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RECLAMATION



Potential LTEMP Experiments Water Year 2021

Adaptive Management Work Group Meeting
February 11, 2021

LTEMP Experiments

“The overall approach attempts to strike a balance between identifying specific experiments and providing flexibility to implement those experiments when resource conditions are appropriate.”

“...rather than proposing a prescriptive approach to experimentation, an adaptive management-based approach that is responsive and flexible will be used to adapt to changing environmental and resource conditions...”



LTEMP Process for Experiments

- Annual Reporting and TWG meetings
- Notification and Consultation to Tribes & PA Parties
- Implementation / Planning Team Recommendation
- DOI decision

1.4 COMMUNICATION AND CONSULTATION PROCESS FOR ALTERNATIVE D

To determine whether conditions are suitable for implementing or discontinuing experimental treatments or management actions, the DOI will schedule implementation/planning meetings or calls with the DOI bureaus (USGS, NPS, FWS, BIA, and Reclamation), WAPA, AZGFD, and one liaison from each Basin State and from the UCRC, as needed or requested by the participants. The implementation/planning group will strive to develop a consensus recommendation to bring forth to the DOI regarding resource issues as detailed at the beginning of this section, as well as including WAPA's assessment of the status of the Basin Fund. The Secretary of the Interior will consider the consensus recommendations of the implementation/planning group, but retains sole discretion to decide how best to accomplish operations and experiments in any given year pursuant to the ROD and other binding obligations.



Potential LTEMP Flow Experiments Water Year 2021

GCD Experimental Flow	Duration	Implementation Window
Fall HFE	up to 96 hours	October – November
Extended Duration Fall HFE	97-192* or 97-250 hours***	October – November
Spring HFE ^Δ	up to 96 hours	March – April
Proactive Spring HFE^{Δ◇}	24 hours**	April – June
Trout Management Flows	up to 3 cycles/month for 4 months	May – August
Macroinvertebrate Flows	target 2-3 replicates	May – August

* First test not to exceed 192 hours

** First test 24 hours

*** After first test, up to 250 hours

Δ no Spring HFE in same WY as extended duration Fall HFE

◇ no proactive Spring HFE in same WY as sediment-driven Spring HFE

Other Potential FY2021 Flows :

- Apron Repair + Spring Disturbance Flow Test (March)
- Release reduction for Overflight (steady 8,000 cfs for 7 days in May)



Trout Management Flows

TMFs are a special type of fluctuating flow designed to reduce the recruitment of trout by disadvantaging YOY trout

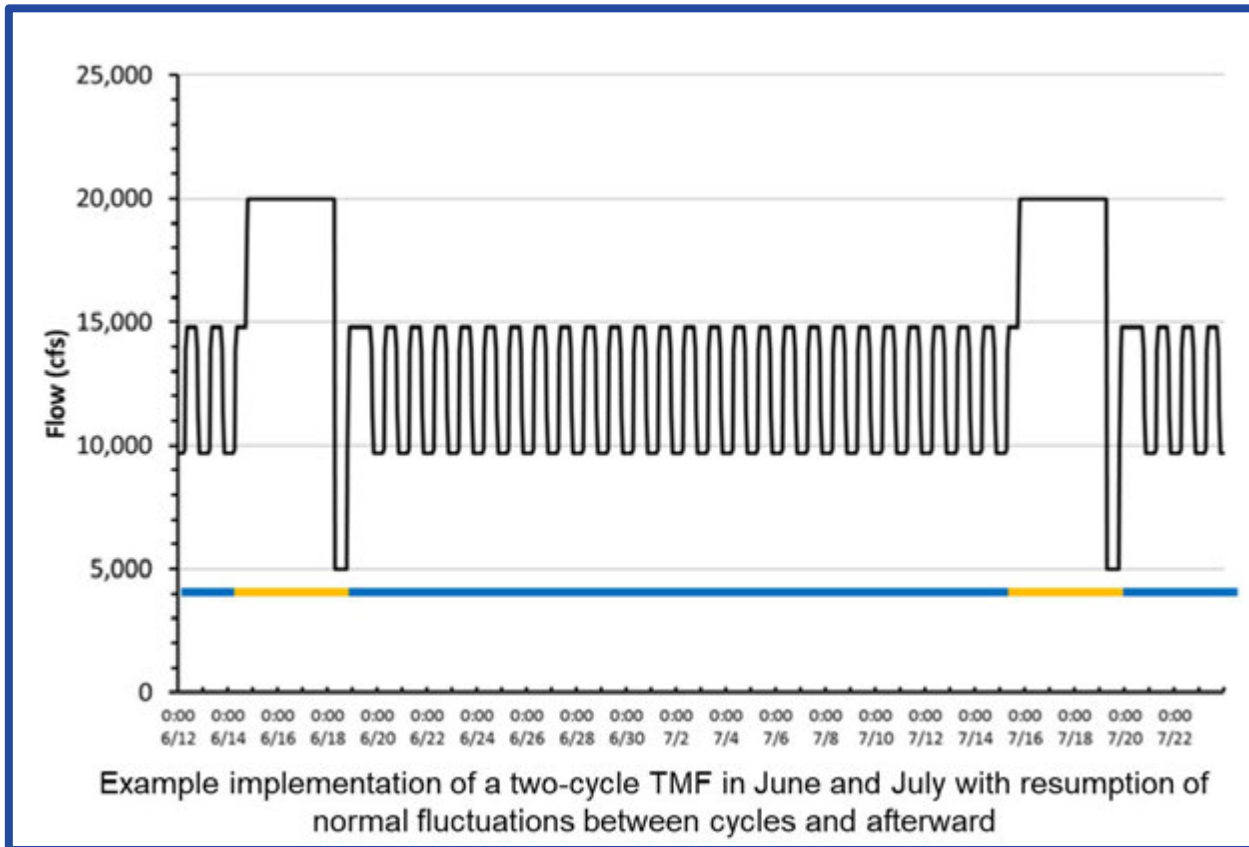


FIGURE 6 Example Implementation of a Two-Cycle TMF in June and July with Resumption of Normal Fluctuations between Cycles and Afterward (Monitoring for effectiveness would occur before and after each cycle. The horizontal line below the graph shows periods of normal fluctuation [blue] and TMFs [orange].)



High Flow Experiments

Fall HFEs, sediment triggered

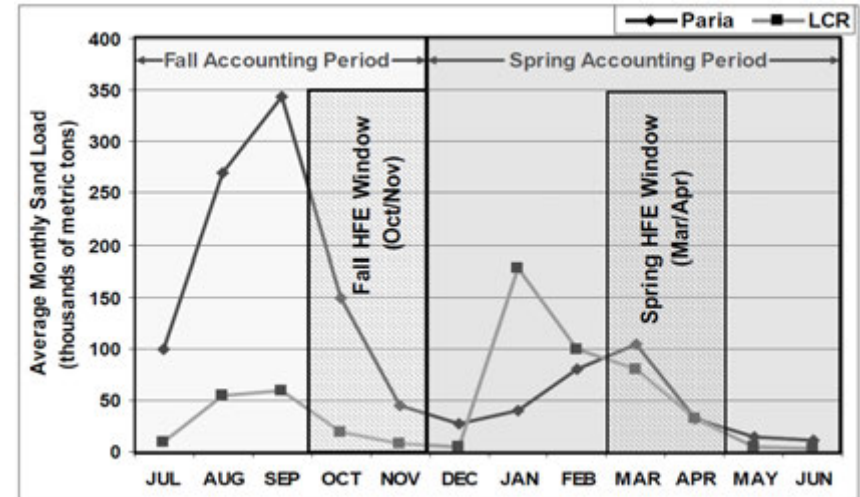
- Sediment accounting: July 1 – Nov 30
- PI Team Evaluation: early September
- Possible implementation: Oct – Nov

Spring HFE, sediment triggered

- Sediment accounting: Dec 1 – June 30
- PI Team Evaluation: late February
- Possible implementation: March-April

Spring HFE, proactive

- Equalization (GCD releases ≥ 10 maf)
- Planning Team: late February
- Possible implementation: April-June

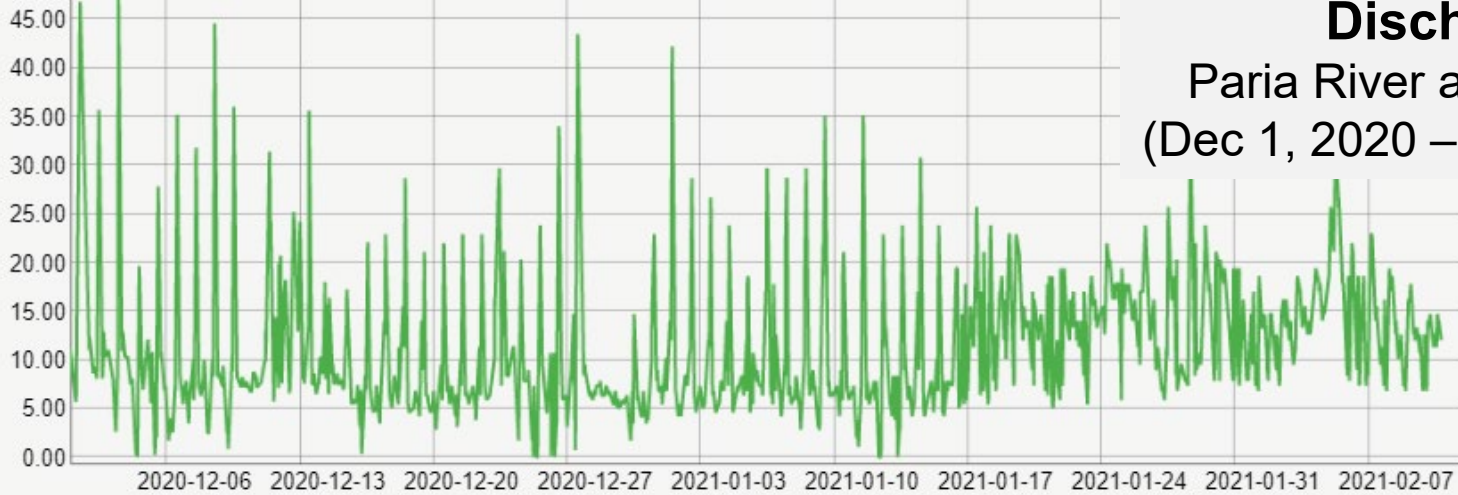


Paria River Discharge & Sediment Inputs

Discharge

Paria River at Lees Ferry
(Dec 1, 2020 – Feb 11, 2021)

Discharge (cfs)

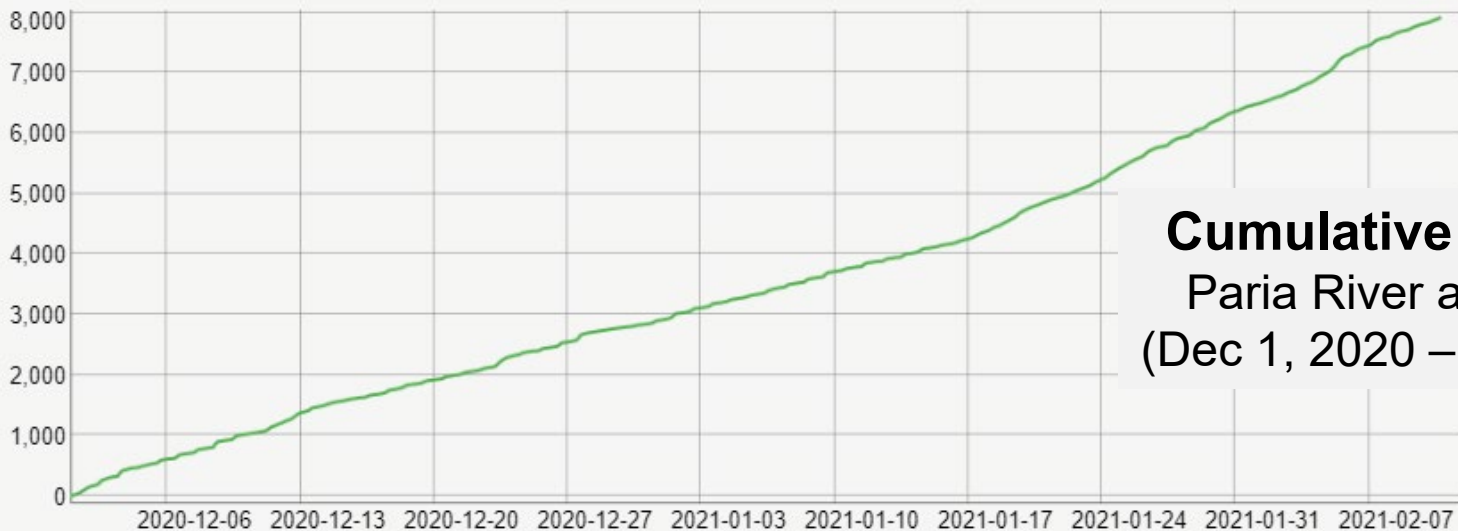


Time

Cumulative Sand Load

Paria River at Lees Ferry
(Dec 1, 2020 – Feb 11, 2021)

Cumulative Sand Load (metric tons)



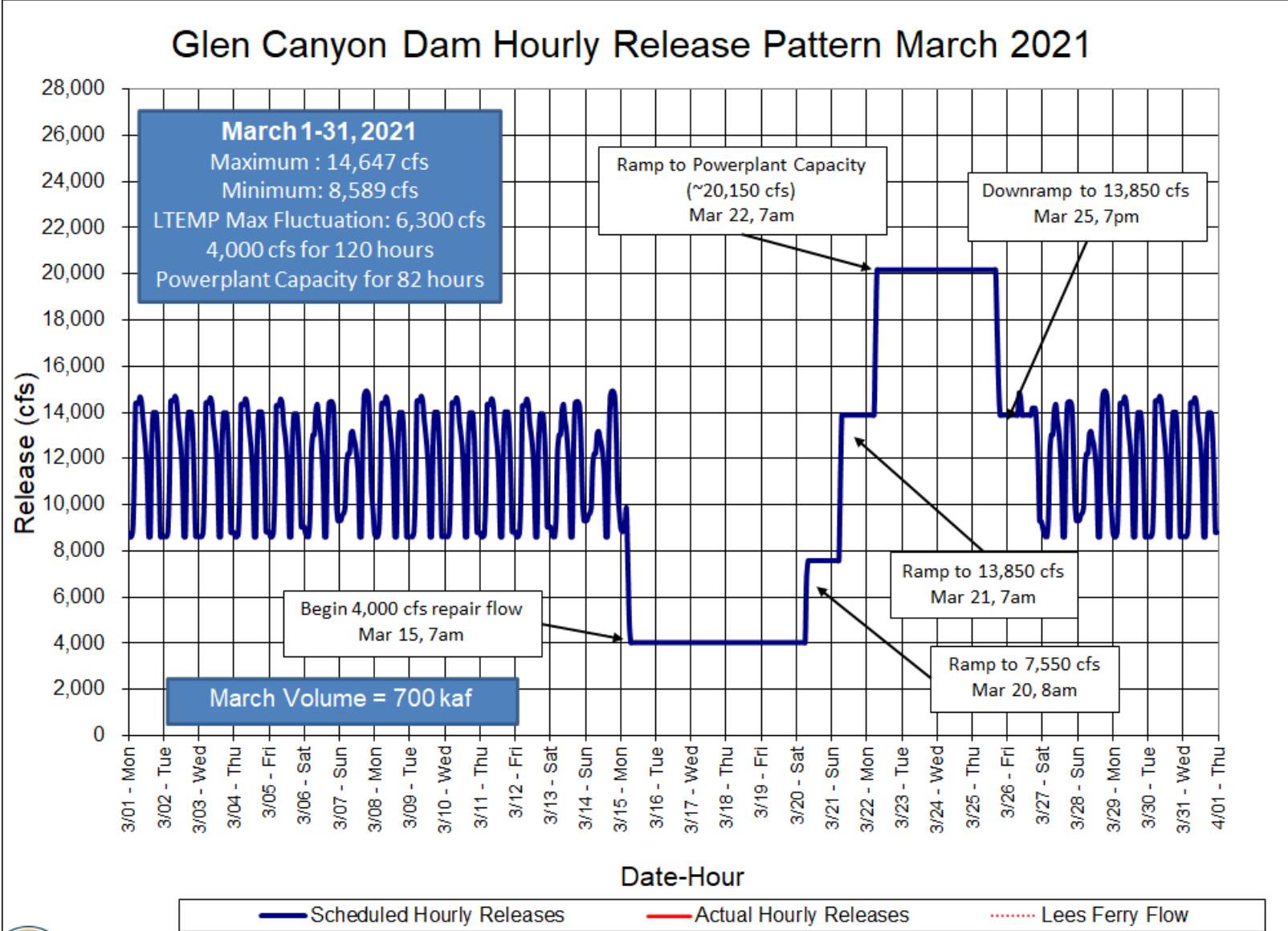
USGS Preliminary Data, 2021. Do Not Cite.

(https://www.gcmrc.gov/discharge_qw_sediment/station/GCDAMP/09382000#)

Feb 11, 2021



Spring Disturbance Flow Hydrograph



Why a Spring Disturbance Flow?

- Necessary Maintenance.

- Low flow portion of the hydrograph will allow a Reclamation dive team to safely complete necessary maintenance on the apron immediately downstream of Glen Canyon Dam

- Improved Understanding consistent w/ LTEMP goals.

- Help fill the knowledge gap left by infrequent sediment-triggered High Flow Experiments (HFE) during the spring season

- Potential Natural Resource Benefits.

- The combination of low and high flows is expected to disturb river bottom; may trigger positive ecosystem responses like increased algae and insect production
- May disadvantage brown trout

- Improved Collaborative Processes

- Developed and evaluated within the LTEMP adaptive management framework; result of extensive collaboration



LTEMP Process for Experiments

- Annual Reporting and TWG meetings to discuss potential experimental actions for the year
- Notification to Tribes – **Tuesday, January 12**
- Implementation / Planning Team to develop a consensus recommendation to DOI
 - AMWG / TWG webinar – **2pm MST Monday, January 25**
 - GCD Leadership Team – **11am MST Tuesday, February 2**
- DOI Designee decision – **February 5**
- Implementation – **Monday, March 15**



Spring Disturbance Monitoring

Element	Topic	PI	To implement this project element as described, need decision by...	Limiting Factor	BAHG Ranking	
O.1	Foodbase	Kennedy	February 1st, 2021	Permits, logistics	Tier 1	\$95,429
O.2	Sediment in Western GC	Grams	February 1st, 2021	Permits, establish new study site in Western Grand Canyon	Tier 2	\$61,626
O.3	Aeolian	Sankey	February 1st, 2021	Equipment rental	Tier 3	\$12,540
O.4	Terrestrial Vegetation	Palmquist	February 1st, 2021	Retaining key staff	Tier 3	\$19,792
O.5	Aquatic Vegetation	Dibble	February 15th, 2021	pre-FLAHG data collections	Tier 1	\$42,432
O.6	Brown Trout	Dibble	February 15th, 2021	pre-FLAHG data collections	Tier 2	\$59,707
O.7	Native Fish Movement	Young	October 15th, 2020--JCM West site (already passed); December 17th, 2020--Western Grand Canyon (already passed)	30d for delivery of sonic tags. Once delivered, tags need to be surgically implanted in fish 30-60d before the FLAHG flow for acclimation purposes	Tier 2	\$48,174
O.8	Recreation	Bair	February 15th, 2021	Developing survey, partnering with AZGFD to implement	Tier 3	\$10,300
O.9	Hydropower	Bair	None, element funded in TWP		NA	
O.10	Sandbars	Grams	None, element funded in TWP		NA	
O.11	Decision Support	Runge	None, element mainly involves post-hoc analyses		Tier 3	\$40,555



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