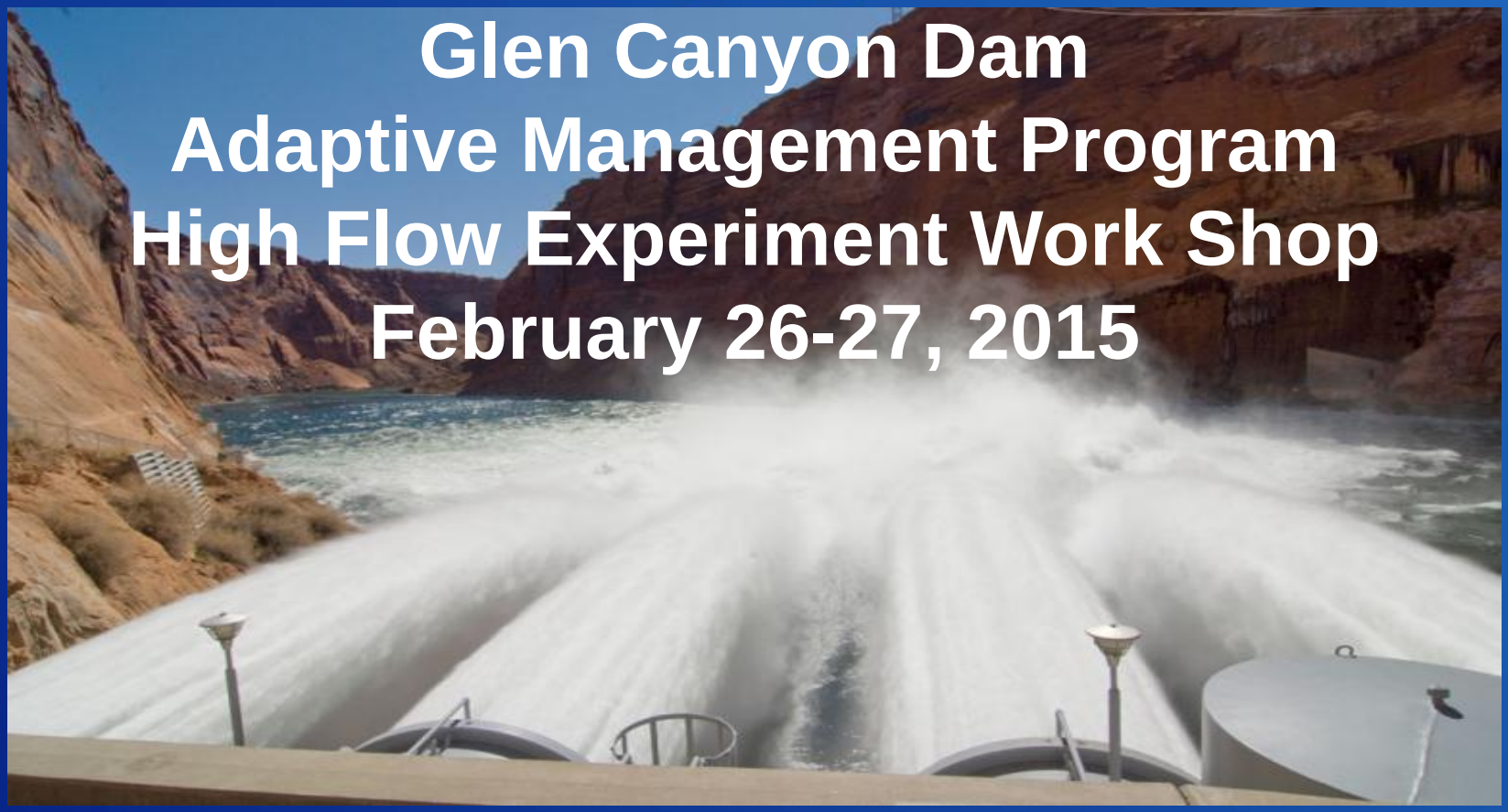
RECLAMATION

Managing Water in the West



Glen Canyon Dam
Adaptive Management Program
High Flow Experiment Work Shop
February 26-27, 2015

U.S. Department of the Interior
Bureau of Reclamation

A Compliance Requirement

"Reclamation will undertake a review in 2014 of the first two years of implementation of the proposed action through a workshop with scientists to assess what has been learned; this review will also serve as the first re-evaluation point. Reclamation will also produce a written report of each evaluation" (U.S. Fish and Wildlife Service 2011 biological opinion p. 10).

"Interior will conduct a comprehensive review of the Protocol after multiple HFEs (at least 3) have occurred" (2012 HFE Protocol FONSI p. 6).

HFE Protocol Parameters

Possible Timing

- **March-April and October-November through 2020**
- **Spring HFEs will not be considered until 2015**

Duration range

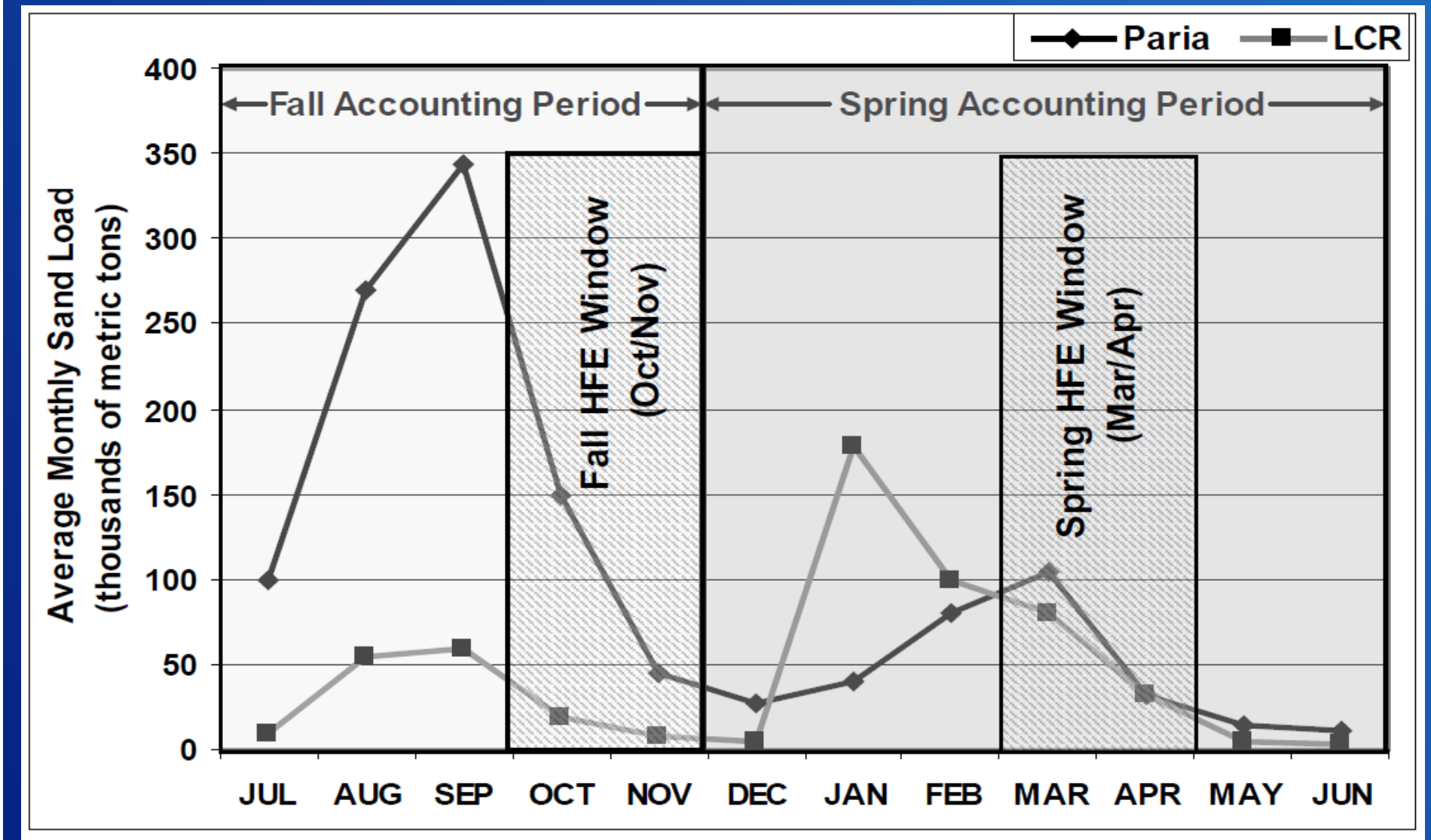
- **1 hr – 96 hrs (at full magnitude)**
- **1 ½ days – 6 ½ days (including ramping)**

Magnitude range

- **31,500 cfs – 45,000 cfs (depends on maintenance, how many of the 8 units are operational at Glen Canyon Dam)**

Ramping rates

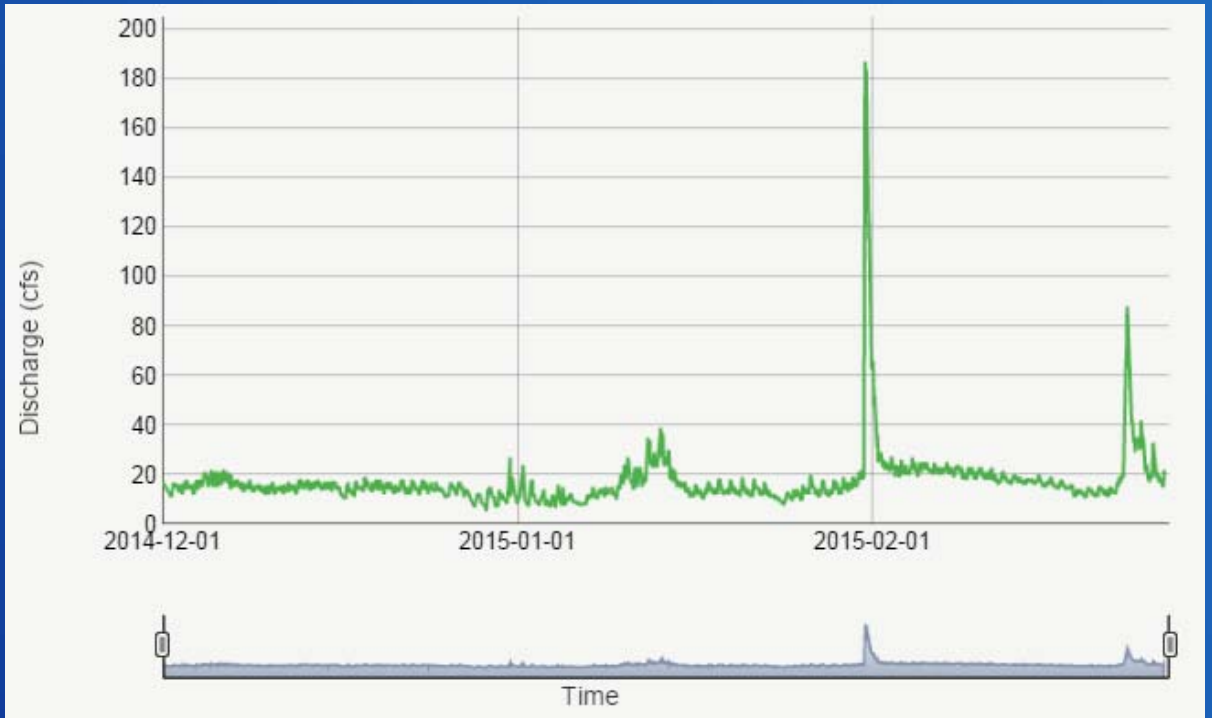
- **Ramping rates are defined by 1996 ROD and 1997 Glen Canyon Dam Operating Criteria (62 FR 9447, 4,000 cfs up and 1,500 cfs down)**



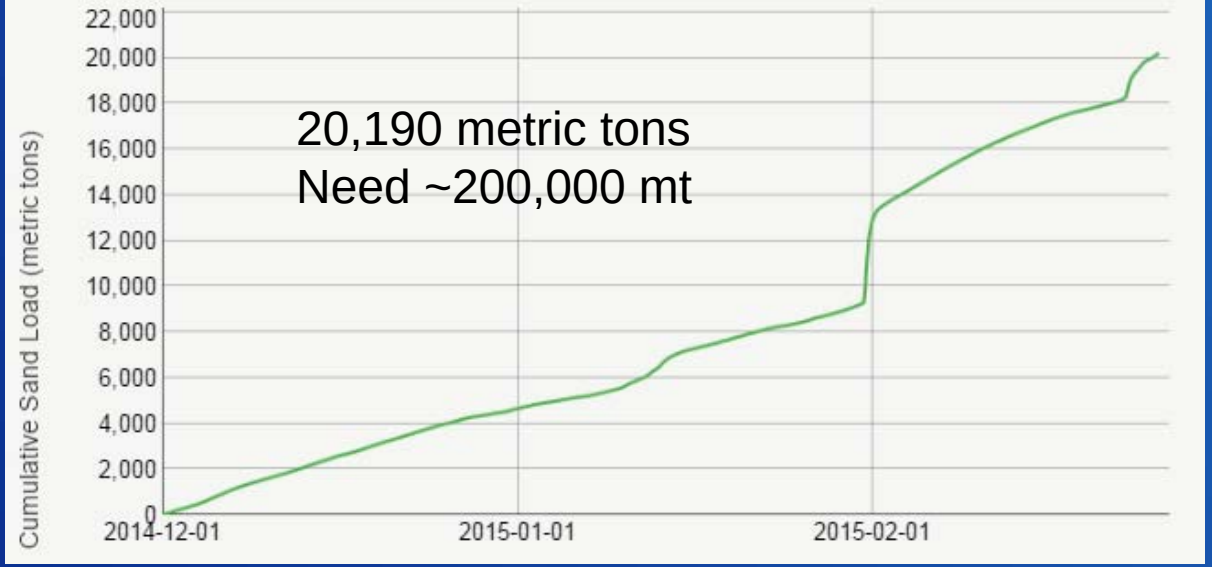
RECLAMATION

Current conditions
from the GCMRC
web page as of Feb. 26

Paria River at Lees Ferry
discharge since Dec 1



Paria River at Lees Ferry
cumulative sand load
since Dec 1



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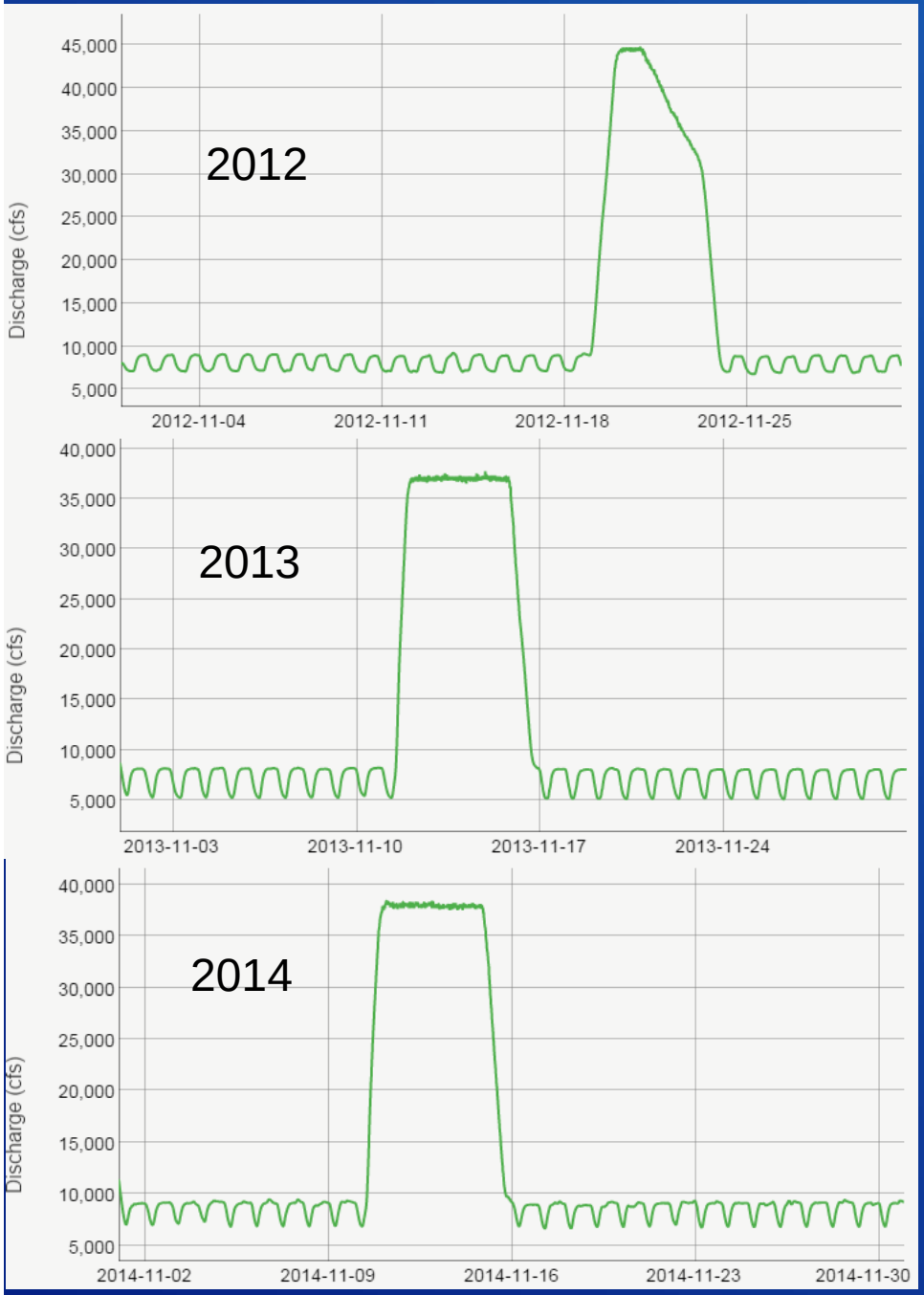


- **November 18-23, 2012**
  ~44,700 cfs for 24 hours
  slow down-ramp rate
  200 cfs/hr 30 hrs
  app. 600k tons sand

- **November 11-16, 2013**
  ~37,000 cfs for 96 hours
  app. 1.9M tons sand

- **November 10-15, 2014**
  ~37,500 cfs for 96 hours
  app. 900k tons sand

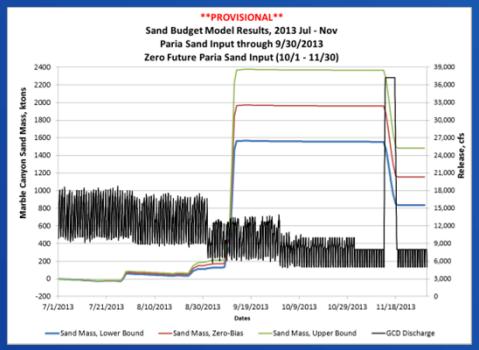
RECLAMATION

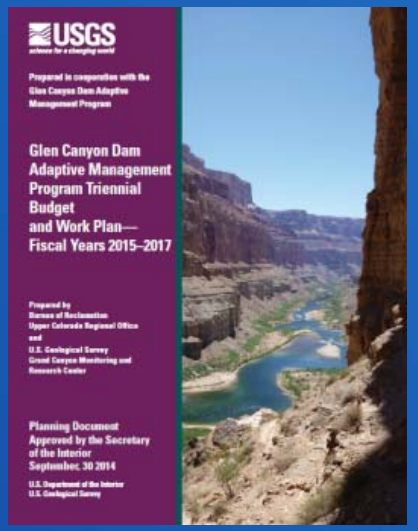
HFE Decision Making Process

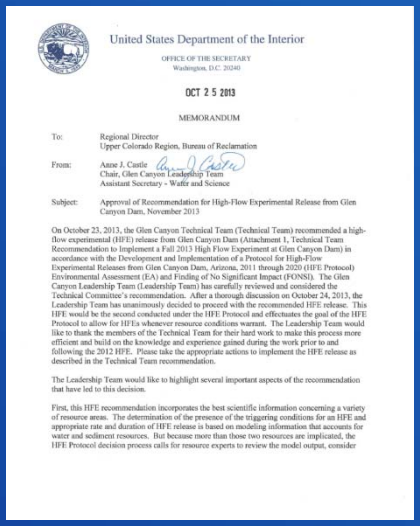
1. Planning and Budgeting Component

2. Modeling Component

3. Decision and Implementation Component







United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

OCT 2 5 2013

MEMORANDUM

To: Regional Director
Upper Colorado Region, Bureau of Reclamation

From: Anne J. Castle
Chair, Glen Canyon Leadership Team
Assistant Secretary - Water and Science

Subject: Approval of Recommendation for High-Flow Experimental Release from Glen Canyon Dam, November 2013

On October 23, 2013, the Glen Canyon Technical Team (Technical Team) recommended a high-flow experimental (HFE) release from Glen Canyon Dam (Attachment 1, Technical Team Recommendation to Implement a Fall 2013 High Flow Experiment at Glen Canyon Dam) in accordance with the Development and Implementation of a Protocol for High-Flow Experimental Releases from Glen Canyon Dam, Arizona, 2011 through 2020 (HFE Protocol) Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). The Glen Canyon Leadership Team (Leadership Team) has carefully reviewed and considered the Technical Committee's recommendation. After a thorough discussion on October 24, 2013, the Leadership Team has unanimously decided to proceed with the recommended HFE release. This HFE would be the second conducted under the HFE Protocol and effectuates the goal of the HFE Protocol to allow for HFEs whenever resource conditions warrant. The Leadership Team would like to thank the members of the Technical Team for their hard work to make this process more efficient and build on the knowledge and experience gained during the work prior to and following the 2012 HFE. Please take the appropriate actions to implement the HFE release as described in the Technical Team recommendation.

The Leadership Team would like to highlight several important aspects of the recommendation that have led to this decision.

First, this HFE recommendation incorporates the best scientific information concerning a variety of resource areas. The determination of the presence of the triggering conditions for an HFE and appropriate rate and duration of HFE release is based on modeling information that accounts for water and sediment resources. But because more than those two resources are implicated, the HFE Protocol decision process calls for resource experts to review the model output, consider

RECLAMATION

Resource Status Assessment

Sediment Resources
In-channel sediment storage
Sandbar campable area
High-elevation sand deposits

Cultural Resources
Archaeological site condition and stability
Access to archaeological sites by tribes

Biological Resources
Aquatic food base
Lees Ferry trout population
Lees Ferry fishery recreation experience quality
Endangered humpback chub and other fish abundance
Riparian vegetation

Hydropower and water delivery
Water quality
Water delivery
Dam maintenance
Hydropower production and marketable capacity