

**Glen Canyon Dam Adaptive Management Work Group Meeting
August 24-25, 2010**

Conducting: Anne Castle, Secretary's Designee
Facilitator: Mary Orton

Start Time: 9:30 a.m.

Committee Members/Alternates:

Perri Benemelis, AZ Dept. of Water Resources
Charley Bullets, Southern Paiute Consortium
George Caan, Colorado River Commission/Nevada
Kerry Christensen, Hualapai Tribe (alt.)
Jennifer Gimbel, Colo. Water Conservation Board
Ann Gold, U.S. Bureau of Reclamation
Amy Heuslein, Bureau of Indian Affairs
Leslie James, CREDA
Sam Jansen, Grand Canyon River Guides
John Jordan, Federation of Fly Fishers
Arden Kucate, Pueblo of Zuni
Leigh Kuwanwisiwma, The Hopi Tribe

LaVerne Kyriss, WAPA
Nikolai Lash, Grand Canyon Trust
Estevan López, NM Interstate Stream Commission
Steve Martin, NPS/GRCA
Ted Rampton, UAMPS
Mike Senn, Arizona Game and Fish Dept.
John Shields, Wyoming State Engineer's Office
Sam Spiller, U.S. Fish and Wildlife Service
Larry Stevens, Grand Canyon Wildlands Council
Dennis Strong, Utah Div. of Water Resources
Jerry Zimmerman, Colo. River Board of California

Committee Members Absent:

Loretta Jackson-Kelly, Hualapai Tribe

Interested Persons:

Patti Aaron, U.S. Bureau of Reclamation
Matthew Andersen, USGS/GCMRC
Deanna Archuleta, DOI
Adam Arellano, WAPA
Mary Barger, WAPA
Shane Capron, WAPA/TWG Chair
Lori Caramanian, DOI
Rick Clayton, U.S. Bureau of Reclamation
Jennifer Crandell, Colo. River Commission/NV
Marianne Crawford, U.S. Bureau of Reclamation
Kevin Dahl, National Parks Conservation Assoc.
Bill Davis, CREDA
Mary Daugherty, USGS/GCMRC
Kurt Dongoske, Pueblo of Zuni
Helen Fairley, USGS/GCMRC
Bert Frost, NPS
Dr. Dave Garrett, M3Research
Paul Grams, USGS/GCMRC
James L. Gourley, USBR/Glen Canyon Dam
Dr. Lance Gunderson, Emory University
John Halliday, DOI
John Hamill, USGS/GCMRC
Christopher Harris, Colo. River Board of California
Norm Henderson, National Park Service
Lisa Iams, U.S. Bureau of Reclamation
Lynn Johnson, DOI Solicitor's Office
Rick Johnson, Grand Canyon Trust
Robert King, Utah Division of Water Resources
Kate Kitchell, USGS/SBSC

Glen Knowles, U.S. Bureau of Reclamation
Ted Kowalski, Colo. Water Conservation Board
Dennis Kubly, U.S. Bureau of Reclamation
Jane Lyder, DOI/Fish, Wildlife, and Parks
Barbara McKenzie, USGS/GCMRC
Ted Melis, USGS/GCMRC
David Nimkin, National Parks Conservation Assoc.
Gopaul Noojibail, NPS/GRCA
Mary Orton, The Mary Orton Company
Don Ostler, Upper Colorado River Commission
Clayton Palmer, WAPA
Sarah Palmer, U.S. Institute for ECR
Colby Pellegrino, Southern Nevada Water Authority
McClain Peterson, Colo. River Commission/NV
Bob Snow, DOI
Mark Sogge, USGS
Pam Sponholtz, USFWS
Bill Swan, Imperial Irrigation District
Jason Thiriot, Colo. River Commission/Nevada
Benjamin Tuggle, U.S. Fish and Wildlife Service
Larry Walkoviak, U.S. Bureau of Reclamation
Carl Walters, UBC Fisheries Centre
Dave Wegner, U.S. House of Rep./Natural Res. Comm.
John Weisheit, Living Rivers
Malcolm Wilson, U.S. Bureau of Reclamation
Palma Wilson, NPS/GRCA
Barry Wirth, U.S. Bureau of Reclamation
Mike Yeatts, The Hopi Tribe

Recorder: Linda Whetton, USBR

Welcome and Administrative. Ms. Castle welcomed everyone to the meeting. Since her first meeting in August 2009, she feels there has been tremendous dialog and constructive discussions about how to move the adaptive management program forward in a way that honors all the resources the program is charged with protecting. She thanked everyone for their participation.

Approval of the February 3-4, 2010, Meeting Minutes. Ms. Castle asked if there were any corrections or additions. Mr. Caan moved the minutes be approved as amended. Ms. Kyriss seconded the motion. The minutes were approved by consensus.

Approval of the May 6, 2010, Webinar Minutes. There were no corrections noted. Mr. Rampton moved the minutes be approved. Mr. Christensen seconded the motion. The minutes were approved by consensus.

Action Item Tracking Report (Attachment 1). The report was reviewed. Ms. Castle noted there are still a number of "open" action items which will continue to be addressed. She asked if there were any questions and none were noted.

Response to Recommendations to the Secretary from February 2010 Meeting. Ms. Castle said the AMWG's recommendation from the last meeting was to request the Secretary of the Interior renew the Charter for two more years. The charter was renewed by the Secretary with only minor changes and was included in the meeting materials.

Legislative Updates. Mr. Kubly said the AMWG may be interested in reading H.R. 5023 which was introduced by Rep. Raul Grijalva (D-AZ). It's titled "Requirements, Expectations, and Standard Procedures for Executive Consultation with Tribes Act." Another bill, H.R. 1320 sponsored by Rep. William Lacy Clay (D-MO), is an attempt to ensure that advisory committees are open and transparent. That bill was moved to a Homeland Security committee. GSA also provided information relative to the FACA database that some fields may be added to provide for better recordkeeping. He said there are also a couple of other bills, one in the House and one in the Senate, that deal with the financing for the Upper Basin Recovery Implementation Programs, but neither of those have moved.

Grand Canyon Cave Scorpion. Mr. Spiller reported that the U.S. Fish and Wildlife Service published a positive 90-day finding on a petition to list the Grand Canyon Cave Scorpion under the Endangered Species Act in the Federal Register on Dec. 16, 2009, and a 12-month finding is being prepared for the regional director.

Northern Leopard Frog. Mr. Spiller said the U.S. Fish and Wildlife Service published a positive 90-day finding on a petition to list the Northern Leopard Frog under the Endangered Species Act in the Federal Register published July 1, 2009 and a 12-month finding is expected to publish in the Federal Register on 9/30/10.

Litigation Update: Mr. Snow said there has been ongoing litigation between GCT and DOI on many GCDAMP related issues since the fall of 2007. There was a hearing before Judge Campbell in May 2010 which addressed and focused on the adequacy of the September 2009 Supplemental Biological Opinion. There were two orders issued, one was in June 2010 and addressed the adequacy of the Sept. 2009 BO, and most recently there was an order issued in August. That order addressed whether the case should be bifurcated to allow a portion of the case to proceed up to the Court of Appeals in this region. In the most recent order the judge found that portions of the BO did not meet the requirements of the ESA and set a schedule for the FWS to address those provisions. The date for that action by the FWS is Sept. 1, 2010. The judge set out a briefing schedule as to how those issues would be addressed in the litigation. He thought the Justice Department and the Grand Canyon Trust are trying to work on a schedule for that briefing and will have to adjust some of the dates, but there will be an additional briefing this fall on the portions of the BO the judge addressed in his June order. The case is still pending in Phoenix. There have now been three major decisions issued (Sept. 2008, May 2009, and June 2010). If anyone wants a copy of those, they should contact Mr. Snow.

AMWG Nominations and Reappointments. Ms. Patti Aaron said the following AMWG appointments were made: Sam Jansen, John Jordan, LaVerne Kyriss, Estevan López, Jerry Cox, Alan Downer, Tony H. Joe., Jr., and Bill Stewart. The following individuals were AMWG reappointments: Dennis Strong and Cliff Barrett.

Tribal Liaison Position. Ms. Archuleta said about a year ago the GCDAMP tribes asked the Department for a liaison position between the Grand Canyon tribes and the Assistant Secretary's office to make sure there was a direct line of communication. She said the position was announced twice and there were two selection groups, one consisting of federal employees tasked with reviewing the applications, and a group of tribal representatives to review the applications as well. She introduced Mr. John Halliday, the new tribal liaison, and asked him to provide some information about himself.

Mr. Halliday was born in the northwest and has been a traditional dancer, traditional singer, knows his language, has participated in ceremonies, and also knows how to conduct ceremonies. He said it was very important to his mother that he be raised with their traditional beliefs. He feels in his heart and soul that he is Native American. His oldest brother was at the Wounded Knee incident. They've always had tribal leadership in their household for as long as he could remember and had discussions about the preservation of their tribal rights. He said his older brothers were always a part of the civil rights' movements, but he chose to study tribal government in college. He wanted to know why there was a 50% unemployment rate in Indian country, why the diabetes rate was at 50% and what they could do about it. One of the first things he did was become a member of the group that founded the American Indian Business Leaders which now has 35 chapters across America. He worked with the Harvard Project on executive leadership and economic development with the Montana Chairman's Association and with the Montana School of Law in developing uniform commercial codes for secure transactions on Indian reservations, in other words developing stability in tribal government with incentives for investment within Indian country. He also lectured at the Federal Reserve on lending in Indian Country and conformance with the Community Reinvestment Act, and worked on getting banks to lend money in Indian Country. He was the director of economic development for the Muckleshoot Tribe which developed the White River Amphitheater, a \$30 million project that addressed a lot of environmental issues with the Corps of Engineers. He then became the tribal liaison for the City of Seattle. The City of Seattle has five hydroelectric dams. The Columbia River goes up into Canada so he also worked with tribes in Canada and 16 tribes in Washington. They had superfund site issues and repatriation issues. He has also been the CEO for the Snoqualmie Tribe and there they had sacred site issues and acquiring lands that would be held in trust for the tribe for development. He then got recruited by the Muckleshoot Tribe to come back and be the operations manager for the tribe. When he first started as the director of economic development, they had a \$10 million budget and about 300 employees. They now operate with a \$200 million budget and about 3,000 employees. He has seen a huge growth in Indian Country but feels there is still a long way for them to go in creating relationships and development of partnerships with non-tribal governments, and with federal government etiquette and protocol of respecting tribal nations, respecting their sovereignty and ensuring the consultation process is followed properly.

Socioeconomic Workshop and Panel Report. (**Attachment 2a** = AIF and PPT). On December 2-3, 2009, GCMRC hosted a socioeconomic workshop for the TWG. The purpose was to review recently completed and ongoing socioeconomic studies that are directly relevant to assessing effects and trade-offs of Glen Canyon Dam operations and, using the information as a starting point, have a facilitated discussion among GCDAMP stakeholders to assist GCMRC in identifying and prioritizing questions and topics that would be useful to inform future GCDAMP decision-making, both within the next 3-5 years (Phase I) and further out in (Phase II). Dr. Michael Hanemann participated as a member of the research panel and gave a Powerpoint presentation, "Socioeconomic Workshop & Research Review Panel Report" (**Attachment 2b**). He offered the following concluding observations: 1) The AMP has made more progress in monitoring camping *beaches* than visitor *experience*, 2) The

panel identified flaws that in socioeconomic monitoring that have been present since 1986, 3) The current plan lacks a way to tie changes in flows to recreational and cultural values, 4) This is not consistent with any meaningful form of adaptive management, and 5) This can hardly withstand sustained scrutiny.

Dr. Hanemann said there is no other program like the GCDAMP that has the commitment to adaptive management. Unfortunately for 25 years there has been a blindspot when it comes to the non-power socioeconomic component. He said adaptive management can't be done if recreational and cultural values aren't considered relevant to the assessment and the connection isn't made in terms of the impact on user satisfaction which hasn't been measured since 1985.

TWG Chair Report. (**Attachment 2c** = PPT). Mr. Capron said the AMWG gave direction to the TWG at its February 2009 meeting to review the "Final Report of the GCMRC Socioeconomic Research Review Panel." The TWG formed an ad hoc group to review the report in greater detail. Upon conclusion of that process, the TWG passed a motion on July 27, 2010, stating they intended to do a more thorough review of the recommendations contained in the report but acknowledged the need to make immediate recommendations in light of the budgetary implications for the FY 2011-12 budget. Mr. Capron said the TWG would like direction from the AMWG as it will take more time and money to do the market analysis. Ms. Fairley said there is \$25K in a project to gather some basic information on visitor satisfaction but that it is a very restricted project. There is also a project under Goal 10 (Hydropower) with a proposal to do a workshop in FY11 to evaluate the GTMax model and conduct peer review. Assuming it would be approved, the model would be used to do a base case analysis.

When asked how the first part of the project would be paid for, Mr. Capron said it would be covered under the \$25K. It was his intent the TWG would identify future funding when they consider the FY 2012-13 budget. Mr. Hamill said there would be money in GCMRC's budget to assist with the work.

Since there would be proposed changes to the budget, Mr. Capron offered motion language which was had minor changes and was proposed by Ms. LaVerne Kyriss.

Proposed Motion (by LaVerne Kyriss, seconded by Mr. Stevens): The AMWG supports implementation of studies to further our understanding of the socioeconomics of adaptive management decisions within the AMP; this includes market, non-market, and non-use studies and western grid power analysis. Thus, the AMWG directs TWG to further develop an economics implementation plan to be provided to the AMWG at its next meeting for possible implementation starting in FY2012. That implementation plan will include the following components:

- a. Information needs associated with each study or analysis and the prioritization of those needs,
- b. Scope and costs associated with each project and potential funding sources,
- c. A description of how the information would be useful to the program, and
- d. A more thorough review of the economic panel report.

The following concerns were noted: 1) the importance of having a thorough review by the TWG, 2) inclusion of the western grid analysis and the true effects of modifications on power and the cost of power as well as the values of it, and 3) the need to understand the flow change and not compromise the western grid. Ms. Castle said it's obvious the western grid analysis is very important in terms of market use, non-market use, and non-use studies. She asked if the AMWG would be willing to accept the original motion language, delete the western grid power analysis, and have Mr. Lash and Mr. Martin ensure that the TWG members are directed to participate and make sure that the western grid power analysis doesn't drop out of the consideration. Mr. Martin said that if it's not going to drop out, then it should be left in. Mr. Lash concurred and said the Trust is very forthright in pushing for an aggressive hydrograph that will have costs to hydropower revenues and insurance that the western power grid will not be significantly compromised. He was agreeable to taking out the words but with the understanding they would be picked up later. **Ms. Castle called for the question on the motion.**

She asked if there was any objection to passing the motion by consensus. Seeing none, the motion was passed by consensus.

Final Motion: The AMWG supports implementation of studies to further our understanding of the socioeconomics of adaptive management decisions within the AMP; this includes market, non-market, and non-use studies. Thus, the AMWG directs TWG to further develop an economics implementation plan to be provided to the AMWG at its next meeting for possible implementation starting in FY2012. That implementation plan will include the following components:

- a. Information needs associated with each study or analysis and the prioritization of those needs,
- b. Scope and costs associated with each project and potential funding sources,
- c. A description of how the information would be useful to the program, and
- d. A more thorough review of the economic panel report.

Mr. Shields said everyone will have different perspectives on the usefulness of this information but they need to come to agreement on how the information is going to be used in the program and actually make decisions. He expressed disappointment that there wasn't more discussion about the policy and legal analyses on page 21 of the report. He said that everyone needs to recognize that what is much more important is not *how* the information will be useful but how it will be *used* in the program.

GCMRC Updates. (**Attachment 3a** = AIF with two reports). Dr. Grams gave a PPT, "Report on Sediment Modeling to Support Development of 2011 hydrograph" (**Attachment 3b**) which focused on sediment retention in different reaches of the Colorado River going downstream. He summarized that the steady year round flows consistently ranked top for sand retention and provides a sort of upper bound for comparison. He said the steady daily flows and equal volumes have similar results that indicate more sand retention than MLFF. The equalized monthly volume is slightly better for 11 maf while steady daily flows is slightly better for 8.23 maf. He said the seasonally adjusted flows ranks high for 11 maf but ranks low for 8.23 maf and this is because the maximum flow in this operating regime (18,000 cfs) is imposed for both volumes. The increased daily range consistently ranks just below MLFF for sand retention.

Dr. Grams gave a PPT on "Update on 2010 Sediment Inputs" (**Attachment 3c**) and provided the following summary:

- The tributaries have been fairly active this summer. Since July 1, 2010, the Paria River has supplied 440,000 ± 90,000 metric tons of sand and the Little Colorado River has supplied 420,000 ± 80,000 metric tons of sand to the Colorado River.
- However, owing to (1) relatively low sand inputs and (2) relatively high powerplant fluctuations during winter and summer months, the sand mass balance in upper Marble Canyon (RM 0 to 30) is only likely slightly positive between recession of the 2008 HFE and today. The change in the sand mass balance in upper Marble Canyon is +120,000 ± 600,000 metric tons during this period.
- In comparison, we had accumulated 1.2 million ± 600,000 metric tons leading up to the March 2008 HFE.

Report on Ecological Modeling. Dr. Walters said the fish and aquatic food base cooperators have been working together to analyze historical data from the aquatic ecosystem and fish populations with an aim to understand how those populations relate to water management policies. He gave a PPT presentation, "Findings from Ecosystem and NSE Modeling Workshops, March 2010" (**Attachment 3d**). He concluded by saying the main threat to native fishes in the Grand Canyon is the LCR. The LCR is the main spawning area for native fishes, especially humpback chub. He said that sooner or later while people are focused on mainstem, something very nasty is going to come down the LCR (toxic spill, exotic fish, tapeworm, low flow). He went through the policy implications of fish trends in the LCR and also past mistakes in the AMP aquatic ecosystem monitoring design.

Science and Management Presentation and Discussion. (**Attachment 4** = AIF and PPT).

Dr. Gunderson introduced himself and said that change is part of natural ecological systems. He gave a PPT presentation, "Evaluating Criteria Guiding Transition of Science and Management Activities in Adaptive Management Programs." He provided the following recommendations:

- To improve management/science transitions AMP should review and improve several areas of its programs.
- Improved criteria should be developed and continually used for consensus building; conflict resolution; goals and DFCs; entity roles; tradeoff and decision methods; planning and budgeting; monitoring programs.
- Following the Secretary and AMWG direction on DFCs, roles and other EIS related proposals, the TWG should accomplish as possible improved criteria and guidelines over the next three years.
- The SAs propose assistance on tradeoff and decision methods in FY 2011/2012.

Dr. Garrett said he looked at about 16 adaptive management programs and selected them because of some attributes they had that he thought would be beneficial to the AMWG for discussion. He said the evaluation was fairly simple. They identified the attributes that they thought do the transitioning in adaptive management programs. They identified GCDAMP weaknesses and tried to identify criteria in other programs that might help mitigate those weaknesses. They identified the following attributes they wanted to discuss: 1) Organization, Goals, and Leadership, 2) Program Planning and Budgeting, 3) Effective Science Monitoring, 4) Responding to Perturbations, 5) Assessments of Knowledge, and 6) Independent Review. He said that CAL-FED accomplished a great deal of work and made significant improvements and compared the GCDAMP with the CAL-FED program and its successes. He said leadership is critical to programs like this and commented on things Ms. Castle has done in her role as the Secretary's Designee. He felt the AMWG should take on some of the issues and the SAs could work with the TWG on them.

FY2010 USBR Mid-year Expenditures. (**Attachment 5** = AIF with two PPT presentations). Mr. Knowles gave a PPT presentation which showed Reclamation's expenditures through June 30, 2010.

FY2010 GCMRC Mid-year Expenditures. Mr. Hamill distributed copies of GCMRC's mid-year report and stated they expect to fully expend all power revenues so there won't be any carryover funds. He reported \$77K was returned to USBR for cancelled non-native fish control work, and \$150K for non-native fish control work was not transferred from the Experimental Flow Fund. Those returned funds will be carried over in FY 2011.

Basin Hydrology and Operations. (**Attachment 6** = AIF and PPT). Mr. Clayton said he would provide projections for Water Year 2011 and set the stage for the next discussion regarding development of a hydrograph for 2011. He provided the projected CRSP Storage WY 2011 storage levels for Flaming Gorge, Blue Mesa, Lake Powell, and Navajo. He said the reservoirs are operating in their normal range. They will go up and down through the year but they end up basically in the same place from the beginning of the year until the end of the year.

He said for the next three months the climate is projected to be quite hot and the precipitation is predicted to be below average in the basin. The River Forecast Center provides an outlook for the next water year in terms of what is expected to be inflow to the system. They use three scenarios to determine the range of what operations might occur next year. He pointed out that with a minimum probable scenario of 5 maf of unregulated inflow and maximum probable of 17 maf of unregulated inflow, the difference is huge. He said anything between those amounts can happen.

Referring to another slide, he said they apply the Interim Guidelines on an annual basis. It starts in August by using the 24-month study to determine which tier of four tiers is in operation: equalization, upper elevation, mid-elevation, and lower elevation. The amounts are based on January's projected elevation at Lake Powell. He referenced a footnote #1 which stated, "Subject to April adjustments that may result in balancing releases or releases according to the Equalization Tier." He said the 24-month study looks further out than just January; it looks all the way to the end of the next water year and the water year after that. It is projected an April adjustment will occur under all three scenarios. He said

there is a large disparity between the minimum probable projected release volume (9.0 maf), the most probable (11.6 maf), and the maximum probable (14.1 maf). He said the maximum probable projected annual release volume is 14.1 maf but noted that the actual volume to achieve Equalization by September 30th would be ~15.0 maf under the maximum probable scenario, but because the maximum probable projected release is limited by powerplant capacity, releases are restricted by scheduled unit maintenance resulting in the estimated release of 14.1 maf.

He went on to explain that the Glen Canyon Dam powerplant has eight units available and if they were all operating perfectly, they would release about 4,000 cfs from each unit as capacity. However, the powerplant is in a continuous state of maintenance. They try to schedule maintenance around critical times of the year when they know a lot of water has to be released. There are usually low volumes of water released in the spring, while larger releases in the summer and winter. Given all the maintenance needed at GCD and the current repair schedule starting with the April most probable, they're scheduling volumes of water that are the absolute maximum capacity the Dam can release. He said the release volumes made over the last 10+ years have been around 8.23 maf. They equalized in 2008 with a volume of 8.9 maf. Even under the minimum probable scenario of 9.0 maf, they're projecting more water to be released than was released in any year for the last 10 years.

When they prepare the 24-month study model, they have to program monthly release volumes to get to the annual volume required for the interim guidelines. They have done their best to distribute those large annual volumes to manage the risk, that it goes dry or goes wet at some point midway through the year. He said that's why the first four months of the minimum probable scenario, most probable, and maximum probable have exactly the same operation in them. They should know by February what kind of year they're going to have and that's why there is a departure in their operations from minimum to maximum beginning in that month. He said the monthly volumes are still under discussion and are not locked into the 24-month study. He said steady flows are still scheduled for September-October 2011. The target for the minimum probable, which is a 9.0 maf release, is 8,000 cfs; 12,000 cfs for the most probable which is at 11.6 maf release, and maximum probable would be powerplant capacity of about 22,000 cfs.

Fiscal Year 2011-12 Hydrograph. (**Attachment 7a** = AIF) Ms. Castle said the Interior agencies and Western Area Power Administration have jointly proposed a hydrograph for 2011 which was sent out on July 23, 2010. She also said the Grand Canyon Trust has a proposed hydrograph they will propose following today's presentations. She informed the AMWG that she spoke with Secretary Salazar about the DOI-DOE joint hydrograph recommendation. He is familiar with the Law of the River and the various issues the GCDAMP is dealing with. He supports and encourages the efforts of the Interior agencies to move forward and to manage the Colorado River based on sound science and with full Federal protection of the resources downstream. He welcomes the participation of WAPA in this truly collaborative effort and wants to encourage the AMWG to engage in this discussion and collaboration to assure protection of water deliveries and the Law of the River, but working hard toward the improvement of environmental, cultural, and recreational resources downstream of Glen Canyon Dam. She said the Department views this joint agency proposal as part of their adaptive management responsibilities. It is a modest adjustment to the operations within the 1996 Record of Decision in adaptively managing the science that they've seen and heard about today concerning the retention of sediment for the benefit of resources downstream. She said that was the spirit with which the proposal was made.

Reclamation Presentation. Mr. Walkoviak stated that at this time last year Mr. Clayton reported there was a 50/50 chance of equalization. The volume was around 10 or 10.5 maf if there was equalization. The runoff didn't develop and to prepare for that they had some higher releases this past November but especially in December, January, and into February, but the snowpack never developed. They dropped down to 8.23 maf and so that pretty much set the release regime for this year. At this time, they're again at a 50/50 chance of equalization but the equalization number is even higher. He said the TWG held a conference call and raised questions regarding some analysis and then last week the

analysis was sent out looking at scenarios, sediment, temperature, power. That document laid out the operational parameters and had two scenarios. The first scenario bracketed lower-type annual releases, 8.23 maf up to the balancing of 9.0 maf. The second scenario got into the equalization releases. He passed out a revised document (**Attachment 7b**) and noted the changes in the paragraph starting with "Daily peaks will not be greater ..." and inserted "daily peaks are anticipated not to be ..." in both scenarios. He said the changes were made to address the potential uncertainties that may come up.

Grand Canyon Protection Act (GCPA) Background Information. Ms. Lyder said she has been fascinated with the legislative process and has worked with legislation for the last 30 years. She has drafted legislation, interpreted legislation, developed the Department's position on legislation, and also kept the legislative history files. Her presentation (**Attachment 7c**) focused on the history of the GCPA, what Congress was thinking when they passed the GCPA, and what could be done with the 1995 EIS and 1996 ROD. She said the hydrograph they developed wasn't very different from last year's hydrograph. It is not everything the NPS wants or asked for going into the hydrograph discussions. They wanted to sit at the table and develop a relationship with Reclamation as the hydrograph was developed. As such, they created conversations between NPS, Reclamation, and FWS that hadn't occurred before and then talked with Western. She wanted people to recognize that the proposed hydrograph may not be the "be all, end all" hydrograph, but it is a hydrograph that was done using a process of listening, taking into consideration some of the concerns of the resource agencies, and putting them on a good path for the future in how they develop operational criteria.

GCMRC Anticipated Benefits to Sediment. Dr. Grams gave a PPT, "Report on modeling the 2008-2010 period to support development of the 2011 hydrograph," (**Attachment 7d**). He summarized his findings:

- The total annual release volume has the strongest impact on sediment transport and retention. Because we are comparing scenarios with identical annual volumes, the differences in sand accumulation result from the different distribution of monthly volumes and daily patterns.
- In general, historical MLFF has slightly higher sand retention in the early spring and summer and the DOI/DOE proposed scenario has slightly higher retention in late summer and early fall.
- The net result is slightly higher end of year sand retention under the DOI/DOE proposed scenario.
- Depending on how an HFE trigger is defined, 5% could affect the determination to implement a high flow.
- It is uncertain whether the small increase in sand retention would occur in the visible sandbars (sandbars between the 8,000 and 20,000 cfs level) or at lower elevations.

Power Operations. LaVerne Kyriss gave a PPT, "Proposed WY 2011 Hydrograph: Impacts on CRSP Electric Power Resources" (**Attachment 7e**). Her presentation focused on the approach Western took in evaluating impacts on hydropower. She provided the following impact analysis conclusions:

- WY 2008 comparison → net reduction in cost to Western estimated at \$352,000
- WY 2009 comparison → net cost to Western estimated at \$258,000
- WY 2010 comparison → net cost to Western estimated at \$535,000

Grand Canyon Trust Hydrograph Proposal. Mr. Lash distributed a copy of their proposed motion (**Attachment 7f**). He said the GCPA is a good place to start in understanding the AMWG's charge to determine a hydrograph. He said it's really clear what Congress said in the committee reports in prioritizing the interests: 1) water, 2) Grand Canyon, and 3) power. He said power gets to be maximized to the extent possible consistent with improving Grand Canyon. He said the DOI-DOE hydrograph is misguided. As a FACA committee, he stated the GCDAMP is charged with improving Grand Canyon and the Glen Canyon National Recreation Area and should be delivering the best recommendation to the Secretary. He proposed the following motion:

MOTION (Proposed by Nikolai Lash, seconded by Sam Jansen):

The AMWG recommends to the Secretary of the Interior that,

1. If the annual release volume for WY 2011 is forecast to be between 8.23 and 9.25 maf in the 2011 AOP, then test SASF as it is described in the 1995 EIS on Glen Canyon Dam operations. If the forecast changes, and the annual volume needs to be adjusted, then pro-rate monthly volumes to maintain the same pattern of monthly volumes.
2. If the annual volume forecast in the 2011 AOP is greater than 9.25 maf, then test Year-Round Steady Flows as it is described in the 1995 EIS on Glen Canyon Dam operations. If the forecast changes, and the annual volume needs to be adjusted, the pro-rate monthly volumes to maintain the same pattern of equal monthly volumes. Finally, adjust September and October monthly volumes as recommended by GCMRC to accommodate the nearshore ecology research program.
3. In addition to these flows,
 - a. Test an HFE under enriched sediment conditions as frequently as those conditions may recur.
 - b. Test non-native control measures recommended by GCMRC.

Ms. Castle asked if there were any public comments on the motion. Hearing none, she asked if there was objection to consensus on the motion. Seeing there was, she asked for a roll call vote:

Stakeholder	Vote	Stakeholder	Vote
Arizona	N	Hualapai Tribe	N
Arizona Game and Fish Department	N	National Park Service	A
Bureau of Indian Affairs	N	Navajo Nation	Absent
Bureau of Reclamation	N	Nevada	N
California	N	New Mexico	N
Colorado	N	Pueblo of Zuni	A
Colorado River Energy Distributors Association	N	Southern Paiute Consortium	Absent
Federation of Fly Fishers	A	Utah	N
Fish and Wildlife Service	N	Utah Associated Municipal Power Systems	N
Grand Canyon River Guides	Y	Western Area Power Administration	N
Grand Canyon Trust	Y	Wyoming	N
Grand Canyon River Wildlands Council	A	San Juan Southern Paiute	Vacant
Hopi Tribe	A		

Voting Results: Yes = 2 No = 15 Abstaining = 5 Total Voting = 17 2/3 = 12				
Motion Fails				

MOTION (Proposed by Ann Gold, seconded by LaVerne Kyriss): The Adaptive Management Work Group recommends to the Secretary the Proposed DOI/DOE Hydrograph as updated and modified and as distributed to the AMWG, August 24, 2010 (“July 23, 2010, with August 23, 2010 Edits”).

Introduction: The Federal agencies involved in the Glen Canyon Dam Adaptive Management program have jointly drafted this recommendation for the projected operation of Glen Canyon Dam in 2011. This recommendation is consistent with the Law of the River and the Grand Canyon Protection Act, which states that the Secretary of the Interior will operate Glen Canyon Dam “in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use.” This recommendation is designed to enhance protection of downstream resources. It can be implemented consistent with existing environmental and operational limitations applicable to Glen Canyon Dam, the annual release requirements of the 2007 Interim Guidelines, applicable operating limitations for Glen Canyon Dam, and the 1996 Glen Canyon Dam Record of Decision (ROD). This approach to operations does not modify the Interim Guidelines, operating criteria or ROD and falls within the parameters of the Modified Low Fluctuating Flow alternative adopted in the ROD.

The National Park Service and U.S. Fish and Wildlife Service provided the initial draft of the operational concepts included in the recommendation to enhance protection of downstream resources. The Bureau of Reclamation provided technical support, clarifications, and refinements to assure these operational concepts would be consistent with the annual release requirements of the Interim Guidelines and applicable operational limitations for Glen Canyon Dam. The Bureau of Indian Affairs has had the opportunity to participate in the development of this recommendation and has reviewed the drafts. The USGS Grand Canyon Monitoring and Research Center has reviewed this recommendation and added its comments. Western Area Power Administration has evaluated the recommendation, participated in discussions concerning its operational impacts, and supports it.

It is Interior's intention to share this proposed recommendation with stakeholders in the Glen Canyon Dam Adaptive Management Work Group prior to the beginning of the 2011 water year, so as to provide an opportunity for input from the participating AMWG stakeholders. It is also Interior's intention to include a projected operation for Glen Canyon Dam during the 2011 water year in a Draft 2011 Annual Operating Plan for Colorado River Reservoirs at the earliest appropriate opportunity. In addition, language will be added to the 2011 Annual Operating Plan to reference the ongoing NEPA process to develop an Experimental Protocol for High-Flow Releases from Glen Canyon Dam, and such language will note that pending completion of the ongoing NEPA process, if a high-flow release is undertaken in Water Year 2011, projected operations of Glen Canyon Dam will be modified consistent with the final experimental protocol. A draft of the information proposed to be added to the Draft 2011 AOP is attached as Attachment 1 to this summary.

Purpose: To develop recommendations for operational 2011 hydrographs based on anticipated possible annual release volumes for Water Year 2011 from Glen Canyon Dam consistent with Section 1802 of the Grand Canyon Protection Act. The operational hydrographs are within the framework of the 1996 Record of Decision and Modified Low Fluctuating Flow (MLFF) operation, consistent with balancing other resources, including power production, and recognize the variability of possible annual release volumes from Glen Canyon Dam under the 2007 Interim Guidelines.

The concept is to apply sound science principles within the framework of adaptive management to adjust the timing of water deliveries to protect and restore flow-dependent resource conditions. The fundamental principle is conservation of the sand resource in order to minimize sand export to Lake Mead and degradation of sandbar resources within the Colorado River ecosystem (CRE). (Note: Recently, a new sand routing model was developed for the CRE [Wright and others, 2010] that evaluates a variety of operational hydrographs from Glen Canyon Dam [including typical MLFF releases] using average annual sand production from both the Paria and Little Colorado Rivers.)

Two scenarios are presented below based upon the range of probable 2011 water year releases from Glen Canyon Dam. It is anticipated that the annual release volumes would likely fall within two sets of annual operations as described below. The agencies expect that the projected releases will be modified as the year progresses to address changing conditions in the same manner as has typically occurred. Proposed parameters for such ongoing operational modifications are also provided.

Water Year Scenario #1: 8.23 – 9.0 million acre feet (maf) – Balancing

Objective: To implement reasonable measures to minimize export of tributary sand inputs delivered to the main channel so as to benefit the lower elevation ecosystem of Grand Canyon National Park, including the ecological processes and functions that affect native flora and fauna, archeological and cultural resources, recreation uses, and other values for which Grand Canyon National Park was established.

Science Principles: For any given annual volume of water released from the dam, sand export is known to be minimized by reducing daily/monthly/seasonal variations in dam

releases. (Rubin and others, 2002; Wright and others, 2005; Wright and others, 2008; ASCE, 1975; USDOI, 1995; Topping and others, 2006).

Proposed Operating Parameters:

- Monthly Release Volumes will be adjusted each month based on the most current forecast of the annual release required by the 2007 Interim Guidelines.
- Monthly Release Volumes will vary within a range of +/- 100,000 acre-feet from the Average Monthly Release Volume over the water year (defined in the next bullet). This monthly operational flexibility will be used for existing power production operations under the Modified Low Fluctuating Flow (MLFF) alternative selected by the 1996 ROD and contained in the 1995 FEIS. Modifications of monthly release volumes will be made in consultation with Western Area Power Administration.
- Average Monthly Release Volumes will be the amount of remaining water to release for the water year divided by the remaining months in the water year (excluding the September/October steady flows).
- Daily peaks are anticipated to not be greater than 16,000 cubic feet per second (cfs), with all other flow parameters of the current MLFF in place. It is important to note that there may be limited operational circumstances where releases may be higher than 16,000 cfs due to circumstances such as: unusually high equalization requirements (e.g. above 13 maf); unusually late or efficient runoff (i.e. snowpack that melts quickly and results in a larger proportion of runoff); unexpected system outages or unanticipated maintenance.
- Additionally, the Bureau of Reclamation will continue to apply best professional judgment in conducting actual operations and in response to changing conditions throughout the water year. Such efforts will continue to be undertaken in coordination with the DOI/DOE agencies to consider changing conditions and adjust projected operations in a manner consistent with the objectives of these parameters as stated above and pursuant to the Law of the River.
- Steady flows in September and October per the 2008 HFE Environmental Assessment (EA), with monthly volumes of approximately 500,000 to 600,000 acre feet (about 8,000 to 10,000 cfs).

Expected Resource Results: Under this scenario, at the lower release volume of 8.23 maf, accumulation of some portion of new tributary sand inputs would likely occur in both Marble and Grand Canyons (Wright and Grams, 2010), but it is less certain that any new sand inputs would accumulate at the higher 9.0 maf volume. Recreational camping beaches would be expected to continue to degrade at previously reported rates associated with MLFF, with perhaps lower erosion rates of camps in summer and winter months (Kaplinski and others, 2005). It is not expected that there would be an increase in size and distribution of camping beaches throughout the river corridor; recreational rafting safety would be unaffected. Terrestrial and river edge aquatic riparian habitats, archaeological sites and historic properties would show no improvement. With lower summer peaks associated with this scenario there may be some vegetation encroachment on sand bars and camping beaches.

Water Year Scenario #2: Above 9.0 million acre feet (maf) – Equalization

Objectives: To implement reasonable measures to minimize erosion of sandbar deposits for purposes of reducing degradation to the lower elevation ecosystem of Grand Canyon National Park, including the ecological processes and functions that affect native flora and fauna, archeological and cultural resources, recreation uses, and other values for which Grand Canyon National Park was established. Science Principle: For any given annual volume release of water, sandbar erosion and sediment transport is minimized by reducing both daily/monthly/seasonal variations in volume releases, and by

minimizing subsequent daily variations in discharges. (Rubin and others, 2002; Wright and others, 2005; Wright and others, 2008; ASCE, 1975; USDOl, 1995; Topping and others, 2006).

Proposed Operating Parameters:

- Monthly Release Volumes will be adjusted each month based on the most current forecast of the annual release required by the 2007 Interim Guidelines.
- Monthly Release Volumes will vary within a range of +/- 100,000 acre-feet from the Average Monthly Release Volume over the water year (defined in the next bullet). This operational flexibility will be used for existing power production operations under the Modified Low Fluctuating Flow (MLFF) alternative selected by the 1996 ROD and contained in the 1995 FEIS. Modifications of monthly release volumes will be made in consultation with Western Area Power Administration.
- Average Monthly Release Volumes will be the amount of remaining water to release for the water year divided by the remaining months in the water year (excluding the September/October steady flows).
- Daily peaks are not anticipated to be greater than 22,000 cfs, with all other flow parameters of the current MLFF in place (including daily range in fluctuating flows up to 8,000 cfs), including the fall steady flows required in the 2008 High Flow Experiment Environmental Assessment (2008 HFE EA). It is important to note that there may be limited operational circumstances where releases may be higher than 22,000 cfs due to circumstances such as: unusually high equalization requirements (e.g. above 13 maf); unusually late or efficient runoff (i.e. snowpack that melts quickly and results in a larger proportion of runoff); unexpected system outages or unanticipated maintenance.
- Additionally, the Bureau of Reclamation will continue to apply best professional judgment in conducting actual operations and in response to changing conditions throughout the water year. Such efforts will continue to be undertaken in coordination with the DOI/DOE agencies to consider changing conditions and adjust projected operations in a manner consistent with the objectives of these parameters as stated above and pursuant to the Law of the River.
- Steady flows in September and October per the 2008 HFE Environmental Assessment (EA).

Expected Resource Results: Under this scenario, loss of recreational camping beaches would be reduced to the extent possible by minimizing sediment transport (Wright and Grams, 2010). Recreational rafting values may benefit from the more limited fluctuations. Terrestrial and aquatic river edge riparian habitats and archaeological sites may continue to degrade, but the amount of loss may be reduced under this recommended flow regime.

Mr. Zimmerman said he wanted some clarification because he could vote for the most probable hydrograph as proposed recognizing that during the year they're going to have to adjust to what amount of volumes are. He said the most probably hydrograph sets out the flow patterns, etc.. Ms. Castle told him the AMWG is voting on the parameters that are described in the document that was referred to so there will be adjustments through the year. The adjustments will be made within the parameters that are described but with the modifying language that Mr. Walkoviak discussed. He offered the following amendment to page 3, fifth bullet under Proposed Operating Parameters, adding to the last word in the sentence to read, **"and pursuant to the Law of the River."** The language would also be added to the language under Water Year Scenario #2..."

Ms. Gold accepted the amendment and Ms. Kyriss seconded the amendment.

Mr. Zimmerman said the concern he had is that the maximum probable releases would result in flows that aren't actually equalized during the water year, so equalized volumes would be extended beyond the water year to meet the previous year's release requirements. He believes that determination cannot be made at this point in time because it's not consistent with the 2007 ROD. He said the way that decision is made during the operating year is if that circumstance does occur there would be discussion *as appropriate* to release it during the water year. At that point in time, he said the Secretary could make a decision in consultation with others that it's appropriate to extend that beyond the water year. He feels its therefore difficult to be voting on that portion of the hydrograph at this time.

Mr. Lash asked if the hydrograph was an experiment and if it's something thought to be outside the ROD. Ms. Lyder told him it was within MLFF. He asked at what point does the Secretary's discretion . He said the Interior agencies are squeezing the limits of dropping down to 22,000 cfs from 25,000 cfs and felt it was a little tinkering with the ROD. He felt it was an experiment. Mr. Walkoviak told him Reclamation tried to lay out in the July 23rd document what the thinking was and didn't believe what they were proposing was outside the ROD. He said they are not describing the 16,000 or the 22,000 cfs as a forever change, but only for 2011. Mr. Lash said it is moving the boundaries of the ROD a little bit for the purpose of the 2011 hydrograph which sounded like an experiment to him. Ms. Castle said that the ROD doesn't say you must exercise the maximum and minimum; it says those are the maximums and minimums and within that range and that the Department believes there is some flexibility but staying within the MLFF regime so not going to a different regime that was considered and rejected in the 1996 ROD.

Ms. Gimbel said that in light of what Ms. Castle just said and Nikolai's question, she asked if the first paragraph could be reviewed because that was part of her confusion. Reading the last sentence, "This approach to operations does not modify the Interim Guidelines, operating criteria or ROD and is an adaptive management-based experimental approach ..." She recommended the word "experimental" be deleted to avoid any confusion.

Ms. Castle asked if there was any objection or further discussion on the proposed change. Mr. Stevens said that everything done in the program is experimental.

Mr. Caan said he wasn't sure what was meant by the words, "with the goals of these parameters" at the end of the fifth bullet. He suggested removing the words "the goals of these" because he didn't know what the goals were. Ms. Castle said the concept was the goals described on the second page where it read, "The fundamental principle is conservation of the sand resource in order to minimize sand export to Lake Mead and degradation of sandbar resources within the Colorado River ecosystem." He said if he was the only one unclear on this, then he could accept the motion language. He felt it was really critical that if there are changes, the changes would be based on something so that the group can point to what that something is. Ms. Castle said there is a paragraph under each scenario with objectives and she felt those could be goals as well as objectives. She said it might be wise to change the sentence to read, "in a manner consistent with the objectives." He deferred to Ms. Castle in what she felt helps make the sentence clear to everyone.

Ms. Castle asked if the proposer of the motion and the person who seconded the motion, were okay with the changes: "goals of these parameters" with "objectives as stated above and pursuant to the Law of the River." Ms. Gold agreed to the amended language as did Ms. Kyriss who had seconded the motion. The language would be applied to both scenarios.

Ms. Gimbel said she wanted to go back to the first paragraph and rather than just deal with "experimental" that the group eliminate the phrase and basically say, "This approach to operations does not modify the Interim Guidelines, operating criteria or ROD and falls within the parameters of the Modified Low Fluctuating Flow alternative adopted in the ROD."

Ms. Castle asked if there were any objections to the changes proposed by Ms. Gimbel. There were none noted. Ms. Orton reviewed the motion with the revised changes.

Ms. Castle asked if there were any public comments on the motion. Seeing none, she asked if there was any objection to passing the motion by consensus. Seeing there were, she asked for a roll call vote:

Stakeholder	Vote	Stakeholder	Vote
Arizona	Y	Hualapai Tribe	Y
Arizona Game and Fish Department	Y	National Park Service	Y
Bureau of Indian Affairs	Y	Navajo Nation	Absent
Bureau of Reclamation	Y	Nevada	Y
California	Y	New Mexico	Y
Colorado	Y	Pueblo of Zuni	A
Colorado River Energy Distributors Association	A	Southern Paiute Consortium	Absent
Federation of Fly Fishers	A	Utah	Y
Fish and Wildlife Service	Y	Utah Associated Municipal Power Systems	A
Grand Canyon River Guides	A	Western Area Power Administration	Y
Grand Canyon Trust	N	Wyoming	Y
Grand Canyon River Wildlands Council	Y	San Juan Southern Paiute	Vacant
Hopi Tribe	Y		
Voting Results: Yes = 16 No = 1 Abstaining = 5 Total Voting = 17 2/3 = 12 Motion Passes			

Ms. Castle thanked everyone for their attention to the proposal and the efforts that were put into making it something that people could view as an appropriate adaptive management technique.

FY 2011-12 Budget and Work Plan (Attachment 8a = AIF)

TWG Chair Budget Report. Mr. Capron gave a PPT, "The Road Map" (Attachment 8b). He concluded with the TWG motion and the changes which were noted. He felt it was an effective process to look two years out in the budget process but noted there is uncertainty in the second year because of the pending non-native and a HFE environmental assessment which may have budget implications.

Reclamation Budget Overview. Mr. Knowles gave a PPT, "BOR FY 11-12 Budget Overview" (Attachment 8c). He said Reclamation had to deal with the CPI rate. Originally it was thought to be 0% but then changed it 2.5% based on the CPI that was being reported at the time the budget was being prepared. It has since dropped to 1.2% and could fluctuate between now and the end of the fiscal year. They are forecasting 3% for FY 2012. He noted the following changes:

- POAHG Line Item. One of the changes GCMRC proposed and the TWG adopted was to cut the POAHG funding in half. The rationale was that the POAHG had done a lot of its work in the first phase of its operation and needed to come back to the AMWG for direction on what would happen in the second phase.
- Compliance Documents. Reclamation had initially proposed the Canyon Treatment Plan be reduced by \$300,000 in FY11 and that money put into the Compliance Documents line item. They made that proposal because the intention of Interior was to embark on the long-term experimental and management plan (LTEMP) EIS in FY11. They feel the funding is needed to get that effort started.
- Canyon Treatment Plan. They had some issues with the contractor for the Canyon Treatment Plan, an agreement with Utah State University, and are in the process of terminating that agreement. They've also had some discussions with the tribes with what constitutes treatment under the Programmatic Agreement and there is a great deal of disagreement among the tribes and the PA signatories on what constitutes treatment. They want to conduct a workshop with GCMRC to better integrate tribal values into the Canyon Treatment Plan implementation. As such, they didn't feel the full \$500,000 was needed

as the implementation would not take place and the remaining \$200,000 was sufficient for the planning that was needed against that contract. The TWG recommended that the Canyon Treatment Plan be left fully funded at \$500,000 until Reclamation can demonstrate its in compliance with the reduction. There are ongoing internal DOI discussions on how to best deal with this issue.

- NPS Permitting. The NPS Permitting line item was proposed to be cut in order to fund two other line items, 1) the non-native fish suppression contingency fund, and 2) the compliance documents fund. The TWG told Reclamation and GCMRC that they needed to go back to Interior and resolve the NPS funding needs. The TWG took no action on cutting the NPS permitting work line item. They've since had internal DOI discussions and made a decision to work with GCMRC to fully fund that line item for both FY11 and FY12.
- Experimental Flow Fund. GCMRC did reduce this and reallocated those funds to the non-native fish suppression fund. The TWG recommended the non-native fish suppression funding be moved back into the EFF carryover. They did that because the tribes were concerned that putting that money in the line item for the fish suppression contingency fund implies that Reclamation has already determined how that money would be spent before completion of the non-native fish control EA.

GCMRC Budget Overview. Mr. Hamill gave a PPT presentation, "GCMRC Biennial Work Plan for Fiscal Years 1011-12" (**Attachment 8d**). He provided the following GCMRC recommended budget changes:

- See August 6th memo; reviewed with TWG on August 13
- Minor language changes
- Drop fall multi-year mainstem fish monitoring trip
- Reinstate one spring mainstem electrofishing monitoring trip
 - Maintains long term data set
 - Provides estimate of trout abundance and native fishes
 - Added cost: \$100,000 (from NN Contingency Fund)
- Maintain fall monitoring of HBC aggregations near Shinumo and Havasu creeks
- Request these changes be incorporated into AMWG budget motion

Due to limited time, Mr. Hamill's presentation was continued on the next day's agenda.

PUBLIC COMMENTS:

Dave Nimkin. *I'm the regional director for the National Parks Conservation Association serving the four corner states and am based in Salt Lake City. As I had commented the last time, I'm relatively new to this process. I haven't had the luxury and pleasure Ms. Lyder did reviewing all the meeting minutes back to 1997 so I have to make do with what I've heard. I thought some of the discussion today related to the socioeconomic analysis that is pending and seemingly lacking is really important in your deliberations. In the review that we have as the public to understand what the tradeoffs are, the term costs versus benefits would be really important for us. I also felt Ms. Lyder's comments about the purpose and history of the adaptive management process and the Grand Canyon Protection Act was pretty fundamental. From the data I've seen on resources that have continued to degrade, I want to know there are efforts being made through science to find ways to ameliorate the problems. I appreciated the effort by the Grand Canyon Trust and the presentation Nikolai made on the hydrograph and how the conditions within the Grand Canyon could actually be improved. I may be overly simplistic and Nikolai was pretty quick to say that even from the start he knew he'd lose, but I still think it's an important proposition. The only consideration I hear on why that isn't possible and why it couldn't be considered if it's not consistent with the ROD that was approved in 1996 is that this proposal is not consistent with MLFF. I guess part of my question is, what is the time frame and when would we be likely to be able to see some review or reconsideration of the ROD that seemingly doesn't allow for the kind of adaptive management that I think is what this program is all about.*

In responding to Mr. Nimkin's comments, Ms. Castle pointed out that the Secretary has directed the development of a long-term experimental and management plan for Glen Canyon Dam and they're anticipating that process would begin around the end of the calendar year. At that time there will be reconsideration of the various flow regimes that could protect resources and stay consistent with the Law of the River.

Adjourned: 5:50 p.m.

Glen Canyon Dam Adaptive Management Work Group Meeting August 24-25, 2010

Conducting: Anne Castle, Secretary's Designee
Facilitator: Mary Orton

Start Time: 8 a.m.

Committee Members/Alternates:

Perri Benemelis, AZ Dept. of Water Resources
George Caan, Colorado River Commission/Nevada
Kerry Christensen, Hualapai Tribe (alt.)
Jennifer Gimbel, Colo. Water Conservation Board
Ann Gold, Bureau of Reclamation
Amy Heuslein, Bureau of Indian Affairs
Leslie James, CREDA
Sam Jansen, Grand Canyon River Guides
John Jordan, Federation of Fly Fishers
Arden Kucate, Pueblo of Zuni
Leigh Kuwanwisiwma, The Hopi Tribe

LaVerne Kyriss, WAPA
Nikolai Lash, Grand Canyon Trust
Estevan López, NM Interstate Stream Commission
Steve Martin, Grand Canyon National Park
Ted Rampton, UAMPS
Mike Senn, Arizona Game and Fish Dept.
John Shields, Wyoming State Engineer's Office
Sam Spiller, U.S. Fish and Wildlife Service
Larry Stevens, Grand Canyon Wildlands Council
Dennis Strong, Utah Div. of Water Resources
Jerry Zimmerman, Colo. River Board of California

Committee Members Absent:

Charley Bullets, Southern Paiute Consortium

Loretta Jackson-Kelly, Hualapai Tribe

Interested Persons:

Matthew Andersen, GCMRC/USGS
Deanna Archuleta, DOI
Adam Arellano, WAPA
Mary Barger, WAPA
Shane Capron, WAPA/TWG Chair
Lori Caramanian, DOI
Rick Clayton, U.S. Bureau of Reclamation
Jennifer Crandell, Colo. River Commission/NV
Marianne Crawford, U.S. Bureau of Reclamation
Kevin Dahl, National Parks Conservation Assoc.
Bill Davis, CREDA
Mary Daugherty, USGS/GCMRC
Kurt Dongoske, Pueblo of Zuni
Helen Fairley, USGS/GCMRC
Bert Frost, NPS
Dr. Dave Garrett, M3Research
Paul Grams, USGS/GCMRC
James L. Gourley, USBR/Glen Canyon Dam
Dr. Lance Gunderson, Emory University
John Halliday, DOI
John Hamill, USGS/GCMRC
Christopher Harris, Colo. River Board of California
Norm Henderson, National Park Service
Lisa Iams, U.S. Bureau of Reclamation
Lynn Johnson, DOI Solicitor's Office
Rick Johnson, Grand Canyon Trust
Robert King, Utah Division of Water Resources
Kate Kitchell, USGS/SBSC

Glen Knowles, U.S. Bureau of Reclamation
Ted Kowalski, Colo. Water Conservation Board
Dennis Kubly, U.S. Bureau of Reclamation
Barbara McKenzie, USGS/GCMRC
Ted Melis, USGS/GCMRC
David Nimkin, National Parks Conservation Assoc.
Gopaul Noojibail, NPS
Mary Orton, The Mary Orton Company
Don Ostler, Upper Colorado River Commission
Clayton Palmer, WAPA
Sarah Palmer, U.S. Institute for ECR
Colby Pellegrino, Southern Nevada Water Authority
McClain Peterson, Colo. River Commission/NV
Dean Saugee, Hualapai Tribe
Mark Sogge, USGS
Pam Sponholtz, USFWS
Jason Thiriot, Colo. River Commission/Nevada
Benjamin Tuggle, U.S. Fish and Wildlife Service
Larry Walkoviak, U.S. Bureau of Reclamation
Carl Walters, UBC Fisheries Centre
Dave Wegner, U.S. House of Rep./Natural Res. Comm.
John Weisheit, Living Rivers
Malcolm Wilson, U.S. Bureau of Reclamation
Palma Wilson, National Park Service
Barry Wirth, U.S. Bureau of Reclamation
Mike Yeatts, The Hopi Tribe

Welcome and Administrative. Ms. Castle welcomed everyone to the meeting. A quorum was established and attendance sheets distributed.

GCMRC FY2011-12 Budget Overview (cont.). Mr. Hamill continued with his presentation from yesterday and referred to his August 6th memo (attached to the AIF). He said there were changes that came about as a result of a review from some cooperators and stakeholders and discussions with their science advisors. There was one significant change with what they're proposing in the mainstem fish monitoring program. They had originally proposed two trips in the fall. Given that spring electrofishing is a very critical dataset, they feel it's wise to cancel one of the fall trips and do a spring trip instead. That would increase the costs by about \$27,000 which they propose would come out of the funds set aside for non-native fish management in Reclamation's portion of the budget. The rationale for doing that is the spring trip would give them an index of the abundance of both native and non-native fish, particularly trout, in the system on an annual basis.

He presented a slide which depicted the differences in the approved funding from FY09 to FY11-12. He then reviewed the tribal concerns: killing of fish (mechanical removal), collateral impacts to other animals from electrofishing, science and recreation use of the LCR, de-emphasis on monitoring priority tribal resources, integration of tribal concerns into core monitoring and AMP decision processes, Native American expert missing from Science Advisors, and access to river bank near Salt Mines for channel mapping.

He concluded with a list of other significant issues:

- Significant uncertainty in several major projects:
 - Nonnative fish control and related science support
 - HFE protocol and science support
 - LTEMP EIS scope and cost and science support needs
 - Phase II DFC development and science support
- Erosion of funding for monitoring projects:
 - Critical element of adaptive management
 - Continued debate over scope and cost of core monitoring
- What is the long term funding strategy?
 - Seek additional revenues?
 - Reduce scope of GCDAMP?
 - Fund management and compliance actions at the expense of the science (monitoring) activities?

Agenda Change. Ms. Castle adjusted the agenda to accommodate Ms. Gimbel's early departure from the meeting. She asked Ms. Gimbel to present the Charter Ad Hoc Group report. Following that, the budget discussion would continue.

Charter Ad Hoc Group Report. When the Charter AHG was formed, Ms. Gimbel thought they would be prepared to present a proposal today. Rather than cram things through, they thought it would be better to do a little more homework in order to make a more measured response. She reminded the members that she and Ann Gold were the co-chairs of the group. They took their direction from a letter from Ms. Castle (**Attachment 9a**) which outlined five issues including composition of the AMWG, inclusion of DOI and Bureaus as voting members, establishment of an executive director position, procedures for approval of work group members and alternates, and the decision making processes. It was not intended to be inclusive but they used it as their starting point. They met in April and held conference calls. They met with Elena Gonzales, Director of the DOI Office of Collaborative Action and Dispute Resolution, and met with the group and talked about how to approach the different collaborative processes. They decided the best way to proceed was to develop a questionnaire and send it to people who were directly involved with the AMP process. They then worked with Sarah Palmer, Senior Program Manager for the U.S. Institute for Environmental Conflict Resolution, for guidance on how to obtain the information they needed. She said they're in the process of setting up interviews and also sending e-mail messages asking questions related to the above five issues. Some of the interviews have started and will continue through the month of September. In October they will analyze the information and prepare a report. The

CAHG will meet for the last week in October to look at what was prepared, to talk about next steps, and start making recommendations so they can come back to the AMWG at the next meeting with a full report. She really encouraged the survey recipients to participate and provide honest answers to the questions.

Ms. Gold said the work is being done in two phases: 1) interviews with current AMWG members, and 2) an additional survey for previous AMWG and TWG members, current TWG members, and others who have been involved with the program in the past. She said the survey portion is a pretty inclusive group of people (60-70). It included former secretary's designees but was limited to people who were directly involved with the program. The CAHG is in the final process of preparing a list of survey participants and the survey should be out shortly. She thanked everyone for their hard work. She said Ms. Palmer brought some brochures from the Institute (**Attachment 9b**) if anyone was interested in reading more about their work.

Ms. Castle encouraged the members to participate in the survey because their input is needed in making changes to the AMWG Charter. She said the CAHG is also looking at the AMWG Operating Procedures. She thanked Ms. Gimbel and Ms. Gold for all their hard work.

Responding to a question from Mr. Lash on changes made to the new charter, Ms. Castle said no substantive changes were made and a comparison document (**Attachment 9c**) would be posted to the AMP website.

Budget Discussion (continued). Ms. Orton said each item would be discussed but no decision would be made on any one item until the group reviewed all the proposed changes. (See **Attachment 10** for the full discussion and hand voting results.)

Final Budget Motion (Proposed by Larry Stevens, seconded by George Caan):

The AMWG recommends that the Secretary of the Interior adopt the FY 2011-12 Draft Budget (tables provided by GCMRC dated June 28, 2010) and Work Plan (dated June 11, 2010) with the following changes:

1. Fund \$505,838 for the Treatment plan in FY11 (line 50) to be funded from compliance (\$250,000 line 37) and from experimental fund (\$50,000 line 40).
2. Reduce funding for Aquatic Food Base monitoring by \$100,000 in FY11. (line 84)
3. Move funding for the Non-native Fish Suppression Fund for FY11 to the Experimental Fund and retain such funds until the Non-Native Fish Control EA process is completed and funds are necessary. (line 45)
4. Restore \$20,000 to the Science Advisors budget (line 171) in FY11 and FY12 from a source in GCMRC's budget to be determined by GCMRC.
5. Include a budget line item for Power Economics studies to be completed by Western with independent oversight by GCMRC.
 - a) Cost of Base case and change case analysis (FY 2011) \$106,950
 - b) Additional power economic studies may be identified and completed by Western in FY 2011 - 12
6. In place of the two proposed fall fish monitoring trips (line 90, FY11 only), conduct one spring electrofishing monitoring trip and one fall mainstem HBC aggregation monitoring trip, with the additional cost of \$27,000 to be taken from funding set aside in the Reclamation budget for nonnative fish control (line 43).
7. Implement editorial changes in the work plan from Attachment 1 (Hamill memo August 6, 2010) for BIO 2.M1.11-12 (LCR HBC monitoring), BIO 2.M3.11-12 (HBC translocations), and HYD 10.R2.11-12 (GTMax model).

8. Restore “Administrative support for NPS permitting” (line 38) to \$120,240 in FY11 and \$123,847 in FY12, from line items to be determined by Reclamation (from Reclamation appropriated dollars) and GCMRC (from AMP funds).
9. Restore Public Outreach Ad Hoc Group to \$56,184 in FY11 and \$57,870 in FY12 (line 26), increases of \$28,092 and \$28,935, to be funded from nonnative fish contingency fund.
10. Reflect in the document that tribal funding lines 62-66 are not adjusted by CPI.

Roll call vote:

Stakeholder	Vote	Stakeholder	Vote
Arizona	Y	Hualapai Tribe	Y
Arizona Game and Fish Department	Y	National Park Service	Y
Bureau of Indian Affairs	Y	Navajo Nation	Absent
Bureau of Reclamation	Y	Nevada	Y
California	Y	New Mexico	Y
Colorado	Y	Pueblo of Zuni	Y
Colorado River Energy Distributors Association	Y	Southern Paiute Consortium	Absent
Federation of Fly Fishers	Y	Utah	Y
Fish and Wildlife Service	Y	Utah Associated Municipal Power Systems	Y
Grand Canyon River Guides	Y	Western Area Power Administration	Y
Grand Canyon Trust	N	Wyoming	Y
Grand Canyon River Wildlands Council	Y	San Juan Southern Paiute	Vacant
Hopi Tribe	Y		
Voting Results: Yes = 21 No = 1 Abstaining = 0 Total Voting = 22 2/3 = 15 Motion Passes			

Ms. Castle said the motion would be passed along to the Secretary together with the hydrograph that was voted on yesterday.

Mr. Stevens said the AMP needs a long-term strategy for budgeting. As they come up with brilliant ideas that contribute to the program, they get could be added to the budget but there is no framework for being able to add those projects. He suggested the AMWG look at other adaptive management programs and see how they frame their budgets against their version of the ecosystem. Ms. Castle said the AMWG needs to get ideas around the table about how best to go about that. She said some time would need to be structured to figure that out. Ms. Senn said that as part of that, the AMWG should look at additional funding sources as far as what options may be available. Ms. Castle suggested tasking the Budget Ad Hoc Group to start thinking about alternative funding sources and long-term budgeting around specific goals.

Desired Future Conditions Ad Hoc Group (DAHG). (**Attachment 11a = AIF**) Ms. Castle complimented the DAHG for all their hard work. She said they held numerous in-person meetings, conference calls, and did the work well and speedily. She thanked Mr. Caan and Mr. Stevens for their leadership as co-chairs and the full participation of the ad hoc group members. Mr. Caan said the PPT presentation (**Attachment 11b**) would include an introduction to the process they went through and then there would be individual presentations from the team leads over the core DFCs (cultural resources, recreation, power, and the Colorado River Ecosystem).

Mr. Stevens said the group still has a lot of issues to deal with. He reviewed the challenges and issues they discussed and stated an ecosystem approach is still needed that would incorporate all the dynamics of the system. In moving into Phase II, they hope to see some recommendations from the Secretary as to how to move forward and perhaps having a symposium to address policy issues might be a way to begin that discussion.

Ms. Castle said that each of the DOI agencies had representatives on the DAHG. They had made it explicit that those representatives were there as ex-officio members and were not voting members. They

wanted to have the DOI agencies participate in the process because the process started out with a draft of the DFCs that had been prepared and jointly proposed by the five DOI agencies. There was participation to answer questions, to provide views, but the Federal representatives did not vote in the process. It's their anticipation that the DFCs that are recommended by the DAHG will be recommended to the Secretary for consideration and that those will come back to the DOI agencies for further review and attention to the mission of the various agencies. To the extent that they think changes need to be made or revisions, those changes will be brought back to the AMWG.

Cultural Resources. Mr. Yeatts said Mary Barger participated and Jan Balsom provided some technical review. They prepared a first draft which was vetted through the internal group. Once that was approved, it went out to the Cultural Resources AHG. Although they weren't part of the process, they thought it was appropriate because a lot of the work had to do with tribal concerns. The final review was done by the DOI agencies. They divided the work into two parts and that was to reflect the legal requirements for cultural resources. He said Phase II would require the most focused input.

Recreation. Mr. Jansen said this group was broken into four sub-sections to try and capture that they're not just after defining white water rafting or fishing but also interested in other things that fit into the category such as educational opportunities, the chance for spiritual engagements, and what places mean to people who aren't visitors – the non-use values. The big issue was the Grand Canyon which provides rafting, beaches for camping, getting to know the environment and being aware of cultural sites. He also talked about the day trips to the Glen Canyon National Recreation Area which is a lot more accessible to people. He says it's important for people to know that the areas are part of everyone's heritage and should be available to future generations.

Power. Ms. James said it was interesting to see the secretaries of DOI, DOE, and the Army Corps of Engineers sign a Memorandum of Understanding regarding hydropower. She read the quote from the MOU: "As the largest source of renewable electricity generation in the U.S., hydropower provides a wide range of benefits to the country. Hydropower is a minimal emission, low-cost source of energy that can be relied upon for long-term, stable production of domestic energy." She said Glen Canyon Dam is the largest resource in the Colorado River Storage Project generating group. Each generator can serve about 1.3 million people. She said a lot of the information they used was gathered from the fact sheets prepared by the POAHG. She said the customers are all non-profit. Resources from Glen Canyon Dam serve about 5 million customers in six western states. She described the make-up of the customers. There are also about 57 Native American entities that are CRSP power customers. One of the DFC objectives is to try to maintain the flexibility needed with this resource, not just from a cost or revenue standpoint, but also a system reliability standpoint, all within trying to achieve a balance with the other resources.

Colorado River Ecosystem. Mr. Palmer said the federal participants included Martha Hahn, Sam Spiller, Norm Henderson, and Jan Balsom. They also received technical support from Ted Melis. They incorporated the comments made by the federal participants. He said there was a structural comment that GCMRC thought the CRE should be structured differently for clarity but they didn't restructure. He said one of the aspects of the CRE DFC was to define an overall policy goal so they actually referred to a bioscience article published in 1998 which basically said that technicians can provide managers with how well they're doing as long as the managers and policy makers decide where they want to go. It was important to have the overall policy goal for the DFC. He read the overall policy goal that the group developed, "Achieve the balance of resource benefits envisioned by the Grand Canyon Protection Act, GCD EIS, Preferred Alternative, and NPS 2006 Management Policies; maintaining, enhancing and where practical, restoring native species, natural habitats, and natural ecosystem processes.." He said the overall goal is to achieve a balance of resources. The wanted to make sure the DFC was consistent with NPS management policies which includes restoration. Their restoration goal is defined by Goal 3 from the Strategic Plan and says that one of the information needs under goal 3 is to gather information so that they can include technical, legal, economic, and policy issues to be considered in determining the feasibility and advisability of restoring a number of extirpated species. The DFCs are to maintain or

enhance aquatic sandbars including camping beaches for recreation in Glen Canyon, Marble or Grand Canyon, in critical reaches; maintain or enhance nearshore habitats for native fish; maintain or enhance marsh and riparian habitat for fish and wildlife; maintain or enhance cultural resources. He said these DFCs will lead them into Phase II to a quantification effort.

USFWS Involvement. Mr. Spiller said the DOI agencies expect to be a part of an internal review process. He felt their participation in the DFC process was productive. He said their advice was often a little bit different, particularly in the area of interpretation of the GCPA as it pertains to biological and cultural resources. The team was trying their best to address those things beyond just Section 7 compliance for HBC.

MOTION (Proposed by George Caan, seconded by Larry Stevens): AMWG recommends the narrative Desired Future Conditions (DFCs) for the Glen Canyon Dam Adaptive Management Program to the Secretary for consideration. The subject DFCs are as described in the memorandum dated August 4, 2010 from George Caan and Larry Stevens including the DFCs attached to that memorandum. AMWG further recommends that the Secretary consider directing the AMWG to use this document as a basis to define quantitative DFCs (Phase 2) for the program, acknowledging that the narrative DFCs may change as the quantitative DFCs are developed.

The members discussed changes to the motion and offered the following comments:

C: *Part C of the GCPA talks about the Secretary's responsibility for not changing the Organic Act and the responsibilities of the Park Service. In reviewing your document and in order to make those charges to the Secretary, some revisions will be required. (Martin)*

C: *The GCT had issues with the basis for generating these DFCs. We didn't think it was consistent with NPS management policies and some language in the GCPA. We'll write up something. It will be kind of an expression of our minority view. An example would be, there are a number of DFCs that are inconsistent with what we've seen from the Park Service and what's expressed in the GCPA. The GCPA has language that says, "AND improve Park values." It's meant to encompass a bigger picture than some of the language in the DFCs that say "maintain OR enhance" that implies that maintenance satisfies the resource condition objective. (Nikolai)*

C: *As a member of the ad hoc group, we had lengthy discussions during the development of the DFCs about the interface between the Park Service and the AMWG as an advisory group. From my perspective and the position I served in, the Park Service clearly has overlap in responsibilities with some of the same issues that the AMWG addresses and provides advice to the Secretary. However, they also have additional responsibilities over and above those issues that are under the purview of the AMWG. I really believe the product we came up with has effectively grappled with that issue of the overlap and is a good document that captures the interface between those responsibilities and this advisory group and the Park Service. (Benemelis)*

Q: *Regarding the recreational trout fishery, the last sentence of that says "maintain angler and visitor satisfaction with controlled recruitment to minimize undesired emigration. I don't know what controlled recruitment means and would like someone to explain that. (Jordan)*

A: *A DFC includes a trout fishery. The DFC group in its overall policy goal describing that the overall policy goal is to achieve a balance among resources includes the desirability of a healthy and sustainable sport fishery at Lee Ferry as part of our overall policy goal. This means to minimize undesired emigration, that is drift from the Lee Ferry Management Reach downstream to where trout may be a problem in the LCR reach by preying on or feeding on native fish. That language doesn't mean that you engage in management policies to eliminate any drift whatsoever. It's to minimize undesired emigration. (Palmer)*

Ms. Castle said Ms. Orton was capturing all the comments and so one option the AMWG has is they could pass along these DFCs or some version of them through the motion to the Secretary for consideration together with the comments that are made at this meeting. The AMWG also has the opportunity of proposing revisions before they are sent to the Secretary. She said that if the AMWG wants to send the full package, the DFCs plus the comments, to the Secretary they could do that. She said a comment period could be established whereby the members could provide comments in writing. She established a 30-day comment period. The comments would be provided to the AMWG, then

passed off to the DAHG for consideration, and possibly incorporated into the DFC Report. She also said the documents would be posted on the AMP website.

Ms. Benemelis said she was confused in that the AMWG was preparing a motion to forward a recommendation to the Secretary and yet comments are still being solicited. She felt there wouldn't be consistency among the members nor with the DAHG report being forwarded to Secretary. Ms. Castle said this is the first time that people who were not part of the DAHG have had an opportunity to provide comments on the document. She said the DAHG had very broad representation, but this was the first time the AMWG had had the discussion. She said comments could be provided to the DAHG for consideration for incorporation into the document or not and then the AMWG would wait for that process to occur before passing off a finished document off to the Secretary. Mr. Shields said he supported the AMWG providing comments to the DAHG and revising the document as necessary before sending to the Secretary. Mr. Caan said that the motion could be revised to say "provide comments to the group, the group shall edit or respond, or not respond" and then say that when that process has been completed, they will be sent to DOI. He doesn't want to leave the meeting not knowing what the next step is for the DAHG. Ms. Castle said the DAHG is empowered to make the decision about whether to revise, incorporate or not, and then pass along to Interior, then they get there in October. She said the narrative DFCs are going to be very important in the long-term planning process and it would be very good to have them moving forward in some way that closure could be reached through Interior and the Secretary by the end of the year rather than waiting for another AMWG meeting and then that Interior review process starts. She wants to push in the direction of getting this done in a more timely manner.

ACTION ITEM: Written comments on the DFCs should be sent to Linda Whetton by September 24, 2010.

Ms. Castle said the comments will be posted on the AMP website. They will be directed to Mr. Caan, Mr. Stevens, and the DAHG for consideration and, as appropriate, incorporated into the DFC document. The DAHG will then be empowered pursuant to this motion to forward the revised document to the Secretary for consideration. Mr. Caan said he would accept the language offered by Ms. Castle as an amendment. Mr. Stevens seconded the amendment.

FINAL DFC MOTION (Proposed by George Caan, seconded by Larry Stevens): AMWG recommends the narrative Desired Future Conditions (DFCs) for the Glen Canyon Dam Adaptive Management Program to the Secretary for consideration, revision, and approval, subsequent to comments received by the DFC Ad Hoc group. The DFCs are described in and attached to the memorandum dated August 4, 2010 from George Caan and Larry Stevens (as amended by the DFC AHG subsequent to receipt of AMWG comments). AMWG further recommends that the Secretary consider directing the AMWG to use the approved DFCs as a basis to define quantitative DFCs (Phase 2) for the program, acknowledging that the narrative DFCs may change as the quantitative DFCs are developed.

Ms. Castle called for the question. She asked if there were any comments on the motion. None were offered. She asked if there was any objection to consensus on the motion. Seeing there were, she asked for a roll call vote.

Stakeholder	Vote	Stakeholder	Vote
Arizona	Y	Hualapai Tribe	Y
Arizona Game and Fish Department	Y	National Park Service	A
Bureau of Indian Affairs	A	Navajo Nation	Absent
Bureau of Reclamation	A	Nevada	Y
California	Y	New Mexico	Y
Colorado	Y	Pueblo of Zuni	Y
Colorado River Energy Distributors Association	Y	Southern Paiute Consortium	Absent
Federation of Fly Fishers	Y	Utah	Y
Fish and Wildlife Service	A	Utah Associated Municipal Power Systems	Y
Grand Canyon River Guides	Y	Western Area Power Administration	Y

Grand Canyon Trust	N	Wyoming	Y
Grand Canyon River Wildlands Council	Y	San Juan Southern Paiute	Vacant
Hopi Tribe	Y		
Voting Results: Yes = 17 No = 1 Abstaining = 4* Total Voting = 22 2/3 = 15 Motion Passes			

* DOI members abstained because they were not allowed to vote in the DAHG.

Long-term Budget Planning Update. Ms. Castle said it was mentioned earlier the consideration of establishing a long-term budget planning group. She said there would be further discussion before the conclusion of the meeting with hopefully some direction from the AMWG. (Note: No further discussion at the meeting.)

TCD and Sediment Augmentation. (**Attachment 12a** = AIF and Kubly PPT). Ms. Castle reminded the AMWG that this was an issue directed to the TWG for further review and a recommendation on TCD and sediment augmentation. She said Mr. Kubly and Mr. Capron would provide reports in response to that request.

Mr. Kubly gave a PPT presentation, “Selective Withdrawal and Sediment Augmentation Update.” He said the structure of Glen Canyon Dam doesn’t allow for release of warm water. He referenced a slide and stated that the reservoir at full elevation is 3,700 feet and the releases from the dam are made through the penstocks down to about 3,490 feet. The only place below that to release water is through the jet tubes which are 100 feet below the penstocks. The TCD would fit on the front side of the dam and have some apparatus that would allow higher water to be taken from the reservoir at a cost of approximately \$50 million per penstock. The water is warmer at the top of the reservoir so rather than delivering water from the penstock level, it could be lowered from the upper portions of the reservoir. He gave a history on selective withdrawal and subsequent findings. He then provided a history of concerns for fine sediment and investigations, improving sediment conservation, and a summary of the feasibility assessment made by Tim Randle (Denver Technical Service Center) and others. Randle and others offered the following conclusions for sediment augmentation feasibility in 2007:

- Technically feasible to construct and operate sediment augmentation; 5 alternatives evaluated
- Cost Estimates: \$140-430 million construct; \$3.6-17 million to operate
- Should be considered in conjunction with selective withdrawal

TWG Chair Report. Mr. Capron gave a “Temperature Control Device/Sediment Augmentation” PPT presentation (**Attachment 12b**). He said the TWG came to the AMWG in February 2010 and walked through the draft motion at that time but didn’t get into a lot of the details of the science behind it. The general consensus of the TWG was:

- The TCD/Sediment augmentation issue may need further information for policy-level decision-making.
- Relationship between HBC carrying capacity (food, habitat) and recovery goals balanced by risk and other methods for recovery (e.g., translocations)
- Where should the effort go?
- Integration into the LTEMP in a way to consider the trade-offs.

Ms. Castle said the TWG did exactly what the AMWG directed them to do which was to look again at a TCD and sediment augmentation and bring a proposal back to the AMWG. The AMWG did not direct the TWG to provide the budget information or identify a time frame. She also wanted to note that the term “engineering feasibility study” at least in Reclamation’s world, that’s a term of art. A feasibility study is a very significant undertaking. They have very preliminary estimates that such a feasibility study would be about a \$2 million item. She said the AMWG needs to consider the recommendation and any potential motion in that context and also consider what the tradeoffs would be should a decision be made to move forward with this type of proposal.

Q: *Have any of the previous studies or the study that is anticipated looked at the operation of this? I have a lot of questions about operational issues, the duration of time that it would operate, how it interfaces with other releases –*

is that part of the studies that have gone on before or is that something that would be encompassed in the study that is proposed? (Benemelis)

A: The nearest corollary that we have is a similar device on Flaming Gorge which was actually put in more for trout than it was for native fish. Subsequent to the EIS that was done on Flaming Gorge Dam, it is not being operated and used to benefit native fish. That would be our best example to use as a comparison. No studies were done as far as a feasibility assessment. We took the position that under adaptive management we would have to test the device. We could do a lot of modeling but could probably never fully determine whether or not the device would have its intended effects. (Kubly)

Q: In 2008 the FWS said that they assessed as being too risky. I'm assuming there were some information limits at that point in time. Is FWS still of the same opinion with regard to this issue or is there any new information that has been developed or would this study be developing additional information, needs have been identified to assess the risks of putting a TCD into operation? (Benemelis)

A: The FWS still feels that a TCD operation might make HBC vulnerable to expansion of non-native warm water fish, not trout. We feel that once in motion, we wouldn't be able to possibly control it. We're not that familiar with the operation of it so we're very cautious and also concerned with the potential cost of this. We don't support a TCD. (Spiller)

Q: In the fifth slide from the end of the presentation you used the phrase, "a major consideration is building and maintenance of beaches for recreation purposes." Where did the word "major" come from? (Shields)

A: My impression is that it's always been a fundamental issue for sediment and fine sediment conservation. Of the reasons for why fine sediment was an issue, a major concern was the effect to recreational use. (Kubly)

Q: I don't remember some of the work that has been done. The annual operation costs that you cited as \$7-13 million. What is the majority of that cost associated with? (Shields)

A: Operating the slurry pipeline. The big difference is whether you deliver below the dam or you deliver down at Lees Ferry. (Kubly)

Q: As far as the annual operation costs of the selective withdrawal, that would be minimal right? (Shields)

A: Yes, that can literally be set up to be automated and somebody inside the dam could either program it or manually move it. The one at Flaming Gorge isn't that sophisticated but the newer systems they have now are programmable and run by computers. (Kubly)

Q: Shane, you mentioned recovery goals for the HBC. What are those recovery goals? I haven't been able to find anywhere where those are codified. (Jordan)

C: When a species is in more than one region, FWS selects a region as a lead so we can coordinate things. Region 6 in Denver is the lead for that and in the process of revising the recovery goals. I can provide previous versions to you. (Spiller)

Q: Will they be quantified in numbers? (Jordan)

A: The current ones are. I can't speak to the latter ones because it's a document that hasn't made a final decision. (Spiller)

C: What concerns me are very large-scale construction projects. A \$100 million project could cost twice that much and can get a life of their own once they get out of hand. This has tremendous appeal to the construction industry. Lobbyists in Washington would be all over this. Labor Unions that would construct would be involved. The politicians would be all over it as well. Although this is something we could probably kick down the road right now, we may lose the power to make some informed decisions to that if the program isn't totally ready to do that because these forces are substantial. (Jordan)

Ms. Castle said there was a recommendation from the TWG that the AMWG consider a recommendation to the Secretary. She asked if anyone wanted to make that motion. Rick Johnson proposed the following motion (from the AIF):

Proposed Motion: AMWG recommends that the Secretary of Interior develop an engineering feasibility study and risk assessment, with a synthesis of existing information, for the implementation of a Temperature Control Device whose goal would be to support recovery of native fish and that:

- (a) incorporates a TCD design with both warm and cold-water release options and with a combination of 2, 4, 6, and 8 units,
- (b) considers concerns that new warm-water non-natives and additional planktonic food sources might become delivered or established in the CRE, and
- (c) considers the potential of using turbidity (silt and clay) as a mechanism to affect predation rates of nonnative fish on native fish.

AMWG further recommends that the consideration of a TCD be implemented within a long-term experimental process. No funding sources have been identified to complete this work.

The motion failed in not getting a second to forward it.

Mr. Jordan moved that the AMWG table the issue until such a time that there are further results or evidence of the necessity of doing a TCD sometime in the future. Ms. Castle said that it could be brought up again when any AMWG member chooses to bring it up again.

Experimental HFE Protocol EA Update (Attachment 13a = AIF and PPT). Mr. Knowles said the process began by a statement made by Secretary Salazar to the Colorado River Water users Association last December. He said the intent for the HFE Protocol is to put a set of guidelines in place that would enable the GCDAMP to capitalize on sediment inputs that come into Grand Canyon on a multi-year, multi-experiment basis. The idea is not to have to do compliance every time there was a sediment input because the guidelines would already be in place. It would better conserve sand throughout Grand Canyon and thereby benefit resources that depend on sediment – sandbars, camping beaches, and habitat for native fish. The EA will also have to look at the effect conducting high flow events on other resources, other natural resources, hydropower production and recreation.

At the February AMWG meeting, there was a scoping session included for the proposed EA. He said there was a lot of good discussion and that meeting formed the foundation for how they have moved forward in developing the way the protocol is shaping up today. In May a number of agencies were invited to be cooperating agencies on the HFE EA. Since that time all the federal agencies in the AMP have signed on as well as the AGFD, and the Upper Colorado River Commission. Initially they invited all the Grand Canyon tribes to be cooperating agencies but didn't get many responses but recently the Pueblo of Zuni has signed on to participate in both EAs. In June they conducted a cooperating agency workshop on the HFE protocols which included presentations by Scott Wright, Jack Schmidt, and Rich Valdez. They provided background information of what was learned from the past high flow experiment conducted in 1996, 2004, and 2008. They've had subsequent conference calls and are now scheduled to hold cooperating agency calls every week beginning next week.

Mr. Knowles reviewed the parameters to define a HFE Protocol:

- Times of year (HFE windows)
- Antecedent conditions (channel and bar storage)
- Tributary sediment inputs (triggers)
- Magnitude of high flows (dam releases)
- Duration of high flows
- Availability of water and scheduled releases
- Dam maintenance requirements

Ms. Castle asked if he would address the GCMRC synthesis report on the previous three high flow experiments and how that would factor into the EA work. She also mentioned that with the end date of March 23rd contemplates the maximum allowable time for the FWS to provide their biological opinion. She said they are quite hopeful that that will not be required and that it will have a final biological opinion from FWS prior to March 23rd. The goal is to be ready for a high flow release if the triggering conditions are appropriate. Mr. Knowles said it was his understanding that GCMRC would complete the synthesis work by the end of the calendar year.

Ms. Gold said Reclamation is looking at places where they can save some time, for instance getting the cooperating agencies together to evaluate comments.

C: I was quite disappointed to see the document that's been shared with the cooperating agencies and will be used for the conference call next week. It simply does not include hardly any of the comments that were made during the AMWG scoping session held in February. I don't know why that is. There is such a thing as taking shortcuts, but I

would've thought that everything that was stated at the scoping session would appear in that document that you're going to be having as a subject of the cooperating agency conference call next week. I really don't understand why they're missing. I thought the whole point of having the scoping session was to get people's concerns down and on the record. What's been drafted so far is lacking in that regard and I would just encourage you to make sure that it all gets in there. The easiest mess to clean up is the one you don't make. You'll be hearing about that from the Upper Colorado River Commission when you have that call. (Shields)

Mr. Kubly said they have not sent out a document in preparation for next week's cooperating agencies conference call and said it would be much more inclusive.

Nonnative Fish Control EA Update (Attachment 13b = AIF and PPT). Mr. Knowles gave an update on the Nonnative Fish Control EA. He said the presentation was also given at a meeting held last Friday with the cooperating agencies and the tribes. It was held specifically for the tribes to present the information presented today and get their feedback. They had the benefit of a mini knowledge assessment from Mike Yard and Matthew Andersen which was quite helpful in framing the discussion. His presentation included a history of the EA, possible treatments, possible mitigating measures, other options that were considered, and next steps in the process.

Q: *Would you consider running angling trips and inviting people to come on and fish for trout? If electroshocking is removing 10,000 fish on a trip, you can angle quite a few fish. (Stevens)*

A: *We got a similar suggestion from the tribes to conduct river angling trips, and so we are will consider this with the cooperating agencies. We haven't done an assessment of the numbers that could be removed. It wouldn't be a standalone alternative but in terms of public education, outreach, and tribal involvement, it might make sense to do it. (Knowles)*

C: *AGFD would be involved in a couple areas but if the bag limit has already been removed, there is unlimited take in that lower section below Lees Ferry. We're already proposing that. The only other thing is that if they were guides, we would license the guides but that's an administrative process. I don't think the Park allows guided river trips right now for the purposes of angling. (Senn)*

A: *That's correct. (Wilson)*

C: *Just a reminder from last week's meeting that the tribes would like to see a roundtable discussion with all the tribes, interested recreational fishermen, and other parties that are interested with Reclamation, GMCRRC, and AGFD to address possible options for Reclamation to consider as alternatives. (Spiller)*

C: *I don't think you should presuppose angler opposition to some of the actions that are under consideration. Those are the most drastic of actions impacting the fishery. With those in mind, I think you might find that the fishing interests could become much more amenable to some things that you think they might not go for such as increasing limits. The second part is it's extremely important that this process be successful in bringing about a resolution that is understood within the Lees Ferry/Marble Canyon community. As you mentioned earlier on, you are laboring under a conservation measure that mandates, if I understand correctly, that actions be taken against non-native fish regardless of the status of native fish. As long as that is in place and you're essentially forced to go out and either continue mechanical removal or implement these other actions, some stakeholders will not understand or support these efforts. It's unfortunate - the unwillingness of the chub to cooperate and decline. The chub are not declining, and that is why moving forward with this is going to be unacceptable to the community. You should instead have these steps available in the event of some change in HBC status. If you cannot escape from that conservation measure in some way, you're going to have the same problem because I suspect there will be some tribal opposition in trying to understand why you have such an aggressive stance on nonnative fish control/mechanical removal. (Jordan)*

C: *I think the anglers appreciated being involved in the meeting. I think they were hoping the meeting was more than just an economics meeting and that there is still a chance to get some scoping-type comments from the folks. I know they expressed an interest at one point. If that time has passed, then that's fine. (Senn)*

C: *Back in July I was asked to coordinate a presentation on this issue to the Native American Fish and Wildlife Society for the Southwest Region. A number of folks here graciously accepted to be speakers, including the tribes and Reclamation, and FWS. It was a different forum but it probably could've been considered as public scoping in a sense because there were various interests there. It was kind of a second step to what we had in March at the 2-day workshops. We got some feedback and hopefully that will be utilized as well. (Heuslein)*

C: *Ms. Gold said that one of the things Reclamation is doing is looking at places where they can save some time, for instance getting the cooperating agencies together to evaluate comments.*

PUBLIC COMMENT: None

Administrative History of the GCDAMP. (**Attachment 14** = AIF). Dr. Stevens presented the following motion which was modified from the one on the AIF. He said the concept is that the program needs some way to document its history as a process and as they go through discussions on DFCs, TCDs, and a whole array of other topics. He said the history of those goes back perhaps 30 years. He said the documents and discussions that have taken place have not been brought together. New members to the AMP process have a very challenging task of going through all those documents to try and figure out what the history of any issue is. The concept is to move towards something that might look like a "Google-AMP" where if someone is interested in a theme, it would be completely open to everyone on the web.

Revised MOTION (Proposed by Larry Stevens, seconded by Sam Jansen): AMWG requests that POAHG, working with Reclamation, GCMRC, and other appropriate parties, develop and forward to TWG a recommendation with regard to a prospectus that identifies goals and objectives, scope, lead agency, cost, and funding source(s) for an RFP for an annotated administrative history of the AMP to document the history of events, people, sites, issues, and documents that have contributed to adaptive ecosystem management of the Colorado River ecosystem in relation to Glen Canyon Dam. AMWG further requests that TWG make a recommendation on the subject to AMWG at the summer 2011 AMWG meeting.

Hearing no objection, the motion was passed by consensus.

Informational AIF Write-ups). Ms. Castle said there wouldn't be sufficient time to discuss the write-ups and suggested people contact the GCMRC staff individually if they had any questions.

GCMRC Updates:

Attachment 15a: Near-Shore Ecology Update

Attachment 15b: The Effects of Three Glen Canyon Dam High-Flow Experiments (HFE) on the Grand Canyon Ecosystem (HFE Synthesis)

Attachment 15c: Low Summer Steady Flows of 2000 Report Update (LSSF) Synthesis

Attachment 15d: GCMRC Cultural Program Update

Other Updates:

Attachment 15e: Lees Ferry Trout Fishery Ad Hoc Group Update

Attachment 15f: Grand Canyon National Park Native Fish Restoration Plan Update

Ms. Castle said she was very appreciative of the attention that the AMWG members devoted to the meeting and the members of the public. She said Secretary Salazar sends his regards to everyone and he's aware that huge progress has been made over the past several months. She thanked Reclamation staff for all their work and specifically Rick Clayton, Malcolm Wilson, and Dave Trueman who supported all the modeling that has been requested in connection with the hydrograph. She also thanked GCMRC for their efforts in producing products on very short time schedules particularly affiliated with the hydrograph and sediment modeling.

Because there are so many things going on, Ms. Castle suggested having three meetings over the next year rather than two meetings. She recognized the monetary and travel impacts to people but because there are so many pending assignments, she asked the AMWG to consider holding three in-person meetings each year. She asked if there was any objection to consideration of three meetings. She recognized that this meeting's agenda was too packed in some ways to get meaningful discussion on some important issues and she wants to ensure there is more time at future meetings. She said they will look at TWG's meeting schedule and send out some possible meeting dates.

Adjourned: 3:50 p.m.

Respectfully submitted,

Linda Whetton
U.S. Bureau of Reclamation
Upper Colorado Region

Attachment 16: Report and Recommendations Memorandum from AS-WS Anne Castle with approval from Secretary of the Interior Ken Salazar.

General Key to Adaptive Management Program Acronyms

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

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