

Glen Canyon Dam Technical Work Group Meeting

March 8-9, 2011

Conducting: Shane Capron, Chairperson

Convened: 8:15 a.m.

Committee Members/Alternates Present:

Jan Balsom, NPS/GRCA
Cliff Barrett, UAMPS
David Bennion, WAPA (alternate)
Charley Bullets, So. Paiute Consortium
Kerry Christensen, Hualapai Tribe
Jerry Lee Cox, Grand Canyon River Guides
Bill Davis, CREDA
Kurt Dongoske, Pueblo of Zuni
Paul Harms, NM Interstate Stream Commission
Norm Henderson, NPS
Amy Heuslein, BIA
Rick Johnson, Grand Canyon Trust

John Jordan, Federation of Fly Fishers
Robert King, UDWR
Glen Knowles, U.S. Bureau of Reclamation
Ted Kowalski, CWCB
Tricia McCraw, ADWR
Don Ostler, UCRC (alternate for WY)
Pam Sponholtz, USFWS
Larry Stevens, Grand Canyon Wildlands Council
Bill Stewart, AGFD
Jason Thiriot, Colo. River Commission/NV
Michael Yeatts, Hopi Tribe

Committee Members Absent:

Christopher Harris, Colorado River Board/CA
Tony H. Joe, Jr., Navajo Nation

John Shields, Wyoming State Engineer's Office

Interested Persons:

Perri Benemelis, ADWR
Lori Caramanian, DOI
Marianne Crawford, USBR
Helen Fairley, USGS/GCMRC
Dave Garrett, M³Research
Martha Hahn, NPS/GRCA
John Halliday, DOI
Leslie James, CREDA

LaVerne Kyriss, WAPA
Kelly McGill, NAU Graduate Student
Ted Melis, USGS/GCMRC
Gerald Myers, White Mountain Fly Fishing
Colby Pellegrino, Southern Nevada Water Auth.
Sam Spiller, USFWS
Wade Wilson, USFWS

Meeting Recorder: Linda Whetton

Welcome and Administrative.

1. David Bennion was recognized as WAPA's new TWG alternate.
2. Anne Castle will be calling in at 9:30 to discuss budget and program priorities.
3. Based on the Doodle poll results, the next TWG meeting will be held June 28-29, 2011.
4. Shane said that while the TWG can have a casual voting process on budget issues (raising hands), recommendations to the AMWG need to be more general than they have been in the past. He will participate in pre- and post-TWG meetings with the AS-WS Office to better determine his role as TWG chair and gain a better understanding of agenda items and actions required.

Approval of the Nov. 15-16, 2010, Meeting Minutes. Without objection, the minutes were approved.

Approval of the January 20, 2011, Meeting Minutes. Glen said there was a subtle change to the discussion on the Programmatic Agreement. The minutes said the parties couldn't reach resolution of effect in 2010 and that's what led to Reclamation seeking individual 106 compliance for the two undertakings and two EAs. He said that wasn't what drove that action but that Reclamation was looking to update the 1994 PA and hadn't come to resolution on how to pay for it. Kurt said the minutes reflected exactly what Glen said and that Glen was going through the 106 process independent of the PA for the two EAs because the PA wasn't effective or wasn't working. Glen said he thought it was a nuance because also during that time they were looking to update the entire PA and said it was the same issue but wasn't worded the same. Glen said the 1994 PA in and of itself is a resolution of effect, a process to get there and revising the PA is probably the bigger point for why Reclamation didn't get there and had to

do individual 106 compliance. Kurt said he didn't think there was a nuance and if Reclamation feels the PA is not meeting their compliance responsibilities, they should terminate it. Jan added that the terminology of resolution of effects and the issue wasn't whether or not the revision of the PA was stopped or they couldn't resolve the effects of the action, it was because they couldn't resolve the changes in a new PA to bring it up to date. Pending edits from Glen and Jan, the minutes were approved.

Review of Action Items. The action items (**Attachment 1**) were updated.

Status of GCMRC Chief. Ted Melis reported that Kate Kitchell has been conducting interviews with the candidates. A selection should be made in April with the new chief reporting in May.

Old Business. None.

GCMRC Update. Ted provided information on the KA Workshop II (**Attachment 2**) and advised the TWG to review the 2006 Knowledge Assessment report in preparation for that workshop. GCMRC will sponsor a WebEx conference call for the purpose of reviewing the resource goals, experimental treatments, and questions which were revised after receiving comments from the SAs.

ACTION ITEM: Linda will send out the 2006 Knowledge Assessment Report along with Ted's PPT from today's meeting in preparation for the GCMRC-sponsored WebEx. (Update: E-mail messages sent 3/10 and 3/17 in conjunction with request for availability.)

New Business. None.

BOR Updates (**Attachment 3**)

Nonnative Fish Control EA. Glen provided a brief history of the EA, the purpose and need, the results from the Structured Decision Making (SDM) workshop, and the Science Advisors' review of the SDM. The EA is available online at <http://www.usbr.gov/uc/envdocs/ea/gc/nafc/index.html>. Reclamation intends to provide the public with another draft of the EA for a two-week review in April. The process should be concluded by early summer 2011 with a decision notice. Comments are due by March 18, 2011.

The members raised concerns about how Reclamation dealt with the fish suppression flow issue in the EA, having sufficient time to prepare and release the revised EAs, additional research needed for determining a trout trigger, and resolution with the Pueblo of Zuni on effects of mechanical removal in the Grand Canyon.

High Flow Experimental Protocol EA. Glen said this EA was distributed on January 20, 2011. Based on comments received and additional discussions with agencies and stakeholders, changes are being made to this EA. He went through some of the substantive changes and said the Science Advisors also reviewed the plan. Reclamation intends to provide another draft EA to the public in April for a two-week review period. The process will conclude in early summer 2011 with a decision notice. If monitoring shows there are unacceptable impacts, such as a significant decline in humpback chub numbers, Reclamation will suspend implementation of the protocol and re-evaluate the protocol. The document can be found online at: <http://www.usbr.gov/uc/envdocs/ea/gc/HFEProtocol/index.html>

Long-Term Experimental and Management Plan (LTEMP) EIS. This plan was first announced by Asst. Secretary Anne Castle at the AMWG meeting in August 2010. Glen said that Reclamation and the Park Service will serve as co-lead agencies. He went through the purpose and need, proposed action, and the goals for 2011. A kick-off meeting was held with potential cooperating agencies on February 11, 2011. Reclamation is working with the Park Service on a Notice of Intent for publication in the Federal Register. Scoping meetings will likely be held in Phoenix and Salt Lake City.

Conference Call with AS-WS Anne Castle. Ms. Castle said she wanted to talk about the direction the Department provided to GCMRC in doing its initial budget formulation. Along with the retirement of John Hamill and 2011 being the last year of a 5-year science plan, she feels it's a good opportunity to take stock in the direction given to GCMRC in how it prioritizes its thinking and planning. She said GCMRC was asked to think about the following in formulating the budget: 1) need to be focused on ESA compliance and also focus science on the native fish particularly the HBC, 2) sediment and its impact on resources, and 3 and 4) focused on non-native fish control and recreational fishing. There aren't going to be increased budgets in the future and GCMRC needs the tools to avoid the *Christmas tree* approach when there are a lot of people with different interests. She wants to make sure the GCMRC process for setting priorities doesn't avoid or negate the need for TWG input, direction, and feedback. She complimented Shane for putting so much time and effort into figuring out how to best utilize the TWG's time and direct a productive process for addressing the budget and the science work plan. There is a lot of good science to be done and she stressed the importance of the TWG to remain focused when prioritizing the work.

The following issues were discussed: 1) need to fully understand how the entire ecosystem works, 2) addressing cultural issues in relation to the four priorities given to GCMRC, 3) TWG involvement and preparation of budget recommendation to the AMWG, and 4) greater integration of science into the adaptive management process.

Continuation of GCMRC Workshops. Ted said the Knowledge Assessment Workshop sets the stage for the next MRP which will be under development in 2012. It also gives the TWG, along with other DOI agencies, a chance to provide input on what the TWG still needs to know or move forward on implementing whatever conservation measure or management action is needed. He said deliberations on the FY12 budget are really critical because they set the course for the five-year (2012-2016) MRP effort. The next steps would be to convene a workshop to solicit "expert" opinions and follow up with a stakeholder/TWG workshop to review the "expert" input. GCMRC anticipates distributing the final report in late summer/fall 2012.

Socioeconomics Implementation Plan. Shane said an update was provided to the AMWG on the progress of the SEAHG. Tables 1-3 were developed and Table 3 is the primary implementation plan (**Attachment 4a**). The SEAHG has been working with Bruce Peacock (NPS) on the NPS Colorado River Socioeconomics Research Plan. Shane feels the SEAHG and NPS are convinced they can collaborate in this effort and said his objective today was to update the TWG on the progress that's been made. He said several NPS documents were posted to the website: Federal Register Notice dated Feb. 8, 2011 (**Attachment 4b**) "Economic Values of National Park System Resources Along the Colorado River: A Proposal for Estimating Magnitude and Significance" (**Attachment 4c**), "White Paper: Economic Values of National Park System Resources Within the Colorado River Watershed" (**Attachment 4d**), and "Final Report: Economic Values of National Park System Resources Within the Colorado River Watershed: Phase II" (**Attachment 4e**).

Helen reminded everyone that Table 3 is a summary of all the projects the SEAHG compiled into a 5-year work plan. The first part focused on doing the basic economic impact assessment of revenues generated by visitation and going on to a non-market evaluation of recreation benefits in conjunction with doing a base case study of the hydropower economic elements of the program. She said all the elements are being addressed at some level by the study they're proposing to do and that there is an opportunity for the GCDAMP to complement the work being done by the Park Service.

Bruce Peacock joined by phone and introduced himself as an economist and also chief of the National Park Service Alliance Division. NPS has been working on this project for approximately five years in various stages of concept, design, and has also produced some products. NPS objectives for the study are to develop comprehensive economic values for NPS resources and to better understand direct and passive use values. Direct use values refer to the direct interaction with the resources, such as hiking, boating, fishing, etc., while passive use values reflect the appreciation people have for just knowing the

resource exists and is going to be preserved for the future. All those impacts were addressed in the 1995 EIS and also considered in the ROD that followed in 1996. They want to be able to compare total NPS values to the total values of other water uses. Many of those water uses are complementary or compatible with NPS resources and uses and some may be competitive. Finally, they want to estimate marginal values as a function of lake level or river flow. The project has been organized in four phases and more information can be found in the above documents. As a result of that exercise, NPS identified data gaps they would like to be able to fill to be able to have valid, defensible, and current economic values for the three categories of interest. The study would involve actually collecting information from the public or visitors, including the two-lake river system of Lake Powell and Glen Canyon National Recreational Area, Grand Canyon, and Lake Mead. To the extent they can extrapolate those results to use outside of that immediate area, for example Curecanti, Upper Colorado, then they would also be looking to do that as well. That last effort would not involve original research but would be an extrapolation or extension of the original research conducted in the two lake river system outside of that immediate area.

They're currently in Phase III, the office management budget information collection review process. They published a Federal Register Notice and intend to collect information and solicit comments from the public. They will then submit the actual survey for information collection packages to DOI and SOI offices for review and then on to OMB for final review and approval. They want to integrate the economic values using hydrologic models in order to calculate marginal economic values for foot of elevation change in lakes or maybe even by flow levels in the Colorado.

Bruce said he is very interested in pursuing collaborative efforts with other entities, but stressed the importance of getting that underway as soon as possible because he will be submitting the report to OMB within a couple of months. Once OMB receives the survey and start going through the review process, they don't look favorably upon last minute changes.

Shane said that part of the SEAHG is going to work on the information needs that are encapsulated in Table 3 while another group will be involved in more detailed discussions with Western, GCMRC, and others to determine where the individual components would mesh, complement, or add to the NPS plan. The TWG needs to decide how much input they want to provide and how much realistically the Park Service can incorporate. Helen said she could assist with the process but it would depend on how much she is asked to do. Shane said he will talk with Deanna Archuleta because he doesn't really know what the AS-WS Office wants the TWG to do. With the AMWG not meeting until May and potentially directing the TWG to work with NPS staff, it doesn't work with the Park Service's schedule to get it completed and sent to OMB.

The following concerns were expressed: 1) be careful when describing economic resources because water users may interpret "allocation of water" as "different allocation of water," 2) time commitment involved to prepare and complete report, 3) AS-WS and AMWG direction to TWG, 4) need a meeting between Western and GCMRC for implementing the base case analysis, and 5) consider establishing a protocol whereby TWG has pre-approval from AMWG to participate in collaborative efforts.

ACTION ITEM: Shane will follow up with Ms. Castle on the base case and policy.

Hydrograph Development for 2012. Glen said that last year DOI and DOE prepared a proposal to modify how to implement MLFF to benefit downstream resources. That proposal was presented to the TWG and the AMWG voted to make that change, and Reclamation has been operating under that proposed hydrograph for 2011. For 2012 they want to start engaging the TWG on developing a hydrograph to include in the budget and work plan recommendation to AMWG in August. He said Dave Trueman has been working with DOI and DOE to look at what would be done differently than was done in 2011.

Dave Trueman gave a PPT presentation (**Attachment 5a**). He said one of the biggest challenges to Reclamation in operating Glen Canyon Dam is determining releases throughout the year. As such, they developed flexible constraints, ones that would move with the forecast. In 2011, they're operating under a restriction of +/- 100 kaf per month on the remaining average of releases for the year. He said they could implement that type of process in scheduling around high flow events and dam maintenance. They observed that possibly lower winter releases would be a good strategy for retaining sediment in the system. The +/- constraint constrained them on the bottom of early releases as well as the top. If a HFE was considered, then the plan might be to conserve sand during the winter months. He provided the following details on comparison of Unrestricted vs. +/- 100 kaf:

- The +/- 100 kaf scenario retained 170 ktons in Marble Canyon
- Historically HFEs have deposited about 600 ktons above 8,000 cfs level (somewhat dependent of sediment input)
- Starting with a higher bed load could be expected to help reduce the net loss of sediment from the system by an HFE
- Additional cost = \$1.75 million

WY2012 Hydrograph: Grand Canyon Trust. Rick Johnson distributed copies of the Trust's proposed hydrograph (**Attachment 5b**). To meet the intent of the Management Policies and the ROD, the Trust proposes an experimental hydrograph for WY 2012 be designed to achieve a neutral or positive mass balance of sediment while implementing high flow experiments under sediment-enriched conditions. The Trust also proposes that the hydrograph be designed to test the potential effects of flows on other Park values such as humpback chub.

Shane said he was not prepared to accept any hydrograph motions at this time. His plan is for the TWG to analyze any proposals and prepare a recommendation at the June meeting. He hasn't heard from Interior if they would be able to absorb other recommendations into the one that's being developed for the TWG's consideration. He also wasn't sure if the GCT proposed hydrograph could be integrated into a proposal that is being worked on by DOI/DOE.

The following concerns were noted: 1) whether the hydrograph presented by Reclamation would result in a positive mass balance, 2) consider doing additional modeling to evaluate if other hydrographs have greater sand retention, 3) should provide the confidence limit on sand estimates, 4) provide additional comparisons of model with past sand measurements in the system to evaluate accuracy of the model, and 5) consider other alternatives that are within the realm of adaptive management.

Ms. Caramanian said she was confused by GCT's proposal and said that if Rick was talking about year-round steady flows, then she didn't think there was environmental compliance for that. She didn't feel there was enough information to figure out a hydrograph for a positive sand balance.

Shane said there would be a revised proposal for consideration by the TWG at its June meeting.

Genetics Management Plan. A copy of the Genetics Management Plan (**Attachment 6a**) was distributed via e-mail to the members prior to the meeting. Wade Wilson gave a PPT presentation (**Attachment 6b**). He provided the following recommendations:

- A genetic management and captive propagation committee should be developed to identify and mitigate new issues should they arise in the program, evaluate research proposals, determine fate of incidental spawns, and provide support and recommendations to the Regional Directorate regarding humpback chub assurance population maintenance and captive propagation. Incidental or unplanned spawns should be targeted for research or disposed of rather than committing space to rearing fish with no future as broodstock.
- A second assurance population should be developed.
- Young-of-year should be collected and 200+ individuals provided annually to each assurance population on alternate years for 10 years.

- Incidental spawns from captive stocks should be collected annually and used for purposes to be determined by the propagation committee.
- Any fish stocked, translocated, or used in a captive program should be PIT-tagged and genotyped.
- An active cryopreservation program should be developed to harvest the genetic reserves of the Little Colorado River. Use of cryopreserved sperm would only be initiated if numbers of humpback chub decline below 100 fish in the Little Colorado River and Grand Canyon.
- At most one facility using raceway culture should maintain a captive stock; the second assurance population should use netted outdoor ponds for rearing. Preferably both stocks would be reared in pond culture.
- Comparisons of genetic changes and allele loss should be ongoing for the duration of the captive program.
- All facilities involved with captive stocks of humpback chub should develop site-specific NATURES rearing practices, especially facilities involved in a raceway culture.
- Identify a closed basin system that can be used to maintain older broodstock once they have been intentionally spawned twice. This experimental population can serve many purposes as determined by the genetic management and captive propagation committee.
- A "studbook keeper" should be designated to maintain pedigree record information for all assurance populations and propagation events for humpback chub. This necessitates facilities becoming members of International Species Information System (ISIS), and training the individual in the Zoological Information Management System (ZIMS) record keeping system.
- The studbook keeper will provide onsite spawning assistance and designate preferred spawning pairs if propagation is initiated.

The following issues were discussed: 1) augmentation as a tool to develop management methods, 2) evaluate other species with similar life history strategies, 3) comfort level of FWS with tribes holding HBC, 4) taking tissue samples from a wild population gets to issue of take and perhaps handling fish too much, and 5) over population in hatcheries leads to fish not having enough room to grow.

Goal 3. Extirpated Species Ad Hoc Group Report. Larry Stevens distributed copies of his PPT presentation (**Attachment 7**) and said the white paper is still in review. He reviewed the AMWG charge and identified four elements of the charge: 1) Develop a list of species of management concern, 2) Review integrity of information, 3) Determine habitats and ecological roles, and 4) Evaluate restoration potential approaches. He said the next steps will be to complete vetting of species with experts, further discussion of scoring and general approach, complete the draft white paper and present to the TWG, incorporate reviews and provide to the TWG, and present a final white paper to the AMWG at its August 2011 meeting.

ACTION ITEM: Larry Stevens will provide a draft of the Goal 3 Ad Hoc Committee's white paper on extirpated species along with comments to the TWG before its next meeting.

FY 2012 Budget and Workplan Modifications. Shane said there wasn't a draft budget for review, but there would be a document for review at the AMWG meeting in May. He will work with Glen in setting up a Budget AHG meeting/conference call in preparation for discussion at the June TWG meeting. He said Glen would present information relative to changes in the FY11 work plan.

The following concerns were raised: 1) Budget priorities presented by Ms. Castle but nothing on tribal values or conflict of cultural values which have been exposed over mechanical removal, 2) Definition of "meaningful" consultation with AMP tribes, 3) Don't know how to deal with tribal issues because policy issues haven't been dealt with, 4) Need to bridge gap between technical aspects and tribal values and work together, 5) Consider issues for the CRAHG to address.

Shane suggested having the tribes report on their monitoring efforts at the next Annual Reports Meeting.

FY 2012 Budget and Workplan Modifications. Because he had provided updates on the two environmental assessments and where Reclamation is headed in terms of the budget, Glen said there would only be minor changes to the workplan. He said nearshore ecology field collection would end this year and they're looking at ways to morph that study to get more data on juvenile chub abundance and habitat use relative to non-native fish control. He said there are concerns about federal budgets being reduced and how that would affect the program. Because the government has been operating under a Continuing Resolution, Reclamation has transferred only limited funds to GCMRC.

GCMRC. Ted said he wanted the TWG to consider the information presented at the Annual Reports meeting held in January in their budget deliberations. He requested that if there are any suggestions for future AR meeting presentations, that they be directed to GCMRC so they can be included.

Notes and Recommendations from AR Meeting. Shane presented notes and recommendations from the FY 2010 Annual Reporting Meeting (**Attachment 8**) and asked the members what they wanted to do with the notes. They added the following to the list:

19. Dongoske (HFE): high flow might reduce habitat availability for HBC in NSE reach thereby reducing survival rates, this is from the GCRMC report, Walters ecosystem.
20. Korman: tagging study for downstream drift could be added to the PBR removal program under the nonnative EA. About 15,000 tags would be needed to tag about 25% of the trout population at Lees Ferry. Presumably they would drift down and be captured in the PBR reach and estimates of emigration from Lees Ferry could be calculated.
21. Balsom: relationship between water temperature and growth rates of humpback chub may be important.
22. Norm: questions movement of small trout downstream, we may be able to catch those.
23. Davis: are we complying with water quality standards in Grand Canyon?
24. Consider the implications of the recommendations from the socioeconomics ad hoc group in consideration of changes to the FY 2012 workplan.
 - a. In Table 3 we have nonuse values workshop for 2012, but unfunded and not in current 12 workplan.

Shane distributed a list of the following items to be considered when developing the revised FY 2012 budget and workplan:

1. Completion of the LSSF Report
2. Fund and implement the science work for Non Native Fish and the High Flow EAs
3. Fund for the LTEMP
4. Expand the NSE work to include tracking of juvenile survival rates in the mainstem and include this in the LCR as well. Maintain/develop adequate sampling regimes to better understand movement between the LCR and mainstem to better understand limiting factors and effects on growth.
5. Fund the Fall Steady Flows synthesis report due to TWG in January 2013.
6. Foodbase – formalize the protocols for aquatic foodbase monitoring (carry out the PEP as planned)
7. Reclamation needs to tell us how Reclamation intends to stay in compliance with PA in 2012.
8. LTEMP Funding – need clarification of how next EIS will be funded and what portion will be funded from AMP program (power) funds and what portion will be covered by the agency funds. Need to identify the funding before the EIS is started.
9. Arrival of tamarisk beetle has many potential implications – should look at an array of projects to assess ecosystem impacts, impacts to resources; how can current projects potentially pick up the effects. Consider what is already happening outside the program, is there adequate collaboration between NPS and USGS programs and other ongoing monitoring efforts.

10. Goal 3 – enormous number of unknowns - collaborative process involving NPS, Reclamation, NGOs to compile info focused on tax, habitats – not necessarily funded by this program.
11. Furthering the translocation science – develop native fish translocation plan – and integrate with NPS native fish management. If NPS is already doing what this program needs, then no need to fund through the AMP.
12. Science project to estimate the effected population size and Ne/N ratio in the wild HBC population (\$10,000?)
13. Identify need to get NPS information back to this program and integrate NPS activities using less of an ad hoc approach. Do we need a formalized clearinghouse process whereby GCMRC reviews other agency reports to meet program needs and standards for peer reviewed science to inform AMP decision making?
14. Be able to better track high elevation sediment after deposited by HFE above the 30,000 cfs water level. (Ted clarifies that sed between 8-45K cfs is tracked through channel mapping but is not incorporated into the existing sediment models.)
15. Include adequate funding for fish monitoring trips.
16. Continue to make process on creating geo-database website to linking various data sets with GIS-based maps.
17. GLCA hidden slough (-6.5 mile) – use this site to evaluate how tamarisk effects our ability to interpret geomorphology since tamarisk has now been removed.
18. Additional funding to investigate suppression flows and effects to HBC, maintain rainbow trout fishery, and integration of traditional ecological knowledge.
19. Funding for socioeconomic program – nonuse value workshop, additional staff support for GCMRC?
20. Nutrient dynamics – effects of dam in changing nutrient transport and dynamics (including loss of pre-dam sediments) and expected response of the system over time; brainstorm on nutrient dynamics conceptual model.
21. Grand Canyon is a light limited system – need to do a GIS analysis of light availability/solar energy budget for resources in the riparian zone.
22. What is the source of mercury contamination in and below the LCR? Perhaps look at large sample to determine extent of the problem, figure out next steps, native fish and human consumption issues.
23. Evaluate how dam operations affect the above issues.
24. Nothing in here is intended to replace what is already in the FY12 budget.

Ted mentioned that the USGS will continue to bring in \$1 million to allow GCMRC to buy down the DOI reduced burden rate on projects. However, GCMRC is going to incur additional costs because the buildings they currently reside in on the U.S. Geological survey's Flagstaff Science Center campus are being replaced. As such, GCMRC isn't sure whether the burden rate will go from 19% to 38% in FY12.

Public Comment: None

Adjourned: 5:02 p.m.

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Tony H. Joe, Jr., Navajo Nation

John Shields, Wyoming State Engineer's Office

Interested Persons:

Marianne Crawford, USBR
Helen Fairley, USGS/GCMRC
Dave Garrett, M³Research
John Halliday, DOI
Loretta Jackson-Kelly, Hualapai Tribe
Leslie James, CREDA

Lea Kearns, The Mary Orton Company
Ted Melis, USGS/GCMRC
Gerald Myers, White Mountain Fly Fishing
Orton, The Mary Orton Company
Colby Pellegrino, Southern Nevada Water Auth.

Meeting Recorder: Linda Whetton

Administrative. Shane welcomed the members and members of the public. He said Dave Garrett will present information on decision support processes and then we will move into the general core monitoring session, he'll discuss goals for the session, and then it will be turned over to Mary Orton who will facilitate the core monitoring session.

SA Annual Report and Decision Support

Fiscal Year 2010 Science Advisor Project Report to GCDAMP. Dr. Garrett provided copies of the Science Advisors' Fiscal Year 2010 Project Report along with copies of his PPT presentation (**Attachment 9a**). He said the SAs are going to do everything they can do to support the program. He provided the general SA recommendations:

1. Provide risk assessment(s) especially as it relates to management actions on non-native fish, native fish, cultural resources, HBC translocations, HFE, etc.
2. Implement more collaborative workshops of TWG and GCMRC to improve AM protocols, operational effectiveness, and management and science integration,
3. Utilize assessments of knowledge, improved science synthesis, modeling and risk assessments to clarify best non-native fish and native fish management alternatives, management actions, and science for Colorado River Ecosystem.
4. Increase interdisciplinary science program implementation and integrated science study and assessments, especially as relates to HFE, native, and non-native fish management.

Tradeoff and Decision Support Methods. Dr. Garrett passed out copies of his report and PPT, “A Prospectus to Evaluate Tradeoff and Decision Support Methods for the GCDAMP” (**Attachment 9b**). He said their goal is to distribute a report in the summer and perhaps bring a couple of science advisors to assist. He referenced the “Review of TWG Developed Appendix and Related Changes to the GCMRC Draft Core Monitoring Plan Report” (**Attachment 9c**). He said the SAs have never provided an accounting of how many reviews they’ve done, but it might be something the program should consider asking for in the future. The SAs may also provide a presentation on their accomplishments at the next Annual Reports meeting.

Kurt felt the Pueblo of Zuni concerns were not adequately addressed in the SDM Project because of: 1) A misunderstanding how the workshop was being used by Reclamation, 2) Non-Zuni persons representing Zuni, and 3) Not enough time to vet decisions through the religious leaders and workshop may not have been the best context to present information to them. He asked if the SAs looked at different cultural values in the SDM process. Dave said they would’ve liked to have done that but John Hamill wanted a decision by the SAs. The review they did was constrained to outcomes and not process and so the values didn’t surface. Kurt asked how they would address that concern through this group and make sure that tribal values don’t get diluted. Dave said they could’ve done multi-criterion assessments and the outcome could’ve possibly been changed. Dave said it’s critical not to use processes that can inadvertently or deliberately delete a goal.

Core Monitoring Plan Development. Shane referenced the General Core Monitoring Plan dated February 18, 2011 (**Attachment 10a**) and gave a PPT presentation, “General Core Monitoring Plan Criteria Development” (**Attachment 10b**). He stressed importance of completing Appendix B (**Attachment 10c**) and then approving the entire CMP. He highlighted specific issues for dealing with Appendix B. He distributed copies of the handout, “General Core Monitoring – Structured Decision Making Process” (**Attachment 10d**) and reviewed the six steps involved in carrying out the SDM process. He asked if there were any questions.

While this is a good way to build on yesterday’s discussion and focus on a set of goals developed in 2004, Jan said there have been many years of work and questioned whether there was a status update on exactly where the program is at this point in time. Larry concurred and said it’s a huge step going from research to core monitoring goals especially with still so many unknowns in the system. Dave said there will be a range of objectives used to get to the best available science.

Norm asked how the PEP process is being utilized. Shane said that’s part of the 4-step process and will be used in the final review.

Consensus Building Workshop

Introduction. Mary Orton said she’s not an expert on issues but an expert on process and has a master’s degree in conflict resolution. It’s been found that if people agree on the process, they will be able to make better decisions. She passed out copies of a handout, “Guidelines for Productive Group Interaction” (**Attachment 11**) and asked for the benefits of participating in groups:

- Collective wisdom (education, ideas, experience)
- Personal growth
- Sustainable decisions
- Better than alternatives
- Accountability
- Commitment to implement

She said a lot of the ideas for working with groups came from the book, “The Skilled Facilitator” and offered the following guidelines for productive group interaction:

1. Test assumptions and inferences
2. Share relevant information

3. Use specific examples and agree on what important words mean
4. Explain your reasoning and intent
5. Combine advocacy and inquiry
6. Jointly design next steps and ways to test disagreements
7. Discuss un-discussable issues
8. Use a decision-making rule that generates the level of commitment needed

If consensus is important to the group, Mary asked how they could get to agreement. She stated consensus is based on including everyone’s position and groups that can go between substantive and process issues will improve their decision-making process. If there are problems, she suggested everyone share their deep feelings or in other words “to get all their snakes on the table.”

Kurt asked how to incorporate everyone’s interests if there are differing opinions. Mary said there is a term for that called “group think” and it’s conforming for the sake of the group. Mary used the *Bay of Pigs* as an example and said that after it occurred, President Kennedy tried to figure out how it happened because he had the best people in his cabinet giving him advice. When he was faced with the Cuban Missile Crisis, President Kennedy asked two of his most trusted advisors in the White House to act as devil’s advocate to address the issues. Mary said if there is an impulse to “go along to get along,” then people need to step out and take a break. She feels the process will help inform the decisions. Only the individual can decide where the line is, but it requires everyone come to table to understand the issues really well in order to draw the line. People shouldn’t give up their interests for consensus sake. She advised people to ask themselves, “How can I get what I want and not thwart the process?” People shouldn’t frivolously get to consensus. Mary asked if the group had developed a definition for consensus. Bill Davis said it was “lack of opposition.” Norm said the budget is the most contentious issue the TWG deals with and when a recommendation passes, no one has a commitment to implement.

When asked if the group wanted to operate by the guidelines today or had any concerns, the following comments were offered: 1) There are sub-units around the table, 2) Certain amount of apathy for having gone through similar processes, 3) Concerned with being involved in a lawsuit and sharing information with litigants seated at the table, 4) There isn’t a better alternative, 5) Time involved may not get the group where it wants to be at the end of the day, and 6) Tribal concerns may be obviated or diluted.

Mary said there is a difference between criteria and objectives. If CMINs are being used, then the criteria for ranking is high, medium, and low. She demonstrated this through the example of buying a vehicle together, soliciting objectives and criteria from the group:

IMPORTANCE (objectives)	SPECIFIC NEEDS (criteria)
High level of fuel efficiency	At least 35 mpg
Gun rack	Has a gun rack for 2 guns
Adequate seating	Seats at least 7
Safety	Side and front air bags
Price	No more than X dollars

Shane said the group is now ready for the next step which will involve making some tough “science based” decisions on criteria for evaluating core monitoring projects. He feels the criteria developed today will help them reach their core monitoring goals. Helen said the things they struggled with in the past were different variables to monitor and types of information to feed into the models. Dr. Garrett said the group needs to establish general criterion that will enable them to select among two or three alternatives.

Mary asked the members to write what they thought general criteria were and told them their ideas would be put into a format they could all read and modify. Following the exercise, she asked what general criteria the TWG should use to evaluate individual core monitoring plans.

She broke them into groups of 5-6 people:

Larry S	Dave B	Jan	Dave G	Robert K
Norm H	Cliff B	John Halliday	John J	Paul H
Kurt D	Bill D	Kerry	Loretta J-K	Rick J
Jerry C	Mike Y	Don	Bill S	Pam S
Helen F	Gerald	Ted	Jason T	Glen K
Marianne C	Myers		Amy H	Ted M
			Tricia McCraw	

Mary then asked them to put an asterisk (*) next to the most important things to each of them. The groups were then asked to discuss their ideas and write them up on half sheets, eliminating overlap while honoring diversity of perspective. She reminded them it was not a consensus building exercise but trying to get as many viewpoints as possible.

The group noted some of their initial concerns:

- Can Western science and non-scientific (tribal) work be meaningfully integrated?
- Relevance to rigorous defensive practical model
- Data are useful and timely
- Contribute to management actions/decisions
- Park values in the legal sense / Consistency of Park values and no impairment

The group worked at combining the notes into clusters. Upon returning from lunch, Mary had put symbols on the clusters and told the members they would name the clusters with the criterion.

Shane said the general idea of the exercise was to get all the ideas recorded and then once there are categories, they would record a description underneath. He wants to work with the Core Monitoring to decide what those descriptions will be. He said there will be multiple levels of review with the goal of getting to specific needs/wants for the program and instead of taking 5 years to make a decision about a resource, it might take 10 or 15 years. In making decisions, the power of the data is going to be really important which will relate back to how often and how much is sampled and the robustness of the sampling programs.

Concerns:

- Up until about year 2000, \$100 million was spent on fish data acquisition, but there was no study design to answer questions. So we went for 20 years gathering high quality data but didn't get to the step of having a study design that actually allowed us to understand the data we'd been collecting wasn't adequate. (Stevens)
- Everything we're talking about doesn't really address the usefulness - the utility to answer the questions. (Balsom)
- The best science, technology, and TEK, could be data quality or it could be the use of it. (Johnson)
- Are the DOI priorities pushing the old AMWG 2004 priorities off the table? (Capron)
- I've listened to deliberations on these topics and members of the group had previously suggested a percentage of the gross budget that would be assigned to core monitoring, but I'm surprised no one has put up a 30%, 40% or 50%. (Melis)

ACTION ITEM: Shane and the Core Monitoring AHG will rewrite Appendix B (integrating Science Advisor comments and include criteria) and bring a revised version back to the TWG at its June meeting.

Final Results of the Consensus Building Workshop:

Compliance with law and policy

Compliance (Fed/state/tribal)
Compliance – ESA, NHPA, Law of River, EO13007
Consistency with park values and no impairment
Degree of linkage to dam operations
Related to GC Dam Operations
Meets mandates of GCPA
Comply with laws and regulations
Meets compliance needs (LOR, NEDA, etc...)
Meets legal goals/objectives
Related to “dam operations and other actions”
(GCPA)

Data Quality

Geospatially and temporarily related datasets
Objectivity and replication of methods,
measurements, and assessments
Appropriate scientific methods (controls, sample,
bstudy decision)
Use of best science/technology and TEK
Data provides a measure of confidence/reliability
Result in measurable outcomes
Adequacy of existing knowledge
Robust metric for determining effects

Utility of Data

Data are useful and timely
Timeliness of information
Risk analysis ... does it contribute?
Ability to detect threats (contingency/risk
assessment)
Flexibility in periodicity of monitoring
Relevance of measured indicators to dam operations
Dual role of data and use in model generation
Relevance to rigorous, defensible predictive model
Adaptable/flexibility of timing and frequency
Continuation of Legacy Data sets
Ability to detect trends
Continues long-term dataset
Metrics and indicators appropriate to CMINs

Minimize adverse impacts

Impact to visitor experience
Geographic and demographic extent of effects
Potential impact on resource being monitored
Minimal impacts to CRE
Impacts to Tribal Trust resources
Considers negative impacts on other resources

Next Steps

- Complete Appendix B
 - Integrate SA comments
 - Include criteria
- CMP AHG
 - Shane Capron, Jan Balsom, Bill Davis, Helen Fairley, Paul Harms, Norm Henderson, Pam Sponholtz, and Larry Stevens

Integration of Cultural and social values

Considers environmental and cultural values
Zuni is happy
Considers economic values
Sensitive to tribal concerns
Stakeholder interest (i.e., AMG, TWG, public)
Satisfies tribal and public trust responsibilities
Considers social values
Tribal monitoring results can be meaningfully
integrated
Culturally relevant and sensitive to cultural concerns

Addresses goals and priorities

Meets hierarchy of priorities
Does it relate to AMP goal?
AMP strategic plan
Meets program priorities
AMWG /sec of Interior priorities
Does it lead to DFC?
Addresses AMP goals 1-12
Contribute to management actions/decisions
Is there a defined goal
Meets SOTI goals
Appropriate to resource goals and CMINs
Are data linked to ends/objectives
DOI priorities vs. AMG priorities

Information Management

Adequacy of information management

Larry's Ecosystem Approach

Is it directed to keystone resources
Prioritized by trophic structure
Tie-in to ecosystem model
Integration into BIG picture (ecosystem)
Provides for multiple needs

Cost effectiveness and affordability

Good benefit/cost
Cost can be accommodated by program
Affordability and budget implications (cost)
Integration with other management programs
No duplication of effort
Cost/Benefit
Collaborative funding sources

Parking Lot

SA Review of Plan(s) (Process)

- o Process – SA review of plans – to be discussed

What are the benefits to working in a group?

- o Collective wisdom – education, ideas, experience – differences
- o Personal growth
- o Sustainable decisions
- o Better than alternative
- o Accountability
- o Commitment to implement

Meeting Evaluation

The meeting concluded with Mary asking TWG members to write down one thing they liked about the meeting and one thing they would change for next time. The results are below.

+	Δ
+ Great job on facilitation	Δ Linkages ignored or unclear.
+ Complexity of program well reflected	Δ Resolution and linkage not identified
+ Encouraging to see the support for the integration and importance of tribal and cultural values in the core monitoring	Δ Realistically this support for integration of tribal values has risen to the top in past TWG/AMWG exercises like this one, but it never gets the subsequent attention and work to integrate it in the program that it needs.
+ Clear statements of criteria	Δ Drill down into specifics
+ I felt this was a good integration of “teaching” a more open way of communicating and crunching out some needed work on CMP	Δ No downside
+ I liked that everyone’s ideas were heard and discussed	Δ A bit more time in the small groups would be helpful
+ Good ability to reach end point, intended goal	Δ At the point of breaking into small groups, work to produce integrated groups so there can be <u>more</u> cross fertilization of ideas. What was done was good and could be made even better!
+ Good integration of stakeholders into small groups – not done enough	Δ Constraints of instrument due to law suits and representing agency rather than personal priorities
+ Engaged the entire group/everyone was participating	Δ Maybe more reminders of the task to keep the group focused
+ Inclusiveness of process	Δ Better overview of CMP status/process/history
+ We accomplished something with everyone’s input	Δ Need to link the criteria rather than separate into categories
+ Small groups good approach for discussions/exercise	Δ It took quite a long time to get into the heart of useful discussion – but have to be sure you have laid enough groundwork for a positive outcome
+ You kept it interesting – no one went to sleep	Δ More time and maybe starting on a simpler “problem” to better see how the process works
+ The formal step of categorizing how decision will be made is very helpful in understanding each others’ perspectives better	Δ Don’t clearly see the transition from cards on the wall to formal written criteria document
+ Facilitator guided discussion and criteria setting	Δ A little more time for process – 1-2 hours
+ Facilitator brought together many varied individuals through experience.	Δ Left Blank
+ Ensuring collaborative approach	Δ Wasn’t sure why we had to pick 3 “clearest” criteria and then again. This seemed to take a long time. Easier for groups to just share criteria
+ Review of guidelines for productive group interaction (wish we could do it <u>before</u> every meeting!)	
+ Mary shows excellent patience with team members who aren’t excited about participating.	
+ Good process to use group to get good cross	

+	Δ
section of ideas	one at a time...kind of a round robin approach?
+ The method of accomplishing the task together	Δ Discussion of relationship between CMP and individual CMPs and what this step means to that process could have had more clear clarification
	Δ Less intro. Not needed with the sophistication of this group

Public Comment: None

Adjourned: 3:02 p.m.

Respectfully submitted,

Linda Whetton
Upper Colorado Regional Office
U.S. Bureau of Reclamation

General Key to Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources
AF – Acre Feet
AGFD – Arizona Game and Fish Department
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
DAHG – Desired Future Conditions Ad Hoc Group
DASA - Data Acquisition, Storage and Analysis
CWCB – Colorado Water Conservation Board
DBMS – Data Base Management System
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
HBC – Humpback Chub (endangered native fish)
HMF – Habitat Maintenance Flow
HPP – Historic Preservation Plan
INs – Information Needs

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
NAU – Northern Arizona University (Flagstaff, AZ)
NEPA – National Environmental Policy Act
NHPA – National Historic Preservation Act
NPS □ National Park Service
NRC □ National Research Council
O&M □ Operations & Maintenance (USBR funding)
PA □ Programmatic Agreement
PEP □ Protocol Evaluation Panel
POAHG □ Public Outreach Ad Hoc Group
Powerplant Capacity = 31,000 cfs
R&D □ Research and Development
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

Updated: May 12, 2010