

Glen Canyon Dam Adaptive Management Work Group Meeting August 19-20, 2020

Wednesday, August 19, 2020

Start Time: 9:30 am Mountain Daylight Time (MDT)

Conducting: Dr. Timothy “Tim” Petty, Assistant Secretary for Water and Science, Department of the Interior (DOI).

Recorder: Carliane Johnson, SeaJay Environmental, LLC.

Facilitator: Marlon Duke, Public Affairs Officer, Bureau of Reclamation, Upper Colorado Basin Region.

Welcome and Administrative

Presenters & Affiliation: Dr. Timothy “Tim” Petty, Assistant Secretary for Water and Science, DOI.

Introductions and Determination of Quorum (13 members)

Dr. Petty welcomed all new members and those who have been with the program a long time. He has been part of Administration since January 2018 and highlighted the following people on the call today:

- **Aubrey Bettencourt, Deputy Assistant Secretary for Water and Science, DOI.** This is her first Adaptive Management Work Group (AMWG) meeting. She has been with the U.S. Department of Agriculture for about a year, and prior to that worked on California water policy primarily associated with agriculture, but also Endangered Species Act (ESA) compliance, mitigation, water quality, and technology infrastructure.
- **Wayne Pullan, Acting Regional Director, Bureau of Reclamation (Reclamation), Upper Colorado Basin Regional Office.** He is acting in Brent Esplin’s former position.
- **Daniel Picard, Reclamation, Deputy Regional Director, Upper Colorado Basin Regional Office and Acting Designated Federal Office (DFO).** He is now serving as the Acting DFO.
- **Lee Traynham, Reclamation, Program Manager, Glen Canyon Dam Adaptive Management Program.** She has been with GCDAMP for just over a year and with Reclamation for seven years in a variety of roles.

A quorum was reached with 23 stakeholders represented by 30 AMWG members or their alternates.

Approval of February 12-13, 2020 Meeting Minutes

[Larry Stevens, Grand Canyon Wildlands Council (GCWC)] On page 21 of the February minutes, it was stated he was in favor of the pump storage facilities. That is a misinterpretation and needs to be corrected as well as one other correction sent by email to Lee. **[Steve Wolff, State of Wyoming]** Moved to approve the February minutes. **[Chris Harris, Colorado River Board of California (CRBC)]** Seconded. The minutes from the February 12-13, 2020 meeting, as distributed on July 28, 2020, were passed by consensus.

Approval of May 20, 2020 Meeting Minutes

No comments; no edits. **[Sara Price, Colorado River Commission of Nevada]** Moved to approve the May minutes. **[Vineetha Kartha, Arizona Department of Water Resources (ADWR)]** Seconded. The minutes from the May 20, 2020 meeting, as distributed on July 28, 2020, were passed by consensus.

Progress on Nominations and Reappointments [\[DOWNLOAD\]](#)

[Lee Traynham, Reclamation] As of Friday, August 14, 17 outstanding nominees had been appointed; four nominations are in process. Thanks to everyone for getting packages submitted during a very challenging time, and to Tara and to Dr. Petty's Chief of Staff, Kerry Rae, for assistance. All members are asked to take a meeting evaluation survey. Planning to provide an "AMWG 101" overview for some members. Would also like feedback on new members' experience with the Federal Advisory Committee (FAC). Every stakeholder, except for one, has a member or alternate in place on the AMWG.

Funding Status

Currently tracking the Energy and Water (E&W) Appropriations bill For Fiscal Year (FY) 2021 funding. The Glen Canyon Dam Adaptive Management Program (GCDAMP) is typically funded through hydropower revenues. Since the 2019 Office of Management and Budget (OMB) Directive, Congress has provided direction regarding the transfer of hydropower revenues to Reclamation from the Western Area Power Administration (WAPA). This funding supports the GCDAMP and several other programs associated with Colorado River storage facilities. The draft E&W bill in the House (now in House Resolution [H.R.] 7617) would allow for the full funding transfer to occur; however, we may end up operating under a Continuing Resolution.

Action Item Tracking Report [\[DOWNLOAD\]](#)

One item on the tracking report is related to the 20-year outlook of the Long-Term Experimental and Management Plan (LTEMP), which will be addressed through updates to guidance documents and the development of monitoring metrics. These are high priority items for Reclamation going forward.

General Awareness

Reclamation has had two new hires (Kerri Pedersen and Clarence Fullard). There will also be two vacancy announcements soon for the archeologist position and for tribal liaison. Hope to advertise and fill those new positions in early 2021. The facilitator contract is close to being awarded, and the science advisor contract is being drafted now and should be awarded in FY21.

During this meeting, we will be working on the work plan and budget to be submitted to DOI for the Secretary's approval. Later in FY21, we will focus on budget prioritization in an effort to mitigate for long-term funding uncertainty.

As a FAC, the charter needs to be renewed every two years; the AMWG Charter is due in September 2021. We will start working on that soon.

Memoriam: Charley Bullets, Kaibab Band of Paiute Indians and Southern Paiute Consortium

[Tim Petty, DOI and AMWG Chair] We recently experienced a great loss with our long-term AMWG member and representative of the Southern Paiute Consortium, Charley Bullets, who passed away suddenly in June 2020. It was a real privilege and honor to have worked with Charley these past three years. He was so enthusiastic and passionate about education, the Colorado River, and family. Many colleagues in Interior have sent condolences. He will be greatly missed.

Words of Remembrance Followed by a Moment of Silence

[Arden Kucate, Pueblo of Zuni] Charley was a special friend and today would have been his birthday. He came from the Kaibab Band of Paiute Indians. He was a great traditionalist; that he inherited through his grandfather and grandmother. He paved the way for the younger generation to understand traditional cultural values. Charley loved to instill his knowledge to others. His Indian name was Tiger. He wanted everyone to understand their connection to the river. We wish him well to the spirit world.

Additional Remarks

[Peter Bungart, Hualapai Tribe] Charley was known for his laughter and good humor. He was passionate about standing up for his people. When we lose someone with this strong sense of knowledge there is a tendency to feel an empty place. We should try to channel that spirit and the guidance they would have provided. Charley was a great voice in the program.

[John Jordan, Fly Fishers International (FFI)/Trout Unlimited] Ted Melis sent a lengthy recollection of his time with Charley, which was read to the group.

[Jakob Maase, Hopi Tribe] Charley always had a contagious spirit and laughter. He was also a colleague and friend who was very outspoken and direct. He will be missed, but as the Hopi say, he is well.

[Larry Stevens, GCWC] About 30 years ago when Larry and Charley first met, it was a rough start, but that edge softened as they spent time together. The high point was during the last river trip last year when Charley agreed to join the chorus of the humpback chub song.

COVID-19 Impacts to FY20 Workplan: Joel Sankey, U.S. Geological Survey (USGS), Grand Canyon Monitoring & Research Center (GCMRC)

Presentation ([DOWNLOAD](#))

[Joel Sankey, GCMRC] is a research scientist at GCMRC and has been acting as chief while Scott VanderKooi is completing a detail elsewhere. The presentation includes a timeline of COVID-19 impacts. GCMRC staff continue to conduct maximum telework with the exception of some laboratory work, field, and river opportunities. Of the trips for this year, 11 were cancelled and seven were postponed of which four of those have since launched and been completed while the rest were postponed to 2021.

Q&A and discussion

[Kelly Burke, GCWC] What is working and have there been any infections from the trips? **[Joel Sankey, GCMRC]** GCMRC has done a lot of work to keep people healthy. It is important that people show up healthy and COVID-free. So far, everything has gone well with no positive cases.

[Arden Kucate, Pueblo of Zuni] had recommended a while back to let Grand Canyon rejuvenate and see how the system reacts without any interference. **[Joel Sankey, GCMRC]** appreciates that comment.

FY2021-2023 Triennial Budget and Work Plan—Overview: Seth Shanahan, Technical Work Group (TWG) Chair; Craig Ellsworth, Budget Ad Hoc Group (BAHG) Chair; Lee Traynham, Reclamation; and Scott VanderKooi, GCMRC.

Presentations ([TWG Chair Presentation](#)) ([Reclamation Presentation](#)) ([GCMRC Presentation](#))

[Seth Shanahan, Southern Nevada Water Authority (SWNA) and TWG Chair] The first presentation summarizes the results of a long, deliberative process that the TWG and ad hoc groups went through to develop the final draft recommendation for the AMWG to consider. Many milestones were met. The action today is to provide input into the budget and recommend it to the Secretary for approval. Thanks

to many people who participated in the process that started back in October 2019. Thanks to Craig Ellsworth who led nine BAHG calls, and to the science advisors who were critical to the process. Additional changes were made after TWG's approval that were first seen July 29. These will be discussed today.

[Craig Ellsworth, WAPA and BAHG Chair] Thanks to the TWG members. This product is a reflection of long hours spent with GCMRC and Reclamation to work out all concerns. All products with respect to the BAHG process have been stored on the Wiki page.

[Lee Traynham, Reclamation] It was a great team effort and the leadership of Seth and Craig is appreciated. The second presentation shows an overview of the GCDAMP triennial budget, which is focused on implementing the 2016 LTEMP Record of Decision (ROD), addressing priorities outlined in the DOI guidance memo, and meeting compliance obligations. Reclamation's portion of the budget (20%) and workplan is focused on administering the AMWG and TWG; program management (e.g. contracting, permitting, facilitation, and other support services) and management actions; and supporting cultural and tribal resources. Highlights were shown of the budget changes made in response to comments received from stakeholders.

[Scott VanderKooi, GCMRC] Thanks to Seth, Craig, and Lee, and to everyone who contributed. It was a heavy lift. The third presentation highlights the GCMRC work plan, which is focused on LTEMP implementation and monitoring. The goal is to make sure conditions and resources can be monitored whether under an experiment or normal operations. Latest update on the Flagstaff new building is that the city was to approve the lease, but this has been delayed until maybe September. It will then take probably 18 months (around February 2022) before the move would occur.

Clarifying questions

[Steve Wolff, State of Wyoming] Will other non-federal partners have input into the prioritizations in 2021 that will be done by DOI? **[Lee Traynham, Reclamation]** Yes. DOI agencies would take a first cut at the draft particularly related to compliance requirements, then anticipate getting feedback from AMWG.

[David Brown, Grand Canyon River Guides (GCRG)] is interested in more specificity about what portion of B.2 was not funded and also B.5 that was not funded. What was the thinking? How the proposed changes in dam operations will affect High Flow Experiments (HFEs) and how release volumes affect sand storage seem like important questions. He is disappointed. **[Scott VanderKooi, GCMRC]** The original proposal for B.2 was to do channel mapping in two of the three years. This was reduced to one. B.5 was to update modeling, which was a tough one. Often there is a trade-off. This is important work, but difficult decisions had to be made, and more funding is needed. A number of things mentioned are covered by other elements, such as elements 1 and 2. Your comments are beneficial because if there is flexibility in the budget, there might be options later.

[Larry Stevens, GCWC] also agrees with the importance of those projects and hopes funding moves forward.

[Chris Cantrell, Arizona Game and Fish Department (AGFD)] There had been questions about dissolved oxygen issues as the LTEMP was being finished. There had also been a scare in Glen Canyon this past year with dissolved oxygen. It was thought that all had agreed some evaluations would be done of the dam to mitigate that. This is a big concern and the only option for AGFD to mitigate it is through stocking. **[Scott VanderKooi, GCMRC]** Know this is of concern and we are paying attention to it. GCMRC has oxygen sensors below the dam and at Lees Ferry. Believe there will be presentations about this on tomorrow's agenda. It is looking better than last year. The actions to take are more on the Reclamation

side. **[Lee Traynham, Reclamation]** This has definitely been a topic of conversation. Reclamation has an element for dissolved oxygen monitoring and risk assessment. We would like to understand if there is sufficient monitoring in place and understand the actual risks to determine the best mitigation strategies. It would be hard to mitigate this with dam operations because of the constraints, but there are alternatives that could be considered. This is also being discussed with Reclamation's Technical Service Center.

[Chris Cantrell, AZGFD] Is there a need for AMWG language for use of Native Fish Conservation Contingency funds? **[Lee Traynham, Reclamation]** Those funds are available and there is language that it can be used for emergencies. If an emergency is brewing, those conversations could start as soon as necessary.

[Leslie James, Colorado River Energy Distributors Association (CREDA)] Is it correct that Project B.2 is monitoring and Project B.5 is modeling? **[Scott VanderKooi, GCMRC]** Yes, that is correct.

[David Brown, GCRG] Is there a sense that if the model in Project B.5 were developed, it would help resolve some uncertainty regarding sediment? **[Paul Grams, GCMRC]** Other than improving and rebuilding the models, the biggest new thing would be to add fine sediment (silt and clay modeling), which the current models do not have. Other things to do would be incremental improvements and better calibrations. There has been support from other USGS offices in modeling streamflow in Grand Canyon. That may get us started, but not sure how far we would get. **[Lucas Bair, GCMRC]** Project J.1 is to develop predictive models for sandbars. This project would attempt to address some of David's and Larry's questions; specifically, sand input and hydrology scenarios in the long run. **[Paul Grams, GCMRC]** B.5 is rebuilding from the ground up those models that are currently being used, which must be done at some point. **[David Brown, GCRG]** There has been discussion about what would make a difference. If this model were produced, could it better inform that question? **[Paul Grams, GCMRC]** The kind of model we proposed was applied to the Lees Ferry reach, which was a test using a newer model. That is an example of what we propose for the rest of the canyon.

[Vineetha Kartha, ADWR] Project O is being funded by the C.5 Experimental Fund. Is it prudent to set aside C.5 funds to Project O given that it is not an LTEMP experiment? **[Lee Traynham, Reclamation]** The purpose for C.5 is to support LTEMP experiments and to address critical knowledge gaps. That is the priority. In past years, we have not needed all those funds. These went into the contingency fund, which is in good shape. There is interest in considering those funds for other purposes. One challenge about using that fund is uncertainty and timing. We want to be sure that we have sufficient funding to support LTEMP experiments if conditions allow. By spring, if Project O and the associated hydrograph were to be on the table, it would be tough to consider all the other things that might be competing for resources for the remainder of the year. We will need to make a judgement call at that time. **[Scott VanderKooi, GCMRC]** There are a number of things that are put forward out of the experimental fund that are condition-dependent and a decision has to be made by Reclamation whether to move forward. Project O is similar. It is not all-or-nothing. It is a little different than how other projects are done in the program. There will be difficult decisions to make depending on what happens this fall.

[Leslie James, CREDA] The GCPA does permit funding from other sources, so if folks have ideas for "outside" sources, here is a good opportunity to bolster funding.

[Kelly Burke, GCWC] We are actually in a position to be reasonably confident about what is likely to happen this fall. Because of timing with Project O, we might be able to evaluate that risk already before we move forward. **[Scott VanderKooi, GCMRC]** Agree, it seems unlikely to get inputs from the Paria, but things could turn around by the deadline. We have a number of decision points that will be part of the discussion.

[Larry Stevens, GCWC] Some stakeholders might think that Project O is not a critical need, but he disagrees with this. The longer-term perspective from springtime high flows are critical to gain knowledge about how the system responds. He encourages the group to think of the long game. **[David Brown, GCRG]** seconds Larry's comments about coming back to the big picture of the program in which learning seems to be a critical function. The opportunity to have a disturbance in the spring has been limited. Apron repairs have never been as low as 4,000 cubic feet per second (CFS) and the opportunity to ramp up quickly would answer some questions. It is not an HFE and circumstances are different, but it took nothing for an emergency response to ramp up the water in response to recent energy needs.

[Vineetha Kartha, ADWR] Agree with those above; not questioning the project itself, but clarity of the dollar amount and the process. Project C.5 does provide some leeway to help in the new studies.

[Steve Wolff, State of Wyoming] There is wide-spread support for a spring disturbance event; the question is how it gets funded. It should be part of the regular GCMRC program, it is a high priority.

[Peter Bungart, Hualapai Tribe] Given the flow regime for the apron repair, this is an essential situation to learn about the effects.

[Leslie James, CREDA] One clarification for David, the emergency operations that occurred this past week were addressed in the ROD. It may have appeared that they "just happened," but not really. Reclamation or WAPA could add details, if necessary.

FY2021-2023 Triennial Budget and Work Plan (TWP)—Discussion and Recommendation:

Discuss and determine consensus (or vote, if necessary) on each of the proposed changes to the budget

[Tim Petty, DOI and AMWG Chair] The end of this session will conclude with the third motion. We want to get to consensus. The dialogue is incredibly important. There are projects we all agree with; some we need to fine tune.

[Lee Traynham, Reclamation] We want to make sure we are capturing all elements of the discussion. We want to understand where the concerns are and what needs to be revised. The draft motion was proposed as follows: *AMWG recommends to the Secretary of the Interior the Glen Canyon Dam Adaptive Management Program Triennial Budget and Work Plan – Fiscal Years 2021-2023 (July 29, 2020 draft), subject to the following:....* This is where we want to start today.

[Leslie James, CREDA] The proposed deletion of a paragraph in Project N (page 312) as it is not relevant to the project is a joint suggestion from WAPA and CREDA.

[Lee Traynham, Reclamation] Is there any further discussion on this proposal for Project N?

[Scott VanderKooi, GCMRC] As Leslie said, WAPA and CREDA reached out to GCMRC. We have no issues with removing that language from the narrative of that project.

[Chris Cantrell, AZGFD] would like to see language to allow 20%, or not to exceed \$340,000, from the contingency fund for the National Park Service (NPS) to use in the Brown Trout Incentivized Harvest project. **[Steve Wolff, State of Wyoming]** Is that per year or for the three-year period? What are those estimated costs? **[Chris Cantrell, AZGFD]** The Year 1 funding has been limited. Reclamation is also going to provide some funding, but unfortunately, the rate is about \$25 per fish, which is not adequate to convince people to drive up there. It is estimated it would cost \$300,000 for mechanical removal. Anticipate this would be less if we saw the continued increase in brown trout. None of the funding has

to be spent unless the fish are removed. This would allow the program to be fully funded so it is not just a process we go through.

[John Jordan, FFI/Trout Unlimited] Would like to have the full name of the contingency fund added in there.

[Lee Traynham, Reclamation] Language added that this refers to Reclamation's Project Element C.6 Native Fish Conservation Contingency Fund.

[Ken Hyde, NPS] NPS has \$160,000 in funding that will start this fall and fund through FY2021. Added to that is \$100,000 over the next 2 years in Reclamation funding. We also have three additional years of funding starting in FY2022 of \$100,000 per year. We could look at bringing forth a proposal from partners to go to \$50 to \$66 per fish and then come back to this group reporting on successes, number of anglers, and then a follow-up discussion on either maintaining the rate or put the money toward removing more fish at an adjusted rate. This might augment the project. We also have GCMRC and Arizona State University staff helping with the social science and looking at different reward levels especially as we get into the hotter parts of the summer when anglers would be less likely to go fishing.

[Lee Traynham, Reclamation] It sounds as if the program funding is going well and this conversation on alternative funding sources might be more important after the first year of implementation. **[Ken Hyde]** Maybe add a bit more discussion about the funding payments.

[Lee Traynham, Reclamation] The NPS work is being conducted under their Expanded Non-Native Aquatic Species Management Plan, which is a separate effort from LTEMP. A previous discussion within the BAHG was whether the incentivized harvest project could be funded by the GCDAMP or not. There is interest in this project and it has a bearing on what we do, but without a more direct tie to mitigating dam operations, the LTEMP ROD, or a more imminent threat from brown trout on humpback chub, there was not consensus to put GCDAMP funds towards the Brown Trout Incentivized Harvest at that time.

[Seth Shanahan and Craig Ellsworth] Both agree with this summary.

[Chris Cantrell, AZGFD] Would add information about new surveys from Lees Ferry where 15-20% of the population is brown trout; another year of continuous increases. It is a win-win because if we are not removing brown trout, then that money is not being spent.

[John Jordan, FFI/Trout Unlimited] We were not part of that BAHG conversation. The reason for the contingency fund was for a catastrophic event. That fund has grown on the basis of unexpended experimental funds. Now it is at \$1.7 million. There haven't been any events that would have justified the expenditures. Don't preclude the incentivized harvest program, which is there to mitigate the potential of the threat. The way to keep that fund in place is to spend from it. The program benefits the humpback chub. The amount spent for mechanical removal would be greater than for the incentivized harvest.

[John Hamill, FFI/Trout Unlimited] There is a social aspect of this. Mechanical removal is of concern to tribal and fishing communities. Trying to do this program on a shoestring is not the way to get it off the ground. There is general consensus that \$25 per fish is not a strong incentive. It costs several hundred dollars per day to get a trip on the water. It is expensive to fish Lees Ferry and catch rates of brown trout there are small.

[John Jordan, FFI/Trout Unlimited] What is the timeframe of when there is a serious problem to consider? When the warning flag first came up that brown trout were out of control, the NPS was ready to go quickly with emergency mechanical removal. This is a preemptive program that would take a year

or more to get through this process if a threat came up. There is not more of a nexus to native fishes than there is with this proposal.

[Jeff Humphrey, USFWS] Are we incentivizing fishing or getting anglers to not release brown trout? The benchmark we are hearing from this conversation is the cost for anglers to get up there. Is the concern whether we are creating an industry when one already exists or are we trying to get anglers to put in a bit more effort when they do land a brown trout that is acceptable to the Tribes? What is an appropriate amount as opposed to “we’re just providing \$66 per fish”?

[John Hamill, FFI/Trout Unlimited] Think it is a little bit of both. We are going to try to attract a new breed of anglers. Fly fishing is not the most appropriate technique for brown trout and they have a culture of catch-and-release. There might be a new group who would specifically harvest all fish that are caught.

[Chris Cantrell, AZGFD] Initial goal of removal was around 2,400 to 2,500 individuals. At \$66 per fish, this would be maybe \$400,000 annually. He recommends reading the [brown trout report](#). That is a good place to start regarding concerns and different efficacies on how to manage that population.

[Jeff Humphrey, USFWS] Why hasn’t this been addressed in the TWP previously?

[Lee Traynham, Reclamation] Where the TWG and BAHG landed, in order to justify use of GCDAMP funding, there is a requirement to tie a proposal directly to mitigating for dam operations or to compliance obligations such as with the ESA. The consensus of the groups was that there was not that connection to consider this project for GCDAMP funding.

[Kirk Young, USFWS] If mechanical removal is needed in the Little Colorado River, it would be around \$2 million. He supports a solution to brown trout, but there is still an uncertain budget. Incentivized harvest is an experiment (not a treatment) to see if it is successful. There needs to be the option to take action, if it is needed. He recommends allowing the fund to accumulate and not deplete it.

[Lee Traynham, Reclamation] Would like to see language that commits the group to revisit this topic in FY21 and consider a recommendation that addresses the concerns heard today, if appropriate.

[Chris Cantrell, AZGFD] Twenty percent is a middle ground that gives flexibility to the NPS.

[Steve Wolff, State of Wyoming] Is it worthwhile to say, “All other available funds will be spent first, and the Native Fish Contingency Fund will be used as a backstop”?

[Lee Traynham, Reclamation] Drafted language: “Only following expenditure of other available funding, up to 20% or not to exceed \$340,000 from Reclamation’s Project Element C.6 Native Fish Conservation Contingency Fund will be considered available for NPS to use on the Incentivized Brown Trout Removal Project.”

[Brian Sadler, WAPA] We need to address what projects would be part of the GCDAMP authority.

[Rodney Smith, DOI Office of the Solicitor] We will need to connect the dots between the desired use and whether it fits within existing authority. This is typically done during the budget process. It is difficult to do this assessment on the fly.

[Chris Cantrell, AZGFD] The brown trout white paper conclusion statement says that the most plausible hypotheses are dam operations and fall HFEs. These are absolutely connections that cannot be ignored.

[Leslie James, CREDA] If there is a clear nexus from fall HFEs, then why continue to consider them? She has concerns about the authority as well for this type of work and regrets not having these conversations during the BAHG calls this summer. Nervous to craft this language on the fly.

[Shane Capron, WAPA] This discussion has come up at various times. The question is whether it crosses the fine line of funding the fishery, which been determined to be outside of GCDAMP funds. The question for Rod and others is whether to fund the fishery with power revenues. WAPA has been supportive of incentivized harvest, but would like to find ways to fund it without power revenues.

[Jan Balsom, NPS-Grand Canyon National Park (GRCA)] Whether fall HFEs are the culprit is still at the hypothesis stage. Chris Cantrell and others have spoken as to why we would like to take care of this before it becomes a problem. The incentivized harvest program does this and it is culturally sensitive. It is an important piece of the adaptive management process to address an emerging threat that is effective and integrates all stakeholders.

[Tim Petty, DOI and AMWG Chair] Bigger concern about [the Brown Trout Incentivized Harvest proposal] is whether to take it back to the TWG to work out the details. Also need this conversation on Project O. Need confidence to bring it to the Secretary.

[Steve Wolff, State of Wyoming] An email was sent out about proposed language for Project O. The water and power group (States and power representatives) has been discussing how to move this forward. Would not like to defer this any further. The proposal is for a one-year spring disturbance flow. There is wide support, but the concern is how the monitoring effort gets funded. This language would support a portion of the proposal as a one-year effort under the experimental fund.

[Leslie James, CREDA] All involved in the FLAHG discussion saw CREDA's comments on the Resources and Analysis paper. Part of this issue is the process. CREDA has been very supportive of the FLAHG work and the concept of within-powerplant-capacity disturbances. CREDA is not opposed, but just wants to be sure that the focus of this spring disturbance is clear, we have the resources to monitor the effects on the hypotheses that are most appropriate, and we are doing it within the constraints of the available funding. It is both process and substance. Have not heard anyone opposed to a spring disturbance.

[Larry Stevens, GCWC] Ted Kennedy developed a plan so we can learn from Project O within the timeframe of the TWP. Grand Canyon Wildlands Council fully endorses this. Only concern is there might not be enough attention to the timing related to the food base and whether we can synthesize enough information to clarify thinking of springtime HFEs for future planning. Perhaps pay more attention to the larger vision of the event.

[Joel Sankey, GCMRC] Project O was a recommendation that came out of the June TWG meeting and wrote the proposal in record time. It did not go through the usual round of revisions and reviews. It has been challenging because it is a hypothetical project with a hypothetical flow and it has happened in parallel with the FLAHG's process to review predicted effects, which has not been concluded. Anything decided today has to be something GCMRC can do that does not hold up the rest of the TWP.

[Steve Wolff, State of Wyoming] Think GCMRC did a great job putting Project O together in such a short time. His concerns only relate to how the project is being funded -- not how it was written.

[David Brown, GCRG] appreciates the support that the spring disturbance flow and concept has and concerns about the process. The concern about where funding comes from makes sense. The compromise resolution from Steve is a step in the right direction.

[Jan Balsom, NPS-GRCA] acknowledges the FLAHG work and amazing how quickly Project O came together. There is the need for the FLAHG to continue looking at experimental flows, and a need to develop a project design for a hypothetical flow that has not been approved. Having seen the river at 2,500 CFS, there is a process that we need to go through to figure out where this fits in the budget. More conversation is needed about nailing down a science plan for a hypothetical flow that we do not

know when it will occur. There are also things in the last version of the plan that still need to be addressed.

[Scott VanderKooi, GCMRC] GCMRC had tried to address the initial charge from the FLAHG by having elements in projects to address that, which was found to be unacceptable. Joel Sankey and Ted Kennedy tried again but want to be careful about rushing this. There is good work here and some needed revisions. Everyone is invested in this and wants to see a solution to reach consensus.

[Lee Traynham, Reclamation] Have three amendments to the proposed motion. Seems we have consensus on Project N. For the brown trout language may need to clarify language and to resolve question on funding authority. Several edits received on Project O to work through tonight with better language for the morning's discussions.

[Steve Wolff, State of Wyoming] If there was a spring disturbance flow in FY21, would GCMRC know enough to write a full-scale project for the following years? Or is a full, three-year project needed?

[Joel Sankey, GCMRC] GCMRC wrote Project O not knowing when this flow might occur. For the purpose of writing a work plan, Year 1 is 2021, which assumes this flow might occur next spring. Year 1 was proposed to be data collection for every possible resource that the FLAHG was considering. Year 2 would be to analyze and interpret the data, then report the learnings to the stakeholders. Year 3 (to get at Steve's question) would be to apply what was learned to future scenarios. That gets at some of GCMRC's concerns regarding limiting the monitoring to a few resources during the spring flow, which would address the unresolved FLAHG process of evaluating predicated effects. If Project O gets pared down to only the first year, then GCMRC would only collect data and not apply the learnings.

[Kelly Burke, GCWC] It would be useful to go back through the framework that got us here with the emphasis on a spring high flow. There are steps along the way that have led us to now. Those parameters make it important for us to consider what happens if we focus more on process rather than the substance of what we want to achieve. The most beneficial hydrograph looks to be the apron repairs, which would give us the biggest range. If we can proceed with the project as Joel described, that would set us up better for the next TWP. Worse-case scenario would be not having this learning for another six years.

[Scott VanderKooi, GCMRC] GCMRC has a lot of concerns and is worried about rushing this forward. One observation about the second bullet is that it was originally proposed in the third TWP draft. The constraints add real challenges such as saying GCMRC can't add an additional researcher. This is basically an unfunded mandate to do research without additional staff. GCMRC proposes pulling Project O from the work plan and having additional discussions with the TWG and others to make sure we have a fully workable proposal that has consensus.

[Steve Wolff, State of Wyoming] Appreciates those comments. Did not want to push any unfunded work on GCMRC. Biggest concern is about where the funding is coming from. Could fully support deferring this.

[Leslie James, CREDA] Agrees with this.

[David Brown, GCRG] Would Scott be comfortable with the Project O that was originally proposed? Is parsing it out the problem? **[Scott VanderKooi, GCMRC]** It is more of a concern being presumptive about the effects. Still working through the predictive effects document and what the final flow might look like. It seems premature to be picking and choosing what to include or not. The proposed project was to meet with the spirit of the recommendation of an interdisciplinary idea that met the FLAHG charge in which maybe not everything would be needed and things would be pulled out. It seems premature to do that now.

[Joel Sankey, GCMRC] Agrees with this. The concern is focusing only on these three elements when the FLAHG has not resolved the predicted effects. This is why an interdisciplinary project was proposed. The \$150,000 proposed for Year 1 is not enough to cover those three elements plus the additional researcher to assist in the data interpretation and analysis.

[Larry Stevens, GCWC] We trust USGS on the science so putting constraints on a potentially invaluable project before we understand the issues seems short-sighted. Why not support the project as is?

[Lee Traynham, Reclamation] It would be a disservice to the group to approve a recommendation that our science partners can't implement. There is comfort in sending this back to the TWG, which may clear up the direction that needs to be taken. There is alternative language for that approach, which can be reviewed tonight.

[Seth Shanahan, SWNA and TWG Chair] As a reminder, the TWG had approved this – but for asking GCMRC to find a way to incorporate the project and to find the budget. GCMRC staff are commended in this effort. It is a reasonable request to have the TWG and BAHG think through the specifics in the same fashion as every other budget item. The TWG has the time and space to do that because its next meeting is in October.

[John Hamill, FFI/Trout Unlimited] Concerned that it is August now and this would be a major event that would occur in March. GCMRC needs time to gear up for that. Could we consider an approach to submit comments to Reclamation and GCMRC over the next couple of weeks so that those agencies can consider them and submit an alternative proposal for consideration by the TWG with a recommendation to the AMWG?

[Seth Shanahan, SWNA and TWG Chair] BAHG could also provide input on this. Some of this is also for the FLAHG to review for a hydrograph recommendation and monitoring, which has not occurred yet.

[Jan Balsom, NPS-GRCA] Understood there would be flexibility if a flow were scheduled, it would not have to happen in March 2021. It could happen in spring 2022. **[Lee Traynham, Reclamation]** Reclamation has that flexibility. Facilities staff have confirmed this.

[Larry Stevens, GCWC] To clarify, if it does not occur in 2021, the learning could not take place within this work plan. It would be optimal to have it this spring to wrap up the learning process in this timeframe. As Joel explained, this is mostly a data process. It takes a lot of time to integrate this information. Then the third year of the TWP, information would be available for the process of planning for the next TWP.

[Leslie James, CREDA] We have been in that same situation with the bug flows. Not sure this is a deal killer.

[Lee Traynham, Reclamation] We will put together language to move this back to the TWG for consideration. This would mean deferring Project O until sometime in the near future, still within the current work plan, to continue these discussions for a project that would potentially occur next spring.

[John Jordan, FFI/Trout Unlimited] There are favorable things to see in the suggested motion from the power and water group. A concern about sending this back is that it will only work if there is a tight timeframe. This is not the initiation of a new process. Any *ad hoc* group [recommendations need] to be consolidated in the TWG. Want to make sure there is no slow walking this. Comfortable with the proposed amendments at this time. **[Vineetha Kartha, ADWR]** Can we develop a timeframe that is attached to the deferment? **[Lee Traynham, Reclamation]** The language includes a suggestion about the timeframe and comment submittals in order to expedite the process. These suggestions will help.

[John Jordan, FFI/Trout Unlimited] If approved by AMWG in February, could GCMRC move on the project by March? **[Scott VanderKooi, GCMRC]** If GCMRC has direction, GCMRC can stage itself to implement it. The hope is that GCMRC would have a sense of what might be needed and would be able to start those preparations.

[John Jordan, FFI/Trout Unlimited] Would it be possible to call an AMWG meeting with a one-item issue? **[Lee Traynham, Reclamation]** Yes, that can be done. Would just need to comply with Federal Advisory Committee Act (FACA) requirements.

[Peter Bungart, Hualapai Tribe] Would also recommend convening an *ad hoc* AMWG meeting on this one issue.

[Lee Traynham, Reclamation] Tomorrow's agenda may have 30-45 minutes to reach a recommendation. It seems there is good comfort with the Project N amendment. There is another proposal from Chris Cantrell that needs to be reviewed by DOI and others interested in getting together offline. We will revise the third amendment to defer Project O and will ask the TWG to consider the proposal and return with a recommendation. We will expedite the process to review and incorporate AMWG member comments.

Tribal Liaison Report: Theresa Pasqual, Tribal Liaison for the GCDAMP

Presentation (no visual provided)

[Theresa Pasqual, Joint Tribal Liaison] The role of the Tribal Liaison is an integral part of GCDAMP. Since COVID-19, each of us has become keenly aware how we have been affected including how we conduct business and the impact on tribal communities regarding how we communicate during these times of closures and other restrictions. This support really took priority especially as tribes have been disproportionately affected. Tribes have lost a number of their knowledge keepers during this pandemic. This has left the tribes struggling as to how to maintain our cultural health and well-being for the younger generation. Everyone is commended for stepping outside of the box to communicate with each other especially for Tribal colleagues who had difficulties accessing their offices. Appreciate the effort to get everyone fully involved in the TWP process. Tribal colleagues have been able to remain involved despite all the hurdles. The TWP is not perfect; however, much work was done to get projects submitted by tribes to ensure their perspectives were included. There is still much work that needs to be done to incorporate this multi-layered view and this remains a challenge for future work plans. There continues to be an expressed frustration that the scientific approach that has been used excludes Tribal Knowledge. This is a challenge to the program as a whole to make room for that information. Regarding the loss of Charley, Theresa has reached out to Chairwoman Ona Segundo to get guidance on who they will nominate for the Southern Paiute representation. Thanks to all who contributed in Charley's memory.

Basin Hydrology and Operations: Heather Patno, Hydraulic Engineer, Reclamation

Presentation ([DOWNLOAD](#))

[Heather Patno, Reclamation] This year has been very dry in the Upper Colorado with more precipitation in the lower part of the basin. Last year's snowpack was above average, which caused high base flows; however, it was a very dry fall and that carried over into this year. Conditions dried out in April, which is what caused the precipitous drop in forecasted runoff with nothing coming into the system. Forecasts are based on predictions of average precipitation and temperature into the future. The precipitation was significantly below average and the temperatures were above average. Between April and July, this was the 11th driest on record for unregulated flows into Lake Powell. Although it was

a dry year, we held onto that snowpack until the peak occurred at a normal time before coming down. Upper basin storage is under normal conditions and will be decreasing through the winter into next spring when we see 2021 runoff. The Green River had the most precipitation this year with Fontenelle and Flaming Gorge reservoirs at close to average in unregulated inflows. For Water Year 2021, the August most probable forecast of unregulated inflow is 80% of the average. The August 24-month study for Upper Colorado Basin sets the operational tier for 2021. The April 24-month study is used to see if there needs to be an adjustment to Balancing when operating under the Upper Elevation Balancing Tier. Taking that WY2021 forecast, with 80% of average runoff, we are in the Upper Elevation Balancing Tier in WY2021 and projecting an April adjustment to Balancing under the most probably scenario. It is important to note that the maximum probable water release would be similar to 2020 conditions with Mead elevation ending the water year above 1,075 ft and the annual release volume remaining at 8.23 maf. We are also not showing the potential for an adjustment to Equalization at this time. All of the proposed 2021 release schedules are compliant with the LTEMP ROD and the Interim Guidelines. A table of Glen Canyon Dam's maintenance schedule was also provided. There have been delays due to COVID-19 concerns about getting contractors into Glen Canyon and that has shifted the transformer replacement schedule.

Reclamation implemented the Emergency Exception Criteria at GCD in August at the request of WAPA and to assist California ISO emergency energy needs. The forecasted, continued, high temperatures should not require Emergency Exception Criteria; however, there is the potential to move water in September, if it should be needed. If that happens, it would likely be only 3,000 to 4,000 acre feet. Right now, the temperature around the penstock is normal for this time of year. The reservoir has thermally stratified with not a lot of mixing occurring. The pandemic has not allowed the normal surveys to occur so there is no updated dissolved oxygen information available except for directly below the dam from GCRMC and at key points within the reservoir. Dissolved oxygen is higher than last year. The conditions this year are not the same as in 2019 with low elevations and a 50-foot increase in elevation from spring runoff, so low dissolved oxygen is not of concern. If anything changes, Reclamation will communicate that with the group.

Q&A and discussion

[Steve Wolff, State of Wyoming] requests this presentation be emailed to members.

[Tim Petty, DOI and AMWG Chair] Those who are new and have not participated in the hydrology presentation, don't feel too overwhelmed by it. There is a lot of information in those slides once you become familiar with them.

Public Comments

None heard.

Closing Comments

[Lee Traynham, Reclamation] Today's discussion was really productive and appreciated. Action items:

1. Circulate the verbiage discussed today for a potential budget motion to consider tomorrow; and
2. Move around a few things on the agenda for Day 2.

First Day Meeting Adjourned at 5:00 pm MDT

Thursday, August 20, 2020

Start Time: 9:30 am MDT

Welcome and Administrative: Tim Petty, Assistant Secretary for Water and Science, Department of the Interior and Secretary's Designee

Introductions and Determination of Quorum (13 members)

[Tim Petty, DOI and AMWG Chair] Greatly appreciate all the effort yesterday and getting ready for Day 2. One thing to emphasize is to stay on the agenda timeframes because our goal is that much of this has been worked through by the TWG and BAHG.

[Lee Traynham, Reclamation] A quorum of 31 members or alternates are present representing 22 stakeholder groups.

[Tim Petty, DOI and AMWG Chair] The agenda was changed by moving federal agency updates in order to continue the discussion about the TWP. If we can't get to an agreement quickly, then will ask that Lee and Rod move us back to meeting in a subgroup to work through the wording.

FY2021-2023 TWP — Discussion and Recommendation (continued):

Discuss and determine consensus (or vote, if necessary) on each of the proposed changes to the budget

[Lee Traynham, Reclamation] A draft motion was presented with the following three items:

- Remove certain verbiage from GCMRC Project N.
- NPS does not have the need for additional federal funding right now for the Incentivized Brown Trout Removal Project; Ken Hyde (NPS) does have funding to implement it this year. NPS will come back to AMWG and TWG to report on status of the incentivized harvest program and figure out if there is need for additional funding, including looking at the Native Fish Conservation Contingency Fund as a possible source. As a result, consideration of this project using Native Fish Conservation Contingency Funds will be deferred, but may be revisited during the normal budget review process next year. [Chris Cantrell and Ken Hyde concur].
- Changes to Project O have been made that would defer it until the TWG can take another look to address comments from multiple members. The language also establishes a timeline.

[Larry Stevens, GCWC] That language seems to capture it. The reason for the compressed dates is to make sure the process can be fully vetted and implemented in time for a spring 2021 test flow. We want to make sure this information gets incorporated into the learnings of the TWP.

[Scott VanderKooi, GCMRC] For the October 7 date, GCMRC typically tries to get material to the TWG two weeks in advance of a meeting to make sure they have adequate time to review. It would be fine to move this earlier. All the other dates work.

[Seth Shanahan, SWNA and TWG Chair] Not opposed to pushing the TWG meeting back and making additional time available. The FLAHG conversations have been very helpful, but there are some technical discussions that have not been completed. We need to think through what is proposed and make sure that the FLAHG approves the approach. The ideal situation is that the FLAHG has enough time to make a recommendation, as well, on the hydrograph to meet the objective.

[Peggy Roefer, Colorado River Commission of Nevada (CRCN) and FLAHG Chair] is good with these dates. The FLAHG just needs to get the effects document and the hydrograph done. When does the AMWG have to approve this? **[Lee Traynham, Reclamation]** There needs be consensus from the AMWG to move forward. As soon as the hydrograph is proposed and approved, then Reclamation and GCMRC can move forward with planning and preparation. The process for implementation begins in January of each year with the annual reporting meeting.

[Scott VanderKooi, GCMRC] November is a much better date for GCMRC to mobilize in time for March. If there is approval from AMWG, then GCMRC can at least start preparing before final approval by DOI.

[Joel Sankey, GCMRC] It is important that the FLAHG works through this effects document. GCMRC can probably get comments back on that document by mid-September at the latest.

[Peggy Roefer, CRCN and FLAHG Chair] It is hoped that the next time going to the FLAHG, the effects document is approved so it can be distributed with the hydrograph. Don't know how many meetings that will take.

[Seth Shanahan, SWNA and TWG Chair] AMWG needs to understand the importance of these documents together. The FLAHG was having conversations about the hydrograph itself and then identifying the benefits (i.e., the predicted effects). Now the stage is set for the monitoring and science. Some of this might have been out of sequence with what was proposed in Project O. It is helpful for the FLAHG to revisit these effects.

[Lee Traynham, Reclamation] is not hearing any opposition other than a comment to move the October 7 date. Do we bump the date up or move the TWG meeting out? **[Scott VanderKooi, GCMRC]** Either works for GCMRC. **[Joel Sankey, GCMRC]** If it is possible to move the TWG back that would allow the FLAHG process to move in parallel. **[John Jordan, FFI/Trout Unlimited]** There is more flexibility now in moving dates while we are remote, if Seth would be amenable to moving the TWG meeting. **[Lee Traynham, Reclamation]** Suggests removing the specific date and referring to it as the "October 2020 TWG meeting." First paragraph has a new section related to the apron repairs and the planning of a springtime HFE.

[Rod Smith, DOI Office of the Solicitor] recommends inserting planning language to be consistent with authorities.

[Scott VanderKooi, GCMRC] Element O.1 is about monitoring and is not related to flow itself.

[Vineetha Kartha, ADWR] had requested adding language related to the Experimental Management Fund and clarification about when it is approved.

[Jan Balsom, NPS-GRCA] Do we want to be more flexible than locked into a springtime 2021 flow? **[John Jordan, FFI/Trout Unlimited]** If that occurs, we should deal with it then. We should not equivocate if there is a willingness to do this in spring 2021. **[Kelly Burke, GCWC]** Agrees with John and there are avenues to deal with that in future. **[Vineetha Kartha, ADWR]** understands Jan's questions and suggests language that the flow be in tandem with the apron repairs. **[Jan Balsom, NPS-GRCA]** That is it exactly. **[Vineetha Kartha, ADWR]** Suggests language that is acceptable. **[Kelly Burke, GCWC]** We have a process for the final approval of the flow.

Motion:

AMWG recommends to the Secretary of the Interior the Glen Canyon Dam Adaptive Management Program Triennial Budget and Work Plan—Fiscal Years 2021-2023 (July 29, 2020 draft), subject to the following:

- Removal from GCMRC Project N the following verbiage:

Past research into changes in regional energy costs attributed to alteration of GCD operations have shown that no changes occur in hourly prices (U.S. Department of Interior, 2016b). Specifically, hourly energy prices at the regional hub important to GCD (Palo Verde) remain approximately the same with variation in production of energy at GCD. In addition, the analysis of experiments is a short-run analysis, assuming that demand for energy is inelastic (demand does not change with small changes in prices) and surplus power capacity exists. Therefore, changes in \$/MW and \$/MWh are accurate representations of the changes in consumer and producer surplus when evaluating minor, short-run changes in GCD operations. However, long-run changes in the energy sector may lead to a different economic outcome and a more complete modeling approach would be required. The evaluation of GCD operation and long-run changes in the electricity sector such as the integration of renewable energy, repurposing of federal hydropower resources, or power system capacity expansion would require a significant increase in research scope.

- Consideration of GCMRC Project O is deferred, but will be included in the 2021-2023 Triennial Budget and Work Plan as a proposal to be considered for the Reclamation C.5 Experimental Management Fund, pending revisions to be made by GCMRC and the Bureau of Reclamation and review by the Technical Work Group. After consideration and if recommended by AMWG, a springtime disturbance flow will be planned to occur in coordination with Glen Canyon Dam apron repairs, to ensure sufficient time to integrate the information and learning about the importance of springtime high flows into the 2021-2023 TWP, subject to an evaluation of the resource conditions described in the LTEMP ROD.

AMWG acknowledges and appreciates the effort to develop Project O in response to elements of the TWG Recommendation for the 2021-2023 Triennial Budget and Work Plan, consistent with guidance from the Secretary's Designee (memo issued August 14, 2019), and in support of the Flow Ad Hoc Group charge. GCMRC is commended for their effort.

AMWG members will submit written comments to GCMRC and Reclamation on Project O no later than Friday, September 4, 2020. GCMRC and Reclamation will make revisions based on comments received and will submit the revised Project O plan for TWG consideration by Wednesday, October 7, 2020, for discussion at the October 2020 TWG meeting. AMWG directs the TWG to review the revised Project O and to forward a revised Project O recommendation for AMWG consideration no later than Friday, October 30, 2020. The AMWG will act on the TWG recommendation no later than Friday, November 20, 2020.

[John Jordan, FFI/Trout Unlimited] moves the motion. **[Larry Stevens, GCWC]** Seconded. Unanimous consent on the motion.

[Lee Traynham, Reclamation] will make sure the motion gets posted to the website and will get the TWP in front of the Secretary as soon as possible. Thanks to everyone for the huge effort and participation.

Federal Agency Updates:

GCDAMP Program Funding short-term and long-term (Reclamation, WAPA)

- **[Kathy Callister, Reclamation]** On the long-term update, Reclamation continues to work with partners of the GCDAMP program and two recovery programs on FY23 and beyond. Work groups are meeting regularly with the Upper Colorado River and San Juan River Recovery Implementation Programs and making progress, but it is slower than expected due to COVID-19. **[Lee Traynham, Reclamation]** Short-term updates were discussed yesterday about language in the draft House-approved E&W Appropriations bill that would allow for hydropower revenues to be moved from WAPA to Reclamation to support this program. We will keep tracking that.
- **[Brian Sadler, WAPA]** As of August 17, there was \$138 million in the revolving fund, which is quite a bit less than the end-of year target of \$175 million. The projected end-of-year balance at end of September is \$133 million. This includes the expectation of transferring \$21.4 million back to the general fund of the Treasury and the \$21.4 million that was transferred to the program earlier this year.

Glen Canyon Dam Emergency Exception Criteria (WAPA): [Tim Vigil, WAPA] Starting last Friday, requests were coming in from the California Independent System Operator (CAISO) to provide emergency assistance, which was provided over four days. There are very stringent requirements when this occurs to make sure they have exhausted all other resources. A total of 1,872 megawatts (MW) of emergency assistance was provided and 565 MW to ramp down the units.

ESA Update: Humpback chub, Razorback sucker, Kanab ambersnail status (USFWS) [Jeff Humphrey, USFWS] Three listing actions are underway. 1) A proposed downlisting of humpback chub has been published. Navajo Nation requested a consultation. The Upper Basin Program is the lead for the recovery and the development of the proposed downlisting. They have not heard back yet from Navajo Nation about the proposal and it is requested that someone loop back on that. 2) Razorback sucker is heading toward a potential downlisting. The species status assessment has been through public comment and peer review. From this, the Upper Basin will likely be developing a proposal for downlisting. 3) Kanab ambersnail has been proposed for delisting based on its taxonomic uncertainty. That rule has been moving forward to the Federal Register, but the schedule for that is not known. **[Richard Begay, Navajo Nation]** had reached out to the Hualapai Fish and Wildlife Department to connect with you [USFWS] about the humpback chub downlisting and will remind them about this.

Expanded Non-native Aquatic Species Management Plan (NPS): [Billy Schott, NPS] Visitations continue, but have changed with no bus or international travelers. There has been increased use of Glen Canyon at Lees Ferry by anglers and by small craft water recreation such as paddleboards and kayaks, which might be causing visitor conflicts with restrooms, campgrounds, and beach use. There was funding to look into this, but it was postponed to next year due to COVID-19. Quite a few fishing guides in the Marble Canyon area have shifted their business model to back hauling and paddle operations. The Lees

Ferry campground is one of the last that remains closed. If it is still closed this fall, the NPS will use it for administrative purposes.

[Ken Hyde, NPS] NPS was on the river with AGFD and found some green sunfish reproducing. A complete pump down will be done of the slough. Sixty fish were collected and will be sent to the AGFD lab to verify they do not have any diseases or parasites. Also plan to collect the majority that are left, keep them quarantined, then release them into the Arizona portion of Lake Powell, upstream of the dam. There is \$160,000 in NPS funds to cover the Incentivized Harvest Program, including rewards to anglers, tribal guided fishing trips, and a tournament or two. Have an agreement with Reclamation to receive \$100,000 to augment that program. Also heard that NPS has half of needed funding for FY22, 23 and 24 from NPS Natural Resource Funds. Anticipating the dead zone will be much worse this year.

[Jan Balsom, NPS-GRCA] NPS has tried to reduce the number of people on commercial trips on the river, reduced the number of launches, and separated out launches so no two companies are at the ramp at the same time to reduce congestion. Becoming more comfortable about visitors and staff in those areas.

[Rob Billerbeck, NPS] An invasive species river trip last week found a few aggregations at different places of what could be reproducing green sunfish, but still need to confirm identifications. Some were found in Kanab Creek, which could indicate a source farther up. Also found some downstream at Grand Canyon West at River Mile 243. More are being found in western Grand Canyon during juvenile chub monitoring trips.

LTEMP Litigation (DOI Solicitor)

[Rodney Smith, DOI Office of the Solicitor] Recall that the Save the Colorado, Living Rivers, and Center for Biological Diversity had challenged 2016 LTEMP on National Environmental Policy Act grounds due to climate change effects and GCD removal not being considered in detail. The case is still in the early phases and figuring out the scope of the Administrative Record, which was filed on June 2nd, consisting of about 8,000 documents. The Parties are reviewing that record. We will learn by August 28 if there are challenges to its scope. If it is good, then the case will go straight to briefing.

Additional Information: 1) [H.R. 7617 - 2021 E&W Funding](#) 2) [PR: GCD Summer Ops](#) 3) [Federal Register Notice \(FRN\) Humpback chub](#) 4) [FRN Kanab ambersnail](#) 5) [NPS Expanded Management Plan](#)

Stakeholder's Perspective—State of Arizona: Clint Chandler and Vineetha Kartha, Arizona Department of Water Resources

Presentation ([DOWNLOAD](#))

[Vineetha Kartha, ADWR] discussed Arizona's water management successes and challenges. A 2018 law now allows for recycling of water for potable use. Groundwater is a finite resource and sometimes its recharge is not possible. The 1980 Groundwater Management Code was implemented to address severe groundwater depletion. Both groundwater and Colorado River water are priority-based systems.

LTEMP Experiments Considered & Implemented for WY2020 and WY2021: Lee Traynham, Reclamation; Joel Sankey, GCMRC

Presentation ([DOWNLOAD](#))

[Lee Traynham, Reclamation] provided a summary of the LTEMP flow experiments possible for implementation in 2021. **[Joel Sankey, GCMRC]** The process for triggering a fall HFE includes monitoring inputs of sand to the Colorado River from the Paria River, estimating the amount of sand exported from Marble Canyon, and evaluating the difference between the two in order to ensure a positive or neutral sand mass balance. **[Jeremiah Drewel, Reclamation]** discussed the sand budget model results. There is not sufficient sand to support an HFE. **[Joel Sankey, GCMRC]** The “bug flows” experiment is in its third year. Monitoring continues to occur despite the pandemic, although half of what it was previously. It is still too early to say anything about the results from this summer. In Project E, preliminary study findings suggest decreased turbidity during the weekends resulting in 25% higher primary production.

Q&A and discussion

[Larry Stevens, GCWC] As curator of the Museum of Northern Arizona, Larry said he is more than happy to receive non-riverine and terrestrial insects through a Memorandum of Understanding with GCMRC. He appreciates their attention to those collections.

[Kurt Dongoske, Pueblo of Zuni] An important and significant aspect of Trout Management Flows, in addition to the questions on design, we know that several stakeholders have concerns about the taking of life. Consultations are an important step that would precede any discussion of potential implementation.

Stakeholder Updates:

States: AZ (ADWR, AGFD), CA, CO, NM, NV, UT, WY

[Charlie Ferrantelli, State of Wyoming] No updates.

[Scott McGettigan, State of Utah] There will be a presentation later about the Lake Powell Pipeline. No other updates.

[Sara Price, CRCN] No updates.

[Paul Harms, State of New Mexico] The San Juan Recovery Program and the Upper Colorado River Endangered Fish Recovery Program have similar budget concerns related to those of the Glen Canyon Dam Adaptive Management Program. **[Arienne Singer, State of New Mexico]** New AMWG member who is an attorney who worked on adjudication of Indian Water Rights Settlements and most recently worked on implementation of the Navajo Gallup Water Supply pipeline project.

[John McClow, State of Colorado] Making progress of the Colorado Water Conservation Board on its Demand Management Feasibility Investigation. A work group was commissioned to analyze the issues and their report was recently published. The board is taking public input now. On September 2nd, the board will hold a working session to decide on next steps.

[Chris Harris, Colorado River Board of California] California is in a profound and historic heat wave with a lot of lightning strikes and fires. Very much appreciate that the Glen Canyon Dam hydropower was brought in to meet the state’s energy needs for the last few days. It was tough. California has also

reached out to neighboring states and have 300 pumper engines coming from Texas, Arizona and Nevada to fight the fires, and still looking for more. Air quality is very bad throughout the state.

[Ryan Mann, AZGFD] Worked with USGS and NPS to get a trip in June to complete Lees Ferry monitoring where an increase in brown trout was seen – about 14% of the fish population – which is up from last year. Also have a final trip this fall is to do a Diamond down trip to assess fish communities in far western Grand Canyon.

[Vineetha Kartha, ADWR] There have been extremely high temperatures the last couple of months that are setting records. Before 2026, the Secretary of Interior is to develop guidelines for the long-term management of the Colorado River system. ADWR and the Central Arizona Project have reconvened the Drought Contingency Plan Steering Committee to develop an Arizona perspective. These meetings will be public and a schedule is on the website.

Tribes: Hopi, Hualapai, Navajo Nation, Pueblo of Zuni, Southern Paiute

[Jakob Maase, Hopi Tribe] Hopi are still in quarantine lockdown until August 31. The river trip had to be cancelled this year due to COVID-19, but Hopi is looking to use the unspent funds to archive and synthesize past trip reports. Next river trip is planned for the spring.

[Peter Bungart, Hualapai Tribe] The Hualapai Tribe had similar experience to Hopi with strict lockdowns. Keeping up with government-to-government consultation requests. Anticipate continued reopening over next month. Had to cancel river trip and looking at other options.

[Richard Begay, Navajo Nation] Navajo Nation was shut down from March 16 until August 17 and have just reopened although working on staggered schedules. Had not planned to do a trip this year, but to send staff on existing science trips, which were cancelled.

[Arden Kucate, Pueblo of Zuni] Pueblo of Zuni declared an emergency order over the community since March. Currently in Phase IV. It has been hard with everyone working from home and trips postponed. Hoping to return to work by end of August with new return-to-work policies such as testing. Holding steady and remain involved in any projects or proposals.

[Kevin Bullets, Southern Paiute Consortium] The 2020 river trip was cancelled. Looking for a new director and was asked to attend these AMWG meetings until a new director is in place.

NGOs: Environmental Organizations, Federal Power Purchasers, and Recreation

[Larry Stevens, GCWC] The Grand Canyon Wildlands Council is engaged in a riparian restoration project at Paria Beach. Also doing work on identifying benthic algae from the dam to Lees Ferry. Very active with a publication on springs and spring vent species in the Colorado River Basin and a global review of river ecosystems. Happy to provide those papers if anyone is interested.

[Kevin Dahl, National Parks Conservation Association (NPCA)] The NPCA and other environmental partners intervened with FERC on a proposal to build a pump hydro storage off the Little Colorado River.

[Sinjin Eberle, American Rivers] American Rivers expresses its appreciation to Lee and Tara for moving nominees forward. American Rivers has also intervened in all three proposals of pumped hydro storage off the Little Colorado River.

[David Brown, GCRG] GCRG also submitted letters regarding pumped storage projects. GCRG held a workshop for members, which scientists attended. Have an upcoming Boatman's Quarterly being released. The respite in the canyon seems to have resulted in a healthy vegetation encroachment, particularly camelthorn, arrowweed and willow, in the campground areas.

[John Jordan, FFI/Trout Unlimited] Trout Unlimited continues to coordinate with the NPS to implement the brown trout incentivized removal program.

[Leslie James, CREDA] CREDA serves over 4 million users and the economic issues due to COVID-19 (paying bills, keeping power on) have been a real challenge in the region. She shared a picture of the Salt fire near the Silver King transmission line. Arizona has been suffering from fires as well. Yesterday was the 11th day in Phoenix at 115 degrees Fahrenheit or higher.

[Kevin Garlick, Utah Municipal Power Agency] The electrical grid is stressed right now. It is during these times when the value of the Glen Canyon Dam and other systems are appreciated.

[David Brown, GCRG] Was the situation in California because a couple of big generators went offline?

[Leslie James, CREDA] For the general public, there is a lot of detailed information on the CAISO website. **[Tim Vigil, WAPA]** Over the last five days, at least two generators have gone down. Wind drops off when sun goes down.

GCMRC Science Updates: Joel Sankey, GCMRC (introductions)

[Tim Petty, DOI and AMWG Chair] This session is to update new members on the latest results of ongoing research to support GCDAMP and work group. Please ask questions on anything that is not clear so everyone has a clear understanding of this work.

[Joel Sankey, GCMRC] Rather than provide a broad overview as has been done in the past, this time the presentations are going to focus on a couple of concise topics. Emily Palmquist just presented her work on arrowweed at the Ecological Society of America. Lucas Bair is an economist on bioeconomic models. Both are rising star scientists at GCMRC.

Presentations ([DOWNLOAD1](#); [DOWNLOAD2](#))

(1) Examining variability in arrowweed physiological traits and responses to flooding, Emily Palmquist,

GCMRC: This study looked at physiological traits and responses to flooding. Plants were collected from different provenances (hotter or cooler areas) and their responses to flooding was assessed.

(2) Are there any more surprises? Bioeconomic models and adaptive management, Lucas Bair,

GCMRC: Chub and trout management are examples of how these can be used in a predictive model. There was a lot of research and monitoring data available and also quite a bit of modeling in the LTEMP environmental impact statement (EIS). The model results give metrics as to when it is cost-effective to remove rainbow trout. For example, translocations of juvenile humpback chub can be modeled to show how effective and efficient management options might be. Very close to a having a publication available for trout management flows and when mechanical removal would be implemented. The triggers are sensitive, but it was found that they are primarily driven by management options.

Q&A and discussion

[Larry Stevens, GCWC] How is the initial root mass and age of root mass controlled because that can affect leaf size? **[Emily Palmquist, GCMRC]** All of the cuttings were planted at the same time and grew for the same amount of time. Also have initial height measurements before the experiment began.

[Seth Shanahan, SWNA and TWG Chair] Appreciates Lucas's efforts. This is a useful tool to evaluate tradeoffs.

Technical Work Group Chair Report: Seth Shanahan, TWG Chair; Peggy Roefer, FLAHG Chair; Ted Kennedy and Jeff Muehlbauer, GCMRC

Presentation ([DOWNLOAD](#))

[Seth Shanahan, SWNA and TWG Chair] reported on TWG activities such as southwestern willow flycatcher and Yuma Ridgway's rail monitoring, exploring the triggers of spring HFEs, understanding the importance of springtime high flows for insect emergence, tracking conditions from Adopt-A-Beach repeat photography, and assessing low dissolved oxygen events. FLAHG is a fantastic forum for not only specific issues that need to be addressed, but also as a model to follow anytime someone is considering an idea related to flow.

[Ted Kennedy, GCMRC] The development of a hydrograph that coincides with the apron repair is a unique opportunity when combined with a spring pulse flow of up to 25,000 CFS. Flows as low as 4,000 CFS have not been seen since the early 90s. Flows of 20,000 CFS or greater have only occurred 7% of the time since 1997. It is very exciting to test this hydrograph. Have not predicted any negative effects, but GCMRC is still doing some analysis that will be reported later.

Lake Powell Pipeline Draft Environmental Impact Statement: Rick Baxter, Program Manager & Heather Patno, Hydraulic Engineer, Bureau of Reclamation

Presentation ([DOWNLOAD](#))

[Rick Baxter, Reclamation] Background and alternatives were provided about the Lake Powell Pipeline (LPP) project. The Southern Alternative involves several sub-alternatives. Comments need to be submitted by September 8. **[Heather Patno, Reclamation]** Heather presented what was analyzed for the LPP using the Colorado River Simulation System model. Reclamation used the 2019 model and the January 2020 initial conditions. Looked at direct natural flows and climate change hydrology under different scenarios (see slides, which are also in the EIS). Four scenarios were run, two of which were sensitivity analyses. To ascertain the impacts, all of the demands that were not reasonably foreseeable were held at 2020 levels. Then, all the reasonable depletions in the Upper Colorado were identified and held constant at 2060 levels. The second sensitivity analysis looked at having the depletions increase over time to the full depletions provided to Reclamation from the Basin States.

Additional information: 1) [LPP DEIS website](#) 2) [Project Proponents' website](#)

Q&A and Discussion

[David Brown, GCRG] What is the slide telling us? It seems to show there won't be any impacts from the pipeline. **[Heather Patno, Reclamation]** The numbers speak for themselves. Hesitate to assign values to the graph because everyone's significance thresholds are different. In terms of elevation between

Action and No Action, there is relatively little significance as compared against the uncertainty regularly seen in the 24-Month Study hydrology.

[Kevin Dahl, National Parks Conservation Association] What is “10% No Action” in the key? The No Action Alternative will not take water so don’t understand the different percentiles given. **[Heather Patno, Reclamation]** That is the 10th percentile of hydrology for No Action across every run. Rather than looking at changes in policy, this is looking at implementation or no implementation. It is a comparative analysis looking at the relative differences in Lake Powell pool elevation under the different alternatives.

[Kelly Burke, GCWC] Struggling to find the 10% No Action line in the graph. Is it 10% of normal inflows? **[Heather Patno, Reclamation]** There isn’t a large impact from the pipeline at the low elevations. The 10% No Action line is almost hidden behind the 10% Proposed Action line because it is hydrology that is driving the system rather than impacts from the LPP.

[Kurt Dongoske, Pueblo of Zuni] The very concept of this project is considered by Zuni to be an adverse effect to Traditional Cultural Property (TCP), the Colorado River. This information was transmitted to the federal government in 2011; yet, there has not been a meaningful conversation with the Zuni governor or tribal council about this issue. The BLM is the lead for 106 compliance. Zuni concerns are similar concerns that have been expressed to GCDAMP for over 20 years. Over the past 10 years, Zuni concerns have not been adequately addressed by the Federal government.

[David Brown, GCRG] How are you dealing with the new Council on Environmental Quality (CEQ) guidance? It might be relevant as to how you treat new guidance with respect to cumulative impact for this program, which would be ignored under the new guidance. **[Rick Baxter, Reclamation]** Trying to make sure we are compliant and we will be. That is a longer conversation, but happy to have that with you.

[Scott McGettigan, State of Utah] Typical traces that are done in Reclamation modeling looks at 10% of the flows that were below and 90% were above with 50% in the middle. Then the 10% No Action pipeline is compared for each subsequent percentile. **[Peter Bungart, Hualapai Tribe]** From Vineetha’s earlier presentation, where there are similar robust population growths over the decades, Arizona actually reduced its water use with municipalities such as Phoenix, Las Vegas, and Tucson using about 120 gallons per person per day. Yet in the St. George area, water use is over 300 gallons per person per day. Why wasn’t conservation looked at more seriously, especially considering the hundreds of cultural resource sites? **[Todd Adams, State of Utah]** Washington County has reduced its water use substantially and has a goal to reduce it even more. Be very careful about comparing per capita water use because St. George’s water use includes secondary water, reuse, and other things. **[Rick Baxter, Reclamation]** Those are the kinds of things that we need to hear during the comment period.

[Kelly Burke, GCWC] Was there a conservation alternative analyzed in the EIS? Also want to acknowledge Kurt’s comment. It is an important thing to be addressed. **[Rick Baxter, Reclamation]** There is a conservation alternative in the DEIS, but it was eliminated because it did not meet the purpose and need. Reclamation plans to take another look at that.

Review of the 2007 Interim Guidelines (7.D. Review): Carly Jerla, Civil Engineer and Malcolm Wilson, Water Resources and Compliance Group Chief, Bureau of Reclamation

Presentation ([DOWNLOAD](#))

[Malcolm Wilson, Reclamation] Reported on the Interim Guidelines process and the review schedule. Additional information: [7D Review website](#)

Public Comment

[Kurt Dongoske, Pueblo of Zuni] The scientific path to review the natural world excludes Native American wisdom. A meaningful land ethic can only be developed when Native American cosmology, knowledge, and rights are taken into account.

Action Items:

1. Members are asked to support the family of Charley Bullets with cards and letters. Please contact Theresa Pasqual (trepasqual@gmail.com) for correspondence instructions.
2. AMWG members are asked to submit written comments on Project O to GCMRC and Reclamation by Friday, September 4th.
3. AMWG and TWG members will receive an inquiry for meeting dates for Project O discussion as outlined in Motion #3 above, including a date for a potential special AMWG session.
4. One or more of the upcoming AMWG meetings will receive updates from NPS's Brown Trout Incentivized Harvest project, including but not limited to funding status and future funding needs.

Wrap-up:

[Tim Petty, DOI and AMWG Chair] Great job to Lee and Marlon. To the members and alternates, a lot was accomplished with a unanimous consent to bring the TWP to the Secretary. Appreciate the times and dates to work on Project O and to vote on it this fall. Very proud of the great work from everyone. Please complete the meeting evaluation surveys, which are taken very seriously and will help us to improve.

FY2021 AMWG and Annual Reporting Meeting Dates:

- January 20-21, 2021 (Annual Reporting Meeting)
- February 10-11, 2021
- May 19, 2021 (webinar)
- August 18-19, 2021

Second Day Meeting Adjourned at 4:00 pm MDT

Meeting Attendees

AMWG Members, Alternates, and Leadership

Todd Adams, State of Utah

Jan Balsom, NPS-GRCA

Cliff Barrett, UMPA (Alternate)

Richard Begay, Navajo Nation

Leslie James, CREDA

John Jordan, FFI/Trout Unlimited

Vineetha Kartha, ADWR (Alternate)

Arden Kucate, Pueblo of Zuni

Aubrey Bettencourt, DOI (Alternate Designee)
David Brown, GCRG
Peter Bungart, Hualapai Tribe
Kathleen Callister, Reclamation (Alternate)
Garry Cantley, Bureau of Indian Affairs (Alternate)
Chris Cantrell, AGFD
Charlie Ferrantelli, State of Wyoming (Alternate)
Kevin Garlick, UMPA
Michelle Garrison, State of Colorado (Alternate)
Ed Gerak, CREDA (Alternate)
John Hamill, FFI/Trout Unlimited (Alternate)
Paul Harms, State of New Mexico (Alternate)
Chris Harris, CRBC (Alternate)
Jeff Humphrey, USFWS

USGS/GCMRC Staff

Lucas Bair
Joshua Caster
Bridget Deemer
Kimberly Dibble
Laura Durning
Helen Fairley
Paul Grams
Thomas Gushue
Ted Kennedy
Keith Kohl
Anya Metcalfe

Reclamation Staff

Pam Adams
Ryan Alcorn
Tara Ashby
Rick Baxter
Kathleen Callister
Paul Davidson
Jeremiah Drewel
Marlon Duke
Clarence Fullard
Dave Isleman

Interested Persons

Rob Billerbeck, NPS
David Braun, Sound Science
Kevin Bullets, Southern Paiute Consortium

Jakob Maase, Hopi Tribe
John McClow, State of Colorado
Jessica Neuwerth, CRBC
Timothy Petty, DOI and Secretary's Designee
Daniel Picard, AMWG DFO
Sara Price, CRCN
Matt Rice, American Rivers
Peggy Roefer, CRCN (Alternate)
Brian Sadler, WAPA (Alternate)
Billy Schott, NPS-GLCA (Alternate)
Arianne Singer, State of New Mexico
Larry Stevens, Grand Canyon Wildlands Council
Steve Wolff, State of Wyoming
Kirk Young, USFWS (Alternate)

Michael Moran
Jeff Muehlbauer
Emily Palmquist
Mike Runge
Joel Sankey
David Topping
Scott VanderKooi
David Ward
Scott Wright
Charles Yackulic
Mike Yard

Zachary Nelson
Heather Patno
Kerri Pedersen
Daniel Picard
Alex Pivarnik
Wayne Pullan
Lee Traynham
Chris Watt
Nicholas Williams
Malcolm Wilson

Scott McGettigan, State of Utah
Craig McGinnis, ADWR
Lisa Meyer, WAPA

Kelly Burke, Grand Canyon Wildlands Council
Shane Capron, WAPA
Kevin Dahl, National Parks Conservation Association
Martina Dawley, Hualapai Tribe
Kurt Dongoske, Pueblo of Zuni
Sinjin Eberle, American Rivers
Craig Ellsworth, WAPA
Sheri Farag, Arizona Salt River Project
Alicyn Gitlin, Sierra Club
Jessica Gwinn, USFWS
Ken Hyde, Glen Canyon National Recreation Area
Carliane Johnson, SeaJay Environmental
Edward Keable, NPS
Sara Larsen, Upper Colorado River Commission
Ryan Mann, AGFD
Kevin McAbee, USFWS
Adam McAnally, Arizona Salt River Project

Virginia O'Connell, ADWR
Emily Omana Smith, NPS-GRCA
Amy Ostdiek, State of Colorado
Theresa Pasqual, Joint Tribal Liaison
Bill Persons, FFI/Trout Unlimited
Noah Pleshet, Southern Paiute Consortium
Kerry Rae, DOI
David Rogowski, AGFD
Amy Schott, NPS
Gene Seagle, NPS
Seth Shanahan, TWG Chair and SNWA
Erik Skeie, State of Colorado
Rod Smith, DOI
Jim Stroger, FFI/Trout Unlimited
Tim Vigil, WAPA
Brian Wooldridge, USFWS

Abbreviations

ADWR – Arizona Department of Water Resources
AMP – Adaptive Management Program
AMWG – Adaptive Management Work Group
AGFD – Arizona Game and Fish Department
BAHG – Budget Ad Hoc Group

CAISO – California Independent System Operator

CEQ – Council on Environmental Quality
CFS – cubic feet per second
CREDA – Colorado River Energy Distributors Association
CRCN – Colorado River Commission of Nevada
DFO – Designated Federal Officer
DOI – Department of the Interior
E&W – Energy and Water
EIS – Environmental Impact Statement
ESA – Endangered Species Act
FAC – Federal Advisory Committee
FACA – Federal Advisory Committee Act
FFI – Fly Fishers International
FLAHG – Flow Ad Hoc Group
FRN – Federal Register Notice
FY – Fiscal Year (October 1 – September 30)
GCD – Glen Canyon Dam
GCDAMP - Glen Canyon Dam Adaptive Management Program

GLCA – Glen Canyon National Recreation Area
GRCA – Grand Canyon National Park
HFE – High Flow Experiment
H.R. – House Resolution
JCM-West – Juvenile Chub Monitoring-West
LTEMP – Long-Term Experimental and Management Plan
LPP – Lake Powell Pipeline
MDT – Mountain Daylight Time
MW – megawatt
MWh – megawatt-hour
NEPA – National Environmental Policy Act
NPS – National Park Service
OMB – Office of Management and Budget
RIP – Recovery Implementation Program
Reclamation – Bureau of Reclamation
ROD – Record of Decision
Secretary – Secretary of the Interior
SNWA – Southern Nevada Water Authority
TCP – Traditional Cultural Property
TWG – GCDAMP Technical Work Group
TWP – Triennial Budget and Work Plan
UMPA - Utah Municipal Power Agency
USFWS – United States Fish & Wildlife Service

GCMRC – Grand Canyon Monitoring & Research Center
GCWC—Grand Canyon Wildlands Council

USGS – United States Geological Survey
WAPA – Western Area Power Administration