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December 15, 2022

*via e-mail to sbucklin@usbr.gov only*

Sarah Bucklin  
Regional Environmental Coordinator  
Bureau of Reclamation  
125 South State Street, Room 8100  
Salt Lake City, Utah 84138-1147

Re: Stakeholder Input to the National Environmental Policy Act (NEPA) Compliance for Glen Canyon Dam Operational Flexibilities in Response to Warmwater Invasive Fish

Dear Ms. Bucklin:

The Bureau of Reclamation (Reclamation) has announced plans to prepare an Environmental Assessment (EA) to consider a proposed action to provide a comprehensive framework for implementing operational alternatives at Glen Canyon Dam consistent with the Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP), Grand Canyon Protection Act and other provisions of applicable Federal laws to reduce the threat of warmwater invasive fish below Glen Canyon Dam. During a Virtual Information Webinar Session (Webinar) held on December 1, 2022, Reclamation requested stakeholder input on the EA by December 15, 2022. The following comments are submitted on behalf of the Glen Canyon Dam Adaptive Management Program (GCDAMP) Technical Work Group (TWG) representatives from the three lower Colorado River Basin states (LB States TWG Reps) as part of the stakeholder input process.

The LB States TWG Reps appreciate this opportunity to provide comments during the EA process and are in support of preventing smallmouth bass establishment. The LB States TWG Reps acknowledge the immediate need to address smallmouth bass through flow-related actions but want to emphasize that operational alternatives alone will not provide prevention. Additional actions, including implementation of a fish exclusion device(s) and fishery actions, such as targeted removals, will be necessary to achieve this goal and should be developed and deployed as expeditiously as possible – ideally by 2024.

**Implementation of Operational Alternatives:** Reclamation indicates that operational flexibilities considered in the EA will be compatible with the LTEMP. As such, we recommend that implementation of operational alternatives follow the communication and consultation processes that have been developed according to Section 1.4 of the LTEMP Record of Decision.

Moreover, the flow options analyzed in the EA may each be important to have available to implement given certain conditions. We recommend that, to the extent multiple alternatives meet the Finding of No Significant Impact threshold, more than a single operational alternative

be available for implementation in the spring and summer of 2023. We also recommend that offramps be identified for emergency exception criteria or if conditions indicate that implementation will not appreciably prevent the establishment of smallmouth bass.

**Purpose and Need Statements:** The LB States TWG Reps recommend the Purpose and Need statements be revised as follows (major revisions are shown in **bold red** text format):

... an Environmental Assessment is necessary to pursue implementation of **operational alternatives (flow options)** at Glen Canyon Dam **as a temporary means to help prevent establishment of** smallmouth bass.

The Need statement should be revised as follows:

Need: As water levels in Lake Powell continue to decline to historical lows, warmer epilimnetic water released through Glen Canyon Dam (GCD) is causing record high water release temperatures. Below the dam, these warm water releases are creating ideal spawning conditions for smallmouth bass (SMB), a predatory warmwater invasive fish species. If SMB successfully spawn and establish below GCD and expand downstream into the Grand Canyon, they will likely pose a threat to the federally protected humpback chub and other native fishes. To respond to the threat of SMB establishment, this EA identifies various GCD flow options designed to disadvantage and disrupt SMB from spawning in the Colorado River between Glen Canyon Dam and the confluence with the Little Colorado River. A mix of water releases would be needed to cool the river below 16 degrees C, which is **a generally acknowledged temperature threshold** for SMB to spawn. **A reduced GCD water release temperature target of 13 degrees C or below**, combined with changes in velocity would be used to prevent SMB from successfully spawning and establishing downstream of GCD.

The LB States TWG Reps recommend inclusion of the temperature target in order to further identify the alternatives available for analysis and for selection by the agency decision-maker. Ensuring any available alternative meets the indicated temperature target provides greater certainty that limited operational actions taken at GCD are anticipated to be highly effective.

In addition, the LB States TWG Reps also recommend ample notice of the trigger be provided by forecasting water release temperatures at least three months in advance to allow hydropower managers as much time as possible to plan for, and replace, lost generation resources.

**Range of Alternatives:** Reclamation should consider the inclusion of the non-bypass flow alternative originally prepared by GCMRC through the Smallmouth Bass Ad Hoc Group and presented at the August Adaptive Management Work Group meeting. Consideration of inclusion of this alternative should focus on whether the flow parameters will meet the stated Purpose and Need.

**Hydropower:** The analysis of impacts needs to thoroughly address the quantitative impacts of flow options in 2023 (and only if necessary and upon further review in 2024) to hydropower generation, grid stability, the Basin Fund, and recipients of hydropower, including Native American Tribes and disadvantaged communities. Specifically, the analysis should quantify the lost generation due to bypass and the financial impact of that loss on Western Area Power Administration (WAPA) customers, as well as assess the risk of that loss on market power prices and to the electric grid during peak energy times.

**Biological Impacts:** The potential for fish displacement and potential downstream establishment, including smallmouth bass, green sunfish, striped bass, and other species of concern identified in the National Park Service Non-Native Aquatic Species Management Plan EA should be evaluated for each alternative. Influencing factors such as cold-water avoidance and behaviors with rapidly increased/decreased velocities should be considered for each species. During the consideration of a 2022 Fall High Flow Experiment (HFE), smallmouth bass dispersal was cited as a concern due to the higher chance of dispersal in young-of-year smallmouth bass. Age classes should also be assessed to determine the potential risks for dispersal for warmwater species of concern. The impacts of the alternatives should also be assessed on the humpback chub population, as well as other native species.

The LB States TWG Reps recommend monitoring be included to assess behaviors and distribution of both high-risk nonnatives and native fish for the duration that flow options would be implemented.

**Available Flow Rate:** Analysis should consider if the desired flow rate for each alternative would be available from both the penstocks and the river outlet works given the current 24-month study elevations for the months of May-November. A detailed analysis of those months would assess the feasibility of the alternatives during the potential trigger windows of all four alternatives. For example, during the consideration of a Fall HFE in 2022, the river outlet works were only capable of discharging 14,000 cubic feet per second (cfs) during the November elevation range.

**Monthly Release Pattern:** Each alternative should be assessed to determine the minimum monthly release volume that is necessary for it to be effective to prevent SMB establishment. Moreover, the analysis should consider the reductions described by Reclamation in the November 29 and December 2, 2022 public scoping webinars for the Supplemental Environmental Impact Statement, including an annual release as low as 5,200,000 af, and how implementation would occur in order to meet the minimum required monthly volume to implement the flow options effectively. Analysis should consider how these reallocated monthly volumes may impact the remainder of monthly water deliveries during the water year, and their impact to Lake Powell's elevation. Additionally, impacts to resources such as hydropower and downstream resources should be considered under the circumstances described above, with the potential of significantly reduced monthly allocations for the remaining months of the water year.

**Infrastructure:** Three of the four proposed alternatives include frequent and variable adjustments to the river outlet works (also referred to as “bypass tubes”), including a ramping from zero bypass to approximately 11,000 cfs bypass.

Furthermore, slides presented during the Webinar indicated alternatives designed with bypass tube operations potentially at half increments. Impacts to the abrupt changes in use and volume from the river outlet works should assess the capabilities of the infrastructure to operate in this pattern and consider infrastructure reliability and potential impacts to water delivery if the bypass tubes were to malfunction during this process.

**Triggers:** The Webinar slides outlining Options A and B state implementation would occur whenever temperature at the LCR is at 16°C, while Options C and D state implementation would occur when daily water temperatures near the LCR approach 16°C. The triggers identified need to be clarified to the exact location and parameters a trigger would have been met. Parameters for the triggers should identify how long the gage reads 16 °C and account for daily fluctuations in temperature that may exist until temperature stabilizes and consider that inflow from the LCR is significantly warmer than the Colorado main stem. The gage location should also be identified, to ensure effective and appropriate indicators of temperature. Lastly, temperature should be modeled for each of the hydrographs.

Analysis should examine the impacts of the potential “three 36-hour flow spikes” for Options B and D, in varying time intervals to limit potential impacts to other resources. Triggers and timing for the flow spikes were not clear to stakeholders during the Webinar. The LB States TWG Reps look forward to a detailed explanation of these triggers in the Draft EA. The analysis should also examine scenarios where quickly repeated flow spikes may have tradeoffs, including decreased reservoir elevation.

### **Conclusion**

The LB States TWG Reps appreciate the aggressive timeline presented by Reclamation in order to address the immediate concern of smallmouth bass, and recommend Reclamation pursue other potential actions that are needed to complement smallmouth bass targeted flows in order to succeed in the goals identified by this EA. While there are several environmental compliance endeavors currently being undertaken by Reclamation, it is important to recognize that while this EA has a targeted purpose, other potential actions will inevitably impact the effectiveness of smallmouth bass targeted flows. Cumulative impact analyses should consider these other parallel proposals that would impact the implementation of smallmouth bass flows.

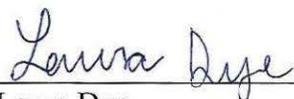
Should there be any questions or concerns regarding this letter or any other aspect of the LB States TWG Reps interest regarding the EA process, please contact us at your earliest convenience.

Sincerely,



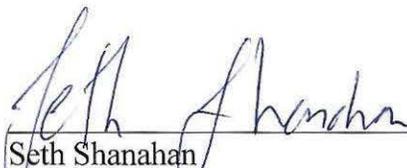
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Kristen Johnson  
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Arizona Department of Water Resources



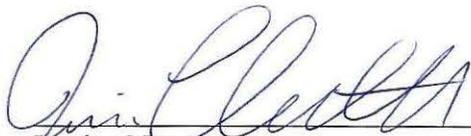
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cc:

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