



Glen Canyon NRA

- **Update on Discussions of the Sloughs at -12-mile mark.**

Glen Canyon NRA Response to USBR -12-mile Slough Modification Proposal

- Glen Canyon NRA (GLCA) has not yet decided on a pathway for modification of the sloughs at the -12-mile mark (3 miles downriver from GCD).
- To make a decision, GLCA needs to better understand associated design, costs, equipment, restoration if feasible, and long-term maintenance obligations. NPS currently has no funds for modifying the sloughs.
- NPS will further discuss the proposal and alternatives with Reclamation in November and December of 2023.
- NPS will work with Reclamation to assemble an interdisciplinary “federal family” working group to start in January 2024 with an ecosystem perspective.

Year 1889 - Sloughs at -12-mile Mark – Glen Canyon Reach



Year 2011 - Sloughs at -12-mile Mark – Glen Canyon Reach



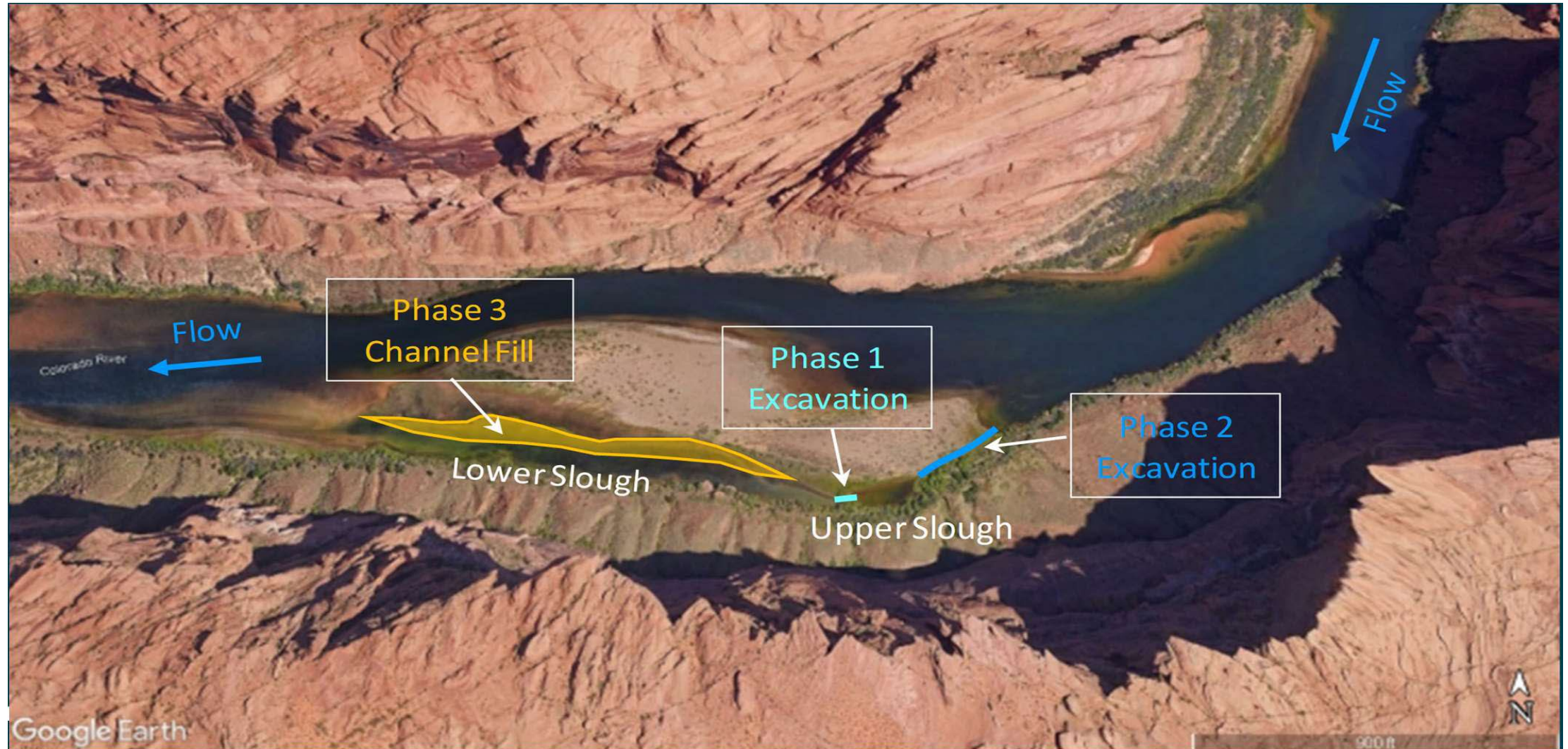
-12-Mile Slough Considerations - GLCA

- Significant natural feature (see 1889 photo) on the river
- Wetlands – Riparian, shallow marsh, deep water with aquatic plants
- Spring hydrology ? Underground upwelling? Bank feeder spring?
- Two species of toads; one species of salamander (DNA sampling?)
- Native fish species breeding (e.g. flannelmouth suckers)
- Waterfowl feeding and resting (ducks, geese, shorebirds, others)
- Christmas bird species count site, including foreign birds
- Recreational hunting and fishing (Glen Canyon NRA multiple use)
- Invertebrates, including dragonfly species.

-12-Mile Slough Observations - GLCA

- Upper slough remains full when river and lower slough are very low.
- Non-native fish breeding not a problem in lower slough before 2022.
- Only upper slough was managed for green sunfish problem b4 2022.
- Water temperature rise in 2022 and 2023 brought SMB breeding.
- Upper and lower sloughs warm earlier, longer & higher than river.
- 2023 water temperature rise was earlier and longer than modeled.
- Lots of aquatic vegetation in lower slough (6 acres in size).
- 2 YOY size cohorts in lower slough in 2023 are larger than river YOY.

Reclamation's Proposed Slough Alternative



Thoughts on Reclamation's -12-mile Slough Proposal

- Cut between upper and lower sloughs – more than hand shoveling
- Significant elevation change from river bend to upper slough
- Cut from river bend to upper slough longer and deeper
- Armoring of inlet from river bend to upper slough?
- Large amount of fill to narrow lower slough. Permit? Mitigation?
- Initial or final restoration – native plants, select fauna, hydrology.
- NEPA and other compliance – use prior documents?
- Can we identify additional alternatives? (Low water? Pipes? Weirs?)
- Work will require helicopter time, heavy equipment, and maintenance to be effective

-12-Mile Slough Questions - GLCA

- Shall we alter a significant natural feature? Habitat conversion?
- Wetlands – Corps of Engineers full permit or nationwide permit?
- Values to tribes - further consultation?
- Spring hydrology – Retain for amphibians and invertebrates?
- Reshape sloughs to retain or propagate native fish?
- Mitigation for loss of waterfowl feeding and resting habitat?
- Mitigation for loss of recreational hunting in Glen Canyon reach?
- “Catch basin “ indicator location for invasive fish (“the canary”) – Will we push fish farther down the river if no “canary?”

-12-mile Slough Closing Thoughts

- For slough modification to have a chance to be effective, solutions at the source (Glen Canyon Dam) are vital. This means cooler water and eliminating passthrough of invasive fish.
- 2016 documents aimed at Green Sunfish management mention a 40% chance of slough modification being effective for bass. How do we raise the effectiveness of such modification?
- What is our multi-agency commitment to a package of actions?
- Consider feedback from tribes, Corps, state agencies, stakeholders
- Plan for one or more rotenone treatments in July/August 2024.
- Timelines – 8 months (2024) vs 1 year 8 months (2025)
- What is the funding pathway for this significant effort?



Questions? Comments?