Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
August 29-30, 2012

Agenda Item

High Flow Experiment Protocol (HFEP) Implementation

Action Requested

✓ This is an information item.

Presenters

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

Nick Williams, Water Quality Specialist, Bureau of Reclamation

Previous Action Taken

✓ Other:
May 23, 2012: The Secretary of the Interior issued a Finding of No Significant Impact (FONSI) for an environmental assessment that proposed a protocol for high flow experiments (HFEs).

Relevant Science

Science and research completed since the GCDAMP was established will be used in the development of the EIS and assessment of impacts.

Background Information

Reclamation will provide an overview of the modeling methods and process in support of HFE determinations and will present results of predictive modeling on the potential for a fall 2012 HFE based on current and possible future inputs. Reclamation will also provide a brief overview of the HFE Protocol decision process and information relative to the current status of GCDAMP resources considered in the decision to conduct an HFE.

RECLAMATION

Managing Water in the West

Implementation of the High Flow Experimental Protocol with Emphasis on Fall 2012

Bureau of Reclamation
Glen Canyon Dam
Adaptive Management Program
Leadership Team Meeting
August 28, 2012

U.S. Department of the Interior
Bureau of Reclamation

HFE Decision Making Process

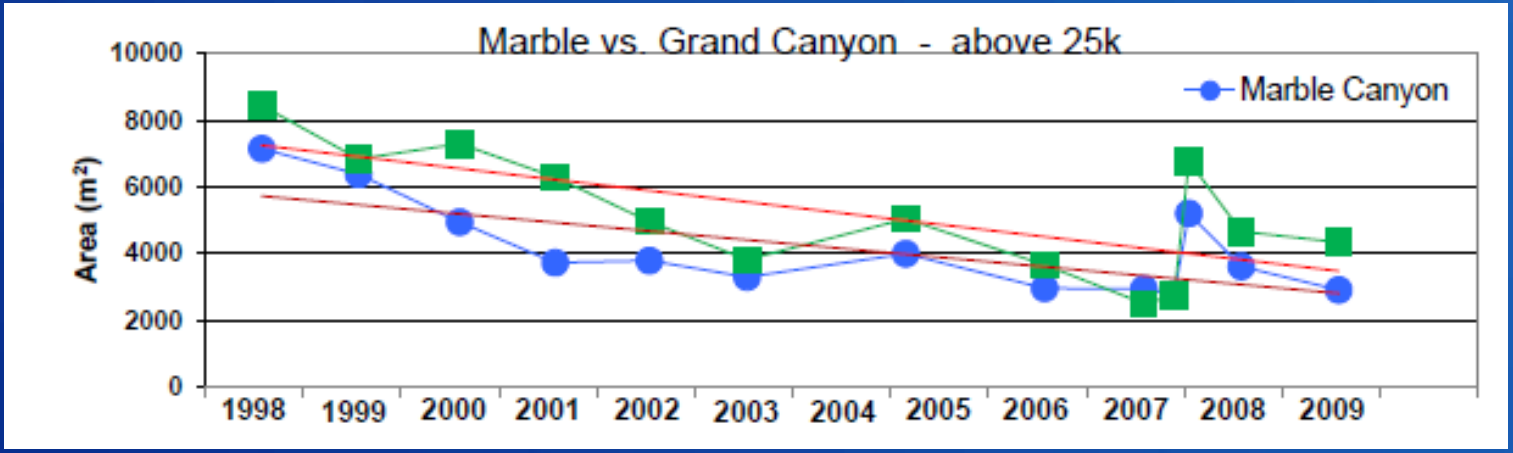
1. Planning and Budgeting Component
   - Annual resource status assessment
     - Annual Agency Report
     - GCDAMP Budget and Work Plan Process
2. Modeling Component
3. Decision and Implementation Component
   - Review Modeling Component
   - Review Status of Resources
   - Consultation with agencies and tribes, AMWG input
   - Staff Recommendation/DOI GCD Leadership Team Recommendation

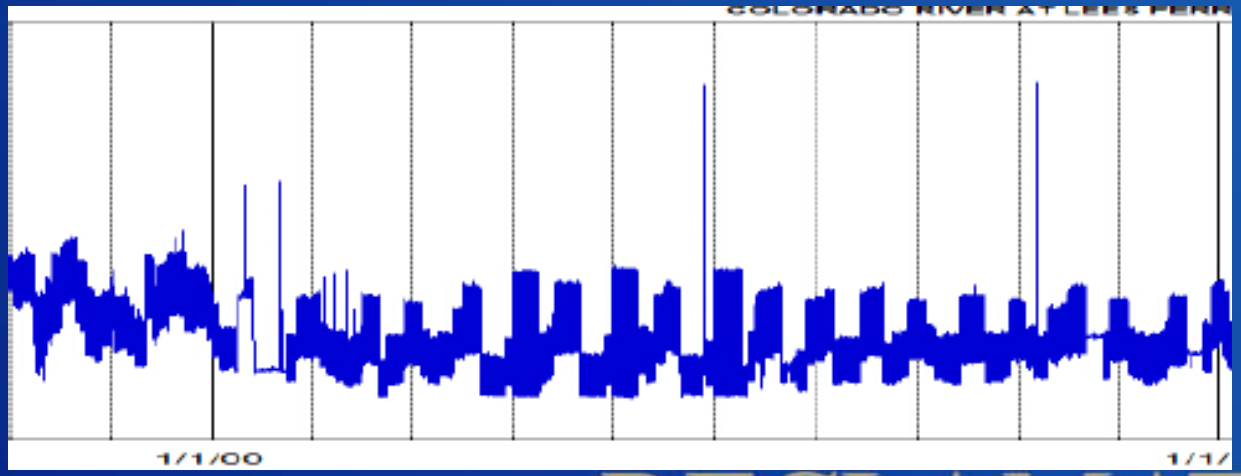
Resource Status Assessment

- In-channel sediment storage
- Sandbar campable area
- High-elevation sand deposits
- Archaeological site condition and stability
- Status of Traditional Cultural Properties
- Aquatic food base
- Lees Ferry trout population
- Lees Ferry fishery recreation experience quality
- Endangered humpback chub and other fish abundance
- Riparian vegetation
- Endangered Kanab ambersnail
- Water quality
- Water delivery
- Dam maintenance
- Hydropower production and marketable capacity

Sediment – Campsite Area

Sand bar size and campsite area have been decreasing, but have increased with each HFE; the protocol will increase frequency of HFEs which should improve this resource.





RECLAMATION

Archaeological Site Stability

- Archaeological sites in Grand Canyon are subject to erosion.
- HFE-caused erosion is a consideration, most sites already mitigated.
- A field trip is planned based on discussions at Aug 1 meeting, and work on ethnohistory for TCPs.
- HFEs create larger sand bars, can be a sources of aeolian (wind-blown) sand to preserve sites, especially those in proximity to large sand bars.
- HFEs likely affect few sites in this way because of limited extent of large sand bars near sites in Grand Canyon.

The MOA for the HFE Protocol requires a meeting with signatories within 120 days of execution of the MOA to evaluate potential effects to archaeological sites (completed August 1, 2012).

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Lees Ferry Rainbow Trout

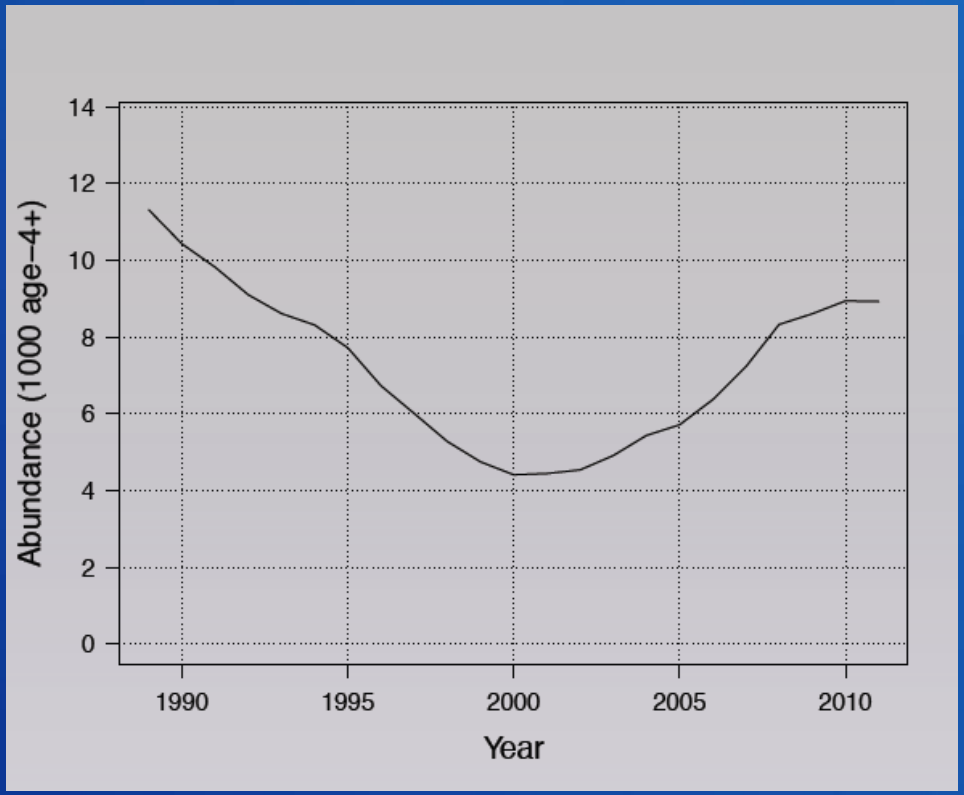
- 1996 and 2008 Spring HFEs led to increases in rainbow trout in Lees Ferry, 2011 high steady releases led to very large recruitment event in Lees Ferry.
- Rainbow trout moving into Marble Canyon, no increase yet at Little Colorado River.
- Effects of Fall HFEs on Lees Ferry Trout is poorly understood.
- 2004 Fall HFE appears to have resulted in displacement or mortality of very young trout.
- Condition overall declined slightly following 2004 November HFE.
- Current monitoring informative, downstream displacement, Lees Ferry recruitment and condition.
- Culling - fishery could improve.

RECLAMATION

Humpback Chub and other native fish

Humpback chub adult population size in the Little Colorado River Using Age-Structured Mark Recapture Estimate (ASMR) 2012

- **Median age-4+ in 2012: 9,000-12,000 fish**
- **Other native fish populations have responded similarly**



RECLAMATION

Humpback Chub and other native fish

Humpback chub sub-adult and juveniles, recruitment

- **Median age-2 in 2,011: 3,998 (3,814 - 4,195)–95%CI**
- **Some evidence of displacement, improved monitoring will help evaluate this and overall survivorship post-HFE and overwinter, also evaluate HFE effect on backwaters as habitat for HBC.**

RECLAMATION

Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2013

(updated 7-13-2012)

Unit Number	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013
1												
2												
3												
4												
5												
6 (3/4 Unit)												
7												
8												
Units Available	5	7	7	7	5	5 / 7	7	7	7	7	7	4
Capacity (cfs)	18,800	21,900	21,900	21,900	14,800	18,100 / 21,900	21,900	21,900	21,900	21,900	21,900	11,100
Capacity (kaf/month)	1250	1300	1350	1350	920	1230	1300	1350	1300	1350	1350	780
Max (kaf)	491	600	800	800	800	900	900	1142	1300	1350	1350	780
Most (kaf)	491	600	800	800	675	600	600	600	800	840	824	600
Min (kaf)	491	600	800	800	675	600	600	600	800	840	824	600

Max Out **early Oct: 33,800 cfs**

Max Out in **Nov: 37,000 cfs**

RECLAMATION

Conclusions

DOI is in the process of completing and documenting the HFE Protocol decision process for a fall HFE in 2012.

Our current review of resources does not indicate there are any concerns with conducting a Fall HFE in 2012.

Only one Fall HFE has been conducted in the past and monitoring was less robust for key resources for that test (November 2004).

A fall HFE could have effects to young trout and humpback chub; levels of monitoring now in place will provide key information on effects of Fall HFEs if a Fall HFE occurs in 2012.

A meeting with HFE and NNFC MOA signatories on August 1 in Flagstaff has led to planning for a field trip in Glen Canyon to define archaeological site treatment to meet requirements of the MOAs for a HFE in Fall 2012. Signatories will be notified 30 days in advance of a fall HFE when decision is made to conduct Fall 2012 HFE.