

Glen Canyon Dam Technical Work Group Meeting

April 8-9, 2008

Conducting: Kurt Dongoske, Chairperson

April 8, 2008

Convened: 9:30 a.m.

Committee Members Present:

Jan Balsom, NPS/GCNP
Mary Barger, WAPA
Cliff Barrett, UAMPS
Charley Bullets, Southern Paiute Consortium
Jonathan Damp, Pueblo of Zuni
William Davis, CREDA
Jay Groseclose, NM Interstate Stream Comm.
Norm Henderson, NPS/GCNRA
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust
Glen Knowles, USFWS

Dennis Kubly, USBR
Anthony Miller, Colo. River Comm./NV
John O'Brien, GCRG
Don Ostler, UCRC
D. Randolph Seaholm, CWCB
Mark Steffen, Federation of Fly Fishers
Larry Stevens, Grand Canyon Wildlands Council
Bill Werner, ADWR
Michael Yeatts, The Hopi Tribe

Committee Members Absent:

Steven Begay, Navajo Nation
Kerry Christensen, Hualapai Tribe
Christopher Harris, Colo. River Board of Calif.

Robert King, UDWR
Bill Persons, AGFD
John Shields, WY State Engineers Office

Alternates Present:

Don Ostler

For:

John Shields, State Engineers Ofc./WY

Interested Persons:

Andrea Alpine, GCMRC/USGS
Matthew Andersen, GCRM/USGS
Glenn Bennett, GCMRC/USGS
John Bleisner, Mussetter Engineering
Helen Fairley, GCRM/USGS
David Garrett, M³Research/Science Advisors
John Hamill, GCRM/USGS
Leslie James, CREDA
Ted Melis, GCMRC/USGS

Tom Ryan, USBR
Jack Schmidt, Utah State University
Phil Smith, GCMRC/USGS
Pam Sponholtz, USFWS
Barbara Steffen, Federation of Fly Fishers
David Topping, GCMRC/USGS
John Weisheit, Living Rivers
Scott Wright, USGS

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative. The Chairman welcomed the TWG members, alternates, and interested persons. Attendance sheets were distributed.

Approval of Draft Minutes from December 4-5, 2007, Meeting. Kurt said the minutes were distributed late and so they will be put on the agenda for the next TWG meeting. He also asked if there were any comments on the format. Linda also asked the members to clarify areas in which there were blank spots.

Corrections Needed:

- Page 8, Mark Steffen thinks he said that the tribs (tributaries) not tribes are not suitable for chubs.
- Page 9, Rick Johnson said he thought it was "brook trout" but he will look it up."

Review of Action Items.

Action Item: 2007:06.25-26(4). John O'Brien said he had a very draft report on the Sediment Transport Modeling Report and has nothing to provide on the monitoring report. He gave a short PPT presentation (**Attachment 2**) which included seven recommendations:

1. Formulate an integrated research plan.
2. Further calibrate and test the Wiele, Wilcock, Grams (WWG) model. (Reach-averaged sediment routing model)
3. Gradually revise and refine the starting equations used by WWG.
4. GCMRC is encouraged to continue using innovative technology, like the NZ pilot tube work.
5. Use data and (existing) multi-dimensional tools (2D and 3D) to understand eddy and bar systems
6. Revisit the existing data, and determine need for additional data (for 2D and 3D models).
7. Analyze the uncertainty of the model predictions.

He concluded with the following motion: The TWG accepts the Draft Report and tell GCMRC to continue working on it but forward to the AMWG as indicated.

Kurt said that because the recommendation John was making hadn't been vetted through the Sediment AHG and because it also dovetails with the long-term core monitoring that GCMRC is working on, he wondered if it covers what the PEP was working on. He wasn't sure the group has to make a recommendation to the AMWG.

John Hamill added that Scott Wright will be making a presentation which will include a lot more recommendations and discussion and whether it's appropriate for use of FY09 funds.

ACTION: The Sediment AHG will meet and bring another recommendation to the TWG.

New Business:

Hydropower Economics Presentation. Rick Johnson provided a list of questions (**Attachment 3**) that he wants addressed in a hydropower economics presentation to be given by WAPA or CREDA. While he had a lot of questions, he suggested the TWG might want to shorten the list. Leslie thought it would be helpful for members to send in any additional questions so she could focus on specific issues. Dave Garrett said the SPG asked for an economic analysis related to hydropower and related to flow regimes. WAPA developed that and the SPG asked the SAs to do that review. He thought Clayton had made a presentation that may have dealt with some of Rick's questions. Dave said he could provide a list of those questions to the TWG for their further consideration. Leslie said she felt WAPA should take the lead on making a presentation.

ACTION ITEM: TWG members will provide additional questions to Mary Barger and Leslie James by Friday, April 11, 2008, with a presentation to be scheduled for the next TWG Meeting.

ACTION ITEM: Dave Garrett will provide a copy of the SA report completed with regard to the economic analysis done related to hydropower and related flow regimes to Linda for distribution to the TWG.

Rick questioned the status of the Argonne Report (August 2006 minutes). Leslie said the Argonne Report is not being done for this program and thinks it's probably information that WAPA would be willing to share. It was something that WAPA was asked to do. She suggested it not be an action item or a task because it has nothing to do with the AMP and isn't being funded by the AMP. Norm followed up with a question about a study in Section 1809 of the GCPA regarding replacement power. Leslie said that was probably the replacement methods report and she's sure it's out of date. However, she suggested WAPA might be able to make a presentation on that.

Species that are Missing in Action. Larry Stevens would like to know more about the species that are MIA in the river corridor and how they can be reintroduced. He would like to work with NPS on preparing a presentation for the next TWG meeting.

ACTION ITEM: Larry Stevens (GCRG) and Jan Balsom (NPS) will work together on preparing a report on reintroducing missing species into the river corridor.

Update on Rate Setting Process. Leslie James said there is currently an ongoing consultation process between CREDA and WAPA. The initial proposed rate increase was about 14%. They will hear on Thursday (this week) there is formal information/comment forum but she doesn't know what the latest is going to be. The formal comment period closes May 5 and all of this has been noticed in the Federal Register. The proposal is to take effect October 1, 2008. The increase is a result of increases in O&M costs primarily at WAPA and a slight increase from USBR along with purchase power, etc.

Science Advisors' Review of GCMRC's Science Plan for the High Flow Test (HFT).

Dave Garrett distributed copies of his report, "Review the Science Plan for Potential 2008 Experimental High Flow at Glen Canyon Dam," (**Attachment 4a**) and then a gave PPT presentation, "SA Review of HFT and Improving SA Information Transfer to the TWG" (**Attachment 4b**) **NEED TO GET DAVE'S REVISED PPT FILE.**

John Hamill said the reason GCMRC asked the SAs to review the 2008 Science Plan was primarily because there was a large study that was added at the end of the process. The whole study of backwater habitats increased the cost of the high flow science plan by about 40% from about \$2 million to \$3+million study that had not gone through any kind of peer review and they felt it was incumbent to ask the SAs to look at the new plan in light of that. At the time of the review GCMRC was also directed to aggressively prepare for a possible high flow event so their ability to sit down and interact with the SAs, take their comments, and in many cases make adjustments to the plan was limited because they were in an implementation mode at the time. Knowing that, they still felt it was important to ask the SAs to provide feedback/advice on how to proceed and identify if there were any fatal flaws and looked for their endorsement. He passed out copies of GCMRC's responses to the SAs comments on the Science Plan (**Attachment 4c**).

Mary asked if the Science Plan got rewritten because of comments. Dave responded that he thought there needed to be revisions and GCMRC made those revisions. John said the plan was finalized at the end of December before the SAs had reviewed one more time. Their comments were considered but GCMRC didn't have time to make all the changes. Dave went through the process of how the SAs would deal with the issues raised and how GCMRC would address the concerns raised by the TWG. Dave said he thought that perhaps he needs to work with AMWG in changing the protocols.

Kurt stated that in looking at the role the SAs have with the TWG, the missing element was a face-to-face dialogue with the SAs on common ground issues that are at odd and how to resolve technical issues. There should be an exchange of ideas and results, and he wanted to facilitate more of a dialogue between the TWG and the SAs. Andrea commented that there never seems to be an endpoint. As such, it's important to find ways to find closure because that's critical to GCMRC getting their work done and questioned whether the TWG is going to ever work on multi-year budget proposals.

Kurt asked if the members were supportive of adopting the recommendations and for greater interaction with the SAs. He asked for a show of hands in support of that and it was determined the TWG was in fairly unanimous support with only three individuals who abstaining.

GCMRC Updates

Sediment Update. Ted Melis said that in 2002 the AMWG passed a motion requiring GCMRC to provide 6-month updates on any experimental results and their long-term monitoring of sediment flux from the tributaries through the mainstem as well as core monitoring. At the AMWG meeting last August, he made a presentation on Dave Topping's behalf and at the January AMWG meeting that information wasn't provided because the AMWG held a conference call instead and so the next opportunity to present the information would be at this meeting. With that said, Dave Topping gave a PPT, "April 2008 Grand Canyon Sediment Update" (**Attachment 5a**).

Ted said CREDA provided some comments and questions on the HFE Experimental Science Plan (**Attachment 5b**). John requested comments on the HFE at the December meeting but CREDA was the only entity that provided comments. Ted said they were answered to the best of their knowledge at this point in time.

HFT Preliminary Observations. Ted Melis distributed a copy of the Science Plan (**Attachment 5c**) along with the PPT, "Update on 2008 Experimental High Flow Test and Observations." (**Attachment 5d**). He commented on some brief updates to the plan. He said the plan is to synthesize all the high flow experimental results related to any resource area that they've acquired or accumulated since 1995-96. He said the budget to complete the synthesis work has not been fully determined. There is a team comprised of PIs and co-PIs that will work on offering that and the funding for that will have to be resolved in the context of the 2010 budget. The proposal right now is being proposed at \$250K that will come from the Experimental Flow Fund in 2009. He directed the members to look at Figure 4 (pg. 16) and said the time scale required to truly evaluate the policy of high flow management of sand and related sources plays out over a much longer than one month or even a year because normal operations over the 6-18 months is what they're going to fully evaluate.

Part II – Early results from 2008 HFE. Dave Topping continued on with this portion of the Updates.

Part IV – Initial Photographic Data. Ted continued with this portion of the Updates. Ted started on Part IV – Initial Photographic Data.

Q: Based on what was said earlier that 20% of the sediment is above the river and 80% is under the river, does that mean the sediment that was retained after the high flow experiment, 80% is below the river? Is there any way to figure out how much was retained as beaches and not just in sandbars? (Barger)

A: That figure comes from analyses that have been done by Joe Hazel and Jack Schmidt and they're for more typical conditions not the conditions immediately after a HFE like this. (Topping)

Q: So is there any way when the analysis is done, will we have a good feel for that? (Barger)

A: Yes. We did collect all the data to address issues like that. (Topping)

Ted said the emphasis has been on the upper third of the system, the sediment transport data down to Mile 88. He said they didn't have anymore to show below there but know that certain people on the river made observations. The best information they could provide for this meeting was digital images and acoustic data in the upper third of the system.

Is there enough sand? Scott Wright passed out copies of his PPT, "Is there enough Sand?" (**Attachment 5e**) and provided the following conclusions:

- The "best case scenario" for hydrology and dam operation has some viability for rebuilding and maintaining sandbar deposits.
- The maximum rate at which sandbars could potentially be rebuilt is comparable to their erosion rate over the ~40 years since dam construction.
- Deviations from optimal conditions (e.g., wetter hydrology, fluctuating flows) will decrease the rate of accumulation or result in net erosion.
- The largest uncertainty is in estimating F_b . Can high flow hydrographs be optimized to promote sandbar building while minimizing export.

Q: *At 200,000 tons that you say would be available, is that accumulative? In other words, if you don't do a high flow event, would that 200,000 accumulate every time? (Henderson)*

A: *I think yes, it should, but as more and more accumulates, the numbers should go down because as the system becomes more enriched there will be more export. For the near future, yes, it would but eventually the system would build up to the point that it's so enriched that it's just exporting what's coming in. (Wright)*

Modeling Updates and next steps FY09 Work Plan” Scott presented the next PPT, “Modeling Updates and next steps FY09 Work Plan” **Attachment 5f**. He also distributed the report, “Development and Application of a Water Temperature Model for the Colorado River Below Gen Canyon Dam, Arizona” **Attachment 5g**.

Q: *On the ramping study, do you know what kind of variables you're going to be looking at? (Davis)*

A: *The main things would be the level of fluctuation in the flow and the makeup of the bar in terms of the current size. (Wright)*

C: *The work that was done years ago for the original EIS was done on one site as I recall and one of the questions we had was whether or not that was applicable all the way down the river and the different grain size in the different parts of the river would seem to be very important to know that. I would hope that is included in there. (Davis)*

A: *It is included in there and I think Mark would be a good one to talk about it. (Wright)*

Update on Analysis of 2005 Imagery. Ted introduced Mike Breedlove and Jack Schmidt and said they would be giving an update on what's going on in the current era of remote sensing imagery analysis specifically the work that's been done on shoreline mapping and change detection in 2007 and 2008, which is still underway and will be completed later in the calendar year. He said their presentation would focus on the results that occurred in response to the 2004 high flow experiment, using 2002-2005 imagery. Jack Schmidt distributed copies of his “Update on Analysis of 2006 Imagery” PowerPoint presentation. **Attachment 5h**. Mike said the preliminary analysis of report could be completed by the end of FY08.

Update on Cultural Monitoring R&D Project. Helen Fairley distributed copies of her PowerPoint presentation **Attachment 5i** along with copies of the “Legacy Monitoring Data Review Panel Report to GCMRC” dated Nov. 29, 2007 **Attachment 5j**. She said the final report on the Legacy meeting was provided in December 2007. Brian Collins from Menlo Park was invited to speak and distributed copies of his PowerPoint presentation, “Evaluation of Terrestrial Lidar as a Tool for Monitoring Geomorphic Change at Archaeological Sites in Grand Canyon National Park” **Attachment 5j**.

Q: *What's the comparison of costs between the two systems? (Davis)*

A: *There is the cost of the processing, the labor, and the instruments. The instruments are about \$100K and I don't know what a total station goes for. (Collins)*

Q: *So you haven't gone through a chart to come up with a comparison of the difference in costs to do this job using terrestrial lidar versus total station? (Davis)*

A: *The reason we haven't presented a number value on that is because it's difficult to get a metric. If you decide that the goal is to collect a gulley balwag, then the terrestrial lidar is going to be much more expensive because of the post-processing time and the equipment. If your goal is to monitor the entire site, then terrestrial lidar is far more inexpensive because it would take you so much time to monitor that site with the conventional. We presented some conclusions in the report to that effect that states you really have to decide first on what you want to monitor and then make the decision on what is more economical for the job. (Collins)*

Q: *At the last CRAHG, we understood Helen you were going to hire an archaeologist at the Center and we didn't hear what they were going to be working on and what the status is on that hiring? (Barger)*

A: *The position has been underway as far as being classified for some time. Because we're looking for someone that could cover a broad range of needs within the program, including maintaining these weather stations, doing the technical upkeep on them, dealing with the data that was coming out of this program both from a geomorphic standpoint as well as an archeological standpoint, we created a position description that they had never seen the likes of before. It's taken them awhile to get that out. We are expecting that position to be advertised by the end of next week. I'll share with people once it comes out. (Fairley)*

Q: *Brian, did I understand you correctly on this LiDAR that it is subject to some atmospheric conditions and if it is, how do you adjust for that? (Seaholm)*

A: *The primary atmospheric condition would be on whether it's foggy or not. You generally can't get the range that you're looking for if there is high moisture in the air. Dust is the same thing. Most of the atmospheric abnormalities are*

actually taken into account by the laser and it actually does a calibration check when you boot it up and measures its own range and returns so those are condition-specific measurements that are taken into account. It's pretty automatic. (Collins)

Q: *So it's pretty much self-correcting, if you will? (Seaholm)*

A: *In general. If you are working in very abnormal conditions or something like that, you can do additional close processing. (Collins)*

Update from Mike Berry on Programmatic Agreement and Excavation of Archeological Sites. Kurt said that before Jonathan Damp would give his presentation, he said he talked with Mike Berry and Mike wanted the TWG to know that the Programmatic Agreement will be the master document for treating sites under 106 Compliance and that will be rewritten to reflect what we now see as the long-term monitoring requirement, probably at a reduced rate via probability sampling and a series of annual Memorandums o Agreement will be executed to deal with specific sites. Only four sites will be excavated in FY08 and that needs to be increased to six or seven to complete data recovery of 54 sites in 10 years or less is the plan.

Preliminary Report on the Archaeological Excavations at the 9-mile site in Glen Canyon. Jonathan Damp said he would provide information on what they did last year and what will be done this year as it relates to the Nine-Mile Wash Site before the high flow event. This was done through the ZCRE with Joel Pedersen, Gary O'Brien, and Erin Tainer. Jonathan distributed copies of his PowerPoint presentation "PPT, "Preliminary Report on the Archaeological Excavations at the 9-mile site in Glen Canyon" (**Attachment 6**).

Q: *How do you infer agricultural fields? Some of these settings seem like very unlikely places to be. (Stevens)*

A: *I don't think it's a very unlikely setting. I think it could be something given the way that agriculture is practiced. It does have water, something that if you get up over out of the canyon and you're getting into a place that doesn't have water and in those areas where you have plentiful rainfall, you might have good places for crops but this is a good way of hedging your bets, putting your fields everywhere and maybe getting some corn to grow there. How do we know if we don't know yet? That's one of the hypothesis we're testing. (Damp)*

Q: *You mentioned the four sites that are going to be excavated in 08. Do you know which ones they are? (Heuslein)*

A: *Yes. There are two at Tanner, one at 39 in Eastern Canyon, and the one we just did at -9 Mile Wash. (Damp)*

Q: *You made a statement that there was 2008 dates taken from the left side of the site and dates from the right side of the site and that you attributed the more recent dates from cutting film, right? Do you think those dates are in situ or are they coming from higher up? (Dongoske)*

A: *No, those dates are in situ. In this part of the site over here, you have cut and fill coming down from this hillside and we haven't dated those yet and I don't think there's a need to date it because we had a hearth and some charcoal stains and ziggy orangeware that dates to about 1100 A.D. so we're pretty confident of that and then what we need to date these but the earlier dates out of here and Kurt Anderson's date sp O really think they are in situ. They haven't been disturbed but you do have cut and fill events happening on the downstream side, that's the far side. (Damp)*

LTEP Update. Dennis Kubly read from a fax he received earlier today: The Long-Term Experimental Plan EIS was to begun in 2006. The AMWG made recommendations to the Secretary on the options that had been assessed by GCMRC and then the identification of 16 cooperating agencies that joined Reclamation as the lead for developing the alternatives. Scoping occurred in early 2007 for that effort. There were both flow and non-flow actions considered in the alternatives. Multiple factors including unique sediment circumstances, new information on the endangered humpback chub, and litigation led to temporary suspension of the work on the LTEP and instead the primary focus was placed on ESA NEPA compliance for a 5-year plan of experimental flows including a 2008 high flow test that was undertaken earlier this year. During the ESA NEPA compliance efforts and a Federal Register Notice published on Feb. 12, 2008, the Department of the Interior committed to reassess the need for an approach to the LTEP following the completion of compliance on the short-term (the 5-year experimental flow program). That reassessment has not been completed and has barely begun and there is a need for both internal discussions within the Department of the Interior and external coordination with AMWG members on the question of where to go with the LTEP. He said he didn't have all the answers today. He said flow actions for the next five years have been addressed and decided by DOI in the EA, BO, and FONSI so that's for the 5-year period but no one knows what comes after that. Ongoing studies will provide guidance for subsequent science and further adaptive management decisions and/or modifications. It's important to note that the FONSI directly

addressed flow issues over the next few years in the context of adaptive management and he quoted from the FONSI (pg. 3) "During the public review process for this proposed action, a number of entities have advocated additional steady flows or high flows in the future or management actions. This proposed experiment neither mandates nor precludes future experimentation rather this proposed experiment was developed consistent with the principles of adaptive management to require full scientific and public analysis of the effects of the experiment and integration of such results in future decision making." The Biological Opinion also contemplates continuation and expansion of non-flow experimental and management actions. With respect to the non-flow actions, the lead for these efforts will likely vary depending on the action following the line authority of the various agencies. Discussions within DOI have just begun on these efforts and are far from complete. Reassessment of the LTEP will include consideration of what is the best approach to complete these ongoing and new non-flow actions in a timely manner. Finally, the reassessment of the LTEP will also consider whether it is preferable to bundle up a number of actions in a single EIS versus addressing the issues in a series of parallel but complementary NEPA actions. Perhaps the path we've used in the past, incremental, sequential EAs is a better approach in an adaptive management setting that needs to be able to respond to new and updated information.

He said that leaves the TWG with an open question about whether or not it will be considered preferable and these are all discussions that have to occur to engage in a LTEP or continue as has been since 2002 when the first EA was done and a series of shorter and simpler actions.

Q: *Will this be on the AMWG agenda? (Barger)*

A: *Yes, and you'll get better information I'm sure. (Kubly)*

Q: *Can we abandon an EIS? (Stevens)*

A: *Sure. (Kubly)*

Adjourned: 4:50 p.m.

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John Weisheit, Living Rivers
Scott Wright/GCMRC/USGS

Meeting Recorder: Linda Whetton, USBR

Welcome and Administrative. The Chairman welcomed the TWG members, alternates, and interested persons. Attendance sheets were distributed.

Clarification from Andrea Alpine on Scott Wright's presentation. Andrea Alpine said there were some questions regarding the presentation yesterday on "Is there enough Sand?" It is not a recommendation but came about because the TWG had asked if there was a flow only option for creating beaches and backwater habitats. She said that was step one in analyzing that question. From the scientist's standpoint, you analyze an extreme case and you say in that extreme case, and when they say "optimal," they mean optimal for sandbar creation. She said if there was one word she could put altogether so that they always

stuck those words together, that is what she would try to create so it doesn't look like someone saying this is the "optimal regime." She advised that you have to put "optimal" when analyzing various flow regimes. The next steps are to analyze the more realistic options. If we want to start to analyze options for MLFF, peak flows, etc., more understanding is needed and that's why the sand study was done. The second thing is people making statements that we should do this every year, every fall, etc.. She said people need to be careful or things could be made worse. They still don't know enough when to do the tests.

LSSF Synthesis Work Plan. Matthew Andersen gave a PPT on the "Low Steady Summer Flows 2000 Synthesis Project" (**Attachment 8a**) along with copies of the Experimental Flows of 2000 Brief Summary of Associated Scientific Studies (**Attachment 8b**), and Goal12 (**Attachment 8c**). Matthew asked the members to look at the projects and if there are any things missing to let him know.

C: The Center did a step process and Barbara is going to go into a workshop setting and perform more analysis and synthesis. Phase III and IV may change significantly. (Garrett)

C: We're right on the cusp of doing a low steady flow in the fall so why are we doing this? We were going to get information from 2000 and it won't be available. We've asked for the synthesis for a long, long time. We're already down the road of what we want to do (Davis)

C: We're only dealing with flows of the dam and whether low steady flows are going to be good for nonnative fish. We've been asking for this for a long time and a key question if LSSF are going to do things for our fish. There are huge questions associated with this. I think having a mini workshop might be a possibility. (Stevens)

R: There are some recent publications and information that have been completed. There is a relatively new report that summarizes transport work done in 2000. There is also a data series on nearshore measurements were done in that year so that data will be acceptable and will be part of that synthesis. (Melis)

Q: The managers think it is important for a large synthesis while scientists have been reviewing reports and are able to respond to RFPs in moving forward. Is there a knowledge assessment that precedes the next SCORE Report? (Kubly)

A: I don't know but highlight that for your attention. (Andersen)

Q: Out of these studies listed here, I don't see anything that relates to SSQs for dam operations at TCP and archaeogocial sites. Are these going to be accomplished? The other question under economics will also include impacts to tribal entities and also effects on tribal entities. (Heuslein)

Q: Would you consider in phase II? (Dongoske)

A: If there is a direction to do more, it will be more synthetic, taking existing data and looking at that. (Andersen)

HFT Work Plan / Impacts on 2008 Work. John Hamill passed out copies of the "Impacts of the High Flow Experiment on GCMRC's Approved FY08 Work Plan" (**Attachment 9**). He said GCMRC tried to articulate in the table the magnitude that went into the high flow experiment. He said the table identifies the project name as listed in the FY08 workplan. He went through the various projects and due dates. John said he didn't feel there would be any financial impacts but some things may be delayed but they will try to catch up.

Q: I don't see the AMP Effectiveness Workshop. (Barger)

A: That's out of my control. We proposed it for FY07 and it was canceled. We didn't put any money into the budget for FY08 for that. That's above me in terms of whether that is going forward. (Hamill)

Q: You don't show any impacts on staff time and things moving into FY09. I still see that as an impact. I don't see that reflected there. (Barger)

A: We're assuming those folks will still be around and working on those things and this will be just one of those assignments that will have to be done. (Hamill)

Chute Falls HBC Translocation/Augmentation. Glen Knowles said he didn't have a handout but Pam Sponholz has a PPT presentation, "Translocation of humpback chub above Chute Falls (**Attachment 10**). He said that by now most people are familiar with the FWS February 27, 2008 Biological Opinion and Reclamation's proposed action for that was for a high flow test in 2008 which was just completed as well as five years of MLFF with steady flows in September and October. In addition to that, Reclamation proposed a number of conservation measures as part of the proposed action to minimize the adverse effects associated with conducting high flow tests and other aspects of the proposed action. One of those conservation measures is translocation of humpback chub. He said FWS is planning to translocate HBC at Havasu Creek, **Shinimu** Creek, and Bright Angel Creek. They also want to continue doing translocations in the Little

Colorado River, taking them from near the mouth of the LCR and moving them upstream above Chute Falls. They would like to do that in 2008 and have procured funding as part of the 2008 budget process. Today's presentation will focus on what they've done in the past three years. This was a conservation measure in the 2002 and 2003 biological opinions to offset take from mechanical removal of non-native fish and conducting a high flow test in 2004. Pam proceeded with her presentation. She concluded with the benefits of the Chute Falls Project:

1. Increased abundance of HBC
2. 2-year old fish >200mm
3. Reduced mortality of YOY chubs
4. Increased historical range by 4km
5. Better understanding of life history

Q: Have you encountered disease issues, parasite issues up there? (Stevens)

A: None whatsoever. (Sponholtz)

Q: The KAS is an interesting analog to this but some of the concerns that we've had is because the dam has allowed this habitat to expand, and the snails have moved down to the habitat, we're concerned that the snails were getting away with an easier life and therefore diluting the overall genetic integrity of the snail population. This is also a possibility if conditions are really good for HBC above Chute Falls, the selection factor going on might drift downstream and soften that population a little bit. Can you talk a little bit about the loss of genetic integrity? (Stevens)

A: There are **some allelic (?)** differences between the fish that have been collected at Willow Beach backing the 1990's and the fish that are moved above Chute Falls which is interesting because they're both collected from the same place. We have done no genetic analysis on the three F1s that have been captured so essentially the fish above Chute Falls, it's not felt to be an issue now but is something this group should be aware of for future action. (Sponholtz)

Q: Is the food resources abundant upstream, what are going on in the downstream resources? (Weisheit)

A: There aren't a lot of in the lower basin.

Q: Concerned about the little chub eat by the lar cube =

Q: Have you done a diet study? (Kubly)

Q: We did one and then one did by Valdez

HFT Biological Opinion and Future Direction - Proposed Action on Conservation Measures. Dennis Kubly distributed copies of his PPT presentation, "Conservation Measures 2007 and 2008 Biological Opinions Glen Canyon Dam Operations" (**Attachment 11a**). He started off by identifying what conservation measures are under the ESA, Section 7. They're voluntary actions proposed by the action agency and in a biological opinion the Service evaluates the effects of the proposed action by the action agency on the listed species. So the conservation measures are intended to voluntarily offset any negative effects that might occur pursuant to undertaking the proposed action.

(In/out process question by Seaholm 1:53)

Q: three questions: HBC refuge (**time 1:58**), KAS genetics – current status, number of 3500 consultation trigger (Johnson)

R: tape (2:00) Matthew Andersen

(ENDED AT 2:02:16 of 3:32:45)

John Hamill presented a PPT on **the Monitoring and Research Plan (Attachment 11b)**. He said the MRP is going to the basis for the annual work plan budget. John feels it needs to be updated and suggest that when we have that AMWG meeting to update the Document and reflect this. He feels it needs to keep it on the agenda.

Comments:

C: There are two issues that the Science group brings to you, science development, and science planning. We said there should be some process of maintaining this documentation. The SA's that should go hand-in-hand. (Garrett)

Q: Is AMP the vehicle for doing work? I would like to go to the AMWG to do a 2-year budget, specifically for 2011 p-2012. (Kubly)

Rick and Larry will write a motion and present after lunch

Budget Ad Hoc Group Report on Preliminary FY09 Budget and Work Plan, Dennis Kubly passed out copies of the "Budget Ad Hoc Group Report to the TWG" (**Attachment 12a**). USBR was about \$2M down and Reclamation made and ask them if the general direction of the budget has begin. We didn't icregrate the CRAHG's opinions.

Overview of the budget process John passed out copies of the Memorandum signed April 4, 2008, FY09 Budget, Work Plan, and Hydrograph (**Attachment 12b**).

USBR Portion of Budget. Rick said he would like to see a BHBF in FY09. It will affect the rest of the motion which was prepared with Hopi, GCWC, and GCT. Dennis asked if he saw where the funding was identified. Dennis said he didn't have that information. Dennis suggested having the budget discussion and then talking about the hydrograph and consider Rick's motion at that time. Dennis said it relates to the analysis of the 08 test. We would also need to include the comments from NPS.

Amy asked how the budget fits in with the Strategic Plan. John said the budget he prepared was built around the CMINS, RINs, etc. Amy suggested adding a column for each of the budget items.

John thought it would be better to have a pre-discussion with the AMWG rather than put a lot of footnotes into the spreadsheet.

Leslie's comment on how the budget evolved to this point in time.

Discussion on Reclamation's portion of the FY09 budget:

Dennis said that we always put in the 3% CPI rate. The main changes are the reduction from LTEP compliance \$229,000 from FY09, leaving \$50K in the compliance and then moved the items down. There was \$250,000 in the treatment plan.

Mary said that the \$1.5 million was put in line 198. It would be nice to know what that money will be spent on.

- Mary wants it to be kept as a placeholder
- Larry: none of the budget line items reflect looking at extirpated species. Don't need to be included but it needs to be kept in mind on future budgets. John H said it was put in the MRP so it remains a concern as we review the MRP.
- Line B4 – Facilitator costs may be more

General Discussion on budget:

The budget discussion continued → comments captured in separate file.

The group identified their concerns.

The Park Service passed out their concerns (**Attachment 13**) -> **NORM DIDN'T MAKE ENOUGH COPIES**

– **Make sure it's one of the documents transferred onto memory stick!**

Norm – This budget incorporates the conservation measures and funding sources. By starting these, we don't have to say that they're all under the AMP. Move things toward management versus _____ (tape), Our intent is to have a balanced budget under the DOI cap in order to fully implement the GCPA.

Kurt asked if he was asking for the DOI intent and how does he want to see it handled by the TWG. Norm said it was to bring to AMWG as an additional item to the budget. This would go along with the budget. Norm said this would be an assumption under the umbrella of the AMP and under the cap.

Comments were taken on the NPS Budget (**Attachment 13b**). Andrea said that DOI hasn't been involved in the preparation of this and it hasn't been blessed by DOI. Norm said there was agreement on pulling coldwater fish ... the details on this and whether the NPS is ready to do requires further discussion. Andrea said there is a lot of money involved.

Don asked whether it was possible to get through this level of detail in 55 minutes. Don asked if this could be done at the next TWG Meeting. Norm said it could be done. He didn't it had to be done line item by line item.

Kurt said there are three motions to consider in terms of the FY09 budget, a HFE for 09, and two motions that Larry Stevens was going to pen. Our time is limited to cover all of this.

Mary said that WAPA has some concerns on timing and could split the TWG on this. Norm told Mary that they had been told this initiative was coming. He doesn't see it as anything different from what they've received from GCMRC. It's always been tucked into ancillary projects.

Kurt said he wanted more comments on this and then decide how to move forward. (time: 1:06:47)

Randy expressed concern that the monitoring and research need to stay under the program as it is and until we actually declare a management action to be moving it into any particular agency. Furthermore the conservation measures that USBR has agreed to and would like to see a lot of guidance on how a CM is going to be implemented.

Norm said they've relied on GCMRC to develop and review the protocols but the implementation is done by the NPS. This fits in with the overall paradigm throughout the whole US.

Leslie said given what Randy said when the program got shifted around, suggest you have the DOI agencies coming forward rather than having several departments and make one presentation. That's where a management action is determined. The DOI agencies need to be in sync. Leslie said there is the issue of keeping this under Reclamation.

Norm said that once we know the protocols for monitoring, then it's time for the management agency to do the work. He said they're trying to find savings.

Leslie said we don't need to get into the Law of the River but there are a lot of unanswered questions.

Kurt: in the interest of time to make comments.

Dave G: The SAs brought up a key issue that you'll be here in 2 days and transfer management actions and make some moves. If you had seen it then, it would've been easier to handle today. You haven't made decisions on management actions. The TWG needs to step up and line out these kinds of issues.

Jay Groseclose: Dave, you're exactly right. I don't think we can face these issues especially at the 11th hour. It does not seem to have any authority on the DOI Secretary. On behalf of our state, this kind of venue

where we're supposed to be working cooperatively is counterproductive and could set us back. If we want to undertake, let's put on the list. We can't do in the short time and not ready to accept this imposition.

Kurt: Let's recognize the NPS budget is out there and go back to the 09 budget. Do you want to go through and see if we have agreement on the items listed. Do we have agreement on most of the budget and recognize these issues in the revision of the next round of the budget. These will be addressed by the Center. Does anyone have any heartburn about accepting the 09 budget pending these issues.

Problem with the budget that don't include these issues:

Yes: 0 No:

Issues 1: Larry will bring up at the next TWG meeting. – Randy said to carry as a placeholder

Issue 2:

Motion Presented by GCT, GCRG, and Hopi Tribe.
Seconded by Mike Yeatts.

Bill Davis – How can you accept a motion at the meeting when we agreed that the TWG would be given a motion earlier to the TWG?

Rick – it's in line with the Operating Procedures.

Don O – question for GCMRC – is the information for the 08 test and ... before we do an 09 test?
I think the FONSI says you have to do that in order to do the test. This was referenced in the FONSI and BO. How do you do this?

Rick – it's the second paragraph. I would argue. We know that BHBF is the way to flow settlement. We know where we are parking settlement. It's a matter of details. Everything is going to be an experiment to some extent. We can put the stamp of approval on that.

Don – That's not what the FONSI says.

Bill D – that's not what we heard yesterday.

Larry S – it will take 6-8 years of what this flow did. There is no way to get a short-term answers. There is too long a time frame waiting for sediment management. We're trying to set the stage and come back and talk through the issues, there is enough sediment in the system, and limit impacts.

Bill W – Can Dennis or Glen answer

Don – I think the EA made the frequency of the tests. It was specifically considered. The tests cost a lot of money. I think the decision was made to get the information before we test every single hypothesis. We've done enough tests and save some of those funds.

Kurt – is it productive to continue this discussion? Call for the question

Motion results: Yes = 9 No = 10 Abstain = 1

Kurt went over the items for consideration:

Whiteboard Comments

1. ~~Extirpated species (Goal 3 – some concern that it's outside the program) – okay i~~
2. HFE in 09
3. LSSF Synthesis funding 09 (placeholder funding)
4. TWG Chair/Facilitator
5. Mainstem coldwater non-native control (line 74)
6. Nearshore ecology/FSF/(needs some plan) → USBR will provide \$
7. ~~Delay Veg work~~
- 8,. Tribal Liaison
- 9 – Overflight Photo during Sept.Oct
- 10 – AMP Effectiveness Workshop
- 11.- Sediment Transport Study – Have all data necessary
- 12, Conservation and other Measures

Budget Motion: The TWG reviewed the FY09 Draft Budget and raised the following concerns to be addressed by the AMWG:

Dennis: I'm fearful of asking them to solve our problems.

Kurt: Can we report to the AMWG at the first look and recognized there is an NPS proposal that needs to be integrated into another outyear budget or AMP budget?

Cliff: question about using funds out of the ceiling. Unsolved issues and like someone to have a good decision and discussion about that. (time 1:57:50).

FY09 Draft Budget, Work Plan and Hydrograph Recommendation to AMWG

Terrestrial PEP Results. Dr. David Cooper passed out copies of his panel report, "Review of Terrestrial Monitoring Protocols for the Grand Canyon" (**Attachment 13a**) along with his PPT presentation (**Attachment 13b**).

TWG Business – removed from agenda due to altering agenda items.

Adjourn: 3 p.m.

Respectfully submitted,

Linda Whetton
U.S. Bureau of Reclamation

General Key to Adaptive Management Program Acronyms

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

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