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 tribunary 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.

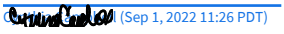
Phoenix recognizes that the types of investments required to manage these issues lie beyond the scope of the 2026 process and would necessarily need to be pursued in parallel or subsequent processes (in most cases involving other agencies at the state, federal, and local levels). Nevertheless, Reclamation 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