove rainbow trout from Shinimu Creek? (Kubly)*

A: *Because of the current native fish load that's in there predation is probably not a big issue in that creek. (McMullen)*

C: *It seems to me that when the AMWG approved this BAC thing it was to kill only brown trout. I don't remember the AMWG saying go in there and kill rainbows. I only remember the AMWG approving killing the brown trout. So for the Park Service to go in there now and for the Bureau of Reclamation to say, why aren't you killing the rainbows? That's out of line frankly. The AMWG did not approve that. (Steffen)*

R: *The AMWG doesn't approve what the NPS does. (Kubly)*

C: *Just one observation on this write-up. The FONSI doesn't call for euthanizing things. The FONSI would analyze the effects of a proposed action. NEPA merely analyzes things. It doesn't really call or direct anything. This could use some polishing. (Werner)*

Adjourned: 5:05 p.m.

Glen Canyon Dam Technical Work Group Meeting
April 2-3, 2007

Conducting: Kurt Dongoske, Chairperson

Convened: 8:00 a.m.

Committee Members Present:

Mary Barger, WAPA
Charley Bullets, Kaibab Band of Paiute Indians
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
Robert King, UDWR
Glen Knowles, USFWS

Dennis Kubly, USBR
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
Don Ostler, UCRC
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Bill Werner, ADWR
Michael Yeatts, The Hopi Tribe

Committee Members Absent:

Steven Begay, Navajo Nation
Christopher Harris, Colo. River Board of California
John Shields, WY State Engr. Office

John O'Brien, Grand Canyon River Guides

Alternates Present:

Don Ostler
Andre Potochnik

For:

John Shields, State Engineers Ofc./WY
John O'Brien, Grand Canyon River Guides

Interested Persons:

Matthew Andersen, GCRM/USGS
Mike Berry, USBR
Wyatt Cross, University of Wyoming
Helen Fairley, GCRM/USGS
Dave Garrett, M³Research
Andrea Gonzales (Bob Lynch's Office)
Bob Hall, University of Wyoming
John Hamill, GCRM/USGS
Kara Hilwig, GCRM/USGS
Loretta Jackson-Kelly, Hualapai Tribe

Leslie James, CREDA
Ted Kennedy, GCMRC/USGS
J.D. Kite, GCMRC/USGS
Bill Leibfried, SWCA
Emma Rosi-Marshall, Loyola Univ/Chicago
Ted Melis, GCMRC/USGS
Pam Sponholtz, USFWS
Dave Wegner, Member of the Public
John Weisheit, Living Rivers
Scott Wright, GCMRC/USGS

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative. The Chairman welcomed the TWG members, alternates, and interested persons. A quorum (16 members) was established and attendance sheets distributed.

TWG Meeting Schedule. Kurt said he would like to schedule meetings through the rest of 2007 between now and December 2007. The AMWG is tentatively scheduled to meet May 22-23 and then again in August. With those dates in mind, the TWG set the following meeting dates:

- June 25-26, 2006 (Mon-Tue)
- October 2-3, 2006 (Tue-Wed)
- December 4-5, 2006 (Tue-Wed)

TWG Operations. Kurt said he has noticed a certain degree of frustration among the stakeholders and feels some of the frustration may stem in part because the TWG is a recommending body and doesn't have any real power to implement action on resources. He would like the TWG to think about how they can work towards making participation more harmonious and less adversarial. He thinks a lot of people are feeling disenfranchised from the process and perhaps part of it is in how the TWG operates and are set up for win/lose scenarios. He thinks the stakeholders need to come to the table with cooperative mindsets to negotiate and work towards the common good for the ecosystem. He mentioned that Dave Garrett gave a presentation yesterday on the Science Advisors' evaluation of the entire adaptive management program and recommendations for improvement within the program. He wanted the TWG to consider the SAs' recommendation as they relate to the TWG and be proactive in tackling them and making changes to the program. He said the TWG could set up another ad hoc group to respond to those recommendations but feels the group has gotten into the mode of being completely reactive to what the Center is doing and what the AMWG does.

C: An ad hoc group is a good way to go about developing a response to that. The criticisms are very deep and serious and there are significant challenges for this program. (Stevens)

C: I have concerns about setting up too many ad hoc groups especially as something as significant as this is to the overall program. I'd rather see the TWG deal with this issue fairly directly rather than put things together in an ad hoc and then bring it to the TWG where sometimes those of us who can't participate in the ad hoc for some reason or another feel like we're being presented something that we don't have adequate opportunity to influence. Something of this magnitude needs to stay within the TWG rather than an ad hoc. (Seaholm)

C: Everyone here is often representing an interest but to expect to be championing the same cause I think is simply dreaming. Some of us may be representing our own interests while others may be representing whoever is paying them to be here. (Werner)

C: Can we get a show of hands of how many people think that is their primary reason for being here? The reason I ask that is because that's not what the EIS laid out as the role of the TWG. I'm not disputing that that's a reason for being here. I'm curious to know because we have this dichotomy come up every time. I just wonder how many people view that as the number one reason for being here is to represent the interests of whoever you're representing as opposed to pursuing the science for adaptive management program. It's probably at the heart of the problems being effective in the TWG. (Kubly)

C: These are interesting discussions but we have a lot of stuff to cover on the agenda. My suggestion is to either put this on the agenda for the next meeting or give us enough time to deal with it. (Persons)

C: Maybe we could review the ground rules before every meeting. (Potochnik)

C: If we're going to have this conversation, it should be a facilitated. (Barger)

C: It seems a lot of the issues that were raised in Dave's report are addressed in the Roles Report. When you talk about a strawman, maybe that provides a good framework for the discussion that this group might have because a lot of the issues are directly or indirectly addressed in that report. (Hamill)

Kurt suggested it would be better to wait until they get the Roles Ad Hoc Group Report back before going any further in their discussion.

AGENDA UPDATE. Kurt said there were three science management updates from yesterday, the HBC concurrent estimates, sediment augmentation at Lake Powell, Glen Canyon tailwater dissolved oxygen plus the ones that were slated from 8:10 – 9 a.m. Since it was about 9 a.m., he suggested starting with the 9

a.m. agenda item and work through the agenda for the remainder of the day and then go back to the science management updates.

Aquatic Food Base Update. Matthew Andersen reminded the TWG that GCMRC has been charged with developing core monitoring for the aquatic foodbase to determine what is most limiting about this resource to the system with regard to the recreational fishery for trout and the native fish community. The PEP scheduled for this topic is FY 2010 so they're into a multi-year process but anticipate that eventually they will get through the whole core monitoring information needs process and be preparing for a PEP panel in 2010. He introduced Dr. Robert Hall with the University of Wyoming/Laramie and Dr. Emma Rosi-Marshall from Loyola University/Chicago. Dr. Hall distributed copies of their combined PPT presentation, "Research to develop a food base monitoring program: Linking whole-river carbon cycling to quantitative food webs in the Colorado River" (**Attachment 11**). He said they're about a year into their research and have had a lot of people working with them.

Q: With regard to the water that's being tapped from the reservoir, monitoring how that changes the reservoir level and output from the turbines and penstocks, there has to be some organic stratification. Are you looking at that input? (Potochnik)

A: We're collecting data monthly right below the dam and at Lees Ferry. The USGS has extensive Lake Powell monitoring data which will also be used to tells how much is coming from the dam and how that changes seasonally. (Hall)

Q: In the recent load dissolved oxygen releases from the dam that happened in February, were you able to see any significant change in the quality of material coming out of the dam in terms of organically? (Potochnik)

A: I haven't seen those data yet. We're not that up to date on our processing. We would absolutely be looking for things like that. (Hall)

Q: In the past we've seen trout and chubs actually consume a lot of cladophora directly and the diatoms that are in the cladophora. Is that complicating your work at all and how are you taking that into consideration? (Steffen)

A: We are taking that into consideration. It absolutely does complicate the use of stable isotopes. If an organism is feeding at multiple trophic levels and then its feeding on something that's feeding on a lower level so the invertebrates are feeding on the cladophora and the diatoms and the trout are feeding on the cladophora and the diatoms, it muddies your ability to use stable isotopes which is where the gut contents come in. We are looking at the gut contents of the trout and are parsing out quantitatively how much cladophora is versus invertebrates. (Rosi-Marshall)

Q: I'm glad to see this food PEP being developed. Are you going to be able to link what's going in the Lees Ferry reach to the downstream because there's been issues about how much that is contributing to the native fish downstream? (Yeatts)

Q: I noticed you're not doing any sampling up in the Little Colorado River. I was curious if any production similar or comparable is being done up there just to see what the chub are primarily using up in that stream? (Yeatts)

A: We are measuring the food web in the LCR at the confluence. We've added a site because of that very different isotope signature and because we need to be able to know what's going on in the LCR to distinguish that so we've actually added that as a food web site. (Rosi-Marshall)

Q: Is there any intention of ultimately expanding that food web into the terrestrial ecosystem? I know you're looking at inputs from there but actually looking at how it is eventually feeding birds, mammals, the whole terrestrial ecosystem. We've never linked the aquatic to the terrestrial in that manner. The reason I'm interested is that it may have some implications on BHBFs. Depending on what's coming out of the terrestrial back into the river, we may be able to do some management of that level too. (Yeatts)

Q: Are you at a stage where you can speculate what is too fully the size of the rainbow trout population in the Lees Ferry reach? (Kubly)

A: There seems to be a lot of food there for trout. The other question is: Can they eat all that is available to them? It doesn't seem like trout are that limited by food in the Lees Ferry reach. I'm speculating that because there is a lot of food there relative to their demands. But then of course, what kind of food is there. Is it high quality? (Rosi-Marshall)

FY06 Carryover Fund Allocation. John Hamill distributed a memo from GCMRC, subject: Preliminary FY 2008 GCDAMP Budget along with the FY08 draft budget (**Attachment 12a**). He said they came out with a surplus of funds and alerted AMWG to that fact last December and the AMWG agreed on an approach that was patterned after the Draft Roles AHG Report for how GCMRC should go about allocating those funds. That approach was basically for GCMRC to make a proposal that would be reviewed by the BAHG and then brought to the TWG. He said they provided GCMRC's recommendations for how those funds should be

allocated last December. John said he made a command decision to move those forward simply because they needed to make some decisions. He reviewed those for the TWG:

- The proposals that were already funded and have already been made were to provide staff to support the development of the sediment core monitoring evaluation report and they provided additional funds for Scott Wright and Dave Topping to produce a report by this spring that will provide the framework for evaluation of the sediment program. That was about \$23,000.
- He made a commitment to fund a writer-editor to help in the preparation of final reports that they're preparing, things like the Strategic Science Plan, the Monitoring and Research Plan, Experimental Option Assessment Report, and he thinks Lara Schmit as that writer-editor will really help them prepare quality reports and meet their requirements under their new fundamental science practices within USGS where now all their reports have to go through greater editorial review before they can get published.
- With \$189,000 still on the table, they provided recommendations for:
 - Hiring a facilitator (Mary Orton) for the CMINs Workshop.
 - Fully funding the Lees Ferry trout study for \$63,000. The project was supported by the TWG last year but GCMRC didn't have all the money to do everything that was required.
 - Purchase additional sonic tags and the related equipment to make that project whole and that's about \$20,000.
 - Then the final allocation was \$100,000 which would first and foremost go to their involvement in the LTEP EIS. That was a big initiative that wasn't really accounted for when they put together the FY07 workplan. John anticipates their involvement in that effort is to be extensive. Reclamation has indicated they want GCMRC to provide a lot of support in developing the experimental design for the science plan. They spent an incredible amount of time last summer and fall producing that report for the TWG and he estimates they'll probably spent \$30-50K on that effort and that was just to produce a draft report. He expects the efforts related to the EIS will be more rigorous and certainly have a lot more review comments for them to address. They felt it was prudent to set aside \$100,000 to support their involvement in that effort, not knowing exactly what that is. They have requested and Reclamation has agreed to provide them with a work plan that lays out their responsibilities under that EIS and that should be done within the next 30 days or so. That should give them a better idea of knowing what those requirements are. If they don't need all of the \$100K, they suggest that money go into the experimental flow fund. He also passed out a copy of "GCMRC's Fiscal Year 2006 Project Report for the GCDAMP Executive Summary" (**Attachment 12b**) and said the full report (**Attachment 12c**) would also be posted.

Q: Are channel cat the best fish to be putting sonic tags on or is there another fish we should be using? (Barger)

A: I think what you're referring to are the criteria that Kara presented yesterday because we were looking at fish that were in the system for which we are not having good success with our current gears and we almost had the potential to expand to increasingly warm water so there was a great deal of discussion among GCMRC, AGFD, and the Service about what species best fits that criteria so I think that's how we arrived at channel cats. AGFD, does that sound about right? There are some terrific cooperative opportunities available this year to test both sonic tags and be monitoring channel cat potential for moving up from Lake Mead so we'll also get a little bit extra bang out of our buck by conducting those two projects together this summer. (Andersen)

Q: And we're not going to use carp? (McMullen)

A: Not in 2007. We're doing what we can with what we have. If there were more funds available, we would probably be pursuing other species and carp would probably be pretty high up the list. (Andersen)

C: I think carp was our second choice. (Persons)

Q: You're not going to use any sonic tags with chubs? (Steffen)

A: We'd like to see how this method behaves in more disposable species before we start working on an endangered species. (Andersen)

Q: Can you clarify your plans for the \$100K on the EIS? I assume your current staff is funded? Are you planning to use contractors for the EIS work? (Ostler)

Q: In reading the minutes from the last two TWG meetings, \$250,000 was put in to support the LTEP EIS in the FY07 budget. So there is \$250K in there right now? (Barger)

A: Not for GCMRC staff. It's to support Reclamation staff and the contractors we have working on the EIS. (Kubly)

John said they didn't try to propose new projects or new starts with the money. They used it to basically fill in holes they saw that needed to be filled based on new circumstances to develop over the course of the year. They felt that if new starts needed to be looked at, it was more appropriate to look at those in the context of the upcoming year's work plan instead of trying to use this as a way to launch new initiatives so they were fairly conservative in how they recommended allocation of the money.

Budget Ad Hoc Group Report. Rather than going over the report as a whole, Dennis directed the members to concentrate on the table on page 4 (**Attachment 12d**). The BAHG actually went through a voting process and in the end there were five proposals for the \$189,000 for the first two needs and Western's foodbase proposal which Mary anticipated would cost \$75,000 that brought the total to \$264,000. The results of the ranking from seven individuals are listed in the table with one being the highest rank. The range and the medians ran from 1 to 4.25. The switch in the order between 2 and 3 which is between Lees Ferry Trout and additional sonic tags with additional sonic tags ranking slightly higher on the median but not on the mean ironically. The BAHG agreed to support the first three but they wanted to bring forward for further discussion with comparison of the LTEP EIS funding for GCMRC and what Western had requested for foodbase studies. He asked Mary to provide a brief description of WAPA's proposal.

Mary said the SPG moved forward pretty easily until they got to what are the effects of fluctuating flows and then hit a rock wall. With WAPA's foodbase proposal, they also proposed an addition that would include an evaluation and effects on fluctuating flows. However, that didn't happen. Since then, they've worked with Ted and GCMRC to come up with a proposal to look at fluctuating flows and the effects on drift. They finally came to an agreement and that is what is in the handout. The proposal was to look at the effect of varying ramping rates on invertebrate drift and standing crop and the effect of drift on short-term fluctuation spikes and what's the effect of short-term flow reduction on drift rates. She said they're basically looking at fluctuations. They wanted to focus on flows within the ROD so are not talking about proposing anything outside of the ROD although they would like to do that at some point in time. GCMRC put together a budget proposal for WAPA to hire a technician for a year to do the collections with work that is already being done for watching for changes during fluctuations. They'd really like to do this because they think it is a significant issue in understanding fluctuations. The budget included equipment for that person and then they would do the analysis. This is something WAPA has been working on with AGFD and others and they'd really like to see it happen.

Q: *So the technician would be working for GCMRC and be part of the current foodbase proposal that we just heard a presentation on? (Johnson)*

A: *If the group decided they wanted to do this, we would incorporate it into the current foodbase study and hire additional staff. It would be part of the ongoing project. (Hamill)*

Q: *How do we incorporate other peoples' ideas on science plans and what gets funded or if it gets incorporated into GCMRC's study or science plan? How do we handle something like this when a non-GCMRC entity puts forth a scientific proposal? (McMullen)*

C: *I think there is a process or there should be a process and that is the MRP process which we do have which addresses these specific science questions. If they're a high priority, they should be put in there and prioritized. (Henderson)*

C: *I would like to hear from Ted Kennedy, Emma, and Bob because I'm concerned how much daily fluctuations are incorporated into their work and are they able to associate certain characteristics of the foodbase based on daily fluctuating flows? Since we're looking at perhaps having steady flows in the future, will you be able to make some conclusions as to what sort of changes occur when you change from fluctuating flows to steady flows? (Steffen)*

Q: *We just heard a really impressive presentation from your foodbase collaborators. How will what they're doing inform the LTEP process? How will it inform how we develop the experiment? (Knowles)*

A: *The existing work helps us understand how energy is transferred through the system, what fish are depending on, both the rainbow trout population and the natives, which helps us identify which things we need to be monitoring. I think the proposal that Western and Argonne put forward is real interesting but it does assume that fish are dependent on the material in the drift. The existing work is helping us quantify that and really test that hypotheses and whether that is the current hypothesis. I would say we're doing the first step and perhaps Western is putting forward is the second step. That's what we discussed with Mary and Kirk LaGory. (Andersen)*

Q: *Are the researchers' aquatic foodbase part of your modeling effort going to be looking at flows and the effect on movement of material and energy downstream and so on? How does what is being proposed here in the fluctuating flows, steady flow scenario, help or hinder you in terms of the work you're developing? (Davis)*

A: *We're going to be cognizant of any changes in hydrology to be able to say did we see a change in production at this period of time because of a change in the hydrology so we can measure if there is an effect. The effects of hydrology have to be over a time scale that is roughly equivalent to the life of the animals we're looking at. And so a week of highly fluctuating flows versus a week of steady flows may effect what happens to those animals during the course of a week but in order to change how it would affect a secondary production, it would have to be a long period of time. (Hall)*

Q: *But we're talking about reality here. We're talking about the dam's operations, steady flow, fluctuating flow as a reality situation. It seems to me that when you do work, you need to be able to measure those differences. For the sake of having that information available to you, how are you going to be able to make that determination? What happens under steady flow versus fluctuating flow? How do you know? (Davis)*

C: *We're getting an understanding of how the system is operating and need to look at power analysis, figure out the kinds of questions that are important, basically figure out whether we would be able to detect the kinds of changes that you guys are asking. If you guys decide that those are the right questions, then we might be in a position to answer them. We can work with you guys to design experiments that are focused on issues of the foodbase and production but it's not our job to design the in isolation. (Kennedy)*

C: *But by the same token, we're talking about a real situation here and it seems to me that your work needs to be sensitive to the real work that's out there and if you cannot measure what we're talking about here, then the information you're going to give us isn't going to be useful. We need to be able to answer the question that she's asking right here, whether or not you're getting more drift created with fluctuating flows than you are with steady flows. You're getting more productivity with steady flows versus fluctuating flows and if you can't answer the question, then we need to have that as part of your study. (Davis)*

Q: *We can test the question of productivity with things like algae which depends on a time scale. How long would the steady flows be? I don't know. I just measure things. If they're at a time scale of two weeks, that probably will not affect invertebrate production because the invertebrates live much longer, but it will potentially affect algae production because algae turn over very quickly. We might be able to use the whole system and be able to say what happens to primary production over the course of changing flow regimes and then over a daily basis be able to measure changes in transport because we can go out with different flow conditions and use any sort of flow regime we want. In terms of how productive the invertebrates are, if the flow regime were changed for a week, I don't think we'd be able to measure a change in the river production. (Kennedy)*

C: *I think it's important for the TWG to consider the project in the context of developing core monitoring. We feel those are the most important parameters to measure no matter what the flows are, steady, fluctuating, short-term, long-term, etc. I think it's a really good approach in understanding the most important things to measure no matter what the proposed conditions are. (Andersen)*

C: *We're trying to get this into the foodbase program at the get-go just because they were already collecting the data. We wanted to do the ramping rates. We wanted to do the fluctuations. We wanted to do studies so we would have this piece of information for the LTEP and to move forward with that because that was clearly during the SPG a huge issue. We just couldn't even answer those questions. We discovered a year ago when we were trying to add this in that the process really doesn't exist. Everyone recognized it's an issue and GCMRC recognized it was an issue but we couldn't get it to happen so we saw the 06 carryover as an opportunity to propose something to add on which this program has done with carryover dollars. We have added in projects. I'm not disagreeing that somehow there should be a better process but right now there is an opportunity to answer the questions about fluctuating flows and ramp rates. (Barger)*

Dennis reiterated that the BAHG's recommendation is to support the first three projects with a split on the second two. He said John identified that it's unclear what GCRMC's funding needs will be to support the LTEP EIS. They have a proposal for approximately \$75,000 from Western which would compete for the same dollars. Dennis advocated the TWG conclude discussion on the issue and reiterated that BAHG approved the following projects: CMINs Workshop Facilitation, Lees Ferry Trout, and Additional Sonic Tags. The projects competing for funds were: GCMRC LTEP EIS Funding and Foodbase Studies

There was some discussion as to whether there needed to be a vote taken or not. Dennis said he didn't feel a motion was needed because there were only two different projects competing for funds that may not be available. At this point in time, it's unclear what amounts will be needed and Dennis said to be fair John won't know until he hears more from Reclamation. Dennis asked John if the TWG voted to fund the foodbase work today, would he feel comfortable in taking that money and using it for that purpose and what

time frame would he use in making that decision. John said his sense was that they're going to need some funding to support their involvement in the LTEP EIS work but he doesn't know what that is. GCMRC is totally funded with AMP projects so he feels caught between a rock and hard place if the TWG wants to recommend taking the money to do a foodbase study or any other study because it puts them in a bind and he doesn't think it's discretionary for them to not be involved in the EIS.

Dennis said that once the scoping is done and the alternatives are fleshed out, they should know what the workplan request will be. Mary said she didn't have a problem with waiting until the end of April to see what the group is up against in terms of GCMRC's commitment. However, John cautioned that if the foodbase study is approved, they are going to have to know what the flow regimes are going to be and how long they'll be. Dennis said the decision on flows would require going back to the AMWG who would then need to make a recommendation to the Secretary of the Interior.

C: I'm feeling uncomfortable about making a change to a proposal. The foodbase came out of a PEP review and it's obviously come out of a lot of thought of discussion in this group and certainly among a number of other groups. I would like to support the proposal from the Center and not saying that other information isn't important and it shouldn't be collected but the time doesn't seem right for doing it now. I would strong support the recommendation made by the Center. I don't know how you want to do this Kurt but my suggestion is to put forward a motion, if you would like one, I would move that we support the recommendation made by the Center on how to spend that money. (Johnson)

C: I would go along with what Rick say but the only thing I would say is why not fold this into the LTEP process? This is working with high flows and the effects of fluctuating flows and it's exactly what we're proposing to do in this LTEP process so why not fold it into that. (Henderson)

C: The whole purpose of this program is to determine what the effects of dam operations are on the river and to see what kind of change in those dam operations and/or other management actions should go forward. My feeling is that if we have an opportunity to incorporate this information at a relatively low cost, we should take advantage of that. Certainly GCMRC needs to provide the support for the LTEP that is underway so I guess I would probably say let's put things around and do 4, 5, and 1 and perhaps leave 2 and 3 for a later time. (Seaholm)

Kurt said the BAHG agreed with the Center's determination on 1, 2, and 3, and punted to the TWG a decision on 4 and 5. He said that if the TWG was willing to accept the BAHG's recommendation, then they would be agreeing with projects 1, 2, and 3 and making a decision on 4 and 5. He asked the members if they were willing to accept the BAHG's recommendation on 1, 2, and 3 and then make a decision on projects 4 and 5. **He asked for a show of hands for how many people would support the BAHG's recommendation. Only two members didn't support (Mary Barger and Randy Seaholm).** Kurt asked Mary and Randy if they wanted to state why they didn't support the BAHG's recommendation:

Randy Seaholm said he remained un-persuaded that additional sonic tags were needed to go along with number 1. He thought that was already done and feels the more important issue is whether or not the activities with the Lees Ferry trout fishery are more important than funding for the foodbase studies. He felt the foodbase studies were perhaps more important now than the trout studies.

Mary Barger said that when she was on the BAHG calls and supported 1, 2, and 3, she thought there was already funding available in 07 to support the LTEP and now that she's hearing there is nothing available, that the 06 carryover is the only money that would be available, she suggested waiting until May to make that decision to see what the proposal is from Reclamation on how much support will be necessary because that also might also identify which people need to work on the LTEP.

Kurt asked the group how they wanted to decide between projects 4 and 5.

Bill Davis said he thought it was premature and didn't know if it was an either/or decision because they might find out by the end of May that the demand for GCMRC is minimal in which case it would free up additional money to do the work they're talking about. As such, he thought the TWG should proceed with the BAHG's recommendation and proceed with what John's talking about until the first of May.

Kurt said he wanted to understand more about the need to wait until May 1 to find out whether there was sufficient funding for GCMRC to participate in the LTEP EIS. If there was sufficient funding, then the TWG could ask to use the carryover of \$100,000 to fund the foodbase study. Dennis said there are no funds from Reclamation but what the expected cost would be out of that \$100,000 for GCMRC.

After further discussion, the following motion was proposed:

MOTION (proposed by Rick Johnson): The TWG supports the proposal made by GCMRC to the BAHG for FY06 carryover funds (projects 1-4) and to fund project 5 if sufficient funds are available.

Motion seconded by Norm Henderson.

Voting Results: Yes: 17 No: 2 Abstaining: 1

Motion passes.

Mary Barger (voting no): It's just based on what Dennis said that this won't be funded. The foodbase program is going on right now. The timing is perfect to jump in and make that more robust and feed into everything we need and we've been trying to do this for over a year so it just shows that there is no potential way that anybody at the table can ever come forward with a change in science, and you can hire your own scientist, it doesn't make any difference and it's disappointing.

Mark Steffen (voting no): I would like to be sure that there are going to be some experiments that will show us what the different effects are on the aquatic foodbase with steady flows and with fluctuating flows. Perhaps the LTEP will do that for us. Perhaps even the aquatic foodbase we already have will do that for us but I want to make sure that we have that eventually.

Randy Seaholm (abstaining): The bottom line is I don't see a way to get around this. That's probably as close to what's achievable at this point in time but I don't believe it's enough.

Tribal Resource Development.

Mike Berry said he would give an overview of how the program got to where it is and then Helen Fairley and Loretta Jackson would give presentations. He passed out copies of his "Native American Monitoring Protocol Development" PPT (**Attachment 13a**). He reminded the TWG that AMWG approved \$25K per tribe in the FY06 budget for Native American monitoring protocol development. In order to save on GCMRC burden costs, it was decided that Reclamation would administer the program. The scopes of work were developed by Reclamation, GCMRC, CREDA, and WAPA. The contracts were executed and funds obligated for a one-year period. The Hualapai Tribe submitted a draft which has been reviewed by Reclamation and GCMRC, however, there have been no formal submittals from the remaining tribes but it's his understanding that Zuni, Hopi, and Kaibab are approaching draft completion. He reviewed the issues involved and said that upon completion of all the tribal protocols, they will be in a better position to determine the approximate role of Native American perspectives in the context of AMP goals.

Helen Fairley reiterated that GCMRC's position all along is to give the tribes an opportunity to explain their perspective and based on that, GCMRC would have a discussion about how the work would best fit within the program. The whole research design was developed for the cultural program was strongly focused on trying to incorporate tribal perspectives about archeological resources and other resource types within the ecosystem. She distributed copies of a memo, subject: Progress Report on Cultural R&D Project (**Attachment 13b**). The landscape approach that was being promoted in there was specifically to allow for better integration of tribal perspectives within this program and so frankly she was offended by the way Mike presented it because it's not a true characterization of what they've been saying all along. She also mentioned a workshop was held in April 2005 specifically looking at the issues about tribal monitoring within the program and it was to recognize that they needed to have more open discussion in order to get to some of those decisions so she doesn't think that saying they're not open to that is completely not true. Mike Berry said he was quoting from the MRP and not trying to cast dispersions on Helen's program.

Traditional Hualapai Ecological Knowledge. Loretta Jackson-Kelly said the purpose of her presentation would be to provide the opportunity for the Hualapai Tribe to present formal monitoring protocols for evaluating the effect of the ongoing operations of Glen Canyon Dam on the downstream resources. When

they had their workshop at NAU in 2005 with GCMRC, it was very difficult to present something that would get evaluated essentially by other scientists. Because their tribal values are tied to the river and canyon, the values can't be separated or analyzed scientifically. She took some courses at NAU on traditional ecological knowledge and learned a lot about TEK but mainly it was from a Native American perspective. She said her presentation, "Traditional Hualapai Ecological Knowledge" (**Attachment 13c**) would show the contrasting views and how they were combined.

C: We really haven't gotten into all our technical aspects about the western science and where it should go. I would like to see GCMRC address this issue as far as tribal monitoring is concerned and apply to their programs. (Heuslein)

Q: You mentioned a number of different kinds of physical and biological resources up there. I didn't see a lot of mention of critters that live in the water and the hydrology except in its relation to the terrestrial environment. Is that intentional? (Andersen)

A: No. In our survey instruments we go through the Hualapai perspectives on the river itself and the fish. There will be an opportunity to address all the different species and resources that are native or even non-native to the system and we would ask questions in the field about these resources and it will be expanding so we will address those. This will require us doing in-field interviews with elders and being interactive because our cultural is oral transmission and contact. We have to see it, touch it, and feel it and that's how the elders can articulate these things. We can't sit in a room and discuss this stuff in a technical aspect without promoting Hualapai language in all these discussions because that's the better way of articulating what they're explaining. (Jackson-Kelly)

Q: What you desire seems to be all encompassing from river to rim if you will. Do you see a way to keep your consultations and your desires within the scope of the Colorado ecosystem up to a certain level or do we have to go well beyond. (Seaholm)

A: It's tough to draw a line when talking about community and how we're affecting our community as a tribal people, that the resources we're proposing to study and evaluate do come back to the community so everything is interactive in the whole sense. Western science is so on-the-spot whereas we're studying traditional concepts in our culture. Everything is interactive and everything is related to one another. We will address in the geographic forum when we're in the canyon and on the river doing our studies. (Jackson-Kelly)

Q: Do you see a way that this program can fully interact with the Park Service to give you the holistic approach that you're looking for without, if you will, extending way beyond some of us believe the scope of this program is? Is there a way to make things come together in separate pieces if you will? (Seaholm)

A: Yes. (Jackson-Kelly)

Q: Do you envision that the interactions with the elders are something that you and other tribal members will do and then report those results to us or do you anticipate that someone from the Center might be part of that interview committee? How do you envision that? (Andersen)

A: I envision that we will train Hualapai cultural technicians to do the interviews. We have an anthropologist and an archeologist on staff that will probably be overseeing the field work and there's always room for more people to come and participate and help. (Jackson-Kelly)

Q: How do you see this fitting into the core monitoring development process? There's a workshop tomorrow where we'll be talking about information needs. Does that fit into your paradigm or your model of how we put this all together? (Kubly)

A: I hope we can both work together on that. We need that in the core monitoring protocols. I'm trying to stay away from very powerful key terms such as traditional cultural properties because that puts you into a different realm of Section 106. We're trying to address these as just culturally sensitive areas. (Jackson-Kelly)

The Southern Paiute Consortium. Charley Bullets made a brief introduction and then turned his time over to David Siebert who is a doctoral student in Cultural Anthropology and is under contract with BOR to do a 10-year summary of SPC involvement in the AMP. David has been using social science methods such as participant observation in these meetings over the course of two years most intensely, document review, history of involvement in the program, ten years of annual reports that the SPC has gathered, and combining all the information in order to fulfill the obligations for the BOR funded project which will end in June. He reviewed the tasks he's been working on: Task 1 is a review of the first 10 years of the monitoring program and Task 2 is to evaluate Southern Paiute tribal participation in the AMP, most specifically how effective the RINs are with current strategies to achieve tribal consultation. A draft should be ready by the end of June.

Hopi Tribe: Mike Yeatts said they're in the process of reviewing a draft and should be submitting to Reclamation and GCMRC fairly soon. In developing these programs, Mike said there isn't really a distinction. It isn't broken between the management and the science. It's all part and parcel. He thinks that's

one of the bigger distinctions is seen in western science and also one of the issues they always run into in the AMP. He said it's very difficult to separate "the science" from the rest of the understanding of this system. It also goes towards about whether you can just look at some arbitrary level of the river corridor for collecting data but it also takes an understanding of the whole world beyond culture and those two things can't be divorced. The holistic view is going to be very valuable when all the tribal programs come in and it will be important to look at the values of what resources are being managed.

Pueblo of Zuni: Jonathan Damp said he has finished the first draft of the protocols for the monitoring but forgot to bring it with him. They're going to be reviewing that and the protocols they have laid out. Zuni is interested in the canyon more for the cultural sites and the environments surrounding those cultural sites so they talked with their religious leaders on their advisory team and developed the protocols and steps for looking at the cultural and natural resources.

TWG Chair Update: Kurt reminded the TWG that when the \$125,000 was approved for developing the tribal monitoring proposals, the proposals would be coming back and the TWG would be expected to provide recommendations on criteria for evaluating the proposals as they fit into the adaptive management program. He encouraged the members to think about those criteria having seen the Hualapai presentation and how they might think about how that proposal would fit into the adaptive management program and provide that criteria to Mike so he can start assembling it can be the basis for evaluating the monitoring program.

Draft FY08 Budget Development. John Hamill passed out a graph showing the "Comparison of GCMRC's portion of the GCDAMP FY2007 Approved and FY2008 Draft Budgets" (**Attachment 14a**). He also passed out a graph showing the Goal 12 Breakout (**Attachment 14b**). He said that the motion passed by the AMWG at their December meeting was that the MRP was approved as a working document to help guide appropriation of the FY08-09 workplan and budget. GCMRC took that to heart and when they put together the FY07 workplan their first priority was to fund projects that were initiated in FY07 and to bring those to their logical conclusion. When they approved those, they approved them from start to finish and so that was their first priority to complete the work that was started in FY07. They also heard that the archeological site treatment plan was going to be completed and there was a desire to move that program forward. In discussions with Reclamation they agreed that a minimum of \$300,000 should be set aside for that effort so they took that as kind of a baseline from which to work and then applied a 3% CPI increase in the amount of funding that would be available and looked at uncontrollable costs associated with various products in terms of salary increases. They looked at either some increases or decreases that they were aware of in those projects that were scheduled to occur in FY07 and put that all together and when they added it up there was some \$300-400,000 that they were in the hole when they first prepared the budget so they went back and pared down some projects. They had a number of budget reduction exercises within GCMRC and the only funding that they were able to identify for any new starts was for the long-term sediment storage monitoring project. It's scheduled to go through TWG review this year and John that at the last BAHG meeting they identified about \$95,000 still on the table so they allocated the money to that particular project. They felt that it was prudent to do that given that this is going to be their first core monitoring project hopefully and it made sense from their standpoint that they ought to at least fund implementation of that in FY08. He said the spreadsheet contains their recommendations for FY07. John said he would restrict his comments to GCMRC's portion of the budget.

They essentially identified what the 07 budget amount was, what their proposed 08 amount would be, and any explanations for why those were either increased or reduced beyond the normal cost of living increases. He said it was essentially a balanced budget that considers all of that. He also referenced various tables and said the first one is a breakdown of the budget by goal. He pointed out that where there were no comments in the column, the TWG could assume it was based on a 3% cost of living increase and any minor salary adjustments just to cover people they knew were going to get salary increases. He said their burden rate for FY07 went from 17% to a projected 19%. In addition, personnel costs were adjusted to reflect expected increases. There is also a note here about the million dollars. They assume the \$1 million

was guessed funds and will be provided in FY08. That's the indication they're receiving from Washington. They believe it's enough to cover their cost share requirements on DOI projects. The USGS is required to contribute money to those projects to keep the burden rate down and they should be okay unless they do an experimental flow test in which it will probably be \$75,000 - 125,000 short in that category. That's an internal issue within USGS that they're working to resolve and to make sure that when they actually do spend money from the experimental flow account that they would have sufficient cost share to address.

John said there was an increase in Goal 12 as he made a decision that all the program managers' staffs rather than being assigned to individual projects were going to get into a program planning and management category under Goal 12 so that includes Helen, Matthew, Ted, and Glenn Bennett, and himself.

Budget Ad Hoc Group Report. Dennis said the BAHG held three conference calls on the 08 budget and workplan development and decided not to get down in the weeds, to not go through a project by project evaluation because the AMWG has indicated that they like an opportunity to look at the drafts. As such, he said that what the TWG was seeing today was in the context of whether they think this is a sufficient presentation of draft budget and workplan to the AMWG. He said the TWG will put together a recommendation at the next meeting. He pointed out that in his there is a bar graph he used to portray Reclamation's 07 and 08 budgets. In almost all the categories, there is 3% CPI change. The big challenge for the BAHG will be to identify a recommendation on a Cultural Resources AHG proposal to increase the amount of funding from \$300,000 to \$500,000 for the treatment plan plus another \$59,000 for Park Service support so the difference is about \$259,000 that has to come from either continuation of projects, the experimental flow fund, or some other source. He also said that Ken McMullen reminded him that there's also about \$3300 in the NPS permitting that isn't accounted for so that's about \$262,000. If it's agreed that the CRAHG effort can be funded at that level, he asked where the money should come from. He said he would like to have Mike Berry speak briefly to the treatment plan and then Mary Barger and Jonathan Damp want to speak to the CRAHG proposal.

CRAHG Update. Mike Berry said that Jonathan delivered the GRCA treatment plan yesterday. It was an outstanding job, about 500 pages, filled with lots of details. They would like to get a TWG recommendation to send a copy of that to Dave Garrett and the Science Advisors who will pass that along to Don Fowler. Simultaneously Mike will give it a quick review and then distribute it to the PA Group for their evaluation. It also provides a basis for budget estimation that he didn't think they were going to have. Initially the \$300,000 placeholder was his idea because he didn't think they would have budgetary information in time and actually at the last CRAHG meeting, they determined that they would be able to get a reasonable budget and that is more like \$500,000. The whole point was to get away from a placeholder mentality and provide real budgets TWG recommendations and AMWG approval on an annual basis.

Rick Johnson asked if the TWG would have an opportunity to review the treatment plan. Mike said it was his intent as COR on the contract to see whether Don Fowler (who serves as a science advisor) could do an external review. Mike is going to contact Dave about that prospect. Mike also said that if anyone wants to read the plan, they should send him an e-mail message and he would provide a copy to them.

Q: It appears there are only one or two tribes that are going to be ready for implementation of the tribal monitoring in FY07 and I just wonder where that money in FY07 is going to go and can it be applied in 08? (Henderson)

A: And as I understand it that money was to be held in abeyance contingent upon the completion of the tribal monitoring protocols. If they are not complete, I suppose that money would go wherever the decision is to put the money, whether it's in the experimental flow fund or back to the Basin Fund but we have to have protocols in place before we can apply contracts under that particular funding. We discussed it earlier and I think we probably need to discuss it with perhaps the BAHG because the Hualapai would like to get going before the next TWG meeting if they're approved. Could the BAHG determine whether or not that money can be? (Berry)

Q: It was already approved by AMWG last year, that's how that money got into the FY07 budget and so we want to know what the process is. We've submitted our protocol report. What is the process for us being able to implement our monitoring program in FY07? (Christensen)

A: *That is a question for the TWG. (Berry)*

C: *I think it's two-tiered. The first thing that has to be done is that the product has to be accepted by the contracting agency which I don't think has formally been done yet. The second agreement was that the TWG review - that's why we were asking for criteria earlier. What are the criteria that the TWG intends to use to say yay or nay to funding which is out of the 07 dollars. That is what Norm is asking about. Just one more aside. If you look at the budget that was prepared for FY08 in the comments section, the BAHG thought that the best use for these dollars, if they're going to be used in FY08, would be for TCD identification because as I understand it, that's a missing element for NHPA compliance. We would really like to elevate that priority and get that done. Your answer is that next time at the TWG meeting they come back and hopefully all the tribes have their projects done, they go through a review and the TWG gives its determination. (Kubly)*

C: *Our monitoring begins May 7 so it's kind of problematic. (Christensen)*

Q: *How about your \$95K? Can you use part of that? (Berry)*

A: *Not at all. (Christensen)*

C: *But there's another part to this. The Federal Government or whoever is going to administer GCMRC or USBR had to make a determination on how that contract will be let, whether it can be done through a sole source as Mike did before, whether it has to be competed. We always have to go through that. (Kubly)*

Q: *I guess I have a question and maybe I'm misremembering but I thought that the tribes were going to come and give their presentations and at some point, pretty quickly, we would approve it because the money is there. We approved the money to be there in order to give them the go to go forward any of the tribes that are ready. So the money is there but if we don't have a process to approve it, it just seems inefficient in the nicest way that I could put it. (Barger)*

C: *What we asked you for today was to submit criteria that the TWG will use to make that determination at its next meeting. I think there is a process in place. You're right the AMWG agreed to those dollars that's what you said. The TWG has said that they want to make a determination on whether to fund and that comes at the next meeting. But then there is a contracting process that always has to occur after that. And what Mike is saying is that there isn't a determination yet of whether or not that resides over in GCMRC and Reclamation. What may be confusing people is usually the Federal action has to be described well enough to do the assessment and they probably wonder how could that be done back at the time of the EIS when you didn't even have the treatment plan that said how much dirt you were going to turn. (Kubly)*

C: *That's why the PA was constructed basically to understand the effects on particular sites and to document which sites were eroding, which sites needed treatment and that's taken 10 years. Actually it didn't take Jonathan that long once we got someone in the field but it took quite a while to get someone in the field. (Berry)*

Q: *What's that consultation trip in September? (Yeatts)*

A: *I sent out a request to all tribal members. It was a two-part message and it said how are you going on the tribal protocols and by the way get back to me on schedule availability for a September consultation trip. I will send that out again if you did not receive it. (Berry)*

Q: *Kurt, could you go back to the AMWG minutes because I don't recall AMWG or anybody saying that the TWG was going to develop criteria to evaluate tribal monitoring protocols. If that's in the minutes, that's fine but I don't recall that. I don't think Mary recalls that and I don't think a lot of these people are going to provide you with criteria to evaluate those protocols so if Kurt at the very least go back to the minutes to see if a process was laid out for that and if there was, fine, but I just don't recall that.*

Q: *Question in regards to trying to decide who does the criteria or not. We're not going to be meeting with the TWG until the end of June so we have 2-3 months that are just kind of lag time for potentially Hualapai to get on the ground for some critical monitoring that goes on in biological resources in the canyon. I'm a little concerned with having that lag time and knowing that these guys have to get through contract administration on top of that so that could take us to the end of the fiscal year. Is there some way to speed up this process rather than wait until the next TWG meeting, or give it to one of the ad hoc groups that already exists, or a separate ad hoc group to accomplish some of these processes that we need to go through? (Heuslein)*

Kurt said that if what he finds out requires a conference call then that can be scheduled. However, he said that if there are criteria that anyone would like to see in the evaluation proposals, he encouraged them to be sent to Mike Berry. He thinks the reason it is coming back to the TWG is to have sort of a crosswalk with the core monitoring program that's being done by GCMRC so that there wasn't duplication and everybody felt comfortable with the monitoring programs being developed. Comments should be submitted to Mike by April 20.

Q: *Do you know when a decision will be made on who will administer the treatment plan or is that to administer the tribal monitoring plan? (Persons)*

A: One of the reasons is this apparent division between Western science and TEK for example. Are there elements of TEK that would fit under the consultation role that Reclamation would likely assume as the action agency and other parts of it that would go under more conventional western science that would likely be administered by GCMRC. That's where the interaction has to occur. That's why Helen's participating in the review so that we get agreement with USGS on how the parts fit together. (Kubly)

C: That's why we were referring to the Hualapai model as a hybrid because it may fit into two categories.

Bill Persons questioned if there was going to be a tribal monitoring program in place in FY07 or are they looking at FY08. He said he would look to the people who are administering the contract and if it's going to take 90 days. With already being halfway through the fiscal year, they want to be doing sampling by May but wondered if it will take 90+ days to get a contract in place. Dennis said that May is unrealistic which prompted Kerry to ask whether an extension could be done on the last contract. Mike Berry said they don't have all the answer and will have to talk with GCMRC on how to divvy up the work.

Amy would like Reclamation to look at the contracting and administration issues with GCRMC and then she would like to propose holding a special TWG conference call within the next 30 days to see what's happening and whether or not tribal core monitoring can move forward this fiscal year.

ACTION ITEM: Kurt will review the AMWG meeting minutes to determine if AMWG said anything about whether the TWG was going to develop criteria to evaluate tribal monitoring protocols and report back to the TWG at its next meeting. If necessary, he'll schedule a conference call to discuss further.

Kurt said he sensed a level of discomfort with the concept of tribal monitoring. He thinks there's support for it in concept but there is some discomfort with formulating in everyone's mind what that's going to look like and how that is going to integrate with the rest of the program. The criteria that he thinks is being asked for is bringing it from a western science basis and integrating with the program. It doesn't necessarily need to be administered by the Center but somehow it needs to articulate in some fashion with the Center, what they're doing and even the Center has expressed some uncertainty on how that's going to articulate with them.

John said there are some financial implications to having Don Fowler review the treatment plan because Dave Garrett's contract is about to run out of money but there are other ways that he could possibly fund the work. He hasn't talked with Dave yet but wanted the TWG to be aware that just because they recommend it to GCRMC, it doesn't mean it will happen. He also needs to check on Dr. Fowler's availability and willingness to do the review.

ACTION ITEM: John Hamill will contact Dave Garrett and determine whether the Treatment Plan Report can be reviewed by Don Fowler, one of the Science Advisors.

Cultural Resources Ad Hoc Group (CRAHG) Report. Mary Barger said she was going to talk about what happened at the last CRAHG meeting. The topics were for the 08 budget so they were going over the 08 budget requests from Reclamation and the Park Service because there were a lot of things going on between the Park Service, GCMRC and the Bureau and a certain amount of overlap. They didn't actually get a budget from Helen Fairley so they ended up primarily talking about Reclamation's budget and what needed to be done to tweak it to make everyone more comfortable and what came out of that was \$300K that was proposed for treatment. As Mike Berry said earlier, it was considered a placeholder. They knew the treatment plan was coming in and the recommendation was to instead of trying to do treatment for 20 years to try and do them in 10 years and to be more cost effective so that would've raised it to \$500K treatment every year for 10 years. The CRAHG thought it would be more efficient to do as much as possible each year rather than to stretch it out and to combine it with some of the trips with the NPS for the treatment efforts they're making on their fee demo program. Also related was to support 1.5 FTEs for the NPS to support the program for monitoring and any other effort related to the program. That was what they agreed to. They did not discuss where that money would come from. They just discussed that it seemed like a good idea archeologically to excavate as many sites at the same time with the same people rather than spreading

it out. She said Jonathan put together the cost estimates so if any of the members had questions, they could ask Jonathan or Mike.

Q: *So we're looking at hopefully starting treatment in 08, is that correct based on review and approval of the treatment plan for that purpose and then going forward with recommendation for a 10-year process taking us out to 2018 basically rather than 2028 or whatever it was. (Heuslein)*

A: *Yes. (Berry)*

Q: *Is the treatment of sites in Glen Canyon included in this treatment proposal for 08? (Henderson)*

A: *Not as yet. We haven't received the treatment plan but I anticipate I'll get it this week. By comparison, we don't have start on Glen in 08, Grand is a much bigger piece of the pie and Glen is only 54 sites and 15 miles, one of which is a site that we need to treat on an emergency basis but I think we can concentrate on Grand primarily for 08. (Henderson)*

Q: *So whether it's \$300K or \$500K, no sites would be treated in 08 in Glen Canyon? (Henderson)*

A: *Except for that one site that requires emergency treatment. That was discovered during field work. It's the one you'll recall that is at risk from BHBF. (Berry)*

Q: *In the Grand Canyon section, how many sites have been evaluated? (Potochnik)*

A: *151 by Reclamation and 9 sites are being excavated under a separate MOA by Grand Canyon personnel. Had they not decided to do that, then those would've fallen to our responsibility and would've taken additional power revenues. (Berry)*

Q: *And when you did the assessment of these sites, what kind of a team did you have doing it or was there one person, a team? Was there a geomorphologist involved? (Potochnik)*

A: *We had a team and actually it was the last TWG meeting that we had a presentation done by Joel Pedersen from Utah State University, his team, and myself visited each and every one of the 151 sites from Lees Ferry to around Separation Canyon, four sites below Diamond. Out of those, 54 needed data recovery and then around another 50 for continued monitoring and another 50 that don't need any action. (Damp)*

Q: *What about the check dams or erosion? (Fairley)*

A: *Those are part of the recommendations. There might be a site that does have some data recovery that would also need some check dams. There might be a site that needs continued monitoring that would need a check dam but it would not be a site that needs no action that needs a check dam. (Damp)*

Q: *And when you analyzed, how did you select the 151 sites out of the 400? (Potochnik)*

A: *That was a decision made between NPS and Reclamation. It's my understanding that NPS had determined there were 161 sites that they were actively monitoring and those were the highest priority. They selected 10 which was then reduced to 9 for MNA to look at and then we took the other 151. (Damp)*

Q: *Bill Davis: Will the treatment plan have enough information on it for us lay citizens here to be able to determine whether or not these are in our own mind, scientifically, affected by dam operations? At what flow levels, as an example, are they going to be found? How are we going to be able to determine from the treatment plan? Is that sort of information in there? (Davis)*

A: *No, the decision to address the original 161 sites was a compromise between NPS and Reclamation and vetted by the PA. I don't know if you're aware of it or not but for 10 years people have been fighting over what the APE was for this project which is one of the reasons we made no headway. We finally resolved the issue with the Park Service that these 161 would constitute the sites in the APE (area of potential effect) and so we could move forward and that was done above board in conjunction with the SHPO. The SHPO has to sign off on it as well. They were at the PA meeting when the decision was made so that has become our universal sites for treatment. It is not like a typical highway project when the APE is defined by the center line and 100 feet either side of it and it's a one-time action. This is an ongoing action in a complex environment and if we were going to remain at loggerheads for another 10 years, we would do nothing but record site erosion. So that's how we came to that decision. (Berry)*

Q: *Well I heard some time back that we were looking at flows of 200,000 cfs and that was going to be the compromise point. I heard 120,000 cfs as a compromise point. I heard 100,000 cfs as a compromise point. I heard a bunch of different numbers here. Were one of those numbers used in that compromise? (Davis)*

A: *No. As Jonathan pointed out, it was the sites that were actively eroding and actively being monitored. It was a compromise. (Berry)*

Q: *So they could be up half a million cfs above the river level? (Davis)*

Kurt said the agreement that was put together but he didn't know if it was ever signed. The informal agreement between Reclamation and the Park Service was tied to a compromise in terms of the sites and is an attachment to the Roles Ad Hoc Group Report. Because there was a point in 2003-04 where Reclamation was arguing for 97,000 cfs level for the extent of dam operations, they couldn't negotiate that

with the Park Service and so they agreed on a certain number of sites that would constitute receiving an adverse effect or within an area that would be receiving an adverse affect from dam operations.

The members continued to discuss this and related issues at length:

C: *And I thought this was settled a year ago. (McMullen)*

A: *It has been. (Dongoske)*

C: *Well not at this program. That was settled between the Bureau and the Park. (Barger)*

R: *I don't think it's been well communicated to you folks. Dongoske)*

C: *We haven't seen it or I wouldn't be asking the question. (Davis)*

Q: *If this is settled between the Bureau and the Park if you will, has it been settled between those entities in the program or is this something that is being done between the Bureau and the Park and program informed. I'm trying to understand how all these things interlink. The compromise is between the Park Service, Reclamation and the SHPO? (Seaholm)*

A: *Right. (Berry)*

Q: *So does that mean there are separate sources of funding and you're just basically informing the program or is it still dependent on a certain level of funding from the program to address. (Seaholm)*

A: *Oh from the program to address. Right. The agreement and it's stated in 36 CMR 800 that the APE is decided upon by the action agency and the SHPO's office and in this case, the land management agency as well. As I said, it wasn't a cut and dried decision. We're requesting power revenues for Reclamation's 106 responsibility. (Berry)*

Q: *So then Reclamation gets this level of funding through the program. Does that put a bow around this particular piece or does there still have to be other cultural resource work done in the canyon? (Seaholm)*

A: *After successful completion of an MOA, it puts a bow around it, however, then we have GCPA to contend with long-term but I anticipate that monitoring levels and all activity levels will drop during that period because we'll be excavating sites that will no longer be endangered. (Berry)*

TWG Chair Update. Kurt said the group still needs to hear about the LTEP EIS and asked the TWG if they were getting sufficient detail and information that would help them in making a recommendation to AMWG on the budget at the next TWG meeting in the June meeting. He asked them to identify specific issues for Reclamation and GCRM to answer in their portions of the budget.

Q: *Just for clarification. We've been discussing this \$300K, \$500K. Is this going to be part of the recommendation or is the \$300K going forward unless we say differently or do we have to decide that now? (Henderson)*

A: *We're just going to identify the disparity. This is something we have to resolve after the AMWG meeting. We'll start with the BAHG and bring it back as a recommendation through the TWG. (Kubly)*

C: *The treatment plan is one of those items that we're going to be looking at. You ask whether or not we have enough information to make a recommendation and I would just say that's why we would like to look at the treatment plan and see. I had questions about the flows and would like to see what kind of deal the Park Service and Reclamation have put together. I have certain opinions about where we have a responsibility of dam operators so I would like to see what the treatment plan does to that. (Davis)*

C: *E-mail me and I'll send you a copy. (Berry)*

Q: *Can you get the treatment plan out to the stakeholders that request one to inform them so they're able to make a decision regarding that at the June TWG meeting? (Dongoske)*

Q: *The HECRAZ model that was discussed yesterday says that we can run flow lines now. It was up to 200,000 cfs. Can we put archeological site data on that and see where all these sites are landing on the flow line and answer Bill Davis' question? (Barger)*

A: *What was that model run on? Is it its own program or is it integrated into GIS? (Damp)*

A: *It's being finalized now and then we hope to get it into peer review but once it's available, it can be directly integrated into GIS. We did it on a preliminary basis so it's out there. It will be available for that kind of purpose and monitoring. (Fairley)*

C: *Yesterday we heard that it's already available online through the Army Corps of Engineers. (Damp)*

R: *No, no, that's the HECRAZ and they've taken that basic. I should let Ted talk about it. (Fairley)*

C: *It's a generic program, a public domain through the Army Corps of Engineers and then it has to be adapted to whatever river channel or setting that you want. So what Chris Magirl has done is taken that generic package and then made it work for our Colorado River. He's in final phase now of publishing a USGS document that describes how that process of constructing it and calibrating it was conducted. It's sort of a user's guide if you will. (Melis)*

C: *The only thing I have right now is what Reclamation provided me years ago was the 97,000 and that really doesn't show us much in relation to the 151 sites. (Damp)*

C: We also have a Digital Elevation Model (DEM) that was constructed based on the 2002 Eyestar so if you know the latitude and longitude of a given site, you can plot that on the Dem which will give you +/- 40 centimeters vertical what the elevation is so you can do that right now with help from our GIS staff if that's something you haven't done or want to and then that same DEM was the basis for constructing these 200,700 cross-sections which Scott talked about which developed from the GIS shop in Flagstaff. Each one of those cross-sections you can plot the elevation of the site and then predict the stage elevation. (Melis)

C: When the STARS model was developed by the Bureau, it was really designed to model flows up to 30,000. When you try to project it higher, it artificially lights the height of the flow line and so when that was projected against where the sites were distributed, I believe it was like 150 of the archeological sites very close to what was actually assessed by Jonathan now on or below the 97,000 line as it was projected by that model and we were pretty sure that wasn't correct and that was one of the things motivating us to try to follow through and get a better model for the future. (Fairley)

C: We have the GIS data for the sites. I guess whether it's peer-reviewed or not, you should be able to run the maps on it. (Barger)

Q: Well do you want to know if it's accurate or not or do you just want to? (Fairley)

A: Well I'm assuming it's more accurate than anything else we have right now. I know Clayton is going to ask for it so Bill's asking for it and other people are going to ask for it, I don't understand why we can't run with the best we have right now to find out what it is. (Barger)

C: Because this body turned down the request to have that model finished two years ago. (Stevens)

R: I think it was last year. (Kubly)

C: I think it started two years ago but for the trivial amount of the model, this body felt it was unimportant. (Stevens)

C: It's going through peer review now that's all I'm saying. It's pretty close to being done. (Barger)

C: But the delays aren't our fault. (Stevens)

TWG Chair Update: Kurt told the group they will be asked to deal with a recommendation from the CRAHG that elevates the amount of treatment for \$300,000 to \$500,000. That's what they recommended but they didn't identify where that extra money was going to come from so if they're going to support that recommendation, they're going to have to make a decision of where that money is going to come from.

John Hamill said the whole idea behind reviewing the preliminary budget was to make these decisions so they don't end up writing work plans that they already know are over funded. He would like the TWG to make a decision today if they want to the work at \$550,000, knowing that \$250,000 will have to be found somewhat else. They don't want to end up writing a budget that is going to be a quarter of a million dollars in the red. He wants to write a balanced budget. He would like to have that decision before GCMRC begins writing detailed work plans for each one of the 40+ projects.

Kurt asked if there was any other information the group needed today.

Q: What am I getting for the extra money? Am I just getting a treatment plan done in 10 years instead of 20 years? (Persons)

A: I think in the long run it's going to cost the same amount. It's actually going to cost more if you fund it at a lower level because you won't be able to get it done. There are very few projects that go 20 years and maintain the personnel and consistency that you need over a 20-year period. I was asked to come up with a budget and in doing so I had to make certain assumptions. Palpability was one of those things which I thought had the highest standing as to what this program would accept, what the Park would accept. First of all, I didn't think that sending 50 archeologists down into the Park all summer with helicopter support was something that NPS was going to swallow. And then at the other extreme was something over 20 years was probably not so I had to make some compromises and that's what I came up with and they seemed to be in the same ballpark figure that Signe Larralde came up about eight years ago and adjusted for inflation actually it's almost a deal. (Damp)

C: It sounds like we're being asked to choose between two options with not enough information on what the tradeoffs are with which to make a decision. What am I getting for the extra money? Where's the cost benefit analysis? You know what criteria I want. Am I missing something here? Why is this so hard? (Persons)

A: You're missing reading the treatment plan recommendation. (Berry)

Q: Which we can get how soon? (Potochnik)

Q: So why do you even bring this to me? (Persons)

C: I think John wants to know so he can budget it. (Christensen)

C: It's not a decision today. (Kubly)

C: *It's not a decision today. (Dongoske)*

C: *Don't bring it to me today. (Persons)*

C: *I don't think you're being asked to make decisions on something that's any more nebulous than some of the stuff you've asked us to vote on fish and some other resources. I don't know why you're giving this such scrutiny. We're asked for money all the time. (Dongoske)*

R: *I beg your pardon Mr. Chairman. (Persons)*

C: *Some additional information I think would be very useful to the TWG in making this decision is to include the Park Service contribution to this treatment plan, the proposal in 08 because I think it gives a false impression about all the treatment activities that are going on to only show the AMP portion of the funding for this. There's going to be at least double this, if not more, in actual treatment activities that are going to be ongoing, in the canyon, in 08. So I would at least double this as far as the activity level that's going to be on there and I think that would be useful information for the TWG to understand that rather than just saying well this is all the perceived notion that this is all the treatment activity that's going to be going on in the canyon in 08. (Henderson)*

R: *So can you provide those data? (Kubly)*

C: *I could have. Basically it's \$500,000 over the next - No, it's \$1.2 million over the next 5 years. (McMullen)*

Q: *What's estimated for 08? (Kubly)*

A: *Well I think it's \$500,000 a year for the next. No, it's \$250,000 a year for the next five years. (McMullen)*

C: *Sure, we can add that. That's good. (Kubly)*

C: *I think I actually heard Lisa say that for 08 it was around \$470,000 to get the bulk of their field work done and then it would be back in the lab and so the costs and analysis but the actual costs would diminish for the outyears. (Fairley)*

C: *Right. The last thing is we had talked about putting in that contributions section in the budget which we haven't gotten around to doing that we could show that. Not only that but the contributions from our senior MP and the translocation and a number of other things as well. We need to do that and I think Norm is right that that would help at least allay some of the care. (McMullen)*

Q: *The other part of it is in the treatment plan is there a projection or is there a recommendation for implementation over a certain time frame or is it just this is what's needed to be treated? (Henderson)*

A: *It's just what needs to be treated. (Damp)*

Q: *Okay, so then it's left up to us to decide how to implement this over what kind of time frame? (Henderson)*

A: *Yeah, and I have provided the Park Service, Lisa and Jan, with a list of the sites and have asked them to help me prioritize it and they have so we would work with them but I can't make those assumptions until we can figure out the logistical level of support. (Damp)*

C: *Well, I would just suggest that somebody needs to make a recommendation here on implementation on what is the most reasonable or most feasible implementation of the treatment plan. If it's not in the treatment plan as far as a projection about it from here to a certain date to get this implemented, then somewhere that would be some useful information to provide along with the treatment plan as an implementation of the treatment plan proposal. (Henderson)*

C: *Norm, the plan is that 10 years is probably realistic but I don't want to write a contract for 10 years. The plan is to compete the contract for 5 years with a base year and 4 option years and come up with real budget estimates on an annual basis. At the end of 5 years with whomever that contractor is, we're going to re-evaluate the situation, see if we've excavated a heck of lot more sites or a heck of a lot less than we anticipated before we let a subsequent contract. That's the plan. (Berry)*

C: *But the five years, is that to try and get everything done or just start. (Henderson)*

R: *As I say, things are going to change. The condition of the sites are going to change in unforeseen ways and excavation may go more expeditiously in some cases than we anticipate or it may be slower so I think a 5-year contract is reasonable and then we evaluate the future after that. (Berry)*

C: *I understand that and you certainly have to re-evaluate as you go along but what I'm getting it you got to at least make some stab at what's the best way to implement this plan and make a proposal here on your 1-10 or 1-20, or 1-15, or whatever you're going to need in the future. (Berry)*

C: *That's where the budget came from. The best estimate for 1/2 million was to complete the plan in 10 years. (Yeatts)*

C: *The budget is based on excavating 6-8 sites a year and then there are some other recommendations in the plan and then a few years at the end to wrap it all up. (Damp)*

Q: *Does that include the Park Service contribution as well or is that 6-8 sites in addition to the Park Service? (Henderson)*

A: *That's in addition to your 9 sites. (Damp)*

C: *It seems like we ought to have a combined proposal including the park because it's a combined treatment plan. (Henderson)*

C: *It's two separate agreements, two separate actions. (Kubly)*

C: *They're going for the same effort. (Dongoske)*

C: *It's separate organizations. We're certainly working together. (Damp)*

C: *The Park Service and Jonathan have been working together with MNA so that the treatments are similar in terms of the methodology, the research approach, the archeological grounding in which they're going to do the treatment. In that capacity they are coordinated. (Dongoske)*

C: *By the way, Jonathan's estimate for the length of the project and the amount of money involved was in the CESU agreement. That was one of his deliverables. (Barger)*

C: *You said that the projection of the time frame was not a deliverable. (Henderson)*

R: *You can figure out the time frame if you know how many sites a year you're going to do and how many there are. It's not rocket science. (Berry)*

C: *They laid it out in 10 years at an estimated \$500,000 a year, right? You know that. (Kubly)*

R: *That's a separate document than the treatment plan. That's the budget which was prepared the first iteration a long time ago. (Damp)*

Q: *Where is that? (Kubly)*

A: *I gave that to Mike and I think he distributed to everybody. The treatment plan I gave to Mike yesterday. (Damp)*

C: *I'm just saying that's a piece of important information that ought to be given to the TWG members to show that the - (Henderson)*

R: *That information was provided to the BAHG. (Damp)*

Q: *So for clarification reasons, how many sites are for recovery, what's the time frame, and what's the cost? Can you clarify that so everyone is on the same playing field? (Heuslein)*

A: *6-8 sites, an average of 7, then there is some other work that has to be done that's talked about in the treatment plan, some mapping type work, and so you average 7 sites, 7 goes into 54 = 8, and then a couple of years to wrap it up. (Damp)*

Q: *At an average cost of \$500,000 per year? (Heuslein)*

A: *Yes. The limiting thing is that work down there you just can't drive a car up with a backhoe up there and start doing your work. (Damp)*

LTEP EIS Update. Dennis Kubly reviewed the steps which have occurred thus far: 1) A federal register notice was released in November; 2) the purpose of the LTEP EIS was presented to the AMWG at their December 2006 meeting; 3) public scoping meetings were held in early January; 4) scoping ended in February; and 5) a scoping report with response to comments was posted on Reclamation's web yesterday. Dennis said the next step in the process will be to convene a science workshop for addressing a series of core questions and hypotheses that will feed into the development of alternatives and GCMRC is sponsoring that workshop this next week. On the second day of the workshop, it's open to stakeholders. He told the members if any of them are interested in attending, Ted Melis would be more than happy to share that information with you.

Dennis said other dates to keep in mind: 1) The Draft EIS is expected to be finalized in February and published in April 2008; 2) a biological assessment is to be prepared in April and it's anticipated that Reclamation will receive a Biological Opinion from the FWS in September; 3) the Final EIS will be published in October and, 4) the Record of Decision is anticipated in December. Unfortunately, Dennis said that creates a budget problem in that they will be three months into the fiscal year and he thinks that's something they should ask the AMWG to provide them with some feedback at their next meeting. He said the purpose and need for this EIS is different from other EIS documents that have been done. Ordinarily when a federal agency is going to take an action, they're going to construct a structure, but in this case they're putting together an experiment to improve understanding of the effects of Glen Canyon Dam on downstream resources, and then to protect and improve those resources so they have a dual nature to the purpose and need for this EIS. Dennis said that one of the things that's pretty evident in the public comments is that they don't separate a change in policy, a change in operation of the dam from the development of a long-term experimental plan probably because this adaptive management concept a pretty new way of doing business and integrating it with NEPA is not something that has been done very many times.

Dennis provided the link to the web page where regular updates are posted on the LTEP EIS:

<http://www.usbr.gov/uc/rm/gcdltep/index.html>

Request for Budget Clarification. John Hamill said he was confused about how the budget process and asked for some clarification. It's was his understanding that the TWG is going to make a recommendation to the AMWG basically the way it is right now with Option A, Option B, one is to fund it as it's proposed plus another possibility for an additional \$250,000 for the treatment plan which happens at the end of May. He wants to know when the decision is going to be made to provide him with direction so GCMRC can start writing their work plans. He reiterated the importance of having a firm recommendation on the budget at the TWG meeting in June to forward to the AMWG. As such, does the TWG want a budget that is a \$250,000 out of balance? He said there is a big time crunch between now and June 25 to produce the documents and he wants to make sure he has clear direction from the TWG.

Q: *Is there any way as you go through these work plans you can say we can do this much work this year based on the budget that you've shown here but if something had to be cut, here is the stopping point that we could cut back? It may not be as efficient in the grand scheme of things but it would at least be something that we could do and do manageably because I appreciate your dilemma. (Seaholm)*

A: *I'm at a point where if we have to cut another \$250,000 out of GCMRC's budget to fully fund the treatment plan, then we're just going to have to quit doing some projects. We cut about \$300,000 out of what was originally projected for 07 to get us to where we're at now. There comes a point where a project just isn't viable anymore and I think we're right on that line. We're just going to have to start saying we're going to quit doing Lees Ferry trout monitoring or quit doing vegetation or HBC, or whatever the heck it is you don't want to do. And so that's a hard decision you all are going to have to make and I don't know how having a whole bunch of paper in front of you is going to make that a whole lot easier. Now maybe you need to have some review of the treatment plan but I think ideally it would be great if you go to the AMWG with a recommendation for a balanced budget instead of giving them a budget that's always has this big problem. Is there any way you can get there between now and next May. You've got two months. (Hamill)*

C: *I think you bring up a good point because we need to present AMWG with a balanced budget rather than having them to do it. I think we know this issue has been coming at us. We've had 10 years to take a look and get plans in place and we know we're going to have a treatment plan for the arch sites and we've kind of ignored everything and put it on the back and now we've got to have a really hard look at what we've been funding and where we're going to open that funding in order to take care of this next leg that we need to do. Everybody is going to have to get their pencils out and start looking at what are the needs we need to continue in the program in order to incorporate the cultural component here. (Heuslein)*

C: *And given that people need to feel comfortable if they want to look at the treatment plan that's the sense I'm getting before they make a determination on the \$300,000 or the \$500,000+ for the cultural resources, it's a matter of Mike getting the treatment plan to those stakeholders who want to review it. I don't think that's going to happen in time. (Dongoske)*

C: *Kurt, if I can digress into contracting procedures for a moment. We have a \$500,000 estimate on the table from our contractor. I'm going to look at what our needs are and I'm obliged to come up with an independent government cost estimate before I let the RFP. Maybe we can come to some level of compromise on this first year. I'll look at it real hard and see what we can do. I understand the money is tight. (Berry)*

C: *My inclination is that we got this treatment plan literally yesterday. It sounds to me like there's a process for further review and it's sounds like there is a process for adjusting as we go down the road and Mike you mentioned in five years out we'll look and see what we still have to have done. Given that understanding and I think John needs clear direction, I'd say let's go ahead with the budget that was laid out there now and we'll figure out where to find \$200,000 when we've got things laid out in an organized process I guess instead of trying to do kind of a panic decision if you will. (Seaholm)*

C: *I think that's a good idea especially for the first year. And I was hoping this group could make a recommendation. We've got \$300,000 set aside in the budget right now. We've just heard that we may need another \$200,000 but we're really not sure yet. I wonder if we could go with the \$300,000 for FY08. By the time we're working on FY09 budget you will have been through the process of getting your best govt data, getting competitive bids, and can show us what it's really going to cost us and then we've got time to try and fit that into the 09 budget and in time to make some of these hard decisions about what we're going to cut. Because right now I understand John's pain and I don't want to put in that place. (Persons)*

C: *And it's not just my pain, we're headed for a train wreck here. I know how these things go and we're just putting off the inevitable from my standpoint. I recognize your need to review the treatment plan but at the same time I don't want us to come down to the deadline in June where we're sitting in this room and we have to make a decision and that's not the best way to do it. The decision isn't going to get any easier three months from now. (Hamill)*

C: *And there's also the potential that the LTEP expenditures are going to be higher so that's additional money that we'll have to pull from somewhere. (McMullen)*

C: *We've got three or four arenas. This is just the shape of things to come. (Kubly)*

C: *And we know we've been coming up against processes to make those priority choices because we have limited funds and now we're just pushing up right against that door a little bit earlier but we have to make those cuts. It's time to prioritize. (McMullen)*

Q: *How are we going to do that at the last minute, in a budget meeting? (Persons)*

A: *I hope not. (McMullen)*

R: *We're on the same schedule we've been on in previous years. I'm not as worried although I agree it makes it harder for you and one of the reasons we're trying each year to move it up is that we face this crunch at the end in August. (Kubly)*

C: *Well we have this additional step this year where we're taking this to the AMWG as a preliminary budget which we didn't do last year so we've interjected an AMWG review and who knows what they're going to say. (Hamill)*

C: *We first started that in 2004. (Kubly)*

C: *Well we didn't do it last year and last year and we had draft work plans written in May and there was a couple of TWG meetings, one in late May and another one in June or July where this thing was dealt with on a couple of different occasions with the TWG. We're just jamming a whole bunch of stuff together right at the very end. Maybe you can resolve this issue of what's in and what's out before we start writing more plans. (Hamill)*

Q: *I think it would be helpful John if you could give some perspective here to the TWG on what potential projects could fall out but we don't spend as much money with so we have some ideas as to what we can cut here based on your recommendations from a science perspective then that may be a way for us to figure out how to prioritize what we have left to work with. Is that possible? (Heuslein)*

A: *We can make some of those recommendations. It's hard for me to read the will of this group is. (Hamill)*

C: *In the BAHG report there are three options: 1) reduce the continuing projects, 2) extract money from the experimental flow fund, and 3) to fund at less than recommended. And, there are questions about some of the monies on whether they can be used or not. (Kubly)*

C: *There are other places to find money if it's the will of this group to want to fund the \$500,000 (Henderson)*

C: *I'm just saying those are the three that at the time we ended the BAHG that we recognized, that's what was transmitted to the TWG. (Kubly)*

Adjourned: 3:45 p.m.

Glen Canyon Dam Technical Work Group **Conference Call**
April 19, 2007

Conducting: Kurt Dongoske, Chairperson

Convended: 1-3:30 p.m. (EDT)
2-4:30 p.m. (MDT)

Committee Members Present:

Mary Barger, WAPA
Steven Begay, Navajo Nation
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS
Rick Johnson, Grand Canyon Trust

Robert King, UDWR
Dennis Kubly, USBR
Phillip S. Lehr, Colo. River Comm./NV
Don Ostler, UCRC
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Bill Werner, ADWR

Committee Members Absent:

Charley Bullets, Kaibab Band of Paiute Indians
Christopher Harris, Colo. River Board of California
Amy Heuslein, BIA
Glen Knowles, USFWS
Ken McMullen, NPS/GCNP

John O'Brien, Grand Canyon River Guides
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
Michael Yeatts, The Hopi Tribe
John Shields, WY State Engr. Office

Alternates Present:

Don Ostler
Andre Potochnik

For:

John Shields, State Engineers Ofc./WY
John O'Brien, Grand Canyon River Guides

Interested Persons:

Matthew Andersen, GCRM/USGS
Dave Garrett, M³Research
Andrea Gonzales (Bob Lynch's Office)
John Hamill, GCRM/USGS
Leslie James, CREDA

Ted Melis, GCMRC/USGS
Pam Sponholtz, USFWS
Dave Wegner, Member of the Public
John Weisheit, Living Rivers
Scott Wright, GCMRC/USGS

Meeting Recorder: Linda Whetton

Kurt reviewed the agenda for today's conference call which items might require action by the TWG:

1. Science Advisors' Recommendation on
2. Warmwater Non-Native Fish Management Plan
3. Humpback Chub Concurrent Estimates
4. Sediment Augmentation
5. Lake Powell/Glen Canyon Tailwater Dissolved Oxygen -> Information only
6. Status of revision of recovery goals for four endangered species in Colorado River Basin
7. Status for development of a Lower Colorado recovery implementation program
8. Hualapai Refugia for Humpback Chub

Science Advisors' Recommendation on AMP Effectiveness. Dave Garrett said the Science Advisors did an overall AMP review and in that review they looked at structural elements of the overall program which included the Secretary's Designee, the AMWG, the TWG, GCMRC, and even the science advisors in looking at overall effectiveness in programming and accomplishing goals of the program. They concluded there have been fairly effective governance programming in that the groups were organized fairly well, there were charters established, there were general guidelines for their operations and that these groups have operated together for about decade and so there was a fairly effective governance program in place. It was also concluded there were some effectiveness in accomplishments, specifically noted was the sediment research and sediment-related activities. They also recognized areas where the goals and overall direction of the AMP had not been accomplished and specifically in the area of endangered species, for example, humpback chub, that up until the 2006 there were significant concerns about the chub and was it in decline. It's still from the establishment of the program it has been in decline so the numbers are now fairly stable, somewhere between 3,000 and 5,000. There have not been significant advances in resource protection. The science advisors made some recommendations but Dave said he wasn't going to go into detail on those but just provide an overview

He said one of the most significant recommendations is evident in several areas that the SAs made that the organization needed to establish some sort of an interactive workshop with all entities of the GCDAMP. The workshop should target two immediate outcomes: 1) the various groups involved in the GCDAMP should reaffirm a commitment to a common purpose and that common purpose is an overall direction would and should be that they would implement adaptive management programming including collaboration to accomplish improvement in the resources of concern. That should be a common goal of the organization. It would involve compromise, mediation, and tradeoffs. The TWG should be a primary push in accomplishing those impulses and working with the overall organization. 2) The entities should look at the various recommendations from the science advisors to improve the effectiveness of the organization and that they would establish a program for the next five years to accomplish those improvements. He reiterated that two things should come out of the workshop: 1) establishment of the consensus of the overall organization for a common purpose, and 2) that they would look at all the recommendations that have been made and try to accomplish things in a certain time frame. The TWG needed to focus on developing effective recommendations to AMWG. The TWG would function effectively as a recommended body to AMWG but an assessor of technical opportunities and would make recommendations in formal written proposals, evaluating the differing alternatives that they would want AMWG to consider and those would be fully vetted out including economic and/or risk assessments associated with that. Another recommendation that's aligned to this is that TWG and GCMRC should in the future conduct much of its assessments in a collaborative fashion in recommending alternatives to the AMWG. When the entities pull together an annual report, they should include a schedule a schedule of activities of all the organizations and what would occur at those meetings. One of the proposals that the science advisors would really like is to have the TWG make sure that some AMP effectiveness workshops occur early on and from those tier down with some follow-up workshops. One of the key areas that the SAs felt that TWG could contribute, outside of providing all these alternative recommendations. One of the accomplishments that TWG could pursue that would be very effective in providing future opportunities for the entire organization and probably in efficiency as well, would be what are the program areas where determinations are going to have to be made about management actions. For example, should science continue on removing trout from the river? What criteria need to be put in place and what process is being put in place to find this and then what other organization would the TWG work with in accomplishing that? Of course, the recommendation would have to be made eventually. These are on management actions. A second area that needs this similar type of work by the TWG would be defining future conditions for various resources. This means assigning every science planning activity that occurs that affects management planning activities. For example something came up in the recent program assessment in element D it was constantly faced by the SPG this in looking at science planning as a long-term experimental plan.

Q: How much overlap is there in these recommendations is what you see coming out of the Roles Ad Hoc and I'm asking that as a process question about the TWG might do in the near term to either coordinate?

A: There is overlap. For example, the previous Roles committee and the current Roles committee but you've read the last Roles Report. There is some overlap not on the management actions group but on this desired future conditions. Some of that encouragement to develop and provide some input has to come out of the Roles Report as well. However, some of the SAs recommendations won't be found in the Roles Report but there is some overlap. The reason there is overlap is that the Roles Report is a very important document that is looking at varied specifics of everyone of the major entities. So it's actually has its fingers in all sorts of recommendations that have occurred by the SAs and others over the past year. (Garrett)

Q: What is to be lost by the TWG simply supporting these recommendations and sending them to the AMWG for their consideration and adoption? There are a whole bunch of them in the report and we've been through this now twice and went through in a TWG meeting in detail and it seems to me that we're ready to go forward with this. (Davis)

A: The SAs would definitely like the TWG to support the recommendations made by the SAs. We did not put emphasis on one versus the other. We tried not to delve into great, extensive recommendations. We felt all of them were appropriate and hoped that TWG would recommend those to the AMWG. (Garrett)

C: Since Dave has acknowledged that there is an overlap with the Roles AHG Report, I think it would be beneficial to simply identify that to the AMWG and urge them to coordinate these two efforts, one a recommendation coming from the SAs up through the TWG and the other coming from the Roles AHG but don't see them as separate but look to their comment recommendations in their consideration. It's just a housekeeping thing. (Kubly)

C: There is overlap also with the strategic plan of the AMWG body. They have some things they want to pursue and this was brought up in 2001. On the workshop they had in 2004 and a report came out of that. On the MRP their recommendations by the GCMRC of directions that the SAs are also recommending those same directions. They may not be exactly the same but they're similar. The SA document doesn't stand alone; it actually incorporates recommendations made by the body. (Garrett)

C: I don't see any harm in just sending it on forward. We've been through this review and sending these recommendations on forward and should the AMWG get recommendations from other bodies, ad hoc, MRP, etc., it seems to me they can take all of those into consideration but at least for now we should move these forward. (Davis)

C: I agree with Bill. (Stevens)

Q: Kurt, there were some areas that the SAs felt that the leadership of TWG would be very important this coming year in stepping out and accomplishing some of the recommendations at the TWG level. Will there be an opportunity at a future TWG meeting for me to have 15 minutes to discuss those? (Garrett)

Q: Certainly. (Dongoske) I've heard from a several (3) TWG members on this and does the TWG want to make a recommendation to the AMWG and are we all on the same page that we should be recommending the recommendations of the SAs to the AMWG? Is there anybody who feels differently about that?

A: The SAs recommendations and they're going to go to the AMWG so I don't want is served by having us validate it and there are parts of it that I wouldn't necessarily concur with so I wouldn't agree to sending them up as if they were consensus or that everybody had agreed to all the recommendations. (Johnson)

Q: Rick, be more specific. What parts don't you support? (Kubly)

A: There is a discussion in there and this came up at the TWG meeting and apparently some people were quite upset about it so I'm not interested in opening up that conversation again but I don't agree this is a successful interpretation of adaptive management. (Johnson)

Q: That's an observation and not a recommendation, right? By the SAs? (Kubly)

A: But the recommendations are apparently based on the recommendation that this is a successful program and I would disagree with that. (Johnson)

Q: I'm a little confused because the report that we received in January it lists findings of various aspects and at the end of these findings for each section there is a list of recommendations for improvements and I guess what I'm saying is I thought that's what this is all about was to see whether or not we supported the recommendations for improvements. Rick, you don't think the recommendations for improvements are right? Or some of them are not right? (Davis)

A: I'm not sure what we're actually recommending. If we're recommending to AMWG that the SAs came out with a report that recommends improvement, well, sure we can all say we need improvements, right? I guess I'm not sure what that's getting us. (Johnson)

Q: No, what I was getting at is that they have specific bulleted items here for improvements and what I brought up was that I was under the impression that the TWG supported the steps that they had recommended for improvements and that's what I'm supporting. (Davis)

Q: I agree with Bill. I think we can support the recommendations by the Science Advisors. I guess I have a question: Can the TWG go forward with any of the recommendations and start to pursue them without asking for the AMWG's blessing? That's a process question. (Barger)

Q: I don't think we can. Which of the recommendations did you think we would have say over?(Davis)

A: Well, we did try to pursue the desired future conditions previously and didn't have a lot of success. I guess that might have been more true to LTEP process but I was specifically thinking about things like that. I know the Park

Service has been working on that because of the Colorado River Management Plan and I know what Ken came up with, we weren't happy with because everyone wanted to do it more collaboratively. (Barger)

Q: *Ken did come up with a set of resource conditions? (Potochnik)*

A: *Yes he did. Remember Dennis? Dennis was there. (Barger)*

R: *Yes I do.*

Q: *How long ago was that? Part of the SPG? (Potochnik)*

A: *That Park Service document is included in their planning direction for the Grand Canyon National Park. Mary noted that was one area where we tried to make an attempt at providing a better definition so that the TWG and GCMRC could operate more effectively in the future. Another area was developing objective, repeatable criteria for evaluating programmatic direction on different programs such as which core monitoring project to accept, or which research project to accept. What would be a management action in the future? How would you define it? Those kinds of things and several were brought up into the pool. (Garrett)*

C: *I was just thinking as part of SPG we did pursue a couple of these. We weren't successful but we did start those conversations and I think we were all aware that it was something that the full TWG was going to have to get involved in. But if we want to wait and adjust to the AMWG as they look at those recommendations, because we would support recommendations for improvements in the process. (Barger)*

C: *And Kurt, that was the substance of my request. I would be glad to come back to the TWG and lead a discussion with various TWG members that served on the SPG about the various areas where we made some attempts in the SPG but failed but knew that we needed to find some solutions to these areas for improvement. Those same areas surfaced again in the SA review of the overall program. That could be dealt with in another TWG meeting. We've never really had time to discuss the details of the SPG outcomes or follow-up from the Science Advisors' recommendations. (Garrett)*

Kurt said he wasn't hearing a big effort on the part of the TWG membership to put a recommendation to AMWG, rather it seems to they're just willing to move the report from the SAs up to the AMWG without really any recommendation or comment. He asked if that was a correct characterization.

The members continued to discuss but eventually passed the following motion:

Motion (Dennis Kubly): The TWG agrees with the recommendations by the Science Advisors on improving AMP effectiveness presented on April 19, 2007 and proposes that the AMWG consider seriously appropriate actions to be taken on those recommendations.
 Motion seconded by Andre Potochnik.

Representative	Stakeholder Entity	Vote
Bill Persons / Scott Rogers	Arizona Game and Fish Department	absent
Amy Heuslein / Garry Cantley	Bureau of Indian Affairs	absent
Dennis Kubly / Randy Peterson	Bureau of Reclamation	y
Mike Yeatts	Hopi Tribe	absent
Kerry Christensen	Hualapai Tribe	y
Ken McMullen / Jan Balsom	National Park Service - Grand Canyon	absent
Norm Henderson / Chris Kincaid	National Park Service - GLNRA	y
Steven Begay	Navajo Nation	y
Jonathan Damp	Pueblo of Zuni	y
VACANT	San Juan Southern Paiute Tribe	absent
Charley Bullets / LeAnn Skrzynski	Kaibab Band of Paiute Indians	absent
Glen Knowles	U.S. Fish and Wildlife Service	absent
Mary Barger	Western Area Power Administration (DOE)	y
Rick Johnson / Nikolai Ramsey	Grand Canyon Trust	n
Larry Stevens	Grand Canyon Wildlands Council	y
Mark Steffen / Tim Steffen	Federation of Fly Fishers	y
John O'Brien / Andre Potochnik	Grand Canyon River Guides	y
Bill Werner	Arizona	y
Christopher Harris	California	absent

Randy Seaholm	Colorado	absent
Phil Lehr	Nevada	y
Jay Groseclose / Don Ostler	New Mexico	y
Robert King	Utah	y
John Shields / Don Ostler	Wyoming	y
Bill Davis	Colorado River Energy Distributors Association	y
Cliff Barrett	Utah Associated Municipal Power Systems	absent
	Total Yes	15
	Total No	1
	Total Abstain	0
	Total Voting	16

Rick Johnson said he didn't want to make a statement why he abstained from voting.

Warm Water Non-native Fish Management Plan. Dennis Kubly asked if the TWG needs to make a recommendation to the AMWG on its and GCMRC's progress in developing the non-native warm water fish control plan. He said it first started in August 2004. He said it may not require a recommendation but the idea was to have some discussion on but not necessarily have the presentation repeated again. Dennis said the reason for asking the question is that the non-native warm water fish control plan is looked upon by Reclamation as being an important component of the LTEP EIS. There needs to be some ancillary or corollary plan that identifies how the program is going to deal with the acknowledged serious problem from warm water non-native fish. It's always been held that the determination of effect would to some extent depend on how far along that plan was. He said that perhaps the best answer comes from GCMRC as to if there is a plan underway and is there an expectation of when it could be delivered to AMWG. Matthew Andersen said that as they reviewed in their presentation at the TWG meeting, they felt it was necessary to have short- and long-term approaches, that there was an immediate need and a longer term need. In 2007 there is a field study underway that would start addressing that short-term and is focused on the channel catfish. They think there is a longer term need especially to understand bioenergetic relationships in the system, that is if you take one species out of the system then how does that affect the rest of the biota and so they would propose to continuing the work. Matthew said they would report results of the short-term work in an initial draft by the end of the fiscal year and will be part of the report on work in FY07. John said there is also a desire to have a contingency plan that would have some triggers that would determine when they would implement some more active control measures if they reach certain population levels or start picking up certain numbers of fish in their samples. This is in response to the concern of what if trout start to come back or they see a proliferation of some warm water fish. They think it's prudent to have a control plan in place that they can implement in the event that that happens. Their commitment was to have something like that done by the end of the year

John said Dennis was concerned about having a full-blown plan in time for the LTEP and John said he doesn't think the full plan will be developed within the next year, but they will have a short-term plan which will include actions to be taken in response to increases in abundance of problematic warm water non-natives. John said he would appreciate some affirmation from the TWG that the direction they're proposing is acceptable. He said that following the presentation they gave at the TWG meeting there wasn't a lot of feedback and he would like to know how the TWG feels about their approach. Dennis asked if GCMRC would make another presentation at the next TWG meeting to identify the support they're seeking and then make a presentation to AMWG at their summer meeting on progress that has been made and provide them with a completion date so they can see the whole picture and the timeline.

Humpback Chub Concurrent Estimates. Matthew Andersen said the desire for concurrent sampling has been expressed by people from FWS, Regions 2 and 6, and they have tried to pursue some testing for that. He thought it was in 2004 that the AMWG asked for concurrent sampling and so GCMRC has been conducting some preliminary testing and plan to implement that in 2007. In fact, they're beginning that work

this month. The reviews by the Kitchell panel and more recently by Dave Otis and his graduate student have suggested that with a little bit of modification to their current program, they can implement some concurrent sampling, that is sampling that occurs in the Little Colorado River mainstem twice in 2007. They think that's going to be very important information for the HBC PEP in the winter of 2008. Thus, there will be some concurrent sampling done this year as well as some sampling of the entire mainstem in the spring and fall of 2007. Mathew distributed a memo, subject: Preliminary data regarding young humpback chub in Marble Canyon" (**Attachment 15a**).

Matthew said they would be doing two concurrent sampling trips this year (**Attachment 15b**) and have reviewed the details with Bob Muth and Tom Czaplak and it was his understanding that they're quite influential in how the sampling programs are evaluated. He said that Bob and Tom thought that this was a really good approach and that Sam Spiller and Glen Knowles gave their approval at that time. Bill Davis expressed concern as to whether Matthew got that agreement in writing and that it would be desirable to have some sort of a written feedback from them saying whether they liked/disliked because it's very critical that they accept the new estimate. John Hamill said they had a long, detailed conversation with them and this is a one or two-year test of concurrent sampling so this is a pilot program to see whether or not there is improved accuracy with the model as a result of going with concurrent sampling. He feels they're anxious to see the results and determine whether this is something that should be continued in the long run. He thinks they feel that GCMRC has been responsive to their concerns and so they've encouraged GCMRC to move forward. John asked that they communicate that to the Upper Basin program participants to let them know that GCMRC has come to this agreement and he understands that that has been done. John said he didn't feel any purpose would be served in trying to get a written confirmation from Region 6 but he could send them an e-mail message but can't force them to put anything in writing. Bill Davis expressed concern that it should be a more formal agreement. Dennis said that when this first came up, the AMWG motion was to proceed with the field work and secondarily do the modeling if there was funding available. The response from the Secretary was to first engage in the modeling and that was the Dave Otis work which was reported on but never finalized. There was never a recommendation that came from the TWG back to the AMWG to seek their concurrence to move to the field studies. John reminded Dennis that if he looked at the FY07 workplan, there is a discussion of going to concurrent sampling. Dennis said this was a major issue for the AMWG and that the TWG was following up on their directive and the directive of the Secretary so to have it just vested in a workplan isn't the same thing. Dennis asked if the Otis study had been finalized and if there was a report, has it been accepted by the TWG. Matthew said the Otis report has been completed and has been through external peer review which was positive and anticipate that Dave Otis will work with Lew Coggins to produce a peer-reviewed article from that work. Dennis asked if the AMWG needs a more formal presentation to them. John said they were scheduled to make a presentation to the AMWG in December 2006 but were dropped off the agenda.

Sediment Augmentation. Ted Melis said Tim Randle made a preliminary report to the TWG over a year ago on the "Colorado River Ecosystem Sediment Augmentation Appraisal Engineering Report" (**Attachment 16**) which was finalized in January 2007. Notice of that report was made to the TWG almost two months ago. Ted said he made a short presentation at the December 2006 AMWG meeting about it and suggested the TWG might want to review the report, deliberate on the implications of the findings, and perhaps make a recommendation to the AMWG for either additional work or simply concur that the project has been completed.

Mark Steffen said this was a good example of where program integration needs to occur because the draft report didn't deal with any of the effects of increasing turbidity on the aquatic foodbase. He asked if the final report considered implications to the foodbase and if Ted Kennedy was involved with it. Ted said there was some involvement by Lew Coggins in terms of making literature available to the authors but at this stage it was an engineering design feasibility approach and didn't go into ecosystem impacts or implications.

Dennis asked what the TWG's responsibility is when there is a report that has been funded by the program and GCMRC has made a summary report to the AMWG. He asked if the TWG has officially accepted the

report. He said that some of the members of the public in their scoping mentioned sediment augmentation so it's something that has to be considered but it's not clear at what level in the EIS process because it was brought up by the public and that begs the question then whether TWG has even identified it as technically credible report to AMWG. He said it was his understanding that when there is a report that has been finalized, that the TWG is to weigh in on its acceptance for use, not that they agree with all the findings, but at this point there is nothing from the TWG up to the AMWG. Ted said he doesn't think there has been any action between the two groups and all he did in December was make the AMWG aware that the study had been completed and would be distributed in January 2007. Ted said Tim Randle is willing to discuss this more and make another presentation if necessary. Ted said they would e-mail the .pdf version to everyone today. Dennis questioned the disconnect between when reports are completed and the process whereby they are deliberated by the TWG. Kurt said it was decided to wait until the Roles AHG Report is shared with the TWG to begin that deliberation process. Andre will check with John O'Brien as head of the Sediment Ad Hoc Group and that it would be put on the agenda for the next TWG meeting.

ACTION ITEM: Andre will check with John O'Brien as head of the Sediment Ad Hoc Group and that it would be put on the agenda for the next TWG meeting.

TWG CHAIR UPDATE. Kurt announced that there was no longer a quorum on the conference call.

Lake Powell/Glen Canyon Tailwater Dissolved Oxygen. Bill Vernieu reported that the dissolved oxygen concentration at the Glen Canyon Dam tailwater began dropping around the first of February and reached a minimum of about 4 milligrams per liter on March 1, which translated into about 5.5 milligram/liter concentration down at Lees Ferry (**Attachment 17a**). It was short-lived and the cause of it was full underflow current moving through the reservoir and that displaced the old dissolved oxygen water upwards and became incorporated into the penstock releases. The conditions this year were very similar to what they were in 2004 (**Attachment 17b**). They had a similar dip in 2004 but that didn't occur until late April and the reason for the difference in timing was that the winter inflows this year were roughly 65% higher than they were in 2004 so the water moved through the reservoir quite a bit faster and that's what caused the peak. Right now the current oxygen levels are fluctuating between about 6 and 7.5 milligrams per liter and they don't expect any further reduction of them through the year so this is a short-lived phenomenon. There does exist a slug of low dissolved oxygen water right below the penstocks right now but the underflow is gone because the inflows warmed up and now they're flowing over the surface and they expect that low dissolved oxygen water to stay below the penstocks and not affect the reservoir releases. For the rest of the year they expect above average temperatures coming out of Glen Canyon Dam because of the relatively low reservoir elevations but because the reservoir elevations are not as low as they were in 2005, they don't have the re-suspension of the inflow sediment of the sediment deltas and also they expect the current inflow projections are roughly 54% of normal this year so they don't expect any dissolved oxygen problems this year but they do expect the continuing above normal temperatures. In terms of future conditions, that all depends on the reservoir levels. If they stay about the same, they'll see about the same elevated temperatures. If they drop further down to what was seen in 2005, they could see reductions in dissolved oxygen in the tailwater similar to what was seen in September 2005. Bill said the reductions in 2005 were an entirely different process than this minor dip seen on March 1. The September process was because of low oxygen in the spring runoff inflows that moved over into the surface of the reservoir and the reductions that were seen on March 1 were because of the whole dense winter underflow cutting through the bottom of the reservoir and lifting the old water up.

Dennis added that Reclamation has the modeling capability to illustrate those two causative events that Bill referred to that occur at different times of the year (**Attachment 17c**). Reclamation can do simulations if and when this subject comes up again and can bring that information because it helps to be able to visualize what's happening with these density currents over the course of time.

Q: Has Reclamation done any modeling with regard to what the TCD might do to mitigate this issue or would it have any influence with regard to the quality of the water that's released downstream relative to oxygen? (Davis)

A: Sure, it certainly gives you much more flexibility to avoid those low oxygen water. There's always that tradeoff of temperature and dissolved oxygen. I think the point to me made is if you think of the TCD as a selective withdrawal, and Dale Robertson brought this out at the science workshop last week, that you have a device here that can serve in managing water quality in general and not just for temperature. There's also been evidence for BHBFs as being an action that can have a positive effect on low dissolved water near the penstocks. (Kubly)

C: With the timing of the proposed BHBFs that could've been a really interesting experiment because as that low oxygen water was moving up, it could've been evacuated or at least a large part of it by the river outlet work. The river outlet work when they discharge water, aerate the water up to saturation anyway so the under-saturated water that would've been discharged during a BHBF would've been re-aerated immediately. (Vernieu)

Q: But did we model the chance of having low DO again this year? (Barger)

A: Yes. (Kubly)

Q: So what is the percentage chance? (Barger)

A: Well, what I was referring to was this past year. We had modeled in it then and knew there was a high probability of there being a brief period of low DO water released. I don't know that they have done that for the upcoming year. (Kubly)

Q: So did you know about what happened on March 1? (Barger)

A: Yes.

Q: So we don't have it for the rest of the year? (Barger)

A: Not that I know of. (Kubly)

C: Dennis, I do think your models project it through the end of the year. (Vernieu)

R: Do they, Okay.

C: They project an increasing concentration with no reduction in the fall as we've seen during the last three years. I can believe that because we just don't have the amount of re-suspension of the delta sediments that eat up all the oxygen, that are expected with these reservoir elevations. (Vernieu)

C: The graph that was sent out, the third slide, shows the projection out through the beginning of May and now you're saying that they've done it further out into the future, right? (Kubly)

R: The presentation that GCMRC prepared, I believe it's the sixth slide, shows dissolved oxygen levels for the past three years in addition to this year and it's superimposed with Reclamation's model and that goes through the end of this calendar year. (Vernieu)

C: Good. (Kubly)

C: Again, I think this speaks to multiple needs to consider the use of the bypass tubes in regards to mitigating issues downstream of the dam that we're supposed to be dealing with and environmental issues and water quality has got to be pretty fundamental to everything downstream. I understand in talking with Bill earlier that Reclamation was able to mitigate the problem in 05 by running more turbines, increasing the electrical efficiency of power generation, but in so doing aerating the water by venting the water passing through the penstocks or through the turbines so it's been aerated sufficiently to mitigate the problem. I've also heard that's a bit of a problem with regard to cavitation and causing damage to the turbine blades. Is it more cost effective to damage the turbine blades and reduce hydropower generation or is it more cost effective in the long run to use the bypass tubes? I think there are multiple reasons for looking at this question of how do we utilize the bypass tubes in the future most effectively to re-operate the dam to satisfy the Grand Canyon Protection Act? (Potochnik)

C: I wouldn't advocate forming an ad hoc every time we have anything like this but I think this is important and a potential application. When we started out with temperature controls just to benefit HBC and now as you look at a massive rise, you realize that it has more potential than just managing temperature just like with the bypass tubes. It seems to me that a group needs to make a concerted effort to look at this and see this as one of the functions of the TWG, either to have the expertise to look at it and make recommendations to AMWG, or to say to GCMRC we likely need to go out through a contract, we'd like to put it in the budget, and get that done. (Kubly)

R: I would say we find the money to do a feasibility study for running the bypass tubes with turbines and I'm happy to make a motion in that regard but we can't do it now because we don't have a quorum but maybe have that on the agenda for the next TWG meeting. (Potochnik)

C: We'll make a note here to put it on the agenda. (Kubly)

FWS Recovery Goals. Kurt said that Sam Spiller couldn't be available at today's meeting but had provided a copy of a letter from Region 2 regarding the FWS revising the 2002 recovery goals (**Attachment 18**) and just wanted to make sure that people were provided an opportunity to provide comments.

Meeting adjourned.

General Key to Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources	LCR – Little Colorado River
AF – Acre Feet	LRRMCP – Lower Colorado River Multi-Species Conservation Program
AGFD – Arizona Game and Fish Department	LTEP – Long Term Experimental Plan
AGU – American Geophysical Union	MAF – Million Acre Feet
AMP – Adaptive Management Program	MA – Management Action
AMWG – Adaptive Management Work Group	MO – Management Objective
AOP – Annual Operating Plan	NAAO – Native American Affairs Office
BA – Biological Assessment	NAU – Northern Arizona University (Flagstaff, AZ)
BAHG – Budget Ad Hoc Group	NEPA – National Environmental Policy Act
BE – Biological Evaluation	NGS – National Geodetic Survey
BHBF – Beach/Habitat-Building Flow	NHPA – National Historic Preservation Act
BHMF – Beach/Habitat Maintenance Flow	NPS - National Park Service
BHTF – Beach/Habitat Test Flow	NRC - National Research Council
BIA – Bureau of Indian Affairs	NWS - National Weather Service
BO – Biological Opinion	O&M - Operations & Maintenance (USBR funding)
BOR – Bureau of Reclamation	PA - Programmatic Agreement
CAPA – Central Arizona Project Assn.	PEP - Protocol Evaluation Panel
CESU – Cooperative Ecosystems Studies Unit	POAHG - Public Outreach Ad Hoc Group
cfs – cubic feet per second	Powerplant Capacity - 31,000 cfs
CRBC – Colorado River Board of California	Reclamation - United States Bureau of Reclamation
CRAHG - Cultural Resources Ad Hoc Group	RBT – Rainbow Trout
CMAHG – Core Monitoring Ad Hoc Group	RFP - Request For Proposals
CRCN – Colorado River Commission of Nevada	RPA - Reasonable and Prudent Alternative
CREDA – Colorado River Energy Distributors Assn.	SA - Science Advisors
CRSP – Colorado River Storage Project	Secretary - Secretary of the Interior
CWCB – Colorado Water Conservation Board	SCORE = S tate of the C olorado R iver E cosystem
DBMS – Data Base Management System	SHPO – State Historic Preservation Office(r)
DOI – Department of the Interior	SPAHG – Strategic Plan Ad Hoc Group
EA – Environmental Assessment	SPG - Science Planning Group
EIS – Environmental Impact Statement	SWCA - Steven W. Carothers Associates
ESA – Endangered Species Act	TCD - Temperature Control Device
FACA – Federal Advisory Committee Act	TCP - Traditional Cultural Property
FEIS – Final Environmental Impact Statement	TES - Threatened and Endangered Species
FRN – Federal Register Notice	TWG - Technical Work Group
FWS – United States Fish & Wildlife Service	UCR - Upper Colorado Region (of the USBR)
FY – Fiscal Year (October 1 – September 30)	UCRC - Upper Colorado River Commission
GCD – Glen Canyon Dam	UDWR - Utah Division of Water Resources
GCMRC – Grand Canyon Monitoring & Research Ctr.	USBR - United States Bureau of Reclamation
GCNP – Grand Canyon National Park	USFWS - United States Fish & Wildlife Service
GCNRA – Glen Canyon National Recreation Area	USGS - United States Geological Survey
GCPA – Grand Canyon Protection Act	WAPA - Western Area Power Administration
GLCA – Glen Canyon National Recreation Area	WY – Water Year (a calendar year)
GRCA - Grand Canyon National Park	
GUI – Graphical User Interface	
HBC – Humpback Chub (endangered native fish)	
HMF – Habitat Maintenance Flow	
HPP – Historic Preservation Plan	
IEDA- Irrigation & Electrical Districts Assoc. of Arizona	
IN – Information Need	
IT – Information Technology	
KAS – Kanab ambersnail (endangered native snail)	

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