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SENT VIA ELECTRONIC MAIL

Responsible Officials
US Department of the Interior
Bureau of Reclamation
Upper Colorado Basin Region
125 South State Street, Room 8100
Salt Lake City, UT 84138
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RE: Glen Canyon Dam/Smallmouth Bass Flow Options Draft Environmental Assessment

Responsible Officials:

The Center for Biological Diversity, Sierra Club Grand Canyon Chapter, Living Rivers and Colorado Riverkeeper, and Great Basin Water Network (“Conservation Groups”) provide the following comments on the Bureau of Reclamation’s (“BOR”) “Glen Canyon Dam/Smallmouth Bass Flow Options Draft Environmental Assessment.”

The Center for Biological Diversity is a national, non-profit conservation organization dedicated to protecting and recovering endangered species and the habitats upon which they depend for their survival. The Center has 1.7 million members and supporters, including members who use and enjoy the Grand Canyon the Colorado River for recreation, natural history, spiritual renewal, photography, art, wildlife observation and scientific study. The Center has been involved in the preservation of threatened and endangered species and their habitats in the Grand Canyon region for decades including protection of the Grand Canyon’s aquifers. Those species include the federally threatened humpback chub, the endangered razorback sucker, the endangered southwestern willow flycatcher, and the threatened Mexican spotted owl. Those habitats include the Colorado River, its springs and connected streams, and terrestrial habitats within and adjacent to Grand Canyon National Park’s boundaries.

The Sierra Club’s mission is “to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth’s ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments.” The Grand Canyon (Arizona) Chapter was formed in 1965 in order to focus attention on stopping dams in Grand Canyon. Our work to protect the Colorado River and Grand Canyon National Park continues today. Our 13,000 members and supporters have a significant interest in the health of the Colorado River and the species that depend upon it.

Living Rivers is a non-profit corporation dedicated to the preservation, protection, and restoration of rivers and watersheds in the Colorado Plateau. Living Rivers works to ensure the long-term health and viability of human, animal, and plant species, as well as environmental quality threatened by mining and oil and gas operations in the region—with a principal focus of reestablishing a free-flowing Colorado River through Glen and Grand Canyons. Colorado Riverkeeper is a licensed organizational member of

Waterkeeper Alliance, which is a global movement of advocates working to protect rivers, streams, and coastlines around the world, including, through Colorado Riverkeeper, the Colorado River.

The Great Basin Water Network (GBWN) was formed to protect the water resources of the Great Basin for residents, animal and plants. The Network promotes effective water conservation programs including economic incentives for water smart-practices as opposed to multi-million dollar projects that would burden urban taxpayers while leaving rural communities in jeopardy.

1. Introduction: This is An Emergency Situation for Humpback Chub

The passage of warm water and smallmouth bass from near the surface of Lake Powell through still-unscreened penstocks of Glen Canyon Dam, into the Colorado River, threatens the survival and recovery of humpback chub. Once established, a reproducing population of smallmouth bass in the Grand Canyon would be impossible to suppress. Predation by bass would reduce the number and reproductive success of the largest remaining population of humpback chub at the Little Colorado River. This outcome would jeopardize humpback chub, sharply increase extinction risk, and would be catastrophic for humpback chub recovery efforts overall.

BOR must avoid that outcome. To do so, BOR must analyze, select, and implement alternative(s) and flow regime(s) that (1) maximally *prevent*, rather than only *disrupt*, smallmouth bass reproduction in Grand Canyon, and that (2) maximally safeguard against resultant predation of humpback chub and other endangered, threatened, and native fish. This requires selecting flow alternatives A and B. Legal mandates are many and clear for BOR to select flow regimes to maximally protect the humpback chub. BOR *lacks* a legal mandate to prioritize flow regimes for hydropower. BOR's analysis, selection, and implementation of flow regimes must advance actions maximally beneficial to the survival and recovery of federally listed fish to avoid jeopardy to humpback chub. Failure to do so will jeopardize humpback chub.

More broadly, BOR and its sister agencies (NPS, USFWS) must undertake planning now to ensure the survival, and recovery of threatened and endangered fish in the context of minimum power pool, dead pool, and a warm Colorado River flowing through Grand Canyon. Worsening greenhouse gas pollution, regional warming, aridification, and Colorado River flow declines provide little assurance that, in the long term, sufficient water will be available to maintain Lake Powell levels and cold water flows from Glen Canyon Dam. BOR and its sister agencies' duty to "carry[] out programs for the conservation"—i.e., recovery of listed species, should compel planning now to ensure for the survival and recovery of threatened and endangered fish. This planning must consider ways to avoid, minimize, or off-set impacts from warm Colorado River water flowing through Grand Canyon due to increasing risks of long-term minimum power pool and dead pool behind Glen Canyon Dam . 16 U.S.C. § 1536(a)(1).

2. The Department of the Interior and Bureau of Reclamation Have Multiple Statutory Mandates to Manage Colorado River Flows to Protect Grand Canyon's Endangered Fish and Grand Canyon National Park's Natural and Cultural Values. Hydropower is "Incident" and Subservient to Conservation Mandates.

The Department of Interior (DOI) and BOR have multiple statutory mandates to manage flows from Glen Canyon Dam to protect, improve, and mitigate adverse impacts to federally endangered species and the natural and cultural values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established. Because hydropower cannot be prioritized above other purposes, and because it is explicitly "incident" to flows for other purposes, BOR has both the authority and obligation to manage Glen Canyon Dam to effectively conserve water and natural resources without the additional burden of prioritizing the provision of hydropower from the dam.

The Secretary, acting through the Director of the National Park Service, must “promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose of the System units, which purpose is to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” 54 U.S.C. § 100101(a).

Further, and as discussed in more detail later as it relates humpback chub, Section 7 of the Endangered Species Act requires that “[e]ach Federal agency shall, in consultation with and with the assistance of [the Services], insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification” of designated critical habitat. 16 U.S.C. § 1536(a)(2). The regulations implementing the ESA define to “jeopardize the continued existence of” as “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. § 402.02.2

Here, pursuant to the ESA, the BOR must ensure that flow regimes from Glen Canyon Dam are not likely to jeopardize the continued existence of humpback chub, result in the destruction or adverse modification of its critical habitat in Grand Canyon National Park, or directly or indirectly reduce its reproduction, numbers, or distribution.

The Grand Canyon Protection Act of 1992 (GCPA) specifies that Glen Canyon Dam “shall” be operated in a manner that is protective of Grand Canyon National Park and Glen Canyon National Recreation Area:

“The Secretary shall operate Glen Canyon Dam... in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use.” (Grand Canyon Protection Act (GCPA) (1992), Section 1802(a))

Here, pursuant to the GCPA, BOR must operate Glen Canyon Dam to protect, improve, and mitigate impacts to humpback chub and the riverine ecosystem upon which it depends, and for which Grand Canyon National Park was established in part to protect.

Upon its passage, GCPA’s House sponsor George Miller explained, “In the name of more electric power production mindless and unnecessary damage is being inflicted every day on the resources of the Grand Canyon, one of the most precious park resources in the world... the daily operation of Glen Canyon dam to produce hydroelectric power was wreaking havoc on the beaches and wildlife habitat at the bottom of Grand Canyon.”

Upon its passage, GCPA’s Senate sponsor John McCain explained, “widely fluctuating water releases from the dam, primarily for the maximum generation of hydroelectric peaking power, are contributing to the irreversible erosion of river beaches. It is critical to recognize that river beaches are not merely convenient resting spots for river rafters, hikers, and Grand Canyon campers. The beaches are extremely valuable biological resources which support riparian vegetation and diverse forms of wildlife. They are precious and fragile ecosystems which are as vital a part of the canyon as a view from the South rim and just as deserving of protection.”

The GCPA specifically mentions compliance with the Colorado River Storage Project Act of 1956 (Public Law 84-485) (CRSP), the law that authorized the construction of Glen Canyon Dam, in reference to water:

“The Secretary shall implement this section in a manner fully consistent with and subject to the Colorado River Compact, the Upper Colorado River Basin Compact, the Water Treaty of 1944 with Mexico, the decree of the Supreme Court in *Arizona v. California*, and the provisions of the Colorado River Storage Project Act of 1956 and the Colorado River Basin Project Act of 1968 that govern allocation, appropriation, development, and exportation of the waters of the Colorado River basin.”

GCPA Sec. 1802(b).

Regarding hydropower, GCPA only discusses the need to replace Glen Canyon Dam’s power with other power supplies. Through the GCPA, “the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established” were prioritized above Glen Canyon Dam’s hydropower production:

“The Secretary of Energy in consultation with the Secretary of the Interior and with representatives of the Colorado River Storage Project power customers, environmental organizations and the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming shall identify economically and technically feasible methods of replacing any power generation that is lost through adoption of long-term operational criteria for Glen Canyon Dam as required by Section 1804 of this title. The Secretary shall present a report of the findings, and implementing draft legislation, if necessary, not later than two years after adoption of long-term operating criteria. The Secretary shall include an investigation of the feasibility of adjusting operations at Hoover Dam to replace all or part of such lost generation. The Secretary shall include an investigation of the modifications or additions to the transmission system that may be required to acquire and deliver replacement power.”

GCPA, Sec. 1809.

Hydropower generation is “incident” to other purposes set forth in the Colorado River Storage Project Act of 1956 (Public Law 84-485), the act which authorized Glen Canyon Dam. The Secretary of the Interior was authorized to “construct, operate, and maintain” Glen Canyon Dam:

“... for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the provisions of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the reclamation of arid and semiarid land, for the control of floods, and *for the generation of hydroelectric power, as an incident of the foregoing purposes...*”

43 U.S.C. §620 (emphasis added).

The DOI and BOR have a clear responsibility to use Glen Canyon Dam to manage water according to the obligations in CRSP and GCPA. Because hydropower cannot be prioritized above other purposes under CRSP and GCPA, BOR has the authority and duty to manage Glen Canyon Dam to effectively conserve water and natural resources without the additional burden of providing hydropower from the dam.

Because of this, we recommend that BOR add to the description of the Colorado River Storage Project (CRSP) Act (April 11, 1956) in the EA at I-5 the following: The purpose of the storage projects is for water storage, flow regulation, and flood control, with hydroelectric power “as an incident of” the other purposes.

BOR and DOI must fulfill the Secretary of Interior’s obligation to operate the dam “in such a manner as to protect, mitigate adverse impacts to, and improve” Grand Canyon, and to operate the dam in such a way that does not reduce the reproduction, numbers, or distribution of federally threatened humpback chub.

3. BOR’s Operation of Glen Canyon Dam Must Prevent Jeopardy of Federally Threatened Humpback Chub and Reductions of its Reproduction, Numbers, or Distribution. Failure by BOR to Prevent a Reproducing Smallmouth Bass Population in the Colorado River of Glen, Marble, or Grand Canyons, or to Select an Alternative(s) or Flow Regime(s) Maximally Preventative of Small Mouth Bass Reproduction and Reductions in Humpback Chub Reproduction, Numbers, or Distribution, Will Jeopardize Humpback Chub in Violation of the Endangered Species Act

As relevant here, Section 7 of the ESA requires that “[e]ach Federal agency shall, in consultation with and with the assistance of [the Services], insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification” of designated critical habitat. 16 U.S.C. § 1536(a)(2). To “jeopardize the continued existence of” means “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. § 402.02.2

This “mandate applies to *every discretionary agency action*—regardless of the expense or burden its application might impose.” *Nat’l Ass’n of Home Builders v. Defs. of Wildlife*, 551 U.S. 644, 671 (2007) (emphasis added).

Formal Section 7 consultation may result in the issuance of a biological opinion, however, “[c]onsulting with the [Fish and Wildlife Service] alone does not satisfy an agency’s duty under the Endangered Species Act.” *Res. Ltd. v. Robertson*, 35 F.3d 1300, 1304 (9th Cir. 1994). The BOR would violate the ESA if it approves or implements an action in reliance on a legally flawed biological opinion or fails in its approval or implementation decision “to discuss information that would undercut the [biological] opinion’s conclusion.” *Ctr. for Biological Diversity v. U.S. BLM*, 698 F.3d 1101, 1127-28 (9th Cir. 2012); *see also WildEarth Guardians v. Steele*, 545 F. Supp. 3d 855, 881 (D. Mont. 2021) (“Ignoring information that would undercut the [biological] opinion’s conclusions violates the [agency’s] obligation under § 7 of the ESA.”).

The ESA and section 7 consultation regulations mandate that biological opinions incorporate a comprehensive, aggregative approach to the effects analysis. The longstanding regulatory definition for “effects of the action” includes direct, indirect, and interrelated threats that are added to the environmental baseline in order to determine jeopardy. 50 C.F.R. § 402.02. The Ninth Circuit has held that a species may be jeopardized even “if there is no appreciable reduction of survival odds” because “a species can often cling to survival even when recovery is far out of reach.” *Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv.*, 524 F.3d 917, 931 (9th Cir. 2008).

The regulations recognize that “reducing the reproduction” of a species may jeopardize the species’ survival or recovery. 50 C.F.R. § 402.02. Thus, Fish and Wildlife Service “must analyze effects on recovery as well as effects on survival.” *Nat’l Wildlife Fed’n*, 524 F.3d at 932. Under the ESA,

“[r]ecoverey means improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act.” 50 C.F.R. § 402.02.

The ESA mandates that all the impacts of the agency’s discretionary activities on listed species, such as BOR’s operation of Glen Canyon Dam, be assessed as an effect, not as part of the environmental baseline, in determining jeopardy. This principle was reaffirmed during the rulemaking process for the 2019 revisions to the 402 consultation regulations. 84 Fed. Reg. 44,976, 44,978 (“discretionary activities . . . that are part of the proposed action but for which no change is proposed” are to be analyzed “as part of the effects of the action, even those operations that the Federal agency proposes to keep the same.”).

Establishing an environmental baseline that fails to consider factors harming the species or degrading the species’ habitat violates the ESA. *See, e.g., Am. Rivers & Ala. Rivers All. v. FERC*, 895 F.3d 32, 46-47 (D.C. Cir. 2018) (holding Fish and Wildlife Service acted arbitrarily in establishing a baseline that failed to consider degradation caused by power plant); *Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv.*, 524 F.3d 917, 929 (9th Cir. 2008) (finding that a biological opinion violated ESA where it did not “incorporate degraded baseline conditions into its jeopardy analysis.”).

As a result, in order for the Bureau of Reclamation to meet the requirements of the ESA, it must engage in consultation with the Service to “insure” that the proposed actions, including existing operations, are “not likely to jeopardize” the continued existence of listed species. 16 U.S.C. § 1536(a)(2).

a. The fate of the Little Colorado River humpback chub population is critical to the species’ overall survival and recovery.

The Little Colorado River population of humpback chub is the species’ largest remaining population. More than 90% of humpback chub exist in Grand Canyon; the majority of these comprise the Little Colorado River population. Its size, reproductive success, and its role as a source population for translocations and dispersal make it critically important to the overall survival and recovery of humpback chub as a species. The importance of the Little Colorado River population is heightened further by the tenuous, declining, and uncertain status of remaining Upper Basin humpback chub populations.

Only five populations of humpback chub persist in the Colorado River basin. Four small and tenuous populations are in the upper Colorado River basin (Black Rocks, Westwater Canyon, Desolation/Gray Canyons, and Cataract Canyon) and one in lower basin population in the Grand Canyon, comprised primarily of fish in the Little Colorado River.¹ The U.S. Fish and Wildlife Service now considers a sixth upper basin population in Dinosaur National Monument to be functionally extirpated.² The Little Colorado River at and upstream of the Colorado River confluence harbors the largest remaining population of humpback chub in the Colorado River Basin, and the most important remaining habitat its survival and recovery. This reach of the Little Colorado River provides eight miles of designated critical habitat³ and 11 miles of occupied habitat (inclusive of critical habitat).⁴

¹ Humpback Chub (*Gila cypha*) 5-Year Review: Summary and Evaluation. 2017. U.S. Fish and Wildlife Service Mountain-Prairie Region Lakewood, Colorado. At 3.

² *Id.*

³ U.S. Fish and Wildlife Service. 2017. Species status assessment for the Humpback Chub (*Gila cypha*). U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, CO. At 64.

⁴ Van Haverbeke, David, Kirk Young, Dennis Stone and Michael Pillow. 2017. Mark-Recapture and Fish Monitoring Activities in the Little Colorado River in Grand Canyon from 2000 to 2016. U.S. Fish and Wildlife Document: USFWS-AZFWCO-FL-16-02. At 11. Accessed 12 Nov

The importance of the Little Colorado River population to the humpback chub's overall survival and recovery is heightened by the comparatively tenuous and uncertain status of the four remaining upper basin populations. In contrast to long-term declining humpback chub populations in the Upper Basin, which are comprised by a total of perhaps only 3600 individual fish,⁵ the Little Colorado River is considered to be the "core" population of humpback chub in the Grand Canyon;⁶ this population reproduces successfully and is stable and self-sustaining with 11,500 to 12,000 individuals.⁷ In the Upper Basin, the U.S. Fish and Wildlife notes that the Black Rocks and Westwater Canyon populations "declined through 2007," that "declines have potentially been arrested," but that "there is uncertainty about this hypothesis."⁸ The "abundance estimate data is insufficient to reach any reliable conclusion about the trajectory of the Desolation/Gray canyons population" and that "the Cataract Canyon population is small and the trajectory of adult numbers is unclear."⁹

In addition to being the largest remaining population of humpback chub world, the Little Colorado River population is a source population that supports dispersal into the mainstem Colorado River and translocations establishing new populations in service of survival and recovery.¹⁰ Humpback chub in Grand Canyon are potadromous (fish that do not migrate to the ocean at any time during their life cycle); adults migrate from the Colorado to the Little Colorado River in the spring to spawn; young humpback chub then rear in the Little Colorado River and emigrate out of the Little Colorado River by seasonal flood events, likely thereby populating several small aggregations of humpback chub in the mainstem Colorado River where reproduction is for the most part absent.¹¹ In addition to dispersal, the Little Colorado River population is the source population for translocation efforts in Grand Canyon. The U.S. Fish and Wildlife Service's 2017 Species Status Assessment for the Humpback Chub (*Gila cypha*) states:

A total of 2,971 juvenile Humpback Chub were translocated from the lower LCR [Little Colorado River] to above Chute Falls (RK 16.2) during 2003–2015 (citation omitted); many have survived and remained in the reach, and ripe and spent fish indicate that spawning is taking place (Stone

2019:

http://gcdamp.com/images_gcdamp_com/7/7a/VanHaverbeke_et_al_2017_USFWS_Mark_recapture_and_fish_monitoring_activies_in_the_LCR_2000-2016.pdf

⁵ U.S. Fish and Wildlife Service. 2017. Species status assessment for the Humpback Chub (*Gila cypha*). U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, CO. At 101.

⁶ *Id* at ix.

⁷ *Id*.

⁸ *Id*.

⁹ *Id*.

¹⁰ Van Haverbeke, David, Kirk Young, Dennis Stone and Michael Pillow. 2017. Mark-Recapture and Fish Monitoring Activities in the Little Colorado River in Grand Canyon from 2000 to 2016. U.S. Fish and Wildlife Document: USFWS-AZFWCO-FL-16-02. At 10. Accessed 12 Nov 2019:

http://gcdamp.com/images_gcdamp_com/7/7a/VanHaverbeke_et_al_2017_USFWS_Mark_recapture_and_fish_monitoring_activies_in_the_LCR_2000-2016.pdf

¹¹ *Id*.

2016). A total of 1,650 juvenile Humpback Chub were translocated from the LCR [Little Colorado River] to lower Havasu Creek during 2011–2015 (see section 4.5, Table 15); many have survived and remained in the tributary, and young unmarked fish found in 2014, 2015, and 2016 indicate that successful reproduction has taken place (citation omitted).¹²

Taken together, the health and stability of the Little Colorado River population and success of translocations have yielded an expansion of humpback chub populations over the past decade in the Lower Basin that undergirded the recommendation to downlist the chub from endangered to threatened status.¹³

b. Establishment of a smallmouth bass population in the Colorado River of Grand Canyon because of Glen Canyon Dam operations would jeopardize humpback chub by reducing the reproduction, numbers, and distribution of the Chub's Little Colorado River population.

Section 7 of the ESA requires that “[e]ach Federal agency shall, in consultation with and with the assistance of [the Services], insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification” of designated critical habitat. 16 U.S.C. § 1536(a)(2). To “jeopardize the continued existence of” means “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. § 402.02.2

Here, BOR’s operation of Glen Canyon Dam, by passing warm water and smallmouth bass from Lake Powell into the Colorado River downstream, threatens jeopardy of humpback chub by facilitating the establishment of smallmouth bass populations that will reduce the reproduction, numbers, and distribution of humpback chub.

There is little evidence to suggest that the failure to prevent the establishment and reproduction of a smallmouth bass between the Little Colorado River and Glen Canyon Dam would not decimate the Little Colorado River population’s recruitment and overall size. To the contrary, abundant information indicates that humpback chub are vulnerable to predation by smallmouth bass generally,¹⁴ that survival and recovery requires habitat with few nonnative predators so that young survive and recruit into self-sustaining populations,¹⁵ that smallmouth bass predation has likely decimated breeding populations of humpback chub in the Yampa river,¹⁶ and that the Little Colorado River population of humpback chub may be particularly prone to predation by non-native fish should a population become established in Grand Canyon.¹⁷

¹² U.S. Fish and Wildlife Service. 2017. Species status assessment for the Humpback Chub (*Gila cypha*). U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, CO.

¹³ Humpback Chub (*Gila cypha*) 5-Year Review: Summary and Evaluation. 2017. U.S. Fish and Wildlife Service Mountain-Prairie Region Lakewood, Colorado. At 13, 15.

¹⁴ U.S. Fish and Wildlife Service. 2017. Species status assessment for the Humpback Chub (*Gila cypha*). U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, CO. At 24.

¹⁵ *Id* at ii.v.

¹⁶ *Id* at 116.

¹⁷ Marsh, P.C., and M.E. Douglas. 1997. Predation by introduced fishes on endangered Humpback Chub and other native species in the Little Colorado River, Arizona. *Transactions of the American Fisheries Society* 126: 343–346.

- c. BOR should select “Cool Mix with Flow Spikes” and “Cool Mix” options (Flow Options B and A) to maximally prevent (rather than just disrupt) small mouth bass reproduction and establishment and to avoid jeopardy under the Endangered Species Act.**

The emergency facing humpback chub demands BOR heed the flow recommendations of scientists who, informed by years of research and adaptive management, have carefully developed plans to experimentally manage federally listed and native fish with Glen Canyon Dam flow various regimes. Those actions must not be delayed. The proposed action should explicitly prioritize the actions that are likely to achieve the purpose and need of the EA: the “Cool Mix with Flow Spikes” and “Cool Mix” options (Flow Options B and A).

BOR must prevent smallmouth bass reproduction and safeguard Grand Canyon’s fish species, several of which rely on Grand Canyon and its tributaries to sustain their populations. Environmental flow actions like this are the safest way to ensure a healthy Colorado River in Grand Canyon without potentially harmful and less effective chemical treatments or electrofishing.

Importantly, drought should not be used as an excuse to postpone or cancel any flow management action that would benefit native fish or redistribute sediment in Grand Canyon. In 2021 and again in 2022, a High Flow Experiment (HFE) was skipped despite U.S. Geological Survey scientists reporting the proper conditions for a 192 hour (8 day) HFE for the first time ever under LTEMP, and while sandbar size was the lowest in ten years. BOR decided not to implement the HFE because of “concerns about pool elevation and the Basin Fund, although there would have been a positive effect on sediments especially given the unprecedented drought conditions.” This is despite the acknowledgement that HFEs do not affect annual water release volumes. Again, we point to the Grand Canyon Protection Act, which is clear about the mandate to “operate Glen Canyon Dam... in such a manner as to protect, mitigate adverse impacts to, and improve” Grand Canyon.

Flow spikes, which are likely to improve the effectiveness of the proposed action, should be employed every time there is enough sediment to ensure that beaches and sandbars will be improved, and never when sediment models predict detrimental impacts to sediment resources. Since sediment resources are favorable in 2023, a flow spike should absolutely be implemented with the Cool Mix (Flow Option B - Cool Mix with Flow Spikes) during the spring or summer of 2023.

BOR should implement Flow Options A and B because they are likely to “disrupt or prevent spawning of smallmouth bass and other nonnative, invasive warmwater fish species.” EA at 3-7 (emphasis added). BOR should not rely on Flow Options C and D because, instead of preventing spawning, these flows are only designed to disrupt spawning, and are only likely to “result in population decreases” for fish that “are spawning at the time of these releases.” EA at 3-7.

To be clear: Flow Options C and D risk decimating the Little Colorado River population and jeopardy to humpback chub overall by failing to prevent spawning of smallmouth bass. BOR, to ensure against jeopardy, must select alternatives and flow regimes that maximally prevent smallmouth bass spawning and reproduction, and that in turn maximally safeguard the humpback chub’s Little Colorado River population.

For these reasons, we urge that BOR select and implement actions that are likely to achieve the purpose and need of the EA by preventing smallmouth bass spawning: the “Cool Mix with Flow Spikes” and “Cool Mix” options (Flow Options B and A). Flow Spikes should be employed every time there is enough sediment to ensure that beaches and sandbars will be improved, and never when sediment models predict detrimental impacts to sediment resources. In order to implement flow spikes during 2023 and in

other years when sediment is optimal, BOR must time dam maintenance activities to ensure that flow through the dam is not reduced when a flow spike is needed to protect Grand Canyon resources.

- d. Given the likelihood that the establishment of smallmouth bass populations would reduce the reproduction, numbers, and distribution of humpback chub in Grand Canyon, failure of BOR's dam operations to prevent the establishment of smallmouth bass populations or to select alternative(s) maximally preventative (rather than just disruptive) of the smallmouth bass reproduction will jeopardize humpback chub, in violation of the Endangered Species Act.**

BOR must avoid jeopardy to the Grand Canyon population of the humpback chub through consultation. Courts have recognized Fish and Wildlife Service's duty to consider project impacts on listed species on scales smaller than the entire population designated through ESA listing or recovery planning. *See Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 529 (9th Cir. 2010); *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004), *amended by* 387 F.3d 968 (9th Cir. 2004). In *Wild Fish Conservancy*, the court invalidated a biological opinion that failed to consider the decline of an isolated bull trout sub-population in Icicle Creek on the species as a whole. 629 F.3d at 525-29. The biological opinion there evaluated a project's impacts to the Icicle Creek sub-population, considered "the smallest local population in the Wenatchee River core area and the most vulnerable to extirpation." *Id.* at 526. Despite this sub-population experiencing long-term negative population trends, the Service concluded the project would not be expected to reduce the likelihood of survival and recovery of the larger Columbia River interim recovery unit. *Id.* The court invalidated the biological opinion, finding that because the Icicle Creek sub-population was important to the Wenatchee River core area, a relative stronghold for bull trout in the upper Columbia River area, a decline in this population could harm recovery. *Id.* at 528-29. The court held that the Service failed to articulate a rational connection between the facts found and the no-jeopardy conclusion made. *Id.* at 529.

Similarly, in *Gifford Pinchot Task Force*, plaintiffs challenged the validity of several biological opinions alleging that they failed to consider local impacts from logging projects on the Northern spotted owl. 378 F.3d at 1075. The court stressed the importance of considering local impacts, stating that "[f]ocusing solely on a vast scale can mask multiple site-specific impacts that, when aggregated, do pose a significant risk to a species." *Id.* (citation omitted). Here, BOR and FWS must consider the local impacts to the Grand Canyon population of humpback chub from the proposed dam operations in their ESA section 7 consultation.

4. BOR Must Immediately Analyze and Implement Screens and Other Dam Modifications to Prevent Passage of Non-native Predator Fish through Glen Canyon Dam. BOR's Failure to Prevent Passage of Non-native Predator Fish through Glen Canyon Dam Violates the Endangered Species Act.

BOR should immediately analyze and then implement screening upstream of Glen Canyon Dam or dam modifications to prevent future exotic species passage through the dam. Powell reservoir is likely to fluctuate around its current level into the future, continuing the risk of allowing more warm water non-native fish in Grand Canyon, and the proposed action could also act to draw more nonnative fish through the dam. EA at 3-8. One possibility to prevent this is upstream screening. Because it will take some time to analyze the feasibility of this action, BOR should begin to study it now. By facilitating the passage of non-native predator fish from Lake Powell into the Colorado River through Grand Canyon, BOR's ongoing operations of Glen Canyon Dam in the absence of preventative screening or other dam modifications threatens humpback chub and other native fish.

5. Pursuant to the Endangered Species Act's Section 7(a)(1), Department of the Interior Agencies Must Plan Now for Endangered Species Survival and Recovery Amidst Climate Inevitabilities of Minimum Power Pool, Dead Pool, and A Warm Colorado River Through Grand Canyon.

BOR and its sister agencies (NPS, USFWS) must undertake planning now to ensure the survival, and recovery of threatened and endangered fish in the context of minimum power pool, dead pool, and a warm Colorado River flowing through Grand Canyon. Worsening greenhouse gas pollution, regional warming, aridification, and Colorado River flow declines provide little assurance that, in the long term, sufficient water will be available to maintain Lake Powell levels and cold water flows from Glen Canyon Dam. BOR and its sister agencies' duty to "carry[] out programs for the conservation"—i.e., recovery of listed species, should compel planning now to ensure for the survival and recovery of threatened and endangered fish. This planning must consider ways to avoid, minimize, or off-set impacts from warm Colorado River water flowing through Grand Canyon due to increasing risks of long-term minimum power pool and dead pool behind Glen Canyon Dam. 16 U.S.C. § 1536(a)(1).

Thank you for your consideration of these comments. Please do not hesitate to contact us with questions.

Sincerely,



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