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Sent via eMail: CRinterimops@usbr.gov

RE: Scoping Comments to Prepare a Supplemental Environmental Impact Statement (SEIS) for December 2007 Record of Decision Entitled Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations For Lake Powell and Lake Mead.[1]

*"Water in the West, although under intensive development for more than a century, is far from being a settled matter."* Professor William M. Lewis in 2003.

## 1.0 - INTRODUCTION

The following conservation organizations present these scoping comments for this emergency federal action to avoid a system-wide collapse in the Colorado River Basin:[2]

Living Rivers & Colorado Riverkeeper, Center for Biological Diversity, Great Basin Water Network, Las Vegas Waterkeeper, Glen Canyon Institute, Utah Rivers Council, Save The Colorado, and Waterkeeper Alliance.

### 1.0.1 - The administrative record is presented here for the reader's convenience.

1. The complete record for 2007 Interim Guidelines is hyperlinked at footnote #3.[3]
2. The complete record for 2012 Colorado River Basin Supply and Demand Study is hyperlinked at footnote #4.[4]

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[1] Notice of Intent, 87 FR 69042, November 17, 2022 : https://www.federalregister.gov/documents/2022/11/17/2022-25004/notice-of-intent-to-prepare-a-supplemental-environmental-impact-statement-for-december-2007-record

[2] Touton, Camille and US Department of Interior, Press Release, August 16, 2022: https://www.doi.gov/pressreleases/interior-department-announces-actions-protect-colorado-river-system-sets-2023

[3] 2007 Interim Guidelines; all files combined into one document, here: http://www.onthecolorado.com/Resources/USBR/Shortage/FEISshortage2007.pdf

[4] 2012 Colorado River Basin Supply and Demand Study; all files combined into one document, here: http://www.riversimulator.org/Resources/USBR/BasinStudy/Final/FilesCombined.pdf

3. The complete record for Drought Contingency Planning (DCP), 7.D. Review, and Drought Response Operations Agreement (DROA) is hyperlinked at footnote #5.[5]
4. All documents cited in this letter are contained in a single zip file and hyperlinked at footnote #6. All these documents will also be provided to Reclamation via U.S. mail on a thumb drive.[6]

## 2.0 - THE NEED AND PURPOSE FOR THIS SEIS WAS A PREDICTABLE OUTCOME

In 2007 we were skeptical about the long-term success of the experimental program called 2007 Interim Guidelines (2007 IG). This Environmental Impact Statement (EIS) has an expiration date of December 31, 2025. Our skepticism was based on the principal foundation of 2007 IG, which assumed that the **voluntary** prescriptions of the EIS would be dutifully performed by the seven states of the Colorado River Basin (CRB), and with the purpose to avoid water shortages for 40+ million people, agriculture, and sensitive wildlife populations. The 2007 IG selectively relied on overly optimistic predictions of water availability and ignored other modeling that clearly predicted the current state of the basin with far less water in the system. Please review our comment letter of April 2007 for the Draft EIS of Interim Guidelines here.[7]

The 2007 IG was also developed with the stated intent to avoid "unnecessary, protracted or destabilizing litigation."[8] The initiation of this SEIS process clearly demonstrates that the anticipated volunteerism of the seven states was not forthcoming,[9] and that interstate litigation is indeed possible.[10]

Moreover, the amounts of water shortage curtailments, as originally outlined by Reclamation in 2007, also proved to be insufficient and untimely. The process to modify the shortage amounts began in 2014, but the contracts for the program, called Drought Contingency Planning, were not finalized until 2019. Ironically, two years then followed and yet another necessary modification emerged and called Drought Response Operating Agreement (DROA), which was immediately replaced by this emergency action SEIS.

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[5] DCP admin: http://www.riversimulator.org/2025Guidelines/USBR/SEIS/DCPadmin.zip
7D admin: http://www.riversimulator.org/2025Guidelines/USBR/SEIS/7Dadmin.zip
DROA admin: http://www.riversimulator.org/2025Guidelines/USBR/SEIS/DROAadmin.zip

[6] SEIS admin: http://www.riversimulator.org/2025Guidelines/USBR/SEIS/SEISadmin.zip

[7] DEIS comment letter, Living Rivers: http://www.livingrivers.org/pdfs/LR_Shortage_DEIS.pdf

[8] 2007 Interim Guidelines, Record of Decision: https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf

[9] Fleck, John; Kuhn, Eric; Schmidt, John, *How We Got Into This Mess on the Colorado River*, Inkstain, August 14, 2022: http://www.riversimulator.org/2025Guidelines/News/2022/HowWeGotIntoThisMesOnTheColoradoRiver2022Fleck.pdf

[10] Bassler, Hunter, *Legal action and Uncertainty Loom over Colorado River, Experts Say*, 12 News, November 4, 2022: http://www.riversimulator.org/2025Guidelines/News/2022/LegalActionUncertaintyLoomOverColoradoRiverExpertsSay2022HunterBassler12news.pdf

Consequently, we now fully understand that Reclamation's preferred alternative for 2007 IG — to institute management solutions with the seven states of the Colorado River Basin (CRB) via collaboration, cooperation and communication (the 3 C's) — was the wrong choice and the consequence is that water management was imprudent under the 2007 IG and management of the actual water now available in the system with current and predicted shortages is likely to result in a serious societal conflict.[11]

We are disappointed with the present compromised position of the Colorado River Basin (CRB) management and declining natural resource conditions and the unfair treatment to the tribes. Our confidence in the governance for this basin by BOR and the States has disappeared like the reservoirs. In fact, because of this political dysfunction within the basin, we think future reviews under the National Environmental Policy Act (NEPA) should be developed by a neutral third party.

## 3.0 - A NEW NEED AND PURPOSE STATEMENT

We will not deny that a loud public outcry exists in this river basin for a effective system of water governance that will embed the principles of equity, sustainability and resiliency, rather than a governance system that permits unstable free markets to politically control and exploit finite water and energy resources at the expense of existing and future generations.

To demonstrate the reluctance of the core leadership to be proactive about developing effective Long Range Operating Criteria,[12] we present this excerpt written in 1979 by the Comptroller General of the United States:

> *The U.S. Bureau of Reclamation estimates that the basin will run out of water for future growth in 2020. Others are less optimistic, foreseeing an impending water shortage around 2000.*[13]

This precautionary statement is just one of many we could cite in this letter.[14] The lack of political will to act on this and other clear-eyed predictions of the current water shortages has less to do with modifying the switches and dials that control reservoir operations at federal dam facilities and more to do with the general lack of applying persistent and effective leadership.

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[11] Estabrook, Rachel; Sakas, Michael Elizabeth, *The Colorado River is Drying Up, But Basin States Have No Plan*, Colorado Public Radio, September 17, 2022: http://www.riversimulator.org/2025Guidelines/News/2022/TheColoradoRiverIsDryingUpButBasinStatesHaveNoPlanOnHowToCutWaterUse2022EstabrookSakasCPR.pdf

[12] Reclamation Bureau, *1970 Long Range Operating Criteria*, June 8, 1970: http://www.onthecolorado.com/Resources/LawOfTheRiver/OperatingCriteria1970.pdf

[13] Government Accountability Office, *Colorado River Basin Water Problems: How To Reduce Their Impact,* May 4, 1979: http://www.riversimulator.org/Resources/GAO/CRBwaterProblems1979.pdf

[14] James, Ian, *Scientists have Long Warned of Colorado River Crisis*, Los Angeles Times, July 15, 2022: http://www.riversimulator.org/2025Guidelines/News/2022/ScientistsHaveLongWarnedOfColoradoRiverCrisis2022iJamesLATimes.pdf

**3.1. - Baseline resource issues that must be considered in the SEIS:**

1. A beneficial water use analysis to satisfy the issues about sharing water equitably.
   a. Satisfy the status and survival of listed species (headwaters to ocean).
   b. Satisfy the water needs of tribal communities.
   c. Satisfy in-stream flows for ecosystems and recreation.
   d. The values of the Grand Canyon Protection Act of 1992 remains a viable metric for considerations in this SEIS.[15] [16]

2. A beneficial water use analysis to support sustainability and resiliency.
   a. Agriculture: maximize health and wellness.
   b. Municipal and industrial: phase out inefficient uses to limit consumption.
   c. Hydropower: phase-out infrastructure with diminishing returns.

3. Assess disruptions from altered circulation patterns of ocean and atmosphere due to Climate Change and impacts on future water availability.
   a. Atmospheric Rivers
   b. North American Monsoons
   c. Atlantic and Pacific cyclones
   d. Advanced rates of evaporation and sublimation due to warming (aridification).

4. The SEIS must be based on the best available science including but not limited to the following studies:
   a. Barnett and Pierce. 2009. Sustainable water deliveries from the Colorado River in a changing climate. PNAS Early Edition[17]
   b. Wang et al. 2022, Evaluating the Accuracy of Reclamation's 24-Month Study Lake Powell Projections, Center for Colorado River Studies, White Paper 7.[18]
   c. Kevin G. Wheeler et al. 2022 "What will it take to stabilize the Colorado River?" Science, 377 (6604)[19]
   d. Williams et al. 2022, Rapid intensification of the emerging southwestern North American megadrought in 2020–2021, Nature Climate Change, 14 February 2022[20]

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[15] Grand Canyon Protection Act, 1992: http://www.onthecolorado.com/Resources/LawOfTheRiver/GCPA1992.pdf

[16] Ian James for *Los Angeles Times:* http://www.riversimulator.org/2025Guidelines/News/2022/FederalOfficialsUrgeActionOnShrinkingColoradoRiver2022IanJamesLAtimes.pdf

[17] http://www.riversimulator.org/Resources/ClimateDocs/PierceBarnett2009.pdf

[18] https://qcnr.usu.edu//coloradoriver/files/news/White-Paper-7.pdf

[19] http://www.riversimulator.org/Resources/ClimateDocs/WhatWillItTakeToStabilizeTheColoradoRiver2022Wheeler.pdf

[20] http://www.riversimulator.org/Resources/ClimateDocs/RapidIntensificationOfEmergingSWNAmegadrought2020to2021Williams2022.pdf

### 3.2 - Considerations for determining what the new Preferred Alternative could be:

1. **Worst Case Scenario Alternative:** For example, an analysis based on 2012 Colorado River Basin Water Supply and Demand Study (2012 Basin Study); Technical Report G — System Reliability Analysis and Evaluation of Options and Strategies; CRSS results for the 10th percentile. See pages: G-18 (Lake Powell) & G-21 (Lake Mead).[21] In other words, prepare for dam operations at both reservoirs for a situation in which it is impossible to produce hydroelectric power reliably and guarantee safe dam operations, and for multiple decades.

2. **Balance the Water Budget Alternative**: significantly reduce demand, equitably; no more water diversion contracts for water right positions that are highly speculative or unable to be fulfilled; equitably shift existing allocations to ecosystems and tribes, because tribes and ecosystems do not have the necessary water required to survive the impacts of global warming and economic disruptions.

3. **One-Dam Solution Alternative:** First submitted to Reclamation at scoping for Shortage Criteria EIS in 2005 by Living Rivers & Colorado Riverkeeper.[22] Decommission Glen Canyon Dam. This facility does not have capacity to safely bypass extraordinary snow melt events (discussed later in this narrative). Transfer storage of surface water to underground aquifers to avoid increasing evaporation losses. Begin a sediment removal plan at Lakes Mead and Powell.

4**. Fill Lake Mead First Alternative** - First submitted to Reclamation at scoping for Glen Canyon Dam EIS in 2012 by Glen Canyon Institute.[23]

## 4.0 - MANAGE COLORADO RIVER SYSTEM FOR CLIMATE FOCUSING ON STREAMFLOW

### 4.0.1 - Discontinue managing shortages based on reservoir elevation tiers at Lakes Powell and Mead.

1. Adjust water deliveries according to streamflow data above Hoover Dam i.e. during times of storage declarations have a schedule of releases predicated on the prior year's runoff. This will help ensure that we live within our means. Priority must be considered after baseline needs are met during shortage years.

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[21] Reclamation Bureau, *Colorado River Basin Water Supply and Demand Study*, Technical Report G, 2012: http://www.riversimulator.org/Resources/USBR/BasinStudy/Final/09TechnicalGReportSystemReliability.pdf

[22] Living Rivers, *The One-Dam Solution*, July 2005: http://www.livingrivers.org/pdfs/TheOne-DamSolution.pdf

[23] Glen Canyon Institute, *Glen Canyon Dam LTEMP EIS: Water Conservation: Fill Lake Mead First,* April 5, 2012. http://www.riversimulator.org/Resources/USBR/LTEMP/Scoping/WaterConservationAlternativeGCI.pdf

2. Run CRSS models with inputs that adhere to the principles we outlined in Section 3.1(4) and Section 3.2 — as well as running traces commensurate with what we describe in the following section as “run-of-the-river” and what was described in the 2007 IG as 10th Percentile. Nothing else matters.
3. Annual shortage sharing agreements should be adaptive with no expiration date.
4. Commit Upper Basin reservoir releases to prioritize targeting environmental flows of proper characteristics and to fulfill the needs of spawning endangered fish.
5. Support development of replacement energy resources to Western Area Power Administration from alternative renewable energy sources that do not require a dependance on diminishing and finite natural resources, or that produce carbon-based emissions.

**4.0.2. - A discussion of Colorado River System Simulation (CRSS) Modeling of:**

1. 2007 - Final EIS: Volume 1, Chapter 4 (Affected Environment);[24]
2. 2007 - Appendix N (Analysis of Hydrologic Variability Sensitivity);[25]
3. 2007 - Appendix U (Summary of Analysis Options and Future Needs);[26]
4. 2012 - Appendix G (Colorado River Basin Supply and Demand Study).[27]

The selected CRSS run/traces for the 2007 IG Final EIS were twofold for water supply: 20th century data (a wet century) and tree ring data from the 12th century (a dry century). The analysis also considered water demands/losses from humans, the reservoir system and Nature. The analysis in 2007 also included comparisons between the No Action Alternative and the Preferred Alternative. The results were bracketed into three ranges: the 90th Percentile (wetter hydrology); 50th Percentile (normal hydrology), and; 10th Percentile (dry hydrology).

The reality that actually unfolded in the CRB since 2007 is this: The CRSS modeling successfully demonstrated that the 10th percentile is the hydrology that the CRB received, and that we understand the reduction in natural flow since Year 2000, has been negative 20%.

This average loss precisely matches the predictions provided by the 2008 Intergovernmental Panel on Climate Change (IPCC).[28] The IPCC predicts this average water loss will continue to increase into the future and these reductions will impose great hardships to people,

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[24] Reclamation Bureau, *Final EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead*, Chapter 4, October 2007: https://www.usbr.gov/lc/region/programs/strategies/FEIS/Chp4.pdf

[25] Reclamation Bureau, *Final EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, Appendix U - Climate Technical Work Group Report; Section U.10,* October 2007: http://www.riversimulator.org/Resources/USBR/ShortageEIS/AppNshortageCriteria.pdf

[26] Ibid: http://www.riversimulator.org/Resources/USBR/ShortageEIS/AppUshortageCriteria.pdf

[27] Reclamation Bureau, *Supra* note 19: http://www.riversimulator.org/Resources/USBR/BasinStudy/Final/09TechnicalGReportSystemReliability.pdf

[28] Barnett and Pierce, *Supra* note 15: http://www.riversimulator.org/Resources/ClimateDocs/2008BarnettPierce.pdf

infrastructure and ecosystems. Please make this point absolutely clear in the narrative of this Final SEIS for 2023.[29]

Reservoirs Powell and Mead have already approached an operating criteria known as, run-of-the-river. This term essentially means: reservoir storage has been exhausted and the system flexibility that reservoir storage provides, no longer exists. That the river water entering the two reservoirs in a given year, will approximately be the same amount that exits the two reservoirs, minus significant and increasing evaporation.

We understand Reclamation will again model the ranges of the 90th percentile and the 50th percentile, and for the sake of providing comparisons. However, the 10th percentile range is where the basin is right now and where it will remain, and where it will be in the future.

That is to say, what proved to be the accurate analysis for the CRB is the 10th percentile bracket, i.e., a persistent dry hydrology that completely exhausts reservoir storage. This is the hydrology position that must be fully modeled and considered for the SEIS.

Lastly, though the 2012 Basin Study was not a NEPA document, its analysis should not be discounted for this NEPA analysis that concludes in the Spring of 2023.

**4.0.3. - CRSS Analysis Summary**

The correct conclusion of previous scenario planning exercises for the 2007 EIS, the Basin Study, and etc., is this: Both reservoirs are drawn down to the inactive and dead pool tiers. Reclamation and the states largely ignored those inconvenient predictions and instead based its management of the river on willful disregard to best practices.

As to system demands, the demand for human water consumption in the present and in the near future, will continue to maintain a position at the maximum allowable limit—agriculture, industry and domestic uses demand as much as they can get. At the same time, consumption by Nature will continue to increase under the stress of global warming, which includes high evaporation and high sublimation rates. All the while, demands for instream flows to support endangered fish and other such resources will continue to grow. Shortages related to increasing temperatures will also compound demands by agriculture, cities, towns, and industry.

As to system surpluses, when they do arrive, they will be transferred quickly from reservoir storage projects to consumptive uses, to the payback for intentional water credits, and to developed aquifer replenishment programs.

Summarily, these impacts to supply and demand mean that any hope of refilling reservoir reserves in the near future is not likely to occur, as a general rule. And yes, pluvials may arrive in the future. And yes, the run-of-the-river paradigm will likewise return and grip this basin for

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[29] Davis, Tony, *The Colorado River we rely on is likely to get even drier,* Arizona Daily Star, December 17, 2022: http://www.riversimulator.org/2025Guidelines/News/2022/TheColoradoRiverWeRelyOnIsLikelyToGetEvenDrier2022DavisAzDailyStar.pdf

long periods of time. Management needs to be realistic about these extremes and cannot continue to be based on wishful thinking about water availability or timing.

The conditions that need attention after the Spring of 2023, are as follows:

1. Human consumption must be reduced substantially, and the incentives to achieve these goals must be mandatory (not voluntary or incremental).
2. The governance of the CRB must implement broad-based climate adaptation programs.
3. Meanwhile, aerially exposed sediment in the two reservoirs will be remobilized and will eventually occupy the dead pool zone, and will likely affect the safety of dam operations at the intakes and conduits of river outlet tubes — especially at Glen Canyon Dam where the portals for bypass tubes were installed with a horizontal trajectory, rather than a vertical trajectory, as at Hoover Dam.
4. The spillways at Glen Canyon Dam are not safe. They cannot tolerate the historic and prehistoric magnitudes that have visited this watershed in the past.[30] Reclamation must provide a determination about the safety features of Glen Canyon Dam and a path forward to the future that takes into account the real costs and benefits of efforts to maintain this dam.

## 5.0. - A DISCUSSION ABOUT HISTORIC AND PREHISTORIC FLOODS AND DAM SAFETY

A warming atmosphere will increase its capacity to suspend and condense water vapor.

### 5.1 - Why a NEPA-based flood analysis is important

CRSS modeling, for a Colorado River Basin NEPA process, has never included a **rigorous** analysis of flood impacts, which is ironic because the impacts of Colorado River flooding into the Salton Sink from 1905 to 1907 was the primary motivation to enact the Boulder Canyon Project Act of 1928.

It is especially appropriate to have this discussion in a NEPA review for Year 2023, since Reclamation has issued the following statement related to bypass infrastructure related to Glen Canyon Dam and on August 16, 2022,[31] and as follows:

- Accelerate ongoing maintenance actions and studies to determine and enhance projected reliability of the use of the river outlet works, commonly referred to as the bypass tubes, at Glen Canyon Dam for extended periods.
- Support technical studies to ascertain if physical modifications can be made to Glen Canyon Dam to allow water to be pumped or released from below currently identified critical and dead pool elevations.

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[30] Tao, Liu, et al, *Holocene extreme paleofloods and their climatological context, Upper Colorado River Basin, USA,* Progress in Physical Geography, 2020: http://www.riversimulator.org/Resources/Floods/HoloceneExtremePaleofloodsClimatologicalContextUpperColoradoRiverBasinUSA2020Liu.pdf

[31] Interior Department, *Supra* note 1: http://www.riversimulator.org/2025Guidelines/News/2022/InteriorDepartmentAnnouncesActionsToProtectColoradoRiverSystemSets2023OperatingConditions2022.pdf

### 5.2. - Flood control operations are critical

Historic floods were an impetus for current management. A random and uncontrolled outburst flood occurred in 1928 at the St. Francis dam site in Ventura County, California; 431 people died in this event.[32] This instantaneous dam failure caught the attention of Reclamation Commissioner Elwood Mead, who then chaired a special committee to reevaluate and modify the specifications for Hoover Dam construction at Black Canyon.[33]

We ask that Reclamation continue to be proactive about flood management in Year 2023, and for this reason: In the coming decades, adaptation to global warming must include the impacts of large precipitation events caused by cloudbursts, monsoons, cyclones, rain-on-snow events, and atmospheric rivers.[34] [35]

### 5.3.2 - We suggest the SEIS utilize CRSS modeling to demonstrate how Reclamation would successfully bypass the following flood scenarios:

1. A five month snow melt of 30 million acre-feet, as occurred in 1884.
2. A five-month snow melt of 45 million acre-feet, as occurred in 1862.
3. A random precipitation event of 4 to 6 million acre-feet for a major tributary. For example, the San Juan River, as occurred in October of 1911.
4. **Note:** the above examples are not necessarily maximum precipitation events.

### 6.0 - Conclusion

The SEIS must provide robust analysis of alternatives for management of the CRB system based on complete baseline information and the best available scientific data about likely future climate in the basin. We urge Reclamation not to repeat the mistakes of the past but to move forward to consider mandatory actions that will protect the ecology of the river including imperiled fish populations and supply truly necessary human uses in an equitable way.

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[32] Blitz, Matt, *On Occasions Like This I Envy The Dead: The St. Francis Dam Disaster*, Smithsonian Magazine, March 12, 2015.

[33] Interior Department, *The Construction of HooverDam: Preliminary Investigations, Design of Dam, and Progress of Construction,* 1933. http://www.riversimulator.org/Resources/USBR/TheConstructionOfHooverDamInvestigationDesignProgress1933.pdf

[34] Reclamation Bureau, *Paleoflood Hydrology of the Colorado River System: Implication for Climate Changes*, 2019: http://www.riversimulator.org/Resources/Floods/PaleofloodHydrologyColoradoRiverSystemImplicationForClimateChanges2019USBR.pdf

[35] Colorado River Research Group, *Thinking about risks on the Colorado River*, 2019: http://www.riversimulator.org/Resources/Academic/CRRG/2019.5.ThinkingAboutRiskOnCRB.pdf

Sincerely yours,

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Robin Silver - Co-founder, Center for Biological Diversity

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