



— BUREAU OF —
RECLAMATION



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LTEMP Flow Experiments

Adaptive Management Work Group Meeting
February 9, 2022

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...”

--2016 LTEMP ROD, p. B-9



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.



Resource Considerations

1. Water quality and water delivery
2. Humpback Chub
3. Sediment
4. Riparian Ecosystems
5. Historic properties and traditional cultural properties
6. Tribal Concerns
7. Hydropower production and WAPA's assessment of the status of the Basin Fund
8. Rainbow Trout Fishery
9. Recreation
10. Other Resources

Reference: 2016 LTEMP ROD, p. B-8,

Section 1.3 Implementation Process for Experiments Under Alternative D



Potential LTEMP Flow Experiments

| 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

WY 2022 Related Activities:

- [Drought Response Ops at GCD](#) – Lower winter releases, reallocation
- Consultation w/ Tribes re: Trout Management Flows – Jan kickoff
- Planning/Implementation Process Review

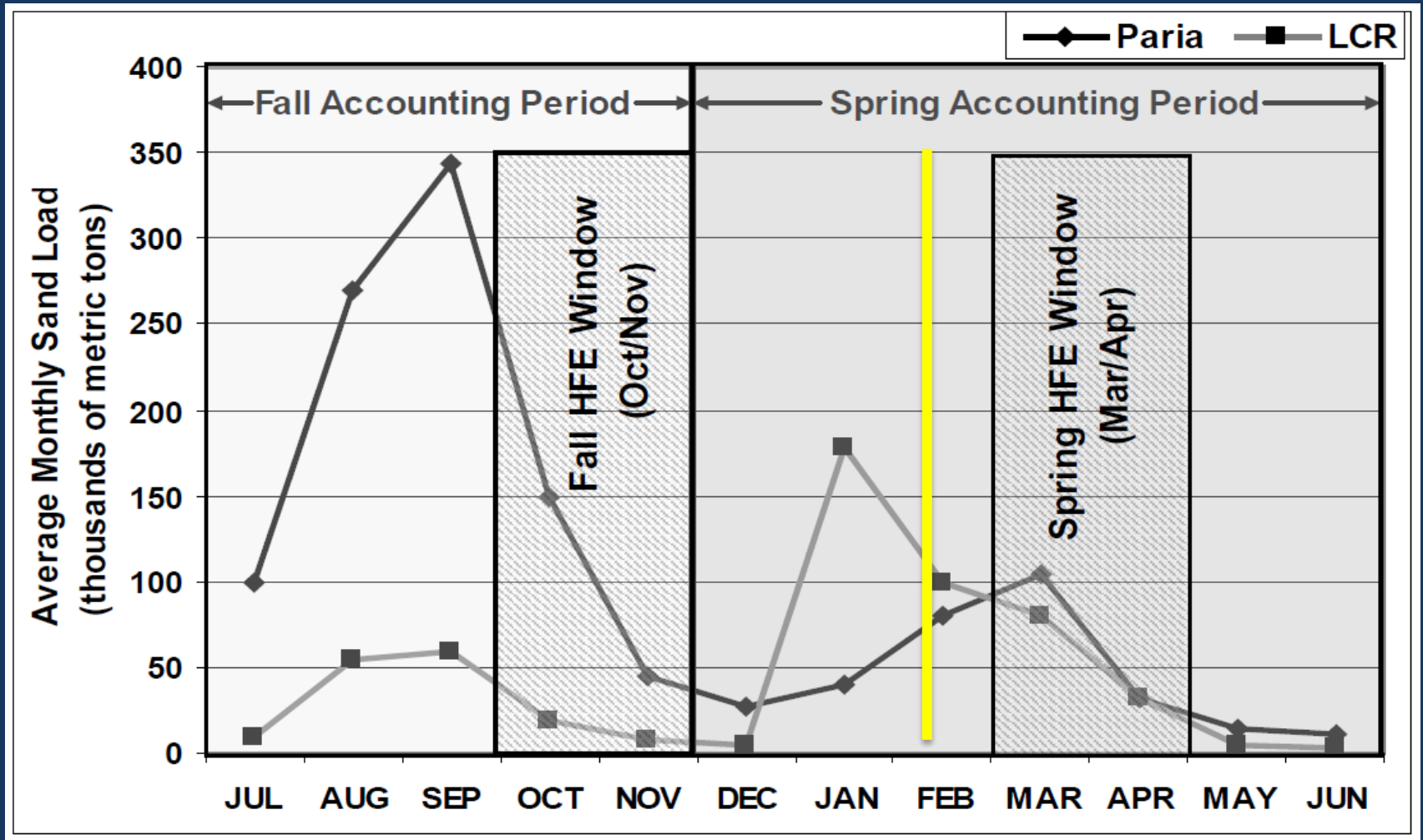


Potential Spring HFE - FY22

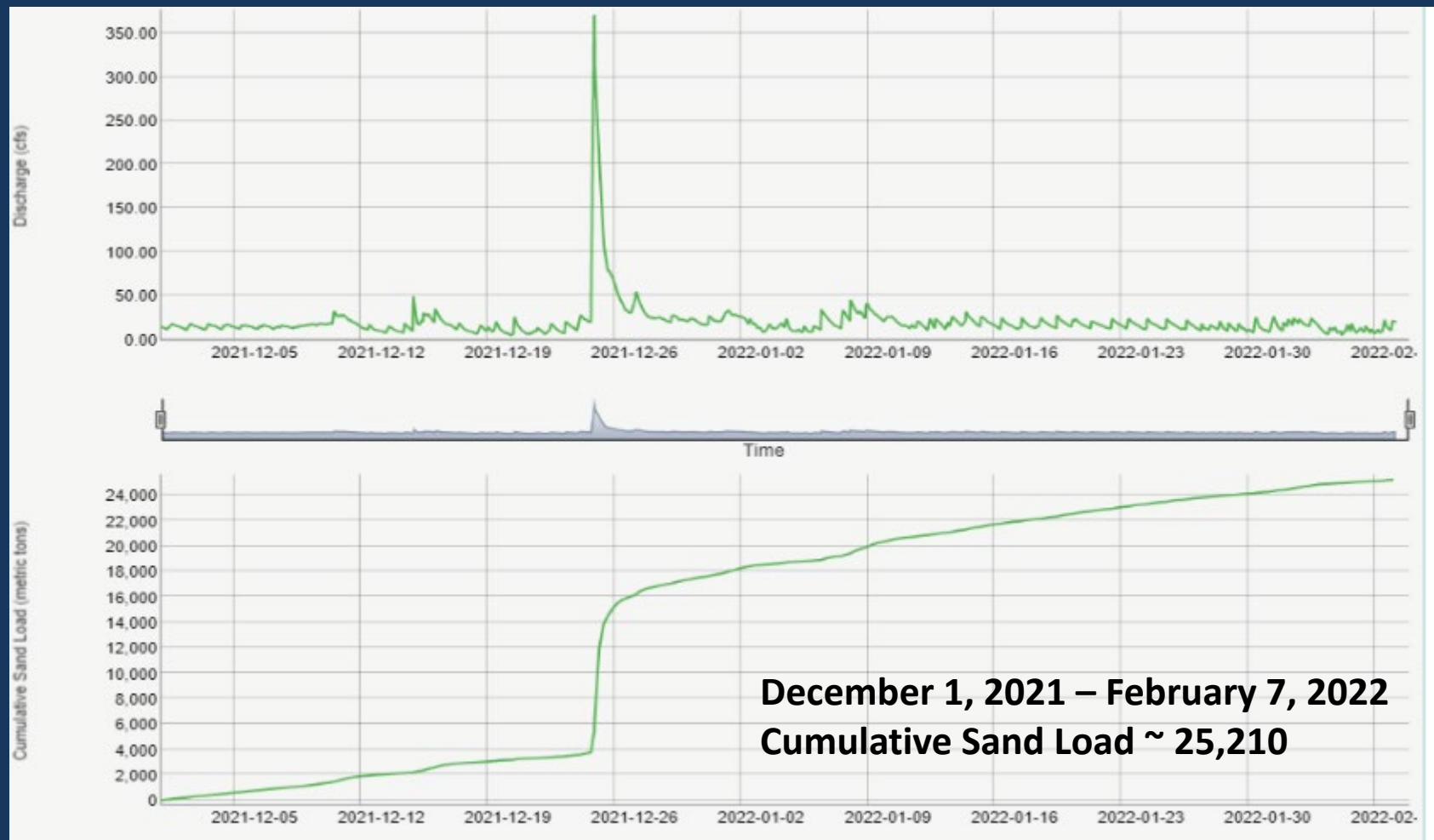
- Currently within Spring accounting window (Dec. 1, 2021 – June 30, 2022)
- Sand inputs from Paria not significant to date



Spring Accounting Window



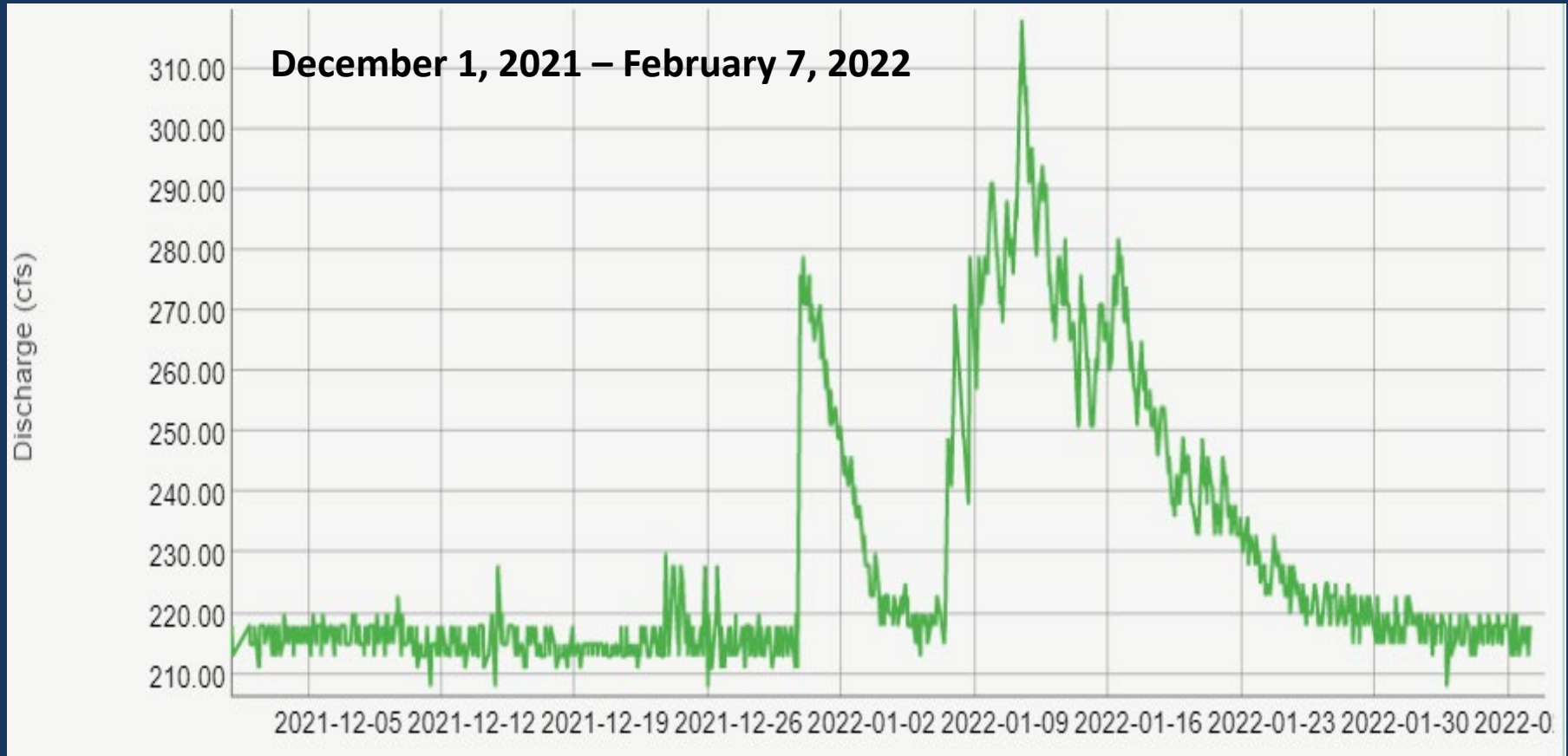
Paria River Discharge and Sand Inputs



USGS Preliminary Data, 2022. Do Not Cite.

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

LCR Discharge



USGS Preliminary Data, 2022. Do Not Cite.

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

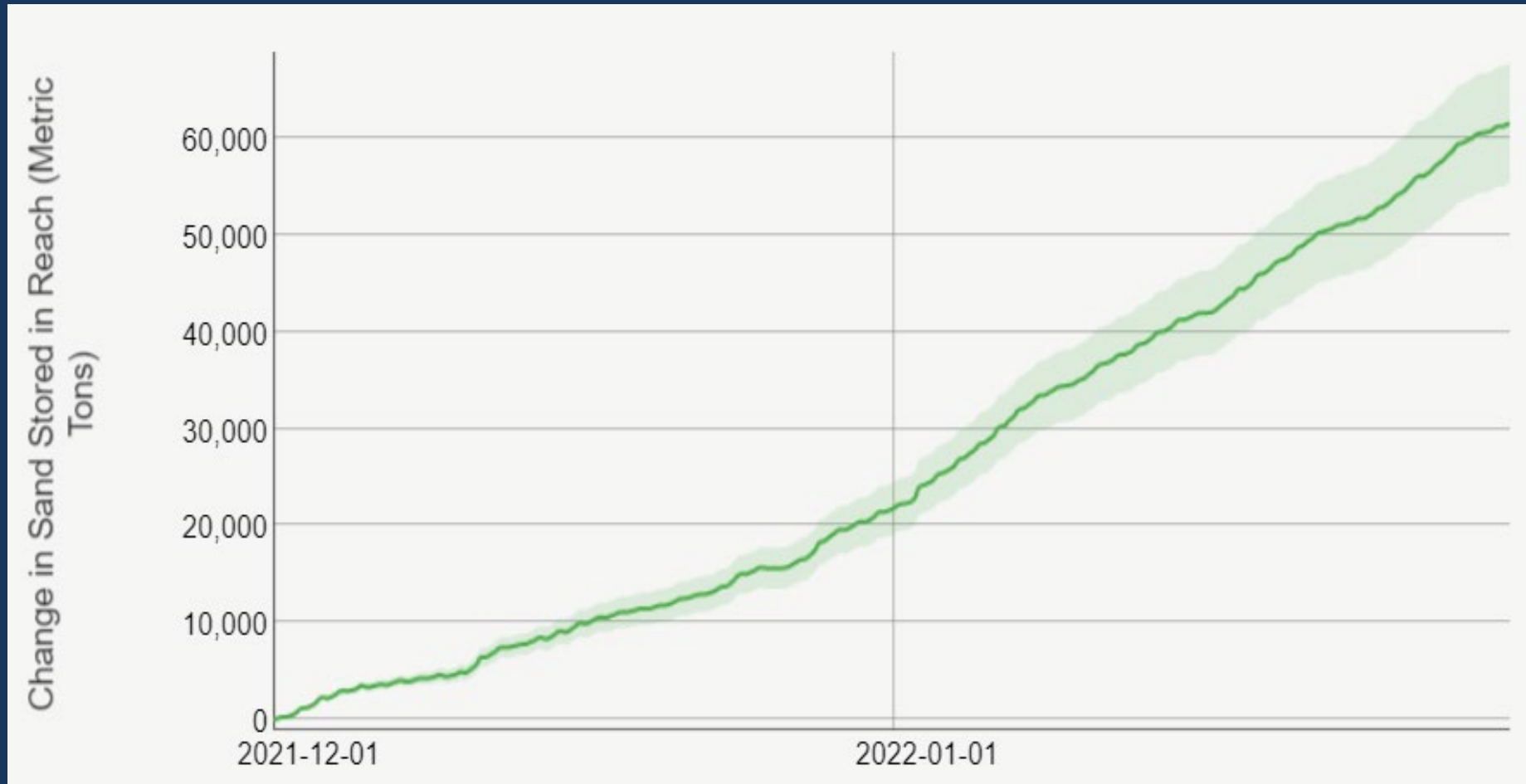
Upper Marble Canyon Sand Mass Balance



USGS Preliminary Data, 2022. Do Not Cite.

(https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09380000/09383050)

Lower Marble Canyon Sand Mass Balance



USGS Preliminary Data, 2022. Do Not Cite.

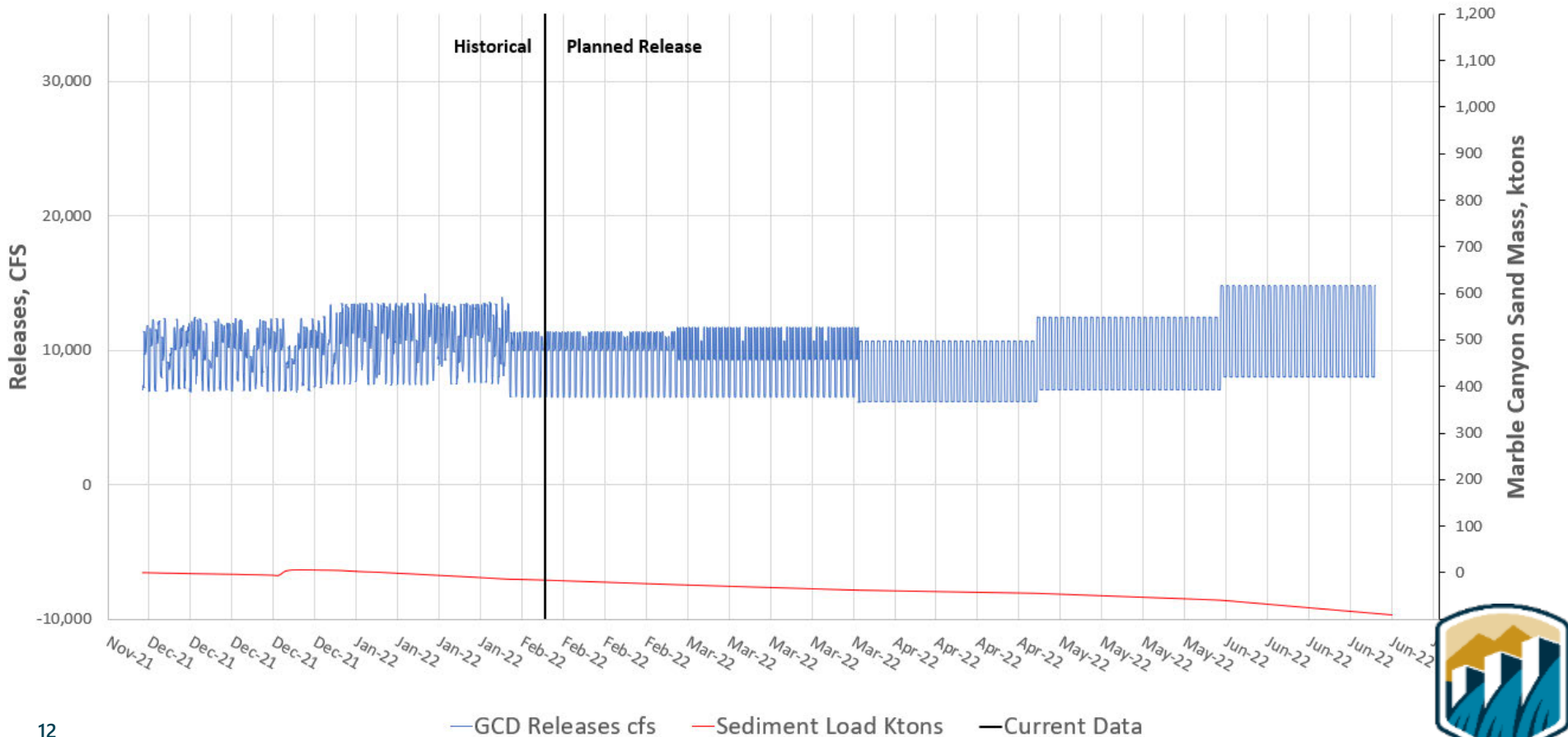
(https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09383050/09383100)

Sand Budget Model Results

Actual Flow as of 2/2/2022
Actual Sediment data as of 2/7/2022
Graph Updated 2/7/2022
GCMRC's most recent Lab Results of
Suspended Sediment as of 10/06/2022

Sand Budget Model Results, Dec 1, 2021 - June 30, 2022 Release and Calculated Sediment Load in Colorado River, Marble Canyon

The model suggested NO HFE be run for 0 hours leaving an approximate -89 kton balance on June 30



Current Activities & Next Steps

- **Spring High Flow Experiment**

- Dec-Mar Monitoring sediment inputs for trigger conditions
Notification to GCDAMP Tribes, Offer Consultation (2/9/22)
If sediment trigger met...
Hydrograph alts, assessment of resource impacts, technical report
AMWG/TWG Informational Webinar (3/1/22)
Secretary/Designee Decision (3/21/22)
- Mar-Apr Implementation Window (late April)

- **Spring Disturbance Flow**

- ✓ Dec 2021 – GCMRC documents findings in Annual Report
- ✓ Jan 2022 – ARM, TWG Review and Discussion
- 2022 – O.1 and O.2 continued, O.11

- **Bug Flows**

- ✓ Oct 2021 – GCMRC Draft Synthesis Report, Stakeholder workshop
- ✓ Dec 2021 – Science Advisors Review
- ✓ Jan 2022 – ARM, TWG Review and Discussion
- Feb-Mar – Revise report, respond to feedback, workshop #2?



Current Activities & Next Steps

- **Trout Management Flows**

- Jan 2022 – Consultation w/ Partner Tribes (Jan kickoff)
- TBD 2022 – GCMRC Literature Review (Jan TWG summary)
- TBD 2022 – BOR White Paper
- Apr 2022 – Review of Upper Basin spike flow experiment
- TBD 2022 – Potential lab-based or small-scale studies

- **Other Concepts & Considerations**

- Reallocation of monthly releases (~350 kaf)
- spring / summer timed disturbance
- Temperature and water quality condition improvement
- Non-native fish establishment prevention



Proposed Motion #1: Flow Ad Hoc Group Charge

- Areas of General Agreement

- Need for a nimble space to discuss emerging issues
- TWG/FLAHG Role in Concept Development & Planning
 - Develop and evaluate hydrographs, predicted effects to resources, monitoring
 - Work w/ GCMRC & Reclamation

- Areas of Less Agreement

- Off Menu / within LTEMP ROD
- Broad discretion / Specific focus
- Long-term planning vs. near term implementation
- Priorities and Objectives
 - Learning vs. Managing
 - Drought objectives, lake levels
 - Sediment
 - Water Quality
 - Non-native fish passage



Questions?



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