

Beach Habitat Building Flow Science Plan Update and Future Steps

by

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Overview

- Update of Water Year 2007 Sand Mass Balance for the Colorado River Ecosystem (Ted Melis)
- Background and Status of BHBF Science Plan (Hamill)
 - Review AMWG questions about a future BHBF test
 - Review non technical concerns related to a BHBF
 - Provide summary of BHBF Science Plan
- TWG Report (Kurt Dongoske)
- Plan next steps (Mary Orton)

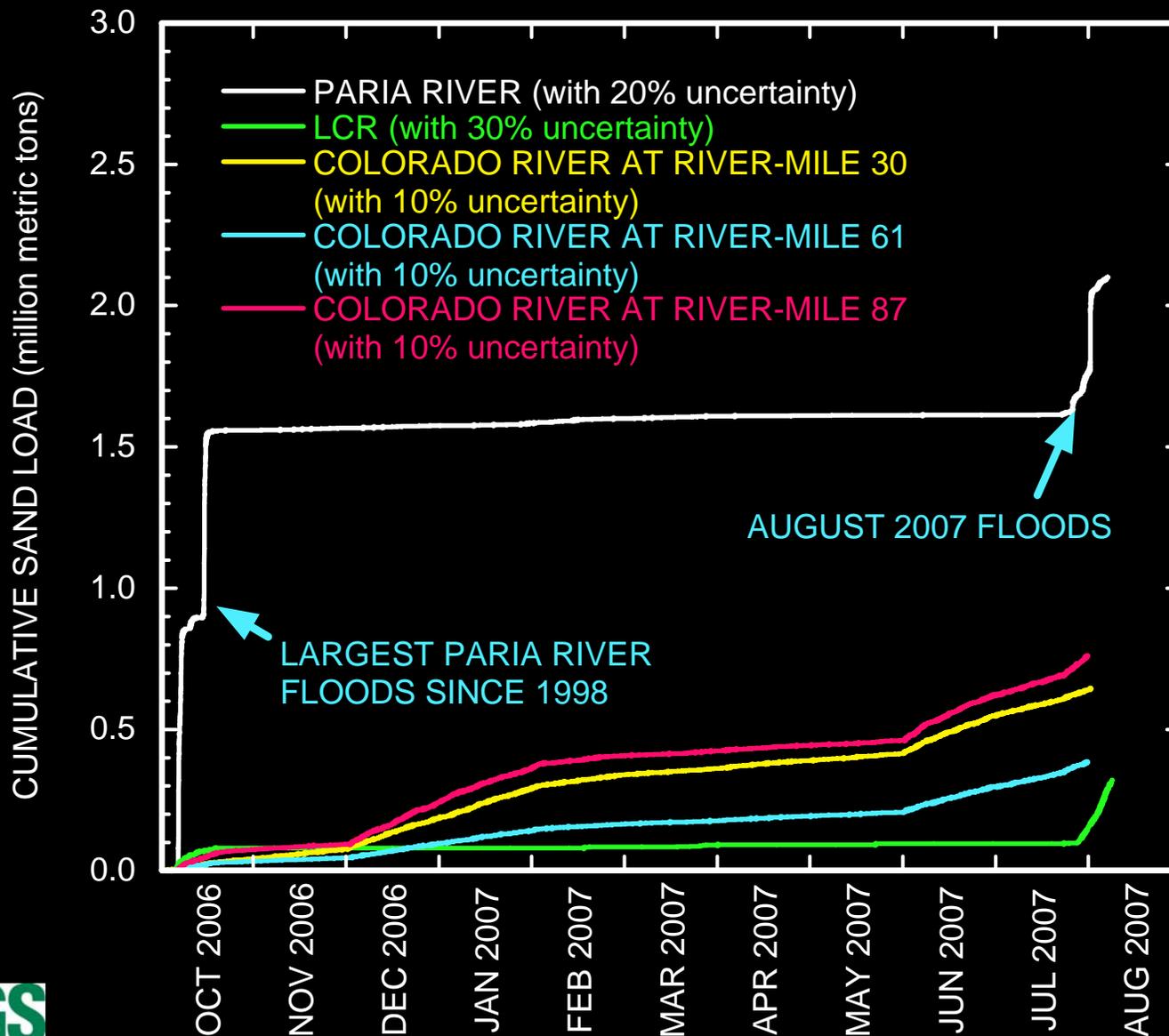
Sand mass balance in Marble and Grand Canyons: October 1, 2006 to August 1, 2007

- October 2006 - Paria River supplied about 1.6 ± 0.2 million metric tons of sand to CRE.
- Frame of Reference - 1 million metric tons = a 40-story building the size of a football field.
- Downstream transport of October 2006 sand was suppressed by minimal dam releases (i.e., ROD releases for an 8.23 million acre-foot year).

Paria River Update:

During early August 2007, the Paria River supplied an additional 0.5 ± 0.1 million metric tons of new sand to upper Marble Canyon.

CUMULATIVE SAND TRANSPORT OCTOBER 2006 - AUGUST 2007



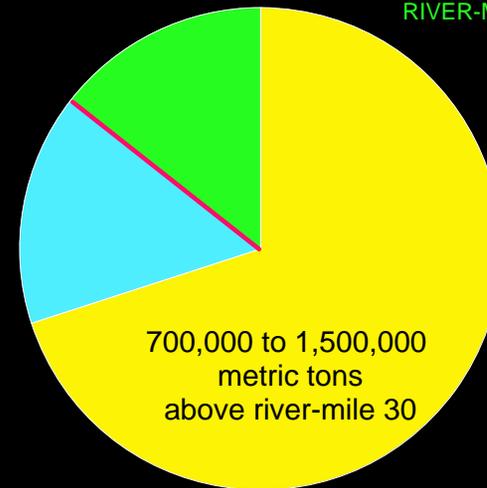
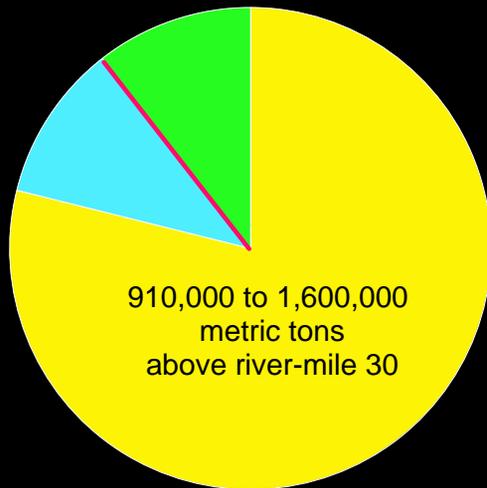
Where was the sand from the October 2006 Paria River floods as of March 1, 2007?

Where was the sand from the October 2006 Paria River floods as of August 1, 2007?

Eastern Grand Canyon lost > 76,000 metric tons of sand between October 1, 2006, and March 1, 2007

Eastern Grand Canyon lost > 75,000 metric tons of sand between October 1, 2006, and August 1, 2007

- UPPER MARBLE CANYON (river-miles 1-30)
- LOWER MARBLE CANYON (river-miles 30-61)
- EASTERN GRAND CANYON (river-miles 61-87)
- GRAND CANYON BELOW RIVER-MILE 87 AND LAKE MEAD



Preliminary Data, Subject to Review and Revision

Summary

- Relative to October 1, 2006, there is most probably 1.5 million metric tons of new sand in upper Marble Canyon (river-miles 1-30)
- Relative to October 1, 2006, there is likely 250,000 metric tons of new sand in lower Marble Canyon (river-miles 30-61)

Summary

- Since October 2006, about half of the sand exported from upper Marble Canyon bypassed lower Marble Canyon and eastern Grand Canyon (eastern Grand Canyon lost a small amount of sand during this period)
- IMPLICATION: “pre-conditioning flows” are still an open question in distributing new sand prior to conducting a BHBF test?

Overview

- Review USGS Fact Sheet re: Research related to conservation of sand bars (Ted Melis)
- Background and Status of BHBF Science Plan (Hamill)
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Recent Action on BHBF

AMWG Recommendation (December 5, 2007)

- “AMWG recommends to the Secretary of the Interior to charge GCMRC to develop a science plan for a BHBF that addresses the concerns raised at the AMWG meeting on Dec. 6, 2006, and AMWG further charges the TWG to work with GCMRC to review the Draft Science Plan and make a recommendation to the AMWG.”

Guidance provided by DOI in the February 2, 2007 memo from Mark Limbaugh to the AMWG:

- “In accordance with the AMWG’s recommendation, staff at the GCMRC have been working since the December meeting to prepare a draft science plan regarding additional BHBFs. ...it is my hope that we can work effectively together to have well-considered, approved, ‘off-the-shelf’ action plans to take advantage of these types of important research opportunities in the future.”

Current Status and Schedule

- Jan-Apr 2007. 1st Draft BHBF Science Plan
 - DOI, WAPA, AGF Preliminary Review
 - Science Advisors Review
 - April LTEP Planning Workshop Scientist Review
- May-Jul 2007. 2nd Draft Plan
 - Written TWG Review/GCMRC response
 - TWG meeting and discussion
- Aug–Sep 2007. 3rd Draft Plan
 - TWG ad hoc committee review (Sediment and Desired Future Conditions)
- October 2-3, 2007. Final TWG Review/Recommendation

10 AMWG Questions

1. What are the pros and cons of a BHBF?
2. What hypotheses would be tested?
3. Why replicate the 2004 BHBF test?
4. What are the pros and cons of a shorter-duration BHBF?
5. What is the risk to humpback chub?
6. Are sufficient funds available for a BHBF test?
7. Will there be an impact to the aquatic food base?
8. What will be the hydropower and other economic impacts?
9. What are the impacts to the Hualapai Nation lands and archaeological sites in Glen Canyon?
10. Will planned maintenance at GCD affect timing of a BHBF?

Responses included in draft BHBF Science Plan and AMWG AIF

Policy Comments

1. Lack of desired future conditions or criteria for evaluating success of a BHBF:
 - Target river reaches (Marble Canyon vs. downstream reaches)
 - Target resources (backwater habitats, aquatic food base, camping beaches, sand bars, riparian vegetation, etc.).
2. Conducting multiple BHBF tests as a means of evaluating cumulative increases in system-wide sandbar response
3. Conducting a BHBF as a “stand-alone” activity before the Long Term Experimental Plan is completed.
4. The need for additional decision criteria for conducting future BHBF tests including ESA compliance, NPS permitting requirements, cost and availability of funds, and whether specific resource targets have been realized.
5. The legality of doing a BHBF test when the reservoir is not full.

BHBF Comment Summary

- 197 written comments received from TWG/AMWG members:
 - Bureau of Reclamation – 28
 - NPS (Glen Canyon NRA) – 20
 - AZ Department of Water Resources – 7
 - AZ Game and Fish Department - 16
 - CREDA – 63
 - Western Area Power Administration – 45
 - U.S. Fish and Wildlife Service – 18
- **18 stakeholder groups did not comment**

BHBF Science Costs

- Estimated cost is over 2 years
 - Year 1: \$1.41
 - Year 2: \$0.47
 - **Total: \$1.88 million**
 - Option to reduce cost by funding a portion of proposed studies
- Available Funds (Experimental Fund)
 - FY 08: \$1.4 million
 - FY 09: \$1.9 million

BHBF Science Plan Questions

Sediment Questions

- Is there a “flow-only” operation that will restore and maintain sandbar habitats over decadal timescales?
- What is the minimum duration for BHBF tests needed to build and maintain sandbars under sand enrichment?
- How do post-BHBF flows affect the persistence of sandbars and related backwater habitats?

HBC and Cultural Resource Questions

HUMPBACK CHUB

- Do BHBF tests result in creation of backwater habitats that offer physical benefits to humpback chub and other native fishes?
- Do BHBF tests affect the distribution and movement of nonnative fishes?

CULTURAL RESOURCES

- Do sandbars deposited by BHBF tests contribute to preservation of archaeological sites in the river corridor?
- How does the abundance and distribution of native and nonnative riparian species important to Native American tribes change in response to a future BHBF test?

Other Priority Questions

- **Food base:** How will a future BHBF test affect food production and availability for rainbow trout in the Lees Ferry reach? What are the effects of BHBF tests on aquatic food production? How do these effects impact native fishes?
- **Lake Powell:** Will the next BHBF test result in higher nutrient releases and shrinking of the hypolimnion?
- **Riparian vegetation:** Are open patches more susceptible to exotic species colonization and establishment than sites with existing vegetation following a disturbance?
- **Kanab ambersnail:** Will the next BHBF test reduce habitat at Vasey's Paradise in a way that impacts the ambersnail population?
- **Camping beaches :** Can the next BHBF test increase campable areas at sandbars on a sustainable basis?

Water Year 2008 BHBF?

- Sediment supply is enriched
- Decision needed by early November to meet logistical and compliance requirements

Next Steps

- **Mid Sept:** The Sediment and DFC Ad Hoc Groups will provide comments on the Draft Plan to the TWG
- **Mid-Sept:** (proposed) AMWG comments requested on GCMRC responses to AMWG concerns (appendix B)
- **Oct 2-3, 2007:** The TWG will review the BHBF science plan and provide a recommendation to the AMWG
- **Early November 2007:** (proposed): AMWG review/ approval of the BHBF Science Plan and a recommendation on BHBF test in the winter of 2008

Questions/Comments

Sandbar Response from 2004 Test – Upper Marble