Glen Canyon Dam Technical Work Group
FINAL Meeting Minutes
May 18, 2005

**Conducting**: Norm Henderson, Chairman

**Committee Members Present**:

Mary Barger, WAPA
Kerry Christensen, Hualapai Tribe
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Lloyd Greiner, UAMPS
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
John O'Brien, GCRG
Chris Kincaid, NPS/GLCA
Dennis Kubly, USBR
Glen Knowles, USFWS
Phillip S. Lehr, Colo. River Comm./NV
Ken McMullen, NPS/GCNP
Bill Persons, AGFD
D. Randolph Seaholm, CWCB
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Michael Yeatts, The Hopi Tribe

**Committee Members Absent**:

Steven Begay, Navajo Nation
Brenda Drye, So. Paiute Consortium
Robert King, UDWR
Christopher Harris, CRB/CA
Don Ostler, UCRC
John Shields, WY State Engineers Office
Bill Werner, ADWR
John Whipple, NM Interstate Stream Comm.

**Alternates Present:** **For:**

**Interested Persons**:

Gary Burton, WAPA
Lew Coggins, USGS/GCMRC
Kurt Dongoske, CREDA
Helen Fairley, USGS/GCMRC
Pam & Dave Garrett, $M^3$Research
Dave Harpman, USBR/Denver Office
Susan Hueftle, USGS/GCMRC
Ted Kennedy, USGS/GCMRC
Josh Korman, Ecometric
Mike Liszewski, USGS/GCMRC
Mark McKinstry, USBR
Ted Melis, USGS/GCMRC
Anthony Miller, Colo. River Comm./NV
Barbara Ralston, USGS/GCMRC
Tim Steffen, Federation of Fly Fishers
Linda Whetton, USBR

Meeting Recorder: Linda Whetton, USBR

**Convened**: 10 a.m.

**Welcome and Administrative Items**. The chairman welcomed the members, alternates, and interested persons. A quorum was established and attendance sheets distributed. Norm said that Dave Garrett's presentation on integration planning would be moved to the first item today as it will set the stage for work to be done in the AMP. He also informed the TWG that Jeff Lovich resigned as GCMRC Chief on April 1, 2005. Ted Melis is currently the acting chief for 120 days. A vacancy announcement has been distributed. Jeff will complete the SCORE Report.

**Review of Action items**:

**Planning Documents Integration.** Dr. Dave Garrett distributed copies of his PowerPoint presentation (***Attachment 1***) and said a letter was prepared along with an Executive Summary on a prospectus for what the Science Planning Group (SPG) will be doing. Those documents can't be released today until vetted through the AMWG. Once the Secretary's Designee approves, it will be e-mailed to the TWG. He said the integration would involve four major plans: (1) a Strategic Science Plan, being developed by GCMRC, (2) a Core Monitoring Plan, (3) a Research Plan, and (4) the 2007-08 Annual Plan. Dr. Garrett the said the SPG will meet in Phoenix on June 22-24, 2005, and future meeting dates will need to be established.

*Questions/Concerns:*

- *I applaud the science advisors for developing the comprehensive approach. I see management coming in at the end but don't see a strong frontend input from the managers or managing agencies so you have a clear integration and acknowledgement of existing management programs. The agencies have ongoing needs and work that contributes to the AMP. (Kincaid)*
- *Doesn't AMWG have to have approval? What is GCMRC's job? Where is the $150K going to come from? This seems like a lot of behind the scenes maneuvering. (Christensen)*
- *This is an adaptive management process. Is there some way to ensure we don't go backwards and revisit things? (Seaholm)*

**MOTION**: Move the TWG recommend approval of the planning process outlined by Dave Garrett and also formally advise the AMWG of this process.
Motion seconded.
Discussion.
Voting Results: Yes = 13 No = 0 Abstaining = 4
Motion passed.
Lloyd Greiner: At this point in time I can't vote because this is additional effort that CREDA representatives would have to participate in and because CREDA is facing a financial crunch, we've been asked to pass on participating in some activities.
Kerry Christensen: Abstained.
Mike Yeatts: This item was not identified as an issue we were going to vote on in our normal procedures and this is the first time I've seen this and we didn't have a chance to weigh in. This will be an additional workload on all the people and we currently don't have any money. I would like to talk to my AMWG representative about this.
Bill Davis: I'm abstaining because these would be additional costs for CREDA. This was given originally as a GCMRC responsibility and some of that work is now falling back onto the TWG and this science group. CREDA would certainly like to participate but we've been told CREDA doesn't have the dollars to do this and we should not be participants. I can't say whether Leslie would support this or not.

**Knowledge Assessment in Support of Experimental Planning.** Ted Melis gave a brief overview of the next steps in the experimental process and moving toward embracing the "hybrid" approach. He gave a PowerPoint presentation (***Attachment 2***).

**Summary on Hydropower Economics Associated with Experimental Flows**. Dave Harpman said his presentation would focus on hydropower and also the cause and effect relationships in terms of hydropower. He gave a PowerPoint presentation (***Attachment 3***).

*Questions & Answers:*

***Q**: Modeling of economic return from power production seems to be a very complicated process and sometimes takes many months to actually come to grips with how much a flow experiment costs. Are those models improving or what's the status of that capability? (Stevens)*
***A**: The models are improving and as they do so amazingly enough they get more complicated so it takes longer to actually look at things and the real issues are data issues. It sometimes takes months before we obtain the data we might require.*
***Q**: For each of our experimental flows in our compliance documents, how many post or pre estimates are after the fact?*
***A**: I've only worked on one which was in 1996. As a sort of an entrée, we are actually involved in a fairly large scale study from 1990 thru 2025 of past impacts to hydropower and also the projected future of that based on what we know. The idea is to develop a comprehensive vision of what the cost to power users and other beneficiaries is as a result of environmental experiments and constraints. This won't be included in the SCORE Report.*
***Q**: Do you report on the annual revenue that the dam produces? (Persons)*
***A**: The key issue isn't really what did happen because we know that pretty well but what would have happened in the absence of an experiment or what would've happened in the absence of the modified low fluctuating flow. I think it's fair to say that the revenue and the generation and the millions of other hydroelectric related variables we measure those in incredible detail and those are available for what did happen.*
***Q**: The lost cost of power due to an experiment in Arizona might also be impacted by a drought on the Columbia River system or a mine workers strike in Wyoming or anything else like that, you would have to be able to tease that up too, right?*
***A**: That's correct. The skyrocketing price of oil, for example, has actually increased the cost of future experiments.*
***Q**: In looking at the options of putting turbines on the jet tubes to still produce electricity, is that feasible?*
***A**: Depending on how much money and what we want to spend, it's always feasible. The question would be: How much would it cost to install and how often have we actually used it? And that I don't know but I could consult with some colleagues and maybe we could jointly give you an answer later. I'm not aware of that kind of study at the moment.*

**Fundamental Uncertainty about Fish Responses to MLFF and other Flow Treatments**. Lew Coggins gave a PowerPoint presentation (***Attachment 4***).

***Q**: Is it possible since you have basically an 8.23 maf release that you would like to see most of the time to manage the fishery for that level of flow and take benefit during the high flow? (Seaholm)*
***A**: I think there is a lot of ways managers could look at it but that would be one way.*
***Q**: Some of your slides show the trout population around the LCR actually went down from 1990 to 1995 while another showed the catfish in the LCR as being very dominant during that period of time. You didn't actually point that out and I think you made it sound like trout had gone up ever since 1990. (Steffen)*
***A**: The biggest increase was in the late 1990s time period and that's what you'll see relative to Lees Ferry.*
***Q**: What accounts for the declining numbers of trout from 1990 to 1995? (Steffen)*
***A**: Again, all I can do is speculate on the cause and effect relationships and I think you can speculate as well as I can. If that was a period of fairly low annual volumes and as we can all pick our pet factors that might have been driving some trend, I've heard you talk about issues relative to the foodbase with experimental flows in the early 1990s, perhaps that's what you're referring to.*

***Q**: If the trout were present there in low numbers at that period of time, and catfish were present in high numbers (Steffen)*
***A**: Those are species composition. They don't reflect any kind of an abundance. There are relative proportions of members that get captured in the catch and as I've told this group before, our gear is pretty poor at catching catfish in the Little Colorado. It's one of the reasons why we haven't aggressively gone after a non-native removal program within the Little Colorado. We don't have good abundance index information on catfish in the Little Colorado and you don't want to misinterpret that as a measure of abundance.*
***Q**: We can also remember what Carl Walters told us at one time that one catfish can do more damage than 100 trout especially if it's in the LCR where the trout don't go anyway. Your first couple of slides showed the effectiveness of electrofishing compared to netting. Are there any particular fish that aren't susceptible to being caught with either method? (Steffen)*
***A**: Yes. You'll recall at an earlier AMWG meeting that I talked about what the characteristics were for fish that were effectively captured with the various gear options that we have in the Grand Canyon for fishing in the mainstem. In general, you can characterize them as either being fish that are closely associated with shorelines, which rainbow and brown trout are particularly at night, as well as juvenile chub and other small bodied fishes or that they occupy slow to moderate current areas where we can fish trammel nets and not necessarily deep areas. There are a number of fish that are present at some level within the CRE particularly in more downstream locations like catfish that don't necessarily fit those different characteristics. Those are caught with lower efficiency and any time you look at a species composition based on a particular gear type, you have to recognize that there are particular biases.*
***Q**: When the Secretary put the Record of Decision in place, it required five changes in operations and volume wasn't one of the things that was changed. What types of speculations might you have of the five criteria that were changed and how they may have impacted any of these species you've listed here? (Greiner)*
***A**: We can say with some level of certainty is the MLFF likely had a lot to do with the establishment of spawning of rainbow trout in the Lees Ferry Reach. You'll recall we went through suggesting the experimental high fluctuating flows during the January-March time frame. The reason we advocated those was that if you look back through the historical record in the no action period, you saw very little natural reproduction in the Lees Ferry Reach. It was a fishery that was supported by stocking and following MLFF, natural recruitment and spawning increased over time eventually to the point where stocking was no longer needed so that certainly is one fishery resource in the canyon that I think there is a reasonable case to be made was affected by the MLFF.*
***Q**: You just made one cause and effect statement that you think is pretty well indicated or verified, are there any other statements you would make concerning cause and effect? (Kubly)*
***A**: The 2000 year class of rainbow trout which was a bumper year class as far as we can tell. Based on the correlation of that year class with low steady summer flows and the work that Josh Korman has done relative to suspicions about how fluctuating flows and large changes in operations between one month and another, could impart mortality effects in various life stages of rainbow trout. I would say that is another one that I might feel somewhat confident as talking about cause and effect.*

**Factors Affecting Humpback Chub Population Dynamics in the Grand Canyon**. Lew Coggins said that in the context of the Knowledge Assessment he thought it would be important to try and present factors affecting humpback chub recruitment dynamics that are either known or suspected and how consideration of some of those factors might lead one to think about experimental design. He gave a PowerPoint presentation (***Attachment 5***).

*Questions & Answers*

***Q**: Because of the way the graph (Decline in adult HBC…) is presented, it looks like the certainty is pretty comparable and the general assumption is there is some kind of pattern of a peak population sometime back between the late 1970s and early 1980s. In 1977 the dam was almost turned off with the lowest flows in post-dam time that year 1983 was the highest single flow that we've had. As people are concerned with management issues, we need to know if the uncertainty is too large to reveal whether bare minimum flows or pre-dam annual peak flows are what need to be managed for chub recruitment. My suggestion would be to change the graph to better express that uncertainty because you're showing a*

*peak around 1977 which were not good years for power production, trout, or anything else in the system and 1983 was a pretty disastrous year as well.*
***A**: The data suggests there were higher recruitments in the past. The uncertainty is relative to which one of these formulations is correct, not within any particular formulation. That's why we show all three because it is a reflection of the uncertainty.*
***Q**: Back to my previous question, of the five criteria that the Secretary changed in the ROD, which of those five should be experimented with pertaining to the HBC? (Greiner)*
***A**: As I understand it, this process now is going to involve this knowledge assessment where myself and other people at today's meeting are going to talk about fisheries resources over the context of other resources relative to the state of knowledge. There is going to be guidance given to the long-term experimental planning group on sideboards for what can be considered as treatments within an experimental design. I think if you ask various people within the room what makes the most sense to experiment with next, you'll get different answers but it seems to me that the thing to do now is to wait for guidance on what range of options is acceptable.*
***Q**: For example, in my mind restriction on daily deviations probably has the greatest impact on power operations and that's probably associated a little bit with the minimum. Does the deviation have any positive or negative impact on the chub? Or can you experiment around that to see what impacts there might be if we relax the deviation? (Greiner)*
***A**: I think it's valuable to consider operations other than what we've done thus far and that's one of your suggestions but as I tried to go through in the first presentation I gave, it's difficult to be able to say what effect MLFF had because we can't contrast it against anything else. There was nothing else that was done for a long enough period of time to look at the effect of dam operations on HBC population dynamics. One could say, well you would've experienced better HBC recruitment under the no action plan during this period of time. We just don't know because there was no other operation that was tried. The other thing we have to consider is there is going to be variability in the brute strength of HBC in the Little Colorado over multiple years and the other thing is the hydrology in the LCR is variable which influences the proportion of fish that gets transported to the mainstem vs. stays resident in the Little Colorado. You have to have blocks of time that are long enough to try and deal with that variability but not so long where you basically take a prescriptive type of operation.*

Mary Barger said she would like see the table show the numbers of the HBC and all the events and changes in flows that have occurred over the years. Lew concurred and said the table could be updated.

Regarding the November flows, Dennis said only half the story was reported by the media. When the experiments were designed in 2002 and the high flow was intended to occur in January, the action agencies interjected a conservation measure into the proposed action that involved translocating small HBC near the mouth of the LCR where they would likely wash out into the mainstem and be lost to up above Chute Falls, not knowing whether they would survive, establish a population, survive for a period of time, get carried downstream, etc., Even though the mitigation effort was successful, the media did not reported the positive side of the story. He reaffirmed that the Secretary asked the right questions and the experiment would not have been carried out if that mitigation had not been in place.

**Effects of 2003/2004 GCD Enhanced Fluctuating Flows on the Early Life History Stages of Rainbow Trout in Glen Canyon**. Josh Korman said his presentation would focus on the January-March 2003 fluctuating flows on rainbow trout principally in Glen Canyon although a lot of the results are transferable downstream. He said the draft report is currently being reviewed by GCMRC and should be available by early summer. He gave a PowerPoint presentation (***Attachment 6)***.

***Q**: That August-September flow change that's killing the small trout, isn't that the same period of time when we're supposed to be protecting the small HBC? Is the same thing happening to the HBC? (Steffen)*

***A**: It's very possible. I don't know what size they are by then or what habitats they're using. Glen Canyon is very wide so I think the impacts are going to be more severe in Glen than they will be in narrower reaches. Lew, what's your opinion?*
***Lew**: A couple of things. What would really be nice is if we knew that HBC did or didn't follow shorelines the way that you've been able to show. There is literature that describes the habitat that juvenile chub utilize. When I think about the places where we monitor HBC downstream in the Little Colorado, most of the habitat we sample is tallous slopes and those are places that might not be impacted very much by those kinds of flows because they are the opposite of what Josh described. We don't have the kind of high resolution information about habitat use that Josh has been able to tease out with juvenile trout.*

**Lees Ferry Trout Fishery Status and Trends Update**. Bill Persons gave a PowerPoint presentation (***Attachment 7***).

**Aquatic Food Base Research and Monitoring – what do we know, and what don't we know**. Ted Melis distributed copies of "A Review of the GCMRC Aquatic Food Base Science Program" completed by the science advisors (***Attachment 8a***). He then introduced Ted Kennedy who gave a PowerPoint presentation (***Attachment 8b***). Dr. Kennedy said they are gearing up for another food base initiative and will be soliciting for research proposals. A copy of the solicitation will be posted on GCMRC's web site or people can go to www.grants.gov for more information.

***Q**: Given the situation with HBC appearing to be pretty dependent on the food base in the LCR, it would seem like that it would be a pretty important part to include that right up front. (Johnson)*
***A**: I imagine that would be heavily emphasized that we need to understand what is ultimately driving production of chub at downstream sites and given that chub spend a significant portion of their time during juvenile life stages in the LCR, that would be a big part of the study.*

**Temperature Measurements in the Near Shore Environment – 2004**. Josh Korman said his PowerPoint, "Gradients in Near Shore Temperature Aug-0ct 2004" (***Attachment 9***) would focus on nearshore and offshore temperature gradients in the mainstem. It was prompted by some work done by Bill Vernieu at GCMRC during the 2000 low steady summer flow experiment. Bill deployed a series of loggers from the nearshore and offshore environment and measured the temperature gradients that occurred in these areas that are somewhat isolated from the mainstem.

***Q**: One of the questions the Service posed a long time ago had to do with what winter mortality and if the inception at winter is a reflection, then the amount of growth during summer is a big question. (Kubly)*
***A**: That's a totally reasonable hypothesis. The fact that you have really warm temperatures now would be good to measure growth, wait a few years until the reservoir fills up and you have some cooler water coming out of the dam and faster water, and then compare the growth of those two years and you've got a field based estimate of what you might expect under TCD. It's only growth. It' not survival.*

Adjourned: 5 p.m.

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Mark McKinstry, USBR
Ted Melis, USGS/GCMRC
Anthony Miller, Colo. River Comm./NV
Barbara Ralston, USGS/GCMRC
Pam Sponholz, USFWS
Tim Steffen, Federation of Fly Fishers
Scott Wright, USGS/GCMRC

Meeting Recorder: Linda Whetton, USBR

Convened: 8 a.m.

**Welcome and Administrative Items**. The chairman welcomed the members, alternates, and interested persons. A quorum was established and attendance sheets.

**Mechanical Removal 2003-04 Update** - Barbara Ralston said Lew Coggins would talk about a non-flow experimental approach about mechanical removal which was initiated in January 2004. She said if there was time they would go over the results of the high flow test on juvenile chub in the mainstem. Lew gave a PowerPoint presentation (***Attachment 10***).

***Q**: Have you tried to separate out recruitment to the electrofishing vs. recruitment or is some of that as the fish grow, they become vulnerable to sampling? (Persons)*
***A**: I have actually stratified the depletion estimates by size to look at differences in catchability amongst sizes and basically what you see is that fish under about 250 millimeters are only about 60% as vulnerable to the larger size class of fish.*
***Q**: What's your ultimate hope with the dietary data? Are you going to be able to eventually say how many HBC are being eaten by rainbow trout and therefore have estimates of chub production to look at efficiency of this kind of effort vs. habitat modification? (Stevens)*
***A**: Yes, that kind of work has been done especially in the cost benefit realm. We will certainly have most of the pieces of information to do that with the exception that we have to go to the literature for basically digestion rates. Rather than that, I'm more interested in looking at overall contribution of mortality source from those two dominant non-native fish but could certainly take it to that level.*

Rick Johnson asked about the status of the Park Service work on Bright Angel Creek and if there were any conclusions. Mark said the Park Service got a little carried away with going after the entire rainbow trout population when the original proposal was to go after the brown. However, the Park Service then to go after rainbow and brown trout throughout the entire creek, residents as well as migrating fish, and that was more than what the AMWG wanted and the public thought that was excessive.

NOTE: Future Agenda Item. Dennis suggested a presentation be made at the June TWG meeting and potentially at the AMWG meeting in August. He said there was a suggestion made at the Budget AHG meeting last September and it was reinforced at a recent meeting by Jan Balsom that ancillary projects need to be brought to the program at least for information needs.

**Hoopnet Sampling Results** (as part of the above presentation). Lew went on to explain the hoopnet sampling results. This was to look at trends of juveniles in the mainstem. The data is highly dependent on cohort size in the LCR and then whatever the flooding activity in the river is as fish eminate from river into the reach. In thinking about experimental planning, Lew said the TWG needs to consider the confounding factors.

**Follow-up discussions on results of the May 18th Knowledge Assessment I.** Josh Korman said it would be good to bring the managers and scientists together in making decisions. Ted questioned if there were some treatments outside the management realm and wondered if there was enough certainty or cause and effect. Josh suggested the TWG think about what treatments would be needed. He recorded the following suggestions on a flip chart:

| Flow | Non-Flow |
|---|---|
| MLFF (last 14 years) | MR |
| ~~No Action~~ Power | TCD |
| SASF | Turbidity enhancement |
| EQMV-MLFF | |
| Steady | |
| Run of River | |
| EIS – Subset | |
| EFF (exp fluc. flow) | |

*Comments:*

- *Suggest we use the technology we did at a previous AMWG meeting in which everyone (AMWG, TWG, Science Advisors) would vote using keypads to understand the variance among the groups as to whether or not they have different thoughts about the level of uncertainty. (Kubly)*
- *It would be interesting to evaluate the flow range and how resources would respond to a natural flow regime. (Johnson)*
- *The no action is historically the way we implemented the MLFF alternative in the ROD. There are other ways to implement MLFF one of which is the SAFF but there may be other ways still within the ROD. (Henderson)*
- *Having more than three alternatives would be good when it comes to trying to present the results graphically. My expectation is that in doing a slightly more complicated analysis, you'll end up with big surprises that are not intuitive given the present set of assumptions about how the system works. There might be ecological advantages to having higher fluctuating flows for example and it will work out in different arenas and also having enough variability in the treatments to getat the non-intuitive results. (Stevens)*
- *We need to look at the flows in the EIS because there are different types of fluctuating flows that were analyzed. When the long-term experimental group met in July 2004. They came up with some proposed flows that included one called EFF (Experimental Fluctuating Flow) but the equivalent was 5-20. In Sept. 2004, the group met again and came up with some management actions that were options and they were more extensive. (Barger)*
- *We have MLFF and have learned certain things that don't work. So if we're going to change, which pieces would we change? We've learned some things about sediment, etc. You have Run of the River but you need to remember we still have the Law of the River. (Seaholm)*

**ACTION ITEM**: TWG will send comments to Ted Melis and Barbara Ralston by June 8, 2005 of alternatives they would like to be considered for the Experimental Plan. Josh will send the list to the TWG by the end of the next TWG meeting (June 21, 2005).

**Geomorphology Workshop Update**. Helen Fairley gave a PowerPoint presentation (***Attachment 11***) on the Geomorphology Workshop that was held February 8-10, 2005. It was a very productive interaction and she believed everyone felt it was a worthwhile effort. The workshop was recorded and she may try to present in a written report but that is dependent upon funding. Helen said the presentations were put on a CD so if anyone wants one, they should contact her.

**Experimental Flow/Sediment Trigger Update**. Norm said he requested information from Mike Gabaldon as to why nothing further was done with the last sediment trigger. Mike told him that the Department didn't want to pursue anything else and that it was more topical in February. John O'Brien said he thought it would be helpful for the TWG to discuss and said he didn't know if anyone has considered if another scenario occurs like it did in the mid-1980's and that the TWG needs to get away from being in a "react" mode. He said it was a very finite example

of how we get to 95% of where we need to be but then don't go further. John said his concern was what happened in the first sediment trigger so we didn't know exactly who was going to swing into action and perhaps allowed more politics to enter into the process. If the data hasn't been processed and looked at from the first experiment, then the experiment is still on. There was cost savings in being able to use the survey from the end of the first trigger as the beginning of the second trigger. It was like free research and that can't be passed up in a reduced budget era. He feels the AMP needs to figure out how to use the dam to make the most of the sediment that comes in from the tributaries, that's going to stop a lot of talking about sediment mining in upper San Juan and Delta and the power costs associated with that as well as the NEPA costs. He would like to see us go the extra 5% and get it spelled out with the Bureau with what we want to do and why.

Larry said the November flood was claimed as a success for sediment but it was a flood conducted at the wrong time and some members weren't happy with the solution. He would hope that in the July meeting there is an honest critique of the amount of experimental planning - the time that went into that event, the tradeoffs in the short amount of time, how to manage high flows better, what the AMWG/TWG knows/doesn't know about high flow management, and the long-term picture of high flows.

Dennis reminded the TWG that Mike Gabaldon made a report at an AMWG meeting which included an evaluation by the Solicitor's Office on whether or not a provision be made in the budget and the water for the flow. It was pretty clear to the solicitor that the compliance didn't preclude doing it but the program hadn't accommodated a second flow either in dollars or water so it was pretty hard to do for that reason. He suggested that if anyone wants to prepare for the next event, they should contact the Roles & Responsibilities Ad Hoc Group (comprised of Mike Gabaldon, Norm Henderson, Randy Peterson, and Dave Garrett). He asked Ted if before the experiment was moved from January to November if anybody was contemplating two events in one year. There wasn't a provision for water and no allocations made in the budget.

Ted said that Dave Topping had concluded from historical data that it was a relatively infrequent winter event that would happen and had just barely made the trigger in the fall. He said the TWG should feel good about the fact that a real time monitoring system for sand production in the Paria River was put in place and it worked flawlessly. GCMRC watched a hydrograph response on the January 12$^{th}$ and 13$^{th}$ and ran the models that Dr. Topping had developed. They had an estimate for what the sand input was before the hydrograph session was even finished. They informed Reclamation and then briefed Tom Weimer the following morning. Once the information was transferred, it was up to the Secretary to make her decision. Dennis said there was an objective evaluation and dollars and water weren't there. He said there was very close communication with Tom Weimer and Bennett Raley. Bennett was present in real time and gave his recommendation to the Secretary right up until the day before the experiment.

**FY06 Budget Process**.

Dennis provided some background history: The BAHG met in December 2004 to take a look at the first 2-year budget cycle for the FY06 budget. The process had been accepted by the TWG but when the group looked at the time and the funds available, it was clear they couldn't put it together so they advocated with GCMRC to embark on another one-year budget and that it be viewed largely as a transitional year with no big changes. They went to work and developed a preliminary budget and work plan that was presented to the TWG in February. It was a constrained budget and it had no experiments. There was a reaction in the TWG that one component, mechanical removal, should be considered. They came to the AMWG with a slightly

revised budget that included mechanical removal. The AMWG's determination was that they wanted to see a non-experimental and an experimental budget work plan, two different sets. Everybody went back to the drawing board. They held a conference call and the agreement was reached to remove mechanical removal from the budget and consider that a non-experimental budget. The opinion shared by most individuals was to look seriously at making that money in a non-experimental budget available for carry forward for ensuing experiments because it became very clear to them that with a constrained budget, they did not have the money in the future in a single year to develop the kind of experiment they've had in the past which Ted estimated at about $1.5 million. There have been several conference calls since and there are now four or five projects they're still juggling between the Budget AHG and GCMRC and GCMRC is revising their budget. However, there has been a new twist and Ted will explain further. He feels that because of having to send out the budget information prior to the June TWG meeting, the Budget AHG will not be able to give it the level of review they've performed on previous budgets.

Ken McMullen said as a member of the BAHG, he wondered if the TWG is aware of what the BAHG does and whether the communication they're receiving is sufficient. He doesn't see a whole lot of communication between the group and the TWG and feels a litttle uncomfortable with some of the decisions. Dennis said that the BAHG doesn't make decisions but rather recommendations to the TWG and they need to be viewed in that context. He said that often times the BAHG discuss significant budget issues via e-mail and conference calls and that if any of the members are interested in seeing those e-mails, he would be happy to include them in the mailing. Larry said that ad hoc groups are designed to address specific issues and that if anyone is interested in being engaged, they should let Dennis know. Bill Persons said he has felt some discomfort in the past and didn't feel the BAHG was well represented by the full TWG. He feels the ad hoc groups should provide regular updates at TWG meetings in an effort to keep the TWG better informed.

Ted said about a week and a half ago, it became clear to him that the appropriations request in the USGS director's budget for $750,000 specific to the GCMRC budget had left the House and that part of the request had been struck. That's unfortunate but it could still be restored by the Senate. He asked Chris Beard what it means if it isn't restored by the Senate. The appropria-ions request in their budget actually showed up at $1million even. It turned out that in the Congress it was only $750,000. GCMRC was being optimistic to begin with and the budget the TWG and the AMWG saw had an appropriations request placeholder of $1 million and that wasn't even what was officially being requested. The idea was that if that money was approved, it would come to GCMRC and help them balance their cost share dollars so they could continue getting the discounted overhead rate of 15% on the science dollars with a special potential for pass through rate on maybe $2 to 2.5 million at 6% for things like cooperative agreements, etc. That's how they've been functioning for FY03 and FY04 and even that was quite different than what they were functioning in 2001-2002 when they had the Mark Schafer special dispensation, no bureau level assessments on those science dollars. When that ended, they were notified by their director that they have to cover some indirect costs and it would hopefully be no more than 15%. Without those appropriations to offset the cost share, Chris Beard told him they will have to deal with the full cost rate for entire science budget. J.D. Kite thinks next year it could be 37% so there might still be the opportunity for a special pass through rate on some portion of the $8+ million, maybe $2 or $2.5 million but everything else would be subject to as much as 37.5% indirect rate. In response to that information and what that meant to budget bottom line, it creates a $2.5 million deficit at the worst, and at the best a special pass through rate for some of the money but it could still be a $1.9 million deficit. Denny Fenn immediately sent a 2-page e-mail message to Chip Groat summarizing the current events. As of today, Ted hasn't heard

anything back from Denny or Chip and doesn't know how to revise the FY06 budget without that information. He would like to keep it down to two versions, one without experimental treatments and one with experimental recommendations.

Dennis said that customarily the Federal Government does a walkdown table in which you start at a full allocation and then reduce it by percentages depending upon what items are cut under certain conditions. He suggested that some of the stakeholders may want to get in touch with their state senators and lobby for restoration of the funds.

**Roles and Responsibilities AHG (Roles AHG) Update**. Norm said that Mike Gabaldon asked some members of the Roles AHG (Dave Garrett, Randy Peterson, Denny Fenn) to address concerns raised at the AMWG Retreat. The issues revolve around the AMWG/TWG interaction, AMWG-TWG as a deliberating body and how it interacts with GCMRC, the role of the Secretary's Designee, streamlining the decision making progress, handling work within the GCMRS, and contracting issues. The group will develop some draft recommendations and present at the next AMWG meeting.

**Humpback Chub Comprehensive Plan Update**. Glen Knowles said he sees the HBC Comprehensive Plan AHG charged with revising the plan so that the actions that were taken to specifically benefit the humpback chub are more integrated in approaching how the AMP is going to turn around the decline in the HBC. The AMWG wants them to be more prescriptive and asked the TWG to come up with crisis criteria. They also need to integrate the HBC Plan with the other plans currently in development. He sees the HBCCP AHG doing that and working closely with the science advisors and GCMRC to make sure there is a good exchange of ideas. He said Tom Czapla (USFWS) distributed a draft copy of the Draft Genetics Management Plan which is being reviewed by the HBC AHG meeting and will be distributed to the TWG at the June meeting. He gave a PowerPoint Presentation (***Attachment 12***) and reviewed a schedule for future meetings.

**Approval of February 2-3, 2005, Draft Minutes**. Without objection, the minutes were approved and adopted by consensus.

**Core Monitoring Plan Update**. Helen Fairley distributed copies of the Provisional Core Monitoring Plan and Future Planning Process (***Attachment 13a***), the Provisional Core Monitoring Plan Final Draft (***Attachment 13b***), and then gave a PowerPoint presentation (***Attachment 13c***).

*Comments:*

- *The AMWG adopted a definition and that needs to be used as a guideline in developing the CMT. Criteria by the Park Service and everything we do has to comply with some laws and it's important to state that everything will be addressed within the law and inside the program. (Seaholm)*
- *The cultural sites should be included in the core monitoring program. The PEP that was done and the concerns have been addressed. The site condition monitoring to be included in the Core Monitoring Plan. (Kincaid)*

**Action Item**: TWG to provide comments on the Core Monitoring Plan to Helen Fairley and the CMAHG by June 8, 2005.

**Step-down Process for Evaluating the Core Monitoring Components of the Downstream Water Quality Project**. Ted said he wanted to present a process that the Core Monitoring Ad

Hoc Group would go through in understanding how work is done on a specific project. For this purpose, they are using the downstream integrated water quality project. He introduced Scott Wright who is in charge of the project. Steve Wiele was also asked to join the discussion because he has been the lead principle investigator on the sediment modeling project that went on between 2002 and 2004 which is now in its final phase. Steve has been trying to developing a predictive capability for routing flow and sediment through the ecosystem from the dam. Scott gave a PowerPoint presentation (***Attachment 14***).

*Comments:*

- *You've been collecting data at the upstream point. That is one of those points that falls outside the program and should be funded by other sources. (Seaholm)*
- *This program should show compliance or change the standards. The State of Arizona has a station at Mile 226. As a program, we can't violate the standards. We may need to consider changing those standards. (Davis)*
- *There is a concern by management to be able to see a cross-section of data that makes sense to them. They can do a quick read and determine where we are with the resources. I think we have to develop some sort of criteria and index and some type of matrix that one can actually make sense of the information. (Garrett)*

**Schedule for upcoming meetings**.

| Dates | Meeting |
|---|---|
| June 21-22 | TWG Meeting in Phoenix |
| June 23-24 | Science Planning Group (SPG) Meeting in Phoenix |
| July 5-8 | Knowledge Assessment in Flagstaff |
| July 27-28 | SPG Meeting |
| August 30-31 | AMWG Meeting in Phoenix |
| Sept. 1-2 | SPG Meeting |
| October 25-27 | Science Symposium |
| | |
| | |

Adjourned: 3:10 p.m.

**Location for June 21-22, 2005 Meeting:**

Bureau of Indian Affairs
2 Arizona Center
400 N. Third Street, 12th Floor
Conference Rooms A & B
Phoenix, Arizona

**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
AMP – Adaptive Management Program
AMWG – Adaptive Management Work Group
AOP – Annual Operating Plan
BA – Biological Assessment
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 Assn.
cfs – cubic feet per second
CRBC – Colorado River Board of California
CRCN – Colorado River Commission of Nevada
CREDA – Colorado River Energy Distributors Assn.
CRSP – Colorado River Storage Project
CWCB – Colorado Water Conservation Board
DBMS – Data Base Management System
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
GCD – Glen Canyon Dam
GCMRC – Grand Canyon Monitoring and Research Center
GCNP – Grand Canyon National Park
GCNRA – Glen Canyon National Recreation Area
GCPA – Grand Canyon Protection Act
GUI – Graphical User Interface
HBC – Humpback Chub (endangered native fish)
HMF – Habitat Maintenance Flow
HPP – Historic Preservation Plan
IEDA- Irrigation and Electrical Districts Association of Arizona
IN – Information Need
IT – Information Technology (GCMRC program)
KAS – Kanab ambersnail (endangered native snail)
LCR – Little Colorado River
LRRMCP – Lower Colorado River Multi-Species Conservation Program
MAF – Million Acre Feet
MA – Management Action
MO – Management Objective
MRAP – Monitoring and Remedial Action 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
Powerplant Capacity - 31,000 cfs
Reclamation – U.S. Bureau of Reclamation
RBT – Rainbow Trout
RFP - Request For Proposals
RPA - Reasonable and Prudent Alternative
SAB - Science Advisory Board
Secretary(=s) - Secretary of the Interior
SWCA - Steven W. Carothers Associates
TCD - Temperature Control Device (for Glen Canyon Dam water releases)
TCP - Traditional Cultural Property
TES - Threatened and Endangered Species
TWG - Glen Canyon Technical Work Group (a subcommittee of the AMWG)
UCR - Upper Colorado Region (of the USBR)
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)