

This is an annotated copy of the Reclamation draft with Comments by David Braun, Sound Science LLC and GCDAMP Executive Coordinator, Science Advisors Program. The comments are intended to provide feedback to Reclamation, the GCMRC, and the TWG on ways in which the proposed work for FY18-20 might be clarified/improved/strengthened. The comments focus on the implications of the LTEMP EIS/ROD objectives and specific needs highlighted by the EIS/ROD for “learning” through adaptive management. The comments below are intended for discussion purposes only and are not for citation, quotation, or wider distribution.

DRAFT - Bureau of Reclamation, Glen Canyon Dam Adaptive Management Program, Triennial Budget and Work Plan Fiscal Years 2018–2020

Introduction

The Glen Canyon Dam Adaptive Management Program (GCDAMP) is a science-based process for continually improving management practices related to the operation of Glen Canyon Dam (GCD) by emphasizing learning through monitoring, research, and experimentation, in fulfillment of the consultation and research commitments of the Grand Canyon Protection Act (GCPA). The Bureau of Reclamation’s (BOR) Upper Colorado Region is responsible for administering funds for the GCDAMP and providing those funds for monitoring, research, and stakeholder involvement. The majority of program funding is derived from hydropower revenues; however, supplemental funding is provided by various Department of the Interior (DOI) agencies that receive appropriations. These agencies include BOR, the U.S. Geological Survey (USGS), the National Park Service (NPS), the U.S. Fish and Wildlife Service (USFWS), and the Bureau of Indian Affairs (BIA).

The budget and work plan for fiscal years (FY) 2018–2020 was largely developed in consideration of the Record of Decision for the Glen Canyon Dam Long-Term Experimental and Management Plan Environmental Impact Statement (LTEMP EIS) and on the basis of outcomes from previous work plans. Additional consideration was given to meeting commitments outlined in: (1) the 2007 USFWS Biological Opinion for the Proposed Adoption of Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Opinion); (2) the 2016 USFWS Biological Opinion for the Long-Term Experimental and Management Plan Environmental Impact Statement (LTEMP EIS)(2016 Opinion); and (3) Section 106 of the National Historic Preservation Act (NHPA) and the Draft 2016 Programmatic Agreement.

Preliminary budget estimates in this draft are rounded to the nearest \$1,000. A consumer price index of 1% was assumed for 2018, 2019, and 2020.

A. Adaptive Management Work Group (AMWG) Costs

A.1. AMWG Program Management

This budget represents BOR staff costs to perform the daily activities required to support the Adaptive Management Work Group (AMWG), the GCDAMP Federal Advisory Committee Act (FACA) committee. The work includes completing assignments resulting from AMWG meetings, consulting with stakeholders on a variety of GCDAMP issues relating to the operation of GCD, disseminating pertinent information to the AMWG, preparing and tracking budget expenses, and updating BOR's web pages. BOR also responds to regular requests from the General Services Administration (GSA) to complete FACA reports and incorporate meeting and member information into the FACA database. BOR also organizes stakeholder travel to AMWG meetings, activities that range from preparing travel authorizations to completing travel vouchers.

The primary goal is to perform all work associated with the AMWG in a timely and efficient manner, while using the funds available as prudently as possible. Secondary goals include increasing each stakeholder's awareness of significant budget and legislative issues related to the GCDAMP, improving working relationships with the AMWG members/alternates, finding constructive ways to resolve differences, and addressing individual concerns in an open and accepting forum of discussion.

BOR will work to ensure that personnel costs will not exceed what has been proposed in the budget unless Federal employee salaries are increased above the consumer price index (CPI). BOR staff will provide budget information to the AMWG on a regular basis. Completed work products will be of high quality and promptly distributed to AMWG members/alternates and interested parties. Budget reports will be presented in a format conducive to AMWG needs.

Budget FY18 = \$220,000 FY19 = \$222,000 FY20 = \$224,000

A.2. AMWG Member Travel Reimbursement

This budget covers the costs to reimburse AMWG members or alternates to attend regularly scheduled AMWG meetings.

Reimbursing AMWG members or alternates for travel expenses is done to encourage their attendance at all meetings. Many members live outside of Phoenix or Flagstaff Arizona, where meetings are often held. As a result, many members must incur travel costs. Having BOR provide reimbursement to AMWG members or alternates for air travel or mileage for the use of private vehicles, as well as other related travel costs such as hotel, per diem, and rental car increases opportunities for members to participate in a variety of AMWG assignments. Because BOR can purchase airline tickets at the Federal Government rate, there are additional cost savings to the program.

The GCDAMP benefits from having all AMWG members participating in regularly scheduled meetings. As a collective body, they address and resolve concerns associated with the operation of GCD and make recommendations to the Secretary of the Interior for continued science efforts performed below the GCD.

Budget FY18= \$20,000 FY19 = \$20,000 FY20 = \$20,000

A.3. AMWG Reclamation Travel

This budget supports travel expenses BOR staff incur to attend AMWG and ad hoc group meetings. The primary goal is for BOR staff to be able to travel to meetings and participate in completing AMWG/TWG assignments. By doing so, the program benefits from greater interaction between BOR staff and GCDAMP members, and opportunities for BOR staff to obtain the latest results from monitoring and research being conducted by the GCDAMP.

BOR staff will be involved with AMWG/TWG members in completing work assignments and resolving issues that affect the GCDAMP. They will develop better working relationships with all involved and work toward consensus with AMWG members on a variety of issues.

Budget FY18 = \$20,000 FY19 = \$20,000 FY20 = \$20,000

A.4. AMWG Facilitation Contract

This budget supports a facilitator who is under contract to BOR to provide facilitations services for AMWG meetings. This person may also assist AMWG ad hoc groups or TWG in completing assignments.

The facilitator's primary responsibility is to keep the AMWG meetings organized and help the members reach consensus on important issues. The facilitator will create an atmosphere in which the members and other participants at AMWG meetings feel comfortable expressing their individual viewpoints. In addition the facilitator assists Reclamation in coordinating meetings, developing agenda's, and provides follow up after meetings that include action items and meeting minutes.

Budget FY18= \$90,000 FY19 = \$91,000 FY20 = \$92,000

A.5. Public Outreach

A.5.1 Reclamation Public Affairs and Public Outreach Ad Hoc Group

This budget covers the expenses for BOR staff and the Public Outreach Ad Hoc Group (POAHG) to develop materials for the GCDAMP public outreach efforts. This item includes BOR public affairs staff attendance at AMWG meetings.

BOR public affairs staff and the POAHG, as appropriate, will work to develop materials to inform and educate the public on the goals and administration of the GCDAMP. They will keep other GCDAMP members advised of progress and expenditures.

Products may include fact sheets, web site information, tribal outreach materials, video B-roll, special events, conference participation, and other pertinent means of advising the public and program members on the achievements of the GCDAMP.

Budget FY18= \$25,000 FY19 = \$25,000 FY20 = \$26,000

A.5.2 Administrative History Project

The GCDAMP was initiated in 1996 and despite consistent record documentation and retention, the administrative portion of the program has not been synthesized in a manner that allows an easy review of the progression of ideas, discussion topics, research, recommendations, decisions and achievements over time. New members of TWG and AMWG and other interested parties, also need concise, accessible orientation materials that provide an overview of GCDAMP, the stakeholders, and past actions the program has taken.

The Administrative History Project implements goals of the Public Outreach Ad Hoc Group by providing a better understanding of the history of the GCDAMP, its work, and participants. The project, which began in FY2017, is anticipated to continue through FY2021, and undertake the following:

- Develop oral histories and interviews with AMP historical figures
- Create an annotated bibliography for program related literature
- Create a website and library database for information archival and retrieval
- Create a chronological program overview including participants
- Develop a new participant's handbook for the AMP.

Budget FY18 = \$50,000 FY19 = \$50,000 FY120 = \$50,000

Total Public Outreach Budget FY18 = \$75,000 FY19 = \$75,000 FY20 = \$76,000

A.6. AMWG Other

This budget represents some of the other "miscellaneous" expenses incurred in operation of the AMWG, including the following expenses:

- Overnight mailings of AMWG meeting packets
- Copying of reports
- Purchasing meeting materials (cassette tapes, markers, paper, software upgrades for GCDAMP Web site posting, etc.)
- Purchasing equipment (audio recording/transcribing machines).

In addition to the expenses noted above, training courses are often required for staff to keep current on environmental issues, FACA changes, computer technology improvements, etc. The primary goal is to limit spending on “other” items as much as possible. By doing so, more money can be applied to science and research. Other expenses will be kept to a minimum in an effort to reduce the administrative portion of the GCDAMP budget.

Budget FY18 = \$15,000 FY19 = \$15,000 FY20 = \$15,000

B. Technical Work Group (TWG) Costs

B.1. TWG Program Management

This budget represents BOR staff costs to perform the daily activities required to support the TWG, a subgroup of the AMWG. The work includes completing assignments resulting from TWG meetings, consulting with stakeholders on a variety of GCDAMP issues relating to the operation of GCD, disseminating pertinent information to TWG members, preparing and tracking budget expenses, and updating the Web pages BOR maintains for the program. BOR also completes all stakeholder travel activities, which range from preparing travel authorizations to completing travel vouchers.

Personnel costs will not exceed what has been proposed in the budget unless Federal employee salaries are increased above the CPI. BOR staff will provide budget information to the TWG on a regular basis. Completed work products will be promptly distributed to TWG members/alternates and interested parties.

Budget FY18 = \$120,000 FY19 = \$121,000 FY20 = \$122,000

B.2. TWG Member Travel Reimbursement

This budget provides funds to reimburse TWG members or alternates for expenses incurred to attend regularly scheduled TWG meetings.

Reimbursing TWG members or alternates for travel expenses is done to encourage their attendance at all meetings. By providing reimbursement to TWG members or alternates for air travel or mileage for the use of private vehicles, as well as other related travel costs such as hotel, per diem, and rental car increases opportunities for members to participate in a variety of TWG assignments. Because BOR can purchase airline tickets at the Federal Government rate, there are additional cost savings to the program.

The GCDAMP will benefit from having all the TWG members participate in regularly scheduled meetings. As a collective body, TWG members address and resolve concerns associated with the operation of GCD and make recommendations to the AMWG for continued research.

Budget FY18 = \$25,000 FY19 = \$25,000 FY20 = \$26,000

B.3. TWG Reclamation Travel

This budget covers travel expenses that BOR staff will incur to prepare for and attend TWG meetings and ad hoc group meetings resulting from AMWG/TWG assignments. The primary goal is for BOR staff to be able to travel to meetings and participate in completing AMWG/TWG assignments. BOR staff will continue to be involved in meeting with AMWG/TWG members to complete work assignments and resolve issues that affect the operation of GCD. They will develop better working relationships with all involved and work toward consensus on a variety of GCDAMP issues.

Budget FY15 = \$20,000 FY16 = \$20,000 FY17 = \$20,000

B.4. TWG Chair Reimbursement/Facilitation

This budget supports a person who is under contract to BOR to serve as the chairperson for the TWG. This person may also assist AMWG/TWG ad hoc groups in completing assignments.

The chairperson's primary responsibility is to conduct regularly scheduled TWG meetings. The chairperson also participates in ad hoc group assignments and works closely with BOR and GCMRC staff in setting meeting agendas. The chairperson follows up on TWG and ad hoc group assignments and ensures that information is shared with the members and alternates in a timely manner.

The chairperson creates an atmosphere in which the members and other participants at TWG meetings feel comfortable expressing their individual viewpoints. The chairperson will bring the TWG members to consensus on sensitive issues with the ultimate goal of making recommendations to the AMWG that incorporate the best scientific information available to the GCDAMP. The chairperson will follow up on action items and make assignments as necessary to accomplish TWG objectives.

In the event that the TWG chair salary is covered through funding outside the GCDAMP, these funds can be used by BOR for TWG-related administrative purposes or to cover facilitation and support for TWG-related issues. Part, or all, of this budget may be used for facilitation services for TWG meetings, support for TWG ad hoc groups, or support completing TWG assignments.

Budget FY15 = \$35,000 FY16 = \$35,000 FY17 = \$36,000

B.5. TWG Other

This budget represents some of the other "miscellaneous" expenses incurred in support of the TWG, including the following expenses:

- Overnight mailings of TWG meeting packets
- Copying of reports

- Purchasing meeting materials (cassette tapes, markers, paper, etc.)
- Purchasing equipment (audio recording/transcribing machines)

The primary goal is to limit spending on “other” items as much as possible. By doing so, more money can be spent on science and research. Other expenses will be kept to a minimum in an effort to keep within the GCDAMP budget.

Budget FY18 = \$15,000 FY19 = \$15,000 FY20 = \$15,000

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C. Program Administration, ESA Compliance, and Management Actions

C.1. Administrative Support for NPS Permitting

This budget item provides funding to support the Grand Canyon National Park permitting of research and monitoring projects conducted under the GCDAMP. Grand Canyon National Park employs a permitting specialist and other staff who review all proposals for projects to be completed in the park and to determine NEPA, ESA and NHPA compliance requirements. The program provides these funds under the auspices of the GCDAMP to offset the park's administrative burden in providing permitting services. The primary goal is to ensure that projects conducted under the GCDAMP are reviewed and permitted by the NPS. Projects conducted under the GCDAMP will receive permits from the NPS in a timely manner.

Budget FY18 = \$138,000 FY19= \$139,000 FY20 = \$141,000

C.2. Contract Administration

This budget covers the expenses for BOR acquisitions and contracting staff to prepare and execute contracts associated with the GCDAMP. Specifically, these contracts include GCMRC science and monitoring, NPS monitoring and permitting, AMWG facilitation, TWG chairperson reimbursement, Science Advisors program, Tribal participation and resource monitoring, Administrative History, and programmatic agreement (PA) contract work.

BOR contract specialists will accurately apply funds spent on individual contracts to ensure costs do not exceed contract limits. They will keep the BOR Environmental Resources Division (ERD) contracting technical representative informed as to those charges so accurate reporting can be made to both AMWG and TWG members.

BOR contracting technical representatives will ensure that individual contractors are fulfilling the requirements of their contracts. They will maintain accurate records of payments made against the contracts and will keep BOR staff informed of discrepancies or concerns. Work will be completed on time and within the limits of the contract.

Budget FY18 = \$100,000 FY19 = \$101,000 FY20 = \$102,000

C.3. Science Advisor Program

This budget provides funding to support Science Advisors Program. The purpose of the Science Advisors Program is to periodically conduct reviews on GCDAMP resource-specific monitoring and research programs, and carry out other advisory tasks as requested by the AMWG. The Science Advisors provide recommendations to the AMWG and the GCMRC regarding monitoring, priorities, integration, and management of natural, cultural, and recreational resources affected by Glen Canyon Dam and provide decision support to participating agencies and stakeholders.

Preliminary tasks identified for the FY2018-2020 work plan are:

1. Support and guide annual Knowledge Assessment process, updating methods while maintaining methodological and data continuity, and integrating and digesting the results in close coordination with TWG and GCMRC. Est. cost: \$45,000/year + CPI.
2. Establish and manage a standing panel of six year-round science advisors, to: (a) review the Knowledge Assessment, Annual Reporting, and annual reports to provide feedback to the TWG and GCMRC on annual work plans and the next (FY21-23) triennial work plan; and (b) provide recommendations for organizing and recruiting experts for independent external reviews (see below). Est. cost: \$45,000/year + CPI.
 - In the absence of this standing panel, the Executive Coordinator's office will handle the listed activities internally. Est. alternative cost: \$25,000/year + CPI.
3. Coordinate and/or conduct one external review per FY focused on a topic for which the GCMRC, TWG, and/or AMWG need(s) independent review and recommendations. The Executive Coordinator will identify up to five potential panel topics for the FY18-20 work plan, and will organize reviews of three of these five over the course of these three years, with the topic for FY18 fixed in the triennial work plan and the other two to be selected based on evolving priorities for successive years. Est. cost: \$55,000/year + CPI.
4. Maintain routine interactions with the GCMRC, TWG, and AMWG to maintain full currency in the actions, knowledge systems, and emerging ideas of the GCDAMP to guide SAP and Executive Coordinator support of the AMP. This task includes Executive Coordinator attendance at a reasonable number of meetings in person and the rest via web link. Est. cost: \$40,000/year + CPI.
5. Maintain routine program administration, including regular communications with Reclamation, financial management, and archiving of records. Est. cost: \$20,000/year + CPI.

Budget FY18 = \$205,000 FY19 = \$207,000 FY20 = \$209,000

C.4. Integrated GCDAMP Stakeholder River Trip

The objective of this project is to provide an opportunity for tribal representatives and GCDAMP stakeholders to articulate their respective values, concerns and issues in a field situation. The river trip also provides the opportunity for AMWG members to visit the canyon and gain a greater understanding of GCDAMP resources and issues. The river trip will be agenda-driven and is intended to provide an opportunity for GCDAMP stakeholders to share perspectives about their values and positions respective to the Grand Canyon and the Colorado River. It is expected that one trip every 2 or 3 years is the appropriate frequency.

Budget FY18 = \$0 FY19 = \$40,000 FY20 = \$0

C.5. Experimental Management Fund

This budget item reserves funds for conducting experiments or management actions under the GCDAMP. The funds will be available to conduct experiments or management actions when conditions are appropriate. If the funds are not needed in a given year, they will be transferred to the Native Fish Conservation Contingency Fund. *[Note: Reclamation will work with DOI agencies, the BAHG and TWG to identify example projects that may be appropriate for the Experimental and Management Fund prior to the next draft of this budget and work plan.]*

Budget FY18 = \$500,000 FY19 = \$505,000 FY20 = \$510,000

C.6. Native Fish Conservation Contingency Fund

This budget item tracks the native fish conservation contingency fund. The goal of this budget item is to ensure that funds are available for native fish conservation actions or nonnative fish control the event this conservation action is needed for endangered humpback chub. This is a fund consisting of GCDAMP carryover funds from prior years and serves to ensure that funds are available for the conservation actions should the need arise. This fund will implement conservation actions as defined in the 2007 and 2016 Opinions. Should excess funds become available beyond those needed for conservation actions, these funds could be expended on other research, monitoring, and management actions that help conserve native fish. This fund will be incrementally increased with future carryover dollars, when available.

Carryover FY16 carryover = \$1,060,000 FY17 anticipated carryover = *[to be filled in at a later date]*

C.7. Experimental Vegetation Treatment

As described in the LTEMP Record of Decision, experimental riparian vegetation treatment is included as mitigation for dam operations within the Colorado River Ecosystem. Vegetation treatment actions on NPS managed lands will be implemented by NPS consistent with NPS Management Policies (NPS 2006) and will occur only within the CRE in areas that are influenced by dam operations. The NPS will work with tribal partners and GCMRC to experimentally implement and evaluate a number of vegetation control and native replanting activities on the riparian vegetation within the Colorado River Ecosystem in Grand Canyon National Park, Glen Canyon National Recreation Area, and the Hualapai reservation. These activities would include ongoing monitoring and removal of selected nonnative plants, species in the corridor, systematic removal of nonnative vegetation at targeted sites, and native replanting at targeted sites and subreaches, which may include complete removal of tamarisk (both live and dead) and revegetation with native vegetation. Treatments fall into two broad categories, including the control of nonnative plant species and revegetation with native plant species.

The 3-year experimental vegetation treatment project is part of implementation of LTEMP ROD to mitigate for declines in New High Water Zone riparian vegetation due to dam operations. This project has 5 major objectives:

1. Control exotic plants - The focus would be on the treatment of priority invasive exotic plants present due to dam operations that have significant and proven effects on native vegetation and wildlife.
2. Restore native riparian plants - Native plant species would be planted in high priority areas, including where extensive tamarisk mortality may adversely impact native wildlife habitat and campsite functionality.
3. Develop a long-term strategy to monitor the river corridor for new highly invasive exotic riparian species that would be favored by dam operations.
4. Control campsite vegetation encroachment – Strategic removal of both native (e.g. arrowweed) and non-native species (e.g. Russian thistle and puncture vine) would occur at priority sites where recreational camping area has been lost to encroachment.
5. Protect archaeological sites - Priority sites would be chosen where GCMRC research has provided evidence of past wind transport of sand uphill near known or potential cultural sites; native and non-native vegetation would be removed at these sites to facilitate future wind transport which would be monitored within an adaptive management framework.

The project area is from Glen Canyon dam to Pearce Ferry. Project partners are the National Park Service, associated tribes, GCMRC, Bureau of Reclamation, youth corps and volunteers.

Project costs include project coordination, planning and administration costs (including an annual coordination and planning meeting for NPS, GCMRC and tribes, GCMRC veg data processing and transfer to NPS), personnel costs (NPS seasonal and term biological technicians for field work, data entry and reporting, NPS term archeologist for on-site field work, tribal staff for on-site field work, GIS and data staff support), supplies (tools and herbicides, plant propagation, fuel for boat travel), and contracts,

Commented [DPB1]: This is a matter identified in the GCMRC draft work plan that needs significant coordination among the GCMRC, Reclamation, NPS, and tribes to determine what learning needs to emerge from this experimental project, to support adaptive management under AMP oversight. The five listed objectives do not indicate what options may need to be compared, to provide guidance to the AMP. For example, what are the desired outcomes from planting native vegetation? What species, in what combinations? Some combinations might favor botanical diversity, or favor native wildlife, or favor desirable characteristics for camping; and these outcomes might be mutually exclusive. Similarly, how will the project determine the right balance between controlling vegetation encroachment and enhancing riparian ecological outcomes? These are matters that need to be decided not just among the cooperating parties but by the larger stakeholder community, since the decisions potentially will affect several other LTEMP ROD objectives, including archaeological and cultural resources, recreational experience, natural processes, and tribal values.

Commented [DPB2]: For example, there appears to be a need here to establish criteria for triggering such removal and determining where/over what area it needs to take place in balance with other objectives. There also may be a need to compare alternatives removal methods. These are matters that need to be incorporated into the "learning" process for this experiment as early as possible, to support adaptive management.

Commented [DPB3]: I would recommend that, before any planning can take place for actual vegetation management actions, a larger plan needs to be put into place establishing the goals and design of the experiment based on what needs to be learned from the perspective of the AMP under the LTEMP ROD. The results of the 2017 Knowledge Assessment suggest large gaps in knowledge and large areas of uncertainty, including some that result from unclear objectives. The immediacy of the need for coordination here is why the SAP list of proposed review topics (not included in the present abstract) included conducting a workshop on riparian vegetation management for the CRE under the AMP, to establish overarching goals, learning needs, etc.

agreements and river support (cooperative agreement for greenhouse operation costs, river support for field work, youth crew agreement to support field work).

Budget FY18 = \$210,000 FY19 = \$273,000 FY20 = \$294,000

C.8 Evaluation of means to prevent fish passage through GCD

In the 2016 LTEMP EIS BO, Reclamation committed to evaluate means of preventing the passage of deleterious invasive nonnative fish through Glen Canyon Dam. Potential options to minimize or eliminate passage through the turbine or bypass intakes, or minimize survival of nonnative fish that pass through the dam would be assessed. While feasible options may not currently exist, technology may be developed later in the LTEMP period that could help achieve this goal. This project would involve the gathering of information, documentation and evaluation of existing and emerging methods and technologies that may be considered for further feasibility analysis at a later date.

Budget FY18 = \$0 FY19 = \$100,000 FY20 = \$0

Commented [DPB4]: This section would benefit from a discussion of how Reclamation intends to carry out the review of potential options. Will this be an external contract, an internal Reclamation review, or a task assigned to one of the AMP member agencies; and would there be a 'steering committee' to help guide the effort? Would the review of options need to consider how various options might be affected by varying lake elevation?

C.9 Evaluation of temperature control methods at GCD

In the 2016 LTEMP EIS BO, Reclamation committed to explore the efficacy of a temperature control device, or methods, at Glen Canyon Dam to respond to potential extremes in hydrological conditions due to climate conditions that could result in nonnative fish establishment. The includes evaluations of current and evolving technological advances that could provide for warming and cooling the river in both high- and low-flow discharge scenarios, and high and low reservoir levels. This project would involve the gathering of information, documentation and evaluation of existing and emerging methods and technologies that may be considered for further feasibility and risk analysis at a later date.

Budget FY18 = \$0 FY19 = \$0 FY20 = \$100,000

Commented [DPB5]: This section, too, would benefit from a discussion of how Reclamation intends to carry out the review of potential options. Will this be an external contract, an internal Reclamation review, a SAP review (as was done during the last cycle of discussions about TCDs), or a task assigned to one of the AMP member agencies; and would there be a 'steering committee' to help guide the effort? Presumably any discussion about TCDs would also need to take into account the way(s) in which such a device would be affected by varying lake elevation and lake thermal structure.

C.10 Southwestern Willow Flycatcher and Yuma Ridgway's Rail Surveys

In the 2016 LTEMP EIS BO, Reclamation committed to monitoring the two endangered birds consulted on in the BO: the Yuma Ridgway's rail and the southwestern willow flycatcher. Reclamation will partially assist in funding National Park Service staff in conducting Yuma Ridgway's rail surveys once every three years and conduct southwestern willow flycatcher

surveys once every two years for the duration of the LTEMP. These monitoring trips will be coordinated and combined with existing trips. Reporting and documentation will be provided to Reclamation by NPS staff certified to survey nesting birds. Both birds would be surveyed in 2018, while only the Southwest willow flycatcher would be surveyed in 2020.

Budget FY18 =\$17,000 FY19 = \$0 FY20 = \$10,000

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Commented [DPB6]: Crucial questions might be how these birds use (or do not use) riparian vegetation of the composition and structure present or potentially to become established in the CRE, and possibilities for their becoming more widely established along the CRE. The findings would bear on decisions vis-à-vis riparian vegetation management. On a larger scale, too, the bird surveys should be considered part of a growing body of investigations concerning T/E species and other native wildlife along the CRE other than the T/E fishes, and the ways that the river, dam operations, and other LTEMP actions may affect the larger CRE ecosystem – all topics within the AMP scope.
An additional question here: Is there a way to engage citizen science and the presence of other monitoring teams in the effort to assess flycatcher, rail and other avian activity along the CRE? Would it be useful if temporary audio stations could be put in place when monitoring teams are camped for other activities or by boating guides, to collect audio data for the durations of those camping visits?

D. Cultural Resources Program

D.1. Cultural Resources Program Administrative Costs

This budget funds the salary and travel expenses of BOR cultural resources staff to administer the National Historic Preservation Act (NHPA) compliance for the GCDAMP, which includes the Section 106 compliance, documentation for the Determination of Eligibility, contracting and reviewing of proposals and reports, annual cultural resources reporting and meeting, costs associated with maintaining the grants for tribal participation in the GCDAMP and tribal contracts to implement tribal monitoring protocols, general consultations, and Historic Preservation Plan development. This also includes the implementation of the new 2017 Programmatic Agreement (PA) for Glen Canyon Dam Operations, the 2012 Memoranda of Agreement (MOA) documents for Non-native Fish Control, and the HFE Protocol, as they may be amended. The project goals and objectives are:

- Management of five tribal grants from both appropriated funds for participation in the GCDAMP and power revenues to provide implementation of tribal monitoring protocols.
- Management of the monitoring and mitigation of at-risk historic properties and other related projects associated with implementation of NHPA compliance agreements for the operation of Glen Canyon Dam.
- Reclamation cultural resource personnel attending, as needed, TWG and AMWG meetings, Cultural Ad Hoc Group meetings, and conducting meetings required by the 2017 PA and revised 2012 MOAs.

Compliance with the NHPA, Section 106 is the primary outcome of this project, which also ensures accountability for the tribal grants and contracts and appropriate use of both appropriated dollars and power revenues. The budget is approximately one full time employee, including DOI overhead (35%).

Budget FY18 = \$150,000 FY19 = \$151,000 FY20 = \$153,000

D.2. Cultural Resources Program Contractor Support to Reclamation

This budget item is for contracted assistance to Reclamation for the development of the Historic Preservation Plan and ensuring GCDAMP compliance with Section 106. Additional tasks include coordinating and attending the annual PA implementation meeting, drafting the annual report. The contractor may solicit GCDAMP expertise and input on cultural resources issues to support the fulfillment of these tasks.

Project Goals and Objectives

- Assist in the administration and implementation of the PA. Assist with Reclamation's compliance with Section 106 of the NHPA.
- Assist with the development of the Historic Preservation Plan

Administrative support to Reclamation with ensuring compliance with the NHPA, Section 106 is the primary outcome of this project. Funding is greater in Year 1 of the work plan to cover initial costs of Historic Preservation Plan development.

Budget FY18 = \$150,000 FY19 = \$75,000 FY20 = \$76,000

D.3. Cultural Resources Monitoring – Glen Canyon (NPS)

Long-term monitoring of cultural resources in the Glen Canyon Reach is required under both Section 106 of NHPA and the Grand Canyon Protection Act. Implementation of long-term monitoring in the Glen Canyon reach will be conducted by National Park Service (NPS) through Glen Canyon National Recreation Area (NRA) and coordinated with other NPS entities, Reclamation, the Grand Canyon Monitoring and Research Center (GCMRC), Tribes, and other stakeholders.

This project will maintain a program of long-term monitoring in the Glen Canyon reach that meets the updated requirements of the 2017 PA for LTEMP and the associated Historic Preservation Plan. It will support the evaluation and documentation of effects to historic properties and inform the development of any mitigation measures identified to protect historic properties from documented adverse effects of dam operations. NPS would work with Reclamation to identify mitigation measures for any documented adverse effects at specific sites in Glen Canyon NRA. NPS will continue consultation concerning tribal values associated with Glen Canyon Reach with Hopi Tribe, Hualapai Tribe, Navajo Tribe, Southern Paiute Consortium, and Pueblo of Zuni. This consultation helps formulate a plan for ethnographic data collection to assist with mitigation of sites.

To project meets objectives of cultural resources protection on lands administered by Glen Canyon NRA using adaptive management processes for the NPS and BOR to achieve specific goals for identification, monitoring, documentation and mitigation actions with regard to cultural resources in the Glen Canyon reach during fiscal years 2018-2020.

Project Goals and Objectives

- Support Reclamation's Section 106 compliance responsibilities
- Monitoring and data collection in support of evaluation of impacts to historic properties.
- Documentation of effects to historic properties.
- Work with Reclamation to identify mitigation measures for any documented adverse effects at specific sites in Glen Canyon NRA

Compliance with the NHPA, Section 106 is the primary outcome of this project. The ultimate goal of the long-term monitoring program is to monitor and document effects to historic properties in the Glen Canyon reach. The data will be useful for identifying mitigation measures to remediate any sites in the Glen Canyon reach damaged by the operations of Glen Canyon Dam.

Budget FY18 = \$34,000 FY19 = \$26,000 FY20 = \$26,000

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D.3. Cultural Resources Monitoring – Grand Canyon (NPS)

The NPS, Grand Canyon will conduct data review, field work, data entry, analysis and report preparation. Field staff will utilize the existing 2016 Cultural Resource Management protocol and associated SOPs for all activities. Protocols will be used to streamline field activities. Additional data collection related to geospatial references and condition of archaeological sites will be gathered using a hardened field computer or hand-held unit and imported directly into the Cultural Resource geodatabase.

Project Goals and Objectives

- Support Reclamation’s Section 106 compliance responsibilities
- Conduct field assessments to update condition and impact data using existing monitoring protocols and subsequent updates as defined in the Historic Preservation Plan (HPP)
- Provide Reclamation site data to support the development and implementation of the HPP
- Review and update site information and associated treatment recommendations contained within Reclamation’s 2007 Geoarchaeological Investigations and Treatment Plan
- Coordinate with resource managers to design and implement appropriate management actions
- Streamline data collection and data mining for cultural resources along the river corridor and report annually to Reclamation on activities and findings

Compliance with the NHPA, Section 106 is the primary outcome of this project. The ultimate goal of the long-term monitoring program is to collect data useful for identifying mitigation measures to remediate sites damaged by the operations of Glen Canyon Dam.

Budget FY18 = \$48,000 FY19 = \$45,000 FY20 = \$45,000

D.5. Traditional Cultural Property (TCP) Documentation for Hualapai, Navajo and Paiute Tribes

Reclamation has identified the need to document individual Tribal Traditional Cultural Properties (TCPs) in order to treat the TCPs as historic properties under Section 106 of NHPA. Under previous contracts, Reclamation initiated the documentation process with the five AMWG tribes. The Hopi Tribe and the Pueblo of Zuni have completed TCP documentation. The Hualapai, Navajo and Paiute Tribes do not have documented TCPs. Future projects including Associated Values studies and projects related to Traditional Ecological Knowledge are based on TCP documentation. Tribal monitoring projects will also document the relationship with TCPs. This project provides funding to assist in the documentation of TCPs for Hualapai, Navajo and Paiute Tribes. The Pueblo of Zuni and the Hopi Tribe may require updates to their existing TCPs, as well.

Project Goals and Objectives

- Documentation of TCPs for Hualapai, Navajo and Paiute Tribes.

Compliance with the NHPA, Section 106 is the primary outcome of this project. The specific project outcome is the documentation of TCPs for the Hualapai, Navajo and Paiute tribes and possible updates to the TCPs for the Hopi Tribe and the Pueblo of Zuni.

Budget FY18 = \$30,000 FY19 = \$- FY20 = \$-

D.6. Tribal Associated Values Studies

Reclamation has identified that the implementation of associated values studies under Section 106, NHPA, is a mitigation measure or may identify mitigation strategies for any potential adverse effect to the character of historic properties as a result of the Glen Canyon Dam operations. Associated Values Studies are based on TCP documentation. Zuni completed an associated values study utilizing videography. FY2018 may begin an associated values study with the Hopi.

When historic properties are valued for their association with important historical events and important people, mitigation may be accomplished by documenting those associations. An example of a past GCDAMP associative value project is the Zuni associative values project which mitigates for losses of associative values through the production of a film that documents the Zuni relationship to Grand Canyon.

Project Goals and Objectives

- Complete Associated Values studies as a method of mitigation or to offer mitigation strategies for any potential adverse effects that may be identified.

Commented [DPB7]: The documentation of the TCPs will include information on the traditional ways in which the individual tribes value this landscape, specific features and places in that landscape, the life-forms and natural processes present, the activities tribal members may need to carry out in the landscape, and the ways that all people use and move through the landscape. This documentation necessarily will establish criteria for tracking Section 106 compliance with the TCP designations. At the same time, the kinds of information needed to inform the TCP nominations are also precisely the kinds of information that the GCMRC Project J.2 seeks to document. Additionally, the LTEMP EIS and ROD include the specific objective to "[m]aintain the diverse values and resources of traditionally associated Tribes along the Colorado River corridor through Glen, Marble, and Grand Canyons." The AMP cannot carry out this objective, nor can it assess the impacts of LTEMP actions on this objective, as also required by the ROD, without the specific information on valued conditions noted above. Implementation of the LTEMP therefore requires an immediate effort to establish a set of explicit criteria by which the tribes and the AMP can evaluate the impacts of LTEMP actions, based on the traditional values that will be articulated through the TCP process and GCMRC Project J.2. Without these criteria, and efforts to record and report on their status as required under Section 106, the AMP will not have the information it needs. This all suggests a significant and presumably immediate AMP need for collaboration and integration among several efforts, including Project J.2, the TCP nominations, AMP and Interior efforts to establish the monitoring plans needed for implementation of the LTEMP ROD, and implementation of Reclamation Projects D2-D8. This collaborative effort will take time, however, since the AMP does not have a history of experience formally tracking management criteria related to traditional tribal values. Such experience is likely in short supply nationally, too, although the federal Advisory Council on Historic Preservation and presumably other groups have developed guidance on how one might proceed, and the TCP nominations necessarily will present substantial information on the subject. Given the state of flux in all of this, it may take a little time and experimentation to arrive at a stable program, beginning with stronger integration of the efforts noted in this Comment.

Compliance with the NHPA, Section 106 is the primary outcome of this project. The ultimate goal is the mitigation of adverse effects or to offer mitigation strategies for any potential adverse effect.

Budget FY18 = \$130,000 FY19 = \$131,000 FY20 = \$133,000

D.7. Cultural Sensitivity Training Development

This project is to fund tribal expertise in the development of a GCDAMP cultural sensitivity training. Native American tribes possess special expertise in religious and cultural significance. It is recognized that this expertise is the outcome of extensive traditional learning and training that certain Native individuals go through to receive tribal recognition as an initiated individual, a medicine man, or a spiritual leader. Reclamation acknowledges and respects traditional knowledge and traditional education systems and recognizes that the inclusion of individuals with this knowledge is a vital component for the identification, evaluation, analysis, recording, treatment, monitoring or disposition of historic properties. Because not every researcher within the GCDAMP is able to undergo the intense training that certain Native individuals complete, this project will fund those experts with such expertise to 1) identify key aspects of religious and cultural significance; 2) develop training methods to pass this information on, and 3) to participate in the cultural sensitivity training.

This training will be developed and then revised every third year. Information from each of the five GCDAMP associated tribes will be incorporated into this training and the training will be developed by tribal members, incorporating information from each of the five GCDAMP associated tribes. Up to \$10,000 will be provided to experts from each of the five GCDAMP associated tribes for expertise and contribution to the cultural sensitivity training.

Commented [DPB8]: It will be important to coordinate this vital training program with the efforts discussed in the preceding Comment field.

Project Goals and Objectives

- Produce a Cultural Sensitivity Training Program for use by all researchers working within the GCDAMP.

Compliance with the NHPA, Section 106 is the primary outcome of this project. The ultimate goal is to develop a training course for GCDAMP funded researchers and other interested GCDAMP participants.

Budget FY18 = \$50,000 FY19 = \$- FY20 = \$-

D.8. Cultural Sensitivity Training Video

Following the development of the cultural sensitivity training identified in project D.8, a video or on-line version of the training will be developed and circulated to allow the cultural sensitivity training to be more accessible for all researchers. This project includes the development of audio and visual elements of the training as well as other training materials. This project will be implemented by a contractor. Coordination with the tribal experts identified in D.8 and the product is critical to the success of this project.

Project Goals and Objectives

- Produce a Cultural Sensitivity Training video for use by all researchers working within the GCDAMP.

Compliance with the NHPA, Section 106 is the primary outcome of this project.

Budget FY18 = \$25,000 FY19 = \$25,000 FY20 = \$-

D.10. Collective Summary of Past Section 106 Activities in the GCDAMP

As a component of the HPP, a collective summary, or synthesis, of all past monitoring and mitigation activities completed under previous Section 106 projects, will be developed. This synthesis will include a management summary table with identified historic properties located within the PA's Area of Potential Effects, a summary of impacts to each historic property, a summary of cumulative effects, previous actions taken at each property, and long-term management goals.

Project Goals and Objectives

- Produce a Section 106 collective summary, or synthesis, of all past monitoring and mitigation activities. This includes a management summary table for each historic property.

Compliance with the NHPA, Section 106 is the primary outcome of this project. The ultimate goal is to develop a synthesis which will aid in the management of each historic property. It will track all previous activities at each property as well as any identified effects resulting from GCDAMP activities.

Budget FY18 = \$- FY19 = \$50,000 FY20 = \$25,000

D.11. Hualapai Archive Project

The Hualapai archive project is to improve values and preserve stories of Hualapai tribal members in the Grand Canyon. For the past 30 years, the Hualapai Department of Cultural

Resources (HDCR) has conducted interviews with Tribal Elders and Tribal Members to gain knowledge about resource condition and changes in resource health for resources in Grand Canyon. Some of these interviews were captured in hand written notes, some were associated with photographs about certain resources, some were audio recorded and some interviews were videotaped. Hundreds of interviews were conducted, and the information is stored in archival boxes at HDCR.

This collection of information needs to be organized and preserved for future generations by archiving this information into a digital database. The photographs and videos need to be converted to digital formats to preserve them before they deteriorate. One goal in creation of this database is to be able to query by resource or place and have all of the interviews (in all formats) that pertain to that resource/place be accessed. This database library will be able to be accessed by the community (for non-sensitive material) and will act as a data reference collection dedicated to preserving Hualapai heritage, language and culture.

Commented [DPB9]: Presumably this important effort will inform development of the planned Hualapai TCP nomination.

Project Goals and Objectives

- Produce a searchable digital database of photographs, notes, videos and audio recordings.

Compliance with the NHPA, Section 106 is the primary outcome of this project.

Budget FY18 = \$50,000 FY19 = \$50,000 FY20 = \$-

D.12. Mitigation of Potential Effects under Section 106

Section 106 of the NHPA calls for the mitigation of any identified adverse effect to historic properties. Although no specific adverse effects or actions have been identified, this project is to set aside funding for possible future mitigation needs.

Project Goals and Objectives

- Mitigation of identified adverse effects to historic properties as required as part of Section 106 under NHPA.

Compliance with the NHPA, Section 106 is the primary outcome of this project. The ultimate goal is to mitigate any identified adverse effect to historic properties. These identified effects will be identified any time during the length of this budget. Funding has to be present to deal with this mitigation on an emergency basis. *[Note: Reclamation will work with tribes, DOI agencies, and the CRAHG to identify example mitigation measures that may be appropriate for this project prior to the next draft of this budget and work plan.]*

Budget FY18 = \$25,000 FY19 = \$25,000 FY20 = \$26,000

D.13. Tribal Resources Monitoring

This budget item provides funds to identify traditional cultural properties (TCPs) and to implement Native American monitoring protocols that were developed in FY 2007 and recommended by the TWG as part of efforts to develop a core-monitoring program.

In addition, the five GCDAMP Tribes (Hopi Tribe, Hualapai Tribe, Kaibab-Paiute Tribe, Pueblo of Zuni, and Navajo Nation) will work with Reclamation and the NPS to implement monitoring of historic properties in Glen and Grand Canyons.

The primary goal of this activity is to monitor and evaluate the effects of dam operations and other actions under the authority of the Secretary of the Interior on resources of value to Native American Tribes. A secondary goal is to conduct condition monitoring of historic properties to assist BOR in compliance with Section 106 of the National Historic Preservation Act.

Annual reports will be prepared detailing activities, findings, and monitoring data that result from implementing core-monitoring protocols for historic properties. Condition monitoring data will be provided to BOR to assist in prioritization of historic properties for treatment in subsequent years. In addition, monitoring data will be used to update NPS databases.

This project includes funding for five tribes for up to \$35,000 each year (plus CPI)

Budget FY17 = \$175,000 FY18 = \$177,000 FY20 = \$179,000

D.14. Tribal Participation in the GCDAMP

This budget item provides funding through agency appropriations (not power revenues) for the participation in GCDAMP meetings of the five GCDAMP Tribes (Hopi Tribe, Hualapai Tribe, Kaibab Paiute Tribe, Pueblo of Zuni, Navajo Nation). This funding covers preparation for meetings, participation in meetings, and travel costs associated with participation in the meetings. The purpose of the funding is to ensure tribal viewpoints are integrated into continuing GCDAMP dialogs, votes, and in the final recommendations made to the Secretary of the Interior. The five DOI agencies (U.S. Geological Survey, National Park Service, BOR, U.S. Fish and Wildlife Service, and Bureau of Indian Affairs) provide appropriated funding to support this budget item, with BOR serving as lead agency.

Budget FY18 = \$475,000 FY19 = \$475,000 FY20= \$475,000

Commented [DPB10]: To what extent do these monitoring programs address historic sites already listed under Section 106, and to what extent do they pertain to potentially less "site"-specific values? If the latter, and they are documented under TCP designations, then these monitoring efforts become another element that needs to be integrated into the larger coordinated effort discussed in my earlier Comment under project D5.

Reclamation Adaptive Management Program Budget Summary FY2018-2020

		2018	2019	2020
	AMP Total w/ 1% CPI	\$ 11,025,454	\$ 11,135,708	\$ 11,247,066
	Reclamation side total (20%)	\$ 2,205,091	\$ 2,227,142	\$ 2,249,413
A	Adaptive Management Work Group	\$ 440,000	\$ 443,900	\$ 447,839
A.1	Adaptive Management Work Group Costs (BOR)	\$ 220,000	\$ 222,200	\$ 224,422
A.2	AMWG Member Travel Reimbursement	\$ 20,000	\$ 20,200	\$ 20,402
A.3	AMWG Reclamation Travel	\$ 20,000	\$ 20,200	\$ 20,402
A.4	AMWG Facilitation Contract	\$ 90,000	\$ 90,900	\$ 91,809
A.5.1	Public Outreach - Reclamation public affairs, POAG	\$ 25,000	\$ 25,250	\$ 25,503
A.5.2	Public Outreach- Administrative History	\$ 50,000	\$ 50,000	\$ 50,000
A.6	AMWG Other	\$ 15,000	\$ 15,150	\$ 15,302
B	Technical Working Group	\$ 215,000	\$ 217,150	\$ 219,322
B.1	TWG Costs	\$ 120,000	\$ 121,200	\$ 122,412
B.2	TWG Member Travel Reimbursement	\$ 25,000	\$ 25,250	\$ 25,503
B.3	TWG Reclamation Travel	\$ 20,000	\$ 20,200	\$ 20,402
B.4	TWG Chair Reimbursement/Facilitation	\$ 35,000	\$ 35,350	\$ 35,704
B.5	TWG Other	\$ 15,000	\$ 15,150	\$ 15,302
C	Program Administration, ESA Compliance, and Management Actions	\$ 1,170,066	\$ 1,365,093	\$ 1,365,615
C.1	Administrative Support for NPS Permitting	\$ 137,766	\$ 139,143	\$ 140,535
C.2	Contract Administration	\$ 100,000	\$ 101,000	\$ 102,010
C.3	Science Advisors Program	\$ 205,000	\$ 207,050	\$ 209,121
C.4	Integrated Stakeholder River Trip	\$ -	\$ 40,000	\$ -
C.5	Experimental Management Fund	\$ 500,000	\$ 505,000	\$ 510,050
C.6	Experimental Vegetation Treatment	\$ 210,300	\$ 272,900	\$ 293,900
C.7	Native Fish Conservation Contingency Fund	carryover from previous years		
C.8	Evaluation of means to prevent fish passage through GCD	\$ -	\$ 100,000	\$ -
C.9	Evaluation of temperature control methods at GCD	\$ -	\$ -	\$ 100,000
C.10	Ridgway Rail and Southwest Willow Flycatcher monitoring	\$ 17,000	\$ -	\$ 10,000

D	Cultural Resources	\$ 867,031	\$ 754,828	\$ 661,617
D.1	Reclamation Cultural Resources Program Management	\$ 150,000	\$ 151,500	\$ 153,015
D.2	Contractor support to Reclamation for cultural resources program	\$ 150,000	\$ 75,000	\$ 75,750
D.3	Cultural Resources Monitoring - Grand Canyon	\$ 34,268	\$ 25,511	\$ 26,006
D.4	Cultural Resources Monitoring - Glen Canyon	\$ 47,763	\$ 44,517	\$ 45,213
D.5	Documentation of Navajo, Hualapai, and Paiute TCPs	\$ 30,000	\$ -	\$ -
D.6	Associative values studies	\$ 130,000	\$ 131,300	\$ 132,613
D.8	Cultural sensitivity training development - tribal expertise	\$ 50,000	\$ -	\$ -
D.9	Cultural sensitivity training video	\$ 25,000	\$ 25,000	-
D.10	Collective summary of past monitoring and mitigation activities	\$ -	\$ 50,000	\$ 25,000
D.11	Hualapai archive project	\$ 50,000	\$ 50,000	\$ -
D.12	Potential mitigation under sec 106	\$ 25,000	\$ 25,250	\$ 25,503
D.13	Tribal cultural resources monitoring	\$ 175,000	\$ 176,750	\$ 178,518
D.14	Tribal participation in AMP (not funded by power revenues)	\$ 475,000	\$ 475,000	\$ 475,000
TOTAL Anticipated Final Reclamation Budget (w/ 1% CPI)		\$ 2,205,091	\$ 2,227,142	\$ 2,249,413
TOTAL initial Reclamation budget		\$ 2,692,097	\$ 2,780,971	\$ 2,694,393
(Over) / Under budget		\$ (487,006)	\$ (553,830)	\$ (444,980)