Glen Canyon Dam Technical Work Group Meeting
June 25-26, 2007

Conducting: Kurt Dongoske, Chairperson **Convened:** 9:30 a.m.

Committee Members Present:

Mary Barger, WAPA
Cliff Barrett, UAMPS
Steven Begay, Navajo Nation
Charley Bulletts, Kaibab Band of Paiute Indians
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
Glen Knowles, USFWS
Dennis Kubly, USBR
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
Don Ostler, UCRC
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Bill Werner, ADWR
Michael Yeatts, The Hopi Tribe

Committee Members Absent:

William Davis, CREDA
Christopher Harris, Colo. River Board of Calif.
Robert King, UDSR
John O'Brien, GCRG
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
John Shields, WY State Engineers Office

Alternates Present: **For**:

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

Interested Persons:

Matthew Andersen, GCRMC/USGS
Glen Bennett, GCMRC/USGS
Mike Berry, USBR
Michael Breedlove, Utah State Unviversity
Shane Capron, WAPA
Marcus Chang, Bob Lynch & Associates
Helen Fairley, GCRMC/USGS
Joe Feller, ASU/College of Law
John Hamill, GCRMC/USGS
David R. Haverbeke, USFWS
Leslie James, CREDA
J.D. Kite, GCMRC/USGS
Ted Melis, GCMRC/USGS
Anthony Miller, Colo. River Comm./NV
Clayton Palmer, WAPA
Randy Peterson, USBR
Mark Schmekly, Arizona State University
David Siebert, University of Arizona
David Topping, GCMRC/USGS
Rich Valdez, SWCA
David R. Van Haverbeke
David Weedman, AGFD
Scott Wright, GCMRC/USGS

Meeting Recorder: Linda Whetton, USBR

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Welcome and Administrative. The Chairman welcomed the TWG members, alternates, and interested persons. Attendance sheets were distributed. Kurt announced that public comments would be taken in conjunction with individual presentations rather than at the end of each meeting day.

Review of Draft Minutes from April 2-3, 2007, Meeting. Kurt said that since the minutes were e-mailed over the weekend and the members probably haven't had time to review them, he suggested they approve

at tomorrow's meeting. However, Linda (meeting recorder) said she would like to revise/shorten them and requested the TWG give interim approval and then obtain full approval at the next meeting in October.

Action Items: Kurt reviewed the action items (***Attachment 1a***).

Action Item 2007.04-2-3(1). Dennis Kubly distributed copies of a document he prepared, "Improving the Development and Transmission of Minority Reports" (***Attachment 1b***). Dennis said this subject came up at the last TWG meeting and since it hasn't been decided when the AMP Effectiveness Workshop is going to be held and subsequent changes to the TWG Operating Procedures made, he felt something needed to be done in order to help the members prepare minority reports. He felt the MRP didn't really work the way it was intended, that all minority group members weren't equally involved, there was no chair, there was no communication of information through the TWG Chair, and currently there is no provision for the majority to produce its own report. To improve the development and transmission of minority reports, Dennis suggested the TWG might want to consider the following in clarifying or modifying its operating procedures:

(1) All dissenting members to a vote of the TWG that passes by a required majority should be offered the opportunity to be included in the development of a minority report.
(2) The minority report group should elect a chair who will be responsible for communication with other minority group members and with the TWG Chair.
(3) Minority group members who participate in the development of the minority report and who agree with its provisions should be clearly identified in the report.
(4) The minority report should be transmitted to the AMWG through the TWG Chair or Co-Chair in the timeframe and manner identified in AMWG operating procedures.
(5) When action is required of GCMRC or any other GCDAMP group to satisfy the provisions of a minority report included in a motion by AMWG, that group should ensure that it communicates with the minority group as a whole and not individually.
(6) Majority group members should be given an equal opportunity to draft a report and submit it through the TWG Chair to identify what they consider to be the strengths of the proposal sanctioned by the majority.

Dennis said the reciprocal part for GCMRC was identified but not the responsibility of the minority report chair, for example, to communicate in a timely manner with GCMRC. He would be willing to make modifications to this document but suggested the members provide their comments to Randy Peterson for the Roles Ad Hoc Group's consideration.

ACTION ITEM. TWG comments on the handout "Improving the Development and Transmission of Minority Reports modifying the one-page Action Item document" are due to Randy Peterson by June 29, 2007.

Action Item 2007.04.2-3(2). Kurt said he reviewed the motion passed at the TWG meeting held on June 21-22, 2005, which states "Convene a meeting among GCMRC, the tribes, Reclamation, and other stakeholders to identify a scope of work (which will be inserted into the FY06 budget and workplan) for tribal monitoring into the overall program and add $50K (if necessary) from the Experimental Flow Fund to the project." The voting results were 12 in favor and 4 were against. Apparently a group of the TWG members, Reclamation, and GCMRC staff met in accordance with the TWG motion. The group agreed to recommend to the AMWG that a new Scope of Work be added to the existing SOW for project C2, a synthesis of past tribal monitoring for the FY06 proposed budget and workplan with the funding amount of $125K with the proviso that Reclamation would administer the contracts to save overhead costs. It also said that for future years the tribes agreed to integrate their tribal monitoring efforts into the regular core monitoring and research funding process by participating in plans to develop a process as soon as they received their FY05 participation funding. The TWG recommendations were forwarded to the AMWG. Kurt said he didn't think there was any kind of direct response by AMWG to the tribal monitoring motion other than they just approved it. In his review of the meeting minutes, he didn't find anything that had to do with the TWG evaluating or developing criteria to evaluate tribal monitoring protocols.

Action Item Update on Genetics Management Plan. Glen Knowles said a draft of the plan should be available by September with the final due in December 2007.

OLD BUSINESS: None

FIST Modeling Report on Sediment Monitoring and **Recommendations on Long-Term Sediment Monitoring**. Ted Melis said Dr. Dave Topping would present the next two agenda items with one combined PPT entitled, "Recommended Protocols for Core Monitoring of Sediment within the Colorado River Ecosystem Below Glen Canyon Dam Part IV." Ted said that in the MRP there is a 4-step process for identification of long-term monitoring protocols and Dave's presentation would summarize some of the research and development results that came out of the FIST Project. Dave passed out copies of the Report (***Attachment 2a***) and the PPT handout (***Attachment 2b***). He concluded with the following risks to knowledge and resource if the project were not implemented:

- Mass-Balance Project. No information pm stage, flow, sediment flux in CRE; No information on <2-year sediment budgets; No information for BHBF triggers
- Sed Trend Task 3: Fine Sediment Bank Account. No ability to predict future condition of fine-sediment resource; No information on locations and geometries (areas plus depths) of backwaters. $200,000 is minimum required to survey sufficiently long reaches, shorter reaches are not worth surveying.
- Sed Trend Task 1: NAU Sandbar Time Series. No information on effectiveness of past dam operations on maintaining high-elevation fine sediment; No information on annual status of campsites.
- Sed Trend Task 2: CRE-wide Remote Sensing Data. No information on CRE-wide distribution of high-elevation fine sediment; No ability to interface with other GCDAMP goals, especially goals 1, 6, and 11.

***Q**: How does what you have here compare to what's happening in other river systems, like on the Green or any other systems? Is this way beyond what everybody else is doing? (Johnson)*
***A**: In terms of the mass balance part, this is state of the art. You're actually trying to manage only 6% of the pre-dam sand supplies and that's tricky to do. One of the things we've learned is extrapolating from smaller typographic maps to larger sediment budgets is a dangerous business. In fact, you can't do that in this river and have certainty that you actually know what's happening to the overall sediment resource. (Topping)*
***Q**: Will the mass balance project help Ted Kennedy understand how frequently the river runs turbid? Will he have the numbers of days each year that the river was turbid? (Steffen)*
***A**: Hour or less. (Topping)*
***Q**: And when the river is running turbid, can he compare this data from year to year. If he goes on a river trip in September, would he know ahead of time how many days that summer the river was turbid? (Steffen)*
***A**: Yes. Most of the sites have satellite telemetry so we can log in at will and download the data. We do measure turbidity. We're also developing relations between turbidity and sediment concentration and grain size as well as acoustic attenuation. We have information back to at least 2002-2003 for the program as it exists now but possibly back as far as 1921 with USGS daily data. Under the proposed sediment trend core monitoring project, we would monitor changes in gravel inputs throughout the system. We can detect changes in gravel distribution. (Topping)*
***Q**: How do we get to a recommendation to the AMWG on the subject of this monitoring and what's the role of the Sediment AHG that was formed a few months ago? (Kubly)*
***A**: We're hoping the AMWG will engage with the scientists and the TWG as an intermediate body to look at this material and come back to the TWG with specific recommendations on how to proceed. There are elements proposed in the Draft FY08 budget and workplan so there may be implications to the budget. (Melis)*
***Q**: When I recently spoke with John O'Brien, he seemed unclear on outstanding Sediment AHG issues. In terms of tomorrow's discussion on desired future conditions, what is the goal of the sediment program? I'd like AMWG to tell us what they want out of the sediment program. We don't understand what the goal is. (Barger)*
***R**: The program we designed is independent of what your actual goal is. As long as there is a goal for sediment, we've designed a program which is robust enough that it can address what's happening. (Topping)*
***C**: One of the pieces of the core monitoring process was to decide which CMINs were truly necessary or quality core and build the program around the most essential. (Henderson)*
***R**: We have the ranked ones that are in there as well as some additional ones with respect to Goal 8. (Topping)*
***Q**: What about the precision of the estimates and the agreement on when you have or not have not reached or attained those goals? That's a cost in the sampling frequency and a precision question, right? (Kubly)*
***A**: Not necessarily. For example, if you look at the mass balance project as the case for the mapping component, you begin to find a sediment bank account where actually less information costs you more than more information in some ways. When you have less information say on the sediment flux, then you can be fully wrong by not having enough points to know what's actually happening. There is more interpretive time spent so that actually ends up costing you more. For the sediment trend project we learned measuring 9% or 10% of a 30-mile reach, you can't extrapolate that*

whole reach by spending resources on doing that. You're not really gaining much because you need to do the rest of it. If you do the rest of it over a lower frequency, that's the way you get around it costing more. If you were to do 30 miles spread throughout the system each year, it will end up costing you more in terms of years to what's actually happening. (Topping)
***C**: This is something I assume the Sediment AHG will spend more time on because it is complicated and those tradeoffs in budget and precision are going to be carried throughout the entire realm of core monitoring. (Kubly)*
***R**: But regardless of what you're doing, I think it's important you measure the signal instead. When you're looking at high elevation deposits, you're basically looking at how effective you've been. That's not telling you what's happening to the sediment budget. If you want to be able to have data points that allow you to say we have two or three, that's great, but it could also be negative because you're slowly losing sediment over time even though over that window the sandbars look okay to you as a manager. A hundred years from now they may not and you won't know that unless you measure the signal which is a depth below 8,000 cfs. It is complicated. (Topping)*

John Hamill said there is some urgency that the TWG address the findings because GCMRC will be involved in several PEPs (vegetation, trout, and humpback chub) within the next eight months which will result in proposals coming to the TWG. He asked the TWG for direction on whether the process presented is acceptable to them. Ted added that the Science Advisors performed an independent review and passed out copies of their report entitled, "GCD AMP Science Advisors Rapid Response Review: A Draft Report to the Technical Work Group of the Glen Canyon Dam Adaptive Management Program: Recommended Protocols for Core Monitoring of Sediment" (***Attachment 2b***).

***C**: Need a timeline for sending to an ad hoc group for further review and incorporating into a long-term monitoring program. (Kaplinski)*
***C**: Ask the Sediment AHG to review the plan and make a recommendation to the TWG. (Barger)*
***C**: Concern about what other core monitoring elements are before endorsing on a long-term basis, 2) need for incorporating managers' needs to get the key CMINs addressed as the primary piece of the core monitoring, and 3) adjustments required due to lack of money. (Henderson)*
***C**: Would like GCMRC to provide a general idea of what they think the totality of core monitoring might be. (Kubly)*

ACTION ITEM: John Hamill will prepare a handout on what GCMRC believes will be the totality of core monitoring by looking at future budget needs and being able to see the bigger picture.

ACTION ITEM: The Sediment Ad Hoc Group is tasked with reviewing the "Draft Report to the Technical Work Group of the Glen Canyon Dam Adaptive Management Program: Recommended Protocols for Core Monitoring of Sediment within the Colorado River Ecosystem Below Glen Canyon Dam, Part IV - Developing a Scientifically Based Long-Term Monitoring Plan for the GCDAMP" and provide their comments at the next TWG meeting (October 2-3, 2007).

Note: The Sediment AHG was reorganized on May 24, 2006: with the following members: Mary Barger, Rick Johnson, Glen Knowles, Ted Melis, John O'Brien (Chair), and Mike Yeatts.

Final Modeling Review and Proposed Next Steps. Ted said Scott Wright organized a specific modeling review workshop that was held in February which was a direct recommendation from the third and final Sediment PEP panel report that Dr. Ellen Wohl reported on last November. Scott said a frequent comment made was that the modeling wasn't very well integrated with the monitoring program and that's one of the things he would address today. He distributed copies of his report, "Sediment Transport Modeling Review Workshop, Review Panel Report" (***Attachment 3a***) along with his PPT Presentation, "Goal 7 Modeling Review and Recommendations" (***Attachment 3b***). He concluded with the following Sediment Review Panel recommendations:

- The modeling program needs better integration with the monitoring program - formulate an integrated research plan
- It is time to update the Wiele 2D model as major advances have been made in multi-dimensional modeling over the past 10 years and lots of new data are available; evaluate readily available modeling packages (such as Delft3D) and available data

- Wiele 1D model is a step forward but more work is necessary to evaluate is predictive capabilities - continue to improve upon this model based on updated MD model
- Continue efforts by Arizona State University (Mark Schmeeckle's group) to model sandbar stability (i.e., mass failures due to bank collapse), including laboratory experiments

The proposed FY08 activities include:

- Develop multi-dimensional models (Delft3D) of flow, temperature, and sediment transport for reaches with available topography/bathymetry (FIST reaches).
- Continue efforts to model sandbar mass failure/stability, including laboratory experiments at ASU
- Continue efforts to understand the relationships between flow, bed sediment grain-size, and suspended-sediment grain-size. Continue to pursue the potential for a model that relies on "shifting rating curves."

Kurt asked if Ted was looking for possible action or a recommendation from the TWG. Ted said in the FY07 plan there was a modeling support component beyond the downstream water quality and it was specifically related to trying to evaluate the Wiele work for sediment transport. In FY08 there is another line item for modeling support activities. As such, they're trying to get some sense from the TWG what they would like to see happen and how to plan their science to meet the needs of the TWG.

***Q**: Would these models be able to give us that kind of predictive capability? (Henderson)*
***A**: If you're talking about sediment coming into the system, that's more difficult than modeling once it's in there. We do have Topping's model of Paria inputs so if you can project the flow record out over 10 years for the Paria, then you can do that. You're going to have to make some assumptions about what the hydrology is going to be over whatever time interval you want to look at and then once you do that, then what's actually happening to the model in the canyon. The projections of inputs and hydrology are probably harder than actually doing the models of the river once you know what's coming in. You have to look at different scenarios about what could happen because you don't know what's going to happen with the basin hydrology. There is no model that's going to tell you that.*
***C**: With the multi-dimensional eddy dynamics model, having sandbar evolution go on and features form such as return current channels and then being able to predict the fate of that feature as well as the thermal regime within that feature, obviously seems like a short-term need. You'd like to know if we do a BHBF and we have a certain operation afterwards, will we form the habitat and what will be the fate of the water temperature in that habitat over some agreed time period relative to HBC recruitment and juvenile rearing. So that's kind of tractable and then you get to the other end of the scale and maybe we can do that and then the question is can you replicate that habitat maintenance building ad nauseum and that's the other end of the spectrum and that's really the end of the spectrum on being able to say we can model anything like that. So the near term shorter term questions Scott's saying are basically ready for prime time in the sense with some more work focused by your needs but that long-term question that relates back to the correlary that Dave Topping showed you in the SSQ that's still beyond our grasp right now. (Melis)*
***Q**: Could you tell us a little more about the near term utility of this DelftD3 model for both temperature and let's just say backwater or eddy dynamics over time, that would be the sediment infilling, so calibration, validation, where are you in being able - we've got an EIS that we're working on right now. (Kubly)*
***A**: I think that temperature modeling for a FIST condition is trackable in the short term when you're talking about six months or less. I think we could move fairly quickly on developing temperature models for the reaches where we have bathymetry and calibrating that to where we have data in backwaters and we could do that over the next several months. I don't think the sediment and the dynamics of eddies in backwaters is trackable. I think we need all of 08 basically to figure out how difficult it is. That's the thing with this modeling, you don't know for certain how hard it's going to be until you really get in there and start doing it. I know it will work with the temperature. Sediment is a lot harder so there's going to be a little bit more work involved in that so I don't see that happening on the EIS time scale of sediment modeling but I do see the temperature modeling as potentially happening on that time scale. (Wright)*
***C**: One of the things Scott told me earlier is that using the Delft3D model you can do the sediment and the temperature in the same package. The integrated three dimensional component is very appealing and it's fully documented. We already have a license for the software. (Melis)*

ACTION ITEM: The Sediment Ad Hoc Group will review the "Sediment Transport Modeling Review Workshop Review Panel Report" and provide a recommendation to the TWG at their October 2-3, 2007 meeting on what further modeling should be done.

HBC Genetics Investigation. With the meeting already behind schedule, Kurt said the presentation by Mike or Marlis Douglas will be scheduled for the next TWG meeting.

ACTION ITEM. The HBC AHG will review the "Genetic Structure of Humpback Chub *Gila cypha* and Roundtail Chub *G. robusta* in the Colorado River Ecosystem" Report (***Attachment 4***).

Warm Water Non-Native Fish Risk Assessment. Dr. Rich Valdez said that over the past two years he has been working with Reclamation on answering several questions, two of which were: 1) What happens if the temperature of the Colorado River is changed downstream of Glen Canyon Dam, and 2) What kind of response might be expected from the fish community? Initially this was going to be done as an environmental assessment for a temperature control device. However, he developed a risk assessment model which is basically a tool that may be useful in terms of evaluating response by not just fish but by different elements of the aquatic resource community. He prepared a report which was distributed at the scientists' workshop and is currently being peer reviewed. He gave a PPT on "Fish Community Response to Temperature Changes in Grand Canyon" (***Attachment 5***) and concluded with the following thoughts:

1. A critical component of looking at what a temperature control device can do in the system is to set up a monitoring program that enables one to be able to letect responses by the different fish. It would look at the life history of the fish, understanding where they reproduce and rear their young, and then catch them early before their populations explode.
2. Develop a good comprehensive and effective non-native fish control program or strategy that enables one to be able to knock these populations back out if they do take off or even stop before it happens.
3. If certain species become abundant or are abundant already, figure a long-term strategy for what's going to take to keep these populations under control. It is possible to control the populations if one knows how best to do it.

***Q**: Was the modeling you did for the TCD based on high reservoir levels? (Johnson)*
***A**: Historic levels. I basically took the 1990-2005 data. (Dr. Valdez)*
***Q**: So maybe with lower reservoir levels, it may actually be warmer? (Johnson)*
***A**: Well, that's the uncertainty. We've already seen warming in the system even without modifying the penstocks. (Dr. Valdez)*
***Q**: Just in general as you go from 2-4-6-8 units, what will you find in terms of the percent of benefit to natives in risk of non-natives? (Johnson)*
***A**: It does increase pretty substantially from 2 to 4. It does not above 4 units. (Dr. Valdez)*
***Q**: Were there differences in the segments as far as the benefit to non-native species? (Christensen)*
***A**: Yes. If you were to implement two units for releasing warmer water, you would see the biggest benefit to native species in that Paria River to LCR Reach. (Dr. Valdez)*
***Q**: What about non-natives? (Christensen)*
***A**: It would be the same for non-natives. You would have more suitable conditions or be more beneficial to them in the tailwater all the way to about the LCR and actually even below the LCR. You don't get to where you reach some kind of ambient temperatures in that system until you're around Diamond Creek. (Dr. Valdez)*
***Q**: Instead of using units as your measure, just do it over a range of temperatures would be a pretty useful thing rather than looking at units of TCD. You ran the model with all of those different species including the producers, did you see any trends of note in things other than fish? (Kaplinski)*
***A**: Yes. There is considerable benefit to some of those primary producing species with two penstocks modified. If you were to warm the water with two units, you get right on the margin of suitable temperatures from whirling disease in that tailwater reach but that's only under maximum temperatures than would occur with median temperatures. There would be some years and some times when the temperature would get high enough to be suitable for whirling disease to be able to reproduce itself. Whirling disease can be in a system but not have active tems unless the temperature reaches 18-20°C range. (Dr. Valdez)*
***Q**: Regarding parasites, as you move downstream, does that increase the likelihood of lernia and Asian tapeworm? Are they persistent in chubs? (Stevens)*
***A**: It does down to below the LCR. From about the LCR downstream or so, you would increase the possibility or the risk that lernia and Asian tapeworm both could reproduce in the mainstem. Right now they're primarily functioning in either backwaters or in tributaries. Asian tapeworm needs about 20°C or so to be able to produce and shed its eggs*

and then for the young to be ingested by a cocopod and then return to cycle. So there would be a greater likelihood of those life cycles being included in the mainstem down around the LCR and below that. (Dr. Valdez)
***Q**: Would we be getting more than temperature from Lake Powell in that you'd be pulling off near surface water with lots more plankton coming in than previous years so have you thought about what happens if you saturate the river with food given the uncertainties that you've looked at there? (Stevens)*
***A**: No we did not. We did take a look at the planktonic species that are in the forebay and what effect the drawdown in that forebay area of the warm water would have. Obviously you try to cool the forebay. There is not much of a difference really to planktonic species in the forebay. (Dr. Valdez)*
***Q**: You said there's a report available? (Barger)*
***A**: The report is being reviewed by some scientists at this time. It's a Reclamation report so it will be up to them on how and when it is distributed. (Dr. Valdez)*
***Q**: For your dirty dozen, are we monitoring for all of those in Grand Canyon or is that an incidental monitoring by doing other work? (Barger)*
***A**: I think some of those species are being monitored at this time. I'm just doing is offering ideas to make sure that all the bases are covered. There are some real critical life histories and life stages where we can effectively detect if a fish is really starting to respond and detect it early in order to be able to do something about it. I think the real place to do it is probably primarily backwaters and shorelines. (Dr. Valdez)*
***Q**: It sounds like over the last few years we hear about these fish only as an incidental thing that fishermen might be catching them or they show up in some of the electroshock or hoopnetting but I'm not sure we're targeting any of these species. Are we, Matthew? (Barger)*

Management Updates.

Status of Revision of Recovery Goals for Four Endangered Fishes of the Colorado River. Glen Knowles combined his updates into one PPT presentation (***Attachment 6a***). He said the Fish and Wildlife Service is engaged revising the recovery goals for HBC and are also in the midst of a 5-year review. Their recovery goals for the four big river fish were published in 2002 including HBC and Glen said they're going to see if any new information can be added. He said Region 2 (Albuquerque) sent a letter in March (***Attachment 6b***) asking for information on that process. The initial comment period closed on May 31 and they received some comments from the TWG. GCMRC also sent a number of papers for them to consider. Most of the early comments were just requests that stakeholders be allowed to review a draft of the recovery goals when they become available. They expect to have draft goals to the stakeholders for their review in July or August. Once they go through the initial review, the revised draft of the recovery goals should be published in the Federal Register by January 2008.

Status for a Lower Colorado RIP. Glen referenced a memo from Deputy Lynn Scarlett directing the FWS to begin the process of developing a RIP for HBC in the Grand Canyon. The FWS are to provide feedback to the AMWG by September 2007 as to timeline, scope, and development of an outreach program to potentially involved stakeholders and report to the DOI Policy Group.

Creating a HBC Refuge at the Hualapai Tribe Fish Rearing Facility. Glen said they are working with the Hualapai Tribe to hold a refuge population of HBC. They've been working with Hualapai for two years and have been rearing since 1998. The FWS want to see if they can do it for HBC and are looking at ways to upgrade it. This is happening through an MOA with FWS, the Hualapai Tribe, and AGFD. They hope to bring 300-500 young of year on station by 2008.

Whirling Disease Discovered in Trout at Lee Ferry. This document (***Attachment 6c***) was provided by Bill Persons with AGFD and is self-explanatory.

Selenium.Concerns in the Grand Canyon. Rick Johnson asked if the TWG would consider looking at the recent selenium issue (***Attachment 6d***) and developing an opinion as to whether the AMP needs to move forward on this. He said there were eleven sites along the Colorado and Green Rivers. Amy asked how much time and money it would cost for the Center to do an analysis. John Hamill said they would need to do more research before they could render a response.

ACTION ITEM: John Hamill will review the selenium handout with his staff and determine what it will take for GCMRC to do a risk assessment on the effects of selenium in Grand Canyon and report back to the TWG at its next meeting.

Zuni Monitoring Protocols Proposal. Jonathan Damp gave a PPT entitled, "Monitoring Protocols for Culturally Significant Resources within the Grand Canyon" (***Attachment 7***). He described how consultation with the tribes is typically handled and presented several slides depicting the Zuni's origin, belief system, and TCPs identified in the Grand Canyon. The primary purpose of a Zuni monitoring program is the collection of data to be used to identify adverse impacts due to dam operations on Zuni TCPs situated along the Colorado River corridor. Zuni monitoring data will be used to guide measures taken to preserve Zuni TCPs in place for their continued use by ancestral and contemporary Zunis, and for their use by future generations.

***Q**: The issue of controls in this whole realm of Grand Canyon is pretty critical and not very well attended to in most cases, so a statistical test you could do to see whether or not you've got regular spacing of your sites that would be quite interesting to do and might inform your search there and also to know whether or not if they are uniform through the river corridor. Are they also uniform throughout the rest of the landscape because they had to be able to reach those sites before they become significant properties and, therefore, do you have a uniform grid of the whole canyon? (Stevens)*
***A**: We can and have done through an extension of GIS geospatial analysis. (Damp)*
***Q**: You were talking about doing a radius evaluation around those sites to see if there are conditional signs or other features of importance of plant congregations that would become the basis for future monitoring. It's not likely you'd do that every time, right? (Fairley)*
***A**: That's right but in going back on repeat visits, they might see things that they hadn't seen before. (Damp)*
***Q**: So they would be re-inventorying the same areas every time? (Fairley)*
***A**: Yes. But these would be done in conjunction with the river trips that we supposedly take every year. (Damp)*
***Q**: It sounds like you're monitoring it potentially for rates of erosion? (Fairley)*
***A**: Yes. Zuni's concern is mainly with the archeological sites and if the sites are eroding away, then it's health is being impacted. I think the scope of our monitoring is going to be different than the other tribes.. (Damp)*
***C**: We understand the lack of communication between the two realms of beliefs, western science and tribal issues, but we never seem to go beyond that. We get up to the point where we agree to disagree about it but I think what would be very fruitful is to actually try to understand a little more in a collaborative way how to use these differences in beliefs in ecosystem management. I think that would be a multi-tribal symposium. (Stevens)*
***C**: Since those contracts are administered by Reclamation, I suggest Reclamation work with the tribes and the Center in putting together a cultural symposium that would bring the viewpoints and tribal specialists together in providing an alternative view to western science and improve dialogue with the tribes. (Heuslein)*
***C**: Maybe this is one of those uncovered problems in the Roles AHG. It doesn't have to do with the TWG per se or the AMWG, but it has to do with a problem within the program.*
***R**: Yes, we could do it separately then there's the problem of how are you going to integrate into the program? I think it would be more effective if it was acknowledged and identified as something expecting the effectiveness of so it should be dealt with here. We're talking about an AMP Effectiveness Workshop. I'm not sure when it's going to occur but there may be time to make it part of that. (Kubly)*

ACTION ITEM: Reclamation (Mike Berry) will consider putting together a Cultural Symposium or a one-day workshop with the AMP tribal stakeholders and tribal scientists. It would focus on improving dialogue, creating learning opportunities, helping to recognize differences, and ways to bridge understanding among all the AMP stakeholders, GCMRC, and the Science Advisors. In addition, the Roles AHG should also participate in the symposium/workshop.

Hopi Monitoring Protcols Proposal. Michael Yeatts the Hopi proposal is based on the integration work the Hopi Tribe has done for the terrestrial ecosystem monitoring. They used that as the basis for their contract and expanded on it. He distributed copies of his PPT presentation entitled, "Hopi Long-term Monitoring Program for Öngtupqa" (***Attachment 8***).

***Q**: How do we use this information to help us make decisions on how to change dam operations or do something different to manage the place based on what the tribes are doing? (Kaplinski)*

***A**: I think the feedback ends up coming to the management end, identifying where resources are being impacted or things aren't going in the right direction, so it would be fed back to the TWG. Whether it's a Hopi perspective or western science or recreation perspective, it's on the resources we want and so I see it coming back more at that level. For our actual proposal, we put together pie charts of the responses that we had for the first few years that we the pilot in the program so you can see 33% of the riparian vegetation is healthy, 25 don't have an opinion, 15 have these different responses so we are tracking that in that way. In the future maybe that will be useful and be more a science program. (Yeatts)*
***R**: I discovered while trying to put some of this together we take it for granted that we're doing interpretation of data without being explicit as to where its coming from. We send a science report for independent review to people who have the training and education in the field that are reviewing it, but when it comes to a tribal program, only a tribal religious leader/elder or someone who understands the cultural side from the inside is qualified to do the traditional cultural review. (Yeatts)*
***C**: Are you looking at different age groups as far as getting input from them versus just the elders? (Heuslein)*
***A**: Yes, we're looking at that as being one of the things that came out of our work in the canyon and the Center has helped to support it by helping to prepare a resource guide that deals with all the resources in the canyon that can be used for education. The "Hopi Footprints Project" has been using data collected for this program for developing for K-12, math, and science curriculums. One group that's largely been missing from the work is women because they're not allowed in the canyon so we're looking at ways of bringing them into loop because they probably have a very different perspective on resources.(Yeatts)*

Long-Term Experimental Plan Update. Randy Peterson provided an update on what has been accomplished and what remains to be done:

- Public scoping was completed last winter and a scoping report was published in March 2007.
- They received a number of draft alternatives which the cooperating agencies are currently reviewing and providing comments.
- By mid-July those alternatives should be solidified. Reclamation will post them to their website and advertise them to the public when they're available.
- The modeling should be completed in final form in the shortage EIS shortly. A preferred alternative was published to the web site last week and they'll be using that model run for the preferred alternative and shortage is their "no action" alternative for this effort. It requires some more modeling than just the annual and monthly volumes that was done for shortage.
- That information will be turned into hourly hydrographs that will allow fluctuating flow analysis and hydropower impacts and the full suite of resource impacts for the LTEP EIS. They'll do the same this summer for all the action alternatives as well. They expect that will be done by August/September time frame. They'll do some water quality and temperature modeling after that occurs so the steps are: annual monthly, then down to hourly, then temperature quality modeling. They'll then do the impact analysis for the EIS and the target for that exercise will October through December.
- An internal administrative draft should be ready in December. It will go through the review process and be ready for public review by the end of February 2008.
- After the draft is released, Reclamation will seek comments from the public on the analysis and the alternatives outlined in the draft. Their intent is to take public comments on the draft before identifying a preferred alternative but that decision hasn't been made.
- A final draft will be ready for in the spring/summer of 2008 and a final report released in fall of 2008.

***Q**: Do you feel you've got an alternative that has strong and unbiased science going into it? It's a long-term scientific plan so having alternatives that have strong science means having a good understanding of controls over time rather than a Christmas tree approach, having a hypothesis driven, credible scientific approach. (Stevens)*
***A**: Our sense is that we're going to have a variety of experimental designed approaches to it. Some will have comparative and contrasting treatments, others might have a single treatment for the duration of the experiment, and to draw conclusions you'd have to compare to previous conditions for example or trend analysis or something like that. We've talked about triggering mechanisms for example. We've talked about alternative decision paths within the experiment. We've talked about various durations as well. We had talked about 7-10 years before but that's not locked in either. It may be something shorter. (Peterson)*
***Q**: Shorter than 7-10 years? The long-term experimental flow plan is shorter? (Kaplinski)*
***A**: Just as a possibility. We are very flexible right now. We're trying to be responsive so when the public raises comments and questions, and is concerned about getting locked into a long period of treatment without some type of off-ramps or triggers, we need to respond to that. One way of doing that is to have a complex EIS that would launch*

you off into different directions depending on how things turn out and the other way is to shorten up the time frame, do something for a short period of time and then re-evaluate and go from there. (Peterson)
***Q**: When you come out with another preferred alternative, will there be another comment period? (Kaplinski)*
***A**: Probably not. The way we're doing it in shortage is to issue a draft, take public comment, make a decision on the preferred alternative, publish that, and then move forward with correcting the impact analysis, adding any sensitivity analyses, and publishing a final. And we'll probably make it pretty clear that the preferred might be a combination of several elements. If we find that a certain scientific experimental design works better than others in producing the answers to questions that we have, then even though the other parts of that experiment might not be what is wanted, that aspect might be carried forward. We expect to have a broad range of high flow testing, ranging from maybe no tests to one test during the period to one test per year, to one test every time it's triggered. Those will have scientific or resource outcomes that can be projected, especially in terms of sediment transport and accumulation. (Peterson)*

TWG Review of the Roles AHG Report. Kurt asked for comments on the Roles AHG Report.

Jay Groseclose: Citing the BHBF as an example of a breakdown in the roles was absolutely wrong. I saw that as a primary example of the function of the two groups and their distinct roles. I think what came out of the AMWG was a response to the management issues because the technical issue alone wasn't enough to carry the date of the proposed BHBF. It looked like we had the hydrology where we could do it so on a technical basis it made sense to forward that to the AMWG. But when it came to the AMWG meeting, we had been told that it would take $1.5 million to do monitoring. Then we were told we could do monitoring adequately with $900,000. From a management perspective, it broke down right there. It also broke down when we couldn't find out answers on results of the 2004 test. I think it's very important we preserve the roles.

Larry Stevens: We're also engaged to see whether or not we can do our jobs better at all these different levels given the mission that we all have. I would hope the report would actually reflect that level of experimentation here as well rather than calling events failures or successes.

Norm Henderson: I would've liked the committee to have looked at the concept of rather than limiting the TWG's role to what the AMWG had prescribed by giving it more flexibility to respond to issues on its own. I also wish they would've addressed the 2/3 majority vote from the AMWG necessary for a recommendation to go forward. Just given the stakeholder group here and the wide diversity of interests, I certainly think consensus is the way we should go.

Mark Steffen: I thought it was a very interesting and well done report. I think the issue of people making compromises needs to be considered more seriously and that we need to recognize the compromises some stakeholders have made.

Bill Werner: One thing that struck me about some of the process discussion within the report was the size of some entities and particular the small ones not having a lot of people to represent their interests on various committees. Some entities simply don't have other people to look to unless they start looking at contractors. That sometimes hinders our ability to keep up with some processes. I think that's something we have to deal with ourselves but at the same time we get in situations where with all the things that are hopping at the same time, there just isn't anybody else.

Dennis Kubly: One thing that really struck me about this report was that it included a fairly lengthy discussion of the importance of collaboration which was not in the first version.

Kurt said that in terms of the discussion of collaboration in the document, it was in reaction to a lot of what they interpreted as an inability of the group to come to compromised situations. They thought that perhaps it was because there was a philosophical mindset of many of the stakeholders not to come to the table to work towards compromise on an issue and collaboration would be a more effective way of trying to reach consensus on an issue rather than going to votes on motions because motions can create an atmosphere of opposition between people. trying to push their particular viewpoint on other folks.

Kurt asked if the members wanted to provide comments as individual stakeholders or have him prepare a consolidated response from them that would go to the AMWG. Dennis said he wondered if the TWG would like to ask for more time to develop its comments and provide those to the Roles AHG so an extension is possible given that the AMP Effectiveness Workshop has not been scheduled. Cliff suggested gathering

comments from the various stakeholders rather than collecting them individually from the AMWG and TWG. Bill Werner said that by using the comment form, it would be easier to identify those areas in which there is agreement on certain issues. He also suggested that people identify their top three or five concerns as opposed to commenting about something in the report.

Kurt asked Randy for a month's extension in order to provide him with a collective response from the TWG regarding the Roles report. Randy said he would grant the extension until July 31.

ACTION ITEM: The TWG has until July 31, 2007, to provide comments on the Roles Ad Hoc Group Report to Randy Peterson.

Adjourned: 5 p.m.

Glen Canyon Dam Technical Work Group Meeting
June 25-26, 2007

Conducting: Kurt Dongoske, Chairperson **Convened:** 8:03 a.m.

Committee Members Present:

Mary Barger, WAPA
Charley Bulletts, Kaibab Band of Paiute Indians
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS
Amy Heuslein, BIA
Glen Knowles, USFWS
Dennis Kubly, USBR
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
Don Ostler, UCRC
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
William Davis, CREDA
Rick Johnson, Grand Canyon Trust
Christopher Harris, Colo. River Board of CaliforniaBill Persons, AGFD
D. Randolph Seaholm, CWCB
Robert King, UDWR
John O'Brien, Grand Canyon River Guides
John Shields, WY State Engr. Office

Alternates Present: **For**:

Don Ostler — John Shields, State Engineers Ofc./WY
Matt Kaplinski — John O'Brien, Grand Canyon River Guides

Interested Persons:

Matthew Andersen, GCRMC/USGS
Mike Berry, USBR
Marcus Chang, Bob Lynch & Associates
Helen Fairley, GCRMC/USGS
Joe Feller, ASU/College of Law
John Hamill, GCRMC/USGS
Leslie James, CREDA
J.D. Kite, GCMRC/USGS
Ted Melis, GCMRC/USGS
Randy Peterson, USBR
David Topping, GCMRC/USGS
Rich Valdez, SWCA
Scott Wright, GCMRC/USGS

Meeting Recorder: Linda Whetton, USBR

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Welcome and Administrative. The Chairman welcomed the TWG members, alternates, and interested persons. A quorum (16 members) was established and attendance sheets distributed. He also reviewed the ground rules for the meeting.

Update on Kanab ambersnail. Glen reminded the members that the USGS funded a study to re-examine the taxonomy of oxyloma to look at how distinct the snails at Vasey's Paradise really are in relation to the genous and it turns out that they might actually be much more widely distributed than had been thought. This new taxonomy information seems to indicate that the Niobrara ambersnails that are at Nine-mile might actually be the same snail that's at Vasey's Paradise. They were thought to be a different subspecies but now, in fact, they might all be (Oxyloma haydeni) Kanab ambersnail The oxyloma is widely distributed

throughout North America from Canada to Mexico. It probably warrants a lot more work but just this limited amount of work that USGS has funded may result in a change in taxonomy in this species. If that happens and it gets published, FWS will have to re-evaluate its listing status. FWS is currently in the midst of a five-year review for the Kanab ambersnail and Glen thinks in that 5-year review they'll recommend it remain listed until they finalize the ongoing taxonomy .

Development of Desired Future Conditions. Randy Peterson said when they commenced the preparation of alternatives for the LTEP EIS, they reflected back when the TWG was involved in the preparation of a strategic plan which had twelve specific goals with a number of cascading management objectives. Within those management objectives, there were target levels that were part of each objective as well as some narrative to help explain what the objective was about. For nearly all the management objectives those target levels have never been defined. It became clear that the design of the alternatives and the measures to be taken regarding experimentation were closely tied to whether or not a particular resource was at an acceptable level. So for example, if one wanted to experiment with trout but found out that all the trout objectives had been met, then that might be a lesser important aspect of a particular alternative. Working with the cooperators, they ranked the core questions of importance and the limiting factors on HBC and their improvement and the improvement of sediment conservation were clearly the two highest objectives of the LTEP EIS and those are two resources where the target levels have not been identified. The Secretary's Designee requested the TWG develop those target levels also known as desired future conditions. The thought was that the TWG should set up an ad hoc group to take on the task and that the TWG would develop options for consideration by the AMWG. So for example, number of trout, the TWG could say where there are several different philosophies or perspectives on that and A, B, and C are three different options for the number of trout and take that another step. The TWG would also then develop implications, if you will, for each of those options, how that might affect the other resources, how the quality of the fishery or the condition of the trout might vary with the number of trout, and the TWG would also provide as much scientific evidence for historic conditions, things like that. It would form a technical package, a scientific package, for the AMWG to consider. The AMWG would then consider all those and make a formal recommendation to the Secretary.

Randy said it's important the AMP complete that process by the end of the calendar year so the information could be used as part of the EIS evaluation process. The USFWS has embarked on revisiting their four big river fish recovery goals as part of their 5-year review and that by the end of the calendar year could result in some potentially modified recovery goals for the HBC. The FWS draft is due out at the end of December. There could be some links between what this group does and what is coming out of the Service. He suggested the new ad hoc group start with those two resources, the chub and sediment, because they are going to be the primary focus of the EIS. At the December 2006 meeting he would expect the AMWG to make some type of recommendation to the Secretary on this issue so backing up from that point in time, he thought that by the next TWG meeting (Oct. 2-3), the TWG would receive something from the newly formed ad hoc group and be able to provide an evaluation of such to the AMWG.

Dennis mentioned that the Secretary's Designee already asked for comments on the AMP Strategic Plan which were due on March 1. With 52 management objectives, he asked if the group should start with the presumption that all 52 of those management objectives persist in the revised strategic plan or if Randy recommends that part of their charge might be to evaluate whether or not all those management objectives really are desirable, necessary, attainable, measurable, etc.. Randy said it's important to focus on the chub specifically for numbers and spatial distribution and then for sediment the focus would be on spatial distribution, volumes, areas, and maybe total sediment. Dennis said he thought the August AMWG meeting would be the place to make sure everyone is on the same track with has to be done before the TWG ends up spending a lot of time working on something without clear guidelines on what they're suppose to achieve.

Norm said that NPS had prepared a draft (***Attachment 9a***) of what they saw as desired future conditions as a starting point for the ones they thought should be addressed. He distributed copies of the document but

cautioned they aren't to be treated as hard and fast sideboards. His only thought was to limit it to the goals that can be accomplished over the next 10 years.

John Hamill requested that Reclamation prepare a written statement on the assignment along with any sideboards so the group would have a clear understanding of what's expected.

ACTION ITEM: Randy Peterson will provide a clear, written charge (along with sideboards) for the purpose of the Desired Future Conditions Ad Hoc Group (DFCAHG) by July 5. Update: See e-mail message sent from Randy Peterson to the TWG on July 20, 2007 (***Attachment 9b***).

The following members volunteered to serve on the DFCAHG: Mary Barger (co-chair), Cliff Barrett, Steven Begay, Shane Capron, Kerry Christensen, Norm Henderson, Glen Knowles, Dennis Kubly, Ken McMullen, Mark Steffen, Larry Stevens (co-chair), Bill Werner, and Mike Yeatts. Ken McMullen volunteered to serve as the interim chair and convene the first meeting and then a permanent chair would be selected. Ted Melis and Matt Kaplinski will serve as technical advisors to the group.

ACTION ITEM: The DFCAHG will present a preliminary report to the AMWG at their August 29-30, 2007, meeting.

Public Comment: Clayton Palmer stated there should be facilitation services provided for the DFCAHG and even though desired future conditions are of general concern to the AMWG, it is partly driven by a schedule related to the LTEP EIS so Reclamation would be best at chairing the ad hoc group.

Dennis concurred that the LTEP EIS is of immediate concern but also said the broader revision of the strategic plan may encompass more resources. Helen asked that the latest version of the AMP Strategic Plan be sent out because there are a couple of versions floating around with different goals and numbering systems. Dennis said he would provide that URL to the TWG.

ACTION ITEM: Dennis Kubly will e-mail the URL for the latest version of the AMP Strategic Plan.

MRP Revisions and Crosswalk Table. John Hamill distributed copies of the "MRP Revisions to address the TWG Minority Report GCMRC" (***Attachment 10***) dated June 12, 2007, which summarizes where he thinks the TWG is at on this particular issue. The NPS and GCMRC met on 1/11/2007 regarding NPS concerns over the draft MRP that had been specified in the minority report presented to the AMWG on 12/6/06. The discussion boiled down to a concern that the draft MRP (11/14) lacked a comprehensive list of critical science questions that would be addressed over the next five years. To address this NPS concern, GCMRC and NPS agreed that GCMRC would develop a crosswalk table showing how the 250 +/- Research Information Needs in the AMP Strategic Plan relate to the Strategic Science Questions in the draft MRP. Through a review of this table, GCMRC and NPS would identify new science questions to be included in the MRP. GCMRC would bring the revised list to the TWG for review. The crosswalk table and additional science questions would be included in the revised draft MRP and brought to the AMWG for approval at its summer meeting.

John met with Rod Kuharich and Randy Seaholm from the State of Colorado along with Mary Barger and Clayton Palmer (WAPA) on December 6, 2006, in Las Vegas, NV, to discuss issues identified in the TWG minority report on the MRP. Three major issues were identified:

1. Humpback Chub monitoring: There is a concern that FWS has not accepted the protocols/models used by GCMRC to determine the humpback chub population status in the Grand Canyon. GCMRC has been working with FWS to ensure that the monitoring protocols and models for humpback chub in the Grand Canyon are consistent with the requirements of the Humpback Chub Recovery Plan. Language will be included in the MRP that clarifies that the humpback chub monitoring being conducted under the auspices of the AMP will be designed to meet the standards or requirements specified in the Humpback Chub Recovery Plan.

2. Sediment: The primary sediment issues were that
   - Policy guidance needs to be provided on the geographic scope of sediment work in the Grand Canyon, i.e., is the focus on the entire Colorado River from Glen Canyon Dam to Lake Mead or just to the Marble Canyon reach? USGS supports the definition of this and other Desired Future Resource Conditions and will update the MRP when they are developed and agreed to by the managers.
   - WAPA and Colorado would like the MRP to reflect that other options for sediment conservation will be addressed. USGS is unaware of any other feasible options for sediment conservation over the next five years.
   - Colorado expressed concern that use of sand bars by recreational users significantly threatens the persistence of sand bars. This issue has not been identified by the AMP as a high priority research issue for the next 5 years

   Both WAPA/Colorado were invited to draft proposed revisions to the MRP to reflect the points above; however none were provided.

3. Food Base
   - The MRP currently specifies that effects of stable vs. fluctuating flows on food base would be addressed through the Long Term Experimental Plan which is still a work in progress. There is currently a place holder in the MRP to address the effects of alternative flow regimes on food base. The intent is to update the MRP to be consistent with the LTEP once it is finalized. Accordingly, USGS does not believe that the MRP should be modified to address this need at this time.
   - Palmer supports implementation of Argonne National Lab's proposal for doing short term experiments to evaluate the effects of fluctuating flows on drift and food base in FY 2008. If WAPA believes that the Argonne proposal needs to be considered before the Long Term Experimental Plan is completed, USGS recommends that this proposal be brought to the TWG for consideration during the preparation of the FY 2008 work plan.

Clayton added that WAPA and Colorado were concerned because it wasn't clear what BHBFs were intended to accomplish and Rod in particular was interested in identifying that. Rod was also interested in having a sediment goal tied to what GCMRC is trying to accomplish for HBC, other high flows (MHFFs, HMFFs), and load following as aspects of high flow tests or experimentation. Clayton said that in order to assist both WAPA and the State of Colorado, WAPA said they would send some draft language for the MRP. However, they have not done that but did forward as a policy issue in their comments on the science plan for BHBFs and agreed with GCMRC that the MRP would be modified once a sediment goal was either changed or clearly identified.

John reviewed the crosswalk table and said they looked at 200+ different RINs and how they related to the SSQs or CMINs that were identified in the MRP. They came up with five additional questions they felt should be added to the strategic science plan or to the MRP which are listed on the first page of the handout. He also reviewed the criteria they used for determining whether or not to add a new science question.

John said the next steps to be taken are:

1. GCMRC will revise the MRP based on consideration of comments/recommendations from the primary authors of the Minority Report (Colorado, NPS and WAPA)
2. GCMRC will send out proposed MRP revisions for review and concurrence by the TWG
3. GCMRC will send out proposed MRP revisions for review and approval by the AMWG (August 1, 2007)

Matt Kaplinski proposed the following motion:
MOTION: **TWG moves to accept the revisions to the MRP and forward the revised MRP to the AMWG for approval.** Kerry Christensen seconded the motion.

***Q**: Why are you focusing on those two small locations rather than the rest of the Grand Canyon or the rest of Marble Canyon? (Steffen)*
***A**: I think the focus on looking at trout in the LCR was once again the focus on HBC and to see what the effects are there as opposed to canyonwide. It's clear that trout are distributed throughout the canyon but we're interested in*

abundance of trout and trout predation relative to HBC and that's where the greatest concentrations of HBC are found. (Hamill)
***A**: Goal 2 and Goal 4 are not easy to rectify. There's a desire to have native fishes. There's a desire to have rainbow trout. This is following the review of the existing information needs that this committee has worked on quite extensively. I certainly built on existing information needs that were already promulgated by this group. This was an effort to try to focus efforts rather than look at everywhere all the time for all species especially for a 5-year plan. To focus efforts on places where we: a) want to have a recreational fishery, and b) maintain the native fishery. (Andersen)*
***C**: Mark raises a good question because it looks like there are only two locations in the system that are considered here in this question. Clearly there is reproduction in major tributaries including Tapeats, Shinimo, and Bright Angel that would be vested within this question. (Kubly)*
***R**: Our proposal isn't to study trout throughout the system, it's to study trout and address these specific questions about whether these fish are being produced locally or they're coming in from the Lees Ferry Reach. (Hamill)*
***Q**: So it brings up the question of the LTEP relationship because the question of tributary versus mainstem, is it in at least one of the draft alternatives now being developed? Would you see this as being adjusted? (Kubly)*
***A**: I think we're talking about a plan here that's going to get finalized to help guide us until the LTEP gets done and then we're going to take the LTEP and update the MRP. (Hamill)*
***Q**: With the proposed changes, do we have an MRP that shows these amendments? (Barger)*
***A**: No. I have not taken it to that stage at this point. (Hamill)*
***Q**: So we don't have anything in writing? (Barger)*
***A**: No, we don't have anything in writing. With TWG's approval today, I'll go back and make those revisions and share that with you to make sure I didn't misrepresent anything. (Hamill)*
***C**: The new SSQs focus HBC on the mainstem and we're looking at some translocation and at issues on some of the tributaries. We would prefer that it didn't say mainstem, or that it said CRE but not mainstem for the HBC issues. (Barger)*
***C**: The purpose here was to figure out when these fish come out into the mainstem from the Little Colorado River and what kind of habitats they're using. It wasn't to go into tributaries and see what kind of habitats they were using there but specifically what can we do to promote habitats in the mainstem that are going to promote survival of those large numbers of fish that come out of the LCR and to answer the question about trying variance of the question are you using talous lobes, are these in backwaters, what's the relative importance of those in terms of providing conditions that will benefit them. Our intent was clearly to look at mainstem habitats. (Hamill)*
***C**: And we would encourage saying CRE so that we have a little bit more flexibility to look at other things. (Barger) The State of Colorado had some real concerns on focusing on BHBFs as the only method of sediment conservation and the MRP still reflects that. We had some similar concerns that BHBFs were worth the focus in the MRP and we feel there should be some other methods for sediment conservation. (Barger)*
***Q**: Just to clarify you had indicated there was only one NPS issue in your of write-up of our meeting in the beginning of January and I'd just like to point out that there were probably three issues that were contained within the minority report that we specifically discussed. The one you're pointing to was the agreement on what to have move forward but there were two other issues related to the process for prioritization which I think was brought up here before which was there was no consolidated prioritization process so everybody felt like that all the SSQs, once those were developed, were important were in the mix and then a prioritization process to establish which ones of those were the most important to address in the next five years. And then the other point that we had made was there didn't seem to be a clear relationship in many cases between the projects that were proposed in the MRP and the specific science questions asked so it didn't appear like there was any intention there to specifically design the project to answer a specific question. The projects were designed to address, as you'd called it throughout the document, those science questions which didn't give me much of a comfort level that we could expect to answer within the next 5 years. With regard to the crosswalk table, in many cases I didn't see the SSQs that were proposed or the SSQs that were listed. Some of these didn't seem to have a direct relationship or a direct crosswalk with the actual RINs that you had put in there. I can go through the specifics but I think a general comment is there were several there I just didn't see the SSQ as directly related to the RIN you showed. (Henderson)*
***C**: John, when said "none proposed" in here that that meant you weren't proposing an RIN because it was of a lesser priority and you weren't going to put it in the 5-year plan anyway so there was no sense in building an SSQ for it. (Henderson)*
***R**: I think that was one of the criteria. It had to be something we felt was a priority that related back to one of the AMWG's priority questions and it also had to be something scientific in nature. If you look at comment #5, there are none proposed. What are the measurable criteria that need to be met in order to remove jeopardy for HBC? That's a desired future condition, a recovery goal kind of thing, and so we didn't propose a SSQ to address that. We felt that was outside of our purview so those were the basic criteria we used in determining whether we should propose a new SSQ. (Hamill)*

***C**: On page 11, #29, you say there is no SSQ proposed but then in the comments section you basically say that you're already doing research so it doesn't seem to follow. It seems like there is a need for an SSQ for something that obviously is a high priority because we're already working on it. I saw a disconnect there. As far as some of the ones that didn't seem to match, I call your attention to page 7, #12, it says what is a viable population. That's the RIN and then the SSQ is what are the important half-ways that link lower trophic levels with the fish and how will they link to dam operations. (Henderson)*
***R**: I think it relates back to carrying capacity and if we can get a better handle on what's the capacity of the system, we can get a better handle on population viability I think. Is that the general thought there? That there's information that's going to come out of the foodbase study that will help inform that question to some extent. I agree that it's not a specifically crafted question to address that concern but to us it's not a stretch to say that the foodbase study would help inform that kind of a RIN. (Hamill)*
***Q**: The point is there are probably differences of opinion about what is intended by what is a viable population, the RIN, possibly and that needs to be teased out to get to an SSQ. We need a process to get there. (Henderson)*
***Q**: One of the premises of your whole group base work and the advice that you receive from peer reviewers and the science advisors was don't make an assumption about whether this is a top-down, predator-limited, or bottom-up foodbase system and it seems that what you're presuming here is for these pieces that you already know that it's food limited. Where's the other side of it? Where's the other SSQ that deals with the question of whether or not this might a predator limited situation? If it's not a foodbase issue? (Kubly)*
***A**: I think we're on a semantic difference. The foodbase research is energetic phased. It's looking at energy transfer through the system. So if there is a predator component, maybe non-natives, that's certainly a proponent of this study, to see how carbon and energy are being transferred up and down through the system. (Andersen)*
***C**: Those are two different types of controls of productivity in the system and it seems that your emphasis is on the bottom up energy exchange, not the -- (Kubly)*
***R**: I agree that that's the name of the project, foodbase, that does give the impression you described but certainly it's about trans energy transfer through the system up and down. (Andersen)*
***C**: One of the things we talked about was the idea that we wanted to make sure this document was a document in progress. I don't see that reflected in here. It sounds like if we vote today for a recommendation to move this forward, it stops the review and the inputs stop. I just want to make sure that we still have the option to tweak this document as we go forward in initiating some of these studies. (McMullen)*
R: The last time the TWG approved this document, it approved it with the understanding that it would be updated upon completion of the LTEP. I agree a major revision of the document is needed and I'm not asking for carte blanche approval of it and walk away from it for five years. The MRP calls for this document to be updated on a 5-year basis and I would suspect that it will probably be updated prior to that as the LTEP EIS unfolds. (Hamill)
***C**: My understanding from reading your next steps, is that you're asking us today to give tentative approval and then you will revise it and send it out for concurrence later so people today will get to see your rewrite based on all this discussion before they approve it and it goes to the AMWG. (Barrett)*
***R**: Assuming you agree with the proposed revisions, I would go back and make language changes to the MRP, highlight those, send them out to you, and then check in with the TWG once again to see if there are any other issues before sending to the AMWG. I would like to send a revised document to the AMWG for them to look at. (Hamill)*

Kurt said there was a motion on the floor asking the TWG to move to accept the revisions to the MRP and forward the revised MRP to AMWG for approval. Amy asked whether Matt would be willing to look at revising his motion to reflect some of the discussion recognizing that the Center needs a little more time to do make the changes in the document. Matt didn't understand why the TWG couldn't approve a document knowing that GCMRC would make the changes. Kurt said it wasn't a matter of the TWG not trusting GCMRC to make the changes but rather the TWG would know exactly what they were forwarding to the AMWG. Kurt closed the discussion and the members voted on the following motion:

Motion: TWG moves to accept the revisions to the MRP and forward the revised MRP to the AMWG for approval. Motion seconded by Kerry Christensen.			
Representative	**Stakeholder Entity**	**Vote**	
Bill Persons / Scott Rogers	Arizona Game and Fish Department	absent	
Amy Heuslein / Garry Cantley	Bureau of Indian Affairs	**abstain**	
Dennis Kubly / Randy Peterson	Bureau of Reclamation	n	
Mike Yeatts	Hopi Tribe	y	
Kerry Christensen	Hualapai Tribe	y	
Ken McMullen / Jan Balsom	National Park Service - Grand Canyon	y	

Norm Henderson / Chris Kincaid	National Park Service - GLNRA	**abstain**	
Steven Begay	Navajo Nation	**abstain**	
Jonathan Damp	Pueblo of Zuni	n	
VACANT	San Juan Southern Paiute Tribe	absent	
Charley Bulletts / LeAnn Skrzynski	Kaibab Band of Paiute Indians	y	
Glen Knowles	U.S. Fish and Wildlife Service	n	
Mary Barger	Western Area Power Administration (DOE)	n	
Rick Johnson / Nikolai Ramsey	Grand Canyon Trust	absent	
Larry Stevens	Grand Canyon Wildlands Council	y	
Mark Steffen / Tim Steffen	Federation of Fly Fishers	n	
Matt Kaplinski	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	n	
Robert King	Utah	absent	
John Shields / **Don Ostler**	Wyoming	**abstain**	
Bill Davis	Colorado River Energy Distributors Association	absent	
Cliff Barrett	Utah Associated Municipal Power Systems	n	
	Total Yes	**8**	
	Total No	**7**	
	Total Abstain	**4**	
	Total Voting	**19**	
	MOTION PASSES		

Norm Henderson (abstaining): I would just like to see the final product to vote on.
Amy Heuslein (abstaining): I wanted to see an amendment to this to allow for a short period of time to meet with the TWG to take a look at it and not necessarily approve it, because I don't think we've got that authority, but for concurrence of those changes.
Steven Begay (abstaining): GCMRC is going to be forwarding this information to the AMWG anyway so irregardless of the TWG's consent or not, I don't think it's a big issue.
Don Ostler (abstaining): I abstained because I missed most all of the discussion and didn't feel it was appropriate to vote.

BHBF Science Plan and Budget. John Hamill reviewed several items from his June 22, 2007 memo (***Attachment 11a***). He stated that GCMRC will respond in writing to the comments received on the BHBF Plan (***Attachment 11b***) following the TWG meeting. He expressed concern that only a minority of TWG members provided comments and he's not sure how to interpret that – whether people liked the plan, didn't get around to making comments, or disliked it so much that they didn't put comments in writing. He feels there still may be issues that are going to come up at an AMWG or some other meeting and GCMRC won't have an opportunity beforehand to discuss because only a small portion of the members commented. He said the non-technical comments should be addressed by the TWG, AMWG, and/or Secretary's Designee as appropriate. He said today's presentation would focus on what they felt were the major issues raised in the comments. Depending on the outcome of today's discussion and perhaps having an ad hoc group look at the plan in more detail, he wants to request the TWG to consider that the WY08 hydrograph include the option to conduct a BHBF subject to a science plan being completed and approved by the Secretary, and that the sediment trigger is met. Last year the TWG did not recommend a BHBF as part of the 08 hydrograph and so the intent is to approve it to this point in time. If the TWG doesn't do that or forward a recommendation to AMWG, John said it casts a little different perspective on how quickly the plan needs to be completed. He said the plan has some major budget implications and he didn't think the BAHG had considered those and that may be something that needs to get considered before it moves for approval.

Ted invited the authors who were involved in drafting the science plan to answer questions as appropriate. He said GCMRC intends to go through the plan as they pertain to each particular part or project in the draft science plan. He also told the BAHG recently that at some point they need to look at the budget, review the science plan, and provide recommendations to the TWG on the scope of the budget and availability of funds which less directly relates to when this or some variant of this plan is actually implemented in the future. He gave a PPT presentation (***Attachment 11c***).

Matthew said the primary comment received was that more biological studies were desired for any of the high flow tests. GCMRC has struggled with the difficulties of sampling the fish. From their projections, the tests would be conducted in late winter or early spring, probably March. Matthew said that's generally a difficult time to catch fish especially the small-bodied warm water fishes so they've struggled with just how to go about studying that. The reviewers stressed that they would be better able to understand how fish use habitats that might be created by such a high flow and proposed a change to the plan that's not reflected in the current plan. Matthew said they would propose adding a second trip. There is currently a backwater seining trip that's conducted in late September/early October each year and they propose to more or less to replicate that sampling much earlier in the season. He and Lew Coggins estimate that a good timing for that would be in May because that's the time of year when water is starting to warm up.

John said it's important to note that the spring seining trips are not only done in years that BHBFs are done but also in years when BHBFs aren't done. Over the long run they have something to compare/contrast data to see whether or not they're getting more backwaters and/or more fish using backwaters. He also thinks there may be some potential to address some of the issues Rich Valdez talked about yesterday in terms of being able to get on top of non-native fishes that may also be using the backwaters and be able to detect non-native fish responses. So there are multiple purposes than just adding a trip that could provide information beyond just a BHBF activity.

Ted added it also gets to the larger topic of how the proposed monitoring program interfaces with research events, like a BHBF, as it pertains to the sediment realm. There are some things GCMRC would encourage or recommend be done as part of long-term monitoring and would support the TWG's understanding of BHBFs whenever those get implemented but they're not necessarily BHBF activities so the two, the research and the monitoring, truly are integrated.

Matt said another comment repeated was that people believed GCMRC hasn't answered all the questions about trout. He said the responses have to be put in the context of the entire adaptive management program annual work plan and that there is other work that goes on. He tried to address that in the text of the report as well as in Appendix A which describes the ongoing work and also some additional work they're trying to pursue for some occupancy modeling.

Q*:.Is it your intent to revise this BHBF Plan to include an additional project that gets into the specifics of how you're going to implement? I know you're adding another trip - suggesting as far as the questions that you're going to try to answer and exactly what you're getting at AND a relationship of that backwater trip and the DASA project review overflight that will be done in a year or two or something like that and how that all fits together as far as evaluation of backwater habitat. Is that intended to be described in an additional project? (Henderson)*
A*: Yes. You don't see a project along those lines in the existing draft so we propose to add that in response to these comments. My concerns in thinking about how to control non-native species is that we seem to be relatively effective in the southwest and west at catching big fish. The removal of rainbow trout and other non-natives in that LCR Reach was relatively effective so they do seem to have pretty decent techniques for that. I'm concerned about what we would do or could do to remove small body non-natives. I think this is an area where we need additional research and one of the techniques that occurs to me that may be available is a high flow, that these non-native small bodied fishes may be relatively less able to withstand floods as compared to the natives which have evolved in this situation in a really flashy river. (Andersen)*
Q*: Sorry Matt, but doesn't that get you then to the question of what the range of high flows are that's necessary to do that testing and it brings me to my first question: Why did you restrict this to 41-45 if that really is a viable hypothesis? Might you not need higher flows to do so? (Kubly)*

***A**: We might but that's all that's available from the dam. I don't know how we could - it would be pretty unreasonable for us to propose it. (Andersen)*
***Q**: This is a long-term plan, right? (Kubly)*
***R**: It's off-the-shelf for the potential implementation of a next BHBF but we specifically say it's not being presented to you in any context for long-term implementation because again we don't know what that is. (Melis)*
***C**: I think that was the request from the AMWG. It said on the shelf to be used at some future time, not time specified was my understanding, but not necessarily part of the long-term. You said this could be incorporated into the LTEP so you must clearly have been looking at it as (Kubly)*
***R**: It could be out of the LTEP if the BHBFs are identified beyond the 41,000 cfs range for future testing. It would simply be a matter of making a small amendment to it. We just felt like we wouldn't be advocating something that in the near term was physically impossible. (Melis)*
***Q**: Maybe that's all it takes is - your period of consideration of 08 but if we're going to go beyond that, then you might change your position. Is that fair to say?(Kubly)*
***A**: Sure. We had indications from 1998 TWG meetings by Reclamation that they were open to the concept of testing BHBFs using one or both spillway tunnels. Of course that was at a time when the lake was basically full. (Melis)*
***C**: When I reviewed the BHBF Plan, I went back to the motion and it did say it was off the shelf and the title is "Science Planned for Future Experimental Beach/Habitat Building Flows." If you thought it was only for 08, why isn't the title "BHBF Science Plan for FY08?" If you don't get one in 08 for whatever reason, then you couldn't use this in 09. Mark Limbaugh said he wanted an off the shelf plan for future BHBFs. (Barger)*
***R**: That's true in spirit but what we're saying is we don't know in what longer term context. We can't say. Right now we assume that the dam operation that precedes and follows the BHBF test is MLFF not because we're saying that that's what it needs to be or has to be, but we don't know of the outcome that would suggest it should be anything other than that, stable or otherwise. It is kind of an off the shelf approach in a modular way that we think can be, perhaps with some modification, plugged into whatever LTEP outcome there is. We haven't necessarily said we're advocating this long-term BHBF approach because we don't know. It's just one operational component that goes on presumably 365 days a year for multiple years and we just don't know enough about what those other operations will be.(Melis)*
***C**: We are interested in what would you propose for options for post-BHBF flows. Mr. Limbaugh also mentioned the BHBF could be anything. Somebody asked him a question and he said we might just spike it and run it right back down. He did propose that in the AMWG and this plan but we didn't see that one in here. (Barger)*
***R**: My take was the AMWG said to go develop a science plan so we don't have this problem the next time we come into a situation where we have sediment inputs. It wasn't go back and develop a science plan for the next 10 years.. Then we have this LTEP thing that's going on to define the overall structure of the long-term experiment which may not include any BHBFs and may include 10 of them over the next 10 years. As Ted said, we're not trying to prejudge what the outcome of that is but only trying to come up with a plan so that the next time this event comes on, there will be a plan in place to implement. This is what we prepared. That was the spirit in which we prepared this. If we need to go back and get additional clarification from the Secretary about what it is he wants us to do, I guess we can do that but that's my understanding. I'd be interested if other people see it differently. (Hamill)*
***Q**: Following the last BHBF, there was a theory that some young chub may have been washed downstream to an unknown fate. Have you got enough information now to feel like a BHBF is not harmful to the chub? (Ostler)*
***A**: That is something that still has to be tested but in our Appendix A we did address that by saying we would like to put additional tags, probably the sonic tags, it's an acoustic technology, into just as many young chubs as we possibly can, that would probably be 150 milimeters or smaller. (Andersen)*
***Q**: Do you think with the tags with one additional test you can determine that it's not overall harmful to the chub? (Ostler)*
***A**: For anything that I'm suggesting and I think for other resources, the more tests, the more data we will gather but will I have the complete answer after one test. I'm not sure. (Andersen)*
***Q**: The last test showed that you couldn't find a lot of the young chub that you found before the test and so the data came from GCMRC. Where did they go? (Ostler)*
***A**: What confounds the sampling for that last test was that following the test, as our staff was getting out into the field to look for those fish, the LCR flooded so the river went quite a bit more murky and that made it difficult to sample for fish so the inability to find them was probably a) they were attracted by some displacement from high flows, but b) was also highly impacted by a murky system that was difficult to sample. And that's been one of the reasons that we've been so kind of gun-shy about conducting sampling for these native fishes immediately following these tests because of that difficulty. (Andersen)*
***Q**: Dr. Rich had an opportunity to study this and published a paper on it which I believe concluded that based on the data that you were able to collect around the 1996 event and immediately following, that there is no dataset that shows that it does significantly impact or displace native fish. Is that correct? (Melis)*
***A**: That's correct. That information is published in the book that is edited by Webb et.al., by the American Geophysical Unit. We radio-tagged 10 adult HBC prior to the 1996 flood that was 45 miles and then we also monitored for densities*

of various fish species, both in backwaters and shorelines. The adults basically shifted position but they certainly didn't get flushed downstream. All the adults pretty much remained in place.We found significant decreases small bodied fish such as fathead minnows, plains gilly fish, and red shiners. After the flood we just couldn't find those fish. The HBC shifted position or habitat and will tend to stay with a similar habitat that is available at he shoreline interface for a given flow stage. So if there was talous at one location, you'd find them there but if the flow dropped and you got down to a sand beach or something, they would be just downstream or upstream from that location. So the densities of HBC in those reaches were not significantly different. In fact, they were very, very similar. That was the indication to us that the flood, in fact, did not transport and that was true with speckled dace as well. We didn't have very many flannelmouths or blueheads to deal with. (Dr. Rich Valdez)
***R**: We've done two of these tests so these are published results from 50% of those tests. The question for you Don and others is to consider: Does that information give you enough certainty to make decisions or recommendations on management activities around BHBFs in the future or would you rather have three or four of these tests and publications from 50% of those three or four tests? How much more replication do you feel you need before you as managers are comfortable saying we believe we know enough about BHBFs to move forward? (Melis)*
***C**: I like the idea of looking at how these tests displace non-native fishes and I didn't really see that in the plan. I noticed some attention paid to rainbow trout in that regard but I think in terms of that particular element, it would be nice if you looked at the suite of non-native fishes in the Grand Canyon and how an event would affect them and also how you would look at that in the overall context of your non-native program and warm water, cold water. (Knowles)*
***C**: Our concern in 2004 was there was more small fish in the system than we'd seen in a decade or more and we were concerned about how flows displace native and non-native fish. The natives adapted to handle it better but nevertheless flows displace fish. We know that when we have floods in the LCR, the flood displaces small fish out of the LCR and the mainstem so it's just physics really. And so when the BHBF was proposed for November 2004, we had a lot of small fish in the system. We were concerned because we thought that doing a BHBF at that time would displace some of that investment that we had worked so hard to get in part through all the work we were doing such as non-native RBT removal. We had spent a lot of money on that. We had a big investment in those fish and we were concerned about what effect the BHBF would have. The data that came from that did suggest that some of those fish might have been displaced. As Matthew said, there was a lot of turbidity in the system associated with the flow that confounded those results. Nevertheless, we're still quite concerned about the timing of conducting BHBFs and we would suggest that spring would be the best time to do that to avoid that type of impact, that is the time of greater abundance of small fish in the system associated with monsoonal storms in the LCR. It's still a concern of ours but we do agree with the basic premise that the natives are better adapted to handling but nevertheless we want attention paid to that potential effect. (Knowles)*

Ted proceeded with the slides on the biological aspects of the program and then Helen provided summary comments on the Aeolian process.

Mike Berry said he was glad to see acknowledgement that there are some negative impacts of BHBFs. The general tenor has been that BHBFs wait for archeology. He referenced the first slide which said, BHBFs have the potential to preserve archeological sites." He said that statement should be paired with a similar statement that "BHBFs have the potential to adversely affect National Register properties as they did in the last BHBF" that Balsom and Walden evaluated. Helen said that as a result of the 1996 BHBF a letter did come to the Bureau of Reclamation in which a decision had been made that BHBFs, those up to 60,000 cfs, would not adversely affect or potentially be a beneficial effect to cultural resources. That was the determination made the SHPO and Advisory Council in consultation with the NPS and the Bureau as a result of that experiment. Mike said the 1998 decision of that level needs to be revisited because they know a lot more about the impacts of flows.
R: And I'll note that that was why mitigation was conducted at those particular locations. We can continue this discussion later. (Fairley)

Kurt reviewed the action requested on the agenda and asked the TWG if they were comfortable with GCMRC's response to their comments. He reviewed the proposed next steps:

- GCMRC respond to remaining comments
- Further TWG review --> ad hoc work group(s)

- TWG recommend to the AMWG that the WY08 hydrograph include the option of conducting a BHBF subject to (a) the sediment trigger being met, and (b) finalization of BHBF Science Plan and acceptance by the Secretary of the Interior
- TWG recommendation on the budget implications of implementing a BHBF Science Plan in 2008.

Kurt asked the TWG if they were comfortable with the above process in an effort to recommend approval of the science plan to the AMWG. He further asked how the process of recommending the 08 hydrograph include a BHBF and approving a science plan would come together.

- *TWG can send a clear message to AMWG that based on the resources and what we know about BHBFs and their benefit to the system, we think it's technically the right call if the triggers are met and if this review process that we haven't defined yet of the science plan occurs and is accepted by the Secretary, we have the option in 08 to run a BHBF. (Kaplinski)*
- *The policy issues need to be addressed by the AMWG or the Secretary's Designee before the science plan can go final. I was disappointed with some of the responses from GCMRC just because they seem to very defensive rather than trying to create more of a collaborative or collegial response. Our comments have not been addressed. We would like to see a new rewrite on the BHBF before we move forward on the science plan. We'd like the Sediment AHG to provide some input into that before we move forward. (Barger)*
- *If a BHBF were not approved now, is there still sufficient time for the AMWG to meet again in December and is it likely that if a BHBF were done in 08, would it be done in March or April? (Ostler)*
- *Would GCMC be able to give some input to the AMWG in August on how you'd advocate flows should be managed for the remainder of this water year if we get a trigger? (Kubly)*

Ted said that last December some AMWG members questioned that even if they didn't approve a BHBF, wouldn't some knowledge be gained by simply monitoring the fate of the inputs under normal operations for purposes of developing the sediment model that Scott Wright had talked about and just having a better monitoring dataset. GCMRC acknowledged that that was the case so when they were directed by Interior that a BHBF wouldn't occur in the spring of 2007, they continued monitoring the sediment inputs from the Paria in October and brought those results back to the AMWG at their spring meeting. And so the concept of pre-conditioning of a new sediment supply which comes in as a point source through the use of just normal MLFF operations throughout winter months seemed to be the operation that most effectively took that material and distributed it more evenly down throughout Marble Canyon and perhaps eastern Grand Canyon. Based on the data that we collected on the last enrichment event, GCMRC feels normal MLFF operations would probably be the best thing to do throughout the fall and winter.

***C**: One of the things that Ted was just describing is a policy change so the critical reach previously for sediment conservation was Marble Canyon and what's being proposed with the conditioning flows is a policy change for distributing sediment throughout the canyon. So when I mentioned that part of the science plan is a change and some of the things are policy driven, this is where those pieces really need to go to AMWG so they can address. This is an example of one of those policy statements that is a shift from what has been agreed upon previously to the Record of Decision. (Barger)*

Kurt asked the TWG if they wanted to add to the following list of concerns already noted:

1. Establishment of a BHBF Science Plan ad hoc group to review document and work with GCMRC to do a revised draft
2. 08 hydrograph include BHBF upon review approval of science plan
3. Send the BHBF plan to the Sediment AHG for review
4. BHBF Science Plan policy issues need to be addressed by AMWG
5. Disappointment in responses by GCMRC before they begin another reiteration of the Science Plan
6. Process to Revise Science Plan

Matt Kaplinski suggested the BHBF Science Plan go to the Sediment AHG for a review. Since they'll be working with GCMRC, GCMRC could make revisions and send to the TWG a month before the Oct. 2-3

meeting. During that meeting the TWG would have time to discuss and possibly approve and/or forward the BHBF Plan to AMWG. Kurt responded that the Sediment AHG already has three assignments and he questioned their ability to accomplish that review as well. He asked if the TWG wanted to establish an AHG to work on revising or responding to GCMRC's response to comments and work with GCMRC to revise the Science Plan. Ted suggested that the newly formed DFCAHG could possibly look into what's needed for establishing sediment desired future conditions. A BHBF is intended to be, at least for the time being, the main way of achieving that, and Ted thought the DFCAHG could encompass that as part of their work as well. John reminded people that there were a lot of questions raised that go beyond the purview of the Sediment AHG - a lot of biological and cultural issues. Dennis concurred with Kurt that he felt the DFCAHG may be getting tasked with too many assignments. As temporary chair of the DFCAHG, Ken said he didn't think the group could address any of the policy issues and still meet their requirements for producing a review by the end of the year. Kurt advised Ken that the group would only be addressing the technical aspects of the science plan with a BHBF and that the AMWG would deal with the policy issues.

Kurt questioned that if the BHBF Science Plan went to the Sediment AHG as one of the options discussed earlier today, would they have enough time to deal with that plus the other sediment plans and modeling assignments. Since many of the same people who are on the Sediment AHG are also on the DFCAHG, there was some thought that the assignments could be done in tandem. Kurt said it would be better to send it to a group that has more diverse expertise that could comment holistically on the plan rather than an ad hoc that is focused on one resource. **Kurt asked how many people were in favor of sending the BHBF Science Plan to the DFCAHG. The response was 13 in favor and one opposed**. Dennis reminded the TWG that come October, many of the cooperating agencies and Reclamation personnel will be working on the LTEP EIS so they won't have much involvement in the DFCAHG or the Sediment AHG.

ACTION ITEM: The DFCAHG was tasked with reviewing the BHBF Science Plan and providing comments to the TWG prior to the October meeting. They are to focus only on the technical issues and leave the policy issues to AMWG.

FY08 Budget. Dennis passed out copies of the Budget Ad Hoc Group Report (***Attachment 12a***). One of the things the group has struggled with the past two years is having less than its full membership at voting time to make a recommendation to the TWG. The group only reached consensus on one of four proposals for additions to the FY08 budget. He asked the sponsors of those projects to make individual presentations and how their projects should be funded.

Project D.4 Glen Canyon and Grand Canyon Treatment Plan Implementation: Mike Berry said approximately $600,000 has been spent in developing treatment plans for Glen and Grand Canyon over the past several years and now it's time to do something to satisfy Reclamation's Section 106 responsibilities under the Programmatic Agreement. The treatment initially had a placeholder in the budget for **$300,000 but that is now $500,000**. Mike said the increase is due to him assuming that a budget would have to be in a place before Jonathan could finish his GRCA treatment plan so the amount he estimated was too low. Following the direction of the cooperative agreement, Jonathan generated a long-term budget for the work. His initial estimate was $500K over a 10-year period and the estimate was that if he went with the lower number ($300K), it would probably go for as many as 20 years. In adjusting for the CPI rate increase over a 20-year period, they arrived at the $500K. Mike said there were some objections to Jonathan doing the estimate because he might be competing for implementation so Mike did it as the contracting representative on the project. Mike feels the $500K is a realistic amount for getting the work done in a reasonable amount of time.

Project D.5 Grand Canyon National Park Service Cost-Share Proposal. Mike said this budget item is tied to the cost sharing project sponsored by himself and Lisa Leap. They supported the Park Service for a combined treatment plan and monitoring protocol with GCMRC last year for $137,500 and **this year it is for $142,000**. **In exchange for that, they would get 1520 hours toward the Reclamation treatment plan as Park Service labor, 1360 hours toward GCMRC monitoring protocol development, $86,000 and**

related monitoring activities, $5,000 toward completion of a historic preservation plan. In addition to that, they're spending $261,180 per year on treatment for ten sites in Grand Canyon that were once part of Reclamation's 106 responsibility. The funding request of $142,000 still includes GCMRC's budget line item. GCMRC initially had $69,000 but Mike thought it had gone to $70,000 to support Helen's work on protocol development. This issue was discussed at the CRAHG and Mike said he has no objections if GCMRC wants to administer the Park Service portion, but he would continue to administer the requested amount for the treatment plan support.

Mike said $75,000 was allocated for treatment plan consultation in FY07. The Park Service volunteered to actually run the consultation trip and provide the funding for that as well as initial funding support in organizing the consultation. That meant that he could had to obligate the $75,000 or it would go into the Experiment Flow Fund. He opted to write a modification to the existing Park Service contract and added the $75K to it. With GCMRC's contribution, to the Park Service, they can fund the program in whole and begin work on the treatment plan. One of the main benefits to the treatment plan is a reduction in what they want to outsource. Given this is the first year, Mike thinks they could do the work for the $300,000 which is already in the budget.

Another issue that came up at the CRAHG and BAHG meetings was that some of the stakeholders are concerned about what is being excavated in the treatment plan. Mike said he is operating under the National Historic Preservation Act, Section 106, requirements. They negotiated an APE (area of potential effect) 161 sites with the SHPO as well as with the Park Service. It was a compromise after ten years of people arguing over what the APE really was so the treatment plan never got started. They agreed upon this even though some of the sites are fairly high and dry and will not be directly impacted but they are sites which were actively eroding according to the Park Service's monitoring plan. That's the NHPA definition of what the real task is. However, some stakeholders won't support because some of the sites to be treated are not directly affected by dam operations. To counter that argument, Mike said in FY08 he proposes doing treatment and excavation on sites that are well within the area of direct dam effects and are unequivocably related to dam operations beginning with the site in Glen Canyon that according to the project geomorphologist will be destroyed by the next BHBF.

***Q**: I don't see a $70,000 line in the budget table. (Kaplinski)*
***A**: The remaining money is within the cultural R&D fund, goal 11. (Fairley)*
***Q**: I know there were some unobligated funds that might have been able to be carried over. (Barger)*
***A**:. We had performance issues with the Navajo Nation Archeological Department so I could not obligate the second $120,000. If I don't obligate power revenues, they go into the Experimental Flow Fund. (Berry)*
***Q**: The original proposal was for $300K and then there was a request by the CRAHG to increase that to $500K so we still have a $200K difference. (Kubly)*
***A**: No, only $100K because of the Park Service deal. (Berry)*

Project Title and ID: BIO 1.R4.8: Impacts of Various Flow Regimes on the Aquatic Food Base. Mary Barger said that when GCMRC proposed the foodbase program, Western had recommended some modifications in order to analyze the effects of fluctuating flows on drift. They offered some modifications to GCMRC and it just didn't work out. Western started working with Argonne National Labs and Ted Kennedy at GCMRC to add some changes to their foodbase monitoring program because right now their foodbase monitoring does monthly monitoring and Western felt it needed to be focused on more fluctuations or more steady to see what the differences were. They worked with Ted Kennedy on that and came up with a proposal. She distributed a handout (***Attachment 12b***).

Mary explained that originally Western proposed three locations to collect the data: at Diamond, the LCR, and Glen Canyon. In talking with the BAHG and others, they agreed to reduce that effort to two sites so that a river trip wouldn't be required thereby reducing the amount significantly. **As such, they came up with a budget requirement of $72,700 to do that work**. If the proposal goes through, Western will work with GCMRC making modifications and proceed with the work. A foodbase PEP is going to be done in a couple of years but Western would really like to have some of that work done ahead of time so that it will be more

useful for future monitoring. **In looking at the bottom line in GCMRC's budget, Mary said there is $79,000 on the table (line 176) and she is suggesting the $72,700 be taken from that amount.**

***Q**: There is a project that's BIO1R308, Diet Drift and Predation Data Analysis that has in it research information need. How is the value of availability of drift as a food source for HBC changed with the implementation with the Record of Decision? I'm just trying to get at how much overlap there is between what you're requesting to do and what's being done on this ongoing project. (Kubly)*
***A**: The project you're describing was for FY07 only. It was to bring together the stomach data. When many of the fish were moved as part of the mechanical removal project, stomachs were taken for diet analysis. Most of the data had been entered but not analyzed so we had a one-year only project to get that work done. The report isn't going to be available until the spring of 08 but there is no 08 budget for that. (Andersen)*
***Q**: It says in here diet and drifting organic matter were both sampled. Are they not being analyzed? (Kubly)*
***A**: Again, that was in FY07 so that work is underway now. (Andersen)*
***C**: The data was collected in 2002 and 2003 so as far as I understand it, this is an analysis of data collected in those two years. (Capron)*
***Q**: Yes, but we're going to have similar flows in the next year so is the drift expected to be comparable? (Kubly)*
***A**: If the flows are the same, that's pretty likely. It's two very different techniques. The project you're describing is looking at stomach contents and this is more sampling of the drift. (Andersen)*
***C**: They're complementary. The new project is primary productivity, algae production and then secondary drift but the other project that we were talking about, R3, is looking at what eventually ends up in the stomachs of the fish so they're complementary but R3 isn't going to be continued as far as the sampling goes. (Capron)*
***R**: That's right. And I think there were drift samples taken as part of that too. (Andersne)*
***C**: There were drift samples plus stomach samples so it was going to compare what turns up in stomachs versus what's available for those 02 and 03. (Andersen)*
***Q**: Comparing 2002 and 2003 to now, how can we expect them to be the same? We've had several things happen in that time frame. We had the flood in 2004 and we know that even though GCMRC didn't study it, we're pretty sure there were tremendous aquatic foodbase consequences from that flood. Things have changed tremendously since then. (Steffen)*
***A**: We're not talking about making comparisons back to 02 and 03. This R3 was looking at just opportunistically looking at the data that they collected back then and trying to make some conclusions from those couple of years. What we're talking about in this new proposal is basically taking the foodbase proposal that GCMRC has put forward and adding an additional capability to that foodbase work that's going to happen in the future to look at smaller time scales so they'll be sampling monthly. We basically want them to around that same monthly sample do a 24-hour sampling of what's going on to look at impacts of flow regimes on the foodbase, algae production, and drift. So if you don't put forward our proposal, what you're going to end up with is monthly sampling views of foodbase and drift. If you vote and implement this one, you'll also get in addition to that a view of a smaller time frame and potentially the impacts of flow regimes on that drift. (Capron)*
***Q**: Question about whether or not these proposals being put forth in here have any sort of external review going on with them. Most proposals that come into the program have a fairly extensive review process, external peer review. (Kaplinski)*
***A**: There were external contributions to WAPA's proposal in the sense that Argonne National Labs drafted this so there has been an outside party contributing to it but the final proposal hasn't been sent out to a university professor or USGS. (Andersen)*
***C**: Bill Leibfried participated and so did Mark Steffen and Bill Persons so we did have a group of people that took a look at this. (Barger)*
***Q**: So you had an external group actually review this? (Kaplinski)*
***A**: They helped put it together. (Barger)*
***C**: Right, so it hasn't been reviewed. (Kaplinski)*
***Q**: The proposal is to work within ROD flows, MLFF flows to make these comparisons, is that right? (Henderson)*
***A**: Yes. (Capron)*
***A**: The main problem is that if you're just sampling monthly, you're just going to get a generalized view throughout the year of what primary production and drift might be in the system that you can sample on a shorter time frame, you can get an idea of what these other factors, how they're playing into drift and production in the system. And so our question is what is the impact of changing flows on drift. And so we're just adding this capability of looking at a shorter time frame period to the project that's already going to be going forward. (Capron)*
***Q**: Probably just want to look at the proposed time frame. This is supposed to start in 08 and end in 2010 so if different flows were implemented, it would only be for that final year is what I'm expecting. I thought it was a 2-year study, yes, so the October 1, 2007 – Sept 30, 2010, is that correct? (Andersen)*

***A**: Yes, to match with the last two years of your foodbase monitoring. (Barger)*
***Q**: Fiscal year 09? (Andersen)*
***Q**: So is that a 3-year commitment of funds? (Yeatts)*
***C**: We talked at this at the BAHG and thought it was two years. (Andersen)*
***Q**: Well, your foodbase says Sept. 2005 to Sept 2009. Has that been going on since 05? (Capron)*
***A**: Yes. (Andersen)*
***Q**: As proposed here? (Capron)*
***A**: Yes (Andersen)*
***Q**: And is going to end in 09? (Capron)*
***A**: Yes, I expect that's through Sept 30, 2009. (Andersen)*
***C**: So our expectation will be that this would be hand in hand with your foodbase program so it would end in 09. It wouldn't be independent, it would be dependent. (Capron)*
***Q**: So this will end on the first day of FY 2010? (Andersen)*
***A**: Right. (Barger)*
***Q**: So I think that addresses your question, Norm, because it limits the amount of flow variability is my perception. Would you agree? (Andersen)*
***C**: The reason I'm doing this is because our proposal is not done. It's to work with GCMRC subsequent to approval by the TWG to move it forward and if GCMRC identifies that some new experiments related to this would be necessary in order to complete the understanding of aquatic foodbase and its relationship to drift, then that would be proposed. So I don't disagree with Shane that it sits on top of flows that are already occurring under either the MLFF for the LTEP but if there are many experiments that would be required, that is by many experiments changes in flows that would be required to complete the study, then those would be identified by GCMRC and they would then proposed. (Palmer)*
***C**: Our understanding is to do this under ROD. (Andersen)*
***C**: You know one day of flat flows is under ROD so what I'm saying that so many experiments are allowed within the ROD and those haven't been identified because we agreed with you guys that if the TWG determined this was a priority item and moved it forward, that it would be revised by GCMRC in order to fill its purpose. (Palmer)*
***R**: We talked with Ted about that and so we were trying to find a good match and so we agreed to talk Ted after it was approved to make sure it was more effective but there would be nothing out of ROD. (Barger)*

Dennis: Maybe in the interest of time, we can move onto the last project.

Project and ID: B.x. Facilitation Contract. Larry said the concept for having a facilitator was to greatly help the process. Even those there is a TWG Chair, having someone to assume the responsibilities for coordinating the meeting seemed like a very good idea and one that Bill Persons had worked out. Bill is of the mindset that the TWG needs to get the meetings cleaned up and trimmed down. A professional facilitator might help make them more efficient.

Dennis said the associated funding proposal is to move the funding of the TWG chair to the facilitator at an equivalent amount which is $23,521 in FY08 and continue to have a TWG chair but have an uncompensated TWG chair. The only thing that I would add to this is hearing the desire to have a facilitator engaged in ad hoc group deliberations, that this is likely not a sufficient amount of funding if the TWG wants both. Dennis said the TWG chair's salary is based on the expectation of six meetings a year. He added that Mike Berry's experience in getting a facilitator for a 2-day CRAHG meeting was about $5,000. Dennis also said that in reading the AMWG Charter, the AMWG may not agree with the TWG doing this so will need to be brought up to them at their next meeting.

OPEN DISCUSSION ON BUDGET ISSUES

Kurt said the group would have about 45 minutes to discuss the budget issues and then 30 minutes to develop a motion.

Request for $10K to Chute Falls, Line Item 61. Glen Knowles said that Pam Sponholtz asked him if he could get an additional $10K to complete the monitoring work but also move about 500 fish upstream. The money would be for helicopter support primarily and logistics. **He proposed taking $10K from the Experimental Flow Fund so they'd be adding $10K to $79,652 to Line 61**.

Shortfall for Sediment Goal 8. Matt Kaplinski pointed out that this project is short $99,323. Ted explained that this is a different matter in that this is one of the proposed elements of that proposed recommendation for long term monitoring of sediment. In FY07 the budget for Goal 8 was zero. There were questions raised last year and why nothing was going into Goal 8 and GCMRC said they were still in the process of going through peer review and trying to finalize a recommendation on long-term monitoring protocols. As they developed the FY08 work plan, Ted suggested putting in $200K into that line item as nothing more than a placeholder. With the budget process as tight as it was, they ended up zeroing it out initially because they couldn't specify exactly what the need was and then later John, in balancing the books, identified there was at least $95,000 that could be put in there simply as a placeholder. The disparity here is that they didn't have a placeholder of $200K because they could only find $95K. Ted said this is a long-term monitoring activity that isn't currently sufficiently funded to proceed ahead with long-term monitoring in 08 and they need about another $100,000 to do it effectively. It's a 30-mile reach that needs to be re-mapped. Dr. Topping added that this is one aspect that the sed tran project which was identified as providing the ability see what's really happening with the long-term sediment budget. This would be the first installment of that. This is also the item they would recommend deferring during years of BHBFs. It would cost $200,000 to do it and if a BHBF were done, then the money could be rolled into something else or the experimental fund.

John said his dilemma on this issue is that they're presenting a proposal while the TWG has yet to adopt a plan. He concurs with Ted that it doesn't make sense to fund it partially. It should either be fully funded at $195K or probably defer it until FY09 after the TWG has had a chance to look at it.

John said that there were a couple of items that were in the MRP that they didn't have funding to implement. One was the **hiring of an ecosystem scientist to help better integrate a lot of the work that we're doing** and **also taking the conceptual ecosystem model that was developed back in 2000 and basically updating that with a lot of new information that's been collected and bring that into the program**. He said the BAHG did not address those issues.

Amy said she would like to see some footnotes added to the Bureau of Reclamation's portion of the budget: 1) Travel reimbursement cost savings by not having her or her alternate have to travel to AMWG/TWG meetings; 2) Cost savings for holding the AMWG/TWG meetings at BIA; 3) Under the tribal consultation, the sole source contracts. Since five Interior agencies (USGS, Park Service, Reclamation, FWS, and BIA) are contributing dollars for the tribal consultation on a yearly basis, she feels the other DOI agencies should have the opportunity to review/receive copies of those contracts. She also addressed cost savings and where money could be utilized if the AMP Effectiveness Workshop weren't going to be held and asked John how much the science symposiums typically cost.

John responded that the **AMP Effectiveness Workshop** is currently on hold. As for the science symposium, there has been some discussion about charging a modest registration fee to offset some of the costs. Normally the symposium runs about $25,000. Ted said the last symposium cost over $50K because of a lot of logistics costs and travel costs for speakers.

John said he has also been talking to people in the Upper Colorado River Recovery Program, the San Juan Program, and the Lower Colorado Program about maybe trying to do a **joint symposium with GCMRC** in 2008 where they would all contribute funds and do some kind of cross-basin exchange of information. This is something that would be done on a periodic basis. He asked if that was worth pursuing.

Norm asked J.D. to explain the totals in columns H and G on page 7 because he didn't feel the totals were correct. J.D. said that lines G thru 0 are a projection of what they say GCMRC is going to need. Both J.D. and Helen explained the totals to Norm.

Budget Check. Kurt said it looks like there are at least six additional projects worth consideration for the FY08 workplan and budget and there isn't sufficient funding to deal with all those additional projects plus the

08 workplan and budget that's been proposed by the Bureau and GCMRC. He asked if there were any additional questions before asking the TWG to consider making a recommendation for the AMWG.

- Glen asked about the concept of a **hydrograph and the need to fund a BHBF in FY08**.
- **There is $46,800 now available** since the AMP Effectiveness Workshop is postponed.
- Mary Barger said as the chair of the CRAHG**, there was series of questions** they wanted Helen to answer in order to make a recommendation to the BAHG. Mary said she didn't bring the questions with her so Helen couldn't answer their concerns.
- Mary also said that for future budgets that the $1 million (line 157, "estimated cost share expense required by USGS policy), does reduce the burden rate that is shown project by project and Western had proposed that they should not do that and separate out the $1 million, **rather they should show full burden for every project and then subtract the $1 million at the bottom as a bottom line** so that everyone can see the full cost of every project rather than having it reduced. Western will continue to request GCMRC do that in their portion of the budget for future years.

Budget Summary. Dennis summarized the following proposed projects:

- The facilitation proposal doesn't require additional funding. It may not fully fund a facilitator but we could in the first year, as an experiment, use what we have. I propose that we pick that up and move it over here and lock it in.
- The treatment plan funding. Mike has indicated he'd be willing to work with the $300,000 but that allows us to pick that one up and put it over here, right? It's not an issue. We're not asking for more than $300,000.
- The Park Service funding, as we indicated, is taken care of by his discovery of some funds that he can move in conjunction with what's already in the budget so pick that up and move it over here.
- That leaves us with funding a sediment project that Ted has now identified what he believes his real costs are.
- Funding the drift project. You don't have enough money to do both. I think I hear GCMRC saying it's not a partial project, right? It doesn't work to fund it in part, if that's correct. So what I'm trying to do is narrow this down to now we're down to the point where we have two different projects that are competing for funding here and let's decide what we're going to do and try to move on.

Based on the above, Dennis said the competition for dollars is between the drift and the sediment projects, and $10K for Chute Falls. As such, there is only $79,022 available.

John asked Mary if it wasn't the recommendation of the BAHG that the **foodbase study**, if elected to do, would be funded out of the Experimental Flow Fund. Mary said that she reserved the right to switch where to take those funds but at the time of the BAHG, she opted for taking from the Experimental Flow Fund. However, she also told the BAHG she would look for another more reasonable option which was to take from the FY08 carryover vs. the Experimental Flow Fund

John said he didn't think it was such a bad idea is that what she is proposing falls under experimental planning, and it made sense to him fund the project out of that Experimental Flow Fund. He said if it was going to be done, then it should be done right and said they should probably drop the Diamond site. He thought the biggest effects would be seen at Lees Ferry where you have the highest amount of drift and he thought it would be nice to know how that translates downstream to where HBC are.

Treatment Plan Mike Yeatts said he would 1) push for the entire amount of funding to go to the treatment plan and certainly one option is to take the $100,000 out of the Experimental Flow Fund because it was his understanding that there was $100K that was directly related to treatment from the sites up in Glen Canyon, but because it couldn't be allocated, by default it ended up in the Experimental Flow Fund so that was money that was directed towards that in past years. 2) Three of the five tribes have completed what was necessary to get essentially the 07 funding for that. Two tribes will not complete the work so $50K that won't be allocated in 07 but carryover and by default goes into the Experimental Flow Fund. The remaining three

tribes could potentially get the $25,000. Mike Berry added that he has a drop dead date of July 13 to submit any simplified acquisition proposals. He thought that perhaps Hualapai and Hopi may get their paperwork in on time, but that still leaves $75K that they're going to lose unless it gets obligated.

Kurt tried to clarify where the budget issues were:

- There's a recommendation to have the treatment plan remain at $300K and make it a part of the budget.
- There's another recommendation to see the additional $100K that would raise it to $500K and have that money come from the Experimental Flow Fund because that money was originally slated for data recovery but it was moved over into the Experimental Flow Fund and it wasn't expended.
- There's a motion to fund the facilitator proposal and move that over into the budget.
- The foodbase comes from Line 176 as an additional for $79,000.

Facilitator Comment: Cliff said he didn't like the idea of funding a facilitator at the expense of not funding the TWG chair. He recalled going back several years when the program agonized long and hard on funding a TWG chair. He feels the money for a facilitator can come from another source.

Foodbase. Mary said she just spoke with Matthew and suggested GCMRC support the full amount that goes back up to $132K for the foodbase so that would go from $72,700 to $132K because he agrees with John that they're getting the drift information at the LCR and it might be important understanding the needs for the HBC. John said he was pretty confident that the AMP Effectiveness Workshop wasn't going to be held in FY07 so that frees up $46K and that it probably won't be done in FY08 so that would free up another $29K.

TIME CHECK: Kurt said the group had 15 minutes to make a decision on the projects and make a recommendation to the AMWG and BHBF in FY08. He asked for "soft" votes on the following:

1. Facilitator for TWG, $23,521 (funds would come from TWG chair funding) to keep in FY08 budget
   Voting Results: Yes = 6 **No = 9** Abstaining = 2

2. Project Title and ID: D.4. Glen Canyon and Grand Canyon Treatment Plan Implementation and Project and ID: D.5. Grand Canyon National Park Service Cost-Share Proposal
   Mike Berry would like to see the funds increased to $500K for D4, with $100K coming from the Experimental Flow Fund. Dennis said the so-called funds in the Experimental Flow Fund are really remaining in the Basin Fund. They don't come out of the Basin Fund until they're obligated. To some of the stakeholders, that's important and he wanted to make that clarification. Mike said it's important to get the $500K in a relatively short time period otherwise you're going to get stung on CPI on the other end.
   Voting Results: Yes = 2 **No = 12** Abstaining = 2
   Results: stays at $300K

3. Foodbase study. Mary Barger moved the money ($72,700) come from line 176 ($79,022), leaving $6,322 remaining.
   Voting Results: **Yes = 11** No = 3 Abstaining = 2
   Comment: The amount to be funded was $72,700

4. Add $10K for Chute Falls (line 61). This was withdrawn as GCMRC will find the money if needed.

5. Sediment Shortfall of $99,323 (line 95). Actual need for this project is $194,323. There is $95,000 already in the budget as a placeholder, so GCMRC still needs $99,323. The group considered two options:

Option A: Shortfall, that the sediment study doesn't get fully funded.

$ 95,000 = already in the budget as a placeholder

$ 6,322 = difference between the $79K and the $72,700 for foodbase
$ 46,800 = AMP Effectiveness Workshop (FY07)
$ 29,000 = AMP Effectiveness Workshop (FY08)
$177,122 = short by 15K

194,323
-177,122
17,201 shortfall

Option B: Deal with shortfall by taking funds out of the Experimental Flow Fund.

Budget Motion: The TWG moves to remand both budget options to the AMWG.
Motion seconded.
Voting Results: Yes = 16 No = 0 Abstaining = 1

Amy offered to make a motion but Mary said as the foodbase proponent, she proposed taking out of the sediment money and the other Experimental Flow Fund.

Kurt said members were beginning to leave and there wouldn't be a quorum to pass a motion.

Dennis said there are two possible paths that have been identified. He advocated to remand both options to the AMWG and leave the decision up to them.

Adjourned: 3:20 p.m.

Glen Canyon Dam Technical Work Group Conference Call
July 23, 2007

Conducting: Kurt Dongoske, Chairperson **Convened:** 9:42 a.m.

Committee Members Present:

Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS
Amy Heuslein, BIA
Robert King, UDWR
Glen Knowles, USFWS
Dennis Kubly, USBR
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
John O'Brien, Grand Canyon River Guides
Don Ostler, UCRC
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
John Shields, WY State Engr. Office
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
Charley Bulletts, Kaibab Band of Paiute Indians
Kerry Christensen, Hualapai Tribe
Rick Johnson, Grand Canyon Trust
Christopher Harris, Colo. River Board of California

Alternates Present: **For**:

Shane Capron Mary Barger, WAPA

Committee Members Absent:

Steven Begay, Navajo Nation
Charley Bulletts, Kaibab Band of Paiute Indians
Kerry Christensen, Hualapai Tribe
Rick Johnson, Grand Canyon Trust
Christopher Harris, Colo. River Board of California

Interested Persons:

Matthew Andersen, GCRMC/USGS
Helen Fairley, GCRMC/USGS
John Hamill, GCRMC/USGS
J.D. Kite, GCMRC/USGS

Meeting Recorder: Linda Whetton, USBR

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

Kurt said at the meeting held on June 26, the final vote was taken in haste and he wanted to make sure that the TWG knew what they had recommended to the AMWG or if they wanted to discuss a different recommendation. The TWG also didn't have time to discuss what the 08 hydrograph would look like and a BHBF in that hydrograph. He said some folks thought the BHBF was off the table until the Science Plan had been thoroughly reviewed and sent to AMWG and to Secretary with approval to implement. If the DFCAHG comes back with a BHBF plan in October, the AMWG will determine at their meeting in December whether to forward the recommendation to the Secretary.

Kurt recapped the following budget items discussed at the June 25-26, 2007, meeting:

1. Facilitator for TWG, $23,521 (funds would come from TWG chair funding) to keep in FY08 budget
   Voting Results: Yes = 6 **No = 9** Abstaining = 2

2. Project Title and ID: D.4. Glen Canyon and Grand Canyon Treatment Plan Implementation and Project and ID: D.5. Grand Canyon National Park Service Cost-Share Proposal
   Mike Berry would like to see the funds increased to $500K for D4, with $100K coming from the Experimental Flow Fund. Dennis said the so-called funds in the Experimental Flow Fund are really remaining in the Basin Fund. They don't come out of the Basin Fund until they're obligated. To some of the stakeholders, that's important and he wanted to make that clarification. Mike said it's important to get the $500K in a relatively short time period otherwise you're going to get stung on CPI on the other end.
   Voting Results: Yes = 2 **No = 12** Abstaining = 2
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   Comment: The amount to be funded was $72,700

4. Add $10K for Chute Falls (line 61). This was withdrawn as GCMRC will find the money if needed.

5. Sediment Shortfall of $99,323 (line 95). Actual need for this project is $194,323. There is $95,000 already in the budget as a placeholder, so GCMRC still needs $99,323. The group considered two options:

Option A: Shortfall, that the sediment study doesn't get fully funded.

$ 95,000 = already in the budget as a placeholder
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194,323
-177,122
17,201 shortfall

Option B: Deal with shortfall by taking funds out of the Experimental Flow Fund.

Budget Motion: The TWG moves to remand both budget options to the AMWG.
Motion seconded.
Voting Results: Yes = 16 No = 0 Abstaining = 1

Kurt answered questions from the members regarding factors leading to the above budget breakdowns. John said he thought GCMRC could possibly fund the sediment shortfall out of his administrative budget and could have some 07 carryover and it may be enough money to cover the sediment shortfall. Kurt asked the group if they wanted to make a motion regarding the FY08 budget and workplan acknowledging that GMCRC will dedicate that funding in the sediment program and not punt two options to the AMWG. He asked were comfortable with passing a new motion.

Bill Davis said both options were remanded on whether funds should come out of the EFF and Option A was modified. He felt the group needed to figure out how to do Option B because it a policy issue.

Bill Persons said he wasn't entirely comfortable withdrawing a motion made earlier. He feels that the AMWG needs to get a sense of deliberations the TWG went through. Don said he didn't think the TWG took action because they didn't have sufficient time to debate it.

Shane Capron proposed the following motion:

Motion: Move that the TWG strike the recommendation #5 from the June 25-26 Summary and not remand the sediment proposal to the AMWG and fund the sediment budget as described under Option A under #5 with the shortfall being funded by carryover funds from GCMRC.
Motion seconded by Norm.

A roll call vote was taken:

Motion: Move that the TWG strike the recommendation #5 from the June 25-26 Summary and not remand the sediment proposal to the AMWG and move to fund the sediment budget as described under Option A under #5 with the shortfall being funded by carryover funds from GCMRC. Motion seconded by Norm Henderson		
Representative	**Stakeholder Entity**	**Vote**
Bill Persons / Scott Rogers	Arizona Game and Fish Department	n
Amy Heuslein / Garry Cantley	Bureau of Indian Affairs	a
Dennis Kubly / Randy Peterson	Bureau of Reclamation	y
Mike Yeatts	Hopi Tribe	y
Kerry Christensen	Hualapai Tribe	absent
Ken McMullen / Jan Balsom	National Park Service - Grand Canyon	y
Norm Henderson / Chris Kincaid	National Park Service - GLNRA	y
Steven Begay	Navajo Nation	absent
Jonathan Damp	Pueblo of Zuni (latecomer)	abent
VACANT	San Juan Southern Paiute Tribe	
Charley Bulletts / 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	absent
Larry Stevens	Grand Canyon Wildlands Council (latecomer)	absent
Mark Steffen / Tim Steffen	Federation of Fly Fishers	y
John O'Brien / Andre Potochnik	Grand Canyon River Guides	y
Bill Werner	Arizona	n
Christopher Harris	California	absent
Randy Seaholm	Colorado (latecomer)	absent
Phil Lehr	Nevada	y
Jay Groseclose / **Don Ostler**	New Mexico (Jay = latecomer)	y
Robert King	Utah	y
John Shields / Don Ostler	Wyoming	y
Bill Davis	Colorado River Energy Distributors Association	y
Cliff Barrett	Utah Assoc. Municipal Power Systems (latecomer)	absent
	Total Yes	**13**
	Total No	**2**
	Total Abstain	**1**
	Total Voting	**16**

CRAHG Concern. Shane said there was a concern about the cultural budget (line #108). Helen got back to the CRAHG on Sunday night with response and questions. There hasn't been time for a response to that and WAPA would like a recommendation from the CRAHG with a recommendation to the TWG before it will be moved to the AMWG. Kurt said the issue was done and dealt with at the TWG meeting. Shane said it wasn't specified at the meeting and they want to hear something back from the CRAHG. Kurt asked if there were any CRAHG members on the phone call. Mike Yeatts was but said he was getting more confused. He got the impression they (CRAHG) were approving the budget but there are some specific questions within the cultural budget, more technical questions than budget questions. He wasn't sure if there would be time to resolve before completing a budget. Helen said that Mary sent out a list of dozen questions in May and so it took awhile for her to respond but she did respond and what she got back from Mary today was a note that they had different questions so Helen was presented with new questions. She said that none of what she provided is going to change what's in the budget.

Addressing the process, Dennis said the CRAHG provided input to the BAHG some time ago. There were four projects promoted by members. He said it's difficult to go back to what the CRAHG had in there so he suggested the TWG could make a recommendation and the BAHG and CRAHG could work as a team to resolve how the money is spent.

Ken said the TWG had the discussion at the last meeting and the budget went through finalized so he doesn't feel comfortable revisiting the discussion again. The funding was allowed and approved. Allowing them to work it out afterwards shouldn't prevent the TWG from moving forward on the 08 budget.

WY08 Hydrograph: Kurt said GCMRC is recommending continuation of MLFF for WY08 with the option for a conducting a BHBF test in the late winter/early spring of 2008 if approved by the Secretary of the Interior.

The estimated cost for implementing all the studies included in the draft BHBF Science Plan is $1.4M in year 1 and $525K in year 2. If the TWG is serious about a BHBF, then they need to set some priorities and allow sufficient time to complete needed compliance and logistical requirement. Accordingly the TWG may want to recommend that the AMWG hold a conference call in early November and prepare draft motion language for the AMWG to consider in forwarding a recommendation to the Secretary of the Interior.rather than waiting until the next regularly scheduled meeting in December 2007 or January 2008.

Don asked if there was $1.9 million in the Experimental Flow Fund. Dennis said the LTEP EIS will likely use some of that money so it may be reduced. He said it's a hard call because the ROD will be in December 2008. There would be a need for some of those funds. The BHBFs are likely to be a part of any alternatives.

Kurt said he heard some concerns about the issues raised about the science plan but that those issues might be resolved. He asked if there were still concerns. John O'Brien said he felt the BHBF was a policy decision best left to the AMWG to make. Norm said it had both policy and technical issues and it should be sent forward to the AMWG.

Ken proposed the following motion:
Motion: Recommend the continuation of MLFF for another year based on a segway to a BHBF Plan if the sediment trigger is met and the Secretary concurs.

The TWG continued to discuss and made several iterations to the motion.

Concerns:

- There's a good possibility if the shortage is completed on time and the AOP would be in major revision and these changes could be incorporated into it.
- That range in the AOP has to be in there.

- It's not just sediment for a BHBF but consider other resources as well. Hope the science plan takes that into consideration. Not sure it's a policy or technical issue. But has to be dealt with.
- Need for additional NEPA.
- Not sure we want to make any recommendation on a BHBF until we know what the LTEP is going to be.
- Concerned about not having a Science Plan in place
- Don't think we should be throwing out the BHBF on policy concerns
- Don't think we need all the answers to recommend a science plan based on what we have. We know what it entails. And we certainly have the information from the November one that we can work off of.
- Couple budget language onto the hydrograph motion

A roll call vote was taken.

Motion: The TWG recommends the FY08 budget and workplan in the amount of $ 9,485,056 as adopted by the TWG on July 23, 2007. The TWG is recommending continuation of MLFF for WY08 with further deliberation and a recommendation by the TWG for or against conducting a BHBF test in 2008.
Motion seconded by Bill Werner

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	y
Mike Yeatts	Hopi Tribe	y
Kerry Christensen	Hualapai Tribe	absent
Ken McMullen / Jan Balsom	National Park Service - Grand Canyon	y
Norm Henderson / Chris Kincaid	National Park Service - GLNRA	y
Steven Begay	Navajo Nation	absent
Jonathan Damp	Pueblo of Zuni	n
VACANT	San Juan Southern Paiute Tribe	
Charley Bulletts / LeAnn Skrzynski	Kaibab Band of Paiute Indians	absent
Glen Knowles	U.S. Fish and Wildlife Service	y
Mary Barger/**Shane Capron**	Western Area Power Administration (DOE)	y
Rick Johnson / Nikolai Ramsey	Grand Canyon Trust	absent
Larry Stevens	Grand Canyon Wildlands Council	absent
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	y
	Total Yes	**18**
	Total No	**1**
	Total Abstain	**0**
	Total Voting	**19**

Adjourned: 4:31 p.m.

General Key to Adaptive Management Program Acronyms

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

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

Updated: 7/27/07