City of Phoenix

March 1, 2026

VIA ELECTRONIC DELIVERY

The Honorable Doug Burgum
Secretary of the Interior
U.S. Department of the Interior
Washington, D.C. 20240

Via:

Bureau of Reclamation
Attn: BCOO-1000
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Re: Comments of the City of Phoenix on the Bureau of Reclamation's Draft Environmental Impact Statement "Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead"

Secretary Burgum:

The City of Phoenix ("City" or "Phoenix") appreciates the opportunity to comment on the Bureau of Reclamation's ("Reclamation") January 2026 Draft Environmental Impact Statement for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead (the "DEIS").[1]

Phoenix is the fifth largest city in the United States and one of the Colorado River Basin's ("Basin") largest municipal water providers. It is also the hub of the Sun Corridor metropolitan region, which supports nationally-critical industries, including semiconductor manufacturing, aerospace, pharmaceuticals, mineral processing, and health care, among others—all sectors essential to the nation's economic stability and security. Colorado River water accounts for 40 percent of the water Phoenix delivers to customers annually and serves as the primary source of supply for major portions of the City's service area. As shown in the map attached as **Attachment D**, essentially

[1] Weekly Receipt of Environmental Impact Statements, 91 Fed. Reg. 2131(Jan. 16, 2026) (*EIS No. 20250184, Draft, BR, CO,* Post-2026 Colorado River Reservoir Operations); U.S. Bureau of Reclamation, Draft Environmental Impact Statement, Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead (Jan. 2026), https://www.usbr.gov/ColoradoRiverBasin/post2026/draft-eis/index.html [hereinafter DEIS].

every major development occurring in the City today is located on lands served by the Colorado River.

As a result, the City has a unique and profound interest in the near- and long-term management of the Colorado River, and Phoenix has engaged with and followed Reclamation's Post-2026 process closely. The City is investing billions of dollars in infrastructure and strategic reserves, including substantial new investments in advanced water purification and alternative water supplies occasioned by the declining condition of the Colorado River. In doing so, Phoenix has acted in reliance on past Reclamation actions and decisions. Phoenix has also contributed significantly to efforts to protect Colorado River reservoirs.[2] All the while, Phoenix has massively increased water use efficiency over the past few decades. The City uses approximately the same amount of water today than it did thirty years ago while its population has grown by more than 45%.

This DEIS arrives at a pivotal moment for the Basin. After more than twenty-five years of declining hydrology driven by rising temperatures and sustained overuse, the system's primary reservoirs—Lake Mead and Lake Powell—stand dangerously close to dead pools amidst one of the warmest and lowest snow winters on record. The conditions that in the past have allowed for more incremental changes in management, such as those which drove the 2007 Interim Guidelines and the Drought Contingency Plans, no longer exist. This DEIS *could* be leveraging the collective experience and expertise developed by water users across the Basin over the past two decades as we seek to respond to these urgent conditions. Reclamation *could* be focusing on building durable, non-incremental strategies to maintain the resilience of water storage and delivery systems amid growing uncertainty. Such an approach could protect the millions of people in the United States and Mexico, nationally and regionally significant industries, and vast agricultural landscapes that depend on the Colorado River.

Respectfully, the DEIS fails to meet this moment.

Phoenix is fully cognizant of the substantial challenges that Reclamation faces in managing the Colorado River. The City also recognizes and appreciates the substantial efforts that have been undertaken by Reclamation's technical staff during the Post-2026 process, particularly their incorporation of decision-making under deep uncertainty (DMDU) principles into the agency's planning and analysis. Reclamation's adoption of a DMDU framework for decision analysis is an important, forward-looking, and fundamental advance in water-resource planning that should continue. For better or worse, however, the use of this decision framework also helps to highlight the multiple fundamental shortcomings in the DEIS's underlying assumptions, the selected alternatives, and its associated impact analysis.

Unfortunately, the most reassuring feature of Reclamation's DEIS is that it still contains the word "draft." In its present form, the proposed federal actions that this DEIS describes look less like a plan to prevent a crisis than a technically sophisticated framework for documenting one. The agency's proposed options for reservoir operating guidelines contravene clear legal requirements

[2] Among other examples, in connection with the shortage sharing agreements negotiated in the 2007 Shortage Guidelines and the Drought Contingency Plan, Phoenix committed tens of thousands of acre-feet to support agricultural transitions away from CAP supplies in Pinal County, and it has committed even greater amounts in recent years to support Lake Mead—even while accepting and adapting to the loss of more than 37,000 acre-feet of annual water supplies from the CAP NIA Pool.

and agency obligations and broadly ignore the critical, nationally-significant economic consequences that would flow from the agency's proposed decisions. The proposed options also disregard important authorities and tools that Reclamation could and should urgently bring to bear as the Basin's primary Colorado River water administrator.

The City's detailed comments on the major components of the DEIS are provided in the document attached to this letter as Attachment A. For convenience, the City's previous pre-scoping and scoping comments are also attached and incorporated as **Attachments B** and **C**. A draft storage proposal that was circulated by the City in late 2024 is also provided as **Attachment E**.

As we discuss in Section 3 of the City's detailed comments, the broader arc of the City's concerns starts with the fact that many of the DEIS's decision criteria for evaluating "success" are not rationally connected to Reclamation's stated purpose and need. Among the DEIS's stated purposes and needs are creating "more robust and adaptive guidelines...for the efficient and sustainable management" of the River; providing users with "a greater degree of predictability with respect to annual water availability...under anticipated increasing variability, low runoff, and low-reservoir conditions;" and providing "flexibility to build resilience and accommodate future needs and growth that are supported by Colorado River water supplies."[3] Across multiple objectives, the performance thresholds selected by the agency lack a stated analytic basis and fail to measure up to those stated underlying goals. For example, the agency's selected minimum success thresholds for domestic water deliveries and reservoir elevations would in many cases cause dangerous levels of disruption in the municipal and industrial (M&I) sector—creating real-world outcomes that no reasonable person would regard as successful.

Alarmingly, however, the decision alternatives presented in the DEIS fail even under these already inadequate measures of success. As discussed in detail in Section 4, across a broad range of metrics—including system reliability, water-user outcomes, and economic, social, and environmental effects—the proposed alternatives fall substantially short of the performance thresholds set by the agency itself.[4] Among other concerns, should the drier hydrologies that the Basin has experienced over the past two decades continue, all five alternatives are in fact projected to create high risks of fundamental system failures—such as dead pool conditions in Lakes Mead and Powell or zero or near-zero water supplies to the CAP.

NEPA requires the agency to consider the "reasonably foreseeable" impacts that could result from its actions. Yet the DEIS largely avoids evaluating the consequences that would flow from those system failures despite the substantial risk that they will occur in a continued dry sequence. As discussed in Section 5.1, the analysis effectively sets aside meaningful consideration of the consequences of reaching dead pool or near-dead pool conditions in Lake Mead, Lake Powell, or both, citing an inability to predict how the federal government might respond if such conditions were reached. The absence of any articulated plans to respond to a serious emergency that the

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[3] DEIS, *supra* note 1, at 1-6

[4] There are also several technical issues that undermine confidence in the modeling results presented in the DEIS. As discussed in Section 8, these issues variously affect the hydrologic inputs, water-demand assumptions, and core structural elements of the models used to predict system responses. As a result, the City is concerned that the modeled numerical outcomes attributed to the proposed alternatives may not provide an accurate assessment of the outcomes that could be expected from the proposed actions.

DEIS predicts is increasingly likely to occur—or consideration of the consequences—is deeply disturbing. By refusing to assess what would happen in those circumstances, the DEIS reads something like a medical study in which the principal investigator concludes that "in the 50 percent of cases where the patient did not die, the treatment outcomes were not particularly satisfactory."

Most alarmingly of all, the DEIS's evaluation of the potential economic consequences of its decisions[5] excludes the very sector where (a) the overwhelming majority of populations and economic activity is concentrated, and (b) the most substantial and potentially disastrous impacts would unquestionably occur: the M&I sector. As discussed in Section 5 of our comments, despite projecting potentially huge water shortages to various M&I users,[6] M&I economic impacts are omitted completely, without attempting to evaluate or quantify any associated economic costs, system disruptions, or secondary effects. Instead, Reclamation's analysis focuses almost exclusively on agriculture and a limited subset of impacts to public recreation.

Due to this exclusive focus, the DEIS's socioeconomic impact analysis addresses less than **1%** of Arizona's annual GDP.[7] The economic impacts to the remaining 99% of Arizona's economic activity—concentrated primarily in Phoenix and other Sun Corridor cities—are not evaluated. Familiar terms like "municipal water supply," "industrial," "homeowner," "investment," or "bonds" do not appear *once* in that analysis. Nor are M&I economic impacts analyzed in any of the other Basin States, thus ignoring more than 95% of the combined economies of the seven Colorado River Basin states.[8] After projecting huge reductions in water available to municipal users, the DEIS merely acknowledges that there could be "widespread impacts." Disturbingly, the DEIS cavalierly suggests that municipalities might "pursue alternative water sources or hauled water" to replace these supplies, without analyzing feasibility, timing, cost, operational implications, or ratepayer burdens—particularly at the scale required to replace Colorado River supplies within major metropolitan areas.[9]

Failing to consider those impacts is simply indefensible. Assuming a continuation or worsening of the dry hydrologies that have recently prevailed in the Basin, all five of the alternatives would result in massive reductions to the CAP and other Arizona Priority 4 users either via actively adopted and imposed policy shortages or via the failure of those adopted policies to avoid dead pool conditions. Those reductions, which could be inflicted indefinitely on Arizona water users, would require immediate mobilization of emergency reserves, jeopardize water deliveries to existing populations primarily reliant on CAP water, and would materialize well before major alternative supplies such as advanced water purification could be brought online.

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[5] *See* DEIS, *supra* note 1, at TA 16.

[6] *See* Attachment A, Section 5.

[7] As discussed further in Attachment A, Section 5.3, the DEIS's socioeconomic analysis for agriculture also misses a substantial part of the larger industry picture by focusing on crop production, while ignoring the fact that most crop processing, packaging, and distribution is associated with M&I uses that would be impacted by the alternatives – harming not just those activities, but also the farms that depend on them to bring agricultural products to market.

[8] Daniel Crespo, et al., *Assessing the Economic Value of Water in the Colorado River Basin: A Hydroeconomic Analysis*, 52 Water Resources & Econ. 100266 (2025).

[9] DEIS, *supra* note 1, 3-193; *see also* discussion in Attachment A, Section 5.2.1.

As discussed in Section 1, rapid and uncontrolled reductions to the CAP would damage not only Phoenix and other Sun Corridor cities, but also metropolitan centers across the Basin and its periphery—including Denver, Salt Lake City, Las Vegas, Los Angeles, and San Diego—and reverberate across the United States. Phoenix is home to and directly responsible for supporting some of the nation's most strategically important sectors. Big tech. Pharmaceuticals and genetics. Medical device manufacturing and health care. Data and AI. Food and beverage processing and manufacturing. Most of these same industries are also housed in Tucson at the opposite end of the Sun Corridor, and many of our other sister cities. Sun Corridor water supplies also sustain a mining industry that produces and refines more than 70 percent of the nation's copper as well as other critical minerals. And critically, Phoenix now occupies a central position in the United States' semiconductor manufacturing capacity.

The semiconductor sector is critical to the operations of essentially every other U.S. industry, from high technology, data, and AI, to automobile manufacturing, to producing tractors, medical devices, and microwaves. The facilities under construction in north Phoenix by the Taiwan Semiconductor Manufacturing Company (TSMC), which are located in an area that is principally dependent on the CAP for water supplies, are the centerpiece of a core national security strategy to onshore critical advanced semiconductor technology.[10] The scale of that investment is difficult to fathom: the initial 6 fabrication plants being constructed as part of this project involve a capital investment of $165 billion by the company, which is the largest foreign direct investment in U.S. history.[11] To put this in perspective, just those 6 fabrication plants will involve an investment (adjusted for inflation) in excess of the entire Marshall Plan to rebuild Europe after WWII;[12] greater than five Manhattan Projects;[13] and larger than the entire cost of the International Space Station.[14]

The federal government has been closely involved in the TSMC facility planning efforts and is providing up to $6.6 billion in direct funding and $5 billion in loans.[15] The Executive Branch has made quite clear via multiple executive orders that this project is critical to the Nation,[16] including

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[10] National Institute of Standards & Technology (NIST), *TSMC Arizona*, https://www.nist.gov/chips/tsmc-arizona-phoenix (last visited Feb. 26, 2026).
[11] TSMC Arizona, https://www.tsmc.com/static/abouttsmcaz/index.htm (last visited Feb. 24, 2026).
[12] The National Museum of American Diplomacy, *The Marshall Plan*, U.S. Dep't of State Museum, https://diplomacy.state.gov/online-exhibits/diplomacy-is-our-mission/development/the-marshall-plan/#:~:text=Under%20the%20Marshall%20Plan%2C%20the,stable%20partners%20to%20the%20United (last visited Feb. 25, 2026).
[13] National Park Service, *Frequently Asked Questions*, Manhattan Project National Historical Park, https://www.nps.gov/mapr/faqs.htm (last visited Feb. 26, 2026).
[14] Michael Sheetz, *NASA Wants Companies to Develop and Build New Space Stations, with Up to $400 Million Up for Grabs*, CNBC (Mar. 27, 2021), https://www.cnbc.com/2021/03/27/nasa-commercial-leo-destinations-project-for-private-space-stations.html.
[15] Biden-Harris Administration Announces CHIPS Incentives Award with TSMC Arizona to Secure U.S. Leadership in Advanced Semiconductor Technology, U.S. Dep't of Commerce (Nov. 15, 2024); Dylan Butts, TSMC Is Set to Expand its $165 Billion U.S. Investment—Here's What We Know, CNBC (Jan. 15, 2026), https://www.cnbc.com/2026/01/16/tsmcs-arizona-chip-expansion-isnt-done-after-us-investment-cfo.html.
[16] *See, e.g.*, Executive Order No. 14365, *Ensuring a National Policy Framework for Artificial Intelligence*, 90 Fed. Reg. 58499 (Dec. 16, 2025); Executive Order No. 14355, *Unlocking Cures for Pediatric Cancer With Artificial Intelligence*, 90 Fed. Reg. 48153 (Oct. 7, 2025); Executive Order No. 14277, *Advancing Artificial Intelligence Education for American Youth*, 90 Fed. Reg. 17519 (Apr. 28, 2025). Executive Order No. 14179, *Removing Barriers to American Leadership in Artificial Intelligence*, 90 Fed. Reg. 8741 (Jan. 31, 2025).

to national welfare and security. This position was reiterated through executive order as recently as January 2 of this year,[17] just a week before the DEIS was posted. And reiterated again when the Department of Commerce announced a historic trade agreement with Taiwan to reshore America's semiconductor sector[18] the day before Reclamation issued its Federal Register Notice for the DEIS.

It is unclear why the Department of Interior would propose actions that so clearly contradict Executive Branch priorities and national interests by threatening the City's ability to deliver water to this facility, let alone to the multiple other Phoenix-based industries that intersect with national defense, health, and national economic welfare, as well as the millions of residents that live and work here. As we discuss in Section 4, all five of Reclamation's alternatives propose federal actions that directly contravene the Colorado River Compact, federal statutes and regulations, and Reclamation's long-acknowledged responsibilities as the primary Colorado River system operator. Even where Reclamation's alternatives reduce releases from Lake Powell such that they cause almost immediate 1922 Colorado River Compact violations, the DEIS makes no effort in the alternatives to evaluate, let alone require, equivalent Upper Basin reductions or conservation that would maintain compliance with Compact minimums.[19]

As discussed in detail in Section 6, in justifying this disproportionate treatment of water users between the Upper and Lower Basins, the DEIS consistently downplays—and in some cases affirmatively disclaims—Reclamation's and the Secretary of the Interior's clear powers and legal obligations to manage federal projects. Reclamation and the Secretary have clear legal authority to operate storage and hydropower facilities, to regulate the Colorado River system as necessary to protect a range of national interests, and to meet their non-discretionary legal obligations under the Law of the River, including the delivery of water to the Lower Basin in accordance with the Long Range Operating Criteria, Colorado River Storage Project Act, and Colorado River Compact. Despite this clear legal authority, even the most aggressive of the action alternatives in the DEIS considers only limited, temporary rebalancing among the Colorado River Storage Project Initial Units and small, entirely voluntary Upper Basin conservation efforts—even where Lower Basin shortages and similar conservation programs would reduce as much as half of total Lower Basin consumptive use.

Section 2 of our comments describe the specific NEPA requirements applicable to Reclamation. Those requirements are not met. The adopted decision criteria that do not succeed in avoiding impacts, the proposed alternatives fail to develop a reasonable range of alternatives capable of meeting even those criteria, and the DEIS omits analysis of impacts affecting the vast majority of the Basin's economic activity—impacts that are not only "reasonably foreseeable" but that the DEIS analysis almost guarantees to occur. Thus, the DEIS fails to conduct the review required by NEPA. The alternatives presented universally violate Reclamation's legal obligations and responsibilities. The DEIS does not offer a credible path toward a seven-state consensus or describe viable federal actions that could be taken in the absence of such consensus to manage the resulting emergencies. Nor does the DEIS adequately grapple with or propose the tools and

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[17] Executive Order of Jan. 2, 2026, *Regarding the Acquisition of Certain Assets of EMCORE Corporation by HieFo Corporation*, 91 Fed. Reg. 895 (Jan. 8, 2026).

[18] Fact Sheet: *Restoring American Semiconductor Manufacturing Leadership Through an Agreement on Trade & Investment with Taiwan*, U.S. Dep't of Commerce (Jan. 15, 2026), https://www.commerce.gov/news/fact-sheets/2026/01/fact-sheet-restoring-american-semiconductor-manufacturing-leadership.

[19] See detailed discussions in Attachment A, Sections 4.4, 4.5, 4.6, and 6.2.8.

flexibility that water providers will need immediately to implement alternative solutions. The result is a document that essentially proposes multiple, alternate pathways for Reclamation to inflict a serious wound to the agency, the Basin's water users, and the nation as a whole.

Since the DEIS does not provide a reasoned basis for agency decision-making, it cannot support a final Reclamation decision and action. The agency must correct these deficiencies and must consider more complete, reasonable alternatives in the Final Environmental Impact Statement (FEIS). The City has attempted to provide detailed suggestions in each section of its comments as to how legal, analytical, and technical deficiencies in the DEIS could be remedied. We also address the requirements that must be met in a final preferred alternative that enables a different range of potential actions, even in the absence of an emergent seven-state consensus agreement or a Lower Basin-only agreement.

Regardless, as part of any FEIS and Record of Decision, the City also urges Reclamation to do as much as possible to specifically prioritize and broaden its support for transactional and transitional behaviors among water users that will be necessary to mitigate the impacts predicted by the DEIS. Reclamation's FEIS cannot simply focus on the rules for reservoir operations alone. It must bring together system-level, risk-reducing elements, such as (1) broadly available flexible storage in Lake Mead to incentivize water user conservation and intrastate partnerships, (2) federally-operated water conservation and storage pools, (3) mobilization of Upper Basin Initial Units and curtailment mechanisms to meet Compact obligations, (4) use of Lower Basin storage to backstop supplies, and (5) defined emergency responses and thresholds to protect critical infrastructure, industries, and minimum deliveries to the CAP. Those system-level elements must be combined with active Reclamation facilitation and support, including up-front analysis and more flexible accounting, to enable ground-level, user-to-user voluntary conservation activities and programs that can be supported by federal, state, and local funding, enabling a wide range of transactions and partnerships.

In this regard, Phoenix appreciates Reclamation's efforts to model the operation of a storage mechanism within multiple DEIS alternatives, since creative and flexible use of voluntary storage and recovery programs which allow broad participation will be a key strategy for managing water risk going forward. As detailed in Section 7.1, this storage mechanism needs to be better analyzed and broadened to ensure that it can provide badly needed mitigation. Reclamation should consider alternative means to ensure the availability of this mechanism in the absence of a seven-state agreement. As discussed in Section 7.2, it will also be critical for Reclamation to use the final stages of this NEPA process to facilitate the transactional behaviors and user-to-user agreements, programs, and projects that will need to be undertaken by individual water providers and water users to mitigate future risks, with Reclamation providing essential support as both a partner and regulator.

As the Colorado River system experiences greater and greater stress, it is those relationships that will be key to preventing and managing conflict and to maintaining the resilience of the system without the need for heavy-handed federal interventions. Such interventions—while clearly necessary in some circumstances to prevent catastrophic outcomes—are not desirable for or desired by the water user community. To that end, Phoenix and Tucson are actively working with other Arizona water users to develop and promote a framework of mutual support and water sharing arrangements, particularly during critical conditions. We need Reclamation to make the tools and flexible mechanisms available to support those agreements. We also need Reclamation

to clearly identify the actions that Reclamation is prepared to take when and if particular emergency thresholds are reached. As discussed in Section 7.3, this guidance must be provided in a FEIS and Record of Decision, since it is essential for planning the scope of a federal response—and to shaping the state and local responses that we will need to construct to ensure that we avoid ever reaching those conditions.

The City is committed to ensuring continued, reliable water deliveries in its service area and helping to ensure that same reliability throughout the Sun Corridor. We have been preparing for the kind of conditions we now face on the Colorado River for decades. There is no reason we cannot maintain the vibrant economies and nationally-significant industries that call the Sun Corridor home if we have a reasonable level of federal support and an agency that enforces the long-standing rules that govern this system. With appropriate flexibility and cooperation, there is also no reason for the Colorado River system to be pushed into such an extreme state that Reclamation will be forced to use its emergency authorities to protect critical infrastructure, human populations, the national and regional economy, or nationally-important industries. But maintaining a sustainable system will require the active cooperation of the Basin's water users, and we cannot navigate the challenges this region faces if Reclamation stays on the sidelines and does not provide a clearly articulated, workable plan that will avoid system failures. It is critical that Reclamation use the remaining portion of this decision process towards that end.

The City respectfully suggests that only a limited set of viable paths forward remain and that these paths can and should be implemented together:

1. **Advance a Legally-Compliant and Authority-Grounded Preferred Alternative**

The agency must advance a final preferred alternative that complies with Reclamation's fundamental legal obligations under the Law of the River, invokes additional available federal authorities to manage Upper Basin water use and undertake broader voluntary programs, and better protects Reclamation's own infrastructure, including the Central Arizona Project. That preferred alternative must also specifically identify any further agreements that will be necessary or desirable to manage system risks of water shortages and to protect critical economic values and populations in the Lower Basin and the M&I sector.

To aid water user planning and the development of responses to more extreme conditions, Reclamation must also specifically define emergency actions that could be taken to protect critical interests and the thresholds at which those interventions would occur.

2. **Provide Mitigation Tools and Resources for Water Users**

Regardless and at a minimum, Reclamation must equip water users with the financial resources, fundamental tools, and transactional flexibility they will need to cooperatively rebalance water resources. Reclamation must create the space within which the ground-level impacts caused by a new Colorado River management regime can be mitigated. This mitigation should include the adoption of a broadly accessible, properly-sized storage system in Lake Mead. In the absence of a seven-State agreement, this storage system could instead be implemented through a Lower Basin-only interstate agreement and/or the exercise of Secretarial authorities.

This mitigation effort should also include analysis of impacts associated with the movements of water from one point on the river to another to provide replacement supplies. It must specifically consider mechanisms by which Reclamation would expeditiously measure and account for reductions in consumptive water use from various transactions. These transactions will inevitably be required to manage large-scale shortages by sharing water among and between various agricultural, municipal, and industrial users. Reclamation's mitigation proposal should also include specific examples of agreements that could or should be undertaken among water users, and opportunities for the federal government to support those arrangements and potentially fund important projects.

3. Engage Other Federal Agencies and Mobilize National Resources

Finally, Reclamation and Interior should promptly engage with other departments of the Executive Branch, including the Departments of Commerce, Defense, State, Energy, Agriculture, and Homeland Security, to evaluate appropriate actions in light of their national and international consequences. These nationally-important issues also clearly warrant the rapid deployment of significant new federal resources through Executive and Congressional action to support the Basin as it transitions to a new Colorado River operating regime.

Phoenix appreciates your consideration of these comments as Reclamation works to develop and implement its Final Environmental Impact Statement and Record of Decision. We urge the agency to reconsider its approach and alternatives and to help chart a clear path to user-to-user and state-to-state cooperation that will protect the cities, industries, farms, cultures, and ecosystem that depend upon the Colorado River. Phoenix would welcome any discussion or collaboration with Reclamation to achieve that as this process proceeds.

Sincerely,

Brandy A. Kelso, P.E.
Director
Water Services Department
City of Phoenix

Maxwell C. Wilson, Ph.D.
Water Resources Management Advisor
City Manager's Office
City of Phoenix

Attachments:

Attachment A: Detailed Comments of City of Phoenix on Post-2026 DEIS, March 1, 2026
Attachment B: City of Phoenix Comments on Reclamation Request for Input, Sept 1, 2022
Attachment C: City of Phoenix Comments on Reclamation Notice of Intent, Aug. 15. 2023
Attachment D: Map of City Service Area Served by Colorado River
Attachment E: Proposed Top Storage Concept

ATTACHMENT A

City of Phoenix

DETAILED COMMENTS OF THE CITY OF PHOENIX ON THE BUREAU OF RECLAMATION'S DRAFT ENVIRONMENTAL IMPACT STATEMENT "POST-2026 OPERATIONAL GUIDELINES AND STRATEGIES FOR LAKE POWELL AND LAKE MEAD"

March 1, 2026

INTRODUCTION

The City of Phoenix ("City" or "Phoenix") appreciates the opportunity to comment on the Bureau of Reclamation's ("Reclamation") January 2026 Draft Environmental Impact Statement for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead (hereinafter, the "DEIS").[1] As discussed in the City's comments below, the City has a number of extremely serious concerns with the DEIS that must be addressed by the agency as it continues to proceed towards a Final Environmental Impact Statement (FEIS) and Record of Decision.

The City does want to recognize and express its appreciation for the substantial efforts that have been undertaken by Reclamation's technical staff during the post-2026 process, particularly their incorporation of decisionmaking under deep uncertainty (DMDU) principles into its planning and analysis. The agency's adoption of a DMDU framework for decision analysis is an important, forward-looking, and fundamental advance in water resource planning that should continue.

For better or worse, however, the use of this decision framework also helps to highlight the multiple fundamental shortcomings in the DEIS's underlying assumptions, the selected alternatives, and its associated impact analysis. Among other items:

1) Many of the agency's proposed performance thresholds are not rationally connected to the stated Purpose and Need and establish thresholds that cannot reasonably be regarded as successful. There are also technical deficiencies that distort the results of performance modeling.

2) The decision alternatives fail to meet either the agency's own proposed performance thresholds or the requirements of the National Environmental Policy Act (NEPA). They fail to fulfill the stated Purpose and Need, violate the agency's legal obligations, and fail to avoid fundamental system failures.

[1] Weekly Receipt of Environmental Impact Statements, 91 Fed. Reg. 2131(Jan. 16, 2026) (*EIS No. 20250184, Draft, BR, CO,* Post-2026 Colorado River Reservoir Operations).

3) The agency's impact analysis is substantially deficient, ignoring both the consequences of predicted system failures and the potentially catastrophic economic outcomes to water users on the Central Arizona Project and throughout the broader municipal and industrial (M&I) sector that could result from these alternatives.

4) The DEIS consistently downplays—and in some cases affirmatively disclaims—the powers of Reclamation and the Secretary of the Interior to manage federal projects, operate storage and hydropower facilities, and regulate the Colorado River system as necessary to protect a range of national interests and to meet the Secretary's legal obligations under the Law of the River.

5) The DEIS fails to appropriately evaluate and consider the essential tools that water users will need to have immediately available to adapt to and manage the risks created by the new operating guidelines. These tools include storage, flexibility, and expanded voluntary actions.

6) Most critically, proposed federal actions fail to protect against or consider the potential economic consequences of system failures and the proposed actions for the M&I sector and associated, nationally important industries. The proposed actions undermine other clearly identified Executive Branch priorities and would squander vast investments by the federal government, the State of Arizona, the private sector, and the City of Phoenix in support of those priorities.

Ultimately, the solutions presented in this DEIS do not offer a credible path toward reaching a seven-state consensus–or even a three-state consensus–for managing the Basin's continued hydrologic decline. It presents no viable federal actions in the absence of consensus. It does not adequately grapple with the real-world economic and operational consequences of those actions it contemplates. And ultimately, it does not meet the required standards for NEPA analysis.

Taken as a whole, the DEIS thus does not provide a reasonable basis for a Reclamation decision that is commensurate to the risks facing the Basin, and it does not accurately frame or properly consider a major federal decision that will have ongoing, serious consequences for the entire country for years to come.

To assist Reclamation in strengthening its analysis and rethinking alternatives, the City's comments explain each of these concerns in detail and are intended to identify the multiple issues that must be resolved in the agency's preferred alternative, FEIS, and Record of Decision. A table of contents is also provided below for ease of reference.

Contents

1 The Proposed Federal Actions Would Have Impacts to Phoenix and Major Industries that Have Regional and National Significance

The City of Phoenix ("City" or "Phoenix") is one of the largest water providers in the United States, providing drinking water for 1.7 million residential customers, together with a broad range of commercial and industrial water customers, spread across a massive, 540-square-mile service area. This system includes five water treatment plants, 73 separate pressure zones, and over 7,000 miles of water lines. This makes the City's water system among the most complex municipal water delivery systems in the world. As the largest municipal water provider in the State of Arizona and one of its largest users of Colorado River water, the City has a major interest in the management of the Colorado River.

Decades of investments in both water conservation and the development of alternative water supplies have massively increased the water use efficiency and sustainability of Phoenix's water system. The City now uses essentially the same volume of water each year that it did thirty years ago. In keeping with the core federal objectives that informed the development of the CAP and which required the concurrent adoption of Arizona's Groundwater Management Act, Phoenix also now supports less than 5% of its annual water demand from groundwater supplies, relying instead on a portfolio of surface water supplies; Colorado River water, delivered via the CAP, represents nearly 40% of the water Phoenix delivers to customers annually. This encompasses approximately 190,000 acre-feet of Municipal and Industrial Priority (M&I) water, Indian Priority water, Non-Indian Agricultural Priority (NIA) water, and Arizona Priority 3 water through various subcontracts and leases.

These CAP supplies represent the primary source of water supply for major portions of the City's service area, including nearly every major commercial or residential development presently occurring in the City. These areas are served by drinking water plants that must receive certain threshold supplies of CAP water to operate throughout the year. These treatment plants cannot realistically access or treat alternative sources of water. To provide redundancy, and to help protect those CAP-dependent facilities, the City has created a number of reserve supplies. Those reserve supplies, however, are also dependent on or interconnected with a functional CAP system, including the substantial backup supplies that Phoenix has stored underground in the Tucson area. Those reserves are designed to be accessed via water exchanges through the CAP system in the event of significant shortages on the CAP.

As discussed elsewhere below, Reclamation has substantial responsibilities to the CAP, its users, and the larger Lower Basin by virtue of its mission as an agency, and its fiduciary obligations in its role as the "watermaster" of the Lower Colorado River and the primary operator of Colorado River system storage reservoirs. As discussed in Section 6, Reclamation is also bound to the requirements of the Colorado River Compact, U.S.-Mexico Treaty of 1944, Colorado River Storage Project Act (CRSPA), Colorado River Basin Project Act (CRBPA), Long Range Operating Criteria (LROC), Boulder Canyon Project Act (BCPA), the Section 5 contracts it has entered into pursuant to the BCPA, and many other relevant provisions of the Law of the River that ultimately dictate the availability of water to the users of the CAP.

Phoenix has relied extensively on those Reclamation responsibilities and obligations. The City has entered into the various CAP subcontracts and leases on which the City's Colorado River water

supplies are built.[2] It has developed the vast water infrastructure that now serves those supplies, and it has issued bonds and raised rates that have paid for and incurred billions of dollars of related costs and obligations to the City and its ratepayers. The City has paid for the costs of that CAP water over decades, including capital charges and extensive subsidies to CAP agricultural users occasioned by the bailout of the CAP in its early years. The City has entered into and supported various Indian water rights settlements, some of which provide the basis for related leases of Tribal water. It has planned, permitted, and developed countless residential, commercial, and industrial uses that rely on those various CAP supplies. The City has stored water in remote locations that can only be recovered via exchanges on the CAP (in some cases to support previous federal actions, such as the 2019 Drought Contingency Plan), and it has entered into multiple recent agreements with Reclamation to help conserve storage in Lake Mead. All of these actions and expenditures have been taken in reliance upon Reclamation fulfilling its statutory responsibilities and obligations.

The City is fully cognizant of the substantial challenges that Reclamation faces in managing the Colorado River, and Phoenix has made significant adjustments to its water infrastructure and water supply portfolio in support of past Reclamation actions. For example, in connection with the shortage sharing agreements negotiated in the 2007 Shortage Guidelines and the Drought Contingency Plan (DCP), Phoenix committed tens of thousands of acre-feet to support agricultural transitions away from CAP supplies in Pinal County. More significantly, Phoenix has accepted the ongoing loss of more than 37,000 acre-feet of its annual water supply from the CAP NIA Pool.[3] This water supply is now unlikely to ever again be available to the City due to policy-driven reductions on the Colorado River in connection with the DCP. To compensate, Phoenix has already deployed considerable new resources to diversify its water supply and reserve portfolio, including massive, ongoing investments in advanced water purification that will cost the City well over $4 billion in new direct infrastructure costs.

At the outset of the Post-2026 process, Reclamation specifically noted that the agency was seeking to adopt a "more holistic approach to Colorado River water management in a way that focuses on the long-term sustainability of both the Basin's population and natural environment, minimizes system vulnerability, and increases system resiliency."[4] As discussed in the previous comment letters provided by the City in both the pre-scoping and scoping process, and proposals shared with Reclamation in other settings, Phoenix has fully supported that effort, relying substantially on Reclamation's expected good faith in carrying out its legal responsibilities in planning for the Post-2026 guidelines, facilitating the ongoing interstate negotiations, and developing reasonable alternatives for the management of the River. The City was also reassured by countless statements by Reclamation throughout this process, including assurances from senior officials in one-on-one meetings, that the agency's intent was to adopt workable solutions that would not jeopardize the future of Central Arizona, its residents, or its critical industries.

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[2] Phoenix has entitlements to 194,357 af of CAP water, consisting of its CAP M&I subcontract, assigned Priority 3 water, several leases of CAP Indian priority water, and two NIA priority subcontracts.

[3] The City also voluntarily contributed a significant volume of water in the DCP to help Pinal County farmers transition away from CAP supplies.

[4] Notice of Intent To Prepare an Environmental Impact Statement and Notice To Solicit Comments and Hold Public Scoping Meetings on the Development of Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead, 88 Fed. Reg. 39455 (June 16, 2023).

Given the actions and alternatives that Reclamation is now considering in this DEIS, however, that reliance appears to have been misplaced. As discussed in detail below, all five of Reclamation's alternatives propose federal actions that directly contravene federal statutes, the Law of the River, and Reclamation's long-acknowledged responsibilities as the primary Colorado River system operator. Assuming a continuation or worsening of the dry hydrologies that have recently prevailed in the Basin, all of the proposed alternatives would cause—either via actively adopted and imposed policy shortages or via the eventual failure of Reclamation's policies to avoid dead pool conditions—extraordinary reductions to the CAP and other Arizona Priority 4 users. Those reductions, which could be inflicted indefinitely on Arizona water users, would require immediate mobilization of emergency reserves, jeopardize water deliveries in areas primarily reliant on CAP water, and would materialize well before major alternative supplies such as advanced water purification could be brought online.

The integrity of the CAP underpins an economic landscape in Central Arizona that is both nationally and strategically significant. The industries and infrastructures that depend on reliable CAP supplies are not incidental—they form the backbone of the region's high-value economy. The industries rely on Phoenix and the Sun Corridor's municipalities for workforce, infrastructure, siting, and continuity of operations. These include some of the nation's largest defense contractors; major technology and data enterprises; pharmaceutical, genomic, and medical-device manufacturers; nationally prominent hospital and research systems such as the Mayo Clinic; and the rapidly expanding sectors associated with artificial intelligence and advanced materials. Nearly all of these are essential, hardened uses of water that cannot simply be curtailed or reduced.

CAP reliability is also indispensable to Arizona's mining industry, which produces and refines more than 70 percent of our nation's copper as well as other critical minerals. This is effectively a "non-discretionary" industry whose operations have national significance as part of the essential supply chains for high tech, defense, clean energy, and other U.S. manufacturing industries, among others. In their comment letter, Freeport McMoRan provides an excellent summary of the significance of CAP supplies to various major operations, including the Miami Smelter, Morenci Mine, and other Arizona mining and refining operations.

These industries do not operate in isolation. Their supply chains, labor markets, and distribution networks are embedded within an increasingly interconnected regional economy that links Phoenix and its sister cities to other Basin and Basin-adjacent metropolitan regions—including Tucson, Denver, Salt Lake City, Las Vegas, Los Angeles, and San Diego—and to the ex-urban agricultural economies that supply essential food and fiber. When the DEIS disregards the impacts of severe and prolonged M&I shortages on Central Arizona, it effectively ignores approximately 99 percent of Arizona's economic engine, the vast majority of which is concentrated in the Sun Corridor.

Among those many critical industries, it is important to highlight that Phoenix now plays a central role in meeting the nation's essential needs in semiconductor manufacturing. Principal among these semiconductor manufacturers, the Taiwan Semiconductor Manufacturing Company (TSMC) is in the midst of constructing a massive production facility that is literally the cutting edge of semiconductor technology. The scale of that investment is difficult to fathom: the initial phases of this project involve a capital investment of $165 billion by the company, which is the largest foreign

direct investment in U.S. history.[5] This first phase of investment includes 6 fabrication plants in north Phoenix (one already operational, one completed but not operational, one under construction, three more in pipeline), two advanced packaging facilities, and an R&D center. In addition, TSMC recently announced, and the City approved zoning of, a further land purchase that will house the advanced packaging facilities and leaves room for further expansion. To put this in perspective, just the first 6 fabrication plants will involve an investment (adjusted for inflation) in excess of the entire Marshall Plan to rebuild Europe after WWII;[6] greater than five Manhattan Projects;[7] and larger than the entire cost of the International Space Station.[8]

These facilities, which are dependent completely on water delivered by Phoenix in an area of the City served primarily by CAP water, position Phoenix and its sister cities[9] at the core of the semiconductor industry — a sector which is critical to the operations of essentially every other U.S. industry. The TSMC facility is also a centerpiece of the United States' core national security strategy of onshoring critical technology, such as manufacturing advanced semiconductors. [10]

The federal government, which has been closely involved in the TSMC facility planning efforts, has made clear via multiple executive orders that this project is critical to the Nation,[11] including to national welfare and security. This position was reiterated through executive order as recently as January 2 of this year,[12] just a week before the DEIS was posted. It was reiterated again when the Department of Commerce announced a historic trade agreement with Taiwan to reshore America's semiconductor sector[13] the day before Reclamation issued its Federal Register Notice for the DEIS. Those strong statements have been supported by massive federal direct investment as well.

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[5] TSMC Arizona, https://www.tsmc.com/static/abouttsmcaz/index.htm (last visited Feb. 24, 2026).
[6] The National Museum of American Diplomacy, *The Marshall Plan*, U.S. Dep't of State Museum, https://diplomacy.state.gov/online-exhibits/diplomacy-is-our-mission/development/the-marshall-plan/#:~:text=Under%20the%20Marshall%20Plan%2C%20the,stable%20partners%20to%20the%20United (last visited Feb. 25, 2026).
[7] National Park Service, *Frequently Asked Questions*, Manhattan Project National Historical Park, https://www.nps.gov/mapr/faqs.htm (last visited Feb. 26, 2026).
[8] Michael Sheetz, *NASA Wants Companies to Develop and Build New Space Stations, with Up to $400 Million Up for Grabs*, CNBC (Mar. 27, 2021), https://www.cnbc.com/2021/03/27/nasa-commercial-leo-destinations-project-for-private-space-stations.html.
[9] For example, a smaller scale but still massive investment from Intel is similarly going into Chandler, Arizona, at a cost of $20 billion. That project will bring Intel's parallel Arizona investments to more than $50 billion. Intel Corp., *Intel Breaks Ground on Two New Leading-Edge Chip Factories in Arizona*, https://www.intc.com/news-events/press-releases/detail/1501/intel-breaks-ground-on-two-new-leading-edge-chip-factories (Sept. 24, 2021).
[10] National Institute of Standards & Technology (NIST), *TSMC Arizona*, https://www.nist.gov/chips/tsmc-arizona-phoenix (last visited Feb. 26, 2026).
[11] *See, e.g.*, Executive Order No. 14365, *Ensuring a National Policy Framework for Artificial Intelligence*, 90 Fed. Reg. 58499 (Dec. 16, 2025); Executive Order No. 14355, *Unlocking Cures for Pediatric Cancer With Artificial Intelligence*, 90 Fed. Reg. 48153 (Oct. 7, 2025); Executive Order No. 14277, *Advancing Artificial Intelligence Education for American Youth*, 90 Fed. Reg. 17519 (Apr. 28, 2025). Executive Order No. 14179, *Removing Barriers to American Leadership in Artificial Intelligence*, 90 Fed. Reg. 8741 (Jan. 31, 2025).
[12] Executive Order of Jan. 2, 2026, *Regarding the Acquisition of Certain Assets of EMCORE Corporation by HieFo Corporation*, 91 Fed. Reg. 895 (Jan. 8, 2026).
[13] Fact Sheet: *Restoring American Semiconductor Manufacturing Leadership Through an Agreement on Trade & Investment with Taiwan*, U.S. Dep't of Commerce (Jan. 15, 2026), https://www.commerce.gov/news/fact-sheets/2026/01/fact-sheet-restoring-american-semiconductor-manufacturing-leadership.

Currently, the federal government is providing up to $6.6 billion in direct funding and $5 billion in loans to this project tied to completion milestones.[14]

The City highlights this project as a clear example of the multiple instances where, in connection with Reclamation's proposed Colorado River actions (or inactions), Phoenix is caught amidst conflicting federal priorities and planning. As we discuss further below, under most of its alternatives, the DEIS proposes cuts to Colorado River allocations that would be borne almost exclusively by the CAP and Central Arizona. Federally supported planning efforts have made Phoenix solely responsible for supplying the water needs of TSMC from its existing water supply portfolio, and the City has made massive infrastructure investments to support both the facility's water supply and other critical infrastructure. This facility is located in a northern portion of the City's service area where the CAP provides almost 100% of the water supply—a real-world limitation that cannot be altered either quickly or cheaply. The alternatives that Reclamation proposes in the DEIS, however, would seriously jeopardize the CAP. Even assuming that Phoenix could mobilize adequate alternative supplies to address the outsized CAP shortages anticipated in the DEIS, which would be highly challenging in itself, the City would face severe infrastructure challenges delivering these supplies to areas traditionally served by the CAP.

It is unclear why the Department of Interior would propose to undermine a national priority of this significance, let alone the multiple other industries that call Phoenix home and that intersect with national defense, health, and economic welfare, while simultaneously jeopardizing the water supply of the millions of residents that live and work here. The mere fact that the DEIS does not even acknowledge those risks is deeply troubling and has already generated significant uncertainty for the City and its residents. The City can only assume, of course, that the agency would not take such an action without consulting the multiple other agencies of the Executive Branch whose interests would be directly affected by the actual impacts of dramatic CAP reductions.

What should be clear from this discussion is that Reclamation's failure to consider the potential disruptive consequences of its Colorado River decisions on the City, the Arizona M&I sector, and the broader Basin economy vastly understates the national significance of the decisions being contemplated in the DEIS. As discussed below in detail, in any FEIS and Record of Decision, Reclamation must chart a path that will honor Reclamation's legal obligations and responsibilities, and better protect the City and these critical national interests. In addition, given their economic and national-security implications, the City respectfully suggests that the choices before Reclamation should involve the input and expertise of other federal agencies, including the Departments of Commerce, State, and Defense. Addressing these issues will also likely require Congress to consider what additional authorities and resources will be needed to support the Basin as it transitions to a new operating regime.

The City stands ready to consult directly with Reclamation and the Department of Interior as to how to better define this decision space. In particular, and as discussed further in Section 7, the City urges Reclamation to do as much as possible to specifically prioritize and broaden its support for the transactional and transitional behaviors among water users that will be needed to navigate a

[14] Biden-Harris Administration Announces CHIPS Incentives Award with TSMC Arizona to Secure U.S. Leadership in Advanced Semiconductor Technology, U.S. Dep't of Commerce (Nov. 15, 2024); Dylan Butts, TSMC Is Set to Expand its $165 Billion U.S. Investment—Here's What We Know, CNBC (Jan. 15, 2026), https://www.cnbc.com/2026/01/16/tsmcs-arizona-chip-expansion-isnt-done-after-us-investment-cfo.html.

declining Colorado River. These transactions include the ability for users to make creative and flexible use of voluntary storage, and mechanisms to support user-to-user agreements, programs, and projects at the ground level. As discussed in Section 7.3, Phoenix and Tucson are actively working with other Arizona water users to develop and promote a framework of mutual support and water sharing arrangements, particularly during critical conditions, which could help to avoid the need for future, heavy-handed federal interventions to manage emergency conditions that the DEIS suggests are now eminently foreseeable.

With Reclamation's leadership, the City believes that these conditions can be successfully avoided. However, Reclamation must use the remainder of this NEPA process to create meaningful opportunities for the Basin to chart a different path.

2 NEPA Authorities and Governing Standards

NEPA provides the statutory foundation for informed and reasoned agency decisionmaking by requiring federal agencies to evaluate environmental consequences, consider alternatives, and disclose the bases for their actions. In enacting NEPA, Congress declared that

> it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.[15]

Courts have long held that NEPA's "sweeping policy goals" are implemented through "action-forcing" procedures requiring agencies to take a "hard look" at environmental consequences and to broadly disclose relevant information.[16]

The Supreme Court has explained that the EIS requirement serves NEPA's purpose in two ways: it ensures the agency carefully considers detailed information about significant environmental impacts, and it guarantees that this information is available to the larger audience that may play a role in the decision-making process and the implementation of federal actions. NEPA is thus intended to prevent agencies from overlooking or underestimating environmental consequences "only to be discovered after resources have been committed or the die otherwise cast."[17]

Pursuant to the NEPA statute, federal agencies are to "ensure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations."[18] Moreover, for any "major Federal actions significantly affecting the quality of the human environment," the agencies are to develop a detailed statement addressing:

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[15] 42 U.S.C.S. § 4331.
[16] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); *Solar Energy Indus. Ass'n v. FERC*, 80 F.4th 956, 991 (9th Cir. 2023).
[17] *Robertson*, 490 U.S. at 349.
[18] 42 U.S.C.S. § 4332(B).

> (i) reasonably foreseeable environmental effects of the proposed agency action;
>
> (ii) any reasonably foreseeable adverse environmental effects which cannot be avoided should the proposal be implemented;
>
> (iii) a reasonable range of alternatives to the proposed agency action, including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are technically and economically feasible, and meet the purpose and need of the proposal;
>
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and
>
> (v) any irreversible and irretrievable commitments of Federal resources which would be involved in the proposed agency action should it be implemented.[19]

In preparing this statement, the lead agency must consult with any federal agency with jurisdiction or special expertise, must ensure professional and scientific integrity, must make use of reliable data and resources, and must study, develop, and describe technically and economically feasible alternatives.[20]

Consistent with these statutory obligations, the Department of the Interior's (DOI) final NEPA implementing regulations, which are applicable to Reclamation's DEIS, recognize that NEPA "requires Federal agencies to consider the environmental effects of proposed actions as part of agencies' decision-making processes."[21] In line with Congress's policy directive to meet the social and economic needs of present and future generations, and consistent with DOI's longstanding practice, DOI's final implementing regulations affirm that social and economic effects must be evaluated as part of the NEPA analysis.[22] DOI furthermore notes that its NEPA procedures provide for the consideration of economic, public health, and safety effects.[23]

DOI's Handbook of National Environmental Policy Act Implementing Procedures reinforces that social and economic effects must be analyzed as part of the environmental consequences of federal actions. Section 0.1 clarifies that the procedures ensure "relevant environmental information, including, as appropriate, economic information, is identified and considered early in the process to ensure informed decision-making."[24] The Handbook's definition confirms this scope by expressly recognizing that "effects or impacts" include economic, social, cultural, and health effects.[25]

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[19] 42 U.S.C.S. § 4332(C).
[20] 42 U.S.C.S. § 4332(D)-(F).
[21] National Environmental Policy Act Implementing Regulations, 91 Fed. Reg. 8738 (Feb. 24. 2026).
[22] *Id.* at 8742. The final implementing regulations note that § 0.1 was revised to explicitly provide that "environmental information" may include "economic information." *Id.*
[23] *Id.* at 8757.
[24] U.S. Dep't of Interior, Handbook of National Environmental Policy Act Implementing Procedures, 516 DM 1, § 0.1 (Feb. 2026) [hereinafter U.S. Dep't of Interior, NEPA Handbook].
[25] *Id.* at § 6.1.

Together, these statutory and departmental requirements frame the scope of analysis an EIS must provide.

An additional core component of the NEPA analysis is the consideration of mitigation. The Supreme Court has held that the requirement to discuss mitigation flows directly from the language of the NEPA statute because the duty to disclose unavoidable adverse effects necessarily implies an analysis of the extent to which such effects may be avoided.[26] DOI's Handbook provides the operative guidance for how mitigation must be addressed in an EIS. The EIS must identify "any means" to mitigate adverse environmental effects of the proposed action.[27][28] The Handbook further directs that the agency's NEPA review of the proposed action and alternatives must consider the "environmental effects of mitigation measures or best management practices," which may be evaluated as elements of alternatives or in a separate discussion of mitigation.[29]

The Handbook defines "mitigation" as "measures that avoid, minimize, or compensate for effects caused by a proposed action or alternatives," provided those measures "have a nexus to those effects."[30] It provides that mitigation includes:

> (1) Avoiding the impact altogether by not taking a certain action or parts of an action.
>
> (2) Minimizing effects by limiting the degree or magnitude of the action and its implementation.
>
> (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
>
> (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
>
> (5) Compensating for the impact by replacing or providing substitute resources or environments.[31]

These statutory, departmental, and judicial authorities collectively provide the framework for evaluating the adequacy of Reclamation's DEIS. To comply with NEPA, the DEIS thus must: (1) provide a transparent and scientifically grounded analysis of reasonably foreseeable environmental effects; (2) rigorously examine a reasonable range of technically and economically feasible alternatives that meet the stated purpose and need; and (3) identify and analyze any means of mitigating adverse environmental effects.

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[26] Robertson, 490 U.S. at 351.
[27] NEPA does not itself require or authorize a Responsible Official to impose mitigation. U.S. Dep't of Interior, Handbook of National Environmental Policy Act Implementing Procedures, 516 DM 1, § 2.3(a)(6) (Feb. 2026) [hereinafter U.S. Dep't of Interior, NEPA Handbook]., *supra* note 24, at § 2.3(a)(6).
[28] *Id.*
[29] *Id.* at § 1.23(e)(2)(i).
[30] *Id.* at § 6.1(o).
[31] *Id.* Consistent with statutory requirements, the Handbook further states that "[w]hile NEPA requires consideration of mitigation, it does not mandate the form or adoption of any mitigation." *Id.*

The City's comments below assess the DEIS against these criteria. Unfortunately, as we discuss in detail below, Reclamation's DEIS falls substantially short on nearly all of these core NEPA obligations and requirements.

3 Reclamation's Draft Decision Criteria Are Flawed

The DEIS relies on a suite of decision criteria and performance indicators to evaluate the relative "success" of alternatives and to determine whether Reclamation's stated purpose and need would be met. As noted in Section 2, NEPA requires that the analytic framework used in an EIS be transparent, scientifically grounded, rationally connected to reasonably foreseeable effects, and meet the stated purpose and need. The decision criteria in the DEIS do not satisfy this standard.[32]

Across multiple objectives, these DEIS criteria are not rationally connected to the outcomes they purport to measure. Moreover, many of these decision criteria—including those related to domestic water reliability, public health and safety, system-level economic risk, shortage volumes, reservoir elevations, and international obligations—do not provide a reasoned or reliable basis for concluding that the proposed alternatives would achieve the stated purpose and need, or that those alternatives would result in outcomes that any reasonable decisionmaker would regard as successful.

In many cases, the thresholds used also lack a stated analytic basis, rely on generalized or averaging-based metrics that obscure consequential risks, or embed value judgments that normalize outcomes inconsistent with Reclamation's own objectives. Taken together, these flaws undermine the integrity of the alternatives analysis by predetermining what constitutes acceptable performance and by masking when alternatives would fail to maintain essential system functions.

3.1 Unreasonable Performance Indicators for Domestic Water Deliveries

Preferred Minimum Performance Indicators: 80% and 60% of normal delivery in 90% of years

The DEIS's preferred minimum performance indicator for domestic water deliveries under population and land use impacts—defined as greater than 80 percent of normal delivery in 90 percent of years —is unreasonable and inconsistent with Reclamation's stated objectives.[33] Reclamation asserts that this level was selected because it "most closely approximates normal domestic water delivery and represents the least induced shortage."[34]

Almost by definition, a 20 percent shortfall in water deliveries does not approximate a "normal" water delivery or reflect a reasonable baseline; most municipal suppliers would regard a 20 percent water supply shortfall as an imminent operational threat and as anything but "normal." This criterion effectively establishes ongoing, significant shortage as the default management outcome – treating a substantial reduction in available M&I water supplies as an acceptable starting point, rather than as an adverse impact to be avoided or minimized. Reclamation's

[32] See Section 2 above.
[33] U.S. Bureau of Reclamation, Draft Environmental Impact Statement, Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead 3-188; TA 17-19 (Jan. 2026), https://www.usbr.gov/ColoradoRiverBasin/post2026/draft-eis/index.html [hereinafter DEIS].
[34] *Id.* at 3-188.

explanation that the 90-percent-of-years metric was selected because it "better displays variation between the alternatives" confirms that the threshold was chosen for modeling convenience rather than to reflect acceptable or protective real-world outcomes.[35]

Moreover, the absence of any sequential temporal component in this criterion compounds the problem. For domestic water providers and the populations they serve, reliability is typically not measured by averages across decades, but by the ability to meet public health, safety, and economic needs in every year while also building and maintaining adequate levels of reserves. Most domestic water providers would be required to implement emergency conservation measures and switch to their backup water supplies (assuming any are available) during a 20 percent water supply shortfall. Most would be burning through their reserve storage or other finite backup supply resources as they did so. During this period, those providers would also likely be unable to develop new or replacement reserves and would be actively looking for replacement water supplies that would most likely only be available at enormous costs.

A performance metric that tolerates both chronic under delivery (20 percent in most years) without considering the relative sequence of years in which those reductions occur and acute failure (greater shortages in one out of ten years) understates the severe consequences to households, industry, and essential services that would be associated with such a result. Under this metric, even under a preferred or "successful" alternative, communities like Phoenix (and others that are significantly dependent on CAP supplies or on-river Priority 4 supplies) must expect to experience severe shortages on a recurring basis – and given the long recovery periods for Lake Mead/Lake Powell storage, these shortages would likely be sustained over significant periods, if not permanently.

For example, the impact of an 80 percent level of Colorado River delivery on Phoenix would be quite significant, particularly if it were maintained over any extended period of time. Although Phoenix has among the strongest reserves of Central Arizona cities, at an 80 percent CAP M&I pool delivery, Phoenix would be actively relying on finite, previously stored water supplies in the Salt River Project system and/or underground storage reserves in the Tucson area to meet annual demands and would be depleting those reserves at a concerning rate. Over a short period of time, this level of shortfall may be manageable; however, if it was expected to be sustained for multiple years, the City would be required to make immediate, significant expenditures to secure additional reserves to ensure that it could replace those primary reserves when they were depleted.

Notably, the DEIS applies this same 80 percent in 90 percent of years performance indicator to Indian trust assets because it is "the model outcome with the largest quantity of water delivered."[36] Selecting the least harmful outcome among inadequate options does not satisfy the federal trust responsibility, which requires the United States to affirmatively protect Tribal lands.[37]

This particular performance indicator for M&I and Tribal users should thus either be based on full domestic delivery (100 percent) or else a lower bar tied to the availability of typical first-order reserves, with such shortages occurring only over a short duration. If an alternative cannot reliably

[35] *Id.* at TA 17-19.
[36] *Id.* at 3-198.
[37] Phoenix and other Sun Corridor cities hold substantial, long-term leases with various Tribes for Colorado River (CAP) supplies and therefore will also be directly affected by impacts to Indian trust assets.

meet domestic water needs at or near full delivery in any substantial sequence of years, that limitation should be clearly identified as a significant adverse impact, not masked by a decision criterion that redefines chronic shortage as robust.

The lower, 60 percent of normal deliveries standard that is also utilized in the agency's analysis is inaccurately characterized in the DEIS as providing for a "degraded but operable" condition for domestic/M&I delivery. In actual fact, this level of water delivery would constitute an emergency condition that would quickly or immediately trigger failures of domestic water service across the M&I sector. At this level of supply shortfall, almost any municipal provider, including those with substantial short- and/or long-term reserves, would likely not be able to meet basic residential, commercial, and industrial demands, supply reliable water to critical facilities like hospitals and schools, or keep fire hydrants and other emergency infrastructure in proper service. As such, this criterion does not evaluate acceptable performance and should be replaced with a more realistic threshold for minimally operable deliveries.

3.2 Failure to Incorporate Public Health and Safety, Essential National Functions, and System-Level Economic Risk into Decision Criteria

The DEIS fails to incorporate any criteria that reflect minimum thresholds necessary to protect public health and safety, including reliable access to potable water, sanitation services, and fire protection. By relying on delivery-percentage metrics, an approach that does not recognize the varied exposures to shortage and access to backup supplies among municipal providers, and relying on metrics that tolerate recurring and substantial shortages without reference to those requirements, the DEIS normalizes conditions that pose foreseeable risks to human health, emergency response capability, and basic public welfare.

The same decision framework also overlooks the role of municipal water systems in supporting facilities and functions for commercial and industrial uses, many of national and regional importance. Given their importance, these considerations must be independently reflected in the decision criteria governing the evaluation of municipal water reliability, rather than inferred from generalized delivery-percentage metrics across the M&I sector.

In the same vein, the DEIS's criteria fail to account for the potential for regional or national-level economic disruption that would result from loss of municipal water reliability in the Lower Basin, where at least 75 percent of the Colorado River Basin's economic activity is concentrated.[38] As noted above, municipal water systems in this region support numerous, nationally- and regionally-significant sectors with high water-reliability dependence, including semiconductor fabrication, pharmaceutical production, housing, defense manufacturing, food and beverage processing, and associated logistics and distribution networks. Disruptions to these systems would not manifest as proportional or localized economic effects, but as cascading operational failures with regional, national, and international consequences. The same is true for housing markets: as demonstrated in 2007–08, the collapse of home values in Southwest markets generated multiple bank failures and helped trigger a nationwide recession. In this context, performance indicators that rely on simple averages or general tolerances for recurring shortages are inadequate and poorly suited to

[38] Colorado River Basin Facts, *available at* https://protectingarizonaslifeline.com/wp-content/uploads/2025/12/CRF-Infographic-BasinFacts.pdf

evaluating risks to public health, emergency response capability, and essential economic functions.

3.3 Unexplained Lower Basin Shortage Volumes in the Basic Coordination Alternative

The DEIS states that under the Basic Coordination Alternative, shortages of up to 1.48 million acre-feet would be imposed, noting that this maximum shortage volume was "estimated by Reclamation to ensure that an assumed minimum flow is available for infrastructure protection and delivery for municipal use by CAP users and other Fourth Priority mainstem entitlement holders in Arizona."[39] Importantly, the Basic Coordination Alternative is apparently intended to reflect Reclamation's view as to actions it could take under its existing authorities and in the absence of any Basin States agreements.[40] However, with this in mind, the DEIS provides no explanation of how the agency derived this 1.48 maf figure, what minimum flow or operational needs for CAP users were assumed, or how those assumptions relate to actual system constraints needed to protect infrastructure and enable deliveries. Despite having by far the largest deliveries of CAP water to drinking water plants, Phoenix was not consulted in development of this criteria.

At this level of shortage, only approximately 480,000 af would remain in the Central Arizona Project. However, Reclamation's assumptions related to the build out of on-River entitlements would reduce this figure even further to approximately 237,000 af by 2040.[41] These extremely low levels of CAP water supply would have disastrous implications for municipal water deliveries. As documented by CAWCD in its separate comment letter, the CAP canal directly supplies municipal drinking water plants that provide approximately 569 million gallons per day (MGD) of water treatment capacity which would be immediately impacted by those reductions. CAP water also provides indirect deliveries of municipal water via annual storage and recovery facilities, replenishment of pumped groundwater to protect aquifers and meet safe yield requirements under the Groundwater Management Act, and storage of CAP water to provide near- and long-term emergency reserves—water uses that would also be substantially harmed at that level of supply, particularly if shortages were sustained over multiple years.

Phoenix alone accounts for close to half of the CAP water treatment capacity at its Lake Pleasant Water Treatment Plant (80 MGD capacity) and Union Hills Water Treatment Plant (160 MGD). The City's water treatment plants are designed to treat specific volumes at a specific rate, and cannot operate at reduced capacities beyond a very limited point. For all intents and purposes, they can be treated as having only two possible settings: "on" and "off". If sufficient water is not available to those plants, they must be turned off, risking damage if turned off for long periods of time. As discussed in Section 4.10, the demands served by these multiple pressure zones cannot simply be turned off or reduced in response, and the limited interconnections with other zones may limit delivery, resulting in failures that the DEIS does not analyze.

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[39] DEIS, *supra* note 33, at 2-12.

[40] DEIS, *supra* note 33, at 2-11.

[41] These figures are based on a best estimate of available CAP water using the assumptions in Reclamation's Priority Shortage Allocation Model (Appendix C, Section 4). The 480,000 af figure is based on estimated levels of CAP supply when on-River use approximates to recent levels of water use. The lower figure reflects that estimated level of supply at full Lower Basin entitlement build outs as projected under the DEIS's Lower Basin Depletion Schedules for 2040 (i.e. 237,000 af =168,576 af available for P4 deliveries to CAP, plus 68,400 of CAP's unshorted P3 supply).

These plants – and other users of the CAP – also must contend with the very real water quality problems that will develop in a CAP system operating at far lower levels of delivery. The CAP currently operates as a fast-moving canal with stable, low-trophic biological values and very reliable water quality. Reductions in flow as proposed by the DEIS would dramatically change water quality in a manner that would be likely to impair treatment plant operation and create health risks. As detailed in CAWCD's comment letter and its attached environmental study from Black & Veatch, reductions in flow below approximately 700,000 af will increase the risk of insect breeding, harmful algal blooms, fish kills, odors, and the expansion of nuisance or invasive species. Even more significant risks, including risks related to cyanotoxins and mosquito borne disease, grow once deliveries fall below 500,000 af; and cascade further below 300,000 af of deliveries. These impacts would threaten the City's ability to treat CAP water for drinking water use out of its existing plants, and would have similar consequences for other M&I users—major environmental impacts that are also not considered in the DEIS.

Accordingly, the operable level of CAP delivery assumed in the DEIS must, at a minimum, include the volumes of water required to keep these plants functioning when needed to meet demand—before accounting for the additional volumes other cities and CAP users require to satisfy their own minimum needs. If the 1.48 maf shortage volume was intended to represent the minimum level at which the system can continue to function for municipal deliveries, it does not. In any future preferred alternative, the FEIS must specifically disclose and cite the actual operating minimums that ensure the system can continue to function, and then explain how those minimums translate into a specific shortage cap.

In the absence of such disclosures, the Basic Coordination Alternative relies on an unsupported assumption that cannot be meaningfully evaluated.

3.4 Unreasonable 3,500 foot Elevation-Based Performance Indicator for Lake Powell

The DEIS relies heavily on a performance indicator requiring Lake Powell to remain above elevation 3,500 feet, asserting that this threshold is necessary to maintain a 10-foot buffer above minimum power pool at elevation 3,490 feet to protect water supply and hydropower.[42] The City recognizes the legitimate infrastructure limitations associated with extended operations below minimum power pool, including reliance on river outlet works that were not designed for long-term use at low reservoir elevations and appear to be prone to cavitation.[43] However, acknowledging these constraints does not justify maintaining them as an ongoing, controlling decision criterion.

This framing has the effect of improperly elevating hydropower protection as a primary management objective, despite statutory direction under the Colorado River Storage Project Act (CRSPA) that hydropower generation at Glen Canyon Dam is incidental to, and subordinate to, water storage for consumptive use.[44] More fundamentally, the reliance on protecting minimum power pool as a justification for the 3,500 feet threshold conflicts with the 1922 Colorado River Compact, which provides that the use of impounded water for power generation "shall be

[42] *Id.* at 3-25.
[43] DEIS, *supra* note 33, at 3-5.
[44] 43 U.S.C.S. § 620.

subservient" to agricultural and domestic uses and must not interfere with those dominant purposes.[45] By treating elevation levels needed to maintain power generation infrastructure as a controlling constraint on system operations, the DEIS effectively reverses this priority structure. As discussed further in Section 6.4, this also violates both Reclamation's obligations under the Colorado River Basin Project Act (CRBPA) and the rules adopted within the Long Range Operating Criteria (LROC).[46]

The DEIS also fails to consider or discuss alternatives or infrastructure modifications that could and should be made to address cavitation issues in the outlet works and thus maintain water delivery capabilities below elevation 3,500 feet independent of the power pool. Given the high probability, if not certainty, of massive Lower Basin shortages contemplated as a result of the federal decisions contemplated in the DEIS, active consideration and adoption of such modifications simply must be prioritized to comply with the agency's governing statutory and Compact requirements. Reclamation's failure to promptly rectify its own design deficiencies effectively strands more than 3.7 maf of storage in Lake Powell that should be released to meet Compact requirements. This failure imposes detrimental impacts on the Lower and Upper Basins.

3.5 Unreasonable 975 foot Elevation-Based Performance Indicator for Lake Mead

The DEIS similarly relies on a Lake Mead elevation performance indicator requiring the reservoir to remain above elevation 975 feet, asserting that this threshold provides a 25-foot buffer to protect critical infrastructure and hydropower generation (which ceases at elevation 950 feet).[47] While the City recognizes that low reservoir elevations raise legitimate infrastructure and operational concerns, the use of hydropower production as part of the principal justification for this elevation threshold again improperly elevates power generation over the delivery of water for consumptive use.

The Boulder Canyon Project Act (BCPA) authorizes Hoover Dam for multiple purposes, including flood control, flow regulation, storage, and delivery of water for reclamation and other beneficial uses, with power generation serving as a means of supporting the project's financial self-sufficiency rather than as a dominant operational objective.[48] As noted above, the Colorado River Compact provides that the impoundment and use of water for the generation of electrical power must be subservient to agricultural and domestic uses and must not interfere with those dominant purposes.[49]

Water can continue to be delivered from Lake Mead at reduced volumes at elevations below 950 (where hydropower production ceases), yet the DEIS does not evaluate whether consumptive uses could be protected through alternative operating strategies or infrastructure adaptations at lower elevations. At the same time, the DEIS does not evaluate whether 950 feet provides a meaningful buffer to protect Lower Basin water-delivery interests. Based on Reclamation's Lake Mead area–capacity tables, only about 1.1 maf of active storage lies above elevation 950, and roughly 3 maf lies above elevation 900—an elevation where the DEIS indicates releases drop to approximately

[45] Colorado River Compact art. IV (1922).
[46] See discussion of Reclamation authorities in Section 6 below.
[47] DEIS, *supra* note 33, at 3-35.
[48] 43 U.S.C.S. § 617.
[49] Colorado River Compact art. IV (1922).

9,600 cfs, producing more than 2.5 maf in Lower Basin shortages. Below that point, only about 150,000 af remains before the system reaches true dead pool, at which all deliveries cease.[50]

Reclamation should provide a clear justification for those specific protection levels that are tied to the protection of water deliveries and that are independent of hydropower. Otherwise, the DEIS again embeds an infrastructure-driven limitation into its decision criteria that reverses the priority structure established by the governing statutes and Compact, rather than neutrally evaluating how best to preserve water deliveries for beneficial consumptive use under low-reservoir conditions.

3.6 Failure to Incorporate Minute 242 Compliance into Decision Criteria

The DEIS expressly declines to evaluate whether the proposed alternatives can comply with Minute 242 of the 1944 U.S.–Mexico Water Treaty, asserting that salinity compliance is "actively managed by Reclamation through various means at a smaller timescale" and therefore not applicable to the long-term analysis.[51] This rationale is flawed.

Compliance with Minute 242 is not a discretionary or ancillary operational detail. It is a binding international obligation that has and will continue to directly affect reservoir operations, including required releases from Lake Mead. Over the past several decades, Minute 242 compliance has required consistent bypasses of water through the Main Outlet Drain Extension (MODE) that are not accounted for within the Lower Basin accounting system. These bypass requirements have risen significantly as a result of dropping salinity levels and reduced overall deliveries (or shortage deliveries) to Mexico at the Northerly International Boundary (NIB). By excluding Minute 242 from its decision criteria, the DEIS assumes without analysis that salinity control can be accommodated independently of the alternatives under consideration.

Minute 242 compliance also has direct operational implications that the DEIS does not examine. Maintaining required salinity levels at the NIB often necessitates additional releases from Lake Mead or changes in blending and bypass operations, particularly under the substantial reductions to Mexico projected in the DEIS. These actions reduce available Lake Mead storage and increase bypass flows through the Yuma system, directly affecting Lower Basin users—including the Central Arizona Project—by tightening an already constrained delivery pool. By omitting this legally required and ongoing operational demand, the DEIS fails to account for a major factor that competes with municipal and agricultural uses in Arizona and the Lower Basin. The FEIS must evaluate how long-term operating strategies interact with Minute 242 requirements and how Mexico's participation in shortage sharing influences the magnitude and timing of additional releases needed to maintain salinity compliance.

4 Alternatives Fail to Meet the Decision Criteria, Purpose and Need, and Governing Requirements

As described in the proceeding sections, in multiple cases the DEIS fails to utilize decision criteria that a reasonable person would define as "successful." Alarmingly, the various alternatives presented in the Draft EIS fail even under these already inadequate definitions of success. As discussed in Section 2, NEPA requires that an EIS demonstrate, through a transparent and

[50] See U.S. Bureau of Reclamation, Lake Mead Area and Capacity Tables 21-59 (2011).
[51] DEIS, *supra* note 33, at M-24.

scientifically grounded analysis, that at least one or more of the alternatives would meet the decision criteria, reasonably meet the stated purpose and need, and satisfy governing requirements.[52] However, as discussed in detail below, across a broad range of metrics—including system reliability, water-user outcomes, and economic, social, and environmental effects—the proposed alternatives fall substantially short of the performance thresholds set by the agency itself.

Regardless of those thresholds, these alternatives also independently fail to meet the stated purpose and need. Even more fundamentally, as we discuss below and in Section 6, none of the alternatives currently under consideration are consistent with Reclamation's mandatory legal responsibilities. And perhaps most significantly, the agency's selected alternatives would result in a high probability of actual system failure, breaching the most fundamental obligations of Reclamation as a water management agency.

As discussed in Section 2, a core requirement of NEPA is that an EIS must include consideration of reasonably foreseeable effects and actions. Here, Reclamation's impact analysis clearly demonstrates that it is now reasonably foreseeable that **violations of Compact delivery requirements** to both the Lower Basin and Mexico will occur. Given current hydrologies, these **could occur within months**. The analysis demonstrates that under hydrologic conditions similar to what we have witnessed over the past two decades, it is reasonably foreseeable (and in fact is all but inevitable) that additional interventions across the Basin will be required to avoid outcomes that would violate Reclamation's responsibilities to Arizona water users and its obligations to Tribes. And it clearly demonstrates that it is now reasonably foreseeable that the Colorado River's system storage could quickly reach levels that would create true emergency conditions in which Reclamation will be forced to act to prevent catastrophic damage to the Basin's M&I sector, millions of residents, to the region's economic foundation, and to industries central to U.S. national interests.

In constructing its preferred alternative for a future FEIS and Record of Decision, Reclamation must therefore advance an alternative that complies with Reclamation's obligations under the Law of the River, including the Compact, CRBPA, CRSPA, and LROC. Under this alternative, Reclamation must invoke additional federal authorities to manage Upper Basin use—and consider broader voluntary programs—to better protect its own infrastructure, including the CAP. The alternative must also identify any further agreements that will be necessary or desirable to manage system-wide shortage risks and protect critical economic values and populations in the Lower Basin and the M&I sector. Reclamation must also specifically define emergency actions that could be taken to protect critical interests during reasonably foreseeable emergency scenarios, and the thresholds at which those interventions would occur in order to aid water user planning and the development of responses to more extreme conditions.

4.1 Alternatives Do Not Meet the Decision Criteria

The DEIS identifies a series of performance indicators and associated thresholds to evaluate and compare alternatives. These criteria are described as measures of whether alternatives are "robust," whether they perform successfully across a range of hydrologic conditions, and whether they are capable of achieving Reclamation's stated purpose and need. Reclamation relies on these

[52] See Section 2.

indicators throughout the alternatives development and evaluation process to screen, compare, and analyze subsets of alternatives. However, the DEIS analysis shows that the alternatives advanced frequently do not meet the performance indicators Reclamation selected.

For example, the DEIS identifies avoidance of dead pool–related reductions as a performance indicator for evaluating robustness, recognizing that maintaining Lake Mead above dead pool is necessary to continue making water releases to users. Yet the DEIS's own robustness analysis shows that none of the alternatives meet this criterion. The Maximum Operational Flexibility Alternative avoids dead pool–related reductions in 100 percent of years in only 91 percent of modeled futures, followed by the Supply Driven Alternative (Lower Basin Pro Rata) at 85 percent, and the Enhanced Coordination Alternative at 84 percent.[53] Accordingly, every alternative evaluated is expected to experience dead pool–related reductions in a substantial share of modeled futures. While these results are presented comparatively as differences in robustness, the DEIS does not explain how alternatives that fail to avoid dead pool–related reductions should be interpreted within the decision framework.

A similar issue arises with respect to the Lake Mead elevation performance indicator. The DEIS evaluates alternative robustness based on the ability to keep Lake Mead above elevation 975 feet. The DEIS reports that, across the full modeling period, the Supply Driven Alternative (Lower Basin Pro Rata), the Maximum Operational Flexibility Alternative, and the Enhanced Coordination Alternative remain above elevation 975 feet in 100 percent of months in only 80 percent, 79 percent, and 75 percent of modeled futures, respectively.[54] Thus, even the most robust alternatives are projected to fall below the 975-foot threshold in a substantial share of futures. While the DEIS presents these results comparatively as differences in robustness, it does not explain how alternatives that fail to maintain Lake Mead above this critical elevation in 20 to 25 percent of futures should be interpreted within the decision framework.

As discussed in Section 8.1, while the hydrologies utilized in the DEIS cover a broad range of future conditions, the "dry" and "critically dry" hydrologies under which most of those failures cannot be regarded as outliers in light of recent hydrologic trends and expected continued future declines in hydrologic yield. As such, alternatives that fail to avoid dead pool conditions under any but the most extreme, unforeseeable scenarios should be unacceptable.

4.2 Alternatives Do Not Satisfy Purpose and Need or Meet Fundamental NEPA Requirements

Fundamentally, the DEIS fails to analyze alternatives and associated actions that would meet Reclamation's stated purpose and need. Reclamation identifies the following as the need for the present action:

- for "specific, objective operational guidelines…to provide improved predictability" needed by Colorado River water users "to better plan for and manage available water supplies;"[55]
- because the 2007 Interim Guidelines are "not robust enough to manage the system in a way that is sufficiently protective of the Colorado River," "[m]ore robust and adaptive guidelines

[53] DEIS, *supra* note 33, at 3-50.
[54] *Id.* at 3-35.
[55] *Id.* at 1-6.

are needed for the efficient and sustainable management of the major mainstream Colorado River reservoirs and system resources;"[56]

- the Colorado River Basin is "experiencing increased aridity due to climate variability, and long-term drought and low-runoff conditions are expected in the future. These conditions will exacerbate the now widely recognized imbalance between water supply and demand in the Basin. Robust and flexible guidelines are needed to manage the Colorado River system and its resources under a broad range of potential future hydrologic conditions;"[57] and
- recognizing these changes in runoff, the guidelines need to provide Colorado River water users "expanded opportunities to conserve, store, and take subsequent delivery of water in and from Lake Mead and/or Lake Powell. The guidelines should also support and integrate future efficiency improvements and opportunities for augmentation" and "provide flexibility and predictability for Basin Tribes to remain able to benefit from their water rights and have opportunities to participate in voluntary conservation programs."[58]

Reclamation identifies the following as the purpose for the present action:

- "Update and expand management guidelines for Colorado River reservoirs, particularly for the coordinated operation of Lake Powell and Lake Mead;"
- "Provide Colorado River water users a greater degree of predictability with respect to annual water availability in future years under anticipated increasing variability, low runoff, and low-reservoir conditions;"
- "Provide additional mechanisms for the conservation, storage, and delivery of water supplies in Colorado River reservoirs;"
- "Provide new or enhanced opportunities for Basin Tribes to benefit from their water rights;" and
- "Provide flexibility to build resilience and accommodate future needs and growth that are supported by Colorado River water supplies, including the integration of unquantified tribal water rights once they are resolved."

Together, the purpose and need statements establish a clear expectation that Reclamation's proposed actions will produce operational guidelines that are demonstrably more robust than the 2007 Interim Guidelines, improve predictability for water users, protect core system functions under a wide range of future conditions, and support conservation, flexibility, and resilience.

As discussed below, however, the alternatives evaluated in the DEIS do not meet these articulated purposes and needs. Reclamation's own performance indicators and robustness analysis show that the alternatives frequently fail to deliver the level of reliability, predictability, and system protection that the purpose and need identifies as essential. Furthermore, as discussed in Section 8 below, the likely failure rates of the considered alternatives are almost certainly worse than as modeled in the DEIS, because a large fraction of the hydrologic scenarios used in the impact analysis are overly optimistic. The following describes some of the key failures within each alternative.

No Action Alternative. As discussed further below, the DEIS's No Action Alternative fails to meet the purpose for which it is supposed to be included in a NEPA analysis: to provide a comparative

[56] *Id.* at 1-6.
[57] *Id.* at 1-6.
[58] *Id.* at 1-6.

analysis against which the proposed agency actions can be evaluated. Regardless, Reclamation's analysis also demonstrates that as written, the No Action Alternative is structurally incapable of meeting the purpose and need. While Reclamation's need statement that current operations are "not robust enough to manage the system in a way that is sufficiently protective of the resources" specifically describes the expiring 2007 Interim Guidelines, the No Action Alternative is even less viable as it reverts to even older, less robust pre-2007 guidance.[59] This alternative fails the primary purpose of the proposed federal action to provide "improved predictability to all water users," as it reverts to a system of annual determinations where users "would not be able to identify in advance particular reservoir conditions" under which shortages would occur.[60] The catastrophic lack of robustness is quantified by modeling results showing that the No Action Alternative allows the system to descend into dead pool-related reductions in 70 percent of modeled futures—the worst performance of any scenario evaluated.[61] Selecting an alternative that permits dead pool conditions in the majority of modeled futures would be inconsistent with prudent risk management and ignores the extreme risks to infrastructure and water supply reliability identified in Reclamation's own vulnerability analysis. Furthermore, while the purpose statement explicitly requires "additional mechanisms for the conservation, storage, and delivery of water supplies," this alternative provides no new storage and delivery mechanisms to replace expiring frameworks.[62] By failing to provide the very tools identified as necessary for long-term survival, the No Action Alternative offers no path toward the "sustainable management of the Colorado River system."[63]

Basic Coordination Alternative. Reclamation explicitly admits that the Basic Coordination Alternative "may not provide adequate protection of critical infrastructure" and is likely viable only in the "short term".[64] This fundamental lack of robustness is quantified by modeling results showing that this alternative fails to avoid dead pool-related reductions in 38 percent of modeled futures.[65] Proceeding with an alternative that reaches dead pool with such alarming frequency directly violates the purpose and need of this federal action: to adopt guidelines that are sufficiently robust and to provide improved predictability to all water users. Users cannot plan with any degree of certainty when the operating framework allows the system to descend into dead pool-related reductions—conditions where Reclamation has no defined methods for allocating water and where conditions would imminently threaten critical infrastructure. That uncertainty is compounded by the anticipated reliance on real-time decision making and undefined "additional measures," which as discussed further in Section 4.10, further eliminates predictability and prevents dependable annual supply planning.[66]

Because it fails to provide adequate protection for the system's primary reservoirs, the Basic Coordination Alternative cannot satisfy the essential need to "build resilience and accommodate future needs and growth" as required by the proposed federal action. It also fails to meet its purpose to "update and expand management guidelines" for Colorado River reservoirs because it does not consider any new management actions or conservation programs for Upper Basin

[59] *Id.* at 1-6.
[60] *Id.* at ES-1; 1-27.
[61] *Id.* at ES-32.
[62] *Id.* at 1-7.
[63] *Id.* at 1-6.
[64] *Id.* at 2-11.
[65] *Id.* at ES-60.
[66] *Id.* at 2-13.

reservoirs, choosing instead to exclude these vital system components from the post-2026 framework. Additionally, while the purpose and need statement identifies that expanded and innovative conservation tools are needed due to low-runoff conditions, this alternative provides no new delivery and storage mechanisms to replace or supplement the expiring Intentionally Created Surplus (ICS) framework.

Enhanced Coordination Alternative. The Enhanced Coordination Alternative fails to meet the purpose and need of the DEIS because it is not sufficiently robust to prevent the system from reaching catastrophic dead pool conditions. Modeling reveals that this alternative fails to avoid dead pool-related reductions in 16 percent of modeled futures, a significant margin of failure that directly contradicts the purpose to provide water users a "greater degree of predictability."[67] Reclamation acknowledges that it has no experience operating these reservoirs under extreme low-flow conditions imminently threatening infrastructure, an admission that makes it "difficult to predict operational outcomes" and renders any alternative with a 16 percent failure rate inherently unpredictable.[68] Furthermore, the alternative fails the purpose to "provide flexibility to build resilience and accommodate future needs and growth" because its reservoir protection is insufficient for the low runoff and low-reservoir conditions the action is intended to address. Even as a "more protective" alternative, it would allow Lake Mead to drop below the 975-foot critical buffer in over 50 percent of months if future conditions remain similar to the Critically Dry flow category, creating a level of system-wide instability that would likely deter investment and stifle growth basin-wide.[69] Selecting an alternative that fails to protect the system against the deep uncertainty of anticipated drier and warmer conditions would constitute an agency action that ignores the very risks the DEIS identifies as needing to be managed.

Maximum Operational Flexibility Alternative. The Maximum Operational Flexibility Alternative fails to meet the purpose of the proposed federal action to provide Colorado River water users a "greater degree of predictability" regarding annual water availability. Reclamation's own sensitivity analysis reveals that this alternative is the most sensitive of all scenarios to Upper Basin demand assumptions, with its vulnerability threshold at Lake Mead varying by a staggering 1.3 maf.[70] This extreme sensitivity creates high uncertainty for Lower Basin water users, directly contradicting the stated need for "specific, objective operational guidelines" that allow entities to "better plan for and manage available water supplies."[71] Furthermore, the alternative fails to satisfy the purpose of providing "flexibility to build resilience and accommodate future needs and growth" because it imposes the most severe socioeconomic impacts of any alternative evaluated. Selecting an alternative that Reclamation acknowledges would generate such profound uncertainty and catastrophic economic disruption would be inconsistent with the DEIS's stated objective of achieving "sustainable management of the Colorado River system."[72]

Supply Driven Alternative. The Supply Driven Alternative fails to meet the DEIS's purpose and need to provide "sufficiently robust" guidelines and "improved predictability to all water users."[73] This alternative is incapable of ensuring system stability, as modeling shows it fails to avoid

[67] *Id.* at ES-32.
[68] *Id.* at 2-11.
[69] *Id.* at ES-22.
[70] *Id.* at I-17.
[71] *Id.* at ES-4.
[72] *Id.* at 1-4.
[73] *Id.* at ES-1.

catastrophic Lake Mead dead pool–related reductions in 15 to 24 percent of modeled futures, a level of risk that leaves users vulnerable to conditions where water cannot be delivered.[74] Reclamation's own analysis identifies this as the "most vulnerable action alternative" for Lake Powell, which is projected to fall below the critical 3,500-foot buffer if 20-year average natural flows are 13.9 maf or lower—a condition that has already occurred in 18 of the last 24 years.[75] Furthermore, the alternative fails to meet the purpose of providing "improved predictability" because its Lake Powell release formula is too rigid and reactive to support long-term planning. By basing annual releases on a fixed 65 percent percentage of a short, 3-year rolling average, the framework subjects users to extreme volatility, providing virtually no lead time for adaptation to annual extremes. Finally, the alternative relies on the ambiguous and poorly defined concept of "gap water." Relying on a vague supplemental volume with no defined source or legal framework—rather than "specific, objective operational guidelines"—fails to meet the need for a transparent framework that allows entities to plan for and manage water supplies.[76]

4.3 The DEIS Does Not Contain a Proper No-Action Alternative

As noted in the DEIS, NEPA requires an EIS to discuss "any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative."[77] Under the recently issued DOI Handbook of National Environmental Policy Act Implementing Procedures, DOI directs its bureaus on how to comply with this NEPA requirement:

> "No action alternative." A "no action alternative" may be considered as part of the NEPA analysis when doing so would set a useful reference against which the effects of the proposed action (and any action alternatives) would be measured. A "no action alternative" consists of a continuation of the reasonably foreseeable environmental trends and planned actions as they would occur should the bureau not implement the proposed action or any action alternatives. The "no action alternative" is therefore often described as "the future without the proposed major Federal action."[78]

Unfortunately, the DEIS's attempt at providing for this No Action Alternative misses this mark in several key respects. The DEIS does not actually utilize the No Action Alternative as a baseline, claiming that the expiration of the 2007 Guidelines and related Minutes obviates its usefulness as a baseline to compare impacts.[79] As constructed, the alternative does not provide the basis for the mandatory consideration of the impacts of proposed actions as against the impacts of no federal action.[80] Instead, it describes an actual change in default federal operations[81] by rejecting the minimum release of 8.23 maf from Lake Powell required under the existing LROC, which as discussed in Section 4.6 below, is in fact the required default mode of Reclamation operations following the expiration of the 2007 Shortage Guidelines.

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[74] *Id.* at ES-32.
[75] *Id.* at ES-24.
[76] *Id.* at ES-4.
[77] 42 U.S.C. § 4332(2)(C)(iii). *See also* DEIS, *supra* note 33, at 2-6.
[78] U.S. Dep't of Interior, NEPA Handbook, *supra* note 24, at 39.
[79] DEIS, *supra* note 33, at 3-5.
[80] *See* 42 U.S.C. § 4332(2)(C)(i)-(v).
[81] *See* DEIS, *supra* note 33, at 3-5 (explaining that the "[n]o [a]ction [a]lternative represents a change in operations.").

Reclamation instead provides a separate, secondary alternative that it incorporates for comparison, the CCS Comparative Baseline, which helps to assess impacts if Colorado River operations were to hypothetically continue "under the current direction and strategies."[82] This includes the 2007 Interim Guidelines, 2019 DCP, and Minute 323, among other agreements that expire this year and were built on agreements among the Basin States, the U.S. and Mexico, or expiring legislation.[83] The CCS Comparative Baseline does indeed provide a separate, potentially quite useful comparison that is helpful in evaluating the performance of various alternatives, but it also does not meet the requirements for a no action alternative under NEPA.

4.4 Alternatives Do Not Comply with the 1922 Colorado River Compact

In multiple instances, the DEIS states that "the Secretary intends to consider, adopt and implement the proposed federal action consistent with the Law of the River, including the Colorado River Compact of 1922…and other provisions of applicable federal law."[84] Despite these claims, all of the proposed alternatives in the DEIS fail to comply with the plain terms of the 1922 Colorado River Compact. As discussed further in Section 6, they violate the Compact's plain terms by failing to satisfy the Upper Basin's delivery obligations under Article III(d) and by disregarding the requirement in Article III(c) that the Upper Basin provide sufficient water to enable the United States to meet its 1944 Treaty commitments to Mexico—thereby placing an unlawful and disproportionate burden on the Lower Basin. [85] This failure is particularly troubling given that, based on the current trajectory of water deliveries out of Lake Powell, the Upper Basin is on the brink of a Compact violation.[86] Numerous Lower Basin agencies and stakeholders, including Phoenix, have repeatedly urged Reclamation throughout this process to incorporate assumptions and analysis in the DEIS that would propose and evaluate mechanisms for Compact compliance. Alarmingly, these assumptions and analysis are completely absent from the document.

As Reclamation is well aware, the terms of the Compact and Treaty are binding on the agency's operations, and it is specifically required to operate the mainstem reservoirs in compliance with the Compact and Treaty pursuant to the CRBPA.[87] As discussed in detail in Section 6 below, the terms of these fundamental documents are quite straightforward. Under the Compact and related provisions of the 1944 Treaty, the Upper Division states are required to deliver an aggregate of 82.5 maf every ten years. This amount includes the 75.0 maf required by Article III(d), plus the Upper Basin's 750,000 af annual share of the 1.5 maf Mexican Treaty obligation under Article III(c) in light of the clear deficiency in supply—equating to roughly 7.5 maf over ten years, before accounting for any reduced deliveries to Mexico.

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[82] *Id*.
[83] *Id*. at 3-5, n.3.
[84] DEIS, *supra* note 33, at 1-4; 1-5; 1-8.
[85] Colorado River Compact (1922).
[86] Arizona Dep't of Water Resources, *ARC Meeting #12 Presentation* (PowerPoint presentation, Feb. 2, 2026), https://www.azwater.gov/sites/default/files/2026-02/2026.02.02_ARC_Meeting_12_Final.pdf. It is Phoenix's understanding that based on the poor hydrology of the winter of 2025-2026 to date and projected low runoff into Lake Powell, Reclamation is also considering further reducing the planned 7.48 maf release for 2026 to protect elevations at Lake Powell, which would accelerate the timeline for a Compact violation. Indeed, it appears that a Compact violation is now all but certain to occur absent a significant change in the Basin's hydrology and a substantial effort by the Upper Basin States to begin to control Upper Basin demands.
[87] See discussion in Section 4.6.

The Basic Coordination Alternative provides a clear illustration of the DEIS's Article III(c) Compact-compliance problem: none of the proposed alternatives implements the Article III(c) requirement that any Mexican Treaty deficiency be shared equally between the Upper and Lower Basins. As the alternative intended to reflect Reclamation's baseline authorities in the absence of a new interstate agreement, Phoenix reasonably expected the Basic Coordination Alternative to incorporate this core Compact obligation. Article III(c) of the Compact clearly requires that any deficiency associated with meeting the Mexican Treaty obligation be "equally borne by the Upper Basin and the Lower Basin." Nevertheless, under the Basin Coordination Alternative, the DEIS allocates up to 1.48 maf of mandatory shortages exclusively on users in the Lower Basin, including Mexico, and imposes no corresponding reductions on users in the Upper Basin even as deliveries from Lake Powell drop well below the required Compact minimums.

The same pattern of non-compliance appears with respect to Article III(d), which requires the Upper Basin to ensure deliveries totaling 75 maf over a ten-year period. None of the proposed alternatives satisfies this baseline Compact obligation. The shortfall is most pronounced under critically dry conditions, where the Enhanced Coordination Alternative delivers a median of only 70.4 maf and the Maximum Operational Flexibility Alternative delivers just 72.4 maf—both well below the required threshold. [88] But this deficiency is not confined even to the so-called "dry" hydrologies: even under "average" conditions, the Enhanced Coordination Alternative delivers a median of only 81.3 maf.[89] The Basic Coordination Alternative also fails to meet the Article III(d) requirement on average and satisfies it only about half the time.[90] These systemic delivery shortfalls cannot be reconciled with Reclamation's legal obligations; they violate both the Compact and Treaty and would impose severe consequences on Lower Basin users who rely on the United States to maintain the required delivery floor.

To address these deficiencies, Reclamation must revise the DEIS alternatives so that their operating rules are explicitly grounded in the Colorado River Compact and the Treaty of 1944. This revision must include mandatory operational triggers that ensure 10-year aggregate flows at Lee Ferry satisfy the Article III(d) delivery floor and Article III(c) Treaty obligations across all hydrologic scenarios and replace inequitable "structural deficit" assumptions with shared, basin-wide responsibility for system losses.

4.5 Alternatives Do Not Respect the Priorities of Lower Basin PPRs

Reclamation's disregard for the basic 1922 Compact requirements is so extreme that the proposed alternatives in the DEIS even fail to protect the rights of pre-Compact Lower Basin water users such as the holders of Present Perfected Rights (PPRs). The proposed alternatives would in some cases inflict mandatory shortages on Lower Basin PPRs while junior Upper Basin water users are unaffected, despite their senior legal status and the Compact's express protections. Under priority-based shortage distribution models like the Maximum Operational Flexibility Alternative,

[88] DEIS, *supra* note 33, at ES-28.
[89] *Id.*
[90] *Id.* at 3-61. The Basic Coordination Alternative has a Glen Canyon Dam median release of 83.0 under the "average" hydrology conditions, and a median release of 74.7 maf under the "critically dry" hydrology conditions. *Id.* However, given that Reclamation's characterization of "average" hydrology is demonstrably too optimistic (see discussion in Section 8.1), the Basic Coordination Alternative would likely not even perform that well under real-world conditions.

the extreme magnitude of policy-based shortages—reaching up to 4.0 maf—exhausts junior entitlements and triggers deep cuts to Lower Basin PPRs. These deep cuts occur even as the Upper Basin is only modeled to provide a trivial 200 kaf of voluntary conservation. Similarly, the pro-rata frameworks of the Enhanced Coordination and Supply Driven (LB Pro Rata) Alternatives explicitly distribute the 1.3 maf of average annual evaporative and system losses at and below Lake Mead proportionally across all users, including PPRs.[91]

These modeled outcomes directly contradict the Compact, which explicitly protects Lower Basin PPRs and requires Upper Basin contributions to any Mexican Treaty deficiency. The 1922 Compact specifically provides that "[p]resent perfected rights to the beneficial use of waters of the Colorado River System are unimpaired by this compact."[92] The Compact also provides that these Lower Basin PPRs have the right to satisfy their relative claims against water stored "not in conflict with Article III."[93] These provisions make clear that the Article III release requirements are intended to protect those PPRs as well, and that these release requirements are the mechanism by which their rights under prior appropriation can be enforced against Upper Basin water users. The Compact also specifically and separately requires that any deficiency in water delivered to Mexico be "equally borne by the Upper Basin and the Lower Basin."[94]

Nevertheless, the DEIS shields Upper Basin water users (pre- and post-1922 priorities) from any mandatory reductions beyond modest voluntary conservation, even under extreme hydrologic conditions. At the same time, Lower Basin PPR holders are required to absorb the full supply-demand imbalance and all delivery-related losses associated with the Mexican Treaty obligation. This approach inverts the Compact's explicit requirements and produces an indefensible and unlawful inequity in the allocation of burdens under the Law of the River.

4.6 Alternatives Do Not Comply with the Colorado River Basin Project Act and Long-Range Operating Criteria

These fundamental failures are closely related to the failure of the selected alternatives to comply with the plain terms of the CRBPA, both with regard to Powell releases and the operation of the Upper Initial Units. As with the Compact and Treaty, Reclamation repeatedly states that it intends to adopt operational guidelines consistent with the LROC and the requirements of the underlying CRBPA. However, the alternatives analyzed in the DEIS substantially depart from the further requirements and intent of the LROC and CRBPA.[95]

As discussed further in Section 6, several features in the DEIS—including the Powell release curves, the distribution of storage between Lakes Powell and Mead, and the use of extrapolated equalization lines—are inconsistent with Reclamation's previously-adopted rules governing coordinated operations. For example, under the Basic Coordination Alternative, the proposed Powell release curve departs from the LROC by reducing annual releases to 7.0 maf whenever Lake Powell's October 1 elevation is at or below 3,525 feet, and by then increasing releases only linearly from 7.0 maf at elevation 3,525 feet to 8.23 maf at elevation 3,575 feet—rather than applying the

[91] *Id.* at ES-12.
[92] Colorado River Compact art. VIII (1922).
[93] *Id.*
[94] Compact Article III Colorado River Compact art. III (1922).
[95] See discussion of these requirements in Section 6.

LROC-consistent minimum objective release volumes above these elevations.[96] There is no basis in the LROC for a tiered or linear reduction of the 8.23 maf objective based on these arbitrary elevation levels.

As another example, the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven alternatives all propose minimum release floors as low as 4.7 maf.[97] While Reclamation attempts to tie these to the Long-Term Experimental and Management Plan (LTEMP) or infrastructure protection, the LROC contains no provision for a policy-based reduction of the 8.23 maf objective to levels this low.[98] Reclamation's own analysis confirms that under the Basic Coordination and Supply Driven alternatives, these low releases are driven by Reclamation policy choices that would result in constrained release volumes in over 60 percent of months during critically dry conditions.[99]

Of additional concern is that for the Basic Coordination and No Action alternatives, Reclamation proposes simply using extrapolated Lake Powell "equalization line" parameters from the 2007 Guidelines, in lieu of making a proper 602(a)[100] determination in setting the Upper Basin storage requirements that are embedded in the Powell release curve.[101] Reclamation documents its related assumptions and the parameters used in setting the 602(a) equalization lines used to drive the extrapolation in Appendix J, including the various storage parameters that are included in its formula.[102] These are based on a 2004 Reclamation algorithm whose parameters were modified by the 2007 Guidelines.[103] These include, among others, parameters for Upper Basin depletions, critical period inflows, critical period length, and minimum power pool storage to be preserved in Upper Basin reservoirs.

While there seems to be a lower probability of reaching these equalization lines given current storage and hydrologic conditions, there are several critical issues with the parameters Reclamation uses in making this determination for the DEIS:

1. As detailed in Section 8.2, the Upper Basin depletion schedules utilized in the DEIS bear no resemblance to actual estimated Upper Basin demands and also show unreasonable growth in that demand compared to past trends; this necessarily distorts the equalization curve, setting it substantially higher than necessary;

2. As detailed in Section 8.6, there are substantial problems with the selected parameters for critical period inflows and critical period length, which further distorts the equalization curve; and

[96] DEIS, *supra* note 33, at 2-14 to 2-15.
[97] *Id.* at 3-207.
[98] *Id.* at 2-20.
[99] *Id.* at ES-22.
[100] 43 U.S.C. § 1552.
[101] *Cf.* DEIS, *supra* note 33, at 2-10.
[102] The parameters used in the DEIS appear in the table on page J-2 of Appendix J.
[103] U.S. Bureau of Reclamation, Adoption of an Interim 602(a) Storage Guideline: Final Environmental Assessment (Mar. 2004).

3. There is no authority provided in Section 602(a) for the use of power pools to determine the quantity of 602(a) storage; as noted in Section 6.3, hydropower production is explicitly subordinated to water delivery obligations under all of Reclamation's relevant authorities.

As Reclamation is well aware, the 2007 Guidelines equalization line was the product of an uneasy compromise among the Basin States in connection with the 2007 Shortage Guidelines, and reflected the fact that there was no real agreement among the Basin States at the time as to how 602(a) storage should be calculated. Regardless, as discussed in Section 4.6 below, the continued use of this extrapolated curve beyond 2026 is entirely unreasonable. Not only was the equalization line agreed to by the Basin States in 2007 intended as a temporary compromise expiring on December 31, 2026, as noted above the 2007 assumptions that were underlying the 602(a) calculation that are incorporated in the DEIS are demonstrably faulty. It is difficult to assess the relative impacts of these incorrect assumptions, which alternatively inflate or deflate the volume of water that would need to be withheld from equalization. It is clear, however, that Reclamation's extrapolated parameters no longer meet the facial requirements of 602(a) and will likely result in the retention of additional water in Powell in a manner inconsistent with the obligations of the Secretary.

Indeed, multiple alternatives seem to incorporate provisions that preferentially retain water in Lake Powell irrespective of the actual 602(a) requirements. For example, the Enhanced Coordination Alternative targets a specific storage distribution that keeps "more water in Lake Powell" relative to Lake Mead until the reservoirs are 63 percent full.[104] However, the DEIS fails to undertake any of the analysis required by Article II(1) of the LROC to justify why this preferential retention might be reasonably necessary to protect Upper Basin uses. Preferentially holding water in Powell at the expense of Mead users—without a formal 602(a) determination based on updated hydrology—violates the LROC.

Importantly, the LROC can only be modified by the Secretary after following specific procedures. This process includes a heightened requirement that the agency engage in direct correspondence with the governors of the Basin States and any appropriate state representative consultation.[105] In addition, Reclamation has recognized in the past that the review of the operating criteria should be categorized as informal rulemaking.[106] By embedding new, non-LROC-compliant release curves into the DEIS alternatives (including the Basic Coordination Alternative), Reclamation is essentially proposing to rewrite the LROC without following the procedures required by statute. This would constitute an illegal rulemaking that is beyond the power of the agency to undertake even if those release curves were in some manner consistent with the 602(a) requirements (which they are not).

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[104] DEIS, *supra* note 33, at 2-19.

[105] "As a result of actual operating experience or unforeseen circumstances, the Secretary may thereafter modify the criteria to better achieve the purposes specified in subsection (a) of this section, but only after correspondence with the Governors of the seven Colorado River Basin States and appropriate consultation with such State representatives as each Governor may designate." 43 U.S.C.S. § 1552.

[106] Review of Existing Coordinated Long-Range Operating Criteria for Colorado River Reservoirs (Operating Criteria), 70 Fed. Reg. 15873, 15877 (Mar. 29, 2005) (Reclamation states "The APA addresses rulemaking. A ''rule'' is defined as: ''the whole or part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the organization, procedure, or practice requirements of an agency * * *'' 5 U.S.C. 551(4). Rulemaking is usually referred to as either formal or informal. While developed pursuant to specific provisions of the Colorado River Basin Project Act, the review of the Operating Criteria should be categorized as informal rulemaking.").

To address these deficiencies, Reclamation must revise the DEIS alternatives so that their operating rules are explicitly grounded in the LROC and CRBPA requirements. This revision must include recalculating 602(a) storage based on updated hydrology and demand assumptions, evaluating alternatives that retain the 8.23-maf objective release except where true equalization or spill-avoidance conditions are applicable, and providing the required justification for any preferential distributions of storage between Lakes Powell and Mead.

4.7 Alternatives Disregard Reclamation's Good Faith Responsibilities to CAP Subcontractors

Since the adoption of the 2007 Shortage Guidelines, Phoenix—like other CAP subcontractors—has recognized that some continuing level of CAP shortage was inevitable given long-term Colorado River hydrology and CAP's relative priority compared to pre-1968 Lower Basin water users. At the time the 2007 Shortage Guidelines were adopted, Phoenix understood that these measures reflected a good-faith attempt to manage shortage risks on the Lower Colorado River, even though the implementation of those measures would effectively end the City's reliable access to CAP NIA supplies—a significant portion of the City's water supply portfolio at the time. Notably, Phoenix and other CAP subcontractors did not object to this development in 2007.

In the years that followed, Phoenix and other subcontractors have repeatedly demonstrated a willingness to cooperate to further reduce water use within the CAP system. The City supported the Lower Basin DCP, contributed significant volumes of its own water to support the transition of Pinal County agricultural users away from CAP supplies, and entered into additional agreements to contribute even greater volumes of water in support of Lower Basin voluntary reduction efforts. The City has also engaged with Reclamation across dozens of local and regional efforts to develop alternative water supplies, support increased water conservation, and promote broader water planning. As discussed in Section 1, Phoenix has also extensively relied on Reclamation's adherence to its legal obligations, and its many statements to reassure water users of the agency's intent to find solutions that would not jeopardize the integrity of the CAP system.

In light of this history of cooperation and collaboration, Reclamation's apparent disregard for the interests of CAP water users in the DEIS is disappointing. The alternatives presented—and the severe impacts they would impose on CAP supplies—show little evidence of careful consideration, collaborative problem-solving, or fiduciary regard that CAP subcontractors should reasonably expect from the federal agency responsible for operating a fifty-year-old, congressionally authorized water supply project serving millions of people and critical industries. The absence of meaningful analysis of alternatives that could substantially reduce these impacts only underscores the extent to which the DEIS falls short of the good-faith engagement that has historically characterized Reclamation's work with CAP stakeholders.

Reclamation can address this deficiency through renewed, good-faith engagement with CAP subcontractors to develop alternatives that equitably distribute burdens, reduce unnecessary shortages, create new tools to promote flexibility and enable future adaptive transfers, and reflect the operational realities and legal commitments governing the CAP.

4.8 Alternatives Disregard Tribal Trust Responsibilities

Although the DEIS correctly acknowledges that the United States "has a trust responsibility to tribes,"[107] the DEIS alternatives do not seem to incorporate the types of actions that would honor those responsibilities. This failure is particularly true for the 22 of the 30 federally-recognized Colorado River Basin Tribes that are located in the State of Arizona. It is even more so for those eleven Tribes that receive allocations of water via the Central Arizona Project pursuant to Congressionally-approved water rights settlement agreements and/or CAP delivery contracts,[108] and the four Tribes that have adjudicated rights to the mainstem pursuant to the *Arizona v. California* Decree[109]

Each of those Tribes have clearly relied on Reclamation's strict adherence to the Law of the River to protect the availability of the water that they received in those water rights settlements and federal delivery contracts. In each case, these settlements and delivery contracts were negotiated or co-negotiated by the federal government on behalf of those Tribes. These settlements typically extinguished far larger Tribal claims against Arizona's surface water supplies in favor of deliveries of CAP water. The City understands that multiple on-River and CAP Tribes plan to submit comment letters to Reclamation that will more clearly articulate the nature of that reliance on Reclamation obligations and responsibilities, and that fully document the fiduciary duty that the federal government owes to Indian Tribes pursuant to the federal trust responsibility.

With due deference to those Tribal comments, the City will merely note that, as we argue throughout this document, the actions proposed in the DEIS clearly fall short of the legal obligations imposed on Reclamation under the Law of the River, Reclamation's broader responsibilities as the owner and/or operator of major water infrastructure, and as the Colorado River system's primary system administrator. Given Reclamation's fiduciary duties, those same arguments are strengthened for the Tribes who rely on the Colorado River and the CAP, since that federal trust responsibility obligates Reclamation to both follow the Law of the River and to give special consideration to the impacts of its actions on those Tribes and Tribal water users. [110]

For on-River Tribes, this consideration clearly must include the recognition that the tribal water rights recognized in the *Arizona v. California* Decree are federal reserved rights with a character and

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[107] DEIS, *supra* note 33, at 3-194.

[108] Ak-Chin Indian Community, Pub. L. 95-328, 92 Stat. 409 (1978), Pub. L. 98-530, 98 Stat. 2698 (1984) Pub. L. 102-497 (1992); Salt River Pima Maricopa Indian Community, Pub. L. 100-512, 102 Stat. 2549 (1988); Fort McDowell Indian Community, Pub. L. 101-628, 104 Stat. 4480 (1990); San Carlos Apache Tribe, Pub. L. 102-575, 106 Stat. 4740 (1992), Pub. L. 105-18, 111 Stat. 181 (1997); Tohono O'odham Nation, Pub. L. 97-293, 96 Stat. 1274 (1982), Pub. L. 108-451 (2004); Gila River Indian Community, Pub. L. 108-451 (2004); White Mountain Apache Tribe, Pub. L. 111-291 (2018), Pub. L. 117-342 (2023); Hualapai Indian Tribe, Pub. L. 117-349 (2022); Yavapai Apache Nation (Camp Verde), 48 Fed. Reg. 12446, 12447 (1983); Tonto Apache Tribe, 48 Fed. Reg. 12446, 12447 (1983); Pascua Yaqui Tribe 48 Fed. Reg. 12446, 12447 (1983). As Reclamation is well aware, approximately 46 percent of the CAP's water supply is, or will be, permanently allocated to Arizona Indian Tribes under the 2004 Arizona Water Settlements Act. Central Arizona Project, *Tribal Water Rights*, https://www.cap-az.com/about/tribal-water-rights/ (last visited Feb. 25, 2026).

[109] These include the Colorado River Indian Tribes (CRIT), the Cocopah Indian Tribe, Fort Mohave Indian Tribe, and Fort Yuma Quechan Indian Tribe.

[110] *See, e.g.*, *Seminole Nation v. United States*, 316 U.S. 286, 296-97 (1942) (the government's conduct in dealing with Indians is subject to "the most exacting fiduciary standards"); *United States v. Mitchell*, 463 U.S. 206, 225 (1983) (citing "undisputed existence of a general trust relationship").

purpose that is distinct from other Section 5 delivery contracts and from the appropriative rights established in state PPRs. The DEIS does not seem to properly consider whether those Tribal rights could legally be subjected to the same administrative treatment as other federal delivery contracts in administering Lower Basin shortages out of priority.

Relative to the CAP Tribes, pursuant to the terms of various federal delivery contracts, Tribal CAP water is either delivered to Tribal lands for direct use, delivered indirectly via exchange agreements, or is available to the Tribes to use for off-reservation leasing as a means of providing reliable sources of Tribal income. Those Tribes have reasonably relied—both explicitly and implicitly—upon the fact that the United States, as their trustee, would properly honor and enforce the various statutes, rules, and contracts that make that water reasonably reliable despite CAP's relative junior priority in the Lower Basin, as well as various federal firming obligations that are built into those settlements and contracts. In turn, those M&I users on the CAP who have leased that Tribal water have also reasonably relied on Reclamation's responsibilities towards Tribal lessors.

The DEIS does not reflect this responsibility. While Reclamation undertakes some limited required analysis of Tribal resources in Section 3.13, this is focused primarily on Tribal cultural resources and traditional cultural places, as well as culturally significant natural resources, fish, and wildlife. The DEIS also provides analysis of the relative impacts of the alternatives on water deliveries to Tribes. However, like its analysis of the M&I sector, the DEIS does little to analyze the actual impacts—including economic impacts—that those reductions in water deliveries would cause across sectors, or mechanisms that it could use to mitigate or better manage those impacts. And like its analysis of the agricultural sector, the DEIS essentially ignores issues such as the interdependence of Tribal agricultural communities with both off-reservation agricultural uses and essential downstream food processing industries that are critical to tribal land leases and the sale of agricultural commodities produced on Tribal lands.

In fact, Reclamation's only direct consideration of its trust responsibilities in this regard appears in two elements within the various alternatives. The first is the "Priority Without Tribal Shortage Alternative Distribution Model" and "Pro Rata Without Tribal Shortage Alternative Distribution Model," which display distributions of water during shortage that do not short any tribal entitlements or allocations.[111] The second is the ability for Upper Basin Tribes to receive credit for contributions of both used and unused entitlements (and for Lower Basin Tribes to potentially receive compensation for unused entitlements) as part of voluntary conservation/storage programs under some alternatives, e.g. the Enhanced Coordination Alternative.

Unsurprisingly, the result of the first set of options is that (1) shortages to Tribes (or PPR Tribes) are zero, and (2) shortages to everyone else are larger.[112] Reclamation is careful to note in each case that these are "not an interpretation of law, contracts, or a legal position."[113] The result of the second set of options, to the extent that it is discernable in Reclamation's DEIS analysis, is that contributions of unused water to an Upper Basin pool tend to increase Lower Basin shortages. In the Lower Basin, by contrast, payments for unused water presumably result in greater net payments to Tribes without materially reducing shortage risk to anyone in the Lower Basin. The DEIS provides no clearly identified plan by which Reclamation could simply disregard the myriad

[111] DEIS, *supra* note 33, at C-117; C-195; C-216.
[112] *Id.* at 198-202 tbls. C-48 and C-49.
[113] *Id.* at C-195.

legal requirements, physical constraints, infrastructure restrictions, and other limitations applicable to its operations that would make it unworkable to deliver full entitlements to every Basin Tribe while shorting all other water users – particularly during emergency conditions. Thus, this rather two-dimensional analysis does not meaningfully analyze the benefits and tradeoffs associated with protection of Tribal water interests, nor sufficiently explore a reasonable range of alternatives pursuant to which Reclamation might take action to protect those Tribal interests or empower Tribal water users as specifically stated in the agency's Purpose and Need.

The City thus supports a more comprehensive consideration of the unique issues, impacts, and tradeoffs that its alternatives and any final preferred alternative would have on Tribal interests and resources. The DEIS should also consider various practical, immediate actions (and required resources for compensatory measures) that Reclamation could take to protect Tribal interests and resources, and to otherwise meet its mandatory trust responsibilities to Tribes.

4.9 Alternatives Do Not Adequately Address Mexico-Related Elements That Elevate Lower Basin Risk

The DEIS is flawed because it relies on a static and speculative 16.67 percent reduction assumption for Mexico, yet no binational negotiations have occurred to secure such an agreement. Reclamation repeatedly disclaims its own modeling on this point, stating that these assumptions are "not intended to constitute an interpretation or application of the 1944 Water Treaty" and that formal discussions through the IBWC "will" be conducted at an unspecified future date.[114] However, by advancing alternatives that uniformly assume massive reductions to Mexico—reaching a maximum of 0.67 maf under the Maximum Operational Flexibility Alternative—without any legal or diplomatic certainty that such cuts will be realized, Reclamation is exposing Lower Basin users to profound hydrologic risk.[115] If binational negotiations fail to produce the assumed shortages, additional volumes of water may be required from Lake Mead, which would accelerate the system's descent toward dead pool and the potential collapse of the Central Arizona Project.

Furthermore, as discussed in Section 4.9 above, Reclamation's decision to exclude compliance with Minute 242 salinity requirements from the DEIS analysis is an alarming oversight that masks the true volume of water needed to maintain the system. The agency acknowledges that fulfilling the national obligation to Mexico requires active management of the salinity differential between Imperial Dam and Morelos Dam, which necessitates bypassing saline water through the MODE canal and blending deliveries with additional upstream releases.[116] Despite this mandatory legal requirement, the DEIS dismisses salinity differential evaluation as "not applicable" to its long-term analysis, effectively ignoring a significant and consistent demand on Lake Mead storage. Failing to account for the water required to satisfy binational water quality standards results in an underestimation of system depletions and significantly increases the risk that the Lower Basin will face catastrophic reductions.

Finally, as noted multiple times above, the DEIS alternatives violate Article III(c) of the 1922 Compact by failing to properly require the Upper Basin to share the burden of the Mexican Treaty obligation. By forcing the Lower Basin and Mexico to resolve the entire system deficit while the

[114] DEIS, *supra* note 33, at 1-19.
[115] *Id.* at 3-52.
[116] *Id.* at M-24.

Upper Basin is unaffected, Reclamation places the entire risk of binational non-compliance on the Lower Basin. And in the case of alternatives where Lower Basin shortages are allocated by priority, this entire risk is shifted to the CAP and other Arizona Priority 4 users.

To address the deficiencies related to the exclusion of binational elements and the subsequent risk to Lower Basin users, the United States must initiate and secure a negotiated agreement with Mexico, and Reclamation must model a range of potential shortage levels within the EIS that provide for a reasonable range of outcomes. Reclamation must also incorporate Minute 242 salinity compliance into the alternatives and revise the alternatives so that the risk of binational non-compliance does not fall exclusively on the Lower Basin.

4.10 Alternatives Do Not Allow for Real-World Water User Adaptation

Reclamation's selection of Post-2026 alternatives must be grounded in the practical realities of municipal water delivery systems to properly meet its responsibilities as the Lower Basin watermaster and the manager of multiple, major federal facilities. The supply challenges that M&I users will face on January 1, 2027, must be met with the water supply infrastructure and staff capacity that exist today. Municipal providers like Phoenix rely on infrastructure that requires certain threshold delivery levels to operate, with system configurations, infrastructure sizing, and equipment that cannot simply be redesigned, resized, or replaced in the near term. The real-world constraints that apply to this infrastructure and capacity were built upon expectations of the availability and reliability of Colorado River water supplies that *Reclamation itself* has worked to cultivate over decades.

Most communities have developed reserve supplies and drought emergency plans that can be mobilized in the case of water shortages, but those supplies and plans are typically focused on managing smaller, short-term water supply shortfalls. Those emergency plans and supplies are not designed to manage the massive, long-term, or even permanent reductions in water supply forecast in the DEIS. These reserve supplies could be quickly exhausted in the face of shortages as large as the DEIS anticipates (50 percent to 100 percent cuts to the CAP) and will create their own environmental impacts. For example, major reductions to the CAP will immediately lead to significant increases in groundwater pumping in the Phoenix area which will draw down groundwater supplies, dry out wells, and lead to land subsidence. As discussed further in Section 5, curtailment of water use in cities could also trigger other environmental consequences as a result of the loss of urban vegetation—eliminating habitat, increasing temperatures, and contributing to poor air quality.

Even where reserves are available, they are not necessarily useable to manage interruptions to specific supply sources. For example, Phoenix operates two water treatment plants that are designed to treat Central Arizona Project water and each of these plants have minimum throughput requirements that could not be met year-round under many of the scenarios described in the DEIS. Like other plants, those are also designed and operated to treat CAP water and process it into safe drinking water in accordance with federal (and state) regulatory standards for water quality; those same plants would not be suitable to treat an entirely different supply even if it were immediately available in the same locations. In addition, the water infrastructure that moves water from those facilities to end users is similarly sized to move particular volumes of water that cannot necessarily be reduced at will. Given the outcomes of many of the DEIS alternatives, significant portions of the

Phoenix service area would be at serious risk unless the City can mobilize replacement water into the CAP.

Building new infrastructure to provide alternative supplies, such as the construction of advanced water purification facilities, takes years or decades to complete. The high costs of these facilities may exceed local bonding ability or rate capacity, particularly in communities that are already making vast investments in other water supply infrastructure to manage existing water supply shortfalls. Phoenix, for example, is in the midst of planning and constructing multiple Advanced Water Purification treatment facilities in its service area that will substantially reduce its dependence on the Colorado River. However, these new supplies cannot come online substantially earlier than 2035.

Even where reduced supplies can be accommodated within treatment infrastructures, most municipal water delivery systems can achieve reductions in end-user demand only incrementally, even when dealing with emergency conditions, and thus cannot conserve their way out of deep shortages. Decades of aggressive efficiency programs typically mean that the most cost-effective and feasible conservation in cities like Phoenix has already been achieved. The Phoenix Water Services Department has been under direction from City leadership to conserve as much as possible for years. It is important to recognize that Phoenix now uses less water today than it did in 2000 despite adding 400,000 new residents and substantial new industries. Water conservation efforts increasingly face tradeoffs, as reductions in irrigation can unintentionally reduce urban tree canopy—an essential component of heat-mitigation infrastructure, particularly in Phoenix's desert climate. The creation of any new additional programs would take years to implement and mature.

It is also important to recognize that, in nearly all communities, and particularly at the residential level, indoor and outdoor uses are typically not separately served and metered; nor are they centrally controlled. As a result, water conservation efforts rely on changes in individual behaviors and after-the-fact enforcement. A city cannot mandate that outdoor water use be reduced, nor could it do so without considering potential impacts on the management of extreme heat during summer months. Municipal providers must also supply hospitals, schools, police and fire facilities, and major industrial users such as semiconductor manufacturers. These sectors already incorporate substantial conservation measures for which even small additional reductions often require costly infrastructure changes that cannot be implemented quickly. Further, these water users cannot simply stop their activities in response to reduced water supply availability without causing massive disruptions.

Municipal pressure zones are another critical constraint; in essence, the infrastructure in each pressure zone must be kept at a minimum pressure level by supplying the necessary volumes of water to pressurize them. That volume is determined by the actual distributed use of water across hundreds of thousands of individual connections. If water demand at those connections exceeds supply, deliveries fail across the pressure zone. Changes in that end water use cannot be controlled centrally or accomplished by just restricting supply. In reality, reductions in end-user water use can only be accomplished through education, incentives, and after-the-fact enforcement. As a result, to provide required redundancy, most cities interconnect their pressure zones so that they can be served by more than one facility in the event of outages, or in some cases by neighboring jurisdictions. However, there are limits to those interconnections.

Phoenix, for example, operates seventy-three pressure zones that are variously interconnected and also maintains interconnects with all neighboring cities to provide backup supplies. To increase resilience against Colorado River shortages that could cause significant cuts to the CAP M&I pool, the City recently completed a $280 million drought interconnection pipeline that is designed to allow the movement of water from zones served by Salt and Verde River water supplies to those that are dependent on Colorado River supplies. However, even with that new pipeline, system redundancy is not infinite.

Municipal water providers must also continue to meet other intersecting regulatory requirements. For example, serious, sustained CAP shortages could make it impossible for many Arizona providers to comply with the Arizona Groundwater Management Act—creating cascading legal and operational failures.

Recognizing these constraints on municipal providers, adaptations to reduced Colorado River water cannot be imposed abstractly by Reclamation, state agencies, or even larger delivery system operators like the CAP. To be achievable, the alternatives must reflect the physical limitations of real infrastructure, the water volumes needed to operate that infrastructure safely, and the long-lead projects and transactions needed to mobilize alternative supplies. Many adaptations will require extensive new programs, projects, and agreements—which as discussed in Section 7 are actions Reclamation must affirmatively enable and facilitate, not merely assume. Reclamation's suggestion in the DEIS that the necessary adaptations by M&I users to continue to make water deliveries will somehow just occur—regardless of the agency's actions to support or facilitate adaptations, to provide reasonable off-ramps and buffer periods, and to provide ample warning of changes in water availability—falls well short of the consideration that must be given to these critical issues. Reclamation's statement that cities might simply adapt to water shortages by "hauling water" is almost comical. Few critical services or industries could realistically be maintained on that basis.

Accordingly, Reclamation must refine its alternatives to include operational strategies that align with the real-world limitations of municipal systems and conservation programs, ensuring that future decisions are grounded in the actual capacities, pressure-zone requirements, and treatment constraints that govern urban water delivery. This will require a far more adaptive and responsive operational framework—one that recognizes the physical and operational limits within which municipal water providers must function and that provides municipal users the flexibility that will be needed to plan for and respond to rapidly changing system conditions.

4.11 Alternatives Do Not Provide for a Sufficiently Adaptive Decision Process

The contemplated decision process for modifying reservoir operations and deliveries suffers from a key deficiency: it is not truly adaptive. Although the Post-2026 process relies on a sophisticated DMDU framework, the proposed structures for decisions included in the alternatives is comparatively rigid and would not give water users adequate time to prepare for evolving system conditions.

Notably, both the 2007 Guidelines and the subsequent DCP extensions of the Guidelines were focused on the management of reservoirs within a limited range of conditions, subject to reconsultation provisions once the system departed from that range. For example, the 2007 Guidelines only addressed operations at elevations down to elevation 1025' at Lake Mead and

deferred any decisions about what to do beyond that point to future consultation. To address the potential risks inherent in a system with only minimal amounts of remaining storage, Reclamation must not simply repeat the historic process of specifying another set of trigger elevations, making related annual operational determinations, applying corresponding volumetric shortage reductions applied to Lower Basin users, and then proposing an uncertain "reconsultation" if the range of design conditions is exceeded.

When reservoir storage is limited, a strategy of annual adjustments tied to predicted snapshots of elevations on January 1 is not adequately responsive, even with the mid-year adjustments that are presently allowed by the rules. Continuing from our original recommendations in our comment letter on the Notice of Intent,[117] Phoenix recommends inclusion of at least three key considerations:

1) The final rule set governing the operation of Lakes Mead and Powell should allow for adjustments over the course of each year in response to actual observed changes in condition and/or changes in forecasts. The rule set should include the ability to adjust releases between Mead and Powell but also the ability to adjust relative levels of shortage. As described elsewhere in this letter, the "natural flow" methodology does not achieve this due to the continued errors in flow calculation and the lag times inherent in those measurements.

2) Adjustments to the levels of shortage must follow reasonably predictable rules with clear signposts, with adjustments made in a manner that more gradually impact available water as opposed to making steep additional cuts at arbitrary trigger levels. Water users, particularly municipal water providers, need advance notice and the opportunity to adjust operations and adapt to the changes in water availability. With a clear set of signposts, triggers, and rules, water users can better prepare for a range of short- and long-term future conditions and develop robust responses. Like many other municipal users, Phoenix can plan for and adapt to many changes in Colorado River operations— provided that the potential for those changes is well understood and the expected adjustments have known implementation timelines that are tied to signposts that can be monitored. Like other Central Arizona water users, Phoenix can mobilize and draw incrementally on various replacement supplies if it has adequate notice of the need to do so. Reclamation's proposed step changes in water availability that are inherent in multiple alternatives make planning far more difficult, if not impossible, by driving less-predictable changes in supply due to the large "steps" in CAP shortage levels from year to year. If Reclamation cannot develop predictable rules with clear signposts, Reclamation must either (a) demand the adoption of agreements among users that allow water to be reallocated to smooth out those transitions, or else (b) invoke its own emergency authorities to achieve this reallocation.

3) Whether built into a Lake Powell release curve, or a more fluid methodology such as that implied in the Maximum Operational Flexibility Alternative, Reclamation must consider a

[117] City of Phoenix Comments on the Bureau of Reclamation's "Notice of Intent to Prepare an Environmental Impact Statement and Notice To Solicit Comments and Hold Public Scoping Meetings on the Development of Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead" Aug. 15, 2023 (hereinafter, City of Phoenix Comments on Notice of Intent).

> combination of both system storage and relevant hydrologic trends. Particularly during low reservoir conditions, the available volumes of reservoir storage throughout the Basin—not just that of Lakes Mead and Powell—become highly relevant to the likelihood and potential timeframe for future system recovery. Similarly, when storage levels in Mead, Powell, and other key reservoirs are low, the storage buffers that are normally present to protect water deliveries, power heads, and avoidance of "dead pool" conditions can potentially be wiped out by a single low-flow water year—such as the one we are presently experiencing in the Colorado River Basin. Reclamation should couple whole-system storage and recent hydrologic trends and forecasts in setting operational rules, such that anticipated dry conditions can lead to more proactive reductions in both Upper and Lower Basin use or anticipatory adjustments to reservoir operations.

In order to adapt to changing conditions, it is important to note that, as discussed in Section 7.3 below, Phoenix and other Arizona stakeholders are proactively working on an "Intrastate Water Security Compact" that is designed to mitigate the most dramatic impacts of CAP reductions at 760,000 and potentially at some lower levels of delivery as well. However, implementing this framework will take time. Reclamation's alternatives do not contemplate the sort of offramp that, for example, was provided to the State of California to reduce its use to 4.4 maf. Hydrologic realities required that California make those reductions, but the Interim Surplus Guidelines were also designed to provide the required "soft landing" to minimize the impacts of doing so and spread risk over the broader Basin rather than imposing devastating reductions on the City of Los Angeles.

Finally, in shaping its proposed responses and actions during low reservoir conditions, Reclamation should establish the foundations for the recovery of the reservoir system over the longer term. Consistent with Phoenix's previous comments in the letter dated September 1, 2022 in response to Reclamation's "Request for Input on Development of Post-2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead Under Historically Low Reservoir Conditions,"[118] it is important for Reclamation to move away from a crisis management framework into one that focuses on establishing long-term system resilience.

4.12 Alternatives Do Not Provide Mission-Consistent Protection Against Dead Pool Conditions & Loss of CAP

Setting aside the various legal and technical deficiencies noted above, it is extraordinarily troubling that the projected outcomes that would result from proposed alternatives in the DEIS would represent a fundamental failure by Reclamation not only to achieve the purpose and need specified in the DEIS, but even to adhere to the agency's primary Mission and Functions as established in the Departmental Manual.[119] The Basic Coordination Alternative fails in this objective even though Reclamation apparently regards this option to be the most consistent with its authorities.

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[118] City of Phoenix Comments on the Bureau of Reclamation's "Request for Input on Development of Post-2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead Under Historically Low Reservoir Conditions" Sept. 1, 2022 (hereinafter City of Phoenix Comments on Request for Input).
[119] U.S. Dep't of the Interior, Bureau of Reclamation, 155 DM 1 – Creation, Objectives, and Functions (Nov. 10, 2022) [hereinafter Bureau of Reclamation, 155 DM 1].

Reclamation is mandated to "manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public."[120] However, modeling reveals that the No Action Alternative results in catastrophic dead pool-related reductions in 70 percent of modeled futures, while the Basic Coordination Alternative—which Reclamation admits "may not provide adequate protection of critical infrastructure"—has the second highest frequency of the system reaching dead pool.[121] These outcomes directly violate Reclamation's core function to "ensure that Reclamation facilities do not present unreasonable risks" to public safety and the environment, as dead pool conditions threaten the physical integrity of Glen Canyon Dam and Hoover Dam and preclude the delivery of water to downstream users.

Furthermore, the DEIS fails to satisfy the agency's objective to "meet future water needs."[122] Under the CRBPA, Congress explicitly directed the Secretary to "construct, operate, and maintain the Central Arizona Project" for the purpose of furnishing "municipal water supplies" and irrigation to water-deficient areas of Arizona.[123] As the largest diversion in Arizona, the CAP serves as a life-sustaining resource for millions of residents and major industrial centers, fulfilling a domestic use that Reclamation's mission requires it to protect "in the interest of the American public."

The proposed alternatives essentially lack any mechanism to prevent the CAP from being reduced catastrophically, or even to zero. Allowing the system to deteriorate to a point where a primary water source for millions of people is completely eliminated is completely unacceptable. Selecting action alternatives that lack a safety net for CAP's M&I users is not only a failure of the agency's broader mission but also a direct dereliction of its statutory duty to maintain the very project Congress authorized it to operate for the nation's benefit.

It is also important to note the irreversible damage that even short-term elimination of CAP deliveries would cause to the CAP infrastructure itself. As CAWCD notes in its comment letter, the CAP infrastructure was not intended to withstand extended periods of low water levels or dry-ups. It was designed and constructed by Reclamation with the assumption that water would be present in CAP's infrastructure continually.[124] The long-term health of CAP's physical systems—including the concrete-lined canal, pumping plants, primary equipment, and major siphons—relies on the continuous presence of water in the system. CAWCD recently created an estimate, cited in their comment letter, of the likely impacts to CAP infrastructure that would be associated with a 12-month "dry-up" period on the CAP. These scenarios are projected by the DEIS to be possible under essentially every one of Reclamation's alternatives, since as noted in Section 4.12, all five alternatives could lead to "dead pool" conditions in Lake Mead. This scenario would also result from the shortage levels proposed in the Maximum Operational Flexibility alternative.[125]

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[120] *Id.* at 1.2.
[121] DEIS, *supra* note 33, at ES-32; 2-11.
[122] Bureau of Reclamation, 155 DM 1, *supra* note 118, at 1.3(O).
[123] 43 U.S.C. § 1521(a).
[124] For example, the CAP canal lining was constructed using concrete without rebar support and is thus physically vulnerable to large changes in temperature when dry, leading to significant cracking, buckling, and potential catastrophic failure.
[125] The total CAP annual deliverable supply is reduced to approximately 21,400 AF under the maximum policy shortage for the Maximum Operational Flexibility Alternative. That volume is insufficient to protect the CAP infrastructure from severe damage.

Under each of those scenarios, CAWCD estimates costs to repair resulting damage and return to service of approximately $358 million. More critically, they estimate an additional 12-24 month period to return to service after water is again available for delivery through the CAP. The consequences of such a scenario for M&I providers on the CAP are difficult to fathom. As discussed in Section 1, a total loss of CAP water supply would be devastating for the City and the nation as a whole even if it occurred briefly. Even a 1 year dry-up would require a recovery period such that deliveries would be unavailable for at least 2-3 years.

These critically important system issues are not discussed or considered by the DEIS, incorporated within Reclamation's alternatives, or considered in setting the minimum volumes of water necessary to avoid damage of this type. Setting aside its responsibilities to the CAP's users, Reclamation's alternatives thus fail even to satisfy the agency's responsibilities to protect the billions of dollars of federal investment that have gone into one of Reclamation's own projects.

To address these deficiencies, Reclamation must develop an alternative that replaces reactive formulas, arbitrary delivery minimums, and ambiguous "gap water" assumptions with robust, objective operational guidelines designed to maintain both Lake Powell and Lake Mead above dead pool elevations in all modeled futures and ensure that minimum necessary volumes of water are provided for. This refined framework should ensure the continued viability of authorized federal projects like the Central Arizona Project. As discussed in Section 6, below, Reclamation has ample authority available to it to achieve these objectives with or without Basin States consensus. And in fact, achieving that consensus will almost certainly require the agency to signal its willingness to use those powers if the States cannot work together to avoid the catastrophic outcomes predicted by the DEIS. The agency must simply have the foresight and courage to act.

4.13 Alternatives Do Not Chart a Reasonable Pathway to User Cooperation

As discussed further in Section 6.1, it is critical that Reclamation use its selected alternatives to map a workable decision space to promote interstate, intrastate, and user-to-user cooperation by specifically identifying how the agency will meet its obligations and responsibilities in the absence of agreement. As discussed in Section 7.3, this clarity is equally critical with regard to how and at what thresholds Reclamation proposes to exercise its emergency authorities. Greater clarity on how Reclamation will prevent disastrous outcomes is the best mechanism by which Reclamation can help water users to work together to minimize the potential for future conflict, avoid reaching emergency conditions in the first place, and support the transactions between and transition of water users throughout the Basin as they adapt to a substantially reduced water supply.

However, facilitating user-to-user cooperation and the types of transactional behaviors that will be required for that adaptation to occur at the ground level also requires that Reclamation's alternatives and future Record of Decision specifically consider and provide for the mechanisms that will be needed to allow that adaptation to occur. As discussed further in Section 7.1. while the alternatives consider the availability of voluntary storage mechanisms to manage escalating shortage risks, they do not analyze a sufficient range of storage pool sizes, creation limits, and delivery limits at a scale commensurate with the severity of projected shortages, particularly within the State of Arizona. Similarly, while the alternatives consider the impacts of voluntary programs, the agency does little to map that decision space or analyze impacts associated with different mechanisms for conservation. Reclamation provides no guidance to water users as to how they

might cooperate or structure agreements with each other, or how Reclamation proposes to support those arrangements with ongoing administration and accounting.

5 Reclamation Fails to Consider Critical Impacts

As discussed in Section 2, a foundational requirement of NEPA is that agencies disclose and analyze all reasonably foreseeable environmental effects of a proposed action, applying a scientifically grounded and comprehensive "hard look" at those effects. NEPA also obligates agencies to disclose environmental consequences with sufficient detail to prevent overlooking or underestimating significant effects and to make that information available to the broader public and other decisionmakers. The DEIS does not satisfy these obligations.

In the DEIS, Reclamation fails to evaluate impacts that are both reasonably foreseeable and central to understanding the consequences of its proposed actions. Among these are categories of effects essential to any meaningful assessment of post-2026 reservoir operations, including dead pool conditions, M&I impacts, key agricultural impacts, key environmental impacts, and key system infrastructure impacts, as described in more detail below. These omissions obscure the severity of the risks facing the Basin and the nation and prevent decisionmakers and the public from understanding the full range of harm that could arise under the proposed alternatives.

5.1 Reclamation Fails to Analyze the Impacts of Dead Pool Conditions

As noted above, Reclamation must develop objective operational guidelines designed to maintain both Lake Powell and Lake Mead above dead pool elevations in all modeled futures. In the DEIS, as drafted, however, Reclamation fails to provide a meaningful analysis of dead pool conditions, while admitting that dead pool in either or both reservoirs is possible and perhaps likely—a clearly foreseeable effect. Indeed, Reclamation's own modeling reveals that the No Action Alternative results in dead pool-related reductions in 70 percent of modeled futures.[126] In spite of the admitted likeliness of dead pool, however, the DEIS states only that the specific methods for managing or allocating water during such an event are "unknown and too speculative to be included in this EIS."[127]

It is critical that Reclamation anticipate and be able to describe system conditions that could fall well outside what was originally contemplated in the 2007 Guidelines or the subsequent DCP, and beyond what the agency optimistically hopes may occur in connection with a speculative multi-state agreement. Reaching these conditions could have serious socioeconomic consequences for users across the spectrum of municipal, industrial, agricultural, and recreational uses, and serious ecological and environmental consequences as well.

By labeling dead pool operations as "too speculative" for inclusion, Reclamation has produced a DEIS that fails to address the very catastrophic scenarios its own modeling suggests are increasingly likely to occur. As discussed in Section 4.12, there is no question that these scenarios would in fact be catastrophic – including for the CAP, for every M&I provider, Tribe, customer, and industry reliant on the CAP, and for the regional and national economy as a whole. Yet despite the high probability and catastrophic consequences of failure, the agency has also not advanced a

[126] DEIS, *supra* note 33, at ES-32.
[127] *Id.* at 3-197.

management framework that provides a clear safety net for M&I and other water users once these levels are reached. Avoiding such conditions can and should be a primary rationale for the kinds of responses that may be authorized by new operational guidelines. To address this deficiency, Reclamation must at least attempt to analyze the nature of those impacts to justify its proposed approach to avoiding those conditions.

As Reclamation is aware, in the discussions leading up to the 2007 Guidelines and DCP, the scenario analyses that were provided to Basin stakeholders consistently underestimated the potential for hydrologic scenarios that would reach or exceed the "worst case" that was repeatedly presented to stakeholders. These overly optimistic scenarios led to a false sense of security, especially among high-priority users, which has inhibited discussions about potential responses to growing water scarcity in the Colorado River Basin. Understanding the consequences of dry hydrologic scenarios and worst-case scenarios will help to facilitate dialogue between users to explore creative solutions or management options that could address those risks.

5.2 Reclamation Fails to Analyze Impacts to the Municipal and Industrial Sector

The DEIS fails to provide almost any evaluation of how its proposed alternatives would affect M&I users—the sectors that make up nearly 99 percent of Arizona's economy, and a similarly large fraction of the Lower Basin economy. Instead of analyzing the consequences of severe M&I shortages for existing communities, essential services, and major industries, the DEIS confines its discussion largely to agriculture and development, leaving readers without the information necessary to understand the real magnitude of the risks. As a result, the DEIS fails to evaluate how shortages would affect potable water availability for current residents, drinking water treatment plant operations, users' water quality, community bond ratings, business investment, employment, the housing market, gross domestic product, packaging and shipping of agricultural products, and semi-conductor and defense output, among a host of other sectors.

The rapid, uncontrolled loss of a Colorado River water supply on M&I users could have an extreme impact on both the local and national economy that should be analyzed. The examination of these impacts is critical because, as noted in Section 4.10 above, the water supply challenges that will be created by any near-term action taken on the Colorado River must be met with the water supply infrastructure and the alternative supply options as they currently exist. There is no time to develop alternative water sources or build additional infrastructure to address shortages that are likely to occur imminently under a final alternative that would take effect as soon as January 1, 2027. The DEIS ignores the consequences of these potential shortages for some of the Basin's largest metropolitan areas and for the key industries supported by Colorado River deliveries, including those supplied through CAP. The following sections outline several specific deficiencies in the DEIS's treatment of M&I users. The examples that follow demonstrate the scale and specificity of the M&I impacts that Reclamation could have analyzed with readily available information.

5.2.1 Missing Quantitative Socioeconomic Analysis

The DEIS fails to quantify the potential economic impacts of its alternatives on approximately 99 percent of the affected Arizona economy, omitting socioeconomic analysis for the non-agricultural sectors that dominate employment, finance, and industrial output in the Basin states. Instead, the DEIS models only agricultural and recreation impacts—despite the fact that these sectors comprise only a small fraction of regional economic activity and cannot serve as proxies for urban

or industrial vulnerability to M&I shortages. This omission is especially inappropriate when analyzing Arizona, where almost 90 percent of the population lives in urban areas.[128]

TA-16 illustrates the magnitude of this omission: in Arizona, non-farm employment accounted for 99.4 percent of total jobs in 2022, while farm employment represented only 0.6 percent. Agricultural products contributed just 1 percent of Arizona's economy. A recent hydro-economic study showed that, taken as a whole across Arizona, California, and Nevada, Lower Basin agricultural water use accounts for just 5 percent of the total economic value from Colorado River water use.[129] Regardless of the metrics used, agricultural impacts represent a tiny fraction of the total socioeconomic value that could be impacted by Colorado River curtailments. Yet the DEIS analyzes Lower Basin agricultural impacts extensively while providing no quantitative analysis for the vastly larger non-agricultural economy—which would include the manufacturing, technology, logistics, defense, health care, and commercial sectors that depend on reliable potable water supplies.

Although Chapter 3 asserts that TA-17.1.2 and TA-17.1.3 offer "detailed information" on industrial and municipal water uses, these sections provide no impact analysis for industrial sectors, and only narrow, qualitative descriptions of municipal conditions. The DEIS includes several tables showing projected volumetric reductions for major M&I users like the Phoenix, but then fails to translate those reductions into economic terms.[130] Unlike agriculture—where the DEIS monetizes losses in dollars, jobs, and output—the municipal and industrial sectors receive no parallel analysis, despite their vastly larger economic footprint. Without converting water shortfalls into sectoral output losses, supply-chain effects, employment at risk, municipal revenue exposure, operational disruptions, credit-rating implications, and regional GDP effects, the DEIS does not provide the information necessary to compare alternatives or evaluate trade-offs. It only estimates the number of years in which M&I deliveries may fall below normal. The result is not a socioeconomic impact analysis under NEPA; it is a delivery-frequency statistic that offers no insight into the severity or consequences of shortages for existing communities or economic systems.

The DEIS does acknowledge that reducing or eliminating legal access to municipal water could cause "widespread impacts on social and economic conditions," but it provides no other meaningful evaluation of those impacts.[131] Instead, it suggests municipalities would "pursue alternative water sources or hauled water," without analyzing feasibility, timing, cost, operational implications, or ratepayer burdens—particularly at the scale required to replace Colorado River supplies.[132] The analysis also relies on long-term averages (e.g., years with reduced deliveries), which do not capture the magnitude of short-duration but severe curtailments that can destabilize municipal operations, degrade water quality, reduce fire-flow capacity, and halt sensitive industrial processes.

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[128] David R. Berman, Morrison Institute for Public Policy, Revisiting the Urban–Rural Relationship in Arizona (Nov. 2019).
[129] Daniel Crespo, et al., *Assessing the Economic Value of Water in the Colorado River Basin: A Hydroeconomic Analysis*, 52 Water Resources & Econ. 100266 (2025).
[130] DEIS, *supra* note 33, at appx. C.
[131] *Id.* at 3-193.
[132] *Id.* at 3-193.

The omission is consequential. Shortages to M&I users directly affect potable water availability, drinking-water treatment reliability, water quality, business investment, municipal bond ratings, employment, the housing market, semiconductor and defense production, and broader regional economic performance. These foreseeable, quantifiable impacts are precisely the type of socioeconomic effects NEPA requires agencies to analyze—and the DEIS omits them entirely.

In their comment letter, CAWCD has undertaken some limited economic analysis that clearly demonstrates the economic significance of CAP water. Freeport McMoRan also provides discussion of the economic and practical significance of CAP water for the mining industry, which clearly demonstrates how critical this supply is for the production of U.S. copper and other critical minerals.

5.2.2 Misclassification of M&I as Indirect Effects

The DEIS evaluates M&I consequences primarily through population growth and land-development lenses. As structured in TA-17, the decision criteria focus on whether shortages may constrain *future* population or development trajectories, rather than on the consequences of shortages for existing communities. This framing assumes the principal municipal effect is foregone growth, not diminished reliability for current residents, businesses, and infrastructure.

That assumption is incorrect under the alternatives, which impose large, recurring shortages. When M&I systems face curtailments, municipalities are not making discretionary expansion choices; they are maintaining safe pressure zones, protecting water quality, operating treatment plants, and supporting industrial/commercial customers already in place. A growth-based proxy misclassifies direct M&I impacts as indirect, obscures real-world consequences, and deprives decisionmakers of a clear understanding of domestic water delivery impacts.

Compounding the misclassification, as noted above, the DEIS presumes municipalities can pivot quickly to alternative or long-term stored supplies.[133] For many central Arizona cities, such a pivot is not feasible in the short-term because (1) there is a lack of infrastructure to recover, treat, and convey stored supplies to customers, and (2) building that infrastructure requires substantial capital and multi-year timelines. Meeting the shortfalls contemplated in the DEIS would require an irretrievable commitment of resources that would alter the water management landscape for decades to come. These are not attenuated impacts far removed from the alternatives considered in the DEIS—they are significant and likely consequences of the proposed alternatives. Failing to discuss them leaves Reclamation uniformed and unable to make a responsible decision.

5.2.3 Technical Errors in Minimum Flow Assumptions

The DEIS asserts that the Basic Coordination Alternative caps maximum annual shortage at 1.48 maf to ensure a "minimum flow" for infrastructure protection and CAP use.[134] The record provides no technical basis for demonstrating that this volume reliably protects municipal deliveries. The DEIS utilizes 80 percent and 60 percent delivery thresholds as its primary metrics for system robustness, which as noted in Section 3.1 above effectively normalizes massive 20 percent to 40 percent delivery curtailments as "preferred" and minimum performance. To the best of the City's

[133] DEIS, *supra* note 33, at 3-193.
[134] *Id.* at 2-12.

knowledge, no Arizona M&I entity was consulted regarding these dubious statements. They are arbitrary, technically unsupported, and minimize foreseeable impacts by assumption rather than analysis.

5.2.4 Public Health/Safety Omissions

The DEIS fails to analyze the direct public health and safety consequences of severe M&I shortages and, in doing so, fails to satisfy Reclamation's core mission to ensure that its facilities do not present "unreasonable risks to the public [or] public safety."[135] Rather than analyzing the primary life-safety risks associated with catastrophic municipal water shortages, the DEIS relegates these threats to secondary indirect social costs, fundamentally mischaracterizing their significance and distorting their role in operational decision making.

This misframing is evident in multiple ways. The DEIS's discussion of urban heat—a major public-health threat in desert cities such as Phoenix—is reduced to an analysis of shade loss, visual setting, and urban tree die-off, with no examination of the resulting increases in heat-related morbidity and mortality that follow reduced municipal water availability.[136] In metropolitan areas where drinking-water systems support cooling centers, hydration infrastructure, and emergency services, the DEIS's failure to quantify or even qualitatively discuss these morbidity and mortality risks constitutes a serious analytical lapse.

Even more troubling, and as noted above, the DEIS asserts that if legal access to municipal water is eliminated, cities could simply "pursue alternative water sources, or hauled water if available" to maintain essential services. [137] This suggestion would be amusing if it did not imperil the health and human safety of United States citizens. It disregards the astronomical cost, logistical infeasibility, and public-health implications of attempting to rely on hauled or emergency supplies at the scale required to replace the Colorado River for millions of people. By failing to assess the feasibility or cascading socioeconomic consequences of such measures, the DEIS ignores the potential for public-health collapse and unprecedented regional disruption that would accompany failure of the Basin's primary domestic water delivery systems.

The analytical deficiencies are intensified by modeling assumptions that falsely presume no physical limitations on access to municipal intakes, even under extreme low-reservoir conditions.[138] This premise obscures the safety risk that potable water intakes, treatment plant conveyances, and pumping infrastructure may become physically stranded or hydraulically inoperable as reservoir elevations decline. The DEIS acknowledges that falling reservoir levels will diminish the dilution capacity for hazardous contaminants such as PFAS and perchlorate, yet then characterizes these risks as "likely negligible" without providing any quantitative assessment,

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[135] Bureau of Reclamation, 155 DM 1, *supra* note 118, at 1.3(N).
[136] DEIS, *supra* note 33, at 17-44. There are various journal articles available that can support such an analysis. *See, e.g.,* Sudeep Sinha et al., *Variation in Estimates of Heat-Related Mortality Reduction Due to Tree Cover in U.S. Cities*, 301 J. Envtl. Mgmt. 113751 (2022); Darin J. Jenerette et al., *Micro-Scale Urban Surface Temperatures Are Related to Land-Cover Features and Residential Heat-Related Health Impacts in Phoenix, AZ (USA)*, 31 Landscape Ecology 745-60 (2016); Peder Ibsen et al., *Urban Tree Cover Provides Consistent Mitigation of Extreme Heat in Arid but Not Humid Cities*, 113 Sustainable Cities & Soc'y 105677 (2024).
[137] DEIS, *supra* note 33, at 17-35.
[138] DEIS, *supra* note 33, at C-6.

operational modeling, or basis for municipalities to plan for treatment upgrades.[139] As detailed in Section 3.3, reduced deliveries on the CAP would create compounding water quality problems that would jeopardize the operation and safety of the canal, and would threaten the viability of municipal drinking water plants that treat CAP water for delivery. The DEIS's dismissal and failure to consider these effects denies affected communities the information necessary to plan for public-health protection under foreseeable low-flow conditions.

5.2.5 Examples of Impacts Reclamation Should Have Analyzed

The magnitude of the impacts omitted from the DEIS is illustrated by work completed by the Arizona State University Seidman Research Institute, which demonstrates the extraordinary economic value Colorado River deliveries provide to Arizona. The CAP system has been a central piece of the state's economic growth, and its potential loss represents a systemic threat to the financial stability of Arizona's major metropolitan regions. Readers of the DEIS are unaware of these risks because the DEIS artificially constrains the analysis of economic impacts to agriculture and development while ignoring the role that the CAP deliveries play in supporting Arizona's largest municipalities and key industries.

According to the Seidman Research Institute's analysis, between 1986 and 2017, CAP deliveries contributed more than $2.0 trillion (2018 dollars) to Arizona's cumulative GDP—representing 28.2 percent of all statewide economic activity during that 32-year period.[140] In 2017 alone, CAP water contributed to nearly half of Arizona's GDP at 41.5 percent.[141] The DEIS makes no reference to this scale of economic dependence, nor does it attempt to evaluate how shortages of the magnitude contemplated under the alternatives would affect the stability of major sectors such as healthcare, manufacturing, defense, or technology—each of which could stand to lose hundreds of billions of dollars in GDP contribution if municipal water supplies are destabilized.

The Institute's research further demonstrates the severity of potential employment impacts from the loss of CAP water. In 2017, CAP water deliveries supported approximately 1.6 million jobs. If the water supply were unavailable, the largest job losses would occur in the Construction (projected loss of 285,869 jobs), Healthcare (219,908 jobs), and Government sectors (189,529 jobs). Yet the DEIS offers no quantitative treatment of how shortages would affect employment, wages, business formation, or economic output.

Finally, it is important to point out that the Institute's figures rely on 2017 conditions and therefore substantially underestimate the current economic significance of CAP water supply. Over the intervening decade, Arizona has experienced significant population growth, industrial expansion, and increased national reliance on sectors such as semiconductor manufacturing. As noted in Section 1, TSMC alone is estimated to be bringing in excess of $165 billion in investment in North Phoenix, which currently relies almost exclusively on CAP water. By failing to analyze these foreseeable impacts, the DEIS does not provide the public or decisionmakers with the information necessary to understand the true economic consequences of the proposed actions.

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[139] *Id.* at 3-72.

[140] L. William Seidman Research Inst., W.P. Carey Sch. of Bus., Ariz. State Univ., The Economic Impact of the Central Arizona Project to the State of Arizona 22 (Oct. 22, 2019), https://library.cap-az.com/documents/departments/finance/Economic-Impact-of-CAP-to-Arizona-102219.pdf.

[141] *Id.*

A socioeconomic impact analysis that accurately accounts for all sectors of the economy is highly feasible, and there is already precedent in the peer-reviewed literature for how this could be accomplished. Another paper from the Seidman Research Institute[142] explored the impacts on gross state product, employment, and labor income from a curtailment of Colorado River water supplies. A recent 2025 paper on the economic value of water in the Colorado River Basin provides another example.[143] Each of these studies shows that agriculture represents only a small fraction of the total socioeconomic impact of Colorado River water supplies and that the majority of benefits from the river accrue to employment, labor income, and urban economies.

To comply with NEPA and to support a reasoned agency decision, Reclamation must correct these analytical deficiencies through an analysis that meaningfully evaluates the full scope of M&I impacts. This requires expanding the socioeconomic assessment beyond agriculture and recreation to include quantitative economic, operational, and public-health consequences for existing communities; providing transparent, defensible modeling of M&I reliability and shortage frequency; and reevaluating unsupported assumptions embedded in TA-17 and the 1.48 maf "minimum flow" framework. Reclamation must also assess the feasibility, timing, and cost of any proposed reliance on alternative sources or emergency supplies, and it must analyze the risks posed by diminished treatment capacity, reduced dilution of contaminants, potential stranding of intake infrastructure, and degraded fire and emergency service reliability. Only by addressing these issues directly can Reclamation produce an EIS that accurately characterizes the consequences of the proposed action and allows decisionmakers and the public to understand and compare the true risks facing the Basin's M&I users.

5.3 Reclamation Fails to Analyze Key Impacts to the Agricultural Sector

The DEIS omits critical analysis of agricultural impacts, overlooking both the hydrologic influence of Upper Basin agricultural use and the disproportionate vulnerability of Lower Basin agricultural production. Despite the relatively smaller economic footprint of Upper Basin agriculture, it constitutes a substantial share of Upper Basin consumptive use and meaningfully affects inflows, runoff timing, and tributary depletions—factors that directly shape Lower Basin conditions. The exclusion of Upper Basin agriculture is particularly problematic because Reclamation's modeling identifies declining inflows, warming temperatures, and reduced runoff efficiency as the primary drivers of system risk in the post-2026 period. By failing to analyze any scenario in which Upper Basin agriculture experiences shortages or altered diversion patterns, the DEIS omits a major determinant of system conditions and narrows the scope of its alternatives analysis.

The DEIS likewise fails to meaningfully analyze the agricultural impacts that would occur in the Lower Basin. It simply assumes that agricultural users will respond to Colorado River shortages by fallowing fields or switching to groundwater, without examining the full economic and environmental consequences of those actions. Groundwater substitution, in particular, will predictably raise pumping costs, diminish long-term aquifer availability, restrict crop choices, and significantly increase energy demand—while itself impacting surrounding communities and M&I values. Those costs might obviously increase even further if hydropower production declines in

[142] Tim James, et al., L. William Seidman Research Inst., W.P. Carey Sch. of Bus., Ariz. State Univ., The Economic Impact of the Central Arizona Project to the State of Arizona (Apr. 4, 2014), https://seidmaninstitute.com/wp-content/uploads/2014/05/CAP-Final-040414.pdf.
[143] Crespo, *supra* note 128.

response to declining reservoir elevations or the loss of power pools. Yet the DEIS offers only cursory, qualitative observations on these issues.

The DEIS also overlooks the deep interdependence between Lower Basin agricultural sector and the M&I sector. Many Lower Basin agricultural regions rely indirectly on CAP or municipally supplied water to support food processing, cold-chain logistics, and distribution infrastructure—elements the DEIS does not analyze. By evaluating agriculture solely as on-farm crop production, the DEIS ignores the much larger food-processing, packaging, refrigeration, and distribution sectors. This omission ignores the fact that Arizona farmers would be massively impacted by disruptions to the extensive value chains downstream from their farms. Those disruptions would both materially harm farm incomes and the ability to bring food crops and other nationally-important agricultural commodities produced in Arizona to market—causing lasting damage to farmers and Arizona's larger food industry alike. As noted in Section 4.8 above, similar deficiencies are present in the DEIS's consideration of Tribal agricultural impacts.

The DEIS's disregard for these value chains also understates the actual economic value of agriculture in Arizona, particularly in Yuma and the Sun Corridor region. In Arizona, for example, in 2022 farms accounted for roughly 0.5 percent of state GDP; however, this is less than half of the GDP figures that are associated with farms and food/beverage processing together.[144] In 2024, approximately 75% percent of food-processing and manufacturing capacity and approximately 50% of farm product raw material wholesalers were located in Maricopa County, which would likely be relying on municipally supplied water.[145] The DEIS does not evaluate how CAP shortages or constraints on M&I water would disrupt these facilities or the agricultural supply chains they anchor, despite such impacts being reasonably foreseeable and potentially severe.

Taken together, these omissions prevent decisionmakers from understanding how the alternatives would affect agricultural communities, regional economies, and broader system hydrology. To address these deficiencies, the FEIS must evaluate the socioeconomic dimensions of Upper Basin agricultural use—including how Upper Basin diversion patterns and consumptive-use behavior influence regional economies and downstream hydrology. It must also assess how reductions in M&I supplies would impair Lower Basin agricultural production systems that depend on reliable municipal water, including the food-processing and manufacturing sectors that support crop markets and distribution networks.

5.4 Reclamation Fails to Analyze Key Environmental Impacts

NEPA requires an EIS to take a "hard look" at reasonably foreseeable environmental consequences using high-quality information, and to evaluate how binding legal constraints shape the range of reasonable alternatives.

Environmental impacts—including scope, intensity, duration, and frequency of impacts to riparian and terrestrial habitats, aquatic ecosystems, native species, vegetation, wildlife, river stage, water quality, salinity, groundwater connectivity, air quality, wildlife refugees, and recreational and cultural resources—are driven by alternative operating rules that determine reservoir elevations,

[144] See Bureau of Economic Analysis NAICS data, available at http://apps.bea.gov.
[145] See U.S. Bureau of Labor Statistics figures for NAICS 311 (food manufacturing), 312 (beverage); and 4245 (farm product raw materials) in Quarterly Census of Employment and Wages, available at http://bls.gov/cew.

releases, and downstream flows. The City understands that a group of conservation organizations intends to submit a joint comment letter that will document multiple deficiencies in the DEIS's consideration of environmental impacts and will propose recommendations to improve Reclamation's analysis in the FEIS that should be considered by the agency.

To highlight just a few key items of particular concern, the City notes that the Endangered Species Act (ESA), the Lower Colorado River Multi-Species Conservation Program (LCR MSCP), and the Grand Canyon Protection Act (GCPA)—implemented in part through LTEMP—are not background context. They are binding legal requirements that must directly inform Reclamation's selection of alternatives and its evaluation of their legality. They are operational sideboards that directly influence reservoir releases and diversion reliability. Yet the DEIS repeatedly defers analysis of these effects to future ESA Section 7 Biological Opinions (BOs) and Section 10 Habitat Conservation Plan amendments. It states "[a]dditional ESA Section 7 and Section 10 processes are ongoing, and additional impacts will be disclosed in future BOs and HCPs."[146]

The DEIS also asserts that LCR MSCP commitments will be handled "in a separate process."[147] In discussing LCR MSCP, it concedes that future impacts and habitat-creation commitments will be addressed in later BOs and HCPs and that the number of acres that will be affected over the next 30 years is "unknown"—even as it points to past acreages and mitigation to "allow a greater understanding of future implications."[148] Deferring analysis does not satisfy NEPA. The effect of these binding obligations on operations must be analyzed now, so decisionmakers can compare alternatives under the real constraints that will govern them and anticipate potential regulatory risks that may develop in the future. These rules have and will continue to impose serious constraints on the management of the Lower Colorado River system and the transfers of water within it—operations that will be increasingly critical during shortage conditions.

The DEIS itself acknowledges certain mechanisms of ecological risk that intensify as elevations decline. For example, it states warmer releases facilitate establishment of warm-water nonnatives and elevate threats to ESA-listed and native fish.[149] It finds "significant changes in the timing, quantity, or temperature of releases could flood or dry critical spawning, nursery, and refuge habitats, potentially harming native and ESA-listed fish."[150] But the DEIS does not carry these admissions forward into alternative-specific sideboards, performance metrics, or risk quantification. Without that analysis, the public cannot understand how the alternatives perform against the very environmental constraints the DEIS identifies, or how those environmental constraints may limit operations in the future.

Other environmental impacts are not evaluated in the DEIS. For example, sustained low inflows could lead to extended operation of reservoirs in a run-of-the-river mode, yet the DEIS does not analyze reasonably foreseeable impacts on temperature, sediment, habitat, water quality, and other environmental resources. Failure to evaluate such impacts poses risks to legal compliance, operational flexibility, and overall system resilience.

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[146] DEIS, *supra* note 33, at 3-113.
[147] *Id.* at 1-29.
[148] DEIS, *supra* note 33, at 3-114.
[149] *Id.* at 3-195.
[150] *Id.* at 3-95.

Reclamation's alternatives collectively demonstrate that the agency has not provided a range of reasonable options capable of meeting the environmental protection requirements embedded in its own mission[151] and the governing ESA, LCR MSCP, and GCPA programs. Across all alternatives, the DEIS projects conditions that will significantly degrade aquatic, riparian, and marsh habitats, increase nonnative predation pressure, destabilize MSCP commitments, and impair the ecological functions the GCPA was enacted to protect—impacts that will only intensify as the Basin grows hotter and drier. Here, Reclamation has instead advanced a suite of alternatives that all produce severe and foreseeable consequences for fish and wildlife, most of which do not meet the environmental performance criteria that the agency itself recognizes as essential.

These impacts are not merely environmental in nature; as noted above they could clearly become operational constraints as hydrologic stress intensifies. Allowing further ecological decline could clearly destabilize system operations and amplify legal, economic, and operational risks Basin-wide.

To address these gaps, the FEIS must explicitly evaluate each alternative's performance relative to the ESA, LCR MSCP, and GCPA. This requires a side-by-side analysis of how each operational alternative supports or constrains compliance with these binding statutory and programmatic requirements. The evaluation should clearly link, wherever possible, the reservoir elevations, release patterns, temperature regimes, and operational flexibilities projected under each alternative to their effects on environmental resources and ecological integrity, particularly under low-flow and dead-pool conditions.

Equally concerning, the DEIS proposes no mitigation for the very ecological harms it predicts. As discussed in Section 2, DOI NEPA guidance requires an EIS to identify any available measures that could mitigate adverse impacts, yet the DEIS supplies none. Instead, it relies on broad statements about future consultations while omitting analysis of whether operational tools, habitat actions, or nonnative suppression strategies could reduce the risks described. By providing no mitigation analysis, the DEIS withholds essential information about how environmental damage could be prevented or minimized.

5.5 Reclamation Fails to Analyze Key System Impacts

While the DEIS contains reasonably extensive hydrologic modeling and accounting-based shortage analysis, it does not evaluate how physical infrastructure limitations, release interruptions, or prolonged low-elevation operations would affect the ability to deliver water to users. In multiple instances, the DEIS acknowledges infrastructure constraints but does not model their operational consequences, or it assumes resumable operations without examining structural risk, interruption scenarios, or downstream system effects. These omissions materially affect the comparative evaluation of alternatives and the protection of consumptive water uses. Several examples are provided below.

Lake Powell & Lake Mead. The DEIS fails to provide any meaningful analysis of the system-wide consequences of Lake Powell or Lake Mead falling below their respective minimum power pool elevations. The DEIS recognizes that powerplant releases through Glen Canyon's penstocks are unavailable below elevation 3,490 feet (minimum power pool) and that releases would then

[151] Bureau of Reclamation, 155 DM 1, *supra* note 118.

depend on the river outlet works at lower elevations.[152] Yet the analysis does not quantify operational consequences if river outlet work releases must carry the system for extended periods, nor does it evaluate whether emergency operations would trigger long-duration delivery interruptions to downstream users. Likewise, the DEIS does not model the delivery consequences as Lake Mead approaches dead pool, when water can no longer be released downstream.[153] Nor does it examine sustained operations below 950 feet that would rely exclusively on non-power outlets, including whether outlet capacity and intake hydraulics would constrain reliable deliveries over multiple months or years.

The DEIS also does not provide engineering feasibility, cost, or environmental analysis for structural adaptations that would likely be required if reservoirs remain at critically low elevations, such as low-level outlet retrofits, penstock/intake extensions, or bypass conveyance to preserve releases below minimum power pool. This leaves agencies and municipal providers without a technical record to inform long-lead capital planning if low-pool conditions persist.

Shortage Allocation Models. The Shortage Allocation Models, which distribute delivery reductions by user and state, are expressly designed to allocate volumes, not to simulate any "physical limitations on water access due to low river stage."[154] These models estimate distribution outcomes under specified shortage quantities and priorities, but they are not an operational model of intake/infrastructure constraints. In practice, that means the tables presented to compare alternatives do not represent when water may cease to be physically available to particular users if intakes are stranded or conveyance is impaired at low pool.

Central Arizona Project. The DEIS identifies the CAP pumping plant on Lake Havasu as the largest diversion for Arizona,[155] but as discussed in Section 4.12, the DEIS does not model the risk of this infrastructure becoming physically stranded, the extensive structural damage that could occur to the 336-mile canal system if it runs dry, or the consequences of extended recovery periods to repair that damage. Additionally, as noted elsewhere, the DEIS refers to an "assumed minimum flow" for CAP, but it does not provide the technical basis or infrastructure studies necessary to validate this figure.[156]

Minute 242. As noted in Sections 3.6 and 4.9, the DEIS fails to evaluate the impact of additional releases required from Lake Mead to satisfy Minute 242 salinity obligations. Reclamation acknowledges that meeting these international treaty obligations often requires "blending water arriving at the NIB [Northerly International Boundary] through additional upstream releases,"[157] yet the document explicitly admits that its modeling "does not include simulated operations…to ensure compliance" with this mandatory salinity differential.[158] Reclamation's dismissal of this operational requirement as "not applicable"—based on the premise that it is managed at a smaller timescale than the DEIS analysis—is unsupported and ignores a real, physical demand on reservoir storage.[159] By omitting these blending volumes, the DEIS likely overestimates Lake Mead elevations

[152] DEIS, *supra* note 33, at 1-22.
[153] *Id.* at 1-23.
[154] DEIS, *supra* note 33, at C-6.
[155] *Id.* at 1-20.
[156] *Id.* at 2-12.
[157] *Id.* at M-7.
[158] *Id.* at M-13.
[159] *Id.* at M-24.

during the dry hydrologic conditions where such releases are most critical, thereby masking the true risks to water supply and infrastructure reliability for all downstream users.

Groundwater. Finally, the DEIS fails to provide an analysis of the impacts on off-river groundwater levels that would result from M&I users turning to groundwater to offset CAP curtailments. Although the DEIS explicitly excludes off-river aquifers from its hydrologic modeling, it simultaneously acknowledges that municipal providers facing shortages will pursue alternative sources, which would likely include groundwater pumping. By declining to assess these foreseeable responses, the DEIS masks the risk of accelerated aquifer depletion in major metropolitan areas and fails to evaluate the regional infrastructure, energy, and water-quality consequences of such emergency pumping.

To address these deficiencies, Reclamation must prepare an analysis that evaluates operational and structural consequences associated with prolonged low-elevation reservoir conditions. This requires quantitative modeling of dam operability, release capability, and delivery reliability across the plausible range of low-pool scenarios presented in the DEIS. Reclamation must examine the frequency, duration, and consequences of falling below the elevations at which powerplant intakes, outlet works, and municipal diversion structures become impaired, and must evaluate whether water can in fact be delivered to downstream users under those conditions. Such analysis is essential for a reasoned comparison of alternatives and cannot be deferred to future operational judgment or emergency response authority.

Reclamation must also evaluate the structural adaptations, capital improvements, and emergency measures that would be required to maintain delivery capability if reservoirs remain at critically low elevations—including, at minimum, assessments of feasibility, engineering constraints, environmental impacts, cost, and implementation lead times for low-level outlet retrofits, intake extensions, bypass conveyance, and other physical modifications. The agency must similarly analyze the implications of these low-elevation operations for major diversion systems such as the CAP. It also must incorporate into its modeling the operational requirements associated with international treaty deliveries and Minute 242 salinity obligations, which impose real physical demands on reservoir storage and release operations.

Finally, Reclamation must address the foreseeable system responses to shortage conditions, including increased reliance on groundwater by M&I providers, and evaluate the associated impacts to off-river aquifers, treatment systems, and regional water-supply resilience. Only by conducting a comprehensive, infrastructure-informed analysis can Reclamation provide the public and decisionmakers with a clear understanding of the system impacts associated with the proposed alternatives.

6 Reclamation Ignores Legal Authorities Available to Manage the Colorado River System

At its core, the DEIS reflects a fundamental failure by Reclamation to acknowledge, interpret, and exercise the full scope of its own legal authorities to manage the Colorado River system responsibly and lawfully. NEPA does not permit an agency to define away feasible options by adopting unduly narrow views of its own legal authority or by assuming the unavailability of cooperative arrangements. Rather, the statute and DOI Handbook requires Reclamation to “study, develop, and describe” a reasonable range of technically and economically feasible alternatives

that meet the purpose and need and to identify "any means" of mitigating adverse effects within its lawful authority or through implementable agreements.[160] By downplaying or disclaiming these avenues, the DEIS fails to take the required hard look and withholds from the public and decisionmakers critical information about less damaging, more equitable outcomes.

To the extent that there is any underlying justification for the extraordinarily large and disproportionate impacts to, between, and among water users in the Upper and Lower Basins, that justification appears to be associated with Reclamation's basic stated assumptions—both explicit and implicit—regarding both: (a) the extent of its legal authority to implement a different set of decisions, and (b) the willingness of water users in each of the Upper and Lower Basins to reach common-sense agreements that would allow the agency to make different decisions.

In both cases, the DEIS consistently downplays, and in some cases affirmatively disclaims, Reclamation's ability to consider or implement additional actions that could produce far more desirable, or at least less catastrophic, outcomes. There are any number of examples of additional actions that could be considered in the DEIS that would be either (1) well within Reclamation's available normal authorities, (2) within its temporary emergency powers; or (3) be readily carried out by the agency based on requested agreements between or among water users in both Basins (including common-sense agreements that will clearly be necessary to avoid potentially catastrophic outcomes). Reclamation should not ignore its own legal authority to both backstop and affirmatively define the terms of agreements that are needed for the sustainable management of the Colorado River system—particularly when not one of the alternatives proposed in the DEIS actually meet the performance criteria that the agency itself selected as measures of success.

6.1 Reclamation Must Clarify How it Will Operate and Apply its Authorities to Create a Workable Decision Space

6.1.1 Reclamation Must More Clearly Define the Decision Space

At every stage of the post-2026 process and in multiple processes that have preceded it, Phoenix has requested and recommended that Reclamation *explicitly define* how the legal authorities the agency has available to it can and will be considered and used in Colorado River operational decision-making.[161] These authorities are foundational whether as part of an agreed-upon alternative or one driven by unilateral federal action. Given the imminent threat to Lower Basin water users that this DEIS describes for both federal action and inaction, Reclamation **must provide clear guidance** related to the agency's plans and capabilities to take responsive actions within its governing legal authorities and available discretion under the Law of the River, the *specific agreements among water users* that would support more desirable outcomes, and Reclamation's ability to take extraordinary actions under emergency conditions. **This guidance is critical to M&I users so that they may plan for potential future water supply reductions, develop realistic adaptation strategies, and timely and orderly address the resulting needed changes to infrastructure, processes, and public expectations.**

[160] 42 U.S.C.S. § 4332(F); U.S. Dep't of Interior, NEPA Handbook, *supra* note 24, at 2.3.
[161] City of Phoenix Comments on Request for Input, *supra* note 117, at 2,5,8,10; City of Phoenix Comments on Notice of Intent, *supra* note 116, at 3, 8, 9, 11, 12.

Given the long delays in the post-2026 process and the extremely late stage of current discussions, this guidance must now go well beyond mere *theoretical* discussions of what the agency "might consider" doing amidst future emergencies, in favor of defining one or more actual, practical paths that federal intervention will follow depending on hydrologic conditions and the progress of interstate discussions. The reason for this is simple, water delivery systems operated by the Basin's M&I providers are complex, and meaningful changes in M&I water use and corresponding demand that may be necessary in response to Reclamation management decisions must begin immediately (and likely cannot be implemented quickly). As discussed in Section 4.10 above, Phoenix and other municipal users must meet the challenges that Reclamation is creating with the water supply infrastructure and staff capacity available now with programs and actions that can be feasibly implemented in the very short timeframes available.

6.1.2 Reclamation's Lack of Guidance is Creating Dangerous Uncertainty

The uncertainty from the present lack of federal guidance with regards to worst-case scenario planning is already causing significant economic consequences within the M&I sector in terms of both capital expenditures on risk management and in business and investor confidence. Pipelines are being built, treatment plants modified, wells drilled, lawsuits prepared, and developments delayed or cancelled, all at enormous expense and at the expense of investments into regional solutions that might work better. The economic consequences of this uncertainty are just as real as those that would result from the actual water shortages, because uncertainty drives decision-making long before any actual event. When federal policy direction is unclear, water-management decisions are likely to be based on incorrect assessments of risk and on misguided assumptions about the actions needed to adapt to future federal requirements.

The alternatives in the DEIS and the range of federal actions contemplated do nothing to address these uncertainties. In its alternatives, Reclamation describes a series of outcomes—e.g. reaching dead pool, deep cuts to the CAP M&I pool, zeroing out deliveries to the CAP and on-River Arizona priority 4 M&I users, and rapid shifts in year-to-year water availability—that could trigger local, regional, national, and international emergencies. The potential harms caused by the outcomes Reclamation is considering could threaten health and human safety and raise national security concerns. They would also have national and potentially global economic impacts. Reclamation's alternatives fail to exercise the agency's own inherent powers to avoid those emergencies and also fail to provide the tools for water users that will be necessary to address or avoid the emergencies Reclamation is creating. The alternatives also provide only the vaguest acknowledgement of Reclamation's extensive emergency powers and no guidance whatsoever as to the actual thresholds at which those emergency powers would be invoked.

6.1.3 Reclamation Must Utilize its Authorities and Define Agreements Necessary to Create a Workable Decision Space

It is essential that Reclamation use this NEPA decision process to carve out a sufficiently broad decision space and sufficient freedom of movement to, **at a minimum, avoid catastrophic impacts** and outcomes and preferably arrive at the **more sustainable management regime that Reclamation identified as being at the core of its purpose and need.** Reclamation must do this regardless of the current state of the Basin States' negotiations, misalignment among M&I and agricultural sectors, or threats of interstate or local litigation. Given the critical circumstances the

Basin is facing, Reclamation must explicitly claim and signal its ability to take necessary actions, even if those actions may be highly controversial or could trigger litigation.[162]

The DEIS recognizes that:

> "[t]he Secretary has the vested authority and responsibility to operate the System through coordinated operations, including the ability to respond to exigent and emergency conditions, pursuant to applicable federal law, the Decree, contractual obligations, and other elements of the Law of the River. **The full extent of Reclamation's operational authority has not been tested to date**—either operationally or through legislative or judicial review. **The primary reason for this is that management of the river has been based on agreements among Basin water users.** In most cases, Reclamation's authority to fully implement the agreements has not been in question; however, specific operational mechanisms negotiated as part of the 2019 DCP required congressional legislation to fully implement."[163]

At this point, however, such agreements have not materialized within either the Upper or Lower Basins. The DEIS could have helped in this respect by highlighting the types of agreements between users (both within and across Basins) that would reduce the negative impacts of shortage. Since the DEIS did not do this, it is important for Reclamation to now point to and explicitly call for both (1) the voluntary agreements among the Basin States and individual water users that will almost inevitably be necessary to minimize impacts; and (2) the federal actions that would be taken in the absence of those agreements. Each of these is necessary for shaping a decision space in which those agreements can feasibly be reached. In multiple locations throughout the DEIS, Reclamation identifies the need to seek "additional authorities" to implement the actions in the described alternatives.[164] Reclamation's failure to clearly define what specific authority it believes it currently lacks, what specific authority it believes it needs to carry out the activity, and what sort of agreement(s) are needed to make that activity possible makes it very difficult to assess the feasibility of or compare alternatives. More to the point, it also fails to provide useful guidance to state and local decisionmakers who will need to develop and implement those agreements – many of which (such as storage mechanisms) would appear to be needed almost immediately given the direction of current reservoir storage.

As we discuss in greater detail below, it is similarly important for Reclamation to describe the alternative actions it will take in the absence of such agreements. This should be undertaken within the scope of individual alternatives for elements that Reclamation could implement independently without an agreement. As has been demonstrated time after time in the Colorado River Basin, the complex intrastate and interstate arrangements that have shaped the modern Law of the River, including the 2001 Surplus Guidelines, the Quantification Settlement Agreement, the 2007 Shortage Guidelines, and the Drought Contingency Plan, have only been reached after the federal government had clearly signaled (and in some cases began to carry out) federal actions that would leave recalcitrant water users worse off than if they reached a collaborative agreement. Simply

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[162] Basin States negotiations have been publicly reported as stalled for months over disagreements regarding reduction targets and commitments, including the Upper Basin States' reluctance to commit to firm reduction or conservation measures. These dynamics underscore why Reclamation cannot reasonably premise its analysis on the existence of future voluntary agreements.

[163] DEIS, *supra* note 33, at 2-5.

[164] *E.g.*, *Id.* at 2-6, 2-12, 2-22,2-34.

calling for more collaboration is not enough. Reclamation needs to specifically define the outcomes that necessary interstate and intrastate agreements must attain and identify the actions that Reclamation will be forced to take otherwise.

In this context, the failure of the DEIS to consider any meaningful action that could be undertaken in the Upper Basin, even to ensure Compact compliance, provides little guidance and little incentive for the engagement of Upper Basin water users to act affirmatively to prevent a Compact violation and/or a system emergency from occurring that will in fact require federal action. If Reclamation simply remains silent, this leaves Lower Basin states and their water users only a few possible paths to drive such engagement: (1) high-level political conflict at executive and congressional levels; (2) interstate litigation; or (3) efforts that monitor, block, and/or buy out existing water uses. Phoenix would prefer that none of these occur, but it is also prepared to support those efforts and expend its own resources as necessary to force federal action.

The DEIS also fails to identify desirable pathways for Lower Basin users to work collaboratively to reallocate water during severe shortages. It also does not describe the federal actions that could occur if emergency conditions arise because users fail to reach agreements that would prevent those emergencies. As a result, the DEIS similarly provides little guidance for Lower Basin users to work together to develop such agreements. Absent this guidance, conflict and litigation becomes far more likely.

Given the exigent circumstances here, Reclamation will thus need to take positions that may be less than comfortable. The fact that its authorities are untested, or that under previous circumstances it has been unnecessary to test those authorities due to the creation of voluntary agreements among water users, does not excuse Reclamation from exercising its authorities now that conditions affirmatively demand doing so. Greater clarity about what federal actions will occur if cooperation fails is likely the only realistic way to motivate interstate and user-to-user collaboration.

6.2 Reclamation Must Evaluate Upper Basin Operational, Conservation, and Emergency Authorities as Part of its Action Alternatives

Reclamation's almost exclusive focus on proposed federal actions that affect users in the Lower Basin is perplexing. Reclamation's proposed alternatives seek to protect Lake Powell by affirmatively regulating only *downstream* water use—not the sources of supply or the upstream water uses that limit the flow into the reservoir. This focus all but completely ignores the all-important "supply" side of the mass balance equation that drives Colorado River storage. It results in alternatives that require massive reductions in Lower Basin water use in order to hold Lake Mead at elevations where Lake Powell release curves do not immediately create dead pool conditions in either reservoir.

The actions proposed in the Upper Basin across all of the considered alternatives are confined to simple re-balancing of storage volumes among the Upper Basin reservoirs and Lake Powell by temporary releasing water out of the Upper Initial Units (UIUs) (and only under the most dire conditions), defining various different release curves from Lake Powell, and considering the impact of small, entirely voluntary conservation programs that might or might not be implemented in the future. Phoenix specifically noted during both the agency's pre-scoping and scoping processes that Reclamation needed to evaluate a broader scope of activities that would embrace substantial

potential reductions in the Upper Basin to protect Powell storage, infrastructure, and preserve Compact compliance. The agency's failure to do so fails to meet the basic requirements and point of the NEPA scoping process: to help identify a reasonable range of alternatives for consideration.[165]

Critically, this approach also results in alternatives that restrict Powell deliveries in a manner that causes nearly immediate violations of both the Colorado River Compact and the LROC. This narrow scope of proposed action is thus completely inconsistent with (1) Reclamation's legal obligations, (2) the need to create the conditions for agreement among the Basin States to help Reclamation manage an incredibly dire set of circumstances, and (3) the agency's clear recognition in the DEIS that the risks to both Lake Powell and Lake Mead are driven by "hydrologic changes and water demands that are occurring throughout the Basin."[166]

This disregard of Upper Basin options reveals three key Reclamation policy decisions that the agency has embedded into the DEIS: (1) that "specific activities that may be undertaken in the Upper Basin to generate…conserved water are not within the scope of this EIS;" (2) that operations at the CRSP UIUs are "intended to remain within the scope of the existing RODs;" and (3) as stated in the Basic Coordination Alternative, that no Upper Basin conservation is being included "since it would require agreements outside of Reclamation's control."[167] Yet these self-imposed policy limitations cannot reasonably be interpreted to mean that Reclamation is unable—or relieved of its obligation—to take actions in the Upper Basin when such actions are essential to the effective, lawful management of the Colorado River system.

Given the imminent risks to the Colorado River system and the legal mandates on the agency to manage the system within the limits of the Compact, Reclamation *must* consider additional potential federal actions, operational adjustments, and activities to generate conserved water in the Upper Basin. There are at least four independent pathways available to the agency to accomplish that: (1) more aggressively utilize storage in the UIUs to protect Lake Powell and ensure Compact compliance; (2) consider and incorporate restrictions on water use in *all* federal projects, including Upper Basin projects, as part of its alternatives; (3) anticipate far larger contributions to storage or reservoir protection via water user agreements that are at least proportional to those assumed to be taking place in the Lower Basin; and (4) clearly delineate how it would utilize its broad emergency authorities and the thresholds that would trigger those emergency interventions. Each of these is discussed below.

6.2.1 Reclamation's Obligations and Authorities to Release Additional Water from UIUs

The alternatives for reservoir operations provided in the DEIS both fail to comply with Reclamation's affirmative obligations to release water from the UIUs and substantially understate Reclamation's available discretionary authorities to do so.

The CRSPA, as adopted, expressly confirms that its purpose was to "mak[e] it possible for the States of the Upper Basin to utilize, *consistently with the provisions of the Colorado River Compact*,

[165] 42 U.S.C.S. § 4332.
[166] DEIS, *supra* note 33, at 1-9 to 1-10.
[167] *Id.* at 2-16.

the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact." [168]

Contrary to this express provision of the CRSPA, Reclamation has seemingly adopted within the DEIS the position that the UIUs need to be treated as storage reservoirs that hold water primarily for Upper Basin use and development. As noted, however, this is not the case. The CRSP reservoirs were instead intended to provide a "holdover" function for the Upper Basin that would allow development while ensuring compliance with the Compact as those states developed their individual apportionments under the 1922 Compact and the 1948 Upper Basin Compact.

This understanding was formalized in the Secretary's 1950 feasibility report on the proposed reservoir system. The report, *Colorado River Storage Project and Participating Projects Upper Colorado River Basin*, [169] specifically concluded that at least 23 maf of active storage capacity would be necessary *for* the Upper Basin States to both utilize their apportionment and satisfy their delivery obligations under Article III(d) of the 1922 Colorado River Compact.[170] That number expressly excludes the amount of additional storage the Upper Basin States would need to satisfy their delivery obligation under Article III(c) to Mexico.[171]

The Colorado Supreme Court has recognized the CRSPA's purpose in its consideration of a water right associated with the Aspinall Unit in *Board of County Commissioners v. Crystal Creek Homeowners' Association* (*Arapahoe*).[172] As part of its decision, the Court noted that:

> Reservoirs allow water retention when flows are high. Then, when flows subside, that water can be released into the river to allow Colorado to meet its Compact obligations at Lee Ferry. Having a savings account in the form of the Aspinall Unit reservoirs allows Colorado water users to develop and use the water allotted to them by the Compact without fear of being "called out" at some time by the demands of the Compact....Congress intended CRSPA to serve as a mechanism for Upper Basin States to develop their water resources and still meet Compact obligations. CRSPA projects allow Colorado to develop its water resources while ensuring that adequate water remains in storage to help meet the Compact obligations in dry years.[173]

CRSPA's statutory directive confirms that Compact compliance—not exclusive support for Upper Basin development—was central to CRSP's design. The DEIS, however, does not propose to use Reclamation's authority as necessary to fulfill those purposes. Although Reclamation acknowledges that the Secretary retains authority to operate the Upper Basin reservoirs outside of existing Record of Decisions (RODs) if necessary, and that the DEIS modeling assumptions are "not intended to, and do not, limit the Secretary's ability to operate these facilities as necessary to respond to hydrologic conditions in accordance with applicable federal law,"[174] the proposed

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[168] 43 U.S.C. § 620 (emphasis added).
[169] Michael Straus & E. O. Larson, Bureau of Reclamation, Colorado River Storage Project and Participating Projects Upper Colorado River Basin, Project Planning Report No. 4-8a81-2 (Dec. 1950).
[170] *Id.* at 3, 18.
[171] *Id.* at 3.
[172] *Bd. of Cnty. Comm'rs v. Crystal Creek Homeowners' Ass'n*, 14 P.3d 325 (Colo. 2000).
[173] *Id.* at 334, 346.
[174] DEIS, *supra* note 33, at 1-30.

operating rules would nonetheless result in actions that clearly violate the CRSPA and the Compact.

6.2.2 Reclamation Must Operate the UIUs and Lake Powell as Necessary to Comply with the Colorado River Compact

Section 14 of CRSPA[175] explicitly directs the Secretary of the Interior (through Reclamation) to operate all federal Colorado River Basin facilities in compliance with the Law of the River, including the 1922 Colorado River Compact, the 1948 Upper Colorado River Basin Compact, the Boulder Canyon Project Act of 1928, and the 1944 U.S.-Mexico Water Treaty. CRSPA also grants each Basin state the right to sue the Secretary if Reclamation fails to comply.[176] As discussed below, this basic authorization provides both express and implied authority in Reclamation to adjust water deliveries from the UIUs as necessary to comply with the Compact and the Long-Range Operating Criteria.

The requirements of the Colorado River Compact are extremely clear: the "States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years."[177] The Upper Basin is further required to deliver one-half of the water owed to Mexico under the Treaty of 1944.[178] Together, this requires 82.5 maf of water over 10 years, less (at least arguably) 50 percent of any shortage to Mexico during the period that reduces Treaty deliveries. These obligations are binding federal law and reflect fundamental terms to which all seven Basin States expressly consented. [179] They operate as both a contract between those states and as federal law.[180]

The Upper Basin itself has acknowledged for many years that it had obligations to the Lower Basin under the Compact. For example, the Upper Colorado River Basin Compact of 1948 (Upper Basin Compact), which was specifically ratified by the Upper Basin States and Congress, provides that "[t]he major purposes of this Compact are…to established the obligations of each State of the Upper Division with respect to the deliveries of water required to be made at Lee Ferry by the Colorado River Compact."[181] Official records of the Upper Basin Commission include statements that clearly indicate its view of the relative priorities between the Upper and Lower Basins. For example, Commissioner Edwin Johnson stated that before any water is available to Upper Basin users, including "the people of Denver or Colorado Springs or the Air Force Academy…before Northern Colorado or the Arkansas Valley…the Western Slope of Colorado, the State of Utah, Wyoming and New Mexico, 7,500,000 acre-feet of water must be delivered to the Lower States." [182]

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[175] 43 U.S.C. § 620m.
[176] § 620m.
[177] Colorado River Compact art. III(d).
[178] Colorado River Compact art. III(c).
[179] *See* Ariz. Rev. Stat. § 45-1311; Colo. Rev. Stat. § 37-61-101; N.M. Stat. Ann. § 72-15-5; Utah Code Ann. § 73-12a-2; Wyo. Stat. Ann. § 41-12-301; Nev. Rev. Stat. Ann. § 538.010; California Act of March 4, 1929, ch.15, 48th Session (1929), at 38-39.
[180] *Texas v. New Mexico*, 482 U.S. 124, 128 (1987).
[181] Upper Colorado River Basin Compact, art. I(a) (1948).
[182] Upper Colorado River Commission, *Official Record*, vol. 16 (1964), Meeting No. 88, Denver, Colo. (Apr. 14-15, 1964) at 72. Commissioner Johnson also noted that he had individually objected to the ratification of the Compact by the State of Colorado on those grounds while serving as a state legislator.

A recent law review article by Scott Miltenberger provides a useful catalogue of dozens of instances where statements and actions by the Upper Basin make clear that at the time of the 1922 Compact, the 1948 Upper Basin Compact, and during the process of reservoir development during the 1950s, 1960s, and 1970s, the Upper Basin clearly understood its obligation to deliver sufficient flows to the Lower Basin.[183] Indeed, the nature of the Upper Basin's obligations to deliver water to the Lower Basin under Article III(c) and III(d) have never been particularly controversial—at least until recently.

The Colorado River Compact's requirements are omnipresent in the "Law of the River." Authorities almost too numerous to list expressly provide that their terms are subject to the Compact, controlled by the Compact, and shall not be construed to amend or conflict with the Compact.[184] This includes each of the BCPA Section 5 contracts with Lower Basin water users,[185] including CAP's master repayment contract[186] and tribal water delivery contracts executed pursuant to Congressionally approved water right settlement agreements. Significantly, it also includes the contracts that Reclamation executed with water users in the Upper Basin for project water from CRSP reservoirs.[187]

Together these provisions underscore a simple but critical point: Compact delivery obligations govern the operation of UIU facilities on the Colorado River.

6.2.3 Reclamation's Own Interpretation of the Compact is Clear, and the Agency Cannot Modify that Interpretation in this Proceeding

Reclamation's own interpretations of the Compact has been entirely consistent with the long-standing interpretations discussed in the previous section. Most relevant to the matters at issue here, Reclamation was directed by Congress in the CRBPA Section 602(a) to adopt operating criteria that would comply with these requirements and that specifically "shall"[188] (not may)

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[183] Scott Miltenberger, *'We Have to Judge the Future by the Past': The 1931-40 Drought, the Upper Basin Compact, and the Colorado River Storage Project*, 57 Ariz St. L.J., 1441 (2025).

[184] *See e.g.*, *Arizona v. California*, 547 U.S. 150, 166 (2006) (stating "[t]his decree shall not affect…[a]ny issue of interpretation of the Colorado River Compact"); 43 U.S.C. § 1551 (stating that "[n]othing in this Act shall be construed to alter, amend, repeal, modify, or be in conflict with the provisions of the Colorado River Compact" and other specified laws); 43 U.S.C. § 620h (stating "[n]othing contained in this Act shall be construed to alter, amend, repeal, construe, interpret, modify, or be in conflict with the provisions of….the Colorado River Compact"); Upper Colorado River Basin Compact art. I(b) (1948) (stating "[i]t is recognized that the Colorado River Compact is in full force and effect and all of the provisions hereof are subject thereto."); 43 U.S.C. § 1600g (stating "[n]othing contained in this Act shall be construed to alter, amend, repeal, modify, interpret, or be in conflict with the provisions of the Colorado River Compact"); 43 U.S.C. § 617l(b) (stating that "[t]he rights of the United States in or to waters of the Colorado River and its tributaries howsoever claimed or acquired, as well as the rights of those claiming under the United States, shall be subject to and controlled by said Colorado River compact").

[185] Contract for Delivery of Water between the United States of America, Dep't of the Interior, Secretary of the Interior and the State of Arizona (1944).

[186] Contract between the United States of America, Dep't of the Interior, Bureau of Reclamation, and the Central Arizona Water Conservation District for the Delivery of Water and Repayment of Costs of the Central Arizona Project, No. 14-06-W-245, Amendment No.1 (1988).

[187] The Central Arizona Water Conservation District provided multiple examples of such contracts in its comment letter submitted on the Post-2026 DEIS.

[188] 43 U.S.C. § 1552(a).

provide for the storage of water and releases of water from Lake Powell in a specific order of priority:

(1) *first*, releases to supply treaty obligations to Mexico referenced in Article III(c) of the Colorado River Compact;[189]
(2) *second*, releases to comply with and carry out Article III(d) of the Colorado River Compact;[190] and
(3) *third*, release of carryover storage that is not needed to meet the first and second priorities to the extent the Secretary finds it reasonably necessary to assure deliveries under the first or second priorities "without impairment" of consumptive use in the Upper Basin.[191]

It is important to note that the "without impairment" language does not appear in Section 602(a)(1) or (2) above, and thus the "without impairment" language does not apply to or limit the required releases to comply with the Compact.[192] Indeed, in the feasibility study for the CRSP, Reclamation specifically noted that the Project storage was needed to enable Upper Basin compliance with deliveries under Article III(d), and "if the Upper Basin is required to release water to Mexico during dry periods, corresponding reductions in Upper Basin use would be required."[193]

Accordingly, Reclamation itself then interpreted the specific Compact and CRSPA requirements in the adoption of the Long Range Operating Criteria (LROC) required under Section 602(a) of the CRBPA. The LROC specifically included those same priorities in its provisions.[194] The LROC determined that, to maintain compliance with the deliveries required by the Compact, these translated to an objective "to maintain a minimum release of water from Lake Powell of 8.23 million acre-feet" per year in times of shortage. Notably, the original LROC also specifically noted that these deliveries would need to be made in a greater amount "if necessary to deliver 75,000,000 acre-feet at Lee Ferry for the 10-year period ending September 30, 1972" [195] — presumably since lower annual deliveries necessitated by the filling of Glen Canyon Dam might otherwise have jeopardized meeting Compact deliveries during the earliest years of the LROC. Those same priorities and objectives were continued by the Secretary when he promulgated revisions to the LROC in 2005.[196]

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[189] § 1552(a)(1).
[190] § 1552(a)(2).
[191] § 1552(a)(3).
[192] *See Jama v. I.C.E.*, 543 U.S. 335, 341 (2005) ("We do not lightly assume that Congress has omitted from its adopted text requirements that it nonetheless intends to apply, and our reluctance is even greater when Congress has shown elsewhere in the same statute that it knows how to make such a requirement manifest."); *Russello v. United States*, 464 U.S. 16, 23 (1983) ("[Where] Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion.") (citation omitted).
[193] Michael Straus & E. O. Larson, Colorado River Storage Project, *supra* note 168, at 60.
[194] Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs, 35 Fed. Reg. 8,951, 8,951-52 (June 10, 1970) (art. III(1)(a-b)).
[195] *Id*. at 8,951 (art. II(2)).
[196] Review of Existing Coordinated Long-Range Operating Criteria for Colorado River Reservoirs (Operating Criteria), 70 Fed. Reg. at 15,875 (art. III(1)(a-b)) and (art. II(2)).

Importantly, the Secretary specifically determined that in applying alternative operating guidelines for the 20 year period of the 2007 Shortage Guidelines, the Secretary was not making any formal determination of any disputes between the Basin States with regard to the interpretation of 602(a), nor proposing to make any "determination with respect to the correctness of any interpretation of Section 602(a) storage and release requirements or other positions of the individual Colorado River Basin states."[197] As such, with the expiration of the 2007 Guidelines, the Section 602(a) storage and release requirements default to the existing LROC.

The DEIS incorrectly suggests that there is some question as to how these 602(a) requirements should be administered in the post-2026 guidelines, since the LROC "offers factors to be considered to determine 602(a) storage but does not present a set formula. The factors to be considered include the historical stream flows, the most critical period of record, probability of available waters, and estimated future depletions in the Upper Basin."[198] Critically, however, the only question that the LROC leaves room for Reclamation to interpret is how to determine when there is sufficient storage available that **more** than 8.23 maf should be delivered to equalize Lakes Powell and Mead, or for beneficial use in the Lower Basin pursuant to Article III(e) of the Compact. Article III(e) provides that the "States of the Upper Division shall note[sic] withhold water…which cannot reasonably be applied to domestic and agricultural uses."[199] We separately discuss the DEIS's proposed interpretation of this requirement in Section 8.6 below.

Even if Reclamation was making a mere policy change related to the direction of the agency's long-standing management of the River, and the manner in which it would be working to protect Compact deliveries, a federal agency must explain those changes.[200] The DEIS does not provide that explanation. But here, Reclamation proposes far more than just a policy change. The Secretary's interpretations of the mandatory 602(a) releases for Compact compliance were previously made and adopted as part of a Congressionally mandated, rulemaking process (involving the governors of all seven states and relevant agencies) and were published in the Federal Register at 35 Fed. Reg. 8951 (June 10, 1970). Importantly, Section 602(b) provides a process by which the LROC could potentially be modified "as a result of actual operating experience or unforeseen circumstances."[201] However, it is critical to note that (1) this process must be followed by Reclamation; and (2) Section 602(b) only allows those criteria to be modified if they "better achieve the purposes specified" in Section 602(a).[202]

Accordingly, in the absence of an agreement like the one adopted in 2007 allowing for a different release formula, Reclamation is bound by the plain language of the Compact, CRSPA, and the adopted LROC to make releases from Lake Powell and the UIUs sufficient to satisfy the Compact, the Treaty, and Section 602(a). Any change to that interpretation in the 2026 guidelines—such as

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[197] U.S. Bureau of Reclamation, Record of Decision: Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead 57 (Dec. 2007).
[198] DEIS, *supra* note 33, at 1-26.
[199] Colorado River Compact art. III(e) (1922).
[200] *See FCC v. Fox Television Stations, Inc*., 556 U.S. 502, 515 (2009) (Agency must show "good reasons for the new policy"); *National Cable & Telecommunications Assn. v. Brand X Internet Services*, 545 U. S. 967, 981 (2005) ("Unexplained inconsistency is" a "reason for holding an interpretation to be an arbitrary and capricious change from agency practice"); *FDA v. Wages & White Lion Invs., L.L.C.*, 604 U.S. 542, 569 (2025).
[201] 43 U.S.C. § 1552(b).
[202] § 1552(b). The purposes of section (a) are "to comply with and carry out the provisions of the Colorado River Compact, the Upper Colorado River Basin Compact, and the Mexican Water Treaty. § 1552(a).

adopting a Minimum Objective Release inconsistent with those requirements—would constitute an unlawful modification of the LROC under Section 602(b). As such, Reclamation's preferred alternative must include the maximum possible releases from the UIUs in support of a minimum 8.23 maf release from Lake Powell so long as any water is actually available.

6.2.4 Reclamation Cannot Consider the Upper Basin's "Alternative Theories" of the Compact

Despite their longstanding acceptance of the plain language of the Compact and CRSPA, the Upper Basin has recently begun to contest some of the core principles of Compact obligations that had previously been uncontested for almost 100 years.

For example, the Upper Basin States have recently begun to argue that their Compact obligation is actually not a delivery obligation, but rather a "non-depletion" obligation. Under this theory, the Upper Basin obligation does not apply if the cause of the Compact violation is simply the existence of less water (as a result of climate change or otherwise), rather than affirmative Upper Basin depletions of the available water. For example, if the Upper Basin is experiencing physical delivery shortfalls and is "shorting itself" as water supplies drop, they argue that the real "reason" for the reduced Compact delivery is the impact of an extraordinary drought—not the Upper Basin depletions of a diminished supply. In that instance, they argue that the Upper Basin should have no obligation to restrict its own use in order to achieve the required Compact delivery of 82.5 maf every 10 years.

This argument is, of course, inapposite to the actual language embraced by the Upper Basin states themselves in the Upper Basin Compact, which specifically referred to an obligation to provide "deliveries of water" to the Lower Basin and in other cited instances as noted above. However, even if the Upper Basin's new and novel argument was accepted, it would not particularly help the Upper Basin, since it is quite clear that Upper Basin depletions are in fact affirmatively working to deplete available water. As noted in Section 8.3, a review of the available data clearly indicates that Upper Basin water use does not actually decrease in any measurable fashion during most dry years. To the extent that this use does decrease, it typically decreases only in the year following if drought conditions continue.

The Upper Basin States in recent years have asserted other new theories as to why their delivery obligation is not a delivery obligation, including: (1) the 75 maf requirement is inequitable in light of changed conditions, (2) the division of water in the Compact should be considered a "mutual mistake" in the face of climate change, (3) the LROC misinterpreted the priority system described by the Compact; (4) the LROC failed to account for the Lower Basin's development of tributary water, such that the Mexico allocation should be borne by the Lower Basin and not shared by the Upper Basin; and/or (5) it is only fair that the Upper Basin should be able to develop its full 7.5 maf allocation under the Compact and that Lower Basin should bear all of the risk of shortages until it is using no more water than the Upper Basin.

These positions are not supported by either the historical record, the plain language of the Compact, Treaty, CRSPA, or any other relevant authorities upon which generations of Colorado River water users have relied. But regardless of their relative merit or lack thereof, Reclamation is not free to consider or adopt any of these positions in determining how to operate the Colorado River system. Reclamation is bound by the requirements of federal law, the agency's existing

interpretations of those laws, and its duties as the operator of the Colorado River reservoir system and multiple major projects.

Reclamation's fundamental obligation to comply with the Compact is also not altered by the 2019 DCP's Drought Response Operations Agreement (DROA), which established specific mechanisms for releases from the CRSP UIUs to protect Lake Powell elevations and which was adopted via consultation with the Upper Basin States. Whether or not the Upper Basin States have agreed to a different mechanism for such releases, or whether they regard additional releases as being consistent with the Compact or their rights to develop Colorado River water, Reclamation's obligation to comply with the Compact, the CRSPA, and the LROC remains paramount and unaltered.

6.2.5 Existing RODs Allow Reclamation Broad Discretion in the Normal Operation of the UIUs and Do Not Pose a Barrier to Releasing Water to Meet Non-Discretionary Compact Deliveries

While the DEIS states that it limits operations at the CRSP UIUs to actions that "remain within the scope of the existing RODs,"[203] it offers no analysis showing that these RODs constrain the agency's ability to comply with the Compact. The DEIS does not identify what operational flexibility the existing RODs allow, how the additional UIU releases included in some alternatives would or would not comply with those RODs, or whether the RODs would in fact prevent Reclamation from releasing more water—or doing so earlier—if necessary to meet Compact requirements. For example, in the Basic Coordination Alternative, Reclamation does not adjust Upper Basin storage levels and releases within the allowable RODs until Lake Powell reaches 3525, even though Reclamation's own modeling shows that this level of adjustment fails to prevent Lake Powell from reaching 3490.[204]

As shown in Table 1, which summarizes Reclamation's CRSPA authorities, Reclamation has quite broad discretion in the management of the UIUs in order to meet its overarching Compact delivery obligations. Reclamation has authority to balance various goals such as providing Compact-consistent water deliveries to the Upper Basin and providing water for temporary storage, power production, and environmental obligations, while also having expansive authorities to engage in emergency response. This discretion would thus permit Reclamation to analyze multiple pathways by which it might operate the UIUs in compliance with its legal obligations.

Table 1. Summary of Reclamation Authorities under CRSPA

Reclamation Action	Basis of Authority	Statutory Reference
Reservoir operations — adjust storage and release patterns to preserve Compact compliance.	CRSPA expressly authorizes Interior to regulate flows and operate CRSP units to enable Compact-consistent use of Upper Basin apportionments, supporting proactive release decisions.	43 U.S.C. §620

[203] DEIS, *supra* note 33, at 1-30.
[204] *Id.* at ES-27.

Contract administration — condition or modify delivery schedules; enforce contract terms.	CRSPA applies reclamation law contracting authority and allows Interior to set and enforce delivery and repayment terms as the operational mechanism for project administration.	43 U.S.C. §620c
Basin Fund control — use Basin Fund for emergency O&M; and system stabilization.	CRSPA creates and funds ongoing operation, maintenance, replacement, and emergency expenditures, supporting rapid operational response without new appropriations.	43 U.S.C. §620d
Hydropower operations — modify release timing to maximize firm power production.	CRSPA mandates operation to produce the greatest practicable firm power, allowing operational adjustments so long as Compact and other superior obligations are respected.	43 U.S.C. §620f
Environmental authority — acquire lands and construct facilities to mitigate impacts to fish and wildlife; integrate ESA/NEPA compliance.	CRSPA authorizes recreation and fish and wildlife measures, such as acquiring lands and constructing projects, in connection with project operations to meet environmental obligations.	43 U.S.C. §620g
Compliance and enforcement — escalate to Compact compliance measures; consider Supreme Court litigation.	CRSPA requires DOI to comply with applicable Compact water delivery obligations in operating federal facilities. In the event DOI fails to comply, any state may file litigation in the Supreme Court to enforce compliance and the U.S. is to be joined in the suit.	43 U.S.C. § 620m
Water banking and studies — expand Top Water Bank in Navajo Reservoir and supporting studies.	CRSPA-authorized study and banking tools in Navajo reservoir to support adaptive management measures that reduce risk.	43 U.S.C. §§ 620n, 620n-1

A review of the cited UIU RODs[205] demonstrates that the vast majority of the operational restrictions in those RODs are focused upon managing temperature and minimum flow volumes for the purposes of protecting fish and other environmental values *below* the UIU dams— not on setting the minimum volumes of water that must be *retained* in the UIUs as storage, or establishing upper limits on the volumes of water that can be *released* downstream. Rather, they layer the Endangered Species Act (ESA) compliance requirements on top of required obligations and compliance with the authorized purposes of those projects.[206]

[205] DEIS, *supra* note 33, at 1-30.

[206] U.S. Bureau of Reclamation, Record of Decision: Operation of Flaming Gorge Dam Final Environmental Impact Statement 3 (Feb. 16, 2006) ("Operate with the goal of achieving the [ESA-related] Flow and Temperature Recommendations, while maintaining and continuing all authorized purposes of Flaming Gorge Dam and Reservoir."

At their base, most of the UIU RODs are procedural documents that outline how the UIU will implement processes to ensure project operations meet ESA requirements.[207] Also, because of their ESA/fish focus, most UIU RODs are designed to achieve minimum flow and temperature requirements. Once those conditions are met, the UIU RODs are satisfied and do not address or restrict Reclamation's ability to release additional water downstream (although they could potentially restrict efforts to retain water in storage).[208] Thus Reclamation can simultaneously operate within the scope of the existing UIU RODs and reallocate storage within the UIUs and between the UIUs and Lake Powell to meet non-discretionary Compact obligations.

More to the point, however, even if the UIU releases were in some manner constrained by the provisions of the UIU RODs, Reclamation is nevertheless bound by its overriding non-discretionary obligations under CRSPA and the Law of the River to make Compact deliveries. In the event of a conflict between discretionary actions memorialized in a ROD and a mandatory federal statute, the agency is bound to follow federal law.[209]

While the ESA is an important statute that has imposed restraints on Reclamation operations in a number of circumstances, its reach extends primarily to *discretionary federal actions*, meaning that if an agency has discretion in how it manages water flows, it must prioritize ESA compliance

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[207] Under NEPA, a ROD is issued after the completion of an Environmental Impact Statement and serves as the agency's formal decision on a proposed action. *Protect Our Cmtys. Found. v. Lacounte*, 939 F.3d 1029, 1035 (9th Cir, 2019). A ROD must explain the chosen course of action, including whether all practical means to minimize environmental harm have been adopted, and if not, why not. 40 C.F.R. § 1505.2; *See also*, *Protect Our Cmtys. Found.*, 939 F.3d at 1035. Accordingly, the scope of activities agencies are bound to in a ROD is narrowly tailored to ensure compliance with specific substantive legal requirements. RODs issued to address ESA Section 7 are generally prepared in consultation with the U.S. Fish and Wildlife Service and include a Reasonable Prudent Alternative (RAP) outlining how to take agency action so that it does not jeopardize the continued existence of endangered or threatened species or destroy critical habitats. *Rio Grande Silvery Minnow v. Bureau of Reclamation*, 601 F.3d 1096, 1106 (10th Cir. 2010). A satisfactory RPA is one that complies with the jeopardy standard and can be implemented by the action agency. *See*, *San Luis & Delta-Mendota Water Auth. v. Jewell*, 747 F.3d 581, 634 (9th Cir. 2014). If the ROD reflects a reasoned evaluation of the environmental impacts, including the use of reliable data and scientific models, it remains binding unless "*significant new information arises"* that presents a seriously different picture of the environmental landscape than what was previously considered. *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 373-74; *Protect Our Cmtys. Found.*, 939 F.3d at 1040.

[208] Once an agency has implemented the actions outlined in a RAP, the agency has complied with both NEPA and the ESA and no further action is required by the ROD. *NRDC v. Haaland*, 102 F.4th 1045, 1073, 1077 (9th Cir. 2024) (holding that the requirement to comply with legal obligations upon a triggering event is not a source of discretion and the scope of Reclamation's discretion to conduct other activities was irrelevant because "FWS and Reclamation discharged their obligations under the ESA by establishing RPAs that 'complied with the jeopardy standard and which could be implemented'"). The UIUs regularly implement operational practices that meet the RAPs' required fish flows and temperature goals. Accordingly, as the ESA is satisfied by those operations, the limited authority recognized under the RODs ends. The RODs cannot be an independent source of authority for DOI to conduct additional unrelated activities such as limiting additional releases of water. Furthermore, by their nature, releases made to meet Compact deliveries that contribute to, or exceed, a ROD's flow requirements do not inherently conflict with DOI's ability to comply with Section 7.

[209] *National Ass'n of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 669 (2007) ("[Section] 7(a)(2)'s no-jeopardy duty covers only discretionary agency actions and does not attach to actions . . . that an agency is *required* by statute to undertake once certain specified triggering events have occurred.")

over other obligations.[210] Reclamation must therefore integrate ESA compliance into the suite of discretionary decisions that it can make while carrying out other non-discretionary actions that the agency is required to meet under federal law.[211] This can allow Reclamation to exercise some discretion where there are multiple potential paths by which it could satisfy a particular obligation and thus still comply with the ESA. The ESA also emphasizes cooperation with state and local agencies to resolve water resource issues, which allows Reclamation some leeway to balance multiple obligations within the ESA framework.[212]

However, nothing in the ESA permits Reclamation to ignore a non-discretionary duty. *Here, the release of water from the UIUs to satisfy Compact obligations is a non-discretionary duty,* and Reclamation does not have the authority to hold back water in violation of those Compact obligations. Reclamation may be obligated by the ESA to consider alternative ways, if any exist, to fulfill that non-discretionary duty. For example, Reclamation could properly consider whether it would be possible to satisfy an annual Compact delivery by sending water from Blue Mesa instead of Flaming Gorge, while still protecting the environmental resources as contemplated by a particular provision of the Flaming Gorge ROD.[213]

As such, even if Reclamation could demonstrate that it is operationally constrained in some manner by the RODs, there is no basis under which Reclamation could operate its facilities in violation of the existing LROC required by the CBPA and the required Compact releases.

6.2.6 Reclamation May Not Operate the UIUs and Lake Powell in the Illegal Manner Proposed in the DEIS and Must Release Water from the UIUs and Powell to Ensure Compact Compliance

The DEIS itself makes numerous statements that "the Secretary intends to consider, adopt and implement the proposed federal action consistent with the Law of the River, including the Colorado River Compact of 1922…and other provisions of applicable federal law."[214] Nevertheless, the DEIS does nothing to enforce Compact compliance and assure sufficient flows are delivered at Lee Ferry. Instead, the DEIS only identifies releases from CRSP UIUs or "additional Upper Basin actions" occurring when "required to protect critical infrastructure."[215] In other words, the alternatives propose to move water from the CRSP UIUs only for the explicit purpose of increasing elevations at Lake Powell and protecting elevation 3490, not for the explicit purpose of releasing water to meet Lee Ferry deliveries.

While the DEIS treats infrastructure protection as the operative purpose of UIU releases, that purpose cannot lawfully override Reclamation's core obligation to meet the Compact's delivery requirements at Lee Ferry. The modeled operations in the DEIS plainly violate these requirements. In every alternative considered, 10-year average flow volumes at the Lee's Ferry Compact compliance point fall below both the absolute 75 maf-over-10-year minimum flow requirement

[210] ESA Section 7 applies to discretionary federal control. 50 C.F.R. § 402.03.
[211] *Nat'l Ass'n of Home Builders v. Defs. of Wildlife*, 551 U.S. 644, 665, (2007) (ESA §7 doesn't "override" a nondiscretionary statutory directive, such as those found in the Clean Water Act).
[212] 16 USCS § 1531(c)(2).
[213] Alternatively, as Reclamation has frequently done, it could modify schedules for the timing and flow rate of releases over the course of the year to meet ESA requirements or other agency objectives.
[214] *See e.g.*, DEIS, *supra* note 33, at 1-4,
[215] *Id.* at 2-16.

initially delineated in the 1922 Compact, the 82.5 maf-over-10-year minimum flow requirement,[216] and the 8.23 Minimum Objective Release defined by Reclamation in the LROC.[217] Importantly, these violations occur not only in the "critically dry" range of hydrologies and the "dry" range of hydrologies evaluated but also in the "normal" range of hydrologies.[218] As described elsewhere in this document, it is reasonably foreseeable that "dry" and "critically dry" hydrologies will be increasingly commonplace moving forward.

The DEIS states that the median values for its Supply Driven, No Action, CCS Comparative Baseline, and Basic Coordination alternatives result in Lee Ferry deliveries above 82.5 maf only half the time.[219] These results hardly reflect agency action that attempts to comply with federal law—a posture further emphasized by the fact that under the "Critically Dry Flow" categories, "all alternatives result in over 75 percent of years with a Compact Point 10-year volume less than 82.5 maf."[220]

Under the most generous possible interpretation (with respect to the Upper Basin) of the LROC and CRSPA requirements—and assuming Mexico was shorted every year by the maximum amount that is provided for under the Basic Coordination Alternative (250,000 af)—meeting Compact and 602(a) delivery requirements would require a minimum 10-year flow out of Lake Powell of 81.25 maf (or 81.23 maf if accounting for intervening tributary inflows above Lee's Ferry). Neither the Basic Coordination Alternative nor any other alternative satisfies this minimum threshold.

Given that the Basic Coordination Alternative is proposed to reflect the exercise of Reclamation's authorities absent further interstate agreement, Reclamation appears to be claiming that it is reasonable for the agency to adopt new operating criteria in which its reservoir operations at both the UIUs and Powell would likely result in Compact, LROC, or Minimum Objective Release noncompliance more than half of the time under expected future conditions. An action that would generate those outcomes is in direct contravention of federal statute, not to mention decades of statements and actions by the United States and Upper Basin States alike that Compact deliveries at Lee Ferry for the Lower Basin and to Mexico are the highest priorities on the river. As such, Reclamation simply does not have the authority to operate its reservoirs in the manner proposed.

6.2.7 Reclamation's Further Ability to Directly or Indirectly Restrict Upper Basin Water Use

In addition to their powers to regulate releases from the UIUs, Reclamation and the Secretary of the Interior have clear powers to manage water deliveries within federal projects as necessary to protect a range of national interests, human health and safety, and meet their legal obligations under the Law of the River. For example, the CRSPA specifically recognizes this authority via

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[216] This is the actual legal requirement of the Colorado River Compact, given the Upper Basin's obligation to deliver 50 percent of the volume required for Mexico pursuant to the 1944 U.S.-Mexico Treaty.
[217] DEIS, *supra* note 33, at TA 3-63 to 3-70.
[218] As discussed in Section 8.1 of this letter, many of the drier sequences characterized as "dry" or "critically" dry should in fact be classified as "normal," while many of the hydrologies characterized as "average" in the 12-14 maf range should in fact be classified as "wet" in light of the changed hydrologic circumstances and expected trends.
[219] DEIS, *supra* note 33, at 3-70 ("at least 50 percent of years result in Compact Point volumes above 82.5 maf").
[220] *Id.* at TA 3-70.

Section 620(c), which subordinates those federal projects to the apportionments within the Compact and Treaty:

> All units and participating projects shall be subject to the apportionments of the use of water between the Upper and Lower Basins of the Colorado River and among the States of the Upper Basin fixed in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, and to the terms of the treaty with the United Mexican States.[221]

The CRSPA specifically directs Reclamation to follow state law with regard to the relative priorities of water rights issued *within* those projects. It states:

> in the diversion and storage of water for any project or any parts thereof constructed under [CRBPA] within and for the benefit of the State of Colorado only, the Secretary is directed to comply with the constitution and statutes of the State of Colorado **relating to priority of appropriation**; with State and Federal court decrees entered pursuant thereto; and with operating principles, if any, adopted by the Secretary and approved by the State of Colorado.[222]

But the CRSPA also expressly provides that **nothing in its provisions "shall be construed to alter, amend, repeal, modify, or be in conflict with the…Colorado River Compact**,"[223] and also expressly directs all federal officers to comply with the provisions of the CRSPA while also complying with the Compact and other components of the Law of the River "in the storage and release of water from reservoirs in the Colorado River Basin."[224]

Thus, while Colorado state law may govern the priority of water rights held under those federal delivery contracts relative to those of other Colorado appropriators, those priorities do not override Reclamation's independent obligations to comply with the Compact in its own administration of water deliveries under those projects.

Setting aside these specific provisions, CRSPA units are also subject to general Reclamation law: "in constructing, operating, and maintaining the units of the Colorado River storage project and the participating projects listed in section 1 of this Act [43 USCS § 620], the Secretary shall be governed by the Federal reclamation laws (Act of June 17, 1902, 32 Stat. 388, and Acts amendatory thereof or supplementary thereto)."[225] Like the CRSPA, the 1902 Reclamation Act requires that the Secretary of Interior defer to state law regarding the "control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder" to the extent not inconsistent with federal law.[226] In seeking the state-based water rights for the CRSP that are held in Utah (Flaming Gorge Unit), Colorado (Aspinall Unit), and New Mexico (Navajo Unit), Reclamation made repeated applications and secured decrees which reflect the Secretary's obligation to ensure that those

[221] 43 U.S.C.S. § 620c.
[222] § 620c.
[223] § 620h.
[224] § 620m.
[225] § 620.c
[226] 43 U.S.C.S. § 383.

water rights are utilized in a manner that ensures required deliveries under the Colorado River Compact.[227]

In keeping with those efforts, state water rights that are associated with the CRSP projects recognize the Compact delivery obligation. Filings and decrees variously associated with the Aspinall Unit,[228] Navajo Unit,[229] and Flaming Gorge Unit[230] all specifically reference downstream delivery obligations recognized in the Upper Basin Compact and the Colorado River Compact. As such, while Reclamation could not override the priority of a water right within a federal Reclamation project so as to prejudice a senior off-project appropriation elsewhere in Colorado, Reclamation clearly could curtail deliveries to a more senior water right on a Reclamation project in order to ensure Compact deliveries—even if this meant that the senior appropriator on the federal project was being curtailed while more junior, non-federal users were receiving water.

There are meaningful volumes of water allocated under Reclamation delivery contracts in the Upper Basin, including active contracts in the Navajo Unit, the Glen Canyon Unit the Aspinall Unit and the Flaming Gorge Unit.[231] Fortunately, there is also significant current storage in those projects that Reclamation can mobilize before it would be required to curtail those contracts.

Reclamation's exercise of these inherent authorities may well be politically challenging, technically complex, and administratively burdensome. Undoubtedly it would be preferable if any reallocation of water within the Upper Basin were undertaken within the framework of a broader interstate

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[227] See *Decree*, Colorado Civil Action No. 10045, at 8-9 (Montrose Cnty. Dist. Ct., May 1968) ("[t]he storage of water to be effected by [the Aspinall Unit reservoirs] is essential to Colorado and the States of the Upper Colorado River, as defined by the Colorado Compact of 1922, [citation], to meet the obligations therein imposed upon them, if any"); *Application No. 30414*, Explanatory Statement at 3 (State of Utah, Aug. 1958) ("[w]ater required to satisfy the purposes set forth in the Upper Colorado River Basin Compact will be released pursuant to a coordinated plan of river regulation adopted by the United States in the operation of all storage dams constructed pursuant to the [CRSPA]"); *Application for Permit*, Explanatory Statement at 1 (State of New Mexico, Mar. 1958) ("[s]torage releases will be made from the Navajo Reservoir for the above purposes as well as for power generation and for any river regulation and for making water deliveries to the Lower Basin and Mexico as may be required under existing compacts and Treaties").

[228] For example, in a 1968 petition to change certain elements of Interior's water rights for the Aspinall Unit reservoirs, the River District stated that "the storage of water to be effected by [the Aspinall Unit reservoirs] is essential to Colorado and the States of the Upper Colorado River, as defined by the Colorado Compact of 1922, [citation], to meet the obligations therein imposed upon them, if any." *Petition*, Civil Action No. 10045, at 4 (Jan. 1968). The Colorado Water Court used identical language when it granted the petition. *Decree*, Civil Action No. 10045, at 8-9 (May 1968).

[229] In Reclamation's combined application for Water Right Nos. SP-2847, SP-2849, SP-2873, and SP-2917, Reclamation stated that "storage releases will be made from the Navajo Reservoir for the above purposes as well as for power generation and for any river regulation and for making water deliveries to the Lower Basin and Mexico as may be required under existing compacts and Treaties." Application for Permit, Explanatory Statement 1 (Mar. 1958).

[230] In Reclamation's application for Water Right No. 41-2963, Reclamation proposed to appropriate water from the Green River for various purposes (listed above) and, notably, "for the purposes set forth in the above-mentioned Upper Colorado River Basin Compact and particularly Article IX(a) thereof quoted as follows…"9 *Application No. 30414*, Explanatory Statement at 1 (Aug. 1958). Reclamation proceeded to state that "water required to satisfy the purposes set forth in the Upper Colorado River Basin Compact will be released pursuant to a coordinated plan of river regulation adopted by the United States in the operation of all storage dams constructed pursuant to the [CRSPA]." *Id.* at 3.

[231] U.S. Bureau of Reclamation, *2023 Drought Response Operations Plan* (May 17, 2023),

agreement agreed to by the Upper Basin States. However, in the absence of such a framework, Reclamation must fully consider how it can exercise its authorities and operate its own infrastructure in compliance with federal law to protect broader national interests against eminently foreseeable risks. Given the legal duties Reclamation owes to the federal contractors within those Upper Basin federal projects, Reclamation should consider how it could *expand its consideration of alternative measures* in the Upper Basin that could help reduce the risks that Compact compliance obligations will otherwise create for those Upper Basin contractors.

6.2.8 Reclamation Must Consider a Broader Range of Voluntary Programs

In keeping with its broad responsibilities under the CRSPA and its duties to its contractors, federal Indian Tribes, and the nation, Reclamation must also consider and enable far broader potential conservation actions in the Upper Basin.[232] Reclamation explicitly notes that its alternatives are intended to both "incorporate components that are within existing authorities along with components that would require new authorities and/or new agreements among Basin water users to fully implement."[233] As such, the agency's arbitrary restrictions on the potential size of both voluntary conservation and storage programs in the Upper Basin are very difficult to understand.

As discussed elsewhere above, Reclamation's alternatives would massively reduce and reallocate Lower Basin water uses to an extent well in excess of what was envisioned in the Lower Basin states' own proposals. To achieve these reductions and reallocation, the alternatives rely on a combination of Reclamation's own authorities and the adoption of new agreements among the Lower Basin states and its water users. By contrast, the Upper Basin is subject only to voluntary conservation programs, with the scale of those programs operating at a fraction of the total amount of Upper Basin water use as compared to the Lower Basin. As shown in Table 2 below, maximum Upper Basin voluntary conservation targets are less than 25 percent of the mandatory shortages imposed on Lower Basin users. Similarly, even for voluntary conservation programs, the Lower Basin programs are between 2 and 5 times larger in every alternative.

[see table on following page]

[232] The City recognizes that the release of additional water from the UIUs will not independently solve the supply vs. demand mass-balance equation that has driven the Colorado River system to the brink of disaster, particularly if the hydrological trends in the Basin continue. Those additional releases can, however, buy time to implement other solutions that are focused on altering one or the other side of that supply and demand equation in both Basins. And they can be used to temporarily mitigate some of the worst case outcomes that might otherwise be associated with hitting dead pool elevations pursuant to an unexpectedly dry winter, including protection of Upper Basin federal contractors who would otherwise face immediate curtailment by Reclamation.

[233] DEIS, *supra* note 33, at 2-6.

Table 2. Comparison of Relative Shortage and Conservation Volumes

	Upper Basin			Lower Basin			
Alternative	**Maximum Shortage (kaf)**	**Maximum Conservation (kaf)**	**Percentage of Normal Delivery**	**Maximum Shortage (kaf)**	**Percentage of Normal Delivery (Shortage)**	**Maximum Conservation (kaf)**	**Percentage of Normal Delivery (Conservation)**
Supply Driven	0	200	**4.9%**	1,750	**23.3%**	1,985	**26.5%**
Enhanced Coordination	0	375	**9.1%**	2,500	**33.3%**	1,250	**16.7%**
Maximum Flexibility	0	500	**12.1%**	3,333	**44.4%**	3,000	**40.0%**

This disparity is simply indefensible. Lower Basin water use supports between 75-90 percent of all economic activity in the Basin.[234] Additionally, both agricultural and municipal water use efficiencies are already higher in the Lower Basin than they are across the Upper Basin.[235] If Reclamation deems it feasible to reduce U.S. Lower Basin water use by one-third with reductions that would require Lower Basin water users to absorb unknown but certainly enormous costs , surely it is reasonable to consider the potential for similar scales of voluntary conservation in the Upper Basin, where water uses are associated with far lower levels of economic value.

The need for this additional water is evident throughout the DEIS given the level of predicted risk to Lake Powell under the various alternatives. As discussed above, it is simply inappropriate to assume that risks to Powell elevations can be managed by restricting Lower Basin demands alone, while ignoring the fact that Upper Basin depletions operate to impact the water elevation at Powell at the exact same rate that releases from Powell to Mead do. Reclamation itself acknowledges this need for additional water given its modeling convention of introducing "gap water" into Lake Powell "whenever Powell cannot meet its required water year release because of low elevation infrastructure constraints."[236] Figure D-1 of Appendix D, which shows "gap water" volumes under different Upper/Lower Basin splits of natural flow under various hydrologic conditions, shows "gap

[234] Two independent studies, using different methods, bracket this range. James et al (2014) used an economic input-output model to estimate economic losses from a sudden drop in water availability from the Colorado River. Based on this analysis, 74% of the economic losses in terms of gross state product and labor income would be concentrated in the Lower Basin, with the remaining 26% in the Upper Basin (James et al., 2014, Table 19). Using different methods, Crespo et al. (2025) used a hydro-economic model to estimate the economic benefits of the Colorado River in terms of urban, agricultural and hydropower output. Based on their study, the Lower Basin accounts for approximately 90% of total economic output from the Colorado River (Crespo et al., 2025, Table 4). Tim James, et al., *supra* note 141; Daniel Crespo, et al., *supra* note 128.

[235] Richter et al. compiled data from municipal water utilities across the Colorado River basin. Using their raw data and weighting by population, the average municipal water use efficiency in the Upper Basin is approximately 143 GPCD, compared to approximately 133 GPCD in the Lower Basin. Brian D. Richter et al., *Decoupling Urban Water Use from Population Growth in the Colorado River Basin*, 149 J. Water Res. Plan. & Mgmt. (2023). Frisvold and Duvall r. estimated net revenue as a function of water use for agricultural products in the Upper Basin and Lower Basin. They estimated a net revenue of $485/AF in the Lower Basin, vs $93/AF in the Upper Basin, indicating that agricultural water use efficiency is approximately a factor of 5 higher in the Lower Basin than the Upper Basin. G.B. Frisvold & D. Duval, *Agricultural Water Footprints and Productivity in the Colorado River Basin*, 11 *Hydrology* 1 (2023).

[236] DEIS, *supra* note 33, at appx. D-1. It is important to note that the modeled "gap water" is the shortfall in available supply after subtracting Upper Basin conservation amounts. We understand this to essentially reflect the difference between the sufficiency of the voluntary conservation program to manage risks to Powell elevations versus the amount of Upper Basin conservation that would have been required to protect those elevations.

water" volumes in excess of modeled Upper Basin voluntary conservation on the order of 1 million acre-feet.[237]

To meet its legal obligations under the Compact and the LROC, Reclamation must thus, at a very minimum, consider a far broader range of voluntary conservation programs in the Upper Basin. Reclamation must analyze and preserve space for mandatory federal actions that might need to occur and to ensure that there is sufficient, pre-analyzed space that would allow user-to-user transactions to help meet or mitigate Compact delivery needs. To ensure that space, the size of these voluntary programs should be at levels that are least comparable or proportional to those analyzed for the Lower Basin and/or should be the subject of a sensitivity analysis to determine the most appropriate size given water delivery requirements. The agency's failure to do so means that it both fails to comply with its own fundamental governing authorities and fails to meet one of NEPA's most fundamental requirements: the consideration of a reasonable range of alternatives.

6.3 Reclamation Disregards or Downplays Important Lower Basin Authorities

Despite its disproportionate focus on Lower Basin reductions, Reclamation's consideration of the authorities that it could exercise in the Lower Basin is also inappropriately limited in scope. Reclamation proposes a broad sweep of actions that would result in potentially massive reductions to Lower Basin water uses as a whole. Yet it only looks at a very narrow range of options for how best to manage and distribute those reductions or how providing tools to accomplish that redistribution could mitigate the impacts of those reductions. This juxtaposition is particularly stark within the State of Arizona, where priority-driven reductions will have the earliest and most significant impacts.

With regard to managing the unique impacts to the CAP, the only option that Reclamation considers[238] appears under the Enhanced Coordination Alternative. Under that alternative, Reclamation departs from the priority system to allocate up to 3 million acre-feet across the board regardless of priority. While the latter alternative has the beneficial effect of limiting impacts to the CAP in favor of a broader distribution of shortage risk across all priorities, it also does not explicitly identify any criteria by which Reclamation determined that those particular levels of cuts would help to minimize risk or protect infrastructure.

Whether pursued through a relatively blunt approach like its proposed pro rata reduction or undertaken in a more tailored fashion, Reclamation does have substantial authorities, even on a non-emergency basis, which should at least be analyzed and considered as alternative means to manage shortage impacts in the absence of other agreements. Unlike in the Upper Basin, where those authorities are tied back to general Reclamation law and the requirements of the Compact, in the Lower Basin, Reclamation was granted broad authority under the BCPA—as recognized and further delineated in the *Arizona v. California* Decree—to serve as the "water master" of the Lower Basin.[239] In the Decree, the Supreme Court expressly noted that Congress, via the BCPA, had empowered the Secretary to step in and regulate water deliveries among the Lower Basin states, leaving "in the hands of the Secretary…full power to control, manage, and operate the

[237] *Id.* at appx. D-4.
[238] This is aside from the strict application of priority, mitigated by some amount of proactive storage.
[239] 3 U.S.C. §§ 617–619b.

Government's Colorado River works."[240] This includes discretion to alter deliveries and operations during shortage conditions.

The Court also specifically observed that the Secretary's water master authority includes the ability to mitigate future water shortages. The Court specifically noted that with respect to shortages:

> "...the Secretary is vested with considerable control over the apportionment of Colorado River waters... neither the Project Act nor the water contracts require the use of any particular formula for apportioning shortages. While the Secretary must follow the standards set out in the Act, he nevertheless is free to choose among the recognized methods of apportionment or to devise reasonable methods of his own. This choice, as we see it, is primarily his, not the Master's, or even ours. And the Secretary may or may not conclude that a *pro rata* division is the best solution... Requiring the Secretary to prorate shortages would strip him of the very power of choice which we think Congress, for reasons satisfactory to it, vested in him, and which we should not impair or take away from him. For the same reasons, we cannot accept California's contention that, in case of shortage, each State's share of water should be determined by the judicial doctrine of equitable apportionment or by the law of priori appropriation... None of this is to say that, in case of shortage, the Secretary cannot adopt a method of proration or that he may not lay stress upon priority of use, local laws and customs, or any other factors that might be helpful in reaching an informed judgment in harmony with the Act, the best interests of the Basin States, and the welfare of the Nation." [241]

As Reclamation is well aware, its ability to undertake a pro rata allocation, at least in the context of federal infrastructure protection, was previously tested by Secretary Udall in his May 16, 1964, order directing a 10 percent reduction in water deliveries on a pro rata basis to Lower Basin users from June to December of 1964. This action was targeted at conserving around 400,000 af of water in Lake Mead to combat low spring runoff as Glen Canyon Dam was filling, helping to reach the power head at Glen Canyon and maintain water levels at Lake Mead.[242] In an action brought by the Yuma Mesa Irrigation and Drainage District seeking to enjoin enforcement of the Secretary's order, the court found that Udall's order was within the Secretary's authority under the BCPA and that the reduction of YMIDD's water order was not a violation of Reclamation's obligations under YMIDD's 1956 Section 5 Colorado River delivery contract. [243] The court cited in particular the temporary nature of the order and the fact that the order provided that additional water would "be made available to meet such individual hardship cases as might develop."[244] Where, as here, the "welfare of the Nation" is potentially at stake, the Secretary thus has broad available discretion in managing shortage impacts in the Lower Basin.

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[240] *Arizona v. California*, 373 U.S. 546, 594 (1963).
[241] *Id.* at 593-594.
[242] *See Yuma County Water Users Association v. Udall*, 231 F. Supp.548, 549-550 (1964).
[243] *Yuma Mesa Irrigation and Drainage District v. Udall*, 253 F. Supp. 909, 912 (D.D.C. 1965).
[244] *Id.* at 912. A separate action by the Yuma County Water Users Association seeking a preliminary injunction failed to reach the issue of Secretarial authority, as the plaintiffs were unable to establish irreparable injury; the court found that the reduction was within the level of water deliveries that were routinely rejected by the District or passed through as waste flows to Mexico. *Yuma County Water Users Association v. Udall*, 231 F. Supp.548, 549-550 (1964).

Beyond this broad apportionment authority, within the Lower Basin, the procedures available under 43 C.F.R. § 417.1 et seq. ("Section 417") generally apply to every public or private organization that has a valid Colorado River delivery contract pursuant to the BCPA or other Reclamation Laws, and to federal establishments other than Indian Reservations in the *Arizona v. California* Decree.[245] These regulations provide that, prior to the beginning of the calendar year, the Regional Director is to:

> arrange for and conduct such consultations with each Contractor as the Regional Director may deem appropriate as to the making…of annual recommendations relating to water conservation measures and operating practices in the diversion, delivery, distribution and use of Colorado River water, and to the making…of annual determinations of each Contractor's estimated water requirements for the ensuing calendar year to the end that deliveries…will not exceed those reasonably required for beneficial use under the respective Boulder Canyon Project Act contract or other authorization for use of Colorado River water.[246]

In making these recommendations and determinations the Regional Director is authorized to consider a broad range of factors, including but not necessarily limited to factors such as:

> the area to be irrigated, climatic conditions, location, land classifications, the kinds of crops raised, cropping practices, the type of irrigation system in use, the condition of water carriage and distribution facilities, record of water orders, and rejections of ordered water, general operating practices, the operating efficiencies and methods of irrigation of the water users, amount and rate of return flows to the river, municipal water requirements and the pertinent provisions of the Contractor's Boulder Canyon Project Act water delivery contract.[247]

Taken together, these authorities thus provide a broad potential basis for Reclamation action in the Lower Basin to restrict lower value uses of water during shortage conditions, particularly where these would be necessary to protect infrastructure, human health and safety, important federal interests, or broader economic welfare.[248] These actions could administratively reallocate saved

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[245] They do not apply to any person or entity that has a contract under the Warren Act or Miscellaneous Purposes Act. 43 C.F.R. § 417.1. Section 417.5 of the code governs the Commissioner of Indian Affairs' procedure as to the estimated amount of water to be diverted for use on each Indian Reservation. 43 C.F.R. § 417.5.

[246] 43 C.F.R. § 417.2.

[247] § 417.3.

[248] Given that Reclamation additionally has authority to apportion unused water for consumptive use in other States pursuant to Article II(B)(6) of the *Arizona v. California* Decree, in an emergency situation Reclamation could potentially even exercise these authorities to at least partially rebalance deliveries among the Lower Basin States themselves. In relevant part, the Decree provides: "If, in any one year, water apportioned for consumptive use in a State will not be consumed in that State, whether for the reason that delivery contracts for the full amount of the State's apportionment are not in effect or that users cannot apply all of such water to beneficial uses, or for any other reason, nothing in this decree shall be construed as prohibiting the Secretary of the Interior from releasing such apportioned but unused water during such year for consumptive use in the other States. No rights to the recurrent use of such water shall accrue by reason of the use thereof." *Arizona v. California*, 547 U.S. 150, 156 (2006). For example, this would potentially permit the Secretary to reallocate water between states following the imposition of a Section 417 restriction on

water to the CAP to protect critical uses or simply leave water in Lake Mead to prevent reservoir declines.

It is also important to note that federal law makes clear that Reclamation must prioritize river regulation and the delivery of domestic and irrigation supplies above power purposes in the operation of Colorado River reservoirs. Among other relevant authorities, this prioritization is explicitly addressed by the Colorado River Compact,[249] Boulder Canyon Project Act,[250] and *Arizona v. California* Decree.[251] In most cases, there are critical needs related to the protection of dam infrastructure, engineering challenges and uncertainties connected to low reservoir heads, such that it is therefore desirable and appropriate to maintain minimum buffers of system storage that overlap with the continued operation of hydropower plants and production of hydropower. Phoenix fully supports efforts to rebuild storage in a manner that will take the Colorado River system out of an ongoing crisis management mode, which would be beneficial to hydropower production. But Reclamation cannot lawfully prioritize hydropower production over water deliveries. Any tradeoffs can and should be resolved in favor of protecting water deliveries rather than power production.

To be clear, **Phoenix is not recommending that Reclamation should immediately deploy those tools in support of a forced reallocation of water.** The City has consistently articulated its support for protecting the priority system and establishing mechanisms for more robust, user-to-user cooperation and transactional behaviors to support changing conditions. Such user-to-user interactions and related tools are not sufficiently considered in the DEIS, significantly increasing the risk that Reclamation would be required to depart from more predictable, priority-based allocations in the future. As discussed in Section 7.3, Phoenix and Tucson are actively working to avoid this outcome by working with other Arizona water users to develop and promote a framework of mutual support and water sharing arrangements, particularly during critical conditions, that could help to mitigate at least some of the potential impacts to both M&I, Tribal, and agricultural users. However, this effort is dependent on Reclamation using the remainder of this NEPA process to ensure the availability of necessary tools, the facilitation of more flexible use of Colorado River water, and the identification and deployment of required financial resources.

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agricultural water uses that resulted in Arizona, California and/or Nevada using less than its full available entitlement. Notably, this type of interstate reallocation could occur in favor of the CAP without any violation of the relative priorities established in Section 301(b) of the CRBPA, provided that Reclamation was not accomplishing the reallocation by further cutting MWD and San Diego beyond what would have otherwise occurred under its regular operating guidelines (e.g. ensuring that all M&I uses were equally protected from experiencing deeper shortages than those established and/or agreed to in those guidelines to govern deliveries under less extreme hydrologic conditions).

[249] Article IV(b) of the 1922 Colorado River Compact states that the impounding and use of water for power shall be "subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes." Colorado River Compact, art. IV(b).

[250] The Boulder Canyon Project Act provides that the dam and reservoir (Hoover Dam and Lake Mead) are to be used: "First, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and satisfaction of present perfected rights in pursuance of Article VIII of said Colorado River Compact; and third, for power." 43 U.S.C. § 617e.

[251] Article II(A) of the 2006 *Arizona v. California* Consolidated Decree states that the United States, its officers, attorneys, agents, and employees are "severally enjoined: (A) From operating regulatory structures controlled by the United States and from releasing water controlled by the United States other than in accordance with the following order of priority: (1) For river regulation, improvement of navigation, and flood control; (2) For irrigation and domestic uses, including the satisfaction of present perfected rights; and (3) For power." *Arizona v. California,* 547 U.S. 150, 154-55 (2006).

Regardless, however, given the incredibly dire outcomes that Reclamation forecasts in the DEIS, Reclamation must acknowledge these authorities and specifically explain how and when it would propose to use them in the absence of other solutions that will prevent the types of consequences described in this document. This guidance is essential to drive Reclamation planning and establish the actual thresholds that would trigger a federal response and the scope of that response. More importantly, as discussed in Section 7.3, this guidance is critical to help other decisionmakers and water users shape the state, local, and user-to-user responses, projects, and programs that will be needed to avoid ever reaching those thresholds in the first place.

6.4 Additional Emergency Authorities

Finally, in the event that the system cannot be managed in a manner that will prevent emergency conditions from occurring, Reclamation has an additional suite of emergency authorities that it could potentially invoke in response. These are authorities which the agency should specifically identify and describe in the context of any proposed federal actions, particularly when the DEIS's analysis essentially guarantees that these emergency conditions will occur. As noted above, a core NEPA requirement is the consideration of reasonably foreseeable effects and actions. [252]

Given the scope of its existing legal authorities, we urge that Reclamation expressly recognize its authority in the DEIS to address public health and safety concerns and define when and how such authorities would be used in at least the following four areas:

1) **Reclamation's authority to undertake at least limited departures from the Basin's "priority system" where necessary for river regulation to protect critical infrastructure, preserve health and safety, and meet fundamental federal objectives such as national security.**

Reclamation has broad authority within the Law of the River to take actions necessary for "river regulation," which is listed as the first priority for water use under the BCPA and the *Arizona v. California* Decree.[253] Under the Compact, BCPA, and the Decree, "river regulation" thus has a priority specifically higher than the delivery of water for irrigation or domestic use, even including the delivery of present perfected rights. While the limits of the Secretary's "river regulation" authority have never been explored, this authority would seem likely to embrace efforts necessary to prevent Lake Mead from reaching dead pool and generating a calamitous shortage that would likely have national economic consequences or implicate broader, fundamental federal obligations such as the protection of national security. Reclamation's ability to prioritize this use is fully anticipated within the context of federal water delivery contracts. Standard provisions in the BPCA water delivery contracts and federal Reclamation projects, like the CAP, provide specific waivers under which contractors must explicitly acknowledge the potential for circumstances in which full water deliveries cannot be made, and in which they specifically absolve Reclamation of any liability to ensure water deliveries in those circumstances.[254]

[252] *See* NEPA discussion in Section 2.
[253] 43 U.S.C. § 617e; *Arizona v. California*, 547 U.S. at 154.
[254] *See* Subcontract Among the United States, the Central Arizona Water Conservation District, and the City of Phoenix Providing for Water Service, Subcontract No. 07-XX-30-W0507, § 4.6 (2007).

2) Reclamation's clear authority to act to limit particular types of water uses and mandate improved efforts at conservation for various water use sectors, particularly during critical conditions.

As described above, under Section 417, Reclamation already has broad authority to restrict lower value uses of water in the Lower Basin during shortage conditions, particularly where these would be necessary to protect human health and safety, economic welfare, or critical national interests. However, during emergency conditions, those authorities are also clearly broader. For example, Reclamation is authorized to specifically exclude M&I water uses from consideration under Section 417 at the discretion of the Regional Director.[255] The agency can also reevaluate and modify previous recommendations and determinations in the event of "changed conditions, emergency, or hardship."[256]

3) Reclamation's clear authority to de-prioritize operational and timing considerations related to hydropower generation and other non-critical functions in the context of ensuring water deliveries.

As discussed above, Reclamation is already directed within the Law of the River to prioritize water deliveries over hydropower wherever a tradeoff would otherwise occur. The multiple reservoirs and significant system storage on the Colorado River normally allows Reclamation plenty of flexibility to meet both water deliveries and hydropower production objectives. However, in a context where Reclamation needs to explicitly curtail water deliveries to protect critical infrastructure and avoid the potential for even larger shortages in water deliveries, Reclamation cannot seek to preserve hydropower at the expense of opportunities to mitigate water shortages. As such, during emergency conditions, Reclamation should specifically exclude considerations related to maintaining power heads or storage buffers if doing so would restrict water deliveries. Any hydropower production during emergencies should be purely incidental to a strategy that protects higher priority uses of the system, and under no circumstances should hydropower be the basis for driving greater reductions in water deliveries or greater risks to river operations.[257]

4) Reclamation's authority to utilize other Lower Basin reservoir storage.

Reclamation must also specifically consider how, in addition to the mobilization of storage from the UIUs as discussed above, the agency could additionally utilize storage in the Lower Basin reservoirs below Lake Mead particularly Lakes Mohave and Havasu, to prevent catastrophic impacts to the CAP and other M&I users in the Lower Basin. Both Mohave and Havasu maintain

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[255] 43 C.F.R. § 417.1.("Contractors for municipal and industrial water may be excluded from the application of these [Section 417] procedures at the discretion of the Regional Director").

[256] § 417.4. Moreover, the code provides that the "right is reserved to issue regulations of general applicability to the topics dealt with herein." § 417.6.

[257] It is important to note that Phoenix is deeply concerned about and acknowledges the ongoing importance of hydropower and its associated revenues within the Basin as a means of funding important programs and meeting other federal obligations, including obligations to federal Indian tribes. Given that these values are already being threatened by reduced hydropower generation and will only be further threatened by the future challenges on the Colorado River, Phoenix both supports and calls upon Reclamation and Congress to urgently replace those revenues and address related revenue shortfalls by directing alternative resources to the Upper and Lower Basin Development Funds and the important programs and values that have historically been supported by hydropower revenues.

smaller active storage pools primarily for hydropower generation and re-regulatory storage. While there are important public recreation values associated with those reservoirs, those values are inherently lower in priority than the delivery of water for M&I and Tribal use on the CAP. While these facilities obviously need to be maintained at the minimum levels necessary to operate the diversions at the Metropolitan Water District California Aqueduct and Mark Wilmer Pumping Plants, there remains substantial active storage available above those minimum operating levels, and Reclamation should thoroughly explore how it can continue to provide re-regulatory with smaller active storage pools so that those reserves may be mobilized in the event of a water supply crisis.

6.5 Special Concerns Related to Reclamation's Treatment of CRBPA Section 301(b)

The City wishes to call out specifically the DEIS's apparent improper interpretation of Section 301(b) of the CRBPA, which provides the basis for the CAP's junior priority in the Lower Basin. Section 301(b) provides that Article II(B)(3) of the *Arizona v. California* decree:

> shall be so administered that in any year in which, as determined by the Secretary, there is **insufficient main stream Colorado River water** available for release to satisfy annual consumptive use of seven million five hundred thousand acre-feet **in Arizona, California, and Nevada**, diversions from the main stream for the Central Arizona Project shall be so limited as to assure the availability of water in quantities sufficient to provide for the aggregate annual consumptive use **by holders of present perfected rights**, **by other users in the State of California** served under existing contracts with the United States by diversion works heretofore constructed, and by other existing Federal reservations in that State, of four million four hundred thousand acre-feet of mainstream water, and **by users of the same character in Arizona and Nevada**.[258]

Section 301(b) is thus quite clear that it governs only the relative priorities **among users in the Lower Basin states**, and only **as to the Lower Basin's 7.5 maf allocation**. This renders CAP's Priority 4 allocation potentially junior in the *Lower* Basin. However, Reclamation's proposed actions in the DEIS would fail to deliver water sufficient to meet the portion of CAP deliveries that fit within that 7.5 maf allocation, fail to make deliveries from the UIUs and Lake Powell as required by statute and the Compact, and fail to short Upper Basin users to the extent necessary to make those deliveries. This effectively treats CAP users as being junior to the *entire* Basin. This is a clear violation of the plain language of Section 301(b) since the CRBPA specifically was not to be interpreted to "alter, amend, repeal, modify, or be in conflict with the provisions of the Colorado River Compact."[259]

As noted by CAWCD in detail in its comment letter, there are also important constitutional concerns that are raised by the operation of Section 301(b) in these circumstances, specifically that it discriminates between states and does not treat them as equal sovereigns. [260] CAWCD

[258] 43 U.S.C. §1521(b) (emphasis added).
[259] 43 U.S.C. § 1551(a).
[260] *See* CAWCD comment letter Sections 3(b) and (c), citing to *Shelby County v. Holder*, 570 U.S. 529, 542-45 (2013).

properly notes that in these circumstances, Reclamation's treatment of the State of Arizona and CAP pursuant to Section 301(b) imposes a disparate and ongoing burden on Arizona by subordinating CAP diversions during shortages, potentially implicating state equal sovereignty principles. Similarly, the anti-commandeering doctrine limits Congress' authority to commandeer state resources even with state consent. [261] While this issue has not been litigated, we agree that this argument warrants careful consideration by the Solicitor's office as part of the NEPA review, particularly given the significant federalism and state sovereignty interests implicated by water allocation decisions.

Similar issues are raised by Reclamation's treatment of Section 202 of the CRBPA, which specifically provides that the water owed to Mexico under the 1944 Treaty is a "national obligation."[262] As noted above, Article III(c) of the Colorado River Compact required the Upper and Lower Basins to share in the responsibility to make treaty deliveries to Mexico. Reclamation's treatment of this obligation in the alternatives considered in the DEIS would essentially place the entire burden of that obligation on Arizona, and more specifically just the CAP, which is clearly contrary to those requirements. This is particularly troubling in light of the multiple issues associated with the DEIS's analysis of shortages to Mexico. As noted in Section 4.9, there are multiple flaws in that analysis, and in the absence of completed consultations and adoption of a new Minute, we cannot know what will be required. Whatever is ultimately negotiated, however, it should be borne by the full Basin and the nation—not placed on the users of the CAP alone.

7 Defining Mitigation: What is Needed for Flexible Tools

An essential component of Reclamation's stated purpose and need was to "provide additional mechanisms for the conservation, storage, and delivery of water supplies in Colorado River reservoirs" and to "[p]rovide flexibility to build resilience and accommodate future needs and growth that are supported by Colorado River water supplies." Consistent with this stated purpose, DOI's NEPA Handbook § 2.3 requires an EIS to identify "any means" available to mitigate adverse environmental effects.[263] Yet the DEIS omits several categories of mitigation that fall squarely within Reclamation's available authorities or achievable agreements, undermining NEPA's requirement that agencies fully identify and analyze feasible measures to mitigate harm.[264]

Accordingly, the City focuses its comments on three areas where the DEIS's analysis is notably deficient: (1) its treatment of storage options and their effectiveness; (2) its evaluation of flexible transactions among water users; (3) its discussion of direct federal interventions to mitigate shortage impacts. Improving its alternatives and analysis in this area will be key to supporting the development of user-to-user agreements, programs, and transactions that can help the system adapt to and mitigate risks in a new Colorado River management regime.

7.1 Reclamation's Final Action Must Support Broadly Available Storage

Phoenix appreciates Reclamation's efforts to model the operation of a storage mechanism within multiple of the DEIS alternatives. Creative and flexible use of voluntary storage and recovery

[261] *New York v. United States,* 505 U.S. 144, 182-83 (1992).
[262] 43 U.S.C. § 1512.
[263] U.S. Dep't of Interior, NEPA Handbook, supra note 24, at § 2.3.
[264] See Section 2 above.

programs that allow participation by a broad range of water users will be a key strategy for managing water risk within the Colorado River. The availability of this mechanism to water users will benefit continued investments in water conservation and efficiency, co-investment in water supply solutions, and intra- and inter-state and international cooperation in managing water risk. Critically, however, as Reclamation moves towards an FEIS and Record of Decision, it is also important that the rules for such storage ensure that a future storage program is broadly available to Section 5 contractors, and that there is some ability for entities like CAWCD to be able to account for and deliver water within their systems that can be developed and used by a subset of their contractors and subcontractors.

In addition, Phoenix greatly appreciates Reclamation's inclusion of operationally neutral treatment of storage as a way to encourage and manage the impacts associated with voluntary storage activities. As described in our previous comment letters, including the draft storage concept that we provided to Reclamation (attached here as **Attachment E**) providing for this operational neutrality is critical to ensure that a new voluntary storage program can provide mechanisms by which subsets of users can support conservation and storage activities to provide protection against shortage risks, without thereby increasing risks to other water users associated with those programs when that water is ultimately withdrawn. The DEIS documents the value of this mechanism in its analysis of shortage risks under the different alternatives, noting that the alternatives including operational flexibility and storage reserves reduce the severity of shortages, as long as there is high participation in those conservation programs.[265]

However, it is critical that this storage mechanism be analyzed and incorporated at a sufficient pool size to provide protection against water risks, particularly to high value uses in vulnerable positions like the CAP. The storage mechanism must also be analyzed with consideration given to appropriate maximum limits on annual creation, annual delivery, and storage. This analysis is missing from the DEIS. While the DEIS alternatives include a number of different storage scenarios that work from different pool sizes, the selected pool sizes are not compared directly in terms of the relative effectiveness of the storage solutions in achieving mitigation of shortage risk. It is therefore confusing that, without this crucial analysis, Reclamation somehow concludes that the conservation pools are not particularly beneficial.

To ensure that the final selected pool sizes are sufficient to manage shortage risks, Reclamation should incorporate a sensitivity analysis within its technical appendices. That analysis should specifically look at the relative impact of larger or smaller total storage pools and creation/delivery limits on managing shortage risks to at least the most vulnerable users and infrastructure, including the CAP. The upper limits for these variables should then be based on some sort of optimization that balances impact resulting from additional storage on operations vs. effectiveness in managing shortage risks.[266] This analysis should consider uses in both the Upper and Lower Basins.

[265] DEIS, *supra* note 33, at 3-192, 3-199.

[266] A similar sensitivity analysis can and should be provided to demonstrate the relative benefits of operationally neutral vs. non-operationally neutral storage. Concerns about those impacts have been raised by multiple parties, but it is not possible to discern the actual differences in resulting impact due to the lack of any direct comparisons in the DEIS.

As noted above, there is no reason to limit Upper Basin voluntary programs to the arbitrary low levels at which they are currently analyzed,[267] nor to limit Lower Basin programs to their present sizes when the predicted shortage outcomes are so dire. Indeed, it is unclear why there are any upper limits imposed on total voluntary conservation at all, or why a no-limit storage option wasn't considered. Provided that storage is operationally neutral and will spill in the event that reservoirs fill, there is no apparent reason (aside from the actual availability of resources to store) that voluntary storage could not occupy up to the entirety of empty active storage space in each reservoir, simultaneously providing protection to water storers and to infrastructure. Indeed, the DEIS expands Lower Basin conservation storage by only 800,000 af beyond what was contemplated in the 2007 Shortage Guidelines, even though present-day risks are far more acute.

Of particular concern is the very small pool sizes that are modeled for Arizona conservation. In the Enhanced Coordination Alternative, Arizona's ICS limit is set at 700,000 af, which is essentially equivalent to what is already available to Arizona under current ICS rules, and Arizona's total annual delivery is limited to 620 kaf, which could support only 40 percent of the CAP for a single year. The Supply Driven Alternative allows Arizona up to 3 maf of cumulative storage, but limits delivery to 420,000 af, which as noted above, is a threshold without a reasonable justification. In each case, California's storage and delivery volumes are allowed to be far larger even though California faces relatively lower risk from the shortages anticipated in the DEIS.[268]

As a result, Reclamation's storage analysis does not specifically consider a storage pool size equivalent to the risks that Arizona will face. As the state exposed to the greatest level of shortages, it would make sense to model both larger overall pools and greater single-year storage and delivery limits so that they are larger than would reasonably be expected to be used/usable under any future conditions. For example, one could model 5 maf of Arizona storage and 1 maf of deliveries, which would be sufficient to protect up to all on-river Priority 4 and nearly full M&I and Indian pools. Given the empty storage capacity in both Mead and Powell, this level of storage is eminently feasible—assuming sufficient resources to fill it are available.

As we learned during the 2007 Shortage Guidelines, the approximately 2 million acre-feet of extra ICS storage that was modeled in the Final Environmental Impact Statement as part of the "federal pool" proved extremely useful in the years that followed because an additional NEPA process was not required. This extra analyzed storage allowed for both the creation of Mexico's Water Reserve in Minutes 319 and 323 and the allocation of additional storage space to the three Lower Basin states amidst the DCP.

Perhaps most importantly of all, it is critical that Reclamation not simply assume, as it has in the Basic Coordination Alternative, that, in the absence of a Basin States agreement, Reclamation would not be able to implement a storage program in the Lower Basin. In point of fact, there are several independent mechanisms by which Reclamation could allow such storage to occur. The following are potential mechanisms Reclamation could use to operate a storage program.

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[267] Although it is important to note that unlike a Lower Basin mechanism, an Upper Basin mechanism would clearly require some sort of interstate framework to enable it if it was attempting to store water that would otherwise be subject to release downstream as described in Section 6.2.

[268] The Maximum Flexibility Alternative allows up to 5 maf of Lower Basin storage, but does not allocate by state.

1) **Storage under a Seven Basin States agreement**. As Reclamation notes, a Basin States framework could readily authorize storage to occur in either or both Lakes Powell or Mead, in virtually any amount that might best aid future operations and guard against future shortage risks. Such a framework could also authorize movement of storage between Mead and Powell as described in the Maximum Flexibility Alternative and the original Conservation Reserve proposal from the conservation organizations.

2) **Storage under a Lower Basin States-only agreement**. The ICS mechanism under the 2007 Shortage Guidelines was authorized and documented via an interstate forbearance agreement among the major California water users, the State of Arizona, and Nevada.[269] No part of that agreement required the participation of any Upper Basin state. Reclamation's' stated authority to create the ICS program was based upon the exercise of Secretarial powers to allocate surplus water in accordance with Article II(B)(2) of the Consolidated Decree. The parties to the forbearance agreement specifically agreed to forbear any right they might have to the delivery of ICS, which was released in accordance with the rules specified in the 2007 ROD.

   Provided those same parties agreed to a new or extended version of the forbearance agreement, the Secretary would be well within his discretion as the watermaster of the Lower Basin to authorize storage on the same terms and conditions as was done in 2007. As noted in our previous comment letters, the process utilized to create ICS could be substantially streamlined and simplified. This streamlining could occur via the creation of one or more pre-approved, uniform ICS exhibits. This exhibit would be entitled to protection under the related forbearance agreement, instead of requiring individual approval of each ICS project. In the FEIS, Reclamation could analyze creation of specific categories of storage and associated criteria that could be authorized in such a Lower Basin agreement.

3) **Storage via Contracting Authorities**. In the absence of either a 7-state or 3-state agreement, it is possible for Reclamation to nevertheless operate at least a limited, state-by-state storage program pursuant to the Secretary's inherent authorities in the Lower Basin, potentially with just the agreement of certain individual parties in those states. This mechanism would rely on the Secretary's inherent authority to issue Section 5 delivery contracts for amounts of water up to each Lower Basin state's allocation under the Boulder Canyon Project Act "under such general regulations as he may prescribe,"[270] provisions of Arizona's master contract with Reclamation,[271] the provisions of individual Section 5 delivery contracts, and the Secretary's authorities under the *Arizona v. California* Decree. Reclamation could also consider more flexible use of off-stream storage within the CAP & MWD systems.

Given the scale of the impacts to the State of Arizona and to the CAP that are projected in the DEIS alternatives, it is critical that Reclamation seek to ensure the availability of a storage mechanism that will be *immediately* available to facilitate transactions among at least Arizona water users in 2027 to increase the options available to manage shortages on the CAP.

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[269] Lower Colorado River Basin Intentionally Created Surplus Forbearance Agreement (Dec. 13, 2007).
[270] 43 U.S.C.S. § 617d.
[271] Contract for Delivery of Water between the United States of America, Dep't of the Interior, Secretary of the Interior and the State of Arizona (1944).

7.2 Reclamation's Final Action Must Promote Substantial New Flexibility and User-to-User Cooperation

As part of any alternative that Reclamation adopts, Reclamation must specifically prioritize and broaden its support for transactional and transitional behaviors among water users that will be necessary to mitigate the impacts predicted by the DEIS. Given the significant declines in Basinwide available water supply that are evident within Reclamation's modeled hydrologies and the resulting imbalances between water supply and demand, large volumes of water will potentially need to be shifted among water users on short timelines to mitigate impacts to, and protect critical federal water infrastructure and water supply projects like, the CAP.

As discussed above, Reclamation can certainly mitigate many of those impacts by making improvements to the reservoir management guidelines that it adopts in its ROD, and those efforts could be further aided should a future interstate consensus emerge. However, regardless of the outcome of any interstate dialogue, any selected set of shortage values or voluntary reductions, or any other high-level policy determinations, the fundamental problems of resolving water supply and demand imbalances will necessarily need to be solved at the ground level wherever possible—through agreements, programs, and projects undertaken by the water providers and users who best understand their needs and the constraints within which they must operate.

Phoenix wishes to emphasize in the strongest possible terms the importance of Reclamation's support in helping to facilitate, plan, develop, and provide necessary regulatory support for those user-to-user agreements. As the Colorado River system experiences greater and greater stress, it is those relationships that will be key to preventing and managing conflict. They are also key to maintaining the resilience of the system without heavy-handed federal interventions that—while clearly necessary in worst-case scenarios to prevent catastrophic outcomes—are not desirable for or desired by the water user community. With sufficient time, planning, and financial resources, the City is convinced that this Basin can navigate the adverse hydrologies and ongoing declines in hydrologic yield that are stressing this system.

However, if these kinds of local arrangements do not materialize, or if Reclamation does not facilitate their development and support their operations with sufficient flexibility and resources, emergencies will inevitably occur. And whenever those emergencies implicate nationally important industries, domestic water deliveries, health and safety, or the economic welfare of Basin communities, Reclamation will ultimately be faced with a choice between allowing catastrophe or exercising controversial emergency powers. As such, while the City firmly believes that Reclamation must plan for those emergencies and facilitate clear understandings within the user community as to the alternatives if we cannot work together successfully, the City also wants to see Reclamation maximize the opportunity for water users to avoid getting into those situations to begin with.

This flexibility needs to encourage user-to-user collaboration both within and between sectors. For example, water conservation and water resource sharing programs must be built to accommodate operational realities. As discussed in Section 4.10, municipal water systems confront real-world constraints on emergency conservation efforts, rate changes, mobilization of reserve supplies, and development of new high-cost recycled or alternative sources. These constraints materially limit the extent to which cities can reduce or modify M&I demands on short timeframes. This inflexibility

thus mandates the ability to develop, access, and replenish excess reserves, including use of surface storage, underground storage, or various types of "dry-year options" in collaboration with users who can more rapidly or flexibly shift demands.

Managing the scale of reductions will require unprecedented levels of cooperation and coordination between federal system operators, regional infrastructure operators, and M&I end users. There must be a clear understanding of the problems that each level of government needs to be prepared to solve and the timelines for those solutions, as well as how response actions can be coordinated in the face of a future crisis. And it will be critical that the transactional tools necessary to reallocate and share water supplies be available immediately as the new guidelines take effect.

Despite proposing alternatives that would generate massive reductions in CAP supplies, the DEIS provides only a skeletal analysis relevant to that adaptive cooperation: (1) the extent of cuts that might occur to various users at different levels of curtailed deliveries from Lake Mead, depending on the alternative ultimately selected; (2) an analysis of the number of runs in which those cuts occur based on hydrology and demand estimates; and (3) some basic assumptions with regard to the amounts of voluntary storage that might be created and delivered to partially offset shortages on the CAP. In its FEIS, Reclamation must do more.

As discussed in Section 6, Reclamation has a broad range of authorities that should be analyzed and considered in this regard. It has the ability to direct its own operations to increase the flexibility of water use throughout the Lower Basin and maximize the potential for voluntary transactions among water users to manage the impacts of large-scale reductions.

As one example, crop substitution—the voluntary transition from higher water use crop(s) to lower water use alternatives—could be a critical tool for managing water supply/demand imbalances in the Colorado River Basin. Given the scale of agricultural water demand in the Basin, meaningful solutions to the Basin's supply/demand imbalance will require significant participation from the agricultural sector and new programs to facilitate it. While full-year fallowing may be appropriate in some circumstances, it should not be the preferred method for that participation, since it can have significant secondary economic impacts on farm labor, processing infrastructure, equipment and farm input suppliers, and rural communities.

By contrast, crop substitution can generate sustained reductions in consumptive water use over multiple seasons while keeping land in production. Pilots and early at-scale implementations of crop substitution and crop selection are already underway and need to be encouraged with financial incentives and accommodative policy to scale up successfully. In a drier Colorado River Basin, this kind of option will also open opportunities in appropriate circumstances for municipal-agricultural partnerships to help accelerate, scale, and sustainably manage these programs for mutual benefit. However, making these programs work will require (1) Reclamation's engagement and support to develop mechanisms to verify and account for reductions in consumptive use within both Lower Basin and Upper Basin contexts, and (2) ideally, programmatic analysis that will smooth future implementation by providing for a comparative analysis of the impacts and tradeoffs associated with different conservation programs.

In the FEIS, Reclamation can and should analyze mechanisms by which Reclamation would expeditiously measure and account for reductions in consumptive water use from various types of

agricultural conservation programs and other transactions that will inevitably be required to manage large-scale shortages and share water among and between various agricultural, municipal, and industrial users. This analysis should give particular attention to methods such as crop substitution, lower water use crop rotations, seasonal fallowing, and deficit irrigation that will encourage broader geographic dispersion of conservation activities (and their costs and benefits) throughout the Basin, minimize impacts to the agricultural sector, and better mitigate harms to rural communities while also generating sizable water savings.

Reclamation also can and should analyze impacts associated with movements of water from various points on the river to provide replacement supplies to users experiencing significant reductions in order to reduce the need for further NEPA analysis and approval. Reclamation might additionally consider including in the EIS a specific analysis and finding, for example, that simply re-filling a water supply to a pre-shortage level does not generate an environmental impact, limiting future NEPA reviews to the supply side only.

7.3 Reclamation's Final Action Must Plan for Potential Emergency Interventions

As discussed above, Reclamation has a series of emergency authorities that it can invoke in the event that Colorado River shortages begin to jeopardize critical national interests, economic stability and broad public welfare, human health and safety, or create other emergency conditions. It is essential not only that Reclamation specifically acknowledge those authorities but that it works to delineate, at least in general terms, (1) where those emergency thresholds will occur and the actions that Reclamation is prepared to take when and if they are reached, (2) how it would utilize its emergency powers to achieve an equitable sharing of the burden of shortage across both Basins, and (3) how it would protect the Basin's citizens and critical national interests served by the Colorado River. As discussed further below, this guidance is essential for planning both the scope of federal response but also for shaping state and local responses to ensure that water providers can prevent the Basin's citizens from experiencing a "day zero" event.

As stated in Section 6, those authorities specifically include Reclamation's authority to undertake at least limited departures from the Basin's "priority system" where that is necessary to protect critical infrastructure, preserve health and safety, and meet fundamental federal objectives, such as protection of national security. They include Reclamation's clear authority to act to limit particular types of water uses and mandate improved efforts at conservation for various water use sectors, particularly during critical conditions. They include Reclamation's clear authority to de-prioritize operational and timing considerations related to hydropower generation in the context of ensuring water deliveries and its obligation to do so regardless of resulting revenue impacts.

In addition to those inherent emergency powers, it is also critical to note that Reclamation has its own expenditure authorities that authorize the agency to shift funding to meet critical needs during emergency conditions. Reclamation's authority to shift funding can and should be considered as a means of minimizing the impacts of shortages, particularly to higher-value economic uses. This includes, for example, the Reclamation States Emergency Drought Relief Act (43 U.S.C. §§2211-2214), which authorizes Reclamation to assist water users during drought emergencies by taking actions such as facilitating water transfers, drilling wells, or providing emergency water supplies.

Reclamation should also specifically identify as part of its analysis where additional appropriations to Reclamation or other agencies could similarly support this type of mitigation. Reclamation could

also clearly define the volumes of water that should be targeted to generate offsetting storage via such federal programs; this information could in turn inform Congressional appropriations or state expenditures that are authorized in connection with the new operating guidelines.

As noted in Section 1, Reclamation's actions on the Colorado River will have significant national implications for a range of critical national interests, including ongoing efforts to onshore semiconductor technologies and ensure the availability of semiconductor supplies to U.S. industry; the production of important materials for national defense; and the protection of other important industries, including high-value winter food crops. Given the implications, Reclamation can and should engage with other key federal agencies with primary responsibility in those areas—specifically the Department of Commerce, Department of Agriculture, and Department of Defense—to explore additional long-term and emergency actions that could be taken to mitigate the impacts of new Colorado River guidelines on those industries, and the risks associated with a declining Colorado River water supply. These actions could also include, among other federal actions, a formal federal emergency declaration, the invocation of emergency authority under laws like the Stafford Disaster Relief Act to provide additional resources, or the use of the Defense Production Act to address water risks to critical industries or impose export controls on specific commodities that are contributing to water shortage risks in a manner that jeopardizes national interests.

The DEIS provides no indication that Reclamation plans to work with major M&I water users like Phoenix to evaluate what **actual** levels of reductions could realistically be absorbed in the preferred alternative that is ultimately adopted in the FEIS. Reclamation needs to undertake this consultation prior to finalizing its decision in the FEIS because it will guide the City's behavior and investment in the months and years to come and the City's ability to work constructively with other water users, CAWCD, the State of Arizona, and Reclamation to address water risks. For example, if Reclamation were to determine that CAP water supplies below 50 percent of the M&I pool constitute an "emergency" that justifies invoking its emergency powers and overriding normal deliveries to protect critical infrastructure and national interests, Phoenix could then work with ADWR, CAWCD, and other water users to: i) create new programs and mutual aid arrangements; ii) rules for the operation of the Arizona Water Banking Authority and recovery of stored water; iii) water wheeling, exchange, and interconnection agreements; and iv) other strategies that would avoid reaching that defined "emergency" level to the greatest extent possible.

Reclamation's guidance on storage, flexibility, and emergency plans is essential, and it must engage with major water users to determine where emergency thresholds should be set. Without clearer guidance from Reclamation on its plans to ensure access to use of voluntary storage mechanisms, to aid transactional flexibility, and to intervene during severe emergencies, it is extraordinarily difficult for major water users like the City to design and implement the programs, projects, and plans that will be needed to manage future Colorado River shortages.

For example, it is not possible to design a coherent strategy for the recovery of stored water from the Arizona Water Bank if water providers do not know whether the Bank must plan to operate during zero or near-zero water in the CAP or in conditions where there are very significant reductions, but there is still sufficient CAP water available to utilize other mechanisms reliant on an

operational CAP aqueduct.[272] It is not possible to design and fund cooperative agricultural water conservation programs if it is unclear which CAP M&I users and on-river priorities will be affected and in what amounts water allocations will be cut in shortage stages leading up, to and then at, defined emergency levels.

Phoenix and Tucson are actively working with other Arizona water users to develop and promote a framework of mutual support and water sharing arrangements that would support, among other things, Arizona Water Bank recovery efforts and urban-agricultural collaborative programs. The framework would also immediately create an "emergency reserve" to which Phoenix and Tucson would commit a portion of their own water reserves (and hopefully those of other jurisdictions and water users) to ensure that wet-water municipal water delivery shortfalls do not occur during the initial stages of Colorado River shortages. However, absent guidance from Reclamation, it is not possible to properly design or appropriately size that municipal emergency reserve or to create coherent rules to operate it.

To be clear, **Phoenix does not assert that Reclamation needs to use its authorities to simply overwrite the Law of the River** in order to protect the M&I sector. However, it is critically important that Reclamation acknowledge that it does have the legal authority to take multiple actions, on both an emergency and non-emergency basis, throughout the Colorado River Basin to protect the system that it stewards and the critical national interests associated with high-value M&I water uses that are reliant on that system. Reclamation must also clearly define the thresholds at which it plans to invoke those authorities. Water users need this guidance in order to plan effectively with regard to how to prepare for and adapt to a changing system, and to proactively develop the transactions, programs, and agreements that will be necessary to ensure that those emergency thresholds are *never reached*.

To the extent that it remains unclear what Reclamation will do should the system continue to decline in the absence of effective interstate agreements, Reclamation is also undermining the agency's stated goal of encouraging interstate consensus among the Colorado River Basin states and avoiding litigation. Reclamation's signaled approaches to managing these risks throughout the Basin, including potential emergency responses should dead pool conditions be reached, and the scope of users and sectors that would be affected by that approach, will centrally influence the direction of the ongoing interstate negotiations (and international discussions with Mexico). At present, Reclamation's alternatives impact only Arizona, California, Nevada, and Mexico – none of which are located in the Basin that is about to violate its obligations under the Colorado River Compact, and all of which have already proposed or borne significant reductions in their water use in support of a sustainable Colorado River.

8 Key Technical Concerns and Mass-Balance-Related Issues

NEPA requires Reclamation to base its analysis on high-quality, accurate scientific information and to meaningfully assess environmental and socioeconomic risks across the range of reasonable hydrologic futures.[273] Because NEPA obligates agencies to take a "hard look" using reliable,

[272] These mechanisms could include water exchanges for long term storage credit recovery, such as the established Phoenix-Tucson exchange.
[273] See Section 2 above.

scientifically grounded data, the technical flaws in Reclamation's modeling choices and assumptions fall short of the statute's required level of analytical integrity.

The CRSS modeling used by Reclamation is the foundation for the impact analysis in the DEIS. While the broad framework of the modeling—including the use of DMDU to evaluate a range of impacts—is sound, there are several technical issues with the choice of model parameters and the inputs and assumptions that unfortunately undermine the conclusions and the comparisons of alternatives. These issues violate the agency's obligations under NEPA to use the best available science. Several of these concerns are highlighted in the sections above. This section provides further details on these technical deficiencies and potential means to address them.

8.1 Flawed Hydrologic Assumptions Undermine the Modeling Results

We commend Reclamation's efforts to consider a wide range of hydrologic conditions[274] for the future period 2027-2060 to gauge potential impacts. However, the DMDU procedure seems to be designed to combine a wide range of hydrologic futures (i.e., a "kitchen sink" approach), rather than discretely focusing on the types of futures that are most closely connected to hydrologic, environmental, and socioeconomic risk.

The 1,200 hydrologic traces[275] in the DEIS modeling are the backbone of the system projections and the subsequent analyses to produce conditional boxplots (Section 3.2.6) and measures of robustness for the five alternatives. Ultimately, **the Combined ensemble includes a significant number of wet futures that are not consistent with future likely conditions**, **obscuring the risk of impacts associated with future conditions that are drier and warmer than historical experience**. In addition, the too-wet initial conditions[276] amplify the bias toward a wet future, compounding the problems associated with the Combined climate and streamflow ensemble.

We raise three specific issues that contribute to the wet bias in the future hydrologies included in the DEIS:

1) **The initial conditions for the system's reservoir levels are too high.** As described in more detail below, the hydrologic conditions in the Basin have deteriorated substantially since Reclamation completed the initial analysis in the DEIS. The winter of 2025-2026 has seen unprecedented warmth, record-low snowpack, and increasing drought conditions throughout the Upper Basin. As a result, the set of initial elevations assumed for Lake Powell in the initial modeling are now unrealistically high, which skews all the analytical results toward being overly optimistic.

2) **Several of the sub-ensembles are unreasonably wet.** In particular, the CMIP5-LOCA ensemble and CMIP3 Paleo-Reconstruction ensemble suggest that future flows would be high relative to the historical record (Figure F-1). For the CMIP5-LOCA ensemble, approximately 50 percent of the traces would exceed the long-term (1906-2024) average annual flow of 14.6 maf and only 10 percent of the traces would be below the recent (2000-2024) average flow of 12.4 maf. Similarly, for the CMIP3 Paleo-Reconstruction, over 50

[274] DEIS, *supra* note 33, at appx. F.
[275] *Id.* at ES-16.
[276] *Id.* at appx. G.

percent of the traces exceed the average annual flow for 1988-2024 of 13.0 maf. The fact that nearly 18 percent of the initial traces from the CMIP3 Paleo-Reconstruction (996 of the 5,600 traces) were removed from the sub-sampling analyses for being too wet (e.g., annual flows greater than 26.45 maf; see p. F-5 for details on the rejection criteria) indicates that this model is not simulating Basin hydrology with physical fidelity.

The flows from both the CMIP5-LOCA and CMIP3 Paleo-Reconstruction are inconsistent with recent modelling studies (e.g., Hoerling et al, 2024)[277] and analyses of the growing impact of warming on Colorado River streamflow (e.g., McCabe et al., 2024; Milly and Dunne, 2020).[278] A more reasonable distribution of streamflow would exhibit a decline in median flow and an increase in the frequency of low flow events, reflecting our improved understanding of the role that warming plays in reducing annual streamflow.

3) **Several of the sub-ensembles fail to exhibit drying over the 2027-2060 period, which should be expected with continued warming in the Basin.** Only two of the five ensembles exhibit clear drying over the 2027-2060 period. The CMIP5-LOCA ensemble shows an increase in median flow from the 2040s to the 2050s and an increased probability of high flow years; the CMIP3-Paleo Reconstruction shows a similar increase in median flows between the 2040s and the 2050s. Even the driest ensemble, Paleo Drought Resampled, shows an increase in median flows from 2027-2039 to the 2040s. Ensembles that maintain or increase average flows in the basin over the second half of the century are inconsistent with the broad consensus regarding continued future aridification of the Colorado River Basin (e.g., Lukas et al., 2020).[279]

We have identified two other methodological issues that undercut the credibility of the simulated hydrologies:

1) **The DEIS describes the steps used to compute the Combined ensemble but does not provide sufficient justification for those steps.** Within the 400 traces used to form the Combined ensemble, there is no rationale offered for the weighting scheme. The recent observations (1988-2023) receive a weighting of 9 percent (36/400); the CMIP5-LOCA projections receive a weighting of 16 percent (64/400); the Drying with Variability receives a weighting of 25 percent (100/400); the Paleo Resampled receives a weighting of 12.5 percent (50/400); and the CMIP3-Paleo Reconstruction receives a weighting of 37.5 percent (150/400). The weighting implies that the hydroclimates from some of the sub-ensembles offer a better or worse description of future conditions. If that is the case, then it requires explanation and illustration.

   In addition, Reclamation must explain the appropriateness of combining a relatively short period of observations (the Stress Test) with a sub-sample from large/long set of model-generated hydrologies. Inherently, the short period of observations and the long set of

[277] Martin Hoerling et al., *Critical Effects of Precipitation on Future Colorado River Flow*, 37 J. Climate 4079-93 (2024).
[278] Gregory J. McCabe et al., *Past and Projected Future Droughts in the Upper Colorado River Basin*, 51 Geophys. Res. Lett. (2024); P.C.D. Milly & K.A. Dunne, *Colorado River Flow Dwindles as Warming-Driven Loss of Reflective Snow Energizes Evaporation*, 367 Science 1252-55 (2020),
[279] Jeff Lukas & Elizabeth Payton eds., Colorado River Basin Climate and Hydrology: State of the Science (2020).

simulated hydrologies differ wildly in the range of variability. Simply combining them is akin to mixing "apples and oranges"—the two types of distributions are not interchangeable or equivalent. At the very least, a re-sampling procedure from the observations should have been implemented to generate a greater range of variability statistics that would be comparable to those from the model simulations and reconstruction.

2) **The DEIS relies on outdated CMIP3 climate models to generate the 150 traces for the Paleo-Reconditioned ensemble without providing justification for their continued use or explaining why more recent climate models were not employed.** The CMIP3 models were run to support the Fourth Assessment Report from the Intergovernmental Panel on Climate Change, published in 2007. The model runs were executed in 2005-2006, nearly two decades ago. While their age alone does not invalidate their consideration, there should be a set of reasons offered to support their use. The subsequent generations of models (CMIP5 and CMIP6) seem more appropriate, as they include significant improvements in spatial resolution and the representation of physical processes.

To address these deficiencies, the EIS should repeat the analyses for the conditional boxplots and the robustness diagrams using only the 100 hydrologic traces from the Drying with Variability ensemble. In addition, it should **abandon the unreasonable "starting points" represented by the Mid and High initial conditions and use the existing Low initial condition (e.g., 3511 feet for Powell) and another lower initial condition or conditions (see Section 8.4).**

The Drying with Variability ensemble appears to include the appropriate drying relative to historical observations, the decline in median flows over the 2027-2060 period, and still retain a wide range of high and low flow outcomes. In fact, it is the only ensemble that meets these three criteria. As explained in the DEIS,[280] the Drying with Variability ensemble was specifically constructed to account for physical changes that are occurring (e.g., warming, declining runoff efficiency); past variability that is consistent with the paleo record and larger than the recent record; and potential future increases in precipitation variability, which has a direct influence on the risk of high or low flow impacts. It is telling that the "reference hydrology" used for the vulnerability analyses presented in Volume III *is* the Drying with Variability ensemble, rather than any of the other sub-ensembles or the Combined ensemble. The use of the Drying with Variability ensemble as the reference hydrology appears to validate that it is the most appropriate representation of potential future conditions.

As for the initial conditions, it is absolutely crucial that the conditional boxplots and robustness analyses have an accurate starting point for reservoir levels in the Colorado River Basin. Starting from a point that is too wet will skew any subsequent risk or impact analyses, with particularly large errors in the coming decade.

Without correcting these hydrologic deficiencies, the DEIS does not appear to provide the scientifically reliable foundation that NEPA requires for evaluating impacts or for making a reasoned choice among the post-2026 operational alternatives.

[280] DEIS, *supra* note 33, at F-2.

8.2 Upper Basin Demand Projections and Historical Use Assumptions Skew Modeling Results

The CRSS model used in the impact analysis represents the Upper Basin largely as a "black box." However, the processes and assumptions within that representation materially influence model outcomes. One of the key assumptions embedded in this "black box" is the assumption that Upper Basin demands should be approximated by the 2016 Upper Basin Depletion Demand Schedules.[281] This demand schedule assumes Upper Basin demands of approximately 5.5 maf in 2027, growing to approximately 6.0 maf in 2060. As shown in Figure I-1, this represents a step-function increase in depletion demand of approximately 1 maf starting in 2027 relative to historical consumptive uses in the Upper Basin, after accounting for approximately 0.5 maf of reservoir evaporation in the Upper Basin. The use of this demand schedule across all the model runs in the impact analysis means that there is an explicit assumption in the model of a step-function increase in Upper Basin demand of approximately 1 maf (approximately 25 percent) as compared to the highest-ever consumptive use in the Upper Basin.

While demands and depletions are not the same thing, the embedded assumption in the model that Upper Basin demands are as high as 5.5 maf starting in 2027 nonetheless distorts the impact analysis in potentially significant ways. This is best illustrated in Figure I-2, which shows projected Upper Basin depletions under the 2016 UCRC demand schedule as compared to depletions under the other scenarios. As an example, across all flow conditions, the median annual depletions under the 2016 UCRC schedule are between ~0.5 and 1.0 maf higher than the depletions under the Steady State 4.5 maf demand schedule. This means that on average, the Upper Basin model is extracting 0.5 to 1.0 maf more from the available flow than it would if a lower demand schedule were used. This assumption therefore cascades through the analysis by reducing flows to the upper model boundary and distorting the outcomes of the modeling across all scenarios.

In addition to the issues with assumed future demands, the consumptive uses and losses (CU&L) used to represent historical demands are also too high. Recent work commissioned by Reclamation and completed by Pearson et al. (2024) used OpenET to directly estimate agricultural consumptive use in the Upper Basin.[282] The Pearson et al. (2024) results demonstrate that the Upper Basin agricultural consumptive uses documented in the CU&L reports are on average approximately 400 kaf too high. Further exploration finds that the Pearson et al. (2024) numbers are also probably too high, due to a poorly documented "incidental agricultural use" term embedded in both the CU&L and Pearson et al. (2024) values. This "incidental agricultural use" value averages approximately 350 kaf/yr under both the Pearson et al. and CU&L datasets. However, using remote sensing and GIS analysis findings, this value is unlikely to be more than 100 kaf/yr. Combined, these comparisons indicate that the historical CU&L values shown in Figure I-1 are on the order of 600 kaf too high, making the Upper Basin demand schedule even more unrealistic relative to historical norms.

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[281] Upper Colorado River Commission, Resolution Adopting 2016 Upper Basin Depletion Demand Schedules (2016), Upper Colorado River Commission, Resolution Adopting Updated 2016 Upper Division States Depletion Demand Schedule (2022).

[282] C. Pearson et al., *Historical Evapotranspiration and Consumptive Use of Irrigated Areas of the Upper Colorado River Basin*, DRI Rep. No. 41304 (2024).

To address these deficiencies in the representation of Upper Basin demands, the EIS impact analysis should be repeated using historical Upper Basin demands as its default, with exploration of increased/decreased future water use in the Upper Basin as a sensitivity analysis. The sensitivity analysis should consider the Pearson et al. (2024) finding that historical agricultural consumptive use estimates may be too high and consider a lower-bound of 3.5 maf for the Upper Basin demand schedule. This representation of Upper Basin demands and sensitivity to those assumptions would be grounded in historical reality rather than aspiration and would present a more realistic set of outcomes in the impact analysis.

It should also be noted that there are also multiple issues with Reclamation's Lower Basin demand schedule. For example, under the Basic Coordination alternative, Reclamation's use of a full-entitlement-by-2040 buildout schedule for the Lower Basin tends to exaggerate reductions to the CAP unnecessarily, particularly over time. While consideration of higher buildouts is more likely to be appropriate for the Lower Basin Tribes, many of the users listed in the State of Arizona depletion schedules in Appendix N[283] are unlikely to build out to full entitlements, particularly those users who have already undertaken significant conservation improvements and whose use has actually been trending downwards.

8.3 Upper Basin "Hydrologic Shortages" are Misrepresented

As discussed further above, the Upper Basin's recent argument that Article III(d) imposes only a "non-depletion" obligation is inconsistent not only with the Compact's language but also with the Upper Basin's own historical water-use behavior.

Reclamation maintains databases of naturalized flow and consumptive uses and losses for the Upper Colorado River. These datasets can be used to evaluate whether and how Upper Basin water use is affected by reductions in water availability. Based on a comparison of Upper Basin consumptive uses and losses versus Lees Ferry naturalized flow, there is essentially no relationship between these two datasets. Based on this high-level analysis, there is therefore currently no evidence that total Upper Basin water use consistently declines during drought years. In fact, the only (very weak) trend that is present shows a slight tendency towards *increased* Upper Basin consumptive uses as Lees Ferry naturalized flow decreases ($r^2 = 0.01$). This lack of a relationship between Upper Basin use and water availability based on historical uses challenges the concept of "hydrologic shortages" in the Upper Basin.

A comparison of consumptive use data with Reclamation records of naturalized flow and Upper Basin reservoir storage further illustrates how changes in Upper Basin consumptive water use are decoupled from Upper Basin hydrologic conditions. Between 1991 and 2022, the four years with the most severe drought conditions—calculated as departure from mean Lees Ferry naturalized flow—were 2002, 2021, 2012 and 2018. Those years saw departures of naturalized flow of -55%, -46%, -36% and -35%, respectively, relative to the long-term (1991-2022) mean. In those same years, agricultural consumptive use in the Upper Basin was actually higher than the long-term mean in as many years as it was lower. Departures in agricultural consumptive use as measured by Pearson et al. (2024) had departures from the mean of -10%, -7%, +12% and +18% in those four years, respectively.[284] Results are similar to Reclamation's total Consumptive Use estimates:

[283] *See* DEIS, *supra* note 33, at tbls. N-3 to N-6i.
[284] C. Pearson et al., *supra* note 281.

departures from mean total Upper Basin consumptive use in those years are -7%, -9%, +7% and +5%, respectively.[285] Thus while there are years in which Upper Basin "hydrologic shortages" appear to occur in response to low-flow conditions, there are also years where water use actually increases relative to the long-term mean in low-flow years. Comparison with reservoir storage data indicates that in those low flow years, hydrologic shortages are largely mitigated, or even eliminated, by reservoir releases that sustain Upper Basin agricultural and total water use.

8.4 Outdated Reservoir Conditions and Inconsistent Scenario Treatment Undermine the Impact Analysis

Reservoir conditions have deteriorated significantly since the DEIS modeling was completed, such that approximately half of the CRSS traces used in the impact analysis are now overly optimistic.

As described in the sections above, the initial conditions in the CRSS model runs are not sufficiently dry. This is acknowledged in Appendix G, where Reclamation compares the initial conditions used in the modeling to the initial conditions from the November 2025, 24-month study. However, conditions have deteriorated substantially since November 2025, to the point that **the *probable maximum* Lake Powell elevation as of February 2026 is now lower than the *most probable* elevation at the time the DEIS was prepared. Furthermore, the *most probable* elevation as of February 2026 is now more than 10 ft lower than the *probable minimum* at the time of the DEIS modeling. There is no scenario that approximates the probable minimum as of February 2026, which is approximately 30' below the low scenario explored in the DEIS.**

By itself, this inflated elevation level means that at least 600 of the 1200 ensemble members represented in the DMDU analysis are unrealistically wet based on what is currently known about initial reservoir conditions and that the DMDU analysis does not include any scenarios that acknowledge the current and deteriorating state of the Basin. These differences are not small: the probable maximum Lake Powell elevation as of January 2026 is more than 50 feet lower than the probable maximum at the time the DEIS modeling was completed. On the low end, the February 2026 probable minimum for Lake Powell is more than 20 feet below minimum power pool, whereas the probable minimum used in the modeling was more than 30 feet above minimum power pool. Overall, this means that approximately the upper 1/2 to 2/3 of the distributions shown in the impact analysis plots are unrealistically wet, which provides a false sense of optimism across all the alternatives evaluated in the DEIS.

To rectify this problem, Reclamation should repeat the impact analysis using only the subset of initial conditions that are consistent with what is known today. Reclamation should also expand the scenarios to include an initial condition reflecting the probable minimum estimated in the February 2026, 24-month study (i.e., a January 2027 elevation of Lake Powell that is 20 feet below minimum power pool). Given the potentially significant impacts that such a scenario would have on Lake Powell release volumes beginning in January 2027, this scenario would most likely create a new set of outcomes outside the range the DEIS currently considers.

[285] Bureau of Reclamation, Reclamation Updates Colorado River Consumptive Uses and Losses Data (June 7, 2024), https://www.usbr.gov/newsroom/news-release/4868.

8.5 The Treatment of Upper Basin Reservoirs is Inconsistent Across Scenarios, Which Complicates Interpretation of Impacts

Appendix A highlights that releases from the Upper Initial Units (UIUs) to protect Lake Powell are included in the modeling only for the Continued Current Strategies, Basic Coordination, and Supply-Driven alternatives. Since the Upper Basin is otherwise a black box in the modeling, this means that there is effectively more water available in the system under these three alternatives than in the others, and the Lake Powell and Lake Mead outcomes from these three alternatives are artificially supported by Upper Basin reservoir releases relative to the other alternatives. This distinction is only drawn out in the CRSS appendix, so that it is not fully transparent in the impacts analysis. This modeling discrepancy complicates any direct comparisons across the alternatives.

To rectify this issue, Reclamation should treat all alternatives equally with respect to assumptions about releases from the UIUs. As originally presented in the DEIS, this would mean that either all the alternatives should assume no releases from the UIUs to protect Lake Powell infrastructure, or all of them should explicitly allow these releases, using the same assumptions regarding what specific Upper Basin conditions lead to Powell Infrastructure Protection releases from the Upper Basin units. However, since as noted in Section 6, Reclamation is in fact legally required to make releases to comply with Compact requirements under relevant statutes, Reclamation should instead model Upper Basin reservoir releases consistent with those mandatory obligations and applicable rules. This consistency in modeling assumptions would allow for direct comparison of the impacts under the alternatives.

8.6 The Methodology for the Calculation Of 602(A) Storage is Arbitrary and Includes Terms that do not Represent Hydrologic Conditions in the Coming Decades

As detailed in Appendix J,[286] the equation for determining the 602(a) storage relies on historical critical flow for the 1953-1964 period (average naturalized flow of 12.13 maf/year at Lees Ferry), a constant estimate of evaporative loss across the Upper Basin (560 kaf/yr), and an estimate for the Upper Basin depletion schedule for 2027-2060. Two issues with the selection of these values that are discussed below render any estimate for the future 602(a) storage volume with this methodology unworkable.[287]

First, the large sensitivity of the estimate of the 602(a) storage volume to terms that cannot be objectively justified undermines the credibility of the methodology. As shown in Figure J-3, the 602(a) storage varies by approximately 5-10 maf based on the assumed critical flow level and period. Despite this large range of potential storage values, **there is no objective standard for selecting the critical flow level period**.[288] While choosing a value "near the middle" of the range is expedient, the large range of values, which is comparable to projected future low flows at Lees Ferry,[289] is troubling. Similarly, in Figure J-4, the 602(a) storage estimate is shown to vary by nearly 15 maf depending on the Upper Basin depletion schedule. Given the issues raised above (see

[286] DEIS, *supra* note 33, at J-2, tbl. J-1.
[287] See the discussion in Section 6.2.3 with regard to the various legal issues with Reclamation's 602(a) determinations.
[288] DEIS, *supra* note 33, at J-7.
[289] *Id.* at fig. F-2.

Section 8.2) about the disconnect between the demand schedule and past observed or likely future conditions, the magnitude of this sensitivity is concerning.

The 602(a) storage estimate requires an improved methodology that avoids an arbitrary selection of past hydrologic conditions or future demand, that reflects realistic future conditions, and that produces estimates with a narrower range of operating conditions. As discussed in Section 4.6, Reclamation must also follow the actual legal requirements associated with that 602(a) determination.

Second, the critical flow and evaporative loss terms are derived from past hydrologic conditions and are unlikely to represent future conditions. The critical period streamflow is set to 12-year average for 1953-1964 (12.13 maf) in the existing calculation. In the historical record, this value is comparable to many of the critical period flows for periods greater than 10 years. However, **all of these flows are likely considerably larger than projected future naturalized low flows**, as depicted in the Drying with Variability ensemble (which as noted, serves as the DEIS Volume III reference hydrology).

The projected flows in Fig. F-2 clearly show that critical flows in the future are likely to be below those from the historical record, regardless of the critical period chosen. From the "Driest 10-year panel" of Figure F-2, it is clear that the Drying with Variability hydrology exhibits a median flow of ~10.5 maf. Even the "Driest 20-year" panel shows a median flow of approximately 11.5 maf, well below the 12.13 maf that is currently being used. Additionally, the evaporative losses in the Upper Basin are represented by a constant (560 kaf/yr; p. J-2) in the existing calculation. With increasing temperatures, an increase in evaporative losses over time should be assumed.

9 Conclusion

By adopting decision criteria that do not reflect the full scope of foreseeable impacts, failing to develop a reasonable range of alternatives capable of meeting even those criteria, and omitting analysis of impacts affecting the vast majority of the Basin's economic activity, the DEIS fails to take the necessary review required by NEPA. As a result, the document does not provide a reasoned basis for agency decision-making and cannot support a final Reclamation decision and action unless these deficiencies are corrected and more complete, reasonable alternatives are considered and selected in the FEIS. A reasonable alternative could include an agreement based on a seven-state consensus should that ultimately emerge. Reclamation could and should also consider and explore an alternative based on a Lower Basin-only agreement if that opportunity instead materializes.

Regardless, in selecting final alternatives and preparing the FEIS and Record of Decision, Reclamation must correct the multiple deficiencies in the DEIS. Given those necessary corrections, the City respectfully suggests that only a limited set of viable paths forward remain—and that these paths can and should be implemented together:

1. **Advance a Legally-Compliant and Authority-Grounded Preferred Alternative**

The agency must advance a final preferred alternative that complies with Reclamation's fundamental legal obligations under the Law of the River, invokes additional available federal authorities to manage Upper Basin water use and undertake broader voluntary programs, and

better protects Reclamation's own infrastructure, including the Central Arizona Project. That preferred alternative must also specifically identify any further agreements that will be necessary or desirable to manage system risks of water shortages and to protect critical economic values and populations in the Lower Basin and the M&I sector.

To aid water user planning and the development of responses to more extreme conditions, Reclamation must also specifically define emergency actions that could be taken to protect critical interests, and the thresholds at which those interventions would occur.

2. Provide Mitigation Tools and Resources for Water Users

Regardless and at a minimum, Reclamation must equip water users with the financial resources, fundamental tools, and transactional flexibility they will need to cooperatively rebalance water resources. Reclamation must create the space within which the ground-level impacts caused by a new Colorado River management regime can be mitigated. This mitigation should include the adoption of a broadly accessible, properly-sized storage system in Lake Mead. In the absence of a seven-State agreement, this storage system could instead be implemented through a Lower Basin-only interstate agreement and/or the exercise of Secretarial authorities.

This mitigation effort should also include analysis of impacts associated with the movements of water from one point on the river to another to provide replacement supplies. It must specifically consider mechanisms by which Reclamation would expeditiously measure and account for reductions in consumptive water use from various transactions. These transactions will inevitably be required to manage large-scale shortages by sharing water among and between various agricultural, municipal, and industrial users. Reclamation's mitigation proposal should also include specific examples of agreements that could or should be undertaken among water users, and opportunities for the federal government to support those arrangements and potentially fund important projects.

3. Engage Other Federal Agencies and Mobilize National Resources

Finally, Reclamation and Interior should promptly engage with other departments of the Executive Branch, including the Departments of Commerce, Defense, State, Energy, Agriculture, and Homeland Security, to evaluate appropriate actions in light of their national and international consequences. These nationally-important issues also clearly warrant the rapid deployment of significant new federal resources through Executive and Congressional action to support the Basin as it transitions to a new Colorado River operating regime.

Phoenix appreciates your consideration of these comments as Reclamation works to develop and implement its Final Environmental Impact Statement and Record of Decision. We urge the agency to reconsider its approach and alternatives, and to help chart a clear path to user-to-user and state-to-state cooperation that will protect the cities, industries, farms, cultures, and ecosystem that have grown around the Colorado River. Phoenix would welcome any discussion or collaboration with Reclamation to achieve that cooperation as this process proceeds.

ATTACHMENT B

City of Phoenix Comments on the Bureau of Reclamation's "Request for Input on Development of Post- 2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead Under Historically Low Reservoir Conditions" Sept. 1, 2022

City of Phoenix

September 1, 2022

VIA ELECTRONIC DELIVERY

Ms. Carly Jerla
Senior Water Resources Program Manager
United States Bureau of Reclamation
CRB-info@usbr.gov

Re: Response of the City of Phoenix to the Bureau of Reclamation's "Request for Input on Development of Post-2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead Under Historically Low Reservoir Conditions"

Dear Ms. Jerla:

On behalf of the City of Phoenix ("Phoenix"), I want to express our appreciation for the opportunity to respond to Reclamation's Request for Input on Development of Post-2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead Under Historically Low Reservoir Conditions, as published in Federal Register Notice 87 FR 37884, June 24, 2022 (hereafter, the "RFI"). As the nation's third-largest municipal water provider, supporting a community and economy that has relied heavily on the Colorado River and the vast Reclamation infrastructure that guards and manages it, Phoenix is deeply interested in the development of new Colorado River guidelines.

We stand at a literal watershed moment in the history of the Colorado River Basin. There is a deep irony in the fact that the reservoir behind Hoover Dam – the iconic centerpiece of one of the most sophisticated and extensive systems of water management on Earth– now stands nearly empty. For more than twenty years, despite multiple groundbreaking efforts at interstate and international collaboration, we have been collectively chasing a declining Basin hydrology that is increasingly dominated by the impacts of climate change. These conditions have changed substantially since the adoption of the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead ("Interim Shortage Guidelines").

The process that Reclamation is opening with this RFI presents a critical opportunity to shape the future of this system in a manner that rises to the fundamental challenges of a changing climate in the arid Southwest. Considering that this system supports more than 40 million people in the U.S. and Mexico, millions of acres of farmland, and in excess of 17% of U.S. GDP, we must face the realities of the Basin's declining hydrology. Reclamation's leadership in shaping a new management approach will be critical; fundamentally, Reclamation must help the Colorado River stakeholder community move away from historic approaches that focused on the maximization of water use, and to guide the Basin towards an approach that focuses on long-term resilience of the system in the face of growing uncertainty.

To that end, Phoenix respectfully offers these comments in response to the RFI, focusing on specific considerations related to engaging stakeholders in the NEPA process, including key tools and information likely to be essential to that effort; the framing of purpose and need and potential scope of this effort; and some specific strategies and elements that Reclamation should consider.

Executive Summary

Process-Related Comments. Phoenix strongly supports the robust decision-making ("RDM") planning approach that Reclamation has outlined in the RFI. In keeping with the character of this planning process, Phoenix would propose the following:

- Reclamation needs to engage broader groups of Basin stakeholders in the development of operational strategies instead of relying primarily on state-led efforts – specifically, sector-driven participation, including municipal, tribal, environmental, Lower Basin agricultural, and Upper Basin agricultural sectors.

- The Draft EIS phase should cultivate a very broad set of scenarios to analyze management approaches that could become necessary on an adaptive basis.

- During the reconsultation process, Reclamation must exercise its authorities to prevent further declines in reservoir storage, so there is adequate time and space for collaborative, cooperative discussion and decision-making.

- Understanding the Basin's changing hydrologic system, increasing the transparency of available data and models, and ensuring the availability of information will be critical to enabling both appropriate planning and implementation of more flexible approaches to system management.

- Data must be based on more accurate assessments of actual and likely water use throughout the Basin. The data sets used for short-term forecasting and in all modeling must also reflect aridification trends in the Basin.

- Limitations of both the Colorado River Simulation System (CRSS) and Colorado River Mid-term Modeling System (CRMMS) models must be acknowledged within both the NEPA process and the management alternatives considered.

- Given the critical economic significance of the Colorado River system, the process must employ a robust means to evaluate economic impacts in connection with different alternatives, including consideration of high-end economic values and potential impacts to local economies.

Definition of Purpose and Need. In addition to the purposes defined in the 2007 NEPA process, three key additional elements should be incorporated into the agency's purpose and need:

- The future management of the Colorado River and the alternatives considered in the 2026 guidelines process must evaluate the degree to which system management allows for greater *notice* to water users—particularly municipal water providers—of both the potential for and the timing of major changes in the availability of Colorado River water, to allow meaningful time for users to adapt.

- The scope of management policies for reservoir management must embrace a precautionary principle, shifting away from viewing reservoirs as a means of *augmenting* water supply towards viewing them as a means of *stabilizing* the availability of water supply over time.

- Because Basin-wide system storage has reached critically low levels, the purpose and need should be broadened to consider operational rules that address and rebuild holistic system storage in Powell, Mead, and other reservoirs throughout the system, while considering relevant hydrologic trends.

Key Elements and Strategies. The following elements and strategies are essential to the success of any future considered alternatives:

- As an RDM analysis, an appropriate assessment of vulnerabilities and impacts requires the active engagement of affected sectors to consider sector-based metrics in the creation of signposts and triggers.

- Changing to a more precautionary management strategy will require Colorado River managers to lengthen the planning horizon in anticipation of future risks, and to consider the Basin on a more holistic basis.

- Meaningful limits on ICS must be implemented to discourage withdrawals of storage at lower elevations, prevent withdrawals at critical elevations, and avoid scenarios that might create or encourage a "run on the reservoir," while supporting mechanisms to increase flexibility within the system.

- The NEPA process should include an explicit evaluation of both the effectiveness and relative economic efficiency of short-term system conservation as a tool for managing reservoir decline versus longer-term investments in conservation and demand reductions.

- Managing and combating aridification will require broad investment in the Colorado River watershed. Reclamation can aid these investments by describing and considering the likely benefits and impacts investments could achieve.

We provide a more detailed explanation of each of these comments in the sections below.

1. Planning Process and Participation

Phoenix strongly supports the planning approach that Reclamation has outlined in the RFI that would shift from the more traditional, scenario-based planning approaches towards a planning method that is focused on "deep uncertainty" in the context of a nonstationary, drying system. Such an approach would identify "robust policies … that withstand a broad range of future conditions and are not based on a single set of assumptions about water supply and demand." *RFI.* Phoenix similarly welcomes Reclamation's recognition in the RFI that these policies must be tested against a broad range of conditions in the future, including "drought sequences that are longer and more severe than those that have been observed."

This type of planning approach is both entirely appropriate and fundamentally necessary in the current context to identify policies that will allow the Basin and its stakeholders to adapt to a changing hydrology and successfully manage this system in the face of uncertainty. Phoenix is similarly in the early stages of shifting its own planning efforts in this direction. We look forward to active participation and coordination with Reclamation and other Basin stakeholders as this process proceeds.

However, it is important to note that the more traditional, Basin-States-led process utilized in previous NEPA analyses (e.g., the 2007 Guidelines) is likely to be insufficient as a means to engage Basin stakeholders in the context of a robust decision-making ("RDM") process. While the Basin States leadership will clearly continue to play a core role in the development of future planning, substantially broader stakeholder engagement will also be essential to drive an RDM process.

Previously, Basin States leadership has negotiated from positional state level interests. This provided a mechanism to negotiate around broader issues – such as the allocation of shortages among Lower Basin users – with the Basin States providing leadership among their respective state stakeholders. At this time, however, those internal state consensus-building mechanisms are inadequate to represent or capture the vulnerabilities of specific users and sectors that should be addressed within a robust decision-making framework.

Along these lines, Phoenix strongly supports Reclamation's stated intention to engage tribal governments. As sovereign nations, it is entirely appropriate that the Basin's tribal governments have better access to the formal Basin States decision-making processes, and that the federal government vigorously uphold its trust obligations in consultation with the tribes. However, we also suggest that the planning and engagement processes for the broader Colorado River stakeholder community should be significantly different in this process.

Consideration of Sector-Driven Pathways

In a system that faces increasing risks of shortage and future reduced supply, various sectors are likely to be affected very differently, face different sorts of risks, and have different interests in the development of future planning approaches. In many cases, there may be greater commonality of risks and vulnerabilities among water users within a particular sector (regardless of geographic location) than there are among the users within particular states.

For example, the municipal and industrial sector may experience and evaluate risk associated with changes in water supply in a way that is different from other sectors in the same state. Examples of sector-specific risks include impacts to housing markets or changes to drinking water infrastructure necessitated by reduced water deliveries. In evaluating these risks, municipal and industrial users may have more in common with members of the same sector in other Basin states, especially when the impacts can easily cross state lines to affect the interests of others on the local, regional, or even national scale. Other sectors have similar shared characteristics and potential interconnections, including industry, production agriculture, and tribal communities and governments that rely on revenues from the leasing of irrigated land or water rights. These common characteristics and interconnected risks can and should be evaluated in a robust decision-making framework, but reliance on Basin State-led representation may lead to underappreciation of the sector's risk assessment.

As a result, we recommend that the stakeholder engagement process used to develop these 2026 guidelines cultivate *alternative, sector-driven participation pathways* in addition to the more traditional, Basin States-led approach to negotiation and solution development. This effort should be undertaken with the objective of engaging stakeholders both within sectors and across sectors to help identify (1) sector-specific or multi-sector vulnerabilities and (2) potential solutions or policies to address them that should be considered in an RDM-based process. At a minimum, we would suggest that this includes efforts to engage sector-specific groups to assess and explore municipal, tribal, environmental, Lower Basin agricultural, and Upper Basin agricultural vulnerabilities and solutions.

Consideration of Substantially Divergent Solution Sets

Similarly, while the development of a consensus-based preferred alternative may be a reasonable objective for adoption in the Final EIS/ROD, Reclamation should use the earlier stages of the NEPA process to fully consider multiple, divergent potential solutions for the future management of the Basin, and work from there to shape a consensus-driven, final preferred alternative.

In the Draft EIS for the 2007 Interim Shortage Guidelines, Reclamation's process resulted in two primary stakeholder-driven alternatives: one offered by the Basin States, and the other offered by a coalition of non-governmental organizations. By contrast, the other alternatives considered in the Draft EIS largely reflected appropriate variations on River management priorities (e.g., maximizing storage for hydropower generation, maximizing water deliveries without regard for shortage) rather than the outcomes of direct stakeholder engagement. While this approach was adequate at the time, given the scope of issues that must be considered as part of this new RDM-driven process, we propose that at the Draft EIS stage, Reclamation should work to deliberately cultivate a broad set of alternatives to explore the decision space as fully as is feasible. This broad set of alternatives can also be framed in a manner that provides wider analytical coverage, allowing Reclamation to anticipate and complete NEPA review of other management approaches that could become necessary on an adaptive basis.

Importance of Maintaining Time & Space for Discussion

The continued decline of reservoir storage in Lakes Powell and Mead is likely to substantially complicate the NEPA process anticipated in the RFI. Reclamation's recent call to the Basin States to reduce use by between 2 to 4 million additional acre-feet has resulted in difficult discussions among Basin interests about how (and whether) this can be achieved. Given the lack of current consensus, it seems fair to assume that those conversations will be ongoing for the foreseeable future.

As such, the next several years are likely to feature multiple emergency short-term actions taken to reduce water uses. These actions and the responses to them are likely to consume a substantial amount of public and stakeholder attention, result in litigation, and distract from the NEPA dialogue(s).

Phoenix expresses its sincere hope that, as Reclamation guides this dialogue while simultaneously seeking to prevent further declines in reservoir storage, Reclamation will seek to exercise its authorities in a manner that attempts to preserve the time and space for collaborative, cooperative discussion. In practice, this may mean making tough decisions and taking earlier or more significant actions than might otherwise be required in order to preserve future management options. For example, if we ultimately reach the decision point on new guidelines in 2026 yet have little to no remaining reservoir storage in the system, we could be forced to adopt management strategies that ignore a wider range of options that could have been available if reservoir storage had been preserved in the interim.

At the same time, the actions taken over the next several years to prevent further system decline are also likely to yield significant new information and approaches that can and should influence the development of alternatives in the NEPA process. It will be important to utilize the NEPA process to evaluate and revisit the results of these emergency short-term actions even as they develop; we cannot afford to wait for another planning cycle to consider those actions and their potential inclusion in post-2026 management strategies. As such, wherever feasible, the actions that are taken by Reclamation and others during the interim period should be added to the ongoing NEPA process and rapidly evaluated to help inform the development of the final preferred alternative.

2. Better Tools and Transparency

Although the Colorado River Basin has been the beneficiary of substantial investments of science, monitoring and data collection, and modeling efforts, the management tools available to Basin stakeholders are increasingly inadequate in the face of a rapidly changing, evolving hydrology, and a complex, dynamic economy and ecology that relies on the Colorado River. Driving better understanding of these dynamics, increasing the transparency of available data and models, and ensuring the availability of information in a manner that can reliably inform decision-making will be critical to enabling both appropriate planning during the 2026 process and in the implementation of the more flexible approaches to management that Reclamation is seeking to cultivate within that process.

To that end, the upcoming NEPA process should seek to provide as much information as possible about the realities, limitations, and possibilities related to water forecasting and water accounting to help boost understanding and transparency related to water use, the impacts of aridification, and the impacts of water management decisions. This would obviously align with the extensive efforts that Reclamation already has taken to improve both its projections and its communication of Colorado River Basin system conditions. Just as importantly, however, alternatives developed in the NEPA process should include the deliberate deployment and anticipated use of new and improved water forecasting and accounting tools as part and parcel of future water management decisions. From Phoenix's perspective, this should address at least five key dimensions of information as described below.

More Robust and Effective Water Accounting

The quality of data related to recent and current water demands varies widely within the Basin States and even within individual states. In some areas, particularly the major diversions along the Colorado River mainstem, water measurement is fairly precise; in other areas, particularly among the smaller diversions along the mainstem and across many Upper Basin tributaries, water use estimates are far less exact. Similarly, the data sets being used in modeling

related to current and future water demands often bear only a partial relationship to measured use and can reflect both anticipated and aspirational future uses of water.

The logic behind this data reflects both practical and political limitations, including widespread concern that better water measurement will inevitably lead to greater regulation. However, in a substantially over-allocated system facing ongoing, climate-driven hydrologic decline, robust and effective water accounting and accountability must be required throughout the Colorado River Basin. A lack of information ultimately protects no one if it leads to catastrophic outcomes and even larger required interventions throughout the Basin.

To this end, Phoenix strongly advocates that both the NEPA process and the water management alternatives considered seek to incorporate more robust and effective water accounting. This accounting should include, at a minimum:

- Data sets for current and future demand that map closely to recent use and actual trends in water demand, including deployment of indirect measurements (e.g., satellite-based ET measurement) where direct measurement is infeasible to better evaluate current use and changes in use over time.
- Efforts to improve the resolution of available flow data at a larger number of points in the Basin.
- Consideration of ongoing changes in crop types and irrigation methods in the evaluation of demand trends.
- Consideration of the impacts of temperature increases on future agricultural, industrial, and municipal demands.
- Better measurement of ecosystem uses of water and changes in response to drought and other stressors, including as a means of evaluating future environmental risks that may be associated with changing hydrological conditions.

Improved Forecasting and Supply Estimation Effort

Given the sustained hydrologic declines that have been experienced over the past two decades, it is critical that the data sets utilized in short-term forecasting and the data sets used in short, mid, and long-term system modeling better reflect aridification trends in the Basin. For example, in the runoff forecast setting, both the NEPA process and the management alternatives considered should address the limitations of current forecast methods and related uncertainties in decision-making, as well as evaluating means by which those runoff forecasts may be improved.

In establishing system-level modeling and forecasting, both the NEPA process and the management alternatives considered should also focus on incorporating appropriate data and data sets in modeling and decision-making relevant to aridification trends and future climate risks. For example:

- Unusually wet sequences or wet single years that may bias results should be segregated within historical data.
- Hydrologies should be developed that include climate-driven temperature impacts in the Basin, such as temperature-adjusted versions of historical flows, in addition to use of flow data derived from global climate models (which currently do not downscale reliably at the resolution of the Colorado River Basin).
- Aridification trends and temperature trends should be incorporated into hydrologic data sets, including typographies that account for potential landscape-level disturbances due to fire, vegetation changes, and other climate-related changes.
- Data sets should allow for the evaluation of system vulnerabilities to rapid changes in hydrologic conditions that may be possible in the future, including rapid swings in precipitation patterns (whether Basin-wide or on a regional basis).

Improvements to Colorado River Modeling

Both the Colorado River Simulation System (CRSS) and the Colorado River Mid-term Modeling System (CRMMS) models have known deficiencies that Reclamation has been working to address. While we applaud these efforts, it is important to acknowledge these shortfalls in both the NEPA process and the management alternatives considered, seek to improve the transparency of the model and its underlying data sets, and consider the potential management gains that

could be derived from further improvements to these models. At a minimum, Reclamation should consider the following:

- Incorporate, either directly or indirectly (via post-processing or the use of secondary models), the potential to model impacts on key resources that lie outside of the current scope of CRMMS or CRSS but that are likely to play a key role in the NEPA process or in development of future system management strategies, such as:
    - availability of water to particular mainstem users within the existing priority system, in order to evaluate impacts to particular end users, including tribes;
    - availability of water to contractors and subcontractors within the Central Arizona Project system;
    - availability of water to key environmental resources that may drive management decisions; and
    - defining desired flexibility to manage water between reservoirs to meet required or desired management objectives (e.g., Grand Canyon, below-reservoir reaches subject to BiOps).
- More clearly incorporating, identifying, and displaying key Colorado River system limits and thresholds, such as:
    - likely real minimum power pools and changes in hydropower production, including secondary impacts from loss of hydropower;
    - Glen Canyon Dam bypass limits; and
    - Central Arizona Project system minimum pumping/delivery limitations.
- Making CRSS/CRMMS model documentation, underlying assumptions, and input data sets readily available for access by advanced users.

Economic Data and Information

The NEPA process will undoubtedly evaluate a range of impacts, given the critical economic significance of the Colorado River system and the potentially national economic impacts that could be associated with different management regimes. It will be important to employ a robust means to evaluate economic impacts in connection with different alternatives, including consideration of high-end economic values and potential impacts to local economies associated with different management regimes. This evaluation should expressly incorporate consideration of environmental justice issues that could be associated with the impact of water shortages on the poorest and most vulnerable populations in the Basin, particularly as municipal water costs increase.

3. Framing of Purpose and Need

As Reclamation notes in the RFI, circumstances have changed substantially in the Colorado River Basin since the development of the Interim Shortage Guidelines in 2007. The past two decades have proved that the hydrology of the Colorado River is both less stable and less predictable than believed at the time. With the impacts of climate change now both evident and increasing, our approaches to manage this system must focus on the identification of vulnerabilities and the implementation of strategies to manage and minimize them. As such, Reclamation should frame the purpose and need for the proposed action to be considered in the NEPA process in keeping with those changed circumstances.

The 2007 Interim Shortage Guidelines focused on three elements:

- improving management of the River by considering tradeoffs between the frequency and magnitude of reductions of water deliveries, and considering impacts on Powell/Mead storage, water supply, power production, recreation, and other environmental resources;
- providing U.S. mainstream users a greater degree of predictability with respect to annual water deliveries, particularly under drought and low reservoir conditions; and
- providing additional mechanisms for storage and delivery of Lake Mead water supplies to increase flexibility. *See* 2007 Record of Decision at p. 7.

To a substantial extent, these remain valid considerations for the next set of Guidelines. However, three key additional elements should be incorporated into the agency's purpose and need, which would both modify and potentially broaden those elements beyond what was considered in 2007.

Providing Notice, Certainty and Time

The future management of the Colorado River and the alternatives considered in the 2026 guidelines process must evaluate the degree to which system management allows for greater *notice* to water users—particularly municipal water providers—of both the potential for, and the timing of, major changes in the availability of Colorado River water. It is also critical that water users have certainty of what management tools will be deployed under varied flow regimes. In the face of growing climate uncertainty, it is likely no longer possible to strive for complete system reliability, an issue that should be expressly acknowledged in the purpose and need for this action. However, as we rethink the management of the Colorado River reservoir system, we must still strive to use this system in a manner that allows water users the *time, space, and clarity* to adapt to changing water availability.

As an example, as of the date of this letter, there remains substantial uncertainty as to what volume of Colorado River water will be available to Phoenix as soon as January 2023 – less than five months from now. While Phoenix fully recognizes the critical importance of making significant additional reductions in water use, it is also important to recognize that, until very recently, both Reclamation and state leadership were publicly indicating that the risks to the system were far less immediate and severe.

Based on its own modeling and forecasting efforts, Phoenix began preparing for the current situation even in advance of the Drought Contingency Plan, including the early construction of the Phoenix "Drought Pipeline," which will bring non-CAP water supplies to areas of Phoenix now almost wholly dependent on the CAP. Despite those efforts, the lack of clarity regarding what actions will be taken by Reclamation or the Basin states in response to the known and existing hydrologic trends impedes Phoenix's efforts to implement conservation efforts or the time and space necessary to make substantial investments and build infrastructure necessary to address key water delivery vulnerabilities.

Ultimately, it is nearly impossible to make significant changes to a major municipal water system on short notice. Like other Basin municipalities, Phoenix has prepared for the possibility of a significant and unexpected short-term disruption to the Colorado River supply (such as a CAP canal outage or other multi-month supply disruption). However, managing long-term or even indefinite water supply disruptions requires significant infrastructure adaptation for Phoenix to deliver even its short-term emergency water resource reserves to customers. With longer advance warning and greater certainty of actions that will be taken in response to trending hydrologic conditions, these inherently limited supplies can be preserved as a hedge against truly unforeseeable events, allowing Phoenix to accelerate implementation of more permanent, infrastructure-based solutions. This protects public health and safety and potentially saves residents millions of dollars in net costs.

Future management strategies for the River must explicitly acknowledge that the timeframes for adaptation and changes to infrastructure, particularly in the municipal sector where there is little to no tolerance for sudden and significant supply disruption, are inherently long. It must be recognized that the acceleration of those timeframes due to unexpected disruption in supply can threaten public health and safety, and massively increase the costs of adaptation. Just as importantly, any rapid changes in supply availability can challenge public confidence in municipal water delivery systems.

While Phoenix can and will manage through the disruptions that current events are likely to cause, it will incur additional costs that would not have been necessary had efforts to restrict water use begun earlier. It is critical for both federal and state leadership to understand and acknowledge that the current course of management has already caused and is likely to continue to cause measurable (and until recently, avoidable) economic damage both regionally and nationally. Because economic damage can be precipitated by even perceived vulnerabilities, it can occur even if the municipal water system ultimately makes the necessary adaptations to provide uninterrupted deliveries.

Working on a Precautionary Principle and Focused on Resilience

To provide this notice and time, the scope of management policies that should be considered in this NEPA process must necessarily embrace a precautionary principle in reservoir management that shifts our broader philosophy of water storage away from viewing reservoirs as a means of *augmenting* water supply towards viewing them as a means of *stabilizing* the availability of water supply over time. Obviously, the long-standing work of Reclamation has always considered both of these goals; however, in the Colorado River system, our recent management of the major reservoirs has focused far too much on preserving delivery of Colorado River Compact volumes and less on the sustainability of a Colorado River in decline.

This effort has unfortunately failed to account for various long-standing issues such as: the failure of the *Arizona v. California* decree to allocate reservoir evaporation losses; the obvious disconnects between fixed allocations and declining hydrologic yields; and the notion that there remains "undeveloped" water within the Basin States' allocations. As such, the purpose and need for the next action must avoid the historic focus on maximizing diversions, as well as the tendency to make only incremental, reactive changes to water use even as the system continues to decline.

Similarly, given the critical importance of Colorado River system storage as a buffer against even more severe drought conditions, future management policies should focus not only on the stabilization of storage, but on the reversal of current declines into storage gains that will promote recovery of the system. This recovery should address both the challenge of the present moment, with Mead, Powell, and the other reservoirs already depleted well beyond the point of safety but also promote rapid storage recovery in the future, in the event that future extreme occurrences result in the drawdown of system storage. Ultimately, this will require a focus on resilience: combining reductions in demand with investments in the watershed and critical infrastructure, as discussed further in the sections below.

Broader Operational Scope

Finally, it is essential that the purpose and need for the 2026 guidelines NEPA process embrace a scope that is broader than simply the rules for the operation of Lakes Mead and Powell. While it is important that the size and scope of this process remain manageable and achievable, it is also important to recognize that in the recent management of the Colorado River system, and in the face of significant storage decline, both Reclamation, the Basin States, and other stakeholders have already embraced a strategy that has begun to look more holistically at total system storage to guide management decisions related to water availability and reservoir releases within the system. As such, we would propose that the purpose and need in making management decisions be broadened accordingly to allow for evaluation of operating rules that would include storage in at least Powell, Mead, and the initial CRSP plus participating units, as well as the consideration of hydrologic trends.

Similarly, while this purpose and need clearly should remain focused on system operations, it is important that it be framed in a manner that allows the next set of guidelines to embrace and encourage the conduct of parallel efforts. These efforts include investments in demand management and watershed resilience via programs and activities that are otherwise outside the scope of the guidelines. The results of those investments can and should potentially factor into future management decisions related to water availability and reservoir releases. This element is discussed in further detail below.

4. Important Elements and Strategies

Much of the detail of future management strategies should be developed through the public, open process of formal NEPA scoping and the development of alternatives for the Draft EIS. However, as Reclamation works to frame that scoping process, the following elements and strategies are essential to the success of any future considered alternatives.

Identification and Incorporation of Signposts and Triggers

As Reclamation has suggested, a key focus of this NEPA process and each of the considered management alternatives should be on the implementation of RDM-type concepts: for example, the identification of signposts within and without the system that point towards key risks; the identification of trigger points (well in advance of the manifestation of risk) that will drive early action; and adaptive management strategies that change in response to evolving conditions.

As noted above, ensuring that this RDM analysis properly assesses vulnerabilities and impacts will require the active engagement of affected sectors in the analytical process and is likely to require consideration of sector-based metrics in the creation of signposts and triggers.

Holistic, Anticipatory/Precautionary Management

Changing to a more precautionary management strategy will necessarily require Colorado River managers to look both further out in time in anticipation of future risks and to consider the Basin and its storage system on a more holistic basis. To ensure that system storage is effectively used as a buffer against climate risk, for example, one or more of the management strategies should consider storage in combination with short and long-term hydrologic and demand trends to better anticipate climate-induced changes. Such strategies would allow for earlier and more gradual interventions to better enable user adaptation to change, while better utilizing reservoir storage to prevent catastrophic impacts.

Both hydrologic and user demand trends should be a part of such adaptive approaches. To the extent feasible, it would be helpful for Reclamation to make this kind of information readily accessible during the process of alternatives development. For example, signals that might be considered in this framework might include elements such as: total system storage; current year hydrology and runoff forecasts; Atlantic and Pacific Ocean AMO and PDO signals, with consideration of known correlations; regional temperature trends; aridification trends; growth trends; and trends in agricultural commodity markets that are likely to impact cropping choices and related water demands.

More holistic management can and should also include consideration of strategies that deliberately promote broader climate *resilience* in the watershed. River operational guidelines can support this strategy by enabling activities that occur within the Basin landscape that drive resilience in the system. Examples of these types of strategies and elements include promoting conjunctive management of storage between the River and groundwater recharge and recovery systems, encouragement and enablement of shared resource agreements between Colorado River users (such as dry year options, exchanges, and allowing multiple places of use); and to the extent feasible, maintenance of environmental values at levels above minimum requirements in order to increase the resilience of ecosystems and wildlife resources to shocks.

Flexible Storage Mechanisms

The ICS top-storage mechanism in Lake Mead has been generally successful in promoting investments in conservation by reservoir users who previously had few incentives to store water because of a “use it or lose it” paradigm. Flexible mechanisms like ICS can and should be continued, and perhaps expanded in scale to other reservoirs within the system to the extent allowable under Reclamation authorities, to allow users to make better use of empty storage in the reservoir system and create express incentives against the “use it or lose it” principles.

At the same time, in keeping with a precautionary principle, more meaningful limits must be put in place to discourage withdrawals of storage at lower elevations, prevent withdrawals at critical elevations, and avoid scenarios that might create or encourage a “run on the reservoir” as conditions decline.

Emphasis on Long-term Systematic Demand Management

Over the past decade, Colorado River stakeholders have made substantial investments in system conservation activities as a means of boosting Lake Mead storage volumes and limiting storage declines. These include the System Conservation Pilot Program, activities associated with the Drought Contingency Plan (DCP) and the 500+ Plan.

As these and other similar investments in demand management activities seem likely to continue both during the interim period and potentially beyond 2026 as a management tool, the NEPA process should include an explicit evaluation of both the effectiveness and relative economic efficiency of these short-term system conservation efforts as a tool for managing reservoir decline. Evaluation of these short-term efforts should be directly compared with approaches that focus on longer-term investments in water conservation and demand management activities, especially those that provide lasting conservation gains. Given the continuing, long-term hydrologic declines in Colorado River hydrology, a careful assessment of the cost-effectiveness and long-term value of these strategies is warranted as part of a NEPA evaluation. Similarly, this evaluation should be structured to assess more coordinated approaches to implementing system conservation Basin-wide. This includes goals tied to hydrologic conditions, incentives for participation tied to avoidance of shortages in particular years, and other means to develop system conservation as a more reliable demand management tool.

Consideration of Landscape Level Investments

The aridification trends that are increasingly evident in the Colorado River Basin cannot be addressed simply through the management of reservoirs. Managing and combating aridification and the growing landscape-level impacts of climate change will require broad investment in the Basin watershed. These investments include forest management and restoration of forest health, improvement of rangeland conditions, increasing the efficiency of agriculture, and the restoration of tributary streams and natural storage systems. Continued hydrologic decline is a significant threat to the long-term stability of the water management systems in the Basin, particularly the agricultural communities that consume most of the water within the system.

Phoenix recognizes that the types of investments required to manage these issues lie beyond the scope of the 2026 process and would necessarily need to be pursued in parallel or subsequent processes (in most cases involving other agencies at the state, federal, and local levels). Nevertheless, Reclamation can aid these investments by considering within the scope of its analysis the likely impacts that such parallel investments could bring. To this end, Reclamation should explicitly consider setting goals within the scope of reservoir management that reflect the potential positive outcomes of parallel efforts that, for example:

- Align other federal spending programs with broader system management goals, (e.g., Farm Bill programs that promote investments on private lands that promote watershed health, natural storage, forest and rangeland conditions, or increase agricultural conservation).
- Increase coordination among federal agencies and public land managers to promote watershed health, natural storage, forest and rangeland conditions, and combat landscape level aridification that is driving hydrologic decline, as well as combating related effects (e.g., the impacts of dust on snow).

Conclusion

Phoenix appreciates consideration of these comments as Reclamation works to develop and implement its scoping notice and stakeholder process for the 2026 Guidelines NEPA process. We look forward to future discussions and collaboration with Reclamation and other Colorado River stakeholders as this process proceeds.

Sincerely,

Cynthia S. Campbell
Water Resources Management Advisor

ATTACHMENT C

City of Phoenix Comments on the Bureau of Reclamation's "Notice of Intent to Prepare an Environmental Impact Statement and Notice To Solicit Comments and Hold Public Scoping Meetings on the Development of Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead" Aug. 15, 2023

City of Phoenix
OFFICE OF THE CITY MANAGER

August 15, 2023

VIA ELECTRONIC DELIVERY

Amanda Erath
Colorado River Post-2026 Program Coordinator
Bureau of Reclamation
Attn: Post-2026 (Mail Stop 84–55000)
P.O. Box 25007
Denver, CO 80225
Via email: crbpost2026@usbr.gov

Re: City of Phoenix Comments on the Bureau of Reclamation's "Notice of Intent to Prepare an Environmental Impact Statement and Notice To Solicit Comments and Hold Public Scoping Meetings on the Development of Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead"

Dear Ms. Erath:

On behalf of the City of Phoenix ("Phoenix"), I want to express our appreciation for the opportunity to comment on Reclamation's Notice of Intent to Prepare an Environmental Impact Statement and Notice To Solicit Comments and Hold Public Scoping Meetings on the Development of Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead, as published in Federal Register Notice 88 FR 39455 on June 16, 2023 (hereinafter the "NOI").

Phoenix is the nation's third-largest municipal water provider and supports a community and economy that relies heavily on the Colorado River and the vast Reclamation infrastructure that works to manage it. As such, Phoenix is deeply interested in the development of new Colorado River guidelines. Over the past several years, the Colorado River system has been stretched to the breaking point by a combination of overuse of reservoir storage, ongoing drought, and an underlying decline in the Basin's hydrology due to the impacts of climate change. The wet winter of 2022-2023 has provided some temporary relief, but these underlying challenges of overallocation, overuse of water, ongoing aridification, and growing hydrologic uncertainties in the face of climate change remain. These challenges threaten to return this river system to crisis within a short time—potentially even before we can complete the process of adopting the new guidelines that are the subject of the NOI.

Conditions in the Colorado River Basin have changed substantially since the adoption of the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead ("2007 Guidelines"), as has our understanding of the challenges we face. The NEPA process being initiated by this NOI presents a critical opportunity to re-shape the management of the Colorado River
in a manner that (a) rises to the challenge of a changing climate in the arid Southwest; and (b) preserves and sustains the Colorado River Basin's $1.4 trillion annual economic activity and 16 million jobs, each while maintaining the quality of life and environment that has drawn the 40 million people who depend on this Basin to make their homes in this region. The stakes could not be higher for the Basin or for the United States as a whole. If we take advantage of this

opportunity, Reclamation can help the Colorado River stakeholder community move away from historic approaches focused on the maximization of water use and guide the Basin towards an approach that focuses on long-term resilience and sustainability of the system and the Nation's economy in the face of growing uncertainty.

To that end, Phoenix respectfully offers these comments in response to the NOI, focusing on specific considerations related to needed modifications to the purpose and need elements as compared to those utilized for the 2007 Guidelines, specific water management strategies that should be considered, and the scope of the guidelines and related analysis that should be undertaken in the Environmental Impact Statement (EIS).

EXECUTIVE SUMMARY

Definition of Purpose, Need, and Elements of the 2026 Guidelines. The past two decades have demonstrated that the hydrology of the Colorado River is both less stable and less predictable than was believed when the 2007 Guidelines were developed. Climate impacts are increasingly evident and growing in every part of the Basin, and as a result our previous management strategy—focusing primarily on the allocation of water from and balance of water between Lakes Mead and Powell—will not be adequate to address the current challenges and avoid the risk of catastrophic failure in the system. To that end, we recommend that the statement of purpose and need originally identified in the 2007 Guidelines should be modified and broadened to include three additional elements:

- Providing U.S. entitlement holders and subcontractors with adequate notice of changes in water availability based on clearly defined management rules that provide meaningful opportunity for adaptation, recognizing that unexpected disruptions in water supply for municipal providers can threaten human health and safety.

- Implementing a precautionary principle in decision-making that focuses on rebuilding storage buffers and maintaining the long-term resilience of the Colorado River system.

- Improving water management by managing the Colorado River based on whole system conditions and developing coordinated solutions across natural and built infrastructure.

Strategies Proposed for Consideration. The following general management strategies should be analyzed within the range of alternatives considered in this NEPA process, with the actual details of these strategies and how they might be incorporated within alternatives to be further developed through stakeholder discussion and modeling.

- Determining volumes available for delivery within the Annual Operating Plan based upon a more holistic view of system conditions, including whole system storage values, near-term water supply/runoff forecasts, and long-term hydrologic trends.

- Adjustment of water allocations on a more gradual, continuous, and predictable basis, moving away from current "trigger and cliff" methodologies that impose large annual step-changes in supply at specific thresholds.

- Establishing operational parameters that promote system storage recovery over the medium term and the ongoing minimization of key water risks, with specific management approaches or pre-planned responses identified and tied to thresholds that avoid critical risks, provide reasonable protection for high-priority rights holders (including tribal rights), and ensure environmental compliance.

- Creative and flexible use of reservoir storage in a manner that benefits continued investments in water conservation and efficiency, co-investment in water supply solutions, and intra- and inter-state and international cooperation in managing water risk. This would include continuation of the ICS rules with certain modifications to minimize operational risks associated with ICS storage and withdrawals.

- Management policies that will specifically support transactional and transitional behaviors among water users that can mitigate water risks at the ground level, such as city-to-city exchanges, dry-year option arrangements, short- or long-term leases, mutually beneficial investments in agricultural lands and new or improved infrastructure.

Scope of Issues for Analysis. To further the purpose and need of the 2026 Guidelines, we encourage Reclamation to consider a broader scope – both geographically and substantively – for analysis in this NEPA process than was considered in the previous 2007 Guidelines process. Several key issues are noted below.

- Reclamation should broaden the geographic scope of its analysis to permit consideration of continued or expanded coordinated operation of Lakes Mead and Powell and operations of other Upper Colorado River Basin reservoirs constructed and operated under the Colorado River Storage Project Act (CRSPA).

- The scope of analysis should consider a broad range of reasonably foreseeable climate impacts that could intersect with Colorado River operations, including a robust analysis of likely futures for Colorado River Basin hydrology and the intersection of the proposed action and alternatives with this hydrology. This should include analysis of potential changes in precipitation and the influence of aridification on the timing and volume of runoff over time.
- Reclamation's analysis needs to provide both on- and off-river stakeholders with a clear understanding of potential impacts to their water supplies; this should include assessment of outcomes that could be associated with reaching dead pool and potential side effects (e.g., groundwater impacts). Reclamation's analysis of those outcomes must also include human health and safety risks and Reclamation's authority to address human health and safety concerns under worst-case conditions.

- The scope of analysis should note the estimated and relative costs and benefits of implementing conservation activities and the estimated volumes of savings that could be achieved by conservation investments.

- Given the critical economic significance of the Colorado River system, the process must employ a robust means to evaluate economic impacts in connection with different alternatives, including consideration of high-end economic values and potential impacts to local economies.

- The scope of the EIS should include discussion and consideration of specific potential mitigation and monitoring measures that could be incorporated within new management guidelines in or parallel with those guidelines to reduce or manage climate-related risks and the impacts of the proposed action.

Other Related Issues for Consideration. Phoenix proposes that Reclamation additionally consider the following as part of its NEPA analysis.

- Full sector-specific analysis of potential impacts resulting from significant shortages, addressing deficiencies observed in the consideration of shortage impacts on water

users, the environmental, and local, regional, and national economies in the 2023 Near-term Colorado River Operations Draft Supplemental Environmental Impact Statement.

- Evaluation of the potential benefits of continuing short-term system conservation efforts as well as long-term systemic demand management and water conservation efforts, and analysis of the potential benefits that landscape level investments could have for management of the Colorado River system.

- Supporting a sector-driven stakeholder process (e.g. municipal sector) to identify impacts to users and the environment and negotiate and develop alternatives.

- Continuing to improve the Basin's water accounting, forecasting and supply estimation efforts as part of the proposed action, as well as the Colorado River modeling software which in turn improves public understanding of water use, the impacts of aridification, and the impacts of water management decisions.

We provide a more detailed explanation of each of these comments in the sections below.

I. How the Purpose, Need, and the Elements of the 2007 Interim Guidelines Should be Retained, Modified, or Eliminated

The purpose and need underlying the 2007 Guidelines focused on three elements:

1. Improving management of the River by considering tradeoffs between the frequency and magnitude of reductions of water deliveries, and considering impacts on Powell/Mead storage, water supply, power production, recreation, and other environmental resources;

2. Providing U.S. mainstream users a greater degree of predictability with respect to annual water deliveries, particularly under drought and low reservoir conditions;

3. Providing additional mechanisms for storage and delivery of Lake Mead water supplies to increase flexibility. *See* 2007 Record of Decision at p. 7.

While these three original elements remain valid considerations for the next set of guidelines, circumstances have also changed substantially in the Colorado River Basin since the development of the Guidelines in 2007, as has our understanding of the climate-related challenges we face. To this end, we recommend that those elements should be modified and broadened for the 2026 guidelines process to include the following *additional* elements.

1. Providing U.S. entitlement holders and subcontractors with adequate notice of water availability, certainty of management tools, and time for adaptation.

The purpose of the 2026 guidelines should seek to provide greater *notice* to water users of both the potential for, and the timing and nature of major changes in the availability of Colorado River water, not simply "predictability." This is particularly important for municipal water providers who are responsible for providing drinking water. It is also critical that water users have *certainty* with regard to the management actions that will be deployed under a range of conditions and have *time* to adapt.

In the face of growing climate uncertainty, it is likely no longer possible to strive for complete system reliability; this is a fundamental issue and one that should be expressly acknowledged in the purpose and need for this action. However, we can and must still strive to manage the

Colorado River system in a manner that allows water users the time, space and clarity to adapt to inevitable changes in water availability.

The timeframes for changes to infrastructure and other adaptive strategies are inherently long, which can be particularly problematic in the municipal sector where there can be little to no tolerance for sudden and significant supply disruption. It must be recognized that the acceleration of timeframes for adaptation due to unexpected disruption in supply can threaten human health and safety, and massively increase the costs of adaptation.

Just as importantly, uncertainty around the potential for rapid changes in supply availability can challenge public confidence in municipal water delivery systems. The recent uncertainty that has prevailed in the Lower Basin with regard to water availability, the potential for catastrophic shortages in the face of "dead pool" conditions, and whether and how Reclamation might act in response has already caused and is likely to continue to cause measurable public concern and related economic damage both regionally and nationally.

2. ***Implementing a precautionary principle in decisionmaking that focuses on rebuilding storage buffers and maintaining the long-term resilience of the Colorado River system.***

While the full extent of future climate impacts on the Basin's water supplies and demands are yet unknown, there is a clear purpose and need of the 2026 Guidelines to introduce a precautionary principle into future decisonmaking in order to better protect human health and the environment.

Under the 2007 Guidelines and prior management regimes, the management of the major reservoirs in the Colorado River system has largely focused on preserving the delivery of Colorado River Compact volumes and maximizing the volume of water available for delivery at all times, and has focused less on ensuring the long-term sustainability of the Colorado River in the face of changing conditions. In doing so, the management of the system has failed to account for various long-standing issues such as the failure of the *Arizona v. California* Decree to allocate reservoir evaporation losses; the obvious disconnects between fixed allocations and declining hydrologic yields; and the increasingly fantastic notion that there remains any "undeveloped" water within the context of a climate-challenged Colorado River. It has also increasingly failed to account for the complexity of this watershed, its ecosystems, and the influences that the relative condition and trends in natural systems have on the system and its storage reservoirs over time.

A clear need for the 2026 Guidelines is to correct these deficiencies and set a new course that proactively addresses them. Recognizing that aridification is likely to reduce the volume of water available from this watershed, we must shift our philosophy of water storage away from viewing reservoirs as a means of *augmenting* water supply towards viewing them as a means of *preserving* and *stabilizing* the availability of water supply over time in the face of uncertainty. A precautionary principle would require efforts to reverse recent declines and promote system recovery. This recovery should address the challenge of the present moment, with Mead, Powell, and the other reservoirs already depleted well beyond the point of safety, and work to promote reasonably rapid storage recovery in the near-to-medium term.

Similarly, future management policies should also focus on increasing the resilience of the Colorado River system. Resilience for the Colorado River system should include the ability to prepare for and adapt to climate impacts—to absorb disruption and persist. A focus on resilience should move the management of the system towards the proactive management of uncertainty, adopting policies that discourage or at least do not encourage the maximization of diversions by water users, understanding vulnerabilities and pre-developing responses to avoid

system failures, and protecting sensitive ecosystem values. Resilience will also require proactive, permanent reductions in demand, with ongoing investments in agricultural, municipal, industrial, and natural watershed infrastructure, and investments to facilitate predictable economic and social transitions. Importantly, the effective term of the new guidelines should be long enough to justify making long-term investments in these areas.

3. ***Improving water management by managing the Colorado River system based on whole system conditions and developing coordinated solutions across natural and built infrastructure.***

It is essential that the purpose and need for this NEPA process embrace a scope that allows the agency to look beyond modifying the rules for the operation of Lakes Mead and Powell alone, and consider both conditions and the potential for coordinated solutions within the larger system that includes natural and built infrastructure. We recognize that there are strong pressures on the agency to limit the scope of these new guidelines and focus on the resolution of current controversies among the Basin States and Upper and Lower Basin interests. However, the challenges that we have been facing in the Colorado River Basin and that have driven the discussions around the 2007 Guidelines, the Drought Contingency Plan (DCP), the 500+ Plan, and the creative management approaches that Reclamation has undertaken in response – as well as its efforts to improve forecasting and modeling – have increasingly looked beyond Powell-Mead operations. This is out of recognition that the impacts of those operations are felt both upstream and downstream, and throughout the storage system and the user community.

At a minimum, this scope needs to permit the agency to embrace a new approach to planning that looks more holistically at system conditions – including storage held in other Upper Basin and Lower Basin reservoirs – to guide management decisions related to water availability and Mead-Powell reservoir releases. This scope can and should embrace the potential for continued and enhanced coordination with other system storage features (e.g., the full list of CRSPA reservoirs), even if this might sooner or later require supplementing existing analyses and Records of Decision governing those features. There is little question that future climate conditions could depart substantially from the conditions anticipated when the operation of other Basin facilities was planned. Additional coordination and flexibility in storage management, deliveries, and accounting between facilities could help to ensure that the water deliveries, flow requirements, and other management constraints at each reservoir can continue to be met over time.

Similarly, we would also suggest that this scope can and should embrace potential approaches to mitigate potential challenges and climate impacts created by selected Mead-Powell operations, whether these are mitigation measures included in the proposed action, or that might occur as part of expected parallel actions or activities. For example, the agency can and should consider how management rules might embrace or encourage investments in systemic demand management and landscape level investments in natural watershed infrastructure, agriculture, municipal conservation, and other activities – which in turn could factor into future management decisions related to water availability and reservoir releases.

II. Strategies Proposed for Consideration

Colorado River management has historically focused on the use of system storage to maximize available water use. Recent history has demonstrated that this approach is ineffectual to deal with the current stresses on the system—as is evidenced by the recent nearly annual interventions necessary to prop up the system, such as the DCP, the 500+ Plan, releases from Flaming Gorge, holding Powell releases back from Mead, and most recently, System Conservation Agreements. A core consideration in the development of the 2026 Guidelines

must be the transition of Colorado River management towards approaches that focus on the long-term resilience of the system in the face of growing uncertainty.

Two key deficiencies of recent Colorado River management have been our continued attention on reservoir storage while downplaying changes in whole system conditions and the use of reservoir storage as a means of delaying necessary and inevitable reductions in water use. The 2007 Guidelines were fundamentally designed to address scenarios in which short-term or medium-term drought conditions developed in the Basin. The scenario analysis and attendant guidelines therefore focused on relatively modest, temporary reductions in water use necessary to manage the use of reservoir storage as a buffer, assuming the system would eventually return to something akin to a "normal" condition that would allow reservoir storage to recover.

The science has demonstrated that a significant contributor to long-term reservoir decline has been the ongoing net reduction in hydrologic yield within the Basin as a result of aridification and gradual temperature increases attributable to climate change. Although shorter-term swings in precipitation patterns or periodic drought have clearly been an important factor in the reduced yields observed over the past 20 years, the signal of reduced hydrologic yield associated with this aridification trend has grown stronger over time, creating greater and greater disconnects between relative levels of precipitation and runoff. As runoff efficiency has decreased, whether due to changes in vegetation, dry soil columns, increases in evapotranspiration, or other factors, the probability of experiencing a repeated annual sequence of conditions wet enough to recover reservoir storage has substantially decreased.

The predictable result was that the 2007 management strategy inexorably led Basin storage in one direction: down. It quickly became clear that the shortage triggers and volumes encapsulated in the 2007 Guidelines were inadequate to prevent continued decline, which led to the expanded shortages and interventions in the DCPs and multiple system conservation and storage efforts. But even these expanded efforts proved inadequate, as our responses were chasing an ever-decreasing hydrological baseline.

We cannot afford to repeat this pattern. With future precipitation and runoff efficiency both increasingly uncertain, our management of water storage must be inherently more holistic and more precautionary in nature, addressing storage conditions not just the Powell-Mead reservoirs but conditions within the Colorado River Basin as a whole. Just as importantly, in determining the volumes of stored water that may be safely allocated from the Colorado River system, this management must be anticipating not only current storage conditions and near-term forecasts, but also underlying hydrologic trends that are likely to influence the direction of storage (and potentially the direction of water demands) into the future.

To this end, we recommend that the following general management strategies should be considered as part of the alternatives development process for the EIS, including as part of mitigation efforts, with the actual details of these strategies to be further developed through stakeholder discussion and modeling.

1. ***Consideration of whole system conditions in determining available water supply/shortages.*** The determination of volumes available for delivery within the Annual Operating Plan should be based upon the consideration of multiple factors that could provide a more holistic view of system condition, e.g.:

    a. ***Whole system storage values.*** Total system storage (rather than just relative elevations or storage volumes in Lakes Mead and Powell), including at a minimum watershed storage and active storage availability in Mead, Powell, Mohave, Havasu, and the CRSPA reservoirs.

b. ***Near-term water supply/runoff forecasts.*** Near-term Basin runoff forecasts generated by the Colorado River Forecast Center and 24-month study on total system storage.
c. ***Long-term hydrologic trend.*** Long-term forecast methodologies that anticipate the potential impact of larger hydrologic trends on a mid-to-long term basis (e.g. 5- to 10-year timeframe). For example, there are well-documented relationships or correlations between runoff efficiency and aridification, temperature, dust-on-snow measurements, and the timing and volume of prior year precipitation, as well as correlations between Atlantic and Pacific ocean temperature regimes measured by the AMO/PDO signals and wetter/drier conditions in the Basin, among other signals.
d. ***Expected results of system water supply benefit programs.*** Investments in projects and programs that create system-level water supply benefits could be incorporated in both near term forecasts (subsection b above) and long-term trends (subsection c above).
e. ***Signposts and triggers.*** As described in further detail below, key signposts and triggers should be identified as part of the modeling efforts along with related protective response strategies that are necessary or desirable to meet management objectives.

2. ***Smoother changes in available water deliveries under the Annual Operating Plan.*** Alternatives evaluated in the EIS should include consideration of a strategy for determining of the annual volumes of water available for allocation and delivery that adjusts deliveries on a more predictable, frequent, and graduated basis to better enable user adaptation over the course of each year or series of years. This would need to reflect a departure from the current "trigger and cliff" methodology for Mead shortage levels and Powell releases, which ties both shortage allocations and reservoir operational schedules to specific elevation tiers projected as of the August 24-month study, and with large step-changes tied to those tiers.

3. ***Define key management objective(s).*** In framing the parameters for operational strategies and in determining the volumes of water that may be safely allocated from the Colorado River system, management objectives should be focused on promoting medium-term system storage recovery and the ongoing minimization of key water risks, specifically:

    a. ***Protection of municipal water supplies.*** Phoenix continues to believe that Reclamation can and should provide further guidance related to the agency's ability to take extraordinary actions to protect human health and safety within its governing legal authorities and available discretion under the Law of the River. This guidance is critical to help municipal and industrial users develop realistic adaptation strategies and make appropriate investments that can prepare large populations and critical industries to make required changes to infrastructure, processes, and public expectations during worst-case conditions. As detailed in our pre-scoping letter of September 1, 2022, which is incorporated here by reference, given the scope of its existing legal authorities, we urge Reclamation to expressly consider and recognize its authority to address human health and safety concerns in at least the following areas:

        i. Reclamation's authority to undertake at least limited departures from the Basin's "priority system" where necessary to protect critical infrastructure, preserve health and safety, and meet fundamental federal objectives such as national security;

ii. Reclamation's clear authority to act to limit particular types of water uses and mandate improved efforts at conservation for various water use sectors, particularly during critical conditions; and
iii. Reclamation's clear authority to de-prioritize operational and timing considerations related to hydropower generation in the context of ensuring water deliveries.

Just as importantly, however, because taking such an action would likely be highly disruptive to system operations, would undermine the settled expectations of various water rights holders, would almost certainly lead to litigation, and is otherwise not at all desirable, **Reclamation must specifically define the limited and extreme conditions under which this sort of intervention would occur. A basic management objective should then be to operate the system in such a manner *that those conditions are never reached.***

b. ***Protection of high-priority rights holders, including tribal rights.*** A corollary to the first objective is that, in the absence of a truly disastrous situation in which extraordinary actions could become necessary, Reclamation's management regime should adequately protect higher-priority users of water in a manner consistent with settled expectations around water rights. By their nature, system reservoirs provide the greatest protection to more junior water users by smoothing out highly variable annual supplies. However, **that smoothing function cannot and should not include mining reservoir storage** over any period of time, particularly when remaining storage is no longer adequate to protect higher-priority users or where forecasts and trends indicate that storage utilized to protect junior users cannot reasonably be expected to be recovered near-term. A basic management objective should thus be to ensure that adjustments to allocations that will impose shortages on more junior users occur promptly enough and at a sufficient scale that it will not jeopardize a core volume of storage within the system.

c. ***Compliance with environmental flow targets.*** Avoiding violations of existing Record of Decisions and other system guidelines related to protection of environmental flows/Grand Canyon requirements and targets, endangered fish requirements, and other ecological priorities should remain a core obligation of Reclamation. Failure to protect these values could create significant operational uncertainties due to litigation or significant adjustments to operations required to recover ecological systems that are disrupted by low-flow events.

d. ***Creation of and response to identified signposts/triggers.*** Given the uncertainties that exist with climate change and the potential need for swift reactions to changing conditions, the EIS process should lead to the creation and analysis of an adaptive management plan for the Basin that establishes some key signposts and triggers that are correlated with significant water risks, together with potentially effective response actions that could be implemented in the event that such conditions actually occur. By signposts, we refer to indicators chosen that are monitored (e.g. average increase in temperature over baseline) and by triggers, we refer to values of signposts (e.g. 0.3 degree Celsius) that identify when associated response actions should be implemented.

Decisionmaking in the Basin is particularly complex with seven states, major municipal and agricultural users, and the country of Mexico all dependent upon the River. As we have observed over the past few years, the pace and scale of changes that could be possible in connection with aridification and less

predictable weather patterns can easily overwhelm our usual consensus-driven governance models. Rather than abandon our commitments to collaboration, we should instead work harder to collaboratively define potential courses of action that should be available to Reclamation if and when conditions change. An effective adaptive plan should help to ensure that Basin users have time to initiate necessary decision processes and implement adaptive responses when and if those conditions occur.

4. ***Operational Flexibility and Creative Use of Storage.*** A key strategy for managing water risk within the Colorado River can and should be the creative and flexible use of reservoir storage in a manner that benefits continued investments in water conservation and efficiency, co-investment in water supply solutions, and intra- and inter-state and international cooperation in managing water risk.

   Intentionally-Created Surplus and the Mexican Water Reserve represented a first step towards incorporating storage-based incentives within Reclamation's operating guidelines that created alternatives to the old paradigm of "use it or lose it." Reclamation has taken further steps towards the creative use of storage in its conjunctive management of Powell and Mead launched under the 2007 Guidelines, its modified Mead-Powell accounting that strategically held back water in Lake Powell to protect power heads, and through DROA releases.

   A next step should be the consideration of a broader range of activities that could creatively generate and utilize storage and incentivize participation. For example, the EIS could analyze creation of specific categories of storage and associated criteria that would be entitled to protection under the related Forbearance Agreement, instead of requiring individual approval of each ICS project within the exhibits to the Forbearance Agreement. It could also consider the potential for the creation of similar storage in Powell to open the same opportunities to Upper Basin users.

   More creative uses of storage could similarly include allowing Reclamation the flexibility to move certain types of stored water (like ICS) between Powell and Mead to meet other key operational priorities and requirements, such as protecting hydropower heads. It could anticipate the potential for such storage to be temporarily "moved" to other CRSPA reservoirs. It should include limits on withdrawals of storage under certain conditions to ensure that the utilization of storage does not damage other users. This could include some rethinking of the ICS rules, such as treating future ICS as "top storage" that does not count towards accounted storage volumes/elevations for purposes of determining the amount of water available for allocation under shortage rules. It should consider the re-creation of the federal ICS account considered in the 2007 Guidelines, potentially as a means to satisfy environmental minimums, protect hydropower, or meet other system-level needs without infringing on water deliveries.

5. ***Facilitation of Transactional Behaviors to Minimize and Mitigate Risk.*** As part of any alternative that Reclamation adopts, Phoenix would strongly suggest that Reclamation specifically prioritize and broaden its support within the operational guidelines for the kinds of transactional and transitional behaviors among water users that could help to mitigate the real water risks that many of the Basin's users now face and that many will continue to face irrespective of the selected strategies for Colorado River management. Regardless of the outcome of any interstate dialogue, any selected set of shortage values or voluntary reductions, or any other high-level policy determinations, the real problems of water allocation will necessarily need to be solved at the ground level, among the providers and users who best understand their needs and the constraints within which they must operate.

Reclamation should not assume that desirable types of transactions will occur in the absence of affirmative federal support, or that individual users will be in a position to mitigate the risks created by Colorado River outcomes on an independent basis as was assumed in Reclamation's 2023 Near-term Colorado River Operations Draft Supplemental Environmental Impact Statement ("SEIS"). This NEPA process provides an opportunity to potentially encourage and streamline at least some of those potential transactional and transitional behaviors – by analyzing related operational rules that would facilitate them – in a context in which substantial amounts of federal and state resources are potentially available to assist those efforts. These transactions can provide meaningful mitigation for the inevitable risks that will be associated with any particular approach to Colorado River management. To this end, we would propose that as part of any preferred alternative or identified mitigation, Reclamation should consider including:

- Analysis of a wider range of potential near-term transactional behaviors that would be supported under new operational rules, in order to reduce the need for extensive NEPA analysis and approval as a near-term obstacle.
- Establishment of a mechanism within the operational rules that would permit certain kinds of pre-approved transfers between users, helping to avoid the worst impacts whenever reservoir storage is in a critical condition.
- Establishing a stakeholder process among and between system operators and end users to determine the precise volumes of water necessary to avoid shutting down critical infrastructure like drinking water plants (and avoid undesirable Reclamation interventions that might otherwise be necessary), and to seek out voluntary solutions to meet those minimums.
- Protection of tribal interests by committing to accelerated approval of core tribal infrastructure projects related to drinking water access and agricultural efficiencies, including direct investments in capacity needed to plan and carry out projects.

III. Scope of Issues for Analysis

Given the importance of the River, its 40 million residents, and the national economy, and recognizing the significant risks facing the Basin and the scale and speed of change that will be required to address it, there are several significant issues that Reclamation should include in its scope of analysis to support a robust NEPA process and set the Basin on a path to resilience. These will require analysis of a broader scope of issues for analysis in the EIS than was considered in the 2007 Guidelines EIS process and in the 2023 SEIS.

Upper Basin Reservoirs. Unlike the 2007 Guidelines, the geographic scope of Reclamation's analysis and any alternatives should be expanded to include coordination with other Upper Colorado River Basin reservoirs apart from Lake Powell. There is little question that future climate conditions could depart substantially from the conditions anticipated when the operations of other Basin facilities were originally planned, and Reclamation's operations at Mead and Powell will inevitably have potential impacts on both upstream and downstream facilities that must be analyzed. In this context, consideration of additional coordination and flexibility in storage management, deliveries, and accounting between and among facilities – even if this is undertaken as only a limited supplement to existing analyses or associated Records of Decision – could help to ensure that the water deliveries, flow requirements, and other management constraints at each reservoir can continue to be met over time.

Reclamation's authority includes adopting guidelines and coordinated reservoir management strategies to address operations of the Upper Colorado River reservoirs constructed and operated under the Colorado River Storage Project Act (CRSPA), including Glen Canyon,

Aspinall Unit (Crystal, Blue Mesa, Morrow), Flaming Gorge, Navajo, and Fontenelle. The 2007 Guidelines were considered guidelines to implement the Operating Criteria developed pursuant to section 602(a) of the Colorado River Basin

Project Act of 1968 (CRBPA).[1] However, the CRBPA provides authority to propose criteria for the coordinated long-range operation of all CRSPA reservoirs and Lake Mead. Although other existing agreements and operational provisions have been created to govern Upper Basin reservoirs (e.g., the Upper Basin Drought Contingency Plan), a truly coordinated set of operational guidelines can and should include more than Lake Mead and Lake Powell and incorporate greater opportunities for coordinated water management strategies with other Upper Basin reservoirs as part of the new post-2026 Guidelines.

Climate Impacts. To move past our recent history of lurching from crisis-to-crisis in the management of the Colorado River system, the scope of Reclamation's analysis should consider a broad range of reasonably foreseeable climate impacts that could intersect with Colorado River operations, including impacts to (1) the affected environment and (2) the proposed action, and (3) the alternatives. It should also analyze adaptation measures to address those impacts.

Climate change is causing significant shifts in weather patterns which is stressing the Colorado River Basin in ways that go well past the levels of runoff that we see each year. The Basin is not only experiencing drought but also aridification—long-term warming and drying. The trend is expected to continue, adversely affecting water availability, water storage, air quality, human health, agriculture, energy production, ecosystem function, biodiversity, and the overall resilience of the system as a whole. Climate change can also be expected to exacerbate environmental justice issues for the communities most vulnerable to climate-related health effects.

Advances in technology, science, and modeling since 2007 have made information and projections of potential climate-related impacts broadly available, and these should be included in the NEPA analysis. Climate impacts that should be analyzed include the following and related impacts on the environment and human communities:

- increasing temperatures;
- risks of longer and more frequent heat waves;
- increasing evaporation;
- changing precipitation patterns;
- changing runoff patterns;
- dust on snow; and
- wildfires.

The analysis should also consider potential resource-related impacts in both the Upper and Lower Basin including the following:

- water availability;
- natural (e.g., wetland) and artificial (e.g., reservoir) storage;

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[1] The CRBPA states: "In order to comply with and carry out the provisions of the Colorado River Compact, the Upper Colorado River Basin Compact, and the Mexican Water Treaty, the Secretary shall propose criteria for the coordinated long-range operation of the reservoir constructed and operated under the authority of the Colorado River Storage Project Act, the Boulder Canyon Project Act, and the Boulder Canyon Project Adjustment Act." Colorado River Basin Project Act of 1968 § 602(a).

- water distribution infrastructure;
- water treatment infrastructure;
- hydropower capabilities;
- agricultural crop requirements;
- natural resources (wetland, forest, soil, vegetation, etc.);
- biological resources; and
- wildlife.

Hydrology. While the scope should include an analysis of the Colorado River Basin's likely future hydrology and the intersection of the proposed action and alternatives with this hydrology, these should also be analyzed in connection with the climate impacts analysis previously mentioned.
This should include analysis of potential changes in precipitation and the influence of aridification on the timing and volume of runoff over time. The EIS analysis should include current assessments of and trends for flows into and out of Upper and Lower Basin reservoirs, snow, runoff, and precipitation, and tie this into the analysis of other climate impacts, particularly hydrologic decline related to aridification. With aridification, Colorado River flows are measurably declining as the temperature and evaporation in the Basin increases and the timing and volume of precipitation changes. It is estimated that for every 1 degree Celsius of warming, the Colorado River is losing 5-10 percent of flow through evaporation. Given global temperature trends, it is increasingly evident that the past hydrology of the Basin cannot be relied upon to predict the future, and that doing so would underestimate the risk of future dry conditions. The hydrology ensembles that are used should thus sample a sufficient number of plausible dry-end scenarios to ensure that the management of Colorado River water is robust to future dry conditions. These should also include temperature-adjusted scenarios that incorporate the continued warming signal in the Basin and that provide an alternative means of estimating warming-related impacts, avoiding the uncertainties associated with global climate models and downscaling-derived artifacts related to precipitation.

Water Supply & Water Rights. The EIS should include a clear analysis of key water supply, demand, and water entitlement-related issues to better provide stakeholders with a clear understanding of potential changes to their water supply operations. These should include, for example (1) estimated water supply shortages for each Colorado River entitlement holder and subcontract holders such as Central Arizona Project (CAP) subcontractors, (2) potential impacts of reservoirs reaching dead pool on holders and subcontractors, (3) impacts on groundwater from changes in recharge activities or as a result of users turning to groundwater to replace Colorado River surface supplies, and (4) different sets of demand assumptions for modeling (e.g. different rates of growth, demand responses to changes in water supply or temperature) to better reflect potential future conditions.

Water Conservation. For activities that have already occurred in the Basin or where existing research is available, the analysis should note the estimated and relative costs and benefits of implementing conservation activities and the estimated volumes of savings that could be achieved by conservation investments.

Water Transactions. The EIS should include an analysis of the varying types of water transactions that Colorado River users could engage in to support mitigation and adaption, including forbearance agreements, intra-state transfers, leasing arrangements, water right sales, trades, and water exchanges. For example, Reclamation could analyze water leases and transfers between on-river users and CAP users. By including the analysis in the EIS, Reclamation can help to streamline the process for users to develop and engage in water transactions that can support water risk sharing and reduce dependence on the Colorado River.

Water Quality. The scope of analysis should include the implications of actions or inactions that create water quality issues, including potential future changes as a result of climate impacts. This includes sedimentation and reduced water quality as a result of watershed conditions, erosion, and/or wildfires, with attendant impacts on reservoir storage. It includes changes in salinity from agricultural activities and in response to shortage conditions. It also should include water quality impacts of reservoir releases, for example releases from Alamo Dam on Central Arizona Project's water supply.

Storage. The EIS should include a clear accounting of reservoir storage space and utilization in the Colorado River Basin. For example, it should describe the Lake Mead storage account volumes and space utilized by entities with ICS, DCP ICS, etc. as well as the use and availability of storage in the Upper Basin reservoirs. Promoting a better understanding of storage within the Colorado River system can help stakeholders assess possible strategies to increase storage in the reservoirs and develop flexible storage arrangements. Reclamation's analysis should also include some assessment of the role of natural storage within the watershed, which also helps to support the resilience of the system against dry conditions (particularly for Upper Basin users). This analysis could help with the consideration of mitigation strategies, such as strategic investments in key watershed areas.

Infrastructure. The scope of analysis should include a thorough assessment of the state of relevant reservoirs and associated issues that could impact other resources. For example, this can and should include an analysis of infrastructure challenges that would be associated with low water levels (e.g. power heads, Lake Powell outlet tubes), loss of storage due to sedimentation, and environmental and infrastructure harm associated with quagga mussel infestations. It is important for Reclamation to fully evaluate and for the Basin's stakeholders to understand the physical infrastructure constraints that may guide water storage and delivery availability in the future.

Socioeconomics. The scope of the EIS should include an adequate assessment of socioeconomic impacts of various alternatives and potential shortages on Colorado River users, including municipal and industrial users. For example, reduced or complete loss of water supply to municipalities can have devastating impacts on employment, the housing market, health care services, education, food packaging and distribution, pharmaceutical production, and defense manufacturing, among other critical sectors that will affect the economy. These impacts should be part of the EIS analysis.

Human Health & Safety. The scope of Reclamation's analysis should include an analysis of human health and safety impacts and Reclamation's authority to address human health and safety concerns. Reduction in Colorado River flows and available water supplies can lead to severe impacts on communities' livelihood. Areas for analysis include water levels sufficient to operate drinking water treatment facilities; communities with no or limited alternative water supplies; quality of life standards as opposed to minimum level necessary for survival (e.g. parks and trees to mitigate demonstrated heat island impacts in addition to drinking water requirements); increased cost of water services on vulnerable populations; and time and resource constraints of developing and building new water infrastructure. With the trend of warming conditions in the Basin and the dependance of many users on the River to supply drinking water and maintain a healthy quality of life, this human health and safety analysis will be critical to determining the operation of the reservoirs to prevent the Basin's citizens from experiencing a "day zero" event.

Agricultural Resources. The scope of analysis should include an analysis of (1) the agricultural areas and crop types being grown in the Basin that use Colorado River water, including identifying whether the crops are for human or animal consumption, and (2) the economic value of water in agricultural operations separated out by region and crop type. With

nearly 80 percent of Colorado River water supporting agricultural uses, it is important for water planning efforts to have a clear understanding of the use of the water and be able to identify areas where investments in infrastructure, the development of new crop markets, water transactions, or other climate adaptive measures may help to address ongoing supply-demand imbalances.

Energy. The scope of the EIS should include an up-to-date analysis of the significance of hydropower to the Western power grid, impacts to generation from reduced flows, and impacts to the financial resources that are provided by hydropower generation. Revenues from hydropower finance several activities throughout the Basin, including meeting operational costs for Reclamation facilities, operation of infrastructure critical to Indian water rights settlements, salinity control, and endangered fish programs. This analysis will be necessary to help stakeholders understand changes to hydropower operations and help plan for potential futures without or with limited hydropower. It can also help identify the funding needs that may need to be sought from other sources to sustain the programs dependent upon hydropower.

Biological & Cultural Resources. The scope of the analysis should include an analysis of impacts to endangered species efforts and habitat programs and cultural resources. The new 2026 Guidelines could have important implications for a range of programs in the Basin including the Upper Colorado Endangered Fish Recovery Program, San Juan River Basin Recovery Implementation Program, Glen Canyon Dam Adaptive Management Program, and Lower Colorado Multi-Species Conservation Program. Changes in water flows and reservoir declines can also have important cultural impacts, such as changes in recreational opportunities and impacts to exposed cultural sites.

Mitigation & Monitoring. Mitigation measures to address expected climate impacts relevant to operations and the impacts of the selected alternative should be identified and considered in the NEPA review. Climate change impacts are also likely to be highly unpredictable and uncertain, which means that Reclamation should consider how it can monitor changes in condition, commit to necessary data collection to ensure the availability of monitoring data, and propose strategies to adjust or undertake future mitigation and monitoring.

IV. Other Related Issues that Should be Considered

In addition to the scope of issues for analysis and strategies for consideration, Phoenix encourages Reclamation to consider several other related issues in the EIS.

a. *Full analysis of potential impacts from significant shortages*

As part of the NEPA analysis, Reclamation should comprehensively analyze potential impacts from shortages. Phoenix recognizes that the analytical scope of this NEPA process will necessarily be far more comprehensive than one would expect to see from Reclamation's recent SEIS. However, Phoenix is compelled to note that there were multiple instances within the (recently withdrawn) SEIS that did not provide sufficient detail or information to adequately assess either environmental impacts or the likely real social and economic effects of proposed actions and water shortages. We would strongly urge that the EIS treat these issues far more broadly and avoid the substantial deficiencies in analysis exhibited by the SEIS in many areas, including analysis of shortage impacts on water users, the environment, the local, regional, and national economies, and the Colorado River system as a whole.

Specifically, the SEIS did not provide any clear analysis of how potential water shortages would impact municipal and industrial (M&I) users, leaving stakeholders without a sufficient analysis of direct, indirect, and cumulative impacts. Shortages to M&I users have the potential to negatively affect potable water availability, drinking water treatment plant operations, users' water quality, bond ratings, business investment, employment, the housing market, gross domestic product,

packaging and shipping of agricultural products, and semi-conductor and defense output, among a host of other sectors. The possibility of a loss of a Colorado River water supply on municipal and industrial users could have an extreme impact on both the local and national economy that should be analyzed. This is particularly critical in light of the fact that the water supply challenges that will be created by any near-term action taken on the Colorado River must be met with the water supply infrastructure and the alternative supply options that are in place today. Changes to that infrastructure or associated operations necessary to adapt to long-term shortages will take substantial time and financing to plan and build; if those changes will be necessary, that will also require significant federal action and support that needs to at least be anticipated by this NEPA analysis.

Similarly, the SEIS did not address the extreme conditions that could arise by reaching "dead pool" in either or both of Lakes Powell and Mead. Given current levels of storage and recent hydrologic trends, potentially reaching these conditions within the next few decades is clearly "foreseeable," and it is critical for Reclamation to anticipate and be able to describe system conditions that could fall well outside what was ever contemplated in the 2007 Guidelines or the subsequent DCP. Reaching these conditions could have serious socioeconomic consequences for users across the spectrum of municipal, industrial, agricultural, and recreational uses, and serious ecological and environmental consequences as well. Because avoiding such conditions can and should be a primary rationale for the kinds of responses that may be authorized by new operational guidelines, Reclamation needs to at least attempt to analyze the nature of those impacts to justify its proposed approach to avoiding those conditions.

As Reclamation is aware, in the discussions leading up to the 2007 Guidelines and DCP, the scenario analyses that were provided to Basin stakeholders consistently underestimated the potential for hydrologic scenarios that would reach or exceed the "worst case" presented to stakeholders. This led to a false sense of security, especially among high-priority users, that has inhibited discussions about potential responses to growing water scarcity in the Colorado River Basin. Understanding the consequences of dry hydrologic scenarios will help to facilitate dialogue between users with greater or lesser risk exposure to explore creative solutions or management options that could address those risks.

b. ***Emphasis on Long-term Water Conservation and Systematic Demand Management***

As part of the NEPA analysis, Reclamation should evaluate the results of the multiple recent short-term system conservation efforts, as compared against approaches that focus on long-term investments in water conservation and demand management activities. System conservation has played a central role in managing short-term Lake Mead storage and limiting storage declines over the past decade, including in the System Conservation Pilot Program, Drought Contingency Plan, and 500+ Plan. Given the widespread adoption of these strategies, the 2026 Guidelines should anticipate the potential need for additional system conservation. However, other conservation approaches that create long-term gains or reduce users' dependence on the Colorado River are also going to be important to support longer-term system resiliency. For example, while system conservation may help to modestly reduce the *probability* that Reclamation will need to impose shortages in the immediate future, reduced dependence on the part of end users gives Reclamation greater *flexibility* by reducing the potential for Reclamation's future management actions and interventions—including all-but-inevitable involuntary reductions and shortages—to produce disruptive or dangerous economic, social, and political consequences.

c. ***Consideration of Landscape Level Investments***

As part of this NEPA analysis, Reclamation should (1) analyze the potential impacts and benefits that landscape level investments could have for management of reservoirs and the system as a whole and (2) consider how operational criteria for the reservoirs will or will not support these investments. Managing and combatting aridification and the impacts of climate change will require more than reservoir management. It will require broad investments in forest management and restoration of forest health, improvement of rangeland conditions, increasing the efficiency of agriculture, and the restoration of tributary streams and natural storage systems that can help insulate vulnerable natural systems from drought and climate risk. The potential value of these investments as a means of managing Colorado River system risk should be analyzed, including as a means of mitigating the risks that will be associated with any operational guidelines that are ultimately selected.

For example, as part of its supportive analysis of desirable transactional behaviors, Reclamation could set goals in the new operating guidelines that would encourage better coordination of investment efforts among federal agencies, such as aligning other federal spending programs with broader system management goals (e.g., Farm Bill programs that promote investments on private lands that promote watershed health, natural storage, forest and rangeland conditions, or increase agricultural conservation) and increase its coordination with other federal and state agencies and public land managers to promote watershed health, natural storage, forest and rangeland conditions, reduce dust on snow, and combat landscape level aridification that is driving hydrologic decline.

d. ***Sector-Driven Process and Participation***

Phoenix appreciates Reclamation's intent to design and implement a stakeholder process that is inclusive, transparent, and encourages meaningful engagement. We support Reclamation's intent to include multiple levels and prioritize regular and meaningful consultation with Tribal Nations. The governance models at the state level used to drive Colorado River negotiations have frequently failed to represent or capture the vulnerabilities of some specific users and sectors. As such, Phoenix recommends that the stakeholder process cultivate sector-driven participation pathways to identify impacts to users and the environment and negotiate and develop alternatives.

In certain cases, there are greater commonalities of risks and vulnerabilities among water users within a sector than there are among particular states. For example, municipalities across the Upper and Lower Basin face risks to housing markets and drinking water infrastructure with reduced deliveries and can be one sector. Reclamation's process should engage stakeholders within sectors to truly understand the unique circumstances the sectors face and then engage across sectors to identify (1) sector-specific or multi-sector vulnerabilities and (2) potential solutions or policies to address them that should be considered in a Robust Decision Making-based process. At the draft EIS stage, consideration of multiple divergent solutions for Basin management can support shaping a consensus-driven preferred alternative.

e. ***Enhancing Data & Analytical Tools for Effective Management***

Effective water management requires robust and effective modeling, water accounting, and supply and demand forecasting, particularly in the over-allocated Colorado River Basin system facing ongoing, climate-driven hydrologic decline. The NEPA process should provide as much information as possible about the realities, limitations, and possibilities related to water accounting and water forecasting to help with stakeholder understanding and transparency. Reclamation should also update and improve its water accounting, forecasting, and modeling work during the NEPA process and in the alternative chosen for post-2026 operations.

i. More Robust and Effective Water Accounting

The availability and quality of data related to recent and current water use and demands varies widely within the Basin States and even within individual states. Moreover, climate change is affecting the water cycle and requiring re-evaluation of previous calculations such as crop evaporation. The water accounting for the Basin should include, at a minimum:

- Data sets for current and future demand that map closely to recent use and actual trends in water demand, including deployment of indirect measurements (e.g., satellite-based evapotranspiration measurement) where direct measurement is infeasible to better evaluate current use and changes in use over time.
- Efforts to improve the resolution of available flow data at a larger number of points in the Basin.
- Consideration of ongoing changes in crop types and irrigation methods in the evaluation of demand trends.
- Consideration of the impacts of temperature increases on future agricultural, industrial, and municipal demands.
- Better measurement of ecosystem uses of water and changes in response to drought and other stressors, including as a means of evaluating future environmental risks that may be associated with changing hydrological conditions.

ii. Improved Forecasting and Supply Estimation Effort

With aridification in the Basin, the data sets utilized in short-term forecasting and the data sets used in short-, mid-, and long-term system modeling should better reflect known aridification trends. Water forecasting for the Basin should include, at a minimum:

- Separation of unusually wet sequences or wet single years that may bias results.
- Development of hydrologies that include climate-driven temperature impacts in the Basin, such as temperature-adjusted versions of historical flows, in addition to use of flow data derived from global climate models (which currently do not downscale reliably at the resolution of the Colorado River Basin).
- Incorporation of aridification trends and temperature trends into hydrologic data sets, including typographies that account for potential landscape-level disturbances due to fire, vegetation changes, and other climate-related changes.
- Evaluation of system vulnerabilities to rapid changes in hydrologic conditions that may be possible in the future, including rapid swings in precipitation patterns (whether Basin-wide or on a regional basis).

iii. Improvements to Colorado River Modeling

The Colorado River Simulation System (CRSS) and the Colorado River Mid-term Modeling System (CRMMS) models have known shortfalls that limit stakeholder understanding of the true impacts that could occur. To improve the models, Reclamation should consider:

- Incorporating, either directly or indirectly (via post-processing or the use of secondary models), the potential to model impacts on key resources that lie outside of the current scope of CRMMS or CRSS but that are likely to play a key role in the NEPA process or in development of future system management strategies, such as:
    - availability of water to particular mainstem users within the existing priority system, in order to evaluate impacts to particular end users, including tribes;
    - availability of water to contractors and subcontractors within the CAP system;
    - availability of water to key environmental resources that may drive management decisions; and

  - defining desired flexibility to manage water between reservoirs to meet required or desired management objectives (e.g., Grand Canyon, below-reservoir reaches subject to BiOps).
- More clearly incorporating, identifying, and displaying key Colorado River system limits and thresholds, including but not limited to:
  - likely real minimum power pools and changes in hydropower production, including secondary impacts from loss of hydropower;
  - Glen Canyon Dam bypass limits; and
  - CAP system minimum pumping/delivery limitations.
- Making CRSS/CRMMS model documentation, underlying assumptions, and input data sets readily available for access by advanced users.

Conclusion

Phoenix greatly appreciates Reclamation's consideration of its comments on the NOI. We look forward to future discussions and collaboration with Reclamation and other Colorado River stakeholders as part of the guidelines process.

Sincerely,

Cynthia S. Campbell

Cynthia S. Campbell
Water Resources Management Advisor

Cc: Camillie Calimlim Touton, Commissioner, US Bureau of Reclamation
David Palumbo, Deputy Commissioner, US Bureau of Reclamation
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Tom Buschatzke, Water Resources Director, Arizona Department of Water Resources
Warren Tenney, Executive Director, Arizona Municipal Water Users Association
Brenda Burman, General Manager, Central Arizona Water Conservation District
Leslie Myers, Chief Water Executive, Salt River Project

ATTACHMENT D

Map of City Service Areas Served by Colorado River Water

AREA SERVED BY COLORADO RIVER

ATTACHMENT E

2024 Proposed Top Storage Concept

Revised RSA “Top Storage” Concept

(For Potential Consideration in Phase 2 Modeling)

DRAFT FOR DISCUSSION

Please note: this proposal remains a work in progress and has not been formally approved by any party involved in its development. This document has been created primarily to guide initial modeling efforts that would assess the feasibility of the proposed concepts and explore potential alternatives and modifications.

Rethinking ICS and Voluntary Reservoir Storage Rules

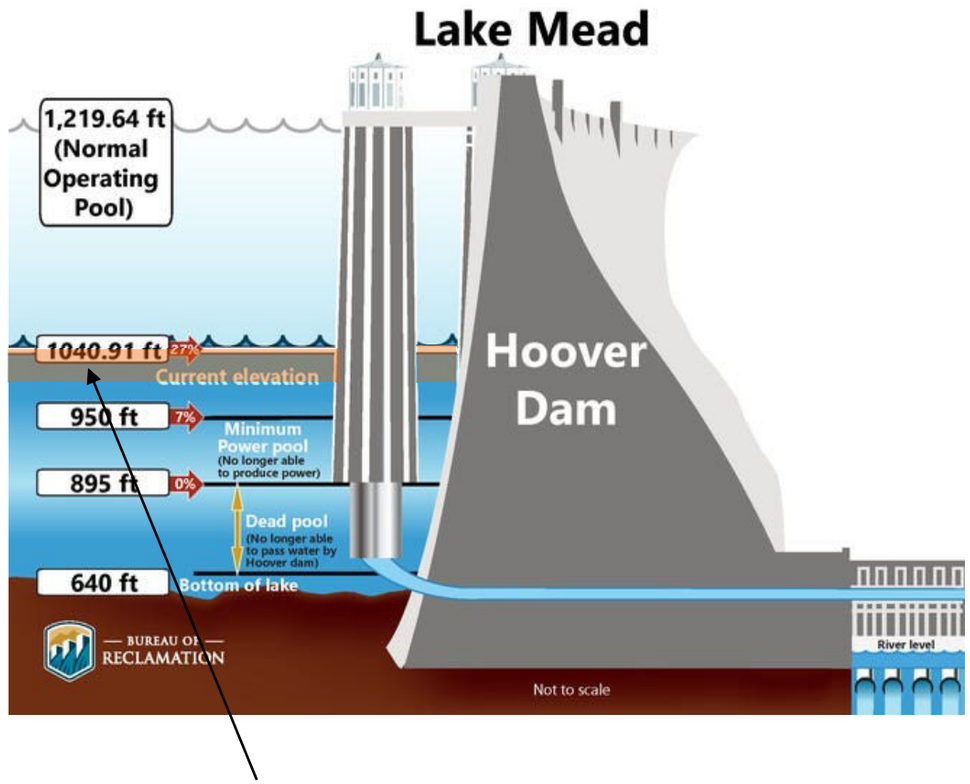
DISCUSSION DRAFT

The ICS program has been successful in encouraging water users to conserve water in Lake Mead. However, there are concerns about the potential for the use of ICS as a means of "gaming" reservoir elevations, and the potential for significant ICS withdrawals to accelerate reservoir declines in shortage years.

Under current rules, because ICS "counts" as part of the Lake Mead elevations that are used to set Lower Basin shortages, the storage of ICS has sometimes helped to maintain water deliveries at levels *higher* than would otherwise have occurred. At the same time, since stored ICS can be used to offset shortages, it potentially increases the amount of water withdrawn in a shortage, reducing the effectiveness of shortages in arresting reservoir declines.

A key evolutionary step for the ICS program after 2026 would be to evolve away from the current ICS program in favor of reservoir storage accounts (RSAs) that are based on "top storage." Volumes stored in RSAs would not "count" towards the calculation of water available for delivery to water users.

This approach would maintain most of the benefits of the ICS program – incentivizing conservation and creating greater flexibility in year-to-year water use. Water users could also use their stored RSA water to offset shortages in particular years without increasing shortage risks to others – because rules governing water availability would be applied as if RSA water was not present in the system.



ICS Pool (shaded) – Although the presence of ICS helped to boost Mead storage significantly, under the existing rules, the rapid withdrawal of ICS at lower elevations by some users could also have quickly dropped Lake Mead elevations further, triggering deeper shortages for other users.

Characteristics of Top Storage RSA

Not counted towards available storage. Top storage RSA would be "operationally neutral" – i.e. it would be discounted in assessing the current elevation or active storage of the reservoir(s). Thus, determinations related to the water available for regular delivery (i.e. shortage levels) would be based on the volume of *non-RSA water* in the normal operating pool.

Created via reduced use/increased supply. Similar to current rules for ICS, RSA water would be created by either reducing consumptive use of Colorado River water or increasing the system water supply in a particular year as compared to what would have otherwise occurred, subject to specific criteria that would ensure equitable application between users.

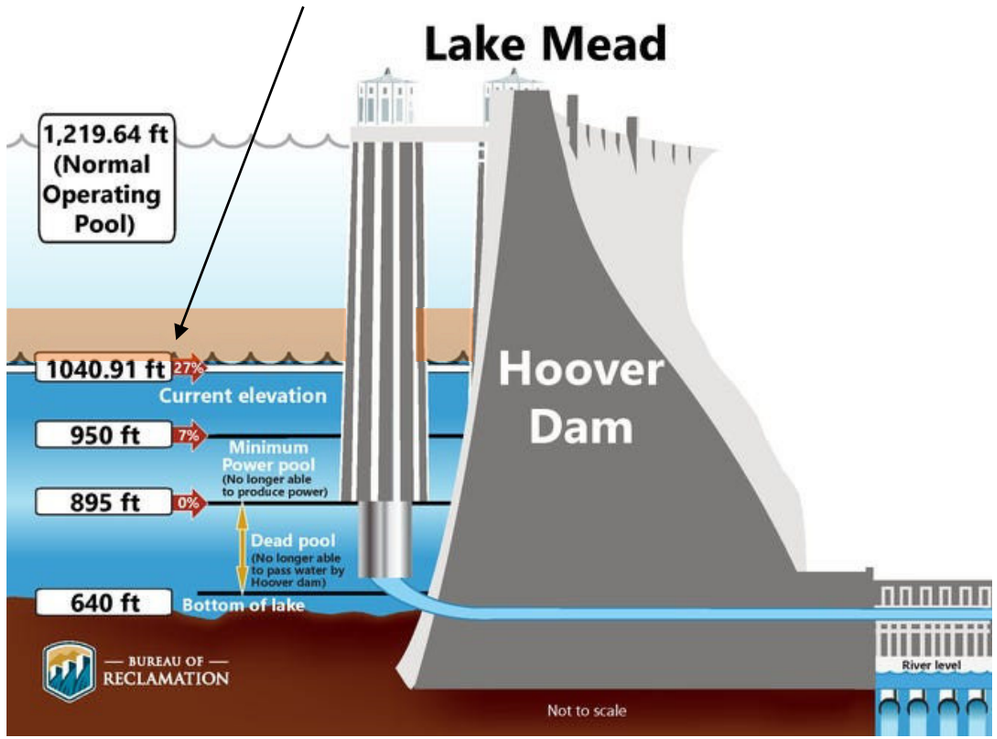
Delivered on top of normal deliveries. Like ICS, users holding RSA water could choose to deliver this water "on top" of their normal deliveries, including to manage inadvertent overruns or to supplement water deliveries in shortage years, helping them to mitigate the impacts of shortage conditions.

Operationally neutral, but still beneficial. Because top storage RSA water would not be counted in setting water delivery amounts, supplemental deliveries should be operationally neutral – they should not impact the amount of water available to other users in comparison to a scenario where the RSA water had never been created and stored. However, RSA water would still serve to keep reservoir levels higher than they would otherwise have been – protecting reservoir infrastructure and hydropower heads.

Subject to spill. In the event that the reservoir fills up (i.e, there is no longer sufficient empty space in the normal operating pool to accommodate top storage), RSA water would be the first to spill. in the event of a spill, the water most recently stored would spill first (reflecting the relatively lower systemic value of adding new top storage when reservoirs are already high). This "last in, first out" approach would apply regardless of the priority of the water stored.

"Top Storage" is a form of reservoir storage that is operationally neutral, takes an accurate annual evaporation assessment, and spills first during flood conditions.

Top Storage RSA Pool (shaded) – Top storage RSA water would "float on top" of the normal operating pool (occupying the empty portion of the reservoir's active storage space), and would not "count" in determining elevation or storage for purposes of assessing water available for normal delivery.



Protecting the Priority System

DISCUSSION DRAFT

A central concern that has been expressed by some users is that if shortage rules are inadequate to protect senior users, and storage that is created using lower-priority water can also be delivered during shortages, this could result in a situation where higher-priority users are shorted even as lower-priority users continue to deliver pre-stored, lower-priority water.

Priority at Creation. To address this challenge, RSA water would retain the relative priority characteristics that it had at the time of its creation. For example, if RSA water was created from Arizona Priority 4, it would remain Priority 4; if created from Priority 3, it would remain Arizona Priority 3 for purposes of any future delivery. (Same rules would apply to tribally-generated RSA.)

Delivery During Shortage. During shortage conditions, stored RSA water would then be available to the users that stored it based on its relative priority. For example, during periods when Arizona Priority 4 is being shorted but still remains available, Priority 4 RSA could potentially be delivered on top of a user's available Priority 4 allocation. However, if a shortage wipes out the Priority 4 allocation, the RSA water stored at that priority is also no longer available for delivery, absent a waiver from more senior users. (See examples on slide 7.)

Shortage to RSA Deliveries: RSA water deliveries would not be shorted as long as the priority remains available. (This is operationally neutral, so other users in the same priority are not better or worse off (but could see reduced CAP costs.)

To be evaluated in modeling:

- Is there a point where RSA storage water might become the only water in the system (or the majority)? How is priority addressed in those circumstances?
- Could trigger point(s) be set at low total system contents that would convert lower-priority RSA storage back to system water – e.g. at a point when more senior priorities are facing reductions?
- Would the priority-based rules for RSA delivery during shortage unduly disincentivize lower-priority conservation due to users being locked out of using it?

Evaporation rules. The balances of RSA storage accounts would be reduced each year to account for *actual evaporative losses in proportion to their total share of active storage in that reservoir.*

Methods for Creation of RSA Water

DISCUSSION DRAFT

Pre-approved RSA exhibits. Many types of top-storage RSA activities could be pre-approved via the development of standard form reservoir storage exhibits to a future Forbearance Agreement (or other similar mechanism) that describe a set of pre-defined, objective criteria that a project would need to meet. These criteria would include methods to ensure that storage is based on evidence-based analysis and water accounting, with appropriate validation through time. Assuming those criteria were met, Reclamation could directly approve a range of RSA creation/delivery projects. Those criteria should also define how baseline water uses are calculated so that this is done in an equitable manner.

Expansion of eligible conservation/supply enhancement activities. RSA water could be created via several types of activities that meet key characteristics. These could include water supply enhancements, efficiency practices, cessation of use, source switching, or other actions that would result in reduced consumptive use of Colorado River water or increased supply. These actions would need to be measured against a fair reasonable-use or historical-use baseline in order to demonstrate the reduced use or increased supply. For ongoing actions, this would involve a demonstration that actions are continuing to create those benefits; ongoing actions might also be subject to time limitations.

Broad Access. RSA water could be created by any BCPA Section 5 contractor, or by a PPR user under agreement with Reclamation. (A subcontractor (e.g. CAP subcontractor) could create RSA only with the written consent of the contract holder.) RSA water could be created by the Section 5 contractor for its own use, or any person could work with a Section 5 contractor to create RSA water.

Note: the vast majority of Section 5 contracts are held by districts, agencies, and other entities with multiple individual users; as a result, creation of RSA water would necessarily require affirmative approvals by those entities.

Methods for Delivery of RSA Water

Similar to current rules for ICS, RSA water would have to be delivered via a delivery contract with Reclamation.

When the Delivery Contract is Created. To limit the potential for speculative accumulation of RSA water by investors or other non-water users, an RSA delivery contract would be approved by Reclamation at the same time that the RSA is created that identifies the recipient. A delivery contract could also allow for the delivery of RSA water in the same year that it is created.

Nature of the Delivery Contract. Similar to current ICS, a contract for delivery of RSA will be treated as a Section 5 BCPA contract – for the one-time delivery of a specific volume of stored water, less evaporation, etc.

Who Can Hold a Delivery Contract. To limit the potential for speculative accumulation of RSA water, an RSA delivery contract can only be held by an entity who is physically capable of taking delivery of that water for a beneficial use (whether directly or via a wheeling agreement]. For example, a CAP subcontractor who could receive potential delivery of water via the System Use Agreement should be qualified to hold an RSA delivery contract, whether or not environmental compliance/final CAP wheeling approvals are in place.

Transfer of a Delivery Contract. With Reclamation approval, all or a portion of an RSA delivery contract can be (1) delivered to a different user; or (2) transferred to a different user, as long as they are eligible to hold a delivery contract. Transfers can be for compensation negotiated between the parties, and water delivered through an RSA delivery contract can be utilized in an exchange.

Reclamation approvals of a transfer would be similar to those that would apply to the temporary transfer of a Section 5 contract. Some of this could be pre-analyzed in the NEPA document.

The Arizona off-river transfer policy would not apply to these deliveries except if ADWR determined that an ongoing RSA creation/delivery transaction is being used to accomplish a permanent transfer to evade review.

Examples of Priority Implementation: Creation and Delivery

Example 1. A Priority 4 user creates Priority 4 RSA using its own water, and obtains a Priority 4 RSA delivery contract; OR a Priority 4 user works with a Priority 3 user to create Priority 3 RSA, and obtains a Priority 3 RSA delivery contract.

During a Priority 4 shortage, the Priority 4 user could deliver either the Priority 4 RSA OR the Priority 3 RSA (or both).

During a Priority 2/3 shortage, the Priority 4 user could not deliver the Priority 4 RSA, but could deliver the Priority 3 RSA.

Example 2. A Priority 3 user creates Priority 3 RSA using its own water, and obtains a Priority 3 RSA delivery contract; OR a Priority 4 user works with a Priority 3 user to create Priority 3 RSA, and obtains a Priority 3 RSA delivery contract.

During a Priority 4 shortage, the Priority 3 and Priority 4 users could deliver their Priority 3 RSA.

During a Priority 2/3 shortage, the Priority 3 and Priority 4 users could deliver their Priority 3 RSA.

During a Priority 1 shortage, neither the Priority 3 or Priority 4 users could deliver their Priority 3 RSA.

Example 3. A Priority 1 user creates Priority 1 RSA using its own water, and obtains a Priority 1 RSA delivery contract; OR a Priority 3 or 4 user works with a Priority 1 user to create Priority 1 RSA, and obtains a Priority 1 RSA delivery contract.

During a Priority 4 shortage and during a Priority 2/3 shortage, any of the users could deliver their Priority 1 RSA.

During a Priority 1 shortage, users could only deliver their Priority 1 RSA if the priority date of the Priority 1 user that created the RSA is higher than that of the other Priority 1 users that are still receiving water. For example, if a shortage was affecting PPRs with priority dates lower (i.e. later) than 1919, RSA with a 1905 priority could be delivered, but RSA with a 1920 priority could not.

Example 4. A Priority 3 agricultural user that has previously created Priority 3 RSA experiences an inadvertent overrun during a Priority 3 or 4 shortage. Instead of having their water delivery cut off, they debit their RSA account balance to continue receiving water and thus address the overrun. Alternatively, they work with a different user with an RSA account balance to utilize their storage for this same purpose. (Use of an RSA account balance to address overruns would be subject to the same storage priority restrictions as described above.)

Proposed Storage "Pools"

Top storage RSA water would be created, accumulated, and stored within several different mitigation "pools," which would help to serve different purposes and allow the system to reach required reduction targets.

Individual User Pool. Users within individual states could work with their own water supplies and/or in partnership with other users to create top storage RSA water. Those users could retain this water in storage, transfer water to other users *in the same state*, and/or choose to deliver this water "on top" of their normal deliveries, including to supplement deliveries in shortage years. This would allow users to work together to more flexibly manage resources and mitigate the individual impacts of shortage conditions.

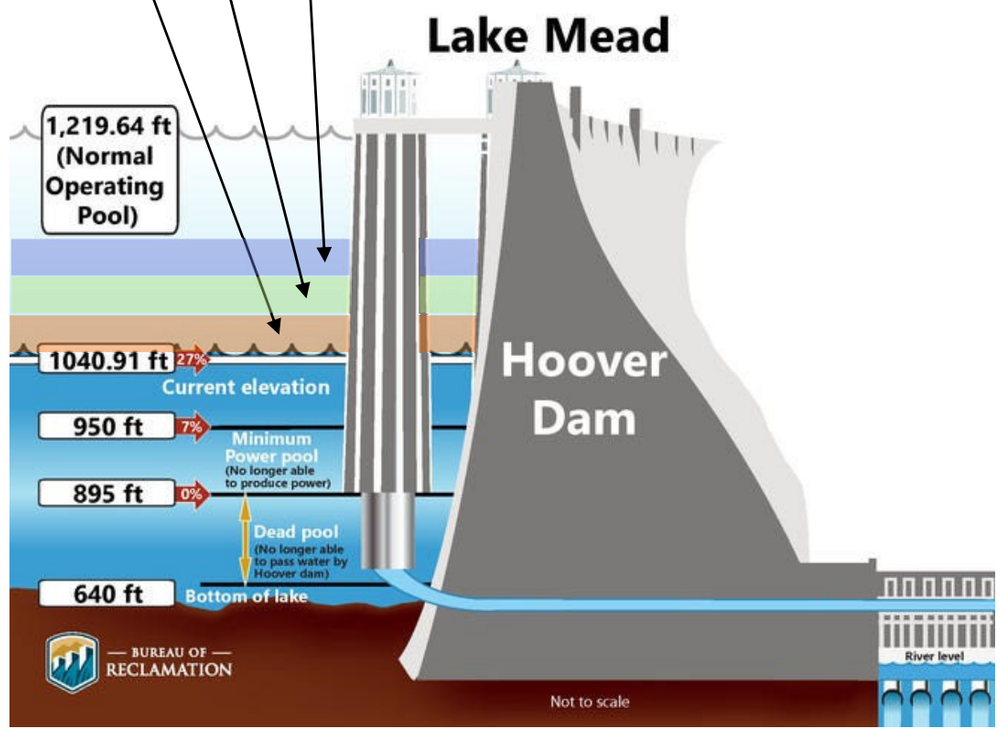
Federal Pool(s). Similar to the federal ICS pool approved in 2007, a federal RSA pool could be funded and developed to meet key federal and system-level objectives such as Treaty compliance, environmental protection, protection of Tribal interests, protection of critical facilities or infrastructure, and to backstop deliveries for human health and safety. Reclamation would also be able to move this and other stored RSA pools within the reservoir system (within certain guidelines) to meet key management objectives, such as protection of critical elevations or HFE releases.

State Pools. Basin states and agencies could work independently or in partnership with other states/agencies, individual users, or the federal government to create state-managed top storage RSA pools that could help to protect important core infrastructure or manage state-level risks, mitigate against future economic impacts of shortage conditions, meet interstate obligations, support economic development, or match federal contributions to system-level efforts.

Individual User Pool – Put and takes from and among individual users in the same state; can be used to mitigate individual shortages.

Federal Pool – The federal RSA pool could be funded and developed to help meet key federal and system-level objectives like protection of critical infrastructure, tribal needs, and ensuring human health and safety minimums.

State Pool – Developed by states and agencies independently or together, and could be used to protect core infrastructure, meet state or agency management objectives, or protect a broader group of users.



Expanding the Availability of Voluntary Top Storage

By making additions and withdrawals of RSA water "operationally neutral," a top storage approach could allow the amount of potential RSA storage to be increased substantially without increasing water user risks. Similarly, greater flexibility could potentially be allowed in the volume of "puts" and "takes" permitted from the RSA pool in any particular year.

The total volume of RSA would be limited by:

- The available, empty active storage space in the participating reservoir(s);
- There will be a need to impose some limits on (1) total storage held by each state; (2) total storage in federal/state pools; and (3) total storage held by individual users; each to ensure that space remains reasonably open access over time;
- Limits should be reevaluated periodically to ensure that they are resulting in equitable allocation of available storage space;
- Delivery volume limits will be specific to the rules for wheeling/use of delivery infrastructure;
- The need for other possible limitations will be evaluated via modeling.

Top storage created or held in Lake Powell could similarly be treated as operationally neutral, without affecting the releases of water from the Upper to the Lower Basin.

Option: Allowing for Movable Top Storage?

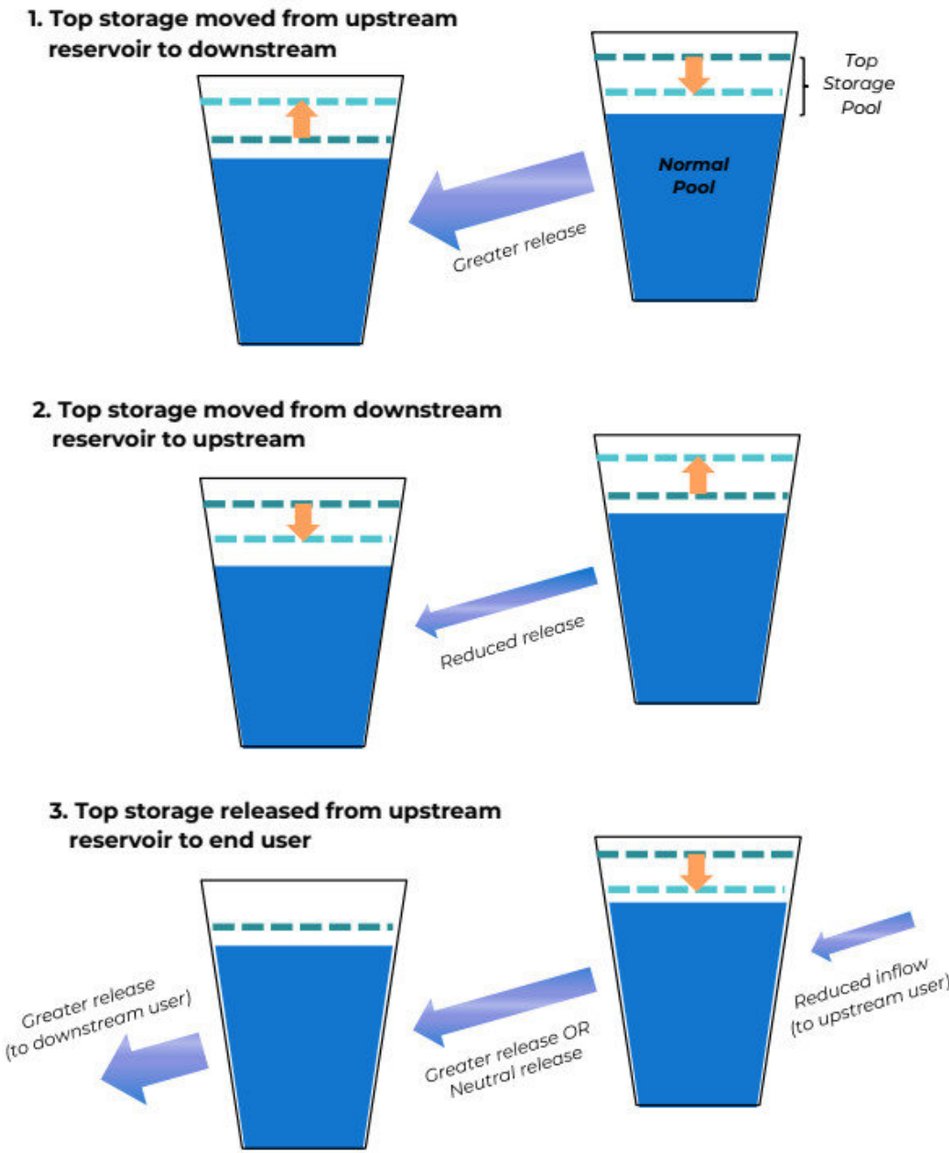
One other key evolutionary step could be to allow top storage water to be moved among Mead and Powell storage until actively called for delivery.

While rules would need to be adopted to protect water user interests and prevent undesirable impacts,[1] Reclamation could potentially gain useful management flexibility from a block of water that could be held back upstream or moved downstream without affecting water users.

For example, Reclamation could potentially move top storage RSA water between reservoirs to:

- Hold additional water in Powell and maintain reservoir protection volumes;
- Move additional water to Mead to protect SNWA intake levels;
- Boost hydropower production during particular periods; or
- Create environmental benefits, such as providing for intermittent, larger releases of water through the Grand Canyon.

Water temporarily released downstream could be recaptured at the next reservoir (e.g. Mead), and could be moved upstream by reducing flows during higher-flow portions of the water year or in a subsequent water year. When top storage RSA water was finally ordered for delivery by an upstream or downstream user, Reclamation would simply adjust the relative deliveries accordingly (within the limits of permitted operations).



1. For example, movements of water between reservoirs for beneficial management purposes would need to be accounted for independent of Lee Ferry obligations.