Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
August 12-13, 2009

Agenda Item

Grand Canyon Monitoring and Research Center (GCMRC) Updates

(Note: The first part of this agenda item is scheduled for Wednesday, August 12; the second part for Thursday, August 13.)

Action Requested

√ Most of the presentations are information items only.
√ Feedback is requested on the final item, the Science Symposium.

Presenters

Lewis Coggins, Center Biometrician, GCMRC
Helen Fairley, Socio-cultural Program Manager, GCMRC
Paul Grams, Physical Science Program Manager, GCMRC
John Hamill, Chief, GCMRC
Kara Hilwig, Fish Biologist, GCMRC
Andrew Makinster, Fishery Biologist, Arizona Game and Fish Department
Ted Melis, Deputy Chief, GCMRC

Previous Action Taken

N/A

Relevant Science

N/A

Background Information

2008 High Flow Experiment (HFE) Reporting and Planning Schedule – Ted Melis
All 2008 HFE projects are progressing approximately on schedule with reports expected to be completed by December 2009. Results will be presented at the GCMRC annual reporting meeting that will occur on January 12 and 13, 2010.

GCMRC contact: Ted Melis (tmelis@usgs.gov, 928-556-7282)

2009 Protocol Evaluation Panel (PEP) for Grand Canyon Fishes – Lew Coggins
GCMRC convened a panel of seven experts from the United States and Canada in May of 2009 to review the protocols for fish monitoring employed by GCMRC and cooperators. The panelists met for 10 days in both the office and the field to learn about fish monitoring in Glen, Marble, and Grand Canyons. Presentations were provided by Arizona Game and Fish Department, US Fish and Wildlife Service, and GCMRC; the panel was able to dialogue with these personnel plus National Park Service, Bureau of Reclamation (represented by Richard Valdez, SWCA), and Ecometric personnel that were also present. The panel culminated their visit with a 2-day meeting on the Northern Arizona University campus to respond to questions and develop recommendations. They have drafted their report and recommendations, and expect to have a final report by Labor Day. In general, they recommended that existing fish monitoring, for both sport and native species, should

be re-directed, so that existing monitoring is maintained, and new efforts are initiated, especially to investigate potential alternative mainstem populations of humpback chub and nonnative species distribution and abundance.

GCMRC contact: Lew Coggins (lcoggins@usgs.gov, 928-556-7376)

2009 Nonnative Fish Mechanical Removal - Andy Makinster

Arizona Game and Fish Department will lead a presentation of the preliminary results of the mechanical removal trip conducted in May 2009 (one of the field activities observed by the PEP). Rainbow trout were the most frequent species captured, at levels approximating those observed in 2005 mechanical removal efforts. A suite of other species, mostly nonnatives, was also observed.

AZGFD contact: Andy Makinster (amakinsteragf@qwestoffice.net)

Nonnative Fish Control Plan (Conservation Measure) – Kara Hilwig

Following a long development period, the GCMRC has sent the TWG a nonnative fish control plan that we believe to be advanced and ready for implementation. This document is the product of three workshops between 2005 and 2008 that included both AMP and outside participants. This version is responsive to comments from the Science Advisors. The TWG will be briefed on the contents of the plan in a July 21 web conference, including a review of the prioritized recommendations of the plan. Consistent with Science Advisors' recommendations, GCMRC does not anticipate producing a long-term plan as originally proposed. Rather, we have incorporated as much knowledge and recommendations as possible, and now intend to proceed with implementing monitoring, research, and control recommended in this current iteration of the plan. Funding to implement "management" aspects of the plan will be discussed at the AMWG meeting.

GCMRC contact: Kara Hilwig (khilwig@usgs.gov, 928-556-7459)

Near Shore Ecology/Fall Steady Flows Plan (Conservation Measure) – Lew Coggins

As previously presented to AMWG and TWG, GCMRC intends to incorporate the results of three ongoing studies to investigate potential biological responses (especially by humpback chub) to fluctuating flows of MLFF and fall steady flows of 2009-2012. These studies are: aquatic food base, early life stages of rainbow trout, and the nearshore ecology project. If aquatic organisms of the Colorado River are exhibiting responses to steady flows in September and October in these years, we expect that one or more of these three projects will capture those responses. A plan has been prepared that is being subjected to Science Advisors' review. Following Science Advisors' review, it will be presented to the TWG for review. September–October flow recommendations will be included in the plan.

GCMRC contacts: Matthew Andersen (mandersen@usgs.gov, 928-556-7379) and Lew Coggins (lcoggins@usgs.gov, 928-556-7376)

Core Monitoring Plan – John Hamill and Ted Melis

The Draft Core Monitoring Plan has been under development during FY2009 and the draft is scheduled to undergo peer review by the Science Advisors during August. Following review and revision, the draft plan will be presented to the TWG at its September meeting and plans will be finalized for a CMP workshop with the TWG during the fall 2009.

GCMRC contacts: John Hamill (jhamill@usgs.gov, 928-556-7364) and Ted Melis (tmelis@usgs.gov, 928-556-7282)

Cultural Resources Program – Helen Fairley

Cultural Monitoring R&D project

The cultural monitoring R&D project continues to make headway towards development of a pilot monitoring program for cultural resources. Since the start of FY2009, USGS staff and cooperators have compiled and analyzed all weather data collected in 2007 and 2008, and caught up on processing a backlog of sand samples. Three posters and one oral presentation about the project were provided at the November 2008 Science Symposium in Tempe, Arizona, and comprehensive updates on all elements of the project were provided to the TWG Cultural Resource Ad Hoc Group and TWG on January 6-7, 2009. Dr. Jack Schmidt and PhD candidate Nina Kilham from Utah State University are currently working with the project to compile existing GIS data pertaining to the Holocene deposits and geomorphic settings of cultural sites in the CRE. Below is a list of publications and presentation that have been either completed and published in FY2009 or are currently undergoing final editing in advance of final publication. Project cooperators are in the process of developing several additional publications (e.g., a series of journal articles and a synthetic monograph on Phase I results) that we anticipate will be finalized in the latter part of FY2009 and in FY2010.

In addition to these products, GCMRC submitted a substantially revised research proposal to Grand Canyon National Park to obtain a permit for field work that was planned for May-June 2009, but the 2009 proposal has not received approval. The LiDAR component of the project continues to be problematic for the NPS. Discussions are currently ongoing between USGS and NPS management to try to resolve NPS issues.

FY2009 Cultural R&D Project Products and Presentations

Collins, B.D., Brown, K.B., and Fairley, H., 2008a. Evaluation of Terrestrial LiDAR for Monitoring Geomorphic Change at Archaeological Sites in Grand Canyon National Park, Arizona: U.S. Geological Survey, Open File Report 2008-1384, 60 p. [http://pubs.usgs.gov/of/2008/1384/].

Collins, B.D., Kayen, R., Minasian, D., and Fairley, H., 2008b. Terrestrial LiDAR Topographic Change Monitoring At Archaeological Sites Along The Colorado River Corridor Of Grand Canyon National Park, Arizona, Oral presentation at *Coming Together: Coordination of Science and Restoration Activities for the Colorado River Ecosystem Conference*, November 19, 2008, Tempe, Arizona.

Collins, B.D., Minasian, D., and Kayen, R., 2009. Topographic Change Detection at Select Archaeological Sites in Grand Canyon National Park, Arizona, 2006-2007: U.S. Geological Survey, Scientific Investigations Report 2009-5116, 97p. [http://pubs.usgs.gov/sir/2009/5116/].

Draut, A.E., Andrews, T., Fairley, H.C., and Brown, C.R., 2009, 2007 Weather and aeolian sand-transport data from the Colorado River corridor, Grand Canyon, Arizona: U.S. Geological Survey Open-File Report 2009-1098, 110 p. [http://pubs.usgs.gov/of/2009/1098/].

Draut, A. E. Hazel, J. E. Jr., Fairley, H. C., and Brown, C. R., 2008, Aeolian Reworking Of Sediment Deposits From The March 2008 Grand Canyon High-Flow Experiment. Poster presented at *Coming Together: Coordination of Science and Restoration Activities for the Colorado River Ecosystem Conference*, November 19, 2008, Tempe, Arizona.

Draut, A.E., Hazel, J.E. Jr., Fairley, H.C., and Brown, C.R., (In prep.) Aeolian reworking of sandbars from the March 2008 Glen Canyon Dam high flow experiment in Grand Canyon: Proceedings, Colorado River Basin Science and Resource Management Symposium, USGS Circular XX.

Draut, A.E., Sondossi, H.A., Hazel, J.E. Jr., Fairley, H.C., Brown, C.R., and Vanaman, K.M., (In prep) 2008 weather and aeolian sand-transport data from the Colorado River corridor, Grand Canyon, Arizona: U.S. Geological Survey Open-File Report 2009-XXXX.

Fairley, H.C. and Sondossi, H., 2008, Applying an Ecosystem Framework to Evaluate Archaeological Site Condition along the Colorado River in Grand Canyon National Park, Arizona. Poster presented at *Coming Together: Coordination of Science and Restoration Activities for the Colorado River Ecosystem Conference*, November 19, 2008, Tempe, Arizona.

Fairley, H.C. and Sondossi, H., (in prep) Applying an Ecosystem Framework to Evaluate Archaeological Site Condition along the Colorado River in Grand Canyon National Park, Arizona: Proceedings, Colorado River Basin Science and Resource Management Symposium, USGS Circular XX.

Leap, L., n.d., Fiscal Year 2007 Report for Interagency Agreement between National Park Service, Grand Canyon National Park, and the U.S. Geological Survey, Grand Canyon Monitoring and Research Center to Collaborate in the Development of Long-Term Monitoring Protocols for Archaeological Resources of the Colorado River Corridor in Grand Canyon that may be Affected by the Operation of Glen Canyon Dam. Draft report submitted October 3, 2008 to U.S. Geological Survey Grand Canyon Monitoring and Research Center, Flagstaff.

O'Brien, G. and Pederson, J., 2008, Soil infiltration, shear strength, and gully erosion measured along the Colorado River – what is responsible for the erosion of cultural sites? Poster presented at *Coming Together: Coordination of Science and Restoration Activities for the Colorado River Ecosystem Conference*, November 19, 2008, Tempe, Arizona.

O'Brien, G. and Pederson, J., n.d. (In prep.), Geomorphic Attributes Of 232 Cultural Sites Along The Colorado River In Grand Canyon National Park, Arizona. Final draft report dated November 15, 2008 by Department of Geology, Utah State University, Logan, to U.S. Geological Survey, Grand Canyon Monitoring and Research Center, Flagstaff.

O'Brien, G. and Pederson, J., n.d. (In prep.), Gully Erosion Processes and Parameters at Six Cultural Sites Along the Colorado River in Grand Canyon National Park, Arizona. Final draft report dated November 23, 2008, submitted by Department of Geology, Utah State University, Logan, to U.S. Geological Survey, Grand Canyon Monitoring and Research Center, Flagstaff.

GCMRC contact: Helen Fairley (hfairley@usgs.gov, 928-556-7285)

Tributary Sediment Inputs and Mainstem Sand Transport – Paul Grams

Sediment supply update: Updates on the mass-balance sand budgets will be provided for the period up to April 2009 for the Colorado River mainstem monitoring stations and updates on tributary sediment inputs will be provided for the period extending through July 2009. The mainstem updates will be provided for six reaches: (1) Upper Marble Canyon (0-30 mile), (2) Lower Marble Canyon (30-61 mile), (3) Eastern Grand Canyon (61-87 mile), (4) Central Grand Canyon (87-166 mile), (5) Western Grand Canyon (166-225 mile), (6) Below Diamond Creek and Lake Mead Delta (>225 mile). The projected sand export for the projected 10.5 million ac-ft release for 2010 will be shown relative to that for a 9.0 million ac-ft release, assuming average Paria River sediment inputs.

The high-resolution sediment-transport data used to construct these sediment budgets is posted on the GCMRC website: http://www.gcmrc.gov/products/other_data/gcmrc.aspx. Also, please see the handouts showing PowerPoint slides from previous AMWG meetings with background and preliminary results related to the March 2008 High Flow Experimental projects. These can be found at http://www.usbr.gov/uc/rm/amp/amwg/mtgs/08may22/index.html (Attachment 2a), http://www.usbr.gov/uc/rm/amp/amwg/mtgs/08sep09/index.html (Attachment 5), http://www.usbr.gov/uc/rm/amp/amwg/mtgs/09apr29/index.html (to be posted).

GCMRC contact: Paul Grams (pgrams@usgs.gov, 928-556-7458)

2008 Science Symposium Proceedings; Next Symposium? – Ted Melis

Approximately 40 papers have been received by the GCMRC's editorial staff from the 120 talks that were presented at the November 2008 Science and Resource Management Symposium. (See the flyer posted at http://www.usbr.gov/uc/rm/amp/amwg/mtgs/09aug12/TM_Symposium.pdf) All have been routed through external peer review, following Fundamental Science Practices protocols of the U.S. Geological Survey. During July, the editorial committee proceeded to review the final, revised papers and the authors' responses to reviewer comments as a means of making final decisions on which of the papers would proceed to final steps in publication. The papers will be included within a U.S. Geological Survey Circular and the publication is anticipated to be available in fall 2009.

The GCMRC would like input from AMWG about their perceptions of the November 2008 symposium. Did it meet AMWG's expectations and provided a useful venue for transferring information among various stakeholders and restoration programs? The GCMRC would also like feedback from AMWG about the timing of a next symposium, and offers the following three timeframes for consideration: fall 2011, spring 2012, or fall 2012. The anticipated budget needed for a symposium similar to the 2008 meeting is $25,000 -$50,000, assuming similar contributions from other recovery/restoration programs in the Colorado River basin. The additional cost for producing a proceedings of the next meeting is estimated to be an additional $70,000, based on costs associated with the current volume being produced as a U.S. Geological Survey Circular.

GCMRC contact: Ted Melis (tmelis@usgs.gov, 928-556-7282)

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Update on Reporting Schedule for the March 2008 High Flow Experimental Results

Presented to AMWG by
Ted Melis

Grand Canyon Monitoring and Research Center

August 12, 2009

U.S. Department of the Interior
U.S. Geological Survey

Completing 2008 HFE Science Projects

Projects:

1 – Integrated Sediment – including: sand flux, sandbar modeling, changes in sand storage/campsites and backwater response (Schmidt and others)

2 - Aquatic food web responses (Kennedy and others)

3 - Riparian vegetation responses (Ralston)

4 - Rainbow trout movements (Hilwig) and related Lees Ferry RBT studies (Korman)

5 - Data on Lake Powell storage & quality of water (Vernieu)

Reporting Timeline:

- Draft reports are being prepared for peer review this summer and Fall
- Final reports scheduled for completion in December 2009
- Results will be reported to TWG at annual reporting meeting week of January 11th 2010

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