

Glen Canyon Dam Technical Work Group
Agenda Item Information
April 3, 2013

Agenda Item

GCDAMP 2013-14 and 2015-16 Biennial Work Plan and Budget

Action Requested

- ✓ Provide updates on recent proposed changes.
- ✓ Develop ideas for May BAHG discussions.

Presenters

Glen Knowles, Chief, Adaptive Management Group, Upper Colorado Region, Bureau of Reclamation

Jack Schmidt, Chief, Grand Canyon Monitoring and Research Center, U. S. Geological Survey

Shane Capron, Budget Ad Hoc Group Chair

Previous Action Taken

- ✓ By TWG: development of budget discussion items during the January 2013 Annual Reporting meeting that were tabled until this April meeting.

Background Information

The purpose of this agenda item is to review the GCDAMP biennial budget process including considerations for prioritization, continue thinking about what potential changes to the second year of the FY 2013-14 budget may be necessary, and begin to consider big picture needs for development of the 2015-16 biennial budget and work plan.

By way of review, Assistant Secretary Anne Castle provided direction to GCMRC regarding science planning in a memo to Kate Kitchell, Mark Sogge, and Ted Melis on March 31, 2011. Assistant Secretary Castle directed GCMRC to primarily focus on the DFCs that were, at the time, still in draft form. Within that context, the Assistant Secretary urged that GCMRC more narrowly focus on some key DFCs, “because the DFCs are very comprehensive” and it was assumed that insufficient funds existed to focus on every DFC. The priorities provided in this memo are that GCMRC should “concentrate its resources” on

“... compliance with the Endangered Species Act, which means focus on the native fish and particularly the humpback chub,”

“... focus on sediment, which was an instigating factor for the Grand Canyon Protection Act and continues to be an issue with resources downstream of the dam. That includes being able to respond if the high flow protocol goes forward,”
and

“... science on both non-native fish control and the recreational trout fishery.”

Assistant Secretary Castle also observed that “while cultural resources remain a very high priority, it is not clear that there are significant science questions involving those resources, or the [Temperature Control Device], that require attention at this time.” Castle also indicated that core monitoring activities in other resource areas should continue. The overall objective of her guidance was “to enable GCMRC to better direct its limited resources and resist the Christmas tree approach to science planning.”

In August 2004 the AMWG established priorities for the GCDAMP in a consensus motion:

MOTION: To adopt TWG-recommended budget process, adding an annual priority-setting session by AMWG, and adding an interim step of review and feedback on the budget and workplan by AMWG before approval of the budget. Motion approved by consensus.

NOTE: To fully explicate the above vote, the questions raised pertaining to the five priorities are listed below:

1. Why are the humpback chub not thriving, and what can we do about it? How many humpback chub are there and how are they doing?
2. What is the best flow regime?
3. What will happen when we test or implement the TCD? How should it be operated? Are safeguards needed for management?
4. What is the impact of sediment loss and what should we do about it?
5. Which cultural resources, including TCPs, are within the APE, which should we treat, and how do we best protect them? What are the status and trends of cultural resources and what are the agents of deterioration?

Discussion has continued at the AMWG and TWG as to whether these program priorities are still valid and/or whether they should be updated.

At this point in the budget development process, the TWG should be considering any changes to the FY 2014 budget. In January 2013, the TWG met during the annual reporting meeting and heard updates on the research and monitoring program (<http://www.gcmrc.gov/AnnualReportingMeeting.aspx>). The TWG had some discussion on potential budget changes.

The TWG identified the following budget items specific to the 2014 budget review:

1. Increased aggregation sampling of HBC to reduce sampling errors in enumeration. (Davis)
2. Look at additional or new capture points for tagging trout in the natal origins rainbow trout study to eliminate possible sample errors for ascertaining the degree of downstream movement. (Davis)
3. Improve detection levels for HBC in the mainstem to confirm estimates (Davis).
4. What elements of the administrative history project require funding? Conduct a pilot effort on those elements in FY2014 and use the results to develop a more thorough undertaking in the next budget cycle, if warranted. (Stevens)

5. Phragmites is this an ecologically and culturally important species that is highly responsive to dam operations. Compile background data and information, including Tribal significance, in 2014 in a pilot analysis, and if feasible, conduct the analysis in the next budget cycle in the context of integration of TEK within the AMP (AR meeting).

TWG has also identified the following general items for longer-term budget discussions (i.e. FY15-16):

1. Investigate whether a criterion should be added when considering whether to conduct another HFE to include the current volume of riverbed sand and not just the amount that has entered (Davis). Long-term sand mass budget is affected by intervening operations that affect the HFEs, are there considerations or lessons learned going forward in future HFEs? Pose the issue to independent reviewers, determine if additional analyses are warranted. What is the trend of sand input from major tributaries? (AR meeting).
2. What elements of the Species of Management Concern (Goal 3) work should be considered for funding in the next budget cycle?
3. Based on the results of the NPS fisheries program, how can the AMP assist the NPS to accomplish its fisheries goals?
4. Do we know what is driving humpback chub population dynamics (up/down)? Why are they trending up now? If population trends for RBT and HBC are going up, what does that mean for the relationship of trout to humpback chub? Decide how to determine this in FY2014 and if there is a reasonable approach, address it in the next budget cycle. (AR meeting)
5. Is the LCR reaching carrying capacity for humpback chub, are their opportunities in the mainstem to expand the population, are the aggregations at capacity? (AR meeting)
6. Why do Lees Ferry and Marble Canyon retain rainbow trout? Is there a new experimental design that is needed? Is there significant trout spawning below Lees Ferry that contributes to abundance? (AR meeting)
7. Are there dam operations that would benefit the ecosystem post-Tamarisk decline? Consider intensifying monitoring of tamarisk-dominated pre-dam terraces for erosion. Consider studying tamarisk growth in relation to river flows and if justified, consider including that in the next budget cycle. How will over-flight imagery support this study? (AR meeting)
8. Will food base research help us better understand the relationship of steady/fluctuation flows vs. food availability for fish? Consider having the science advisors conduct an unbiased meta-analysis from other systems. (AR meeting)
9. Implications of equalization flows on physical and biological resources? Analyze the issue of which management options best conserve sediment mass balance during equalization years, and how such flows align with policy considerations in those years. (AR meeting).

GCMRC has also identified the following long-term issues for consideration:

1. To what degree did the FY13/14 BWP address the priority science questions that were defined in August 2004?
2. To what degree have the priority science questions that were defined in August 2004 now been addressed by the HFE Protocol EA and the NNFC EA? To the degree to which the priority science questions are now being addressed by these EAs, does that situation redefine the role of GCMRC in addressing these questions? Does this redefine the expectations of TWG in when/how monitoring and research is addressed?

3. To what degree have the priority science questions that were defined in August 2004 been subsumed in the LTEMP EIS process? To the degree to which the priority science questions are now being addressed by the LTEMP program, does that situation redefine the roles of GCMRC in addressing these questions? Does this redefine the expectations of TWG in when/how monitoring and research are addressed?

GCMRC identified the following in evaluating how the August 2004 priority science questions (the 5 priority questions listed above) have been addressed:

1. GCMRC is proceeding with a number of high priority field and laboratory studies concerning humpback chub life history, longitudinal distribution, food base, and competition/predation by trout, as well as studies related to temperature effects of these interactions.
2. This is a policy level question being addressed by the entirety of the LTEMP EIS.
3. Temperature effects are addressed in a range of ways in the GCMRC fish monitoring and research program, and temperature control is being considered in the LTEMP EIS.
4. The impact of fine-sediment deficit and what to do about it is primarily addressed by the HFE Protocol EA and there is a large part of the GCMRC budget that implements this EA. The “what difference does sediment loss make to the Grand Canyon ecosystem” is partly addressed by Project A, and has been a continuing focus of our science talks with the stakeholders.
5. Project J in part focuses on informing discussion about the APE and the effects of dam operations on archeological resources.

Table 1. Approximate timelines for a streamlined process for development of a biennial workplan and budget (BWP), plus consideration of changes to the second year of the budget. Dates shown are estimated targets.

Month	Year-1 (FY11) (development of biennial workplan & budget)	Year-2 (FY12) (consideration of year-2 of biennial workplan & budget)
November	USGS produces GCMRC annual project reports document	USGS produces GCMRC annual project reports document
January	Annual reports meeting (2 days) followed by 1-day TWG meeting to review budget and provide guidance to GCMRC and BOR. TWG reviews progress in addressing Information Needs and research accomplishments.	Annual reports meeting (2 days) followed by 1-day TWG meeting to review GCMRC budget and provide guidance to USGS and BOR on any potential changes to consider for year-2 of the budget. TWG reviews progress in addressing Information Needs and research accomplishments.
February-	<ol style="list-style-type: none"> Based on a revised SSP/MRP, DOI establishes/updates general work plan priorities/hydrograph assumptions and communicates those to AMWG USGS and BOR will meet will meet with the DOI family to solicit their input on DOI priorities and major issues to be reconciled. Any disagreements will be resolved by DOI in consultation with the DOI Family 	USGS initiates internal review of BWP in relation to ASWS priorities and funding constraints. Identifies proposed revisions and analyzes scenarios/implications.
March	GCMRC and BOR will develop an initial biennial budget spreadsheet based on DOI priorities and input from (a) scientist and TWG provide at the AR meeting and (b) the DOI family.	USGS provides initial draft BWP spreadsheet for ASWS consideration.
April	TWG meets to consider and provide input on the initial GCMRC/BOR budget recommendation. Unresolved issues or conflicting priorities will be resolved by DOI in consultation with the DOI family	<ul style="list-style-type: none"> USGS meets with the DOI family to solicit input on draft BWP. USGS provides revised draft BWP and briefing to ASWS.
May	GCMRC and BOR provide a draft BWP to the TWG and SA for their review and comment.	<ul style="list-style-type: none"> USGS provides draft BWP to the BAHG and SA for review. BAHG meets to consider and provide input on the draft BWP.
June	TWG meets to provide input on the initial GCMRC and BOR budget recommendation and provide a recommendation to the AMWG.	<ul style="list-style-type: none"> USGS provides a final draft BWP to the TWG and SA for review. TWG meets to provide input on the final draft BWP.
July	GCMRC and BOR provides a final draft BWP to the AMWG for their review	USGS revises and provides final draft BWP to the AMWG for their review.
August	AMWG meets to provide input on the GCMRC and BOR draft BWPs and provide a recommendation to the SOI	AMWG meets to provide input on the final draft BWP and provide a recommendation to the SOI
September	SOI reviews the budget and work plan recommendation from AMWG.	SOI reviews the budget and work plan recommendation from AMWG.

Criteria for Review and Revisions of the Year-two Budget

In order for BWP development process to be successful in reducing the administrative burden on the GCMRC, BOR and the GCDAMP it must have clear criteria for making changes to the year-two budget. The burden of an appropriate rationale for proposing a change falls upon the proposer to make a persuasive argument. The following criteria will be used by GCMRC, Reclamation, and TWG in making recommendations to AMWG on changes to the year-two budget:

- **Scientific requirement or merit:** New information gained during the implementation of monitoring and research projects may result in a need to alter methods, scope, or timelines in the work plan or substantially alter or eliminate a project. This is a science-based need based on the experience of implementing an already approved project. This does not represent a shifting priority, but a scientific learning process which results in needed modifications to carry out the goals.
- **Administrative needs:** Administrative or programmatic changes may occur within the time-frame of an approved budget. Examples include the mitigation of an impact as a result of ESA consultation or tribal consultation, a change in the “overhead” charges of a federal or state agency, a significant reduction of the balance of the Colorado River Basin Fund or a failure to secure NPS permits for work in the Grand Canyon. As soon as an administrative event occurs that affects the budget, GCMRC (or relevant agency – such as DOI) will notify the TWG.
- **New initiatives:** New initiatives or modifications to projects that may or may not be based on a scientific merit must be vetted through DOI. DOI will consider whether to direct GCMRC/BOR to work on these new initiatives or whether to consider them during the next full budget cycle. Given that the budget will likely be fully accounted for, direction on where to locate the funds within the current budget will be requested from DOI.

GCDAMP BIENNIAL BUDGET PROCESS

Approved by AMWG on May 6, 2010

At its August 12-13, 2009 meeting, the Adaptive Management Work Group (AMWG) instructed the Technical Work Group (TWG) to terminate its deliberations on comparisons between rolling and non-rolling two-year budget processes and to develop a two-year non-rolling budget beginning in Fiscal Years (FY) 2011-12. This document describes the proposed two-year non-rolling budget approach and some of the history that led up to its development. The primary goal is to reduce the effort currently expended on the budget process while maintaining a high-quality adaptive management program.

MOTION: AMWG directs TWG to develop a two-year, FY11-12 two-year, non-rolling budget; and that a description of that process be provided by TWG to AMWG at its next meeting.

Motion was passed by consensus

1.0 Background

The previous budget process (two-year rolling budget) was approved by AMWG in 2004 and helped to provide structure for the budget process. Within that structure, the primary element was a biennial budget, work plan, and hydrograph (BWPH). Each budget year, the GCDAMP would roll the old second year of the previous BWPH into the new first year, and add a new second year. It was envisioned that the rolling BWPH would be accompanied by a 3-year outlook that would allow development of appropriations requests on federal budget schedules if the need arose to supplement hydropower revenues for the GCDAMP. It would also include a 5-year strategic outlook to coincide with revisions of major strategic documents such as the GCDAMP Strategic Plan, the Strategic Science Plan, the Monitoring and Research Plan, and Core Monitoring Plan (unfinished). The Core Monitoring Plan also factored into the BWPH in that core monitoring projects, as they became defined and adopted, were to be added to the rolling BWPH as largely fixed budget items.

The major components of the 2004 budget process were described as:

- BWPH with rollover of year-two into year-one of the next BWPH, and would include (yet undeveloped) criteria for reopening the budget
- Appropriations request for Federal agency budget or for Congressional write-in with a 3-year outlook
- Strategic 5-year outlook to forecast major changes, determine need for contingencies, and develop draft out-year projects
- Fiscal Reporting, mid-year and previous fiscal year
- Project Progress Reports, mid-year and end end-of-year reports
- Budget Spreadsheet and work plan
- Formation of the Budget Ad Hoc Group (BAHG)

Since the adoption of this process in 2004, the Glen Canyon Dam Adaptive Management Program (GDCAMP) implemented many aspects of the budget process (outlined above), especially those dealing with reporting, work plans, and budget spreadsheets. However, it was not until 2009 that the GCDAMP developed the first BWPH for FY 2010-11. During the development of the FY 2010-11 BWPH, some TWG members felt that the rolling budget process would not reduce effort spent on the budget and may have increased the amount of effort needed by the GCDAMP. Thus, an alternative to the rolling budget (i.e., non-rolling BWPH) was described in general terms to AMWG and adopted by the AMWG for the FY 2011-12 budget cycle (see AMWG motion above).

2.0 Description of a Two-Year Non-rolling Budget Process

The general approach is to use a budget development process similar to that taken by the Upper Colorado River Endangered Fish Recovery Program (Figure 2). The goal is to reduce the effort expended on the budget process while improving the effectiveness of the Grand Canyon Monitoring and Research Center (GCMRC), TWG, and AMWG. Generally, the GCDAMP would develop a two-year budget the first year of the process. Then, in the second year the GCDAMP would revisit only year-two of the budget and make relatively minor corrections to allow for changes in projects or potential important new starts not envisioned during the development of the two-year budget. The potential benefit is that effort may be saved in year-two of the budget process allowing for time and effort to be used on other endeavors of interest to the GCDAMP. This goal can only be achieved if we are successful in limiting changes to the year-two BWPH.

The major components of the two-year BWPH would include:

- Two-year budget spreadsheets, work plans, and hydrographs,
- Modifications of the year-two budget based on specific criteria,
- Fiscal reporting, including expenditures for the previous fiscal year (mid-year and end end-of-year reports),
- Project progress reports, including an annual reporting meeting in January, and
- Utilization of the BAHG to interface with the Bureau of Reclamation (Reclamation) and GCMRC in developing a draft BWPH, and to help the TWG develop budget recommendations for AMWG consideration.

Much of the rest of the process would be as described in 2004, such as reporting requirements, budget spreadsheets, work plans, and hydrographs would all be developed. TWG and GCMRC will hold an annual reporting workshop in January to review progress on the previous year's work plan.

3.0 Budget Process Components

The following describes the specific elements of the budget process and responsibilities.

3.1 Budget Principles

The BWPH will:

- Employ the adaptive environmental assessment and management approach to resources management that was developed by Holling (1978) and Walters (1986), and articulated in the Adaptive Management Program Strategic Plan (AMPSP) to include participation from the BAHG, TWG, and AMWG;
- Be consistent with the GCMRC Strategic Science Plan (SSP), Monitoring and Research Plan (MRP), and Core Monitoring Plan (when completed);
- Use a collaborative science planning process as described in the SSP and MRP (Figure 1); and
- Address GCDAMP priority questions, information needs, and the associated strategic science questions (SSQs) and using them to provide the primary basis for designing the science program;

The BWPH process will be most successful if the AMPSP, SSP, MRP, and Core Monitoring Plan are current and up to date. It is important that science planning and management planning occur currently as portrayed in Figure 1.

3.2 Priorities

All parties in the GCDAMP recognize the fact that not all funds needed and requested will always be made available. Prioritization of work is essential to the budgeting process. This is especially true as we move toward a budget that will include core monitoring and management actions. The Strategic Plan, including the Goals and Management Objectives and Desired Future Conditions when available, and especially the Information Needs (in sequence order) should serve as the basis for determining budget priorities. We anticipate that AMWG will review and update these periodically (e.g., every 5 years) to ensure they reflect new information and program priorities. Currently many of the documents have not been reviewed or updated for nearly a decade. At its basic level the budget should put core monitoring and high priority information needs ahead of other activities. TWG will provide an initial general BWPH recommendation to AMWG at its spring meeting and AMWG will provide feedback to TWG on budget priorities and general direction which the BAHG, TWG, and GCMRC will use in their development of a final recommendation to AMWG.

3.3 Budget Ad Hoc Group (BAHG)

TWG consideration of the budget and work plan has been facilitated by the BAHG, a small ad hoc group which has worked with Reclamation and GCMRC in past years. TWG will continue to utilize the BAHG to review the budget and work plan and to resolve difficult technical issues. The BAHG will work with Reclamation and GCMRC throughout the budget process and provide a liaison with TWG members. The BAHG will help Reclamation and GCMRC develop and bring to the TWG budgets that are prepared for full TWG discussion and recommendation to AMWG. Thus, technical issues and resolutions of major issues will be resolved to the extent possible before full TWG review. The TWG will give initial budget prioritization to the BAHG at its annual January reporting meeting. The BAHG will consider this input and the initial budget proposed by Reclamation and GCMRC and provide an initial budget recommendation to TWG at its late-winter meeting (e.g., March). The BAHG will then work with Reclamation and GCMRC through the spring and early summer to provide a final BWPH recommendation to the TWG at its summer meeting (e.g., June). In the second year of the BWPH this process will be truncated to consider only necessary changes to the budget for year-two (see section 3.8 below).

3.4 January Reporting Meeting

TWG, in coordination with GCMRC and Reclamation, will hold a reporting meeting annually in January to review progress on funded monitoring and research projects for the previous year. GCMRC and Reclamation will provide an annual report for each funded activity in the work plan. TWG will use this time to review and evaluate the progress of projects and to give direction to the BAHG in the development of the initial budget.

3.5 Mid-year and End of Year Fiscal Reporting Including Carry Over

Reclamation and GCMRC will provide mid-year and end of fiscal year reporting of expenditures and carry over to TWG and AMWG.

3.6 Budget Spreadsheet and Work Plan

Reclamation and GCMRC will coordinate to provide a budget spreadsheet for the BAHG to review in January of each year based on either a new BWPH or modifications to the second year of the BWPH. The spreadsheet will include expected costs for each project based on the priority setting provided by AMWG and discussions with the BAHG. This spreadsheet will be used by TWG to provide initial budget

recommendations to AMWG. Reclamation and GCMRC will coordinate to provide a budget spreadsheet, work plan, and hydrograph to the BAHG in the spring of the first year of the BWPH development. The BWPH will be used by TWG to provide final budget recommendations to AMWG. During the second year of the budget, a full work plan would not be developed, rather a memo from GCMRC and/or Reclamation, outlining changes to the work plan would be provided in addition to a modified budget spreadsheet.

3.7 Hydrograph Development

The hydrograph of releases from Glen Canyon Dam emerges from a 24-month modeling study accomplished by Reclamation. Modeling outputs reflect anticipated inflows and reservoir storage to project annual and monthly dam releases. Daily fluctuations are predicated on agreements in the 1996 Record of Decision and the 2008 FONSI on dam operations. The TWG will be provided with Reclamation's 24-month findings, recognizing that these projections change with each month, to advise them of the most probable future release scenarios. TWG members will provide a recommendation for the hydrograph within the BWPH to AMWG at their draft and final BWPH meetings.

3.8 Roles of GCDAMP Entities

- TWG Chair: The chairman of the TWG will endeavor to provide appropriate time for full discussion of the budget on the TWG agenda, and encourage Reclamation and GCMRC to provide budget documents to the TWG sufficiently in advance of meetings to allow for full review prior to TWG meetings.
- GCMRC: Develop budget spreadsheets and work plans in a timely manner that is responsive to Program Direction (SSP/MRP), and to TWG and AMWG requests and comments on draft documents.
- Reclamation: Develop budget spreadsheets, work plans, and hydrographs for their portion of the budget that is responsive to TWG and AMWG requests and comments on draft documents.
- AMWG: Review the initial budget at its spring meeting and provide input to Reclamation, GCMRC and TWG on priorities and general budget direction and development. Review the final budget recommendation from TWG at its fall meeting and make a final budget recommendation to the SOI.
- TWG: Review the initial budget spreadsheet and initial BAHG budget recommendations and formulate an initial budget recommendation to AMWG at its spring meeting. Review the draft final budget spreadsheet and work plan and make final budget recommendation at its summer meeting for AMWG review at its fall meeting.
- BAHG: Review the initial budget spreadsheet and draft final budget spreadsheet, work plan, and hydrograph with GCMRC and Reclamation, and with input from the CRAHG, make modifications as necessary, and provide recommendations to TWG at its spring and summer meetings.
- Science Advisors: Participate in TWG and AMWG deliberations on the budget in coordination with the Executive Coordinator. Review the final work plan, budget, and hydrograph proposals submitted to the AMWG for review and provide written feedback to both GCMRC and the AMWG.
- Other Cooperators: Other agencies and cooperators that are conducting work relevant to the GCDAMP are invited to submit workplans for inclusion in the GCDAMP and report upon those workplans at the Annual Reports Meeting.

3.9 Criteria for Review and Revisions of the Year-two Budget

In order for this budget process to be successful in reducing the administrative burden on the GCDAMP it must have clear criteria for making changes to the year-two budget. The burden of an appropriate rationale for proposing a change falls upon the proposer to make a persuasive argument to the TWG. Proposed modifications to the budget will be prepared and distributed to the TWG two weeks ahead of a TWG meeting using an agreed upon format (to be provided by GCMRC). The TWG will determine if the argument meets the criteria agreed upon in this section. The following criteria will be used by GCMRC, Reclamation, and TWG in making recommendations to AMWG on changes to the year-two budget:

- **Scientific requirement or merit:** New information gained during the implementation of monitoring and research projects may result in a need to alter methods, scope, or timelines in the work plan or substantially alter or eliminate a project. This is a science-based need based on the experience of implementing an already approved project. This does not represent a shifting priority of individual GCDAMP members, but a scientific learning process which results in needed modifications to carry out the goals.
- **Administrative needs:** Administrative or programmatic changes may occur within the time-frame of an approved budget. Examples include the mitigation of an impact as a result of ESA consultation or tribal consultation, a change in the “overhead” charges of a federal or state agency, a significant reduction of the balance of the Colorado River Basin Fund or a failure to secure NPS permits for work in the Grand Canyon. As soon as an administrative event occurs that affects the budget, GCMRC (or relevant agency – such as DOI) will notify the TWG. Depending upon the magnitude or urgency of the event, the TWG Chair will add an agenda item to the next TWG meeting or convene a TWG conference call.
- **Unfunded projects and carryover funds:** In developing the budget, TWG will recommend a prioritized list of unfunded projects in the budget and work plan, such that in the case that funds are available in year-one or two beyond what was anticipated, those projects can be funded in that order. The TWG, at its next scheduled meeting will determine if there are other considerations regarding it’s prioritized list that should be considered when implementing those projects. These unfunded projects would also be considered for funding through the 3-year appropriated funds process.
- **New initiatives:** New initiatives or modifications to projects that may or may not be based on a scientific merit must be vetted through AMWG before they can be recommended by TWG in a final budget. New initiatives considered by the AMWG must be fully described and submitted to the AMWG in advance of an AMWG meeting. The TWG will discuss proposed new starts via the BAHG soon after the annual reporting workshop. The BAHG will consider those and if the BAHG finds merit in the proposal(s), and the TWG so recommends, those will be presented to AMWG by the TWG Chair at the next AMWG meeting. AMWG will consider whether to direct TWG to work on these new initiatives or whether to consider them during the next full budget cycle. Given that the budget will likely be fully accounted for, direction on where to locate the funds within the current budget will be requested from AMWG.

3.10 Strategic 3-year Budget Outlook

Annually, the GCDAMP would prepare a strategic 3-year outlook budget spreadsheet (no workplan) that describes major funding needs by program and any unfunded initiatives that are foreseen. This would help to determine whether the GCDAMP would seek funding, likely from federal appropriations, in addition to the hydropower revenues that provide the majority of funding for the program.

NOTE: This table has been superceded by the revised table 1 provided by DOI attached above to the AIF.

Table 1. Description of the approximate timelines for milestones and activities in the development of a biennial budget and consideration of changes to the second year of the budget.

Month	Year-One (development of BWPH)	Year-Two (changes to year-two)
December	GCMRC, Reclamation, and cooperators produce the annual project reports document	GCMRC, Reclamation, and cooperators produce the annual project reports document
January	Annual reports meeting (2 days) followed by 1-day TWG meeting to review TWG concerns and provide guidance to the BAHG. TWG reviews progress in addressing Information Needs and research accomplishments arising from the annual reports meeting and other information provided by GCMRC and Reclamation.	Annual reports meeting (2 days) followed by 1-day TWG meeting to review budget and provide guidance to BAHG on any potential changes to consider for year-two of the budget. TWG reviews progress in addressing Information Needs and research accomplishments arising from the annual reports meeting and other information provided by GCMRC and Reclamation.
February-March	GCMRC and Reclamation will provide initial biennial budget spreadsheet to the BAHG. BAHG meets to consider an initial budget recommendation to TWG focusing on priorities and major issues to be reconciled.	GCMRC and Reclamation will provide a revised budget spreadsheet (for year-two) and any modified project work plans to the BAHG. Abbreviated BAHG review of recommended changes based on the criteria will occur with a recommendation to TWG at its next meeting.
March	TWG meets to consider an initial budget recommendation to AMWG including consideration of a draft hydrograph provided by Reclamation. Consider priorities for funding, major unresolved issues, and guidance from AMWG on general direction.	TWG and SA will review BAHG recommended changes to year-two of the BWPH and make recommendations to AMWG. If no new initiatives that weren't already prioritized and funded with carry-over are proposed, then this can represent a final recommendation. If new initiatives that require AMWG initial review and changing priorities are proposed, then this would represent an initial proposal for AMWG review at their next meeting.
Early May	AMWG meets to consider TWG's initial budget recommendation and provide guidance to TWG on priorities, general direction, and guidance on any major unresolved issues.	AMWG meets to consider changes to year-two of the BWPH. If new initiatives are proposed by TWG, provide guidance to TWG on priorities, general direction, and guidance on any new initiatives. If TWG has proposed a final recommendation, then consider and provide a recommendation to the SOI if changes are needed.
May-June	GCMRC and Reclamation provides the work plan to the BAHG and SAs by early May for their consideration of a BWPH to TWG.	IF NEEDED: GCMRC and Reclamation work with the BAHG to implement new initiatives as requested by AMWG (based on TWG's recommendations).
Late June/Early	TWG meets to consider a BAHG recommendation, SA review comments,	IF NEEDED: TWG meets to consider year-two recommended changes and provide a

July	and hydrograph, for a recommendation to AMWG on a BWPH.	recommendation to AMWG.
Late August/Early September	AMWG meets to consider a BWPH recommendation from TWG in order to make a recommendation to the SOI.	IF NEEDED: AMWG meets to consider a BWPH recommendation from TWG in order to make a recommendation to the SOI.
September	SOI reviews the budget and work plan recommendation from AMWG.	If changes are recommended by AMWG, the SOI reviews the budget and work plan recommendation.

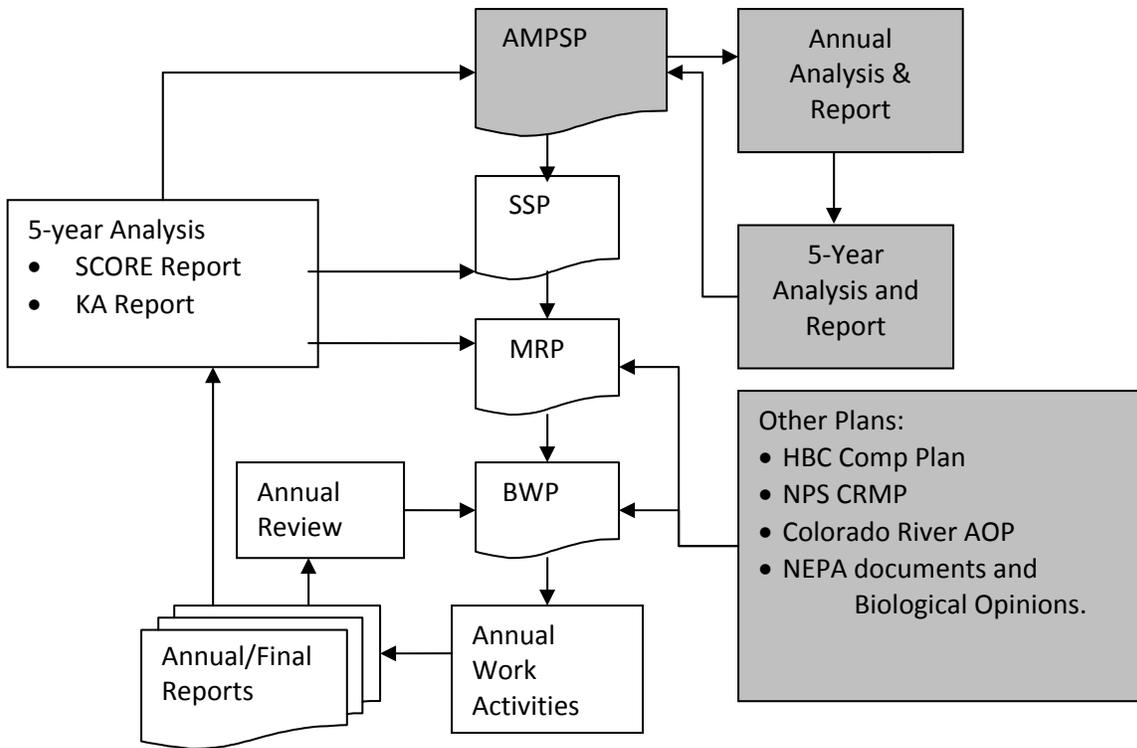


Figure 1. Collaborative science planning and implementation process from GCMRC’s Strategic Science Plan. The Glen Canyon Dam Adaptive Management Program and the Department of the Interior have lead responsibility for the shaded boxes. The Grand Canyon Monitoring and Research Center has lead responsibility for the boxes that are not shaded.

Figure 2. Representation of the two-year budget process in the Upper Colorado River Endangered Fish Recovery Program (attached pdf).