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From: Shane Capron
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Date: April 22, 2014 (sent electronically)

Subject: The Technical Work Group (TWG) Report on Budget Issues for Review by the Department of Interior on the FY 2015-17 Glen Canyon Dam Adaptive Management Program Budget and Work Plan

The TWG has reviewed the initial FY 2015-17 budget recommendations provided by Dr. Jack Schmidt (GCMRC) and Glen Knowles (Reclamation) as provided to the TWG on April 8-9, 2014. The TWG began consideration of the budget and work plan at its meeting and completed discussion at a Budget Ad Hoc Group (BAHG) conference call on April 21. The following issues and questions represent consensus decisions by the TWG and the BAHG.

During review of the initial budget and work plan, the TWG and BAHG, have continued to implement the budget process as requested by Anne Castle (Secretary's Designee: March 31, 2011; May 4, 2011). The goal of this process is to identify and resolve technical issues of detail at the TWG/DOI level and pass only policy-level issues up to AMWG.

The TWG requests consideration and feedback from DOI on the unresolved technical issues described below before its June 24-25 meeting. We are also transmitting the draft policy issues to DOI that the TWG would like to present to the AMWG for discussion at its May 22 webinar. It is likely that further technical issues may surface before the June TWG meeting. If so, the TWG will forward those to you for consideration by DOI in the development of the draft budget that AMWG will consider in August.

Many of the issues described below stem from a need for further information. We observe that the proposed budget was very preliminary and expect substantial changes before further consideration by the TWG in late May. We thank GCMRC and Reclamation for their excellent work in developing the budgets and for thoughtfully participating in TWG discussions and considering input. The TWG is very supportive of the triennial budget and work plan concept and looks forward to working collaboratively with GCMRC and Reclamation in revising the May 6, 2010 budget process paper approved by AMWG.

Technical Issues for Consideration by DOI (via Caramanian)

Humpback Chub

1. Humpback chub natal origins. Continue looking into non-lethal methods, and utilize humpback chub that are taken as a result of incidental take.
2. Continue LCR studies. Lower 1200m effort discontinued, enhance existing spring and fall monitoring with remote sensing.
3. Effect of temperature vs. trout on humpback chub. Continue existing studies and monitoring on the effect of temperature vs. trout on humpback chub.
4. Humpback chub aggregation monitoring, continue and add new sites. Randomize sites, assess 2013/14 work. Utilize citizen science and remote tag readers.
5. Increase humpback chub aggregations funding for monitoring. Continue requirements of BO.
6. Humpback chub mainstem aggregation enhancement by translocation. Support pilot study.
7. More money to study the influence of turbidity on trout-humpback chub interactions. Evaluate current research before moving forward, determine potential management actions to increase turbidity.
8. Support further development of the Yackulic humpback chub population model.
9. Support project, but also support proposed changes to reduce costs for Chute Falls translocations/monitoring.

Modeling

1. The following model elements need to be better understood (consider a workshop) to scope the utility and cost of developing a CRE ecosystem concept model to improve the predictive capability for effects of dam operations:
 - a. Fish studies (trout, chub, others)
 - b. Sediment transport
 - c. Hydrology
 - d. Foodbase
 - e. Recreation
 - f. Riparian ecology*
 - g. Nutrient budget*
 - h. Climate change*
 - i. Cultural values and perspectives/TEK*

*these elements need considerably more information/instruction on how to incorporate these elements into a CRE ecosystem model.

2. Continue to develop research projects that would incorporate Traditional Ecological Knowledge (TEK) into CRE science and management and help contribute to management decisions.

Food Base

1. The priority for developing food base projects should be a higher priority because of its potential importance to the CRE ecosystem in general and native fish recovery in particular.

Nonnatives

1. Provide annual report and synthesis of nonnative invasive species monitoring data and options for monitoring and management (fund with Experimental Fund).
2. Increase invasive species surveillance in the LCR and from Diamond down (fund with Experimental Fund).
3. Review and synthesize data on tamarisk mortality impacts in the upper basin based on review of literature and on-going studies (\$10K). DOI should consider whether this project is appropriate for the use of power revenues.

Trout

1. Continue funding support to resolve questions about whether rainbow trout at the LCR originate from Glen Canyon. Provide additional funding to assess whether RBT reproduction is occurring in Marble canyon. Provide management recommendations.
2. Continue to fund Lees Ferry rainbow trout monitoring (electrofishing, RTELLS, and CREEL).
3. GCMRC should participate in the development of a more detailed fish management plan for Lees Ferry consistent with the NPS Comprehensive Fish management plan and other agency policies and mandates.
4. Provide funding to map the channel in Glen canyon and assess the effect of low flows on fish habitat.
5. Continue funding projects to assess competition and predation between Humpback chub & trout.
6. Continue to fund system-wide electrofishing monitoring for natives and nonnatives using techniques intended to be non-lethal.

Program Planning

1. GCDAMP administrative history funding. Proceed with proposed effort.
2. PEP reviews should be funded in the budget, especially for trout, humpback chub, research and monitoring.
3. Cultural resources treatment plan, resolution of tribal issues related to treatment needs to occur. This needs to be resolved by DOI before budget is approved. This is needed to implement the new PA.
4. What are we “required” to do under the biological opinion for monitoring? Clarify for the TWG, the biological opinion requirements within the GCDAMP.

Core Monitoring

1. Core monitoring needs, Strategic Plan, and SSQs should be considered after LTEMP is completed.
2. Develop system model linking aquatic and terrestrial ecosystems. This is the framework on which core monitoring can be established. Establish a discussion in the FY15-16 time frame to learn how to undertake this effort - review other systems model (e.g., MSCP). After LTEMP approval, request review by SAs, etc. No significant budget implications at this stage, but FY16+ may involve SA review and project formulation.

New Projects

1. The TWG supports GCMRC's proposal to continue funding the physics based sand bar model and the empirical based sand bar model.
2. GCMRC should consider a study directed at driftwood (CWD) history, distribution, movement, HFE & normal flows (citizen science). Initial steps would be to think about projects, and implement with volunteers. For instance, river guides could try to recapture marked wood. Should only be a very small line item.
3. TWG supports further development of the monitoring program (e.g., Lidar) to assess dam effects on historic properties.
4. Assess cataract canyon as a control for CRE DFCs. We encourage cooperative work without using AMP funding.
5. More money for work below Diamond Creek. For example sediment following HFEs and fish monitoring including tribal participation.
6. The TWG supports the proposed research to investigate trout habitat and aquatic food base and the relationship to flows in Lees Ferry but is concerned about the proposed cost.

Support In Question

1. Can't support bat/bird/spider work. Need more information about this. Some of us like it just from the title, but some have concerns.
2. The socio-economic DSS work is a low priority. Clarification – this means Applied Decision Methods (ADM, not DSS). Needs more discussion. How does this fit in with work being done for LTEMP? Please justify.

Policy Issues for Consideration by AMWG

1. Evaluate the feasibility of options to maintain water quality (e.g., temperature) needed to support a quality trout fishery in Lees Ferry and native fish downstream (TCD, water management options etc.).
2. Cost for new GCMRC facility in Flagstaff. Devastating reduction of research due to increased USGS burden.
3. Utility of the POAHG - some funding may be appropriate, but review the costs and benefits - less money may be appropriate.
4. Role of Science Advisors in GCDAMP. TWG needs to be involved in the development of the role of the SAs, and SA budget may need to be increased.