

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 20-21, 2013

Agenda Item

Updates on the 2012 High Flow Experiment

Action Requested

✓ Information item only.

Presenter

Glen Knowles, Adaptive Management Group Chief, Bureau of Reclamation, Upper Colorado Region
Dr. Jack Schmidt, Chief, Grand Canyon Monitoring and Research Center

Previous Action Taken

N/A

Relevant Science

The Environmental Assessment and Finding of No Significant Impact for Development and Implementation of a Protocol for High-Flow Experimental Releases from Glen Canyon Dam, Arizona, 2011 through 2020 can be found here: <http://www.usbr.gov/uc/envdocs/index.html>

Background Information

The Finding of No Significant Impact for the Development and Implementation of a Protocol for High-Flow Experimental Releases from Glen Canyon Dam, Arizona, 2011 through 2020 (HFE Protocol) was completed in May of 2012 along with a directive from the Secretary of the Interior on the implementation of the HFE Protocol and Non-native Fish Control in Grand Canyon. The first HFE conducted under the HFE Protocol was completed in November 2012. The planning for this even under the Secretarial Directive was comprehensive, and resulted in a thorough review of all Glen Canyon Dam Adaptive Management Program resources. Reclamation will provide a presentation will review the HFE planning and implementation process, as well as lessons learned during the process in 2012 that will help improve how the HFE Protocol is applied in the future.

GCMRC will provide a summary of preliminary findings to date. During the accounting period between July 1 and November 17, 2012, between 617,000 and 769,000 metric tons of sand were delivered from the Paria River to the mainstem Colorado River; evidence indicates that most of this sand was stored at the very head of Marble Canyon and had not been transported past River Mile (RM) 30 before the High Flow Experiment (HFE) that was released on November 18. The amount of newly delivered sand available for transport by the HFE was much less than had been available for transport before the 2008 HFE but was more than was available before the 2004 HFE. High suspended sediment concentrations presumably occurred during the 2012 HFE, but they were not measured at RM30. Thirty-three sandbars were photographed before and after the HFE, using fixed-location cameras that take pictures at fixed intervals; 55% of these sandbars significantly increased in area. All sandbars between Lees Ferry and RM32 increased in area; further downstream some sandbars increased in area and an equal proportion had no change. A few sites had significant decrease in sand area. On average, sandbars were larger after the 2008 HFE than after the 2012 HFE.

RECLAMATION

Managing Water in the West

High Flow Experiment (HFE) Update

Bureau of Reclamation
Glen Canyon Dam
Adaptive Management Program
Adaptive Management Work Group
February 20, 2013



U.S. Department of the Interior
Bureau of Reclamation

HFE Decision Making Process

1. Planning and Budgeting Component

- Annual resource status assessment
 - 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

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)

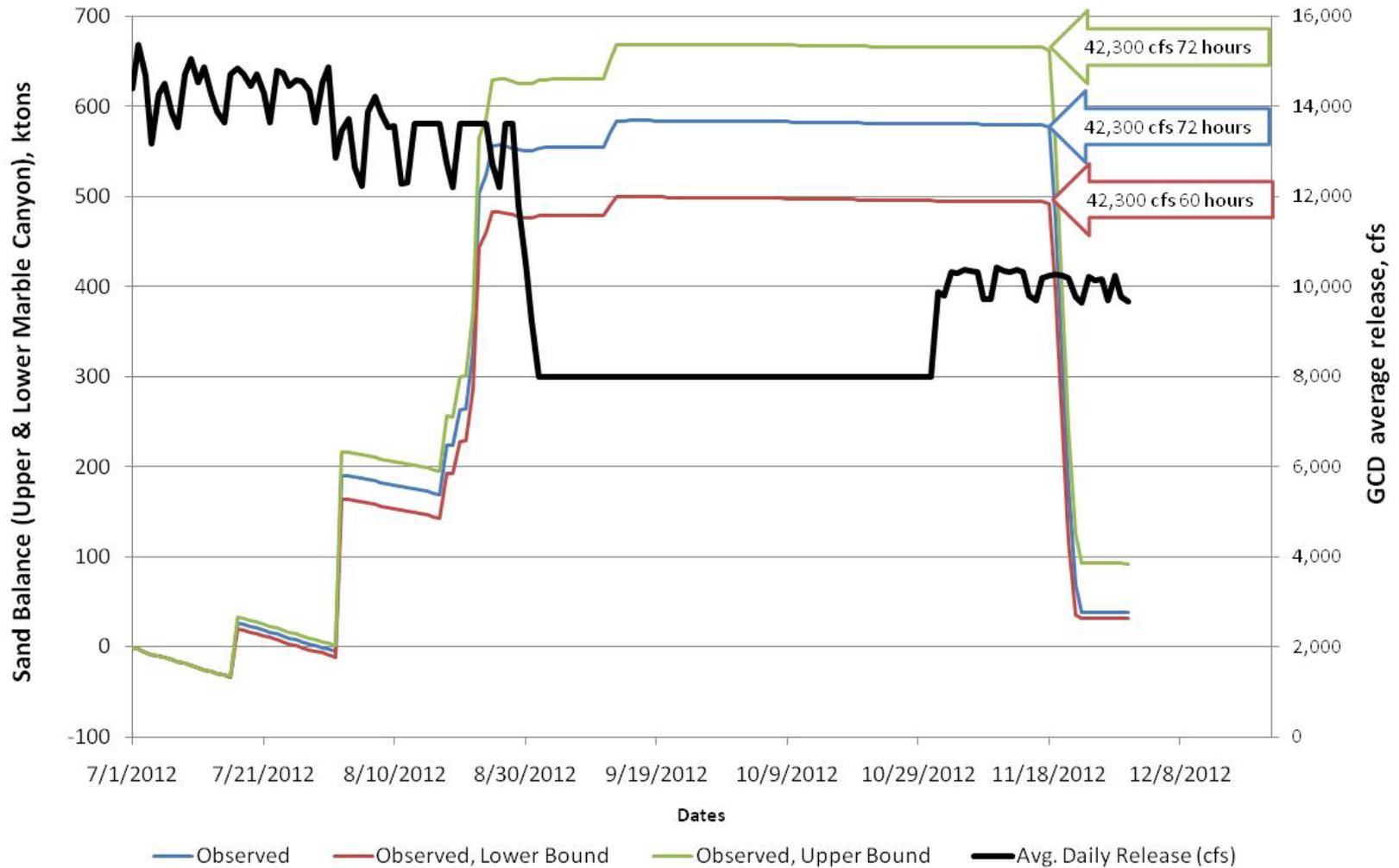
Ramping rates

- 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)

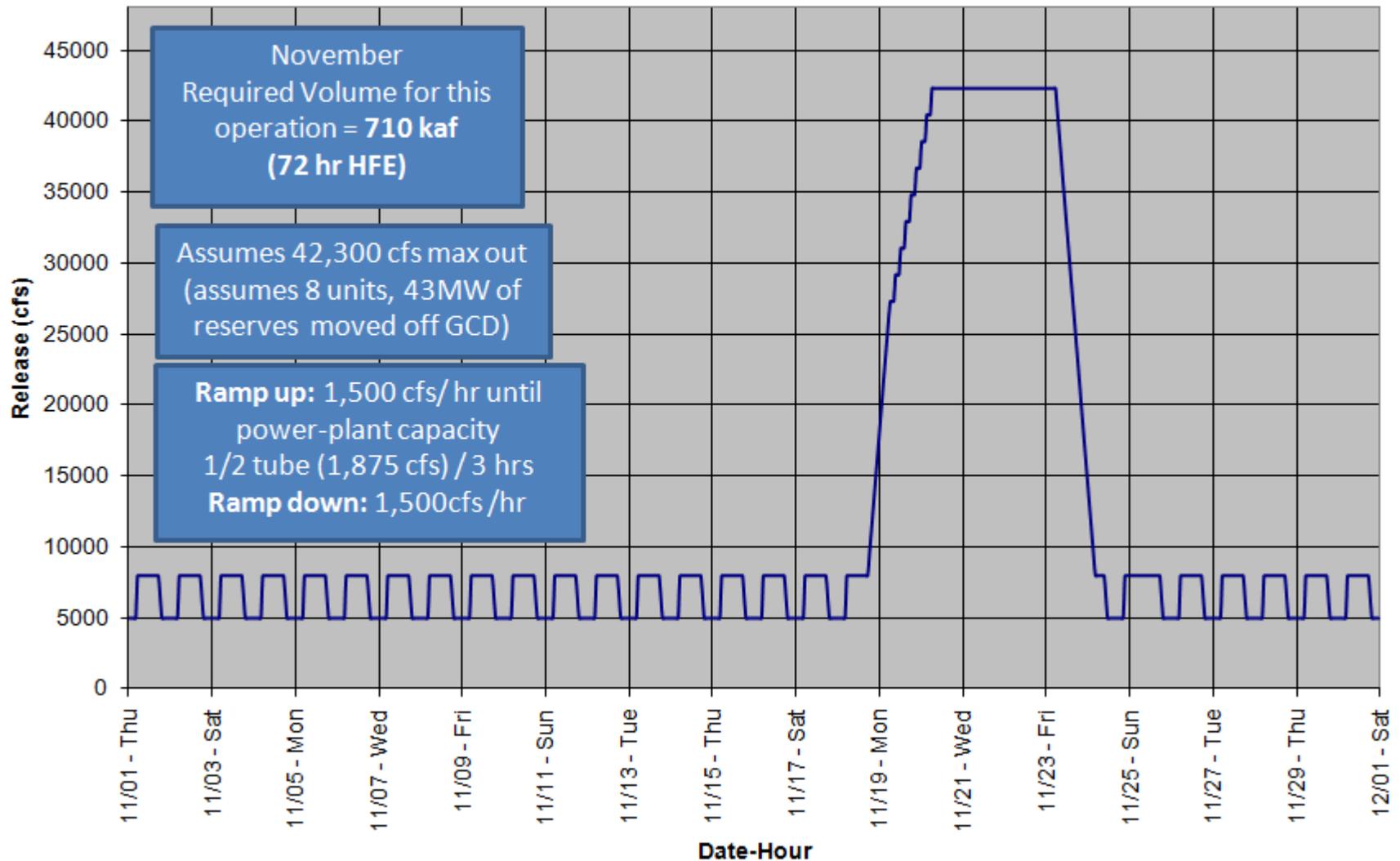
Model Constraints

- “the Leadership Team's view is that it would be inappropriate to adjust the model output in a way that would increase the amount of water to be released or increase power costs associated with an HFE release.” November 7, 2012 memo from Anne Castle

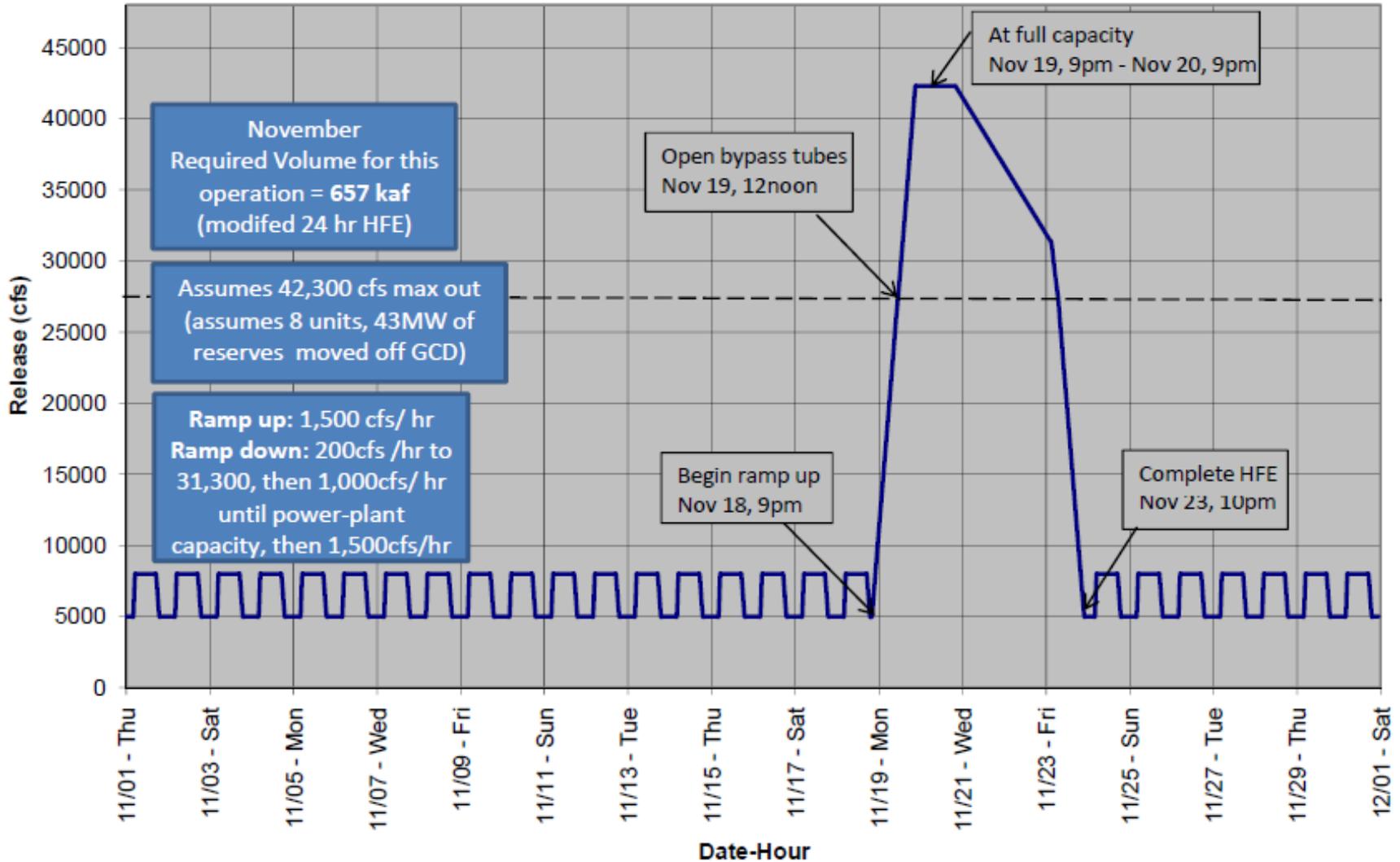
Sand Budget Model Results, 2012 Jul - Nov
Observed (incl. Upper & Lower est.) Paria Sand Input through 10/4/2012
Zero Future Paria Sand Input (10/5 - 11/30) **PROVISIONAL******



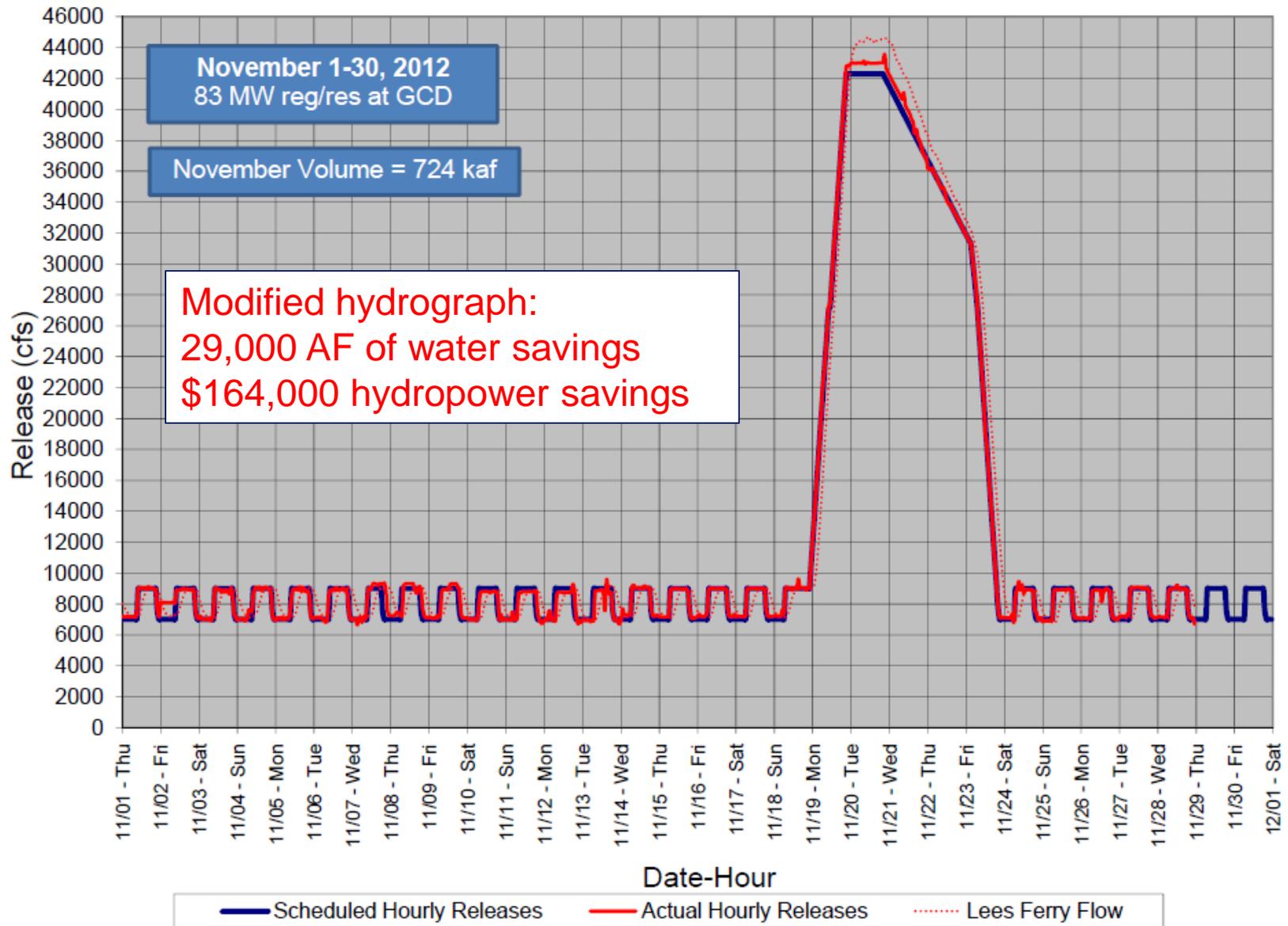
Possible Glen Canyon Dam Hourly Release Pattern



Possible Glen Canyon Dam Hourly Release Pattern



Glen Canyon Dam Hourly Release Pattern NOV 2012



Issues Raised and Lessons Learned during the 2012 HFE Planning Process

- More opportunity for more input sooner
- Modifying the hydrograph from the model output
- Effect of HFE spreading Whirling Disease
- Impacts of 5,000 to 8,000 background operation
 - Food base and Lees Ferry rainbow trout fishery
 - Whitewater rafting safety concerns
- Monitoring of sand bars
- Covering of, and access to, archaeological sites
- Hydropower costs – impacts to ratepayers