BUREAU OF RECLAMATION

Alternatives Report

Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead

Upper Colorado Basin Region
Lower Colorado Basin Region

U.S. Department of the Interior

January 2025

BUREAU OF
RECLAMATION

Mission Statements

The **Department of the Interior** protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the **Bureau of Reclamation** is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Executive Summary

In December 2007 the Secretary of the Interior adopted coordinated operating guidelines for operation of Glen Canyon Dam and Hoover Dam for an interim period that expires in 2026. To address long-term Colorado River operations after the expiration of these guidelines, the United States Department of the Interior initiated a National Environmental Policy Act process on June 16, 2023, to develop and adopt successor domestic guidelines and agreements for the operation of Glen Canyon Dam and Hoover Dam to take effect in mid-2026, before the current operational framework expires. On November 20, 2024, the Bureau of Reclamation published the range of alternatives planned for analysis in the draft environmental impact statement and committed to providing additional information in a subsequent report. This report describes these alternatives and the process for developing them in more detail.

The alternatives were developed over the past year and incorporate considerable input received from the Colorado River Basin States, Colorado River Basin Tribes, conservation organizations, other federal agencies, and other stakeholders during that time. Throughout 2024, the Bureau of Reclamation worked extensively with these key partners to integrate their input into the range of alternatives. The alternatives identified in this report provide a reasonable and broad range of Colorado River operations that capture an appropriate range of potential environmental impacts from implementing new operational guidelines post-2026.

The five alternatives described in detail in this report are:

No Action Alternative – Included as a requirement of the National Environmental Policy Act, the No Action Alternative assumes Colorado River operations would revert to annual determinations announced through the Annual Operating Plan for Colorado River Reservoirs process and be based on operating guidance in place prior to the adoption of the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead.

Federal Authorities Alternative – This alternative is designed to achieve protection of critical infrastructure within the Department of the Interior's and Bureau of Reclamation's current statutory authorities and absent new stakeholder agreements.

Federal Authorities Hybrid Alternative – This alternative is based on proposals and concepts from Tribes, federal agencies, and other stakeholders and is designed to achieve protection of critical infrastructure while benefitting key resources through an approach to distributing storage between Lake Powell and Lake Mead that enhances the reservoirs' ability to support the Colorado River Basin.

Cooperative Conservation Alternative – This alternative is informed by a proposal submitted by a consortium of conservation organizations with the goal of stabilizing system storage, integrating stewardship and mitigation strategies of Lake Powell and Lake Mead, maintaining opportunities for

binational cooperative measures, incentivizing water conservation, and designing flexible water management strategies.

Basin Hybrid Alternative – This alternative reflects components of the proposals and concepts submitted by the Upper Division States, Lower Division States, and Colorado River Basin Tribes that could provide a basis for coordinated operations and may facilitate greater agreement across the Basin.

Releasing the Bureau of Reclamation's intended approach to the alternatives in advance of publishing the draft environmental impact statement enhances transparency and public understanding of this important National Environmental Policy Act process and provides greater opportunities for collaboration. Information submitted following the November 20, 2024, publication of the range of alternatives has not been considered in this report. Following the publication of this report, the Bureau of Reclamation will continue its efforts working with Colorado River Basin partners and stakeholders and will analyze information submitted after November 20, 2024. The Bureau of Reclamation will also prepare the environmental impact analysis for the draft environmental impact statement.

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Acronyms and Abbreviations

1944 Water Treaty	1944 United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande
2007 Interim Guidelines	2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead
Basin	Colorado River Basin
CRSP	Colorado River Storage Project
CY	calendar year
Department	United States Department of the Interior
Decree	Supreme Court Decree in *Arizona v. California*
EIS	environmental impact statement
EOWY	end-of-water-year
ICS	Intentionally Created Surplus
kaf	thousand acre-feet
LROC	Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs
LTEMP	Glen Canyon Dam Long-Term Experimental and Management Plan
maf	million acre-feet
Mexico	United Mexican States
NEPA	National Environmental Policy Act of 1969
Post-2026 process	Post-2026 Colorado River Reservoir Operations process
Reclamation	Bureau of Reclamation
ROD	Record of Decision
Secretary	Secretary of the Interior
WY	water year

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1. Introduction

For the first time since initiating operations of Hoover Dam (1937) and Glen Canyon Dam (1963), in December 2007 the United States Department of the Interior (Department) adopted detailed, objective operating guidelines to determine the coordinated operations of both Glen Canyon and Hoover Dams throughout their full operating ranges.

The 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines) were specifically adopted for a limited (interim) term of 20 years through 2026 to gain actual operating experience that would inform future modifications and improvements to the operations of these critical facilities.

Beginning in 2020, the Department undertook a detailed public review to assess how the actual operations since 2007 met the stated goals and objectives of the adopted guidelines. Following that assessment, the Department began a two-year period seeking input from Colorado River Basin (Basin) partners and stakeholders, along with the general public, on how the 2007 Interim Guidelines could or should be modified in light of their performance over the past two decades as informed by the best available information on future conditions and risks.

Informed by that input, in the summer of 2023 the Department formally initiated a process pursuant to the National Environmental Policy Act of 1969 (NEPA) to develop the successor guidelines to the 2007 Interim Guidelines. Since that time, the Bureau of Reclamation (Reclamation), in collaboration with Basin partners and stakeholders, has been focused on crafting a broad and reasonable range of potential alternatives for consideration in the upcoming draft environmental impact statement (EIS).

This report is a summarization of the best information Reclamation has available as of November 20, 2024, and describes how that input has been used to set a broad and reasonable range of potential alternatives for post-2026 operations for consideration in the upcoming draft EIS.

2. Purpose of this Report

This alternatives report was prepared to document the alternatives Reclamation anticipates carrying forward for analysis in the draft EIS for the Post-2026 Colorado River Reservoir Operations process (Post-2026 process). As several important reservoir and water management decisional documents and agreements that govern operation of Colorado River facilities and management of Colorado River water are scheduled to expire in 2026, the Post-2026 process was formally initiated in June 2023 to develop successor domestic Colorado River guidelines and strategies for operation of Lake Powell and Lake Mead.

This report describes Reclamation's anticipated range of alternatives that were first identified to the general public on November 20, 2024, for full environmental impact analysis in the upcoming draft EIS, which is currently under development. The report describes, in general terms, the process undertaken by Reclamation to develop the alternatives, provides a detailed description of the operational elements for each alternative, and compares the operational elements across each alternative. Since the identification of the anticipated range of alternatives, Reclamation has received additional information from Basin partners and stakeholders, which it will consider, analyze, and incorporate as appropriate in the forthcoming draft EIS.

Releasing Reclamation's intended approach to the alternatives in advance of publishing the draft EIS enhances transparency and public understanding of this important NEPA process and provides greater opportunities for collaboration. Following the publication of this report, Reclamation will continue its efforts working with Basin partners and stakeholders and will analyze information submitted after November 20, 2024. Reclamation will also prepare the environmental impact analysis for the draft EIS.

3. Background

The Basin provides essential water supplies to approximately 40 million people, nearly 5.5 million acres of agricultural lands, and habitat for ecological resources across the southwestern United States and northwestern United Mexican States (Mexico). Declining Colorado River water supplies, coupled with record-low runoff conditions since 1999, are contributing to the prolonged drought in the Basin, resulting in historically low reservoir levels at Lake Powell and Lake Mead.

Several reservoir and water management decisional documents and agreements that govern the operation of Colorado River facilities and management of the Colorado River are scheduled to expire in 2026.[1] These include the 2007 Interim Guidelines[2] and the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the 1944 United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty). Reclamation, as directed by the Secretary of the Interior (Secretary), is developing successor domestic agreements for the continued operation of Lake Powell and Lake Mead as part of the Post-2026 process. As a first step in developing these agreements, in June 2022 the Department solicited stakeholder and public input through pre-scoping efforts related to long-term Colorado River operations.[3] Subsequently, the Department initiated a NEPA process on June 16, 2023 (88 *Federal Register* 39455), to develop and adopt successor domestic guidelines and agreements for the operation of Glen Canyon Dam and Hoover Dam to take effect when the current operations expire in 2026.

[1] Except for the special provisions described in Section XI.G.8. of the 2007 Interim Guidelines Record of Decision, the guidelines are anticipated to remain in effect through December 31, 2025 (through preparation of the 2026 Annual Operating Plan). With the exception of certain Intentionally Created Surplus recovery and Upper Basin demand management provisions, operations under the Guidelines and the 2019 Drought Contingency Plans are in effect through 2026. The 2026 Annual Operating Plan will cover operations from October 1, 2025, through September 30, 2026, for Glen Canyon Dam and January 1, 2026, through December 31, 2026, for Hoover Dam.

[2] The 2007 Interim Guidelines Record of Decision, as modified by the 2024 Supplemental Environmental Impact Statement for Near Term Colorado River Operations Record of Decision.

[3] The Department published a Federal Register notice on June 24, 2022 (87 *Federal Register* 37884), seeking public input on both procedural approaches to and operational elements of developing post-2026 operations.

4. Proposed Federal Action

As set forth in the Federal Register Notice published on October 20, 2023 (88 *Federal Register* 72535), this section identifies the anticipated Proposed Federal Action in the ongoing NEPA process.

Reclamation, acting on behalf of the Secretary, proposes to take action to adopt specific guidelines and coordinated reservoir management strategies to address operations of Lake Powell and Lake Mead through their full operating ranges. This action would provide improved predictability to all water users and managers in the Basin by developing and adopting objective guidelines for the operation of Glen Canyon Dam and Hoover Dam to take effect when the current operating guidelines expire in 2026. This action is designed to provide for the sustainable management of the Colorado River system and its resources under a wide range of potential future system conditions due to a changing climate.

Based on public input, the Department anticipates the guidelines would include the following elements:

(1) Identification of circumstances under which the Secretary would allocate, reduce, or increase the annual amount of water available for consumptive use from Lake Mead to the Lower Division States (Arizona, California, and Nevada) at, below, or above 7.5 million acre-feet (maf), pursuant to the Supreme Court Decree in *Arizona v. California* (Decree).[4]

(2) Coordinated operations of Lake Powell and Lake Mead, particularly under low reservoir conditions.

(3) Storage and delivery of conserved water in Lake Mead and/or Lake Powell to increase the flexibility to meet water use needs from both reservoirs, including the storage and delivery of non-system water; exchanges; and water conserved through extraordinary measures by or for Tribal, agricultural, or municipal entities.

The proposed federal action allows for development of robust operating guidelines for Lake Powell and Lake Mead without precluding upstream or downstream actions needed to protect critical reservoir elevations at Lake Powell and Lake Mead, such as the following:

- Approaches that consider total system storage in all major Colorado River reservoirs and/or actual inflows to determine coordinated operations of Lake Powell and Lake Mead.
- Approaches that include opportunities for conservation, augmentation, demand management, or other water management strategies.
- Temporary emergency response operations at upstream Colorado River reservoirs to protect critical infrastructure at Glen Canyon Dam, so long as the project-specific operations of those reservoirs remain within their respective Records of Decision (RODs).

[4] The Department intends to meet any consultation requirements identified in Article II(B)(3) of the Supreme Court Decree in *Arizona v. California* through the ongoing NEPA process initiated by the Federal Register Notice of June 16, 2023 (88 *Federal Register* 39455), and the annual implementation of guidelines developed through this process.

The Department intends that the guidelines be interim in nature and extend for at least the same duration as the 2007 Interim Guidelines (approximately 20 years), subject to further consideration during the NEPA process. Adoption of new guidelines for an interim (or limited) period provides the opportunity to gain additional experience for operating the reservoirs, thereby informing future operational and water management decisions.

Recognizing additional authorities may be developed, it is the intent of the Department to adopt and implement the guidelines in a manner consistent with the Law of the River.[5] It is also the intent of the Department that the guidelines be used to implement the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs Pursuant to the Colorado River Basin Project Act of September 30, 1968 (LROC).

[5] The treaties, compacts, decrees, statutes, regulations, contracts, and other legal documents and agreements applicable to the allocation, appropriation, development, exportation, and management of the waters of the Basin are often referred to as the "Law of the River." There is no single, universally agreed-upon definition of the "Law of the River," but it is useful as a shorthand reference to describe this longstanding and complex body of legal agreements governing the Colorado River.

5. Purpose of and Need for the Proposed Federal Action

As set forth in the Federal Register Notice published on October 20, 2023 (88 *Federal Register* 72535), this section identifies the Purpose of and Need for the Proposed Federal Action in the ongoing NEPA process.

The proposed federal action is needed for the following reasons:

- *The Secretary is legally required to coordinate operations of Colorado River reservoirs:* The Colorado River Basin Project Act of 1968 directs the Secretary to propose criteria for the coordinated long-range operation of Colorado River reservoirs. In compliance with this obligation, the LROC were developed and adopted by the Secretary in 1970. The LROC provide general narrative guidance regarding Lake Powell and Lake Mead operations but do not contain specific, objective criteria to guide annual operations. To address this inadequacy, the 2007 Interim Guidelines were developed to provide objective criteria used by the Department to implement the LROC. These guidelines have provided predictability needed by the entities that receive Colorado River water to better plan for and manage available water supplies from the Colorado River and other sources.
- *2007 Interim Guidelines are expiring:* Current operational guidelines expire during the 2026 operating year. The Department has determined that specific, objective operational guidelines are important to provide improved predictability and should be established for another interim period beyond 2026. Most of the federal and non-federal agreements associated with implementing provisions of the 2007 Interim Guidelines also expire after the 2026 operating year.
- *2007 Interim Guidelines have not sufficiently reduced risk:* Based on operational experience since 2007, the current guidelines are not robust enough to manage in a way that is sufficiently protective of the resources dependent on the Colorado River, particularly under dry hydrologic conditions. Despite near-continuous drought-response actions in recent years, low-reservoir conditions have persisted and new infrastructure risks at Glen Canyon Dam have arisen. More robust and adaptive guidelines are needed for the efficient and sustainable management of the major mainstream Colorado River reservoirs and system resources.
- *Imbalance between water supply and demand will be exacerbated by increasingly likely low-runoff conditions:* The Colorado River Basin is experiencing climate-change induced aridification, and long-term and sustained drought and low-runoff conditions should be expected in the future. These conditions will exacerbate the now widely recognized imbalance between water supply and demand in the Colorado River 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.
- *Expanded and innovative use of conservation is needed:* Recognizing the anticipated future low-runoff conditions in the Colorado River Basin, the Department has also determined a need

for guidelines that provide Colorado River water users, including Basin Tribes, 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.

- *Addressing Tribal concerns regarding Colorado River Basin management is needed:* Basin Tribes have expressed concern that the current approach to Colorado River water management is insufficient to address the range of interests, needs, and fundamental rights of the Basin Tribes. The Department has determined a need for guidelines that provide flexibility and predictability for Basin Tribes to remain able to benefit from their water rights and have an opportunity to participate in voluntary conservation programs.

The purpose for the proposed federal action is to:

- Update and expand management guidelines for Colorado River reservoirs, particularly for Lake Powell and Lake Mead;
- Provide Colorado River water users a greater degree of predictability with respect to the amount of annual water available 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.

6. Alternatives Development Process

The goal of the alternatives development phase was to develop a reasonable and broad range of alternatives through collaboration with Basin partners, stakeholders, cooperating agencies, and the public who submitted information for potential inclusion and analysis in the draft EIS. Analyzing a sufficiently broad range of alternatives in a wide range of potential future conditions will ensure that the decision-maker and the public are informed of all impacts analyses and tradeoffs of different operational approaches as required in an EIS.

6.1 Input Received During Alternatives Development

The alternatives development phase commenced immediately after the conclusion of the scoping period in October 2023. Since that time, Reclamation received considerable input from the Basin States,[6] many Basin Tribes,[7] conservation organizations, other federal agencies, and other stakeholders. Input submitted ranged from detailed proposed alternatives to operational concepts and principles. Throughout the alternatives development phase, Reclamation had over 60 meetings with states, Tribes, and other partners to review and discuss their input.

Proposals submitted by the Upper Division States,[8] the Lower Division States,[9] the Gila River Indian Community, and a consortium of conservation organizations[10] contained sufficient detail and information to be potentially included as a full alternative. Reclamation worked extensively with these entities to not only understand and gather additional information, but also to model and perform detailed preliminary analyses of their proposals. Reclamation discussed these results and potential refinements on numerous occasions with the submitting entities and presented the preliminary modeling results of these proposed alternatives during a public webinar in October 2024.

Reclamation also received input through its Post-2026 Operations Exploration Web Tool, designed to enable stakeholders to explore operational strategies and facilitate collaboration. While the more than 300 operational strategies developed and explored by stakeholders and the public in the web

[6] Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming
[7] There are 30 federally recognized Native American Tribes in the Colorado River Basin: Ak-Chin Indian Community, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort McDowell Yavapai Nation, Fort Mojave Indian Tribe, Fort Yuma-Quechan Tribe, Gila River Indian Community, Havasupai Tribe, Hopi Tribe, Hualapai Tribe, Jicarilla Apache Nation, Kaibab Band of Paiute Indians, Las Vegas Paiute Tribe, Moapa Band of Paiute Indians, Navajo Nation, Pascua Yaqui Tribe, Pueblo of Zuni, Salt River Pima-Maricopa Indian Community, San Carlos Apache Tribe, San Juan Southern Paiute, Shivwits Band of Paiutes, Southern Ute Indian Tribe, Tohono O'odham Nation, Tonto Apache Tribe, Ute Indian Tribe of the Uintah and Ouray Reservation, Ute Mountain Ute Tribe, White Mountain Apache Tribe, Yavapai-Apache Nation, and Yavapai-Prescott Indian Tribe.
[8] Colorado, New Mexico, Utah, and Wyoming
[9] Arizona, California, and Nevada
[10] National Audubon Society, Western Resource Advocates, Theodore Roosevelt Conservation Partnership, American Rivers, The Nature Conservancy, Environmental Defense Fund, and Trout Unlimited

tool are not considered as officially submitted alternatives, they informed Reclamation's design of alternatives.

6.2 Identification of Anticipated Alternatives

As noted above, over the past two years, through pre-scoping, scoping, and alternatives development, Reclamation received and evaluated a voluminous and unprecedented amount of input from several stakeholders and the public. Based on this input, numerous potential operational concepts and strategies were evaluated, including quantitatively through preliminary modeling. From this analysis, on November 20, 2024, Reclamation identified five alternatives (No Action and four action alternatives) that capture an appropriate range of potential environmental impacts from implementing new operational guidelines post-2026.

The five anticipated alternatives are:

- No Action Alternative
- Federal Authorities Alternative
- Federal Authorities Hybrid Alternative
- Cooperative Conservation Alternative
- Basin Hybrid Alternative

Reclamation will continue to refine these alternatives based on new information, public input, and evolving collaboration throughout the Basin, both prior to and after publication of the draft EIS. The following sections summarize the key basis for and elements of each of the alternatives anticipated to be fully analyzed in the draft EIS.

Of the four proposals identified in **Section 6.1**, Reclamation is not carrying forward proposals by the Upper Division States, Lower Division States, or the Gila River Indian Community as full alternatives for analysis in the draft EIS. However, Reclamation crafted action alternatives—the Basin Hybrid Alternative and the Federal Authorities Hybrid Alternative—that include a number of key elements of these submissions.

Based on preliminary modeling results, Reclamation concluded that, as submitted in the spring of 2024, the Upper Division and Lower Division proposals do not provide an appropriate basis for comprehensive and coordinated operations of Lake Powell and Lake Mead, a necessary component of the purpose and need for this proposed action. During conversations with Basin State representatives, Reclamation identified and communicated concerns about imbalanced Basin impacts and lack of reservoir coordination. Following these discussions, and subsequent to the November 20, 2024 announcements, additional information has been provided by state and Tribal representatives, which will be reviewed and assessed as development of the draft EIS continues.

Reclamation also worked closely with the Gila River Indian Community to fully understand the objectives, perspectives, and goals associated with their proposal. The Community proposed several unique operational elements as well as several elements that were similar to or the same as those

submitted by the Lower Division States. Reclamation has integrated the majority of the concepts embodied in the Community's submission within the range of alternatives, primarily the Federal Authorities Hybrid Alternative and the Basin Hybrid Alternative, which will be fully analyzed in the draft EIS.

7. Description of the Alternatives

The sections that follow include information on the overall concepts and specific elements of the alternatives to be considered in the draft EIS.

7.1 Analysis Concepts Common to All Alternatives

All alternatives will be analyzed under a set of modeling assumptions, including assumptions about future hydrology, future Upper Basin demand, future Lower Basin demand, and reservoir initial conditions. While some assumptions are specific to certain alternatives, many are common to all alternatives. Modeling assumptions and results will be detailed in the draft EIS. The analysis will also compare the performance of alternatives over a common set of key hydrologic metrics including reservoir elevations, water use in the Upper and Lower Basins, and river flows.

7.1.1 Hydrologic Metrics – Including Flow of the Colorado River at Lee Ferry

The proposed federal action is to develop and adopt specific guidelines that will be used to implement the LROC.[11] Reclamation received input and questions concerning whether the proposed federal action would continue to comply with relevant provisions of the 1922 Colorado River Compact concerning the flow of Colorado River at Lee Ferry during the NEPA process and particularly after the scoping period. The proposed federal action is not designed to provide interpretation of the 1922 Colorado River Compact or resolve differing interpretations by Basin States, Basin Tribes, and other stakeholders. Reclamation will follow all relevant provisions of federal law to implement the proposed federal action, including relevant provisions of the Law of the River.

Reclamation recognizes that, under Article II(2) of the LROC, the "objective shall be to maintain a minimum release of water from Lake Powell of 8.23 [maf]."[12] Reclamation also recognizes that variation in releases of water above and below the minimum objective release of 8.23 maf can, in appropriate circumstances, be adopted. Given the proposed federal action and in order to inform Basin partners and stakeholders of the relevant considerations, Reclamation plans to identify and publish any annual deficits below the objective release of 8.23 maf, as well as relevant 10-year metrics of particular interest at Lee Ferry, such as the 10-year consecutive aggregate flow, along with any deficit in the 10-year consecutive aggregate flow (such as, any deficit from 82.5 maf and 75 maf).

While the LROC are "administered consistent with applicable federal laws," the draft EIS will also expressly note that releases from Lake Powell pursuant to the LROC or any adopted guidelines "shall not prejudice the position of either the upper or lower basin interests with respect to the required deliveries at Lee Ferry pursuant to the Colorado River Compact."[13]

[11] 88 *Federal Register* 72535
[12] LROC Article II(2)
[13] LROC Article II(5)

Reclamation's goal in providing detailed information on the potential flow of the river at Lee Ferry under all analyzed alternatives is to ensure that all entities, including the Upper and Lower Division States, can use the relevant flow information to assess how potential future operations under the various alternatives comply with their respective views of the 1922 Colorado River Compact. This is of particular importance in the absence of consensus among various Basin entities on what operations are required under the Law of the River generally or specifically regarding the 1922 Colorado River Compact's Article III obligations. In light of conflicting interpretations, Reclamation plans to display the 10-year consecutive aggregate flows to provide the best available technical and scientific information to support development of Post-2026 operational guidelines (including ongoing discussions among Basin States, Basin Tribes, and affected water users in the Basin). Since 1970, the Basin States have supported operations and reached agreements among themselves and with the Secretary on various aspects of Colorado River reservoir operations. It is beyond question that, historically, achieving a consensus-based approach to Basin reservoir operations has proved critical to the long-term operating success of the Basin.

7.2 Operational Concepts Common to All Alternatives

The concepts below are related to operations and are common across all alternatives.

- Releases from Lake Powell may be less than the specified release at elevations below 3,490 feet due to Glen Canyon Dam infrastructure limitations.
- Monthly releases from Lake Powell meet Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP)[14] minimum flows unless they are reduced by Glen Canyon Dam infrastructure constraints below elevation 3,490 feet.
- When Lake Powell is above elevation 3,680 feet, releases deviate from the planned release for spill avoidance and infrastructure protection at high elevations.
- Additional Lower Basin shortages (and potential additional reductions in water deliveries to Mexico) may be necessary under future hydrologic scenarios where Lake Mead approaches dead pool.[15]
- As in the 2001 Interim Surplus Guidelines and 2007 Interim Guidelines, the Secretary retains all applicable authority to respond to exigent and emergency conditions.
- The determination of deliveries to Mexico is not a part of the proposed federal action. Any such determination would be made in accordance with the 1944 Water Treaty. Nevertheless, modeling assumptions with respect to the distribution of shortages for the Lower Division States include corresponding water delivery reductions to Mexico in order to analyze potential impacts on hydrologic and other environmental resources. Shortage amounts described are amounts of total shortage, including Mexico. Modeling assumptions that identify water deliveries to Mexico pursuant to the 1944 Water Treaty would be developed

[14] 2016 Glen Canyon Dam Long-Term Experimental and Management Plan Environmental Impact Statement and ROD, as modified by the 2024 Glen Canyon Dam Long-Term Experimental and Management Plan Supplemental Environmental Impact Statement and ROD.

[15] Lake Mead elevation 895 feet is considered dead pool, the elevation at which water cannot be regularly released from a reservoir, which would effectively prevent Colorado River diversions by downstream users.

after all necessary and appropriate discussions have been completed with the United States International Boundary and Water Commission in consultation with the Department of State.

- An appropriate level of detail regarding implementation of these alternatives will be included in the draft and final EIS. Action alternatives will have unique attributes regarding necessary implementation agreements, which will be identified and described in these documents, including any implementation agreements resulting from this process.

7.3 No Action Alternative

Under NEPA, an action agency is required to describe and analyze a "no action" alternative in an EIS. A no action alternative must be carefully tailored depending on whether the proposed action would be a wholly new activity or would be a part of ongoing or continuing actions. The analysis of a no action alternative provides a benchmark allowing decision-makers and the public to compare and contrast the levels of environmental effects associated with the various alternatives.

As a threshold matter, Reclamation is not considering ceasing operations of Glen Canyon Dam or Hoover Dam as the No Action Alternative. Doing so would be inappropriate given the proposed federal action of adopting guidelines for full operating ranges of these Reclamation facilities.

The No Action Alternative is a requirement of NEPA and provides an additional alternative for comparison within the range of alternatives. Reclamation carefully reviewed the No Action Alternative included in the 2007 Interim Guidelines Final EIS. Consistent with that No Action Alternative, with refinements, Reclamation based the anticipated No Action Alternative on the operating guidance that was in place before the adoption of the 2007 Interim Guidelines ROD.

Under this alternative, following the expiration of current domestic and international implementing agreements in 2026, Reclamation operations are assumed to immediately revert to the assumptions embedded in the No Action Alternative beginning October 1, 2026. This approach would represent a change from current operations (which are most closely captured in the Continued Current Strategies comparative baseline)[16] but would not represent a decision by Reclamation to adopt a new operating strategy.

Reclamation is not including the No Action Alternative with the expectation that it would be adopted because this alternative does not satisfy the purpose of and need for this proposed federal action. Instead, its inclusion is designed to clearly describe to the public what the limitations and potential environmental effects of such a strategy would be.

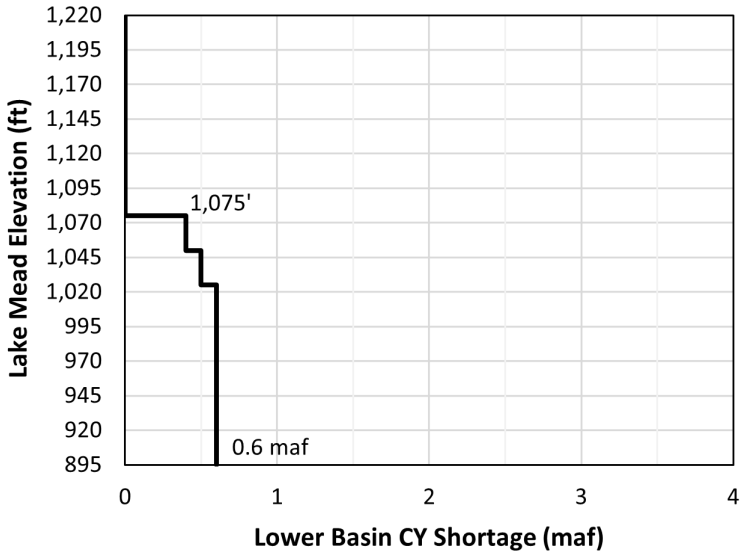
[16] The current operational framework relies on strategies and agreements that expire in 2026, including the 2007 Interim Guidelines, the 2019 Drought Contingency Plan, Minute 323 of the 1944 Water Treaty, and other agreements. Because this operational framework cannot continue beyond 2026 without additional actions by the parties and new agreements, it would be inappropriate to assume the continuation of current operational strategies in the No Action Alternative. For the draft EIS, Reclamation plans to include the Continued Current Strategies comparative baseline as a contemporary set of operations that stakeholders are familiar with to evaluate performance of the alternatives (including No Action) and facilitate public understanding and decision-making.

7.3.1 Guidelines to Reduce or Increase Deliveries from Lake Mead

7.3.1.1 Shortage Conditions

The shortage volume would be determined for the upcoming calendar year (CY) based on January 1 Lake Mead elevation using the curve depicted in **Figure 1**. Shortages would be distributed based on priority.

Figure 1
Shortage Guidelines to Reduce Deliveries from Lake Mead, No Action Alternative



7.3.1.2 Surplus Conditions

Volumes above normal apportionment would be distributed only when criteria are met in Lake Mead for a 70R Surplus Condition[17] or a Flood Control Surplus Condition.

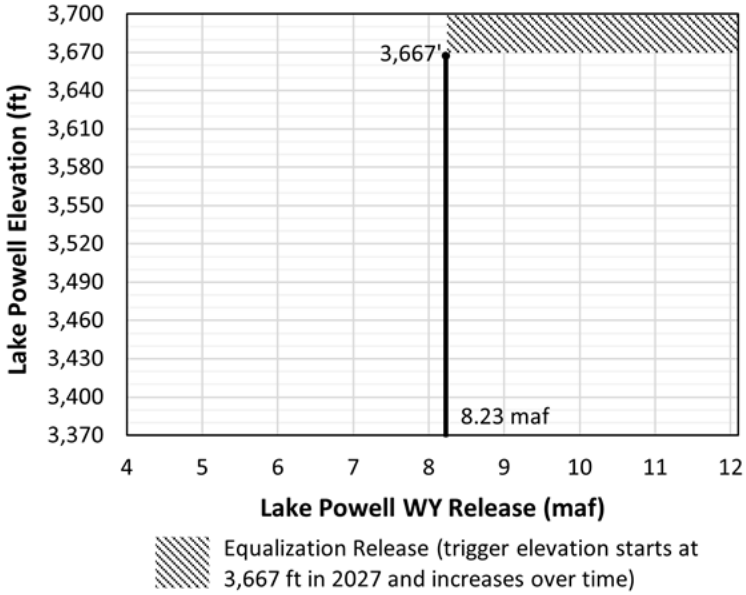
[17] Under the 70R Strategy, a surplus condition is based on the system space requirement at the beginning of each year. Based on the 70th percentile historical runoff, a normal 7.5 maf delivery to the Lower Division States, the Upper Basin scheduled use, and Lake Powell and Lake Mead volumes at the beginning of the year, the volume of water in excess of the system space requirement at the end of the year is estimated. If that volume is greater than zero, a Surplus is declared.

7.3.2 Coordinated Reservoir Operations (Lake Powell and Lake Mead)

7.3.2.1 Basic Operations

The water year (WY) release volume from Lake Powell would be calculated based on the October 1 elevation of Lake Powell using the curve depicted in **Figure 2**. If Lake Powell is above the equalization elevation in any month, WY releases could be adjusted above 8.23 maf if needed to bring Lake Powell elevation down to the equalization line based on the 2007 Interim Guidelines[18] or to equalize storage between Lake Powell and Lake Mead to the extent practicable, whichever is reached first. The equalization elevation would grow over time. In 2027, equalization would be triggered at 3,667 feet; it would reach 3,680 feet in 2038 and would remain at 3,680 feet through the end of the analysis period.

Figure 2
Coordinated Operations of Lake Powell and Lake Mead, No Action Alternative



7.3.2.2 Infrastructure Protection and Other Considerations

No adjustments to Lake Powell releases would be made to protect physical elevation 3,490 feet; however, Reclamation maintains the authority to modify operations to protect Glen Canyon Dam infrastructure.

[18] For modeling purposes, Reclamation intends that the equalization line concept used in the 2007 Interim Guidelines be applied and extended in the same manner as adopted in the 2007 Interim Guidelines with reference to 602(a) considerations.

7.3.3 Storage and Delivery of Conserved System and Non-System Water

7.3.3.1 Lake Powell and Lake Mead Mechanisms

There would be no mechanisms to proactively conserve and store water in Lake Powell or Lake Mead.

7.3.3.2 Treatment of Pre-2027 ICS Conservation

Any water conserved under previous mechanisms that remains in Lake Mead in 2027 would be delivered in accordance with existing agreements.

7.3.4 Additional Activities Above Lake Powell

7.3.4.1 Upper Basin Conservation

No Upper Basin conservation would be included.

7.3.4.2 Releases to Protect Glen Canyon Dam

While assumptions for releases from Colorado River Storage Project (CRSP) Upper Initial Units[19] have not been developed for this alternative, Reclamation maintains the authority to operate its reservoirs to protect Glen Canyon Dam infrastructure.

7.4 Federal Authorities Alternative

The Federal Authorities Alternative is designed to achieve protection of critical infrastructure within the Department's and Reclamation's current statutory authorities and absent new stakeholder agreements. This alternative does not presume water users within the Basin would voluntarily agree to depart from the priority system for water use reductions, give their consent to water conservation mechanisms, or enter into other voluntary agreements.

Management of the river has to-date been dependent upon agreements among Basin water users. Since the adoption of the 2007 Interim Guidelines, Reclamation has not imposed any reductions on an involuntary basis. Infusions of funding to support conservation efforts, particularly in the Lower Basin, have further protected the operability of the dams on the major mainstream Colorado River reservoirs in the face of variable hydrologic conditions. Without these two mechanisms—agreements between Basin water users and infusions of funding—efficient and sustainable management of the reservoirs and system resources under an increasingly broad range of potential future hydrologic conditions would be even more challenging than under historical operations and would result in a number of highly undesirable consequences.

In the absence of new agreements among water users or additional authorities, Reclamation would be required to implement the direction of Congress under current statutory law and subject to the limitations on Reclamation and the Secretary imposed by the Decree and applicable federal law to protect the system. The full extent of Reclamation's operational authority has not been tested to

[19] Flaming Gorge, Blue Mesa, and Navajo reservoirs

date—either operationally or through legislative or judicial review. Accordingly, Reclamation's description of how this alternative would be implemented relies on legal, operational, and engineering judgment regarding future operations under a broad range of hydrologic conditions. To mitigate the reasonably foreseeable undesirable consequences if authorities are limited to those already existing, Reclamation would actively seek additional authorities from Congress (and potentially the Supreme Court) to protect critical infrastructure if this alternative were to be selected in the ROD.

While Reclamation has had experience with high-flow Flood Control operations at Lake Powell and Lake Mead, the agency does not have experience at these reservoirs with extreme low-flow conditions threatening critical infrastructure, which makes it impossible to predict outcomes with any certainty. Reclamation would need to balance equity and infrastructure concerns in real time under such conditions.

It is important to note that this alternative is not Reclamation's version of a potential consensus alternative; instead, it provides environmental compliance for a specific set of operations as a NEPA alternative that Reclamation could implement beginning in WY 2027 (that is, beginning October 1, 2026) if either no consensus among relevant entities in the Basin is developed or no additional congressional authorizations are adopted.

Reclamation believes the inclusion of this alternative is important to ensure that the Department and Reclamation are able to continue to meet their responsibility to operate the system even if water users within the Basin are unable to reach consensus (or support additional Congressional authorities) before the expiration of the 2007 Interim Guidelines. This action alternative would represent specific decisions by Reclamation about how to best operate the system to meet the purpose and need while informing the public about the environmental effects and operational challenges that would result under existing federal authorities without the development and adoption of new authorities or water management mechanisms.

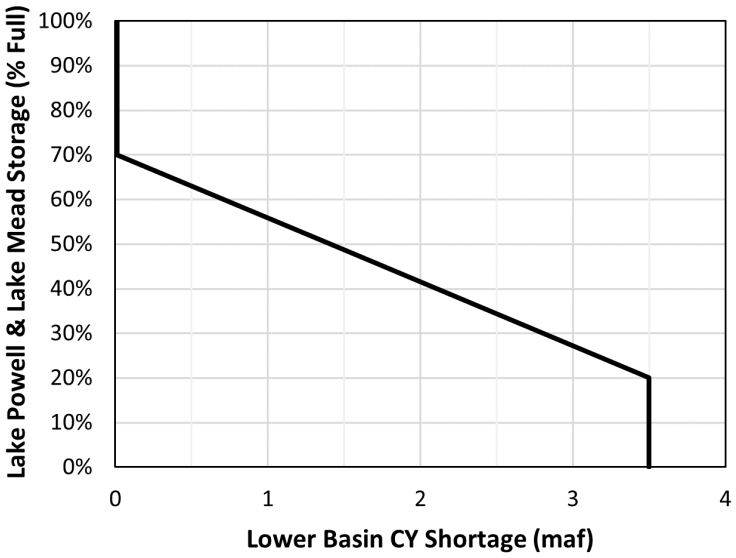
This alternative includes explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water.

7.4.1 Guidelines to Reduce or Increase Deliveries from Lake Mead

7.4.1.1 Shortage Conditions

The shortage volume would be determined for the upcoming CY based on October 1 combined storage in Lake Powell and Lake Mead using the curve depicted in **Figure 3**. Shortages would be distributed based on priority.

Figure 3
Shortage Guidelines to Reduce Deliveries from Lake Mead, Federal Authorities Alternative



7.4.1.2 Surplus Conditions

Volumes above normal apportionment would be distributed only when criteria are met in Lake Mead for a 70R Surplus Condition or a Flood Control Surplus Condition.

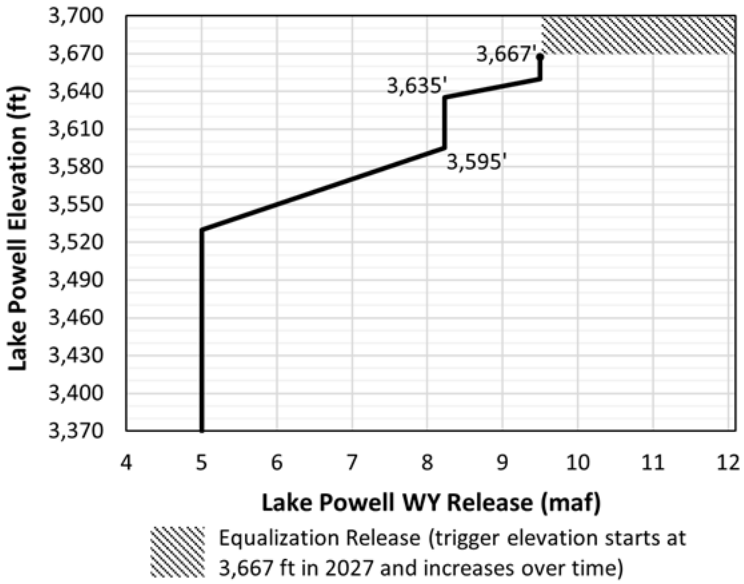
7.4.2 Coordinated Reservoir Operations (Lake Powell and Lake Mead)

7.4.2.1 Basic Operations

The WY release volume from Lake Powell would be calculated based on the October 1 elevation of Lake Powell using the curve depicted in **Figure 4**. If Lake Powell is above the equalization elevation in any month, WY releases could be adjusted above 9.5 maf if needed to bring Lake Powell elevation down to the equalization line based on the 2007 Interim Guidelines[20] or to equalize storage between Lake Powell and Lake Mead to the extent practicable, whichever is reached first. The equalization elevation would grow over time. In 2027, equalization would be triggered at 3,667 feet; it would reach 3,680 feet in 2038 and would remain at 3,680 feet through the end of the analysis period.

[20] For modeling purposes, Reclamation intends that the equalization line concept used in the 2007 Interim Guidelines be applied and extended in the same manner as adopted in the 2007 Interim Guidelines with reference to 602(a) considerations.

Figure 4
Coordinated Operations of Lake Powell and Lake Mead, Federal Authorities Alternative



7.4.2.2 Infrastructure Protection and Other Considerations

If Lake Powell is projected to fall below 3,490 feet after additional releases are made from CRSP Upper Initial Units (refer to **Section 7.4.4**), Lake Powell releases would be reduced to protect 3,490 feet. If a monthly release is reduced to protect 3,490 feet, subsequent months' releases within the WY would be increased to make up the volume if possible.

7.4.3 Storage and Delivery of Conserved System and Non-System Water

7.4.3.1 Lake Powell and Lake Mead Mechanisms

There would be no mechanisms to proactively conserve and store water in Lake Powell or Lake Mead since agreements outside of Reclamation's authorities would be required.

7.4.3.2 Treatment of Pre-2027 ICS Conservation

Any water conserved under previous mechanisms that remains in Lake Mead in 2027 would be delivered in accordance with existing agreements.

7.4.4 Additional Activities Above Lake Powell

7.4.4.1 Upper Basin Conservation

No Upper Basin conservation would be included since it would require agreements outside of Reclamation's authorities.

7.4.4.2 Releases to Protect Glen Canyon Dam

If Lake Powell's physical elevation is projected to go below 3,525 feet, CRSP Upper Initial Units would increase their releases within their RODs to bolster elevations at Lake Powell.

7.5 Federal Authorities Hybrid Alternative

The Federal Authorities Hybrid Alternative is based on proposals and concepts from Basin Tribes, federal agencies, and other stakeholders. This Alternative protects critical infrastructure while benefitting key resources (such as environmental, hydropower, and recreation) through an approach to distributing storage between Lake Powell and Lake Mead that enhances the reservoirs' abilities to support the Basin. It applies pro rata[21] Lower Basin shortage distribution to evaluate the potential impacts of more evenly distributing reductions among all water users in Arizona, Nevada, and California.

This alternative would include explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water.

Some elements of this alternative would require additional federal authorities and/or implementation agreements.

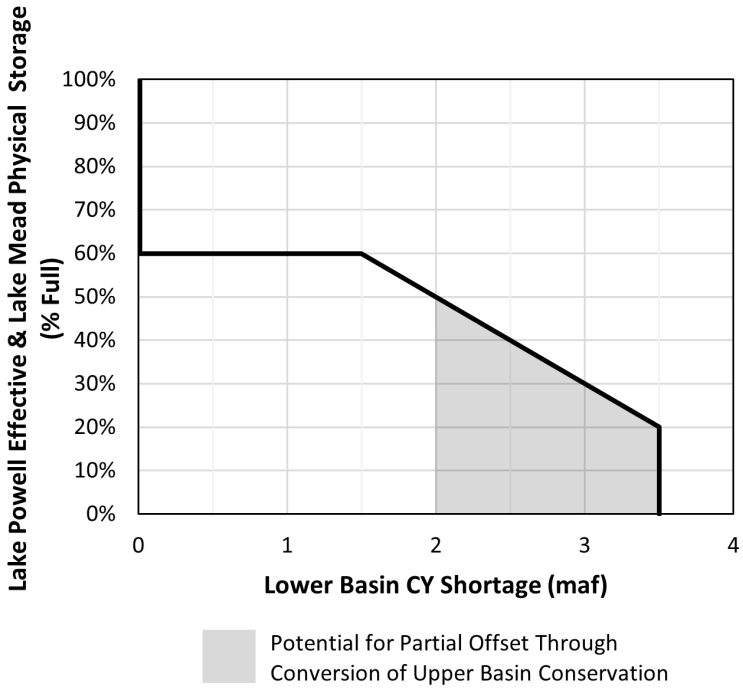
7.5.1 Guidelines to Reduce or Increase Deliveries from Lake Mead

7.5.1.1 Shortage Conditions

The shortage volume would be determined for the upcoming CY based on the October 1 sum of effective[22] storage in Lake Powell and physical storage in Lake Mead using the curve depicted in **Figure 5**. Required shortages could be partially or fully offset by delivering or converting previously conserved water, subject to provisions described in **Section 7.5.3**. Shortages would be distributed pro rata independent of state.

[21] Please refer to *Special Considerations Regarding Use of Pro Rata Shortage Distributions in Alternatives* at the end of the report.
[22] "Effective" elevation or storage is calculated as physical elevation/storage minus any conserved volume that is held in the respective reservoir.

Figure 5
Shortage Guidelines to Reduce Deliveries from Lake Mead, Federal Authorities Hybrid Alternative



7.5.1.2 Surplus Conditions

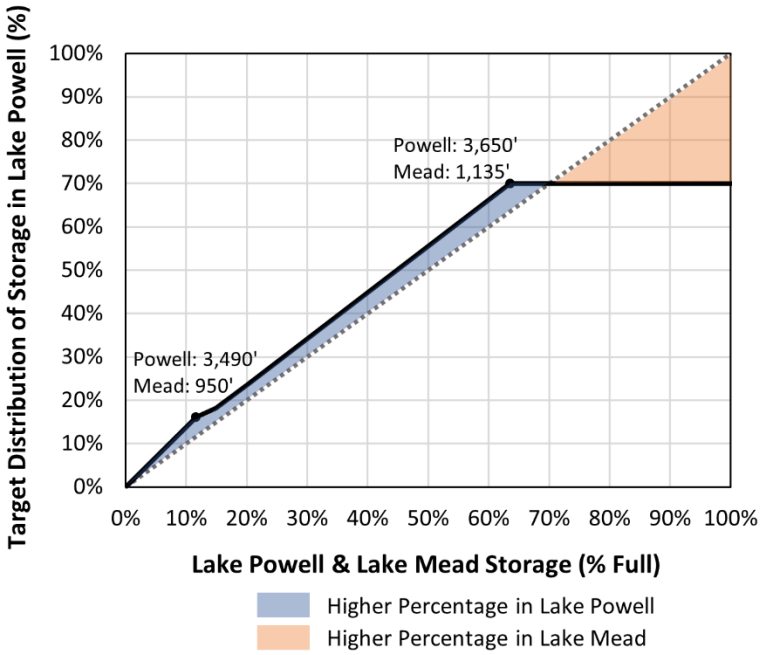
Volumes above normal apportionment would be distributed only when criteria are met in Lake Mead for a 70R Surplus Condition or a Flood Control Surplus Condition.

7.5.2 Coordinated Reservoir Operations (Lake Powell and Lake Mead)

Operations would target a specific distribution of storage across Lake Powell and Lake Mead for any given total volume of water. The purpose of this approach is to equitably distribute resource and infrastructure benefits and risks across the two reservoirs.

The curve in **Figure 6**, called the "target storage distribution curve," depicts the percentage of total storage that is targeted to be held in Lake Powell versus the combined storage of Lake Powell and Lake Mead. The dotted diagonal line marks a 50/50 split for reference, and the target storage curve is variable across that line, indicating the portion where Lake Powell has a greater share of the storage (emphasized with blue shading) and the portion where Lake Mead has a greater share (emphasized with orange shading). From 0 percent to 64 percent combined storage, operations would target keeping more water in Lake Powell. Above 64 percent full, a greater portion of water would be proactively sent to Lake Mead to prevent unplanned releases that may be required to avoid spills and protect Glen Canyon Dam at high elevations.

Figure 6
Coordinated Operations of Lake Powell and Lake Mead, Federal Authorities Hybrid Alternative



7.5.2.1 Basic Operations

Each year, an initial WY release volume from Lake Powell would be calculated on October 1 using four factors:

1. October 1 physical[23] storage in Lake Powell and Lake Mead
2. Target storage distribution curve in **Figure 6**
3. Preceding 10-year running average inflow to Lake Powell
4. Lower Basin delivery reductions for the upcoming CY

The first step would be to calculate an end-of-water-year (EOWY) target storage adjustment (Δ_{EOWY}) needed to get the current storage distribution back to the target distribution (to account for actual conditions over the preceding water year) using factors 1 and 2. The next step would be to estimate the inflow into Lake Powell for the upcoming year using the preceding 10-year average inflow ($\bar{I}_{10}$). The final step would be to reduce the release by the volume of Lower Basin delivery reductions determined for the upcoming year ($Reduction_{LB}$, calculated based on shortages from the curve in **Figure 6** and any offsetting delivery of previously conserved water). This reduction accounts for the fact that water would be reserved in Lake Mead, resulting in higher storage, and creates alignment across the reservoirs: when low storage would cause a conservative release from Lake Mead, the Lake Powell release would also be reduced.

[23] Using physical storage instead of effective storage for Lake Powell releases would prevent conservation from affecting the intended target storage distribution.

$$Current\ WY\ initial\ Lake\ Powell\ release = \Delta_{EOWY} + \bar{I}_{10} - Reduction_{LB}$$

The exact distribution identified in the target storage distribution curve would be unlikely to be achieved due to hydrologic uncertainty, but using the curve as a target would allow the system to be responsive while distributing benefits and risks. As described, an end-of-water-year adjustment would ensure that the discrepancy is reconciled on a rolling annual basis.

In April, a one-time adjustment would be made to the remaining WY initial release volume if the end-of-water-year forecast shows that the end-of-water-year Lake Powell storage is off target by more than 1 maf. This would provide an opportunity to avoid a very large or very small WY release in the subsequent year. If an adjustment is warranted, the volume increase or decrease would be distributed among the remaining 6 months while ensuring that the adjustment would not cause the monthly release to be greater than 1 maf, or less than the LTEMP minimum flows.

7.5.2.2 Infrastructure Protection and Other Considerations

If Lake Powell is projected to fall below 3,490 feet after additional releases are made from CRSP Upper Initial Units (refer to **Section 7.5.4**), Lake Powell releases would be reduced to protect 3,490 feet. If a monthly release is reduced to protect 3,490 feet, subsequent months' releases within the WY would be increased to make up the volume if possible.

The maximum planned WY release from Lake Powell would be 12 maf to avoid releasing volumes that could cause sediment scouring below Glen Canyon Dam. Annual releases above 12 maf would be made if required to avoid spills and protect Glen Canyon Dam at high elevations.

At Reclamation's discretion, additional adjustments to Lake Powell WY release volumes could be made to mitigate potential negative impacts to resources between Glen Canyon Dam and Lake Mead. These adjustments would be reconciled in the subsequent year through the end-of-water-year target storage adjustment.

7.5.3 Storage and Delivery of Conserved System and Non-System Water

This alternative incorporates specific elements that are designed to provide enhanced flexibility and predictability for Basin Tribes to benefit from their water rights. It incorporates a storage and delivery mechanism in both Lake Powell and Lake Mead where Basin Tribes could store their water, receive federal protection of that water, and take delivery of or otherwise use their water at a later time, including contributions to the system, according to a broad set of use purposes and rules. Also contemplated in this alternative is the establishment of a Colorado River Protection Pool.

The Colorado River Protection Pool would be a federal supply of water that could be used to mitigate Basin-wide reductions, protect infrastructure, meet federal firming obligations, and provide environmental benefits. The Colorado River Protection Pool would acquire water through multiple mechanisms, including but not limited to compensated Tribal water or dedication of an assessment assigned to the creation of new conserved water, both Tribal and non-Tribal.

While these elements are incorporated within the Federal Authorities Hybrid Alternative,[24] the design of these elements is intended to allow for their implementation within any operational framework that includes a storage and delivery mechanism (including frameworks where conservation is excluded from all release and shortage determinations).[25]

These elements have been designed with extensive input from representatives of Basin Tribes, and opportunities for input will continue throughout the NEPA process. Reclamation will continue to work with these Tribal representatives and other stakeholders to develop the additional details needed to perform a full analysis and inclusion of these concepts in the draft EIS.

7.5.3.1 Lake Powell Mechanism

Water conserved by Upper Basin users would be stored in a pool in Lake Powell that can reach a maximum volume of 2 maf. Water in this conservation pool would be included for purposes of determining Lake Powell releases but excluded from determinations of shortage volumes until it is converted to system water. Upper Division States and Upper Basin Tribes would have equal access to contribute to the conservation pool, and all users could use their conserved water in transactions with other Upper Basin users.

Water held in the Lake Powell conservation pool would be converted to system water based on the shortage curve in **Figure 5**. When Lower Basin shortages are greater than 2 maf for the second consecutive year, and in every subsequent year above 2 maf, half of the conservation water in Lake Powell would be converted to system water and would reduce required Lower Basin shortages by the same amount that was converted, subject to the following:

1. Resulting Lower Basin shortages could not be below 1.5 maf (conversion volume would be capped at whatever offset results in 1.5 maf).
2. If the Lake Powell conservation pool holds less than 1 maf, the conversion would be the minimum of either 500 thousand acre-feet (kaf) or the remaining balance.

7.5.3.2 Lake Mead Mechanism

Water conserved by Lower Basin users would be stored in a pool in Lake Mead that can reach a maximum volume of 5 maf. Annual total and state-based limits for conservation volumes and delivery of conserved water are under development. All conserved water stored in Lake Mead would be included in determinations of Lake Powell releases and shortage volumes. Lower Division States and Lower Basin Tribes would have equal access to contribute to the conservation pool and to use their conserved water in transactions with other Lower Basin users, including interstate transactions.

Water users could contribute and convert or deliver previously conserved water in their accounts at their discretion, within the general annual volume constraints related to the pool. Additionally, conserved water could be used to offset only up to 1.5 maf of required shortages. Delivery of conserved water would not be allowed when Lake Mead's physical elevation is below 1,025 feet.

[24] Refer to the discussion in following sections for assumptions regarding treatment of conserved water in the determinations of Lake Powell releases and shortage volumes in this alternative.
[25] The Colorado River Protection Pool will be analyzed in multiple frameworks to demonstrate its flexibility.

7.5.3.3 Treatment of Pre-2027 ICS Conservation

Any water conserved under previous mechanisms that remains in Lake Mead in 2027 would be transferred to the Post-2026 Lake Mead mechanism immediately and would be subject to all provisions described in the previous section.

7.5.4 Additional Activities Above Lake Powell

7.5.4.1 Upper Basin Conservation

Upper Basin users would be assumed to contribute up to 200 kaf per year to the Lake Powell conservation pool, based on to hydrologic conditions in the Upper Basin.

7.5.4.2 Releases to Protect Glen Canyon Dam

If Lake Powell's physical elevation is projected to go below 3,525 feet, CRSP Upper Initial Units would increase their releases within their RODs to bolster elevations at Lake Powell.

Additionally, Reclamation would consider conditions when additional activities above Lake Powell may be needed under parallel processes (such as reopening the RODs for the CRSP Upper Initial Units or initiating processes with the Upper Division States and the Upper Colorado River Commission to seek additional Upper Basin reductions to address the risk of extreme low-reservoir conditions at Lake Powell).

7.6 Cooperative Conservation Alternative

The Cooperative Conservation Alternative is informed by a proposal submitted by a consortium of conservation organizations. As described in the submission letter, this proposal seeks to inform operations through a synthesis of lessons learned from past management experiences and current scientific understanding. It considers additional proactive responses, targeted reservoir management strategies, and innovative and flexible tools to address an increasingly variable set of future hydrologic conditions.

Specifically, the Cooperative Conservation Alternative emphasizes approaches to help:

- Stabilize system storage and avoid crisis management;
- Design reservoir management to integrate environmental stewardship and mitigation in storage and release operations;
- Maintain opportunities for Colorado River Delta flows and other binational cooperative measures; and
- Incentivize water conservation and design flexible tools and water management strategies to maximize the community and ecological benefit of all water saved.

This alternative is based on "Dual Indicator" operations for determining annual releases from Lake Powell and Lake Mead. Additionally, it proposes stewardship targets and mitigation goals to maintain the integrity of priority Basin ecosystems and introduces the Conservation Reserve as a flexible tool for water conservation and management.

This alternative includes explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water.

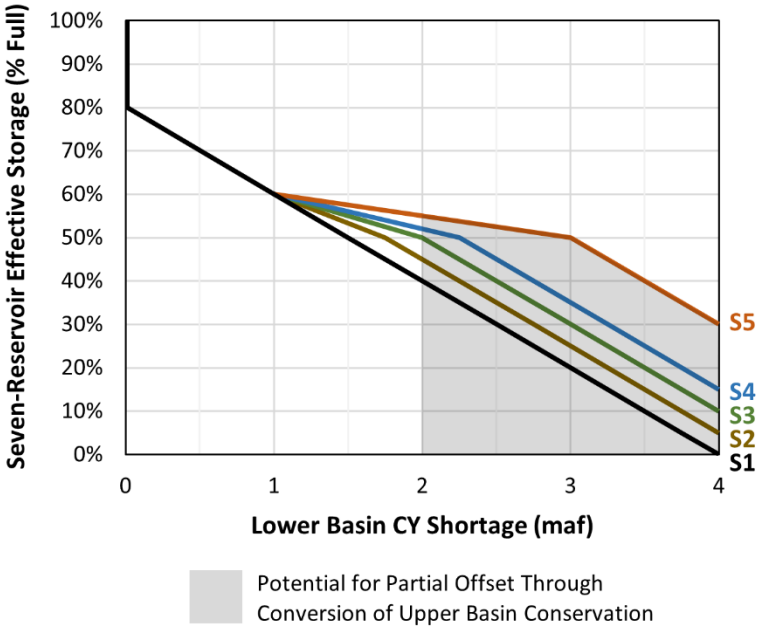
Some elements of this alternative would require additional federal authorities and/or implementation agreements.

7.6.1 Guidelines to Reduce or Increase Deliveries from Lake Mead

7.6.1.1 Shortage Conditions

The shortage volume would be determined for the upcoming CY based on October 1 total system[26] effective storage according to the curves depicted in **Figure 7**. Between 80 percent and 60 percent effective storage, all curves collapse to a single line. Starting at 60 percent effective storage, each of the five curves corresponds to a different range of the Climate Response Indicator, which is defined as the previous 3-year average natural flow at Lees Ferry, Arizona. As hydrology declines, shortages would increase. **Table 1** describes when each curve would be operative.

Figure 7
Shortage Guidelines to Reduce Deliveries from Lake Mead, Cooperative Conservation Alternative



[26] Flaming Gorge, Blue Mesa, Navajo, Lake Powell, Lake Mead, Lake Mohave, and Lake Havasu reservoirs

Table 1
Shortage Curves and Relevant Conditions, Cooperative Conservation Alternative

Shortage Curve	Previous 3-Year Average Lees Ferry Natural Flow (maf)
S1	≥ 14
S2	< 14 to ≥ 12
S3	< 12 to ≥ 10
S4	< 10 to ≥ 8
S5	< 8

Required shortages could be partially or fully offset by delivering or converting previously conserved water, subject to provisions described in **Section 7.6.3**. Shortages would be distributed based on priority, identical to Approach 1 in the Basin Hybrid Alternative (refer to **Section 7.7.1**).

7.6.1.2 Surplus Conditions

Volumes above normal apportionment would be distributed only when criteria are met in Lake Mead for a Flood Control Surplus Condition.

7.6.2 Coordinated Reservoir Operations (Lake Powell and Lake Mead)

7.6.2.1 Basic Operations

The WY release from Lake Powell would be determined based on the combined effective storage of Lake Powell, Flaming Gorge, Blue Mesa, and Navajo reservoirs on October 1 according to the curves depicted in **Figure 8**. Above 70 percent effective storage, all curves collapse to a single line. Starting at 70 percent effective storage, each of the three curves corresponds to a different range of the Climate Response Indicator. As hydrology declines, releases would decrease. **Table 2** describes when each curve would be operative.

7.6.2.2 Infrastructure Protection and Other Considerations

When physical elevation at Lake Powell is below 3,510 feet, Lake Powell monthly releases would be equal to the minimum of either monthly inflow minus losses or the monthly volume corresponding to the WY release determined by the curve. The minimum monthly release would be based on 5,000 cubic feet per second unless it is reduced by Glen Canyon Dam infrastructure constraints below physical elevation 3,490 feet.

Lake Powell WY releases could be adjusted based on flexibilities provided by the Conservation Reserve as described in **Section 7.6.3**.

Figure 8
Coordinated Operations of Lake Powell and Lake Mead, Cooperative Conservation Alternative

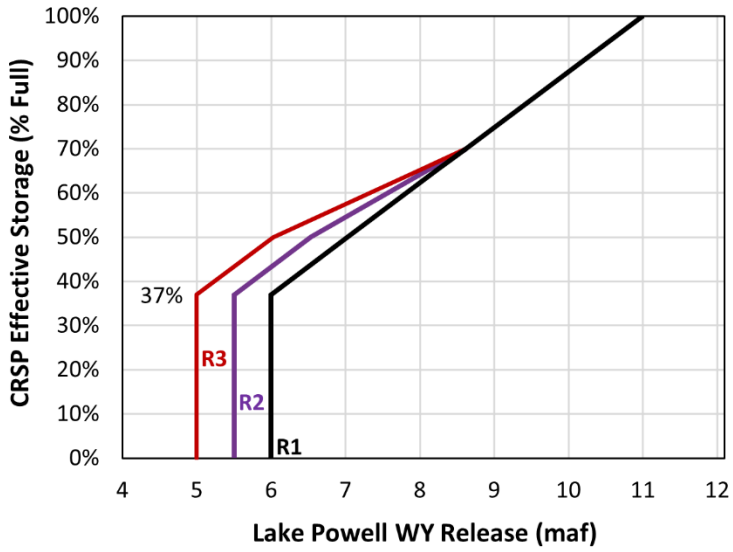


Table 2
Release Curves and Relevant Conditions, Cooperative Conservation Alternative

Lake Powell Release Curve	Previous 3-Year Average Lees Ferry Natural Flow (maf)
R1	≥ 10
R2	< 10 to ≥ 8
R3	< 8

7.6.3 Storage and Delivery of Conserved System and Non-System Water

7.6.3.1 Combined Lake Powell and Lake Mead Mechanism

The Conservation Reserve is a pool that would store water conserved by any water user in either basin (including Mexico) and would be distributed strategically across Lake Powell and Lake Mead to protect infrastructure and benefit a range of resources including the Colorado River Delta, Lower Colorado River Multi-Species Conservation Program, and Grand Canyon. Water in the Conservation Reserve would be excluded from determining basic (curve-based) WY releases from Lake Powell and shortage volumes until it is converted to system water. The timing and volume criteria for this conversion are described below. The maximum volume of the Conservation Reserve would be 8 maf, with 3 maf of space allocated to Upper Basin users and 5 maf allocated to Lower Basin users with no maximum total storage for any single user or state, though there would be annual creation and delivery limits. Transactions could occur between any users within the basin of origin, including across states.

Reclamation would choose how to allocate the Conservation Reserve volume between reservoirs and could increase or decrease Lake Powell's basic WY release volume to meet infrastructure needs or resource goals. Operation of the Conservation Reserve would not affect tracking of Lee Ferry flows.

Upper Basin users' conserved water would be converted to system water based on the shortage curve in **Figure 7**. When Lower Basin shortages are greater than 2 maf, the volume above 2 maf would be converted from Upper Basin users' Conservation Reserve water to system water, subject to availability in the Reserve.[27] The required Lower Basin shortage volume would be reduced by whatever volume of previously conserved Upper Basin water is converted.

Lower Basin users could conserve and request delivery of conserved water in their accounts at their discretion to offset up to the full required shortage amount, subject to annual creation and delivery limits and constrained by the priority of using Conservation Reserve water to keep Lake Powell above 3,510 feet and Lake Mead above 1,000 feet.

7.6.3.2 Treatment of Pre-2027 ICS Conservation

Any water conserved under previous mechanisms that remains in Lake Mead in 2027 would be transferred to the Conservation Reserve in 2027 and would be subject to all provisions described in the previous section.

7.6.4 Additional Activities Above Lake Powell

7.6.4.1 Upper Basin Conservation

Upper Basin users are assumed to contribute an average of 200 kaf per year to the Conservation Reserve, ranging from zero to 500 kaf per year based on hydrologic conditions in the Upper Basin.

7.6.4.2 Releases to Protect Glen Canyon Dam

CRSP Upper Initial Units would not adjust their releases to protect infrastructure at Glen Canyon Dam. However, Reclamation maintains the authority to operate its reservoirs to protect Glen Canyon Dam infrastructure.

7.7 Basin Hybrid Alternative

After analysis and coordination with the entities that submitted the proposals from the Upper Division States and Lower Division States, Reclamation identified important elements in each proposal that could be refined to produce more balanced and coordinated reservoir operations that protect the interests of water users across the Basin and provide better operational protection for Lake Powell, Lake Mead, and associated infrastructure than either proposal on its own. Accordingly, Reclamation developed an alternative designed to reflect components from the proposals and concepts submitted by the Upper Division States, Lower Division States, and Basin Tribes.

[27] Annual Lower Basin shortage volume cannot be reduced 2 maf by conversion of Upper Basin conserved water.

Reclamation's intent in developing this alternative is to provide a basis for continued discussion and agreement across the Basin.

This alternative includes explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water.

Some elements of this alternative would require additional federal authorities and/or implementation agreements.

7.7.1 Guidelines to Reduce or Increase Deliveries from Lake Mead

7.7.1.1 Shortage Conditions

The shortage volume would be determined for the upcoming CY based on October 1 total system[28] effective storage using the curve depicted in **Figure 9**.[29] Required shortages could be partially or fully offset by delivering or converting previously conserved water, subject to provisions described in **Section 7.7.3**. To analyze a wide range of potential impacts, this alternative will consider two different approaches to the distribution of shortages:

1. Priority within state-specific distributions up to 1.5 maf, then priority independent of state
2. Pro rata within state-specific distributions up to 1.5 maf, then pro rata independent of state

For purposes of analysis, three additional shortage scenarios will be modeled:

(A) No Tribal shortages; priority within state-specific distributions up to 1.5 maf, then priority independent of state

(B) No Tribal shortages; pro rata within state-specific distributions up to 1.5 maf, then pro rata independent of state

(C) No shortages to decreed Tribes;[30] pro rata within state-specific distributions up to 1.5, then pro rata independent of state

"State-specific distributions" refers to how total shortage volumes up to 1.5 maf would be divided among the states and Mexico in the Lower Basin. Within each state, the shortages would be distributed based on priority within that state (approaches 1 and (a)) or pro rata within that state (approaches 2, (b), and (c)). **Table 3** reports the state-specific distributions for shortage volumes up to 1.5 maf.

[28] Flaming Gorge, Blue Mesa, Navajo, Lake Powell, Lake Mead, Lake Mohave, and Lake Havasu reservoirs

[29] Reclamation recognizes that the maximum shortage reflected in this alternative may not sufficiently protect the system, but inclusion of this range of shortage adds value to the analysis of impacts from the range of alternatives.

[30] Decreed Tribes refers to the five Lower Basin Tribes with water rights set forth in the 2006 Consolidated Decree, Arizona v. California, 574 U.S. 150 (2006). The five Tribes are: the Fort Mojave Indian Tribe; the Chemehuevi Indian Tribe; the Colorado River Indian Tribes; the Quechan Indian Tribe; and the Cocopah Indian Tribe.

Figure 9
Shortage Guidelines to Reduce Deliveries from Lake Mead, Basin Hybrid Alternative

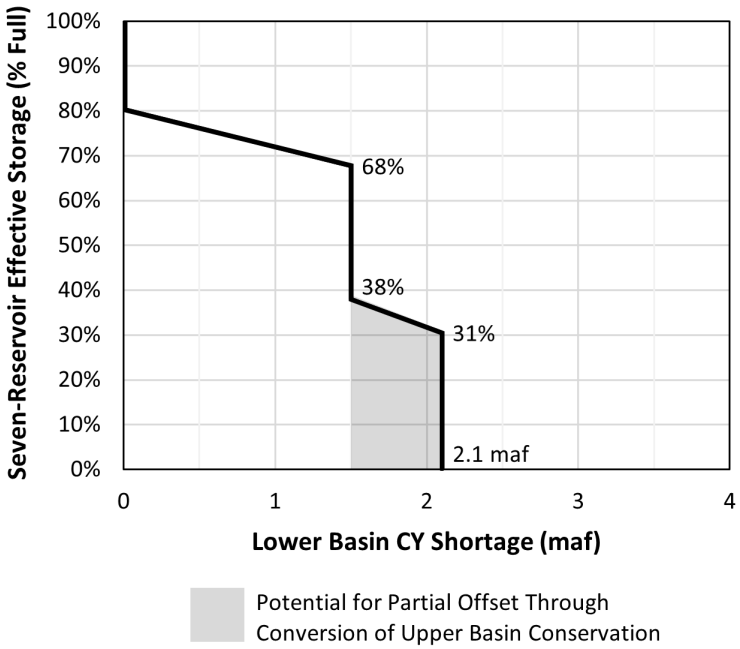


Table 3
Submitted State-specific Shortage Distributions

State/Country	Shortage (%) from 0 to 300 kaf	Shortage (%) from 300 to 1,500 kaf	Total shortage (kaf) when Basin-wide shortage is 1,500 kaf
Arizona	80.00	43.33	760
California	0	36.67	440
Nevada	3.33	3.33	50
Mexico	16.67	16.67	250

7.7.1.2 Surplus Conditions

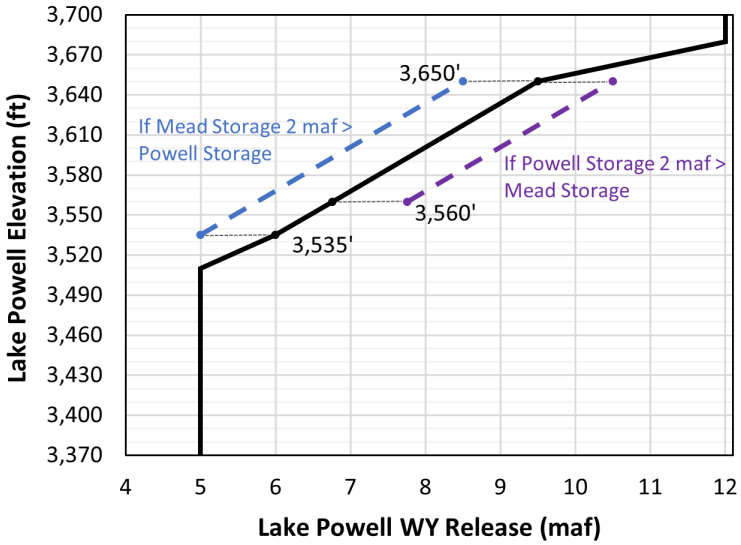
If on October 1 total system effective storage is above 85 percent and Lake Mead physical elevation is above 1,160 feet, a Surplus Condition would be determined and an additional 250 kaf of water would be distributed to Lower Basin users. Volumes above Surplus Condition would be distributed when criteria are met in Lake Mead for a 70R Surplus Condition or a Flood Control Surplus Condition.

7.7.2 Coordinated Reservoir Operations (Lake Powell and Lake Mead)

7.7.2.1 Basic Operations

An initial WY release volume from Lake Powell would be calculated based on the October 1 effective elevation of Lake Powell using the curve depicted in **Figure 10**. The initial volume could be adjusted on October 1 based on the effective storage difference between Lake Powell and Lake Mead.

Figure 10
Coordinated Operations of Lake Powell and Lake Mead, Basin Hybrid Alternative



Between effective elevations 3,535 feet and 3,650 feet, the initial release volume would be *decreased* by 1 maf if Lake Mead effective storage is over 2 maf greater than Lake Powell effective storage. Between Lake Powell effective elevations 3,560 feet and 3,650 feet, the initial release would be *increased* by 1 maf if Lake Powell effective storage is over 2 maf greater than Lake Mead effective storage.

7.7.2.2 Infrastructure Protection and Other Considerations

No adjustments to Lake Powell releases would be made to protect physical elevation 3,490 feet; however, Reclamation maintains the authority to modify operations to protect Glen Canyon Dam infrastructure.

7.7.3 Storage and Delivery of Conserved System and Non-System Water

7.7.3.1 Lake Powell Mechanism

Water conserved by Upper Basin users would be stored in a pool in Lake Powell that could reach a maximum volume of 3 maf. All water stored in Lake Powell would be excluded from determinations of Lake Powell releases and shortage volumes until it is converted to system water. Upper Division States and Upper Basin Tribes would have equal access to contribute to the conservation pool and to use their conserved water in transactions with other Upper Basin users, including interstate transactions.

Water in the Lake Powell conservation pool would be converted to system water based on the shortage curve in **Figure 9**. When Lower Basin shortages are greater than 1.5 maf, a portion of the shortage volume above 1.5 maf would be met by converting water from the Lake Powell conservation pool to system water. The exact volume converted would be equal to 50 percent of the Lower Basin shortage volume above 1.5 maf minus the volume of Upper Basin hydrologic shortage

above 1.5 maf. The required Lower Basin shortage volume would be reduced by the same volume that is converted from the Lake Powell conservation pool to system water.[31] For example, the maximum conversion volume of 300 kaf would occur if the original Lower Basin shortage volume is 2.1 maf and the Upper Basin hydrologic shortage is 1.5 maf or less, resulting in a final Lower Basin shortage of 1.8 maf.

7.7.3.2 Lake Mead Mechanism

Water conserved by Lower Basin users would be stored in a pool in Lake Mead that could reach a maximum volume of 8 maf. Annual total and state-based limits for conservation volumes and delivery of conserved water are under development. All water stored in the Lake Mead conservation pool would be excluded from determinations of Lake Powell releases and shortage volumes until it is converted to system water by a user to offset their required shortages. Lower Division States and Lower Basin Tribes would have equal access to contribute to the Lake Mead conservation pool and to use their conserved water in transactions with other Lower Basin users, including interstate transactions.

Water users could convert or deliver previously conserved water in their accounts at their discretion within the general constraints related to the pool. Limitations on conversion and delivery of previously conserved water to offset required shortage would vary by shortage volume. Delivery of conserved water would not be allowed when Lake Mead's physical elevation is below 975 feet.

7.7.3.3 Treatment of Pre-2027 ICS Conservation

Any water conserved under previous mechanisms that remains in Lake Mead in 2027 would be converted to the Post-2026 Lake Mead mechanism using a phased approach over 5 years. Once transferred to the new mechanism, it would be subject to all provisions described in the previous section.

7.7.4 Additional Activities Above Lake Powell

7.7.4.1 Upper Basin Conservation

Upper Basin users are assumed to contribute up to 200 kaf per year to the conservation pool in Lake Powell based on hydrologic conditions in the Upper Basin and available space. Upper Basin conservation in this alternative is assumed to be required, which would be handled through agreements between Upper and Lower Division States and other parties.

7.7.4.2 Releases to Protect Glen Canyon Dam

If Lake Powell's physical elevation is projected to go below 3,525 feet, CRSP Upper Initial Units would increase their releases within their RODs to bolster elevations at Lake Powell. Any volume of protection water sent to Lake Powell that has not been recovered to the CRSP Upper Initial Units would be excluded from determinations of Lake Powell releases.

[31] $UDS\ Conversion\ from\ Lake\ Powell\ Conservation\ Account = [Max\ (LB\ Reduction - 1.5\ \text{maf}, 0) \times 50\%] - Max\ (UDS\ Hydrologic\ Shortage - 1.5\ \text{maf}, 0)$

7.8 Summary of Alternatives

Table 4, below, summarizes the alternatives described in the sections above.

Table 4
Summary of Alternatives

No Action Alternative	The No Action Alternative does not meet the purpose of and need for the federal action, but it is included as a requirement of NEPA. Operations would revert to annual determinations announced through the Annual Operating Plan for Colorado River Reservoirs process. Lake Powell release would be 8.23 maf unless a higher release is required for equalization or a lower release results from Glen Canyon Dam infrastructure limitations. Shortages to the Lower Basin would be based on priority and reach a maximum of 600 kaf. This would not represent a continuation of current operations but is generally based on the pre-existing operating guidance that was in place before the adoption of the 2007 Interim Guidelines, and thus includes no specific activities above Lake Powell beyond existing authorities (e.g., to make emergency releases from CRSP Upper Initial Units** to protect infrastructure at Glen Canyon Dam). Existing ICS* would be delivered in accordance with existing agreements, but there would be no new delivery and storage mechanisms.				
	Shortage Guidelines to Reduce Deliveries from Lake Mead	**Coordinated Reservoir Operations (Lake Powell and Lake Mead)**	**Storage and Delivery of Conserved System and Non-system Water (Lake Mead and/or Lake Powell)**	**Surplus Guidelines to Increase Deliveries/Releases from Lake Mead**	**Additional Activities Above Lake Powell**
	• Shortages determined based on Lake Mead elevation • Shortage volume of 400, 500, and 600 kaf at elevations 1,075, 1,050, and 1,025 feet, respectively • Shortages distributed based on priority	• Lake Powell release of 8.23 maf unless more is required for equalization releases • Releases less than 8.23 maf below elevation 3,490 feet due to Glen Canyon Dam infrastructure limitations	• No new storage and delivery mechanism to replace ICS • Delivery of existing ICS in accordance with existing agreements	• Surplus determinations limited to 70R (spill avoidance strategy) and Flood Control conditions	• No additional activities above Lake Powell

Federal Authorities Alternative

This alternative is designed to achieve protection of critical infrastructure within the Department's and Reclamation's current statutory authorities and absent new stakeholder agreements. Lake Powell releases would be determined based on Lake Powell elevations, unless equalization releases are required. Lake Powell releases would range from 9.5 to 5.0 maf. Releases could be less than 5.0 maf, and Lake Powell elevations could be increased by CRSP Upper Initial Units to protect infrastructure at Glen Canyon Dam. Lower Basin shortages of up to 3.5 maf would be distributed consistent with the priority system and would be triggered based on combined storage in Lake Powell and Lake Mead. Existing ICS would be delivered in accordance with existing agreements, but there would be no new delivery and storage mechanisms. There would be explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water.

Shortage Guidelines to Reduce Deliveries from Lake Mead	**Coordinated Reservoir Operations (Lake Powell and Lake Mead)**	**Storage and Delivery of Conserved System and Non-system Water (Lake Mead and/or Lake Powell)**	**Surplus Guidelines to Increase Deliveries/Releases from Lake Mead**	**Additional Activities Above Lake Powell**
• Shortages determined based on combined storage in Lake Powell and Lake Mead • Shortages start at 70% full and increase linearly, reaching a maximum of 3.5 maf at 20% full and below • Shortages distributed based on priority	• Lake Powell releases determined based on Lake Powell elevation unless equalization releases are required • Releases range from 9.5 to 5.0 maf, including a 40-foot zone of 8.23 maf, unless more is required for equalization releases or less is required to protect elevation 3,490 feet	• No new storage and delivery mechanism to replace ICS • Delivery of existing ICS in accordance with existing agreements	• Surplus determinations limited to 70R (spill avoidance strategy) and Flood Control conditions	• Releases from CRSP Initial Units to protect infrastructure at Glen Canyon Dam

Federal Authorities Hybrid Alternative

This alternative is designed based on proposals and concepts from Tribes, federal agencies, and other stakeholders to achieve protection of critical infrastructure while benefitting key resources (e.g., natural, hydropower and recreation) through an approach to distributing storage between Lake Powell and Lake Mead that enhances the reservoirs' ability to support the Basin. Lake Powell releases would be determined based on a combination of Lake Powell and Lake Mead elevations, 10-year running-average hydrology, and Lower Basin deliveries. Lake Powell elevations could be increased by releases from CRSP Upper Initial Units to protect infrastructure at Glen Canyon Dam. This alternative would include delivery and storage mechanisms for Lake Powell and Lake Mead with federal and non-federal storage pools and enhanced flexibilities for all users. The operations incorporate Basin-wide shared contributions to the sustainability of the system, including Upper Basin conservation that would be stored in Lake Powell and Lower Basin shortages starting at 1.5 maf, which exceeds average annual evaporative and system losses at and below Lake Mead, and reaching a maximum of 3.5 maf. Shortages would be triggered based on combined storage in Lake Powell and Lake Mead and distributed pro rata. There would be explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water. Some elements of this alternative would require additional federal statutory authorities and stakeholder agreements.

Shortage Guidelines to Reduce Deliveries from Lake Mead	Coordinated Reservoir Operations (Lake Powell and Lake Mead)	Storage and Delivery of Conserved System and Non-system Water (Lake Mead and/or Lake Powell)	Surplus Guidelines to Increase Deliveries/Releases from Lake Mead	Additional Activities Above Lake Powell
• Shortages determined based on combined storage in Lake Powell and Lake Mead • Shortages start at 60% full at a volume of 1.5 maf, then increase linearly, reaching a maximum of 3.5 maf at 20% full and below • Shortages distributed pro rata	• Lake Powell releases determined based on a combination of Lake Powell and Lake Mead elevations, 10-year running-average hydrology, and Lower Basin deliveries • Releases range from 12.0 to 4.7 maf, unless less is required to protect elevation 3,490 feet	• Storage up to 5.0 maf in Lake Mead. Water in this conservation pool is included for purposes of determining Lake Powell releases and determinations of shortage volumes. • Storage up to 2.0 maf in Lake Powell. Water in this conservation pool is included for purposes of determining Lake Powell releases but excluded from determinations of shortage volumes	• Surplus determinations limited to 70R (spill avoidance strategy) and Flood Control conditions	• Releases from CRSP Upper Initial Units to protect infrastructure at Glen Canyon Dam • Up to 200 kaf of Upper Basin annual conservation based on hydrological conditions contributed to the Lake Powell conservation pool • Consider conditions when additional activities above Lake Powell may be needed under parallel processes

Federal Authorities Hybrid Alternative *(continued)*	*(see above)*	*(see above)*	• Existing ICS converted to new mechanism immediately • Enhanced flexibilities for all users: creation of federal and non-federal storage pools and transactions within each basin, including interstate	*(see above)*	*(see above)*

Cooperative Conservation Alternative

This alternative is informed by a proposal submitted by a consortium of conservation organizations with the goal of stabilizing system storage, integrating stewardship and mitigation strategies of Lake Powell and Lake Mead, maintaining opportunities for binational cooperative measures, incentivizing water conservation, and designing flexible water management strategies. Lake Powell releases would range from 11.0 maf to 5.0 maf and would be determined by total Upper Basin system storage (Flaming Gorge, Blue Mesa, Navajo, and Lake Powell) and recent hydrology. Releases would switch to "run-of-river" when Lake Powell is at 3,510 feet or lower. The operations incorporate Basin-wide shared contributions to sustain system integrity, including up to 4.0 maf of shortages in the Lower Basin triggered by combined seven-reservoir storage (Flaming Gorge, Blue Mesa, Navajo, Lake Powell, Lake Mead, Lake Mohave, and Lake Havasu) and recent hydrology and voluntary water contributions from both basins. Some elements of this alternative would require additional federal authorities and stakeholder agreements.

Shortage Guidelines to Reduce Deliveries from Lake Mead	Coordinated Reservoir Operations (Lake Powell and Lake Mead)	Storage and Delivery of Conserved System and Non-system Water (Lake Mead and/or Lake Powell)	Surplus Guidelines to Increase Deliveries/Releases from Lake Mead	Additional Activities Above Lake Powell
• Shortages determined based on combined seven-reservoir storage and recent hydrology • Shortages start at 80% full and increase linearly, subject to upward adjustment based on hydrology, reaching a maximum of 4.0 maf • Shortages distributed based on priority, identically to Approach 1 in the Basin Hybrid Alternative	• Lake Powell releases determined based on total Upper Basin system storage and recent hydrology • Releases are subject to downward adjustment based on hydrology and range from 11.0 to 5.0 maf • Releases switch to "run-of-river" when Lake Powell is at elevation 3,510 feet or lower	• Storage up to 8.0 maf in either Lake Powell or Lake Mead for infrastructure protection, offsetting reductions, and/or mitigating resource impacts • Water in this conservation pool is excluded for purposes of determining Lake Powell releases and shortage volumes • Existing ICS converted to new mechanism immediately • Maximum flexibilities for all users: transactions within and across basins, including interstate and inter-basin	• Surplus determinations limited to Flood Control conditions	• Average of 200 kaf of Upper Basin annual conservation based on hydrological conditions contributed to the Lake Powell conservation pool

Basin Hybrid Alternative

This alternative is designed to reflect components from the proposals and concepts submitted by the Upper Division States, Lower Division States, and Basin Tribes to present elements that could provide a basis for coordinated operations and may facilitate greater agreement across the Basin. Lake Powell releases would be determined primarily based on Lake Powell elevation with consideration in some scenarios of Lake Mead elevation. Releases would range from 12.0 to 5.0 maf. Lake Powell elevations could be increased by releases from CRSP Upper Initial Units to protect infrastructure at Glen Canyon Dam. This alternative would include new delivery and storage mechanisms for Lake Powell and Lake Mead, including incentivizing conservation and managing/offsetting reductions, to afford Tribal and non-Tribal entities the same ability to use these mechanisms. The operations incorporate Basin-wide shared contributions, including Upper Basin conservation that would be stored in Lake Powell and up to 2.1 maf of Lower Basin shortages triggered by combined seven-reservoir storage. This alternative would analyze shortage distribution using two approaches: priority and pro rata, both of which would be analyzed with and without shortages to Tribes. There would be explicit accounting of unused/undeveloped quantified Tribal water to inform stakeholder conversations about potential future protective measures, including compensation and/or credit of unused water. Some elements of this alternative would require additional federal authorities and stakeholder agreements.

Shortage Guidelines to Reduce Deliveries from Lake Mead	**Coordinated Reservoir Operations (Lake Powell and Lake Mead)**	**Storage and Delivery of Conserved System and Non-system Water (Lake Mead and/or Lake Powell)**	**Surplus Guidelines to Increase Deliveries/Releases from Lake Mead**	**Additional Activities Above Lake Powell**
• Shortages determined based on combined seven-reservoir storage • Shortages start at 80% full, increasing to a static 1.5 maf zone at 68% full and reaching a maximum of 2.1 maf at 31% full and below • Shortage distribution represented through two separate approaches, both of which include the state distributions up to 1.5 maf. ○ Approach 1: priority distribution within	• Lake Powell releases determined primarily based on Lake Powell elevation • Subject to adjustment based on distribution of storage in Lake Powell and Lake Mead • Releases range from 12.0 to 5.0 maf	• Storage up to 8.0 maf in Lake Mead and 3.0 maf at Lake Powell Water in these conservation pools is excluded for purposes of determining Lake Powell releases and shortage volumes • Existing ICS converted to new mechanism over 5-year phase-in period • Until converted, delivery of existing ICS in accordance with existing agreements	• Surplus determinations not limited to 70R (spill avoidance strategy) and Flood Control conditions • When the combined seven-reservoir system storage is greater than 85% full and Lake Mead elevation is greater than 1,160 feet, then 250 kaf is available for surplus deliveries	• Releases from CRSP Upper Initial Units to protect infrastructure at Glen Canyon Dam • Up to 200 kaf of Upper Basin annual conservation based on hydrological conditions contributed to the Lake Powell conservation pool

Basin Hybrid Alternative *(continued)*	and above specified state distributions ○ Approach 2: pro rata distribution within and above specified state distributions ○ Note: Approach 1 and 2 would be analyzed with and without shortages to Tribes. ○ Note: Approach 2 would be analyzed with no shortages to decreed Tribes	*(see above)*	*(see above)*	*(see above)*	*(see above)*

* Intentionally Created Surplus

**Flaming Gorge, Blue Mesa, and Navajo Reservoirs

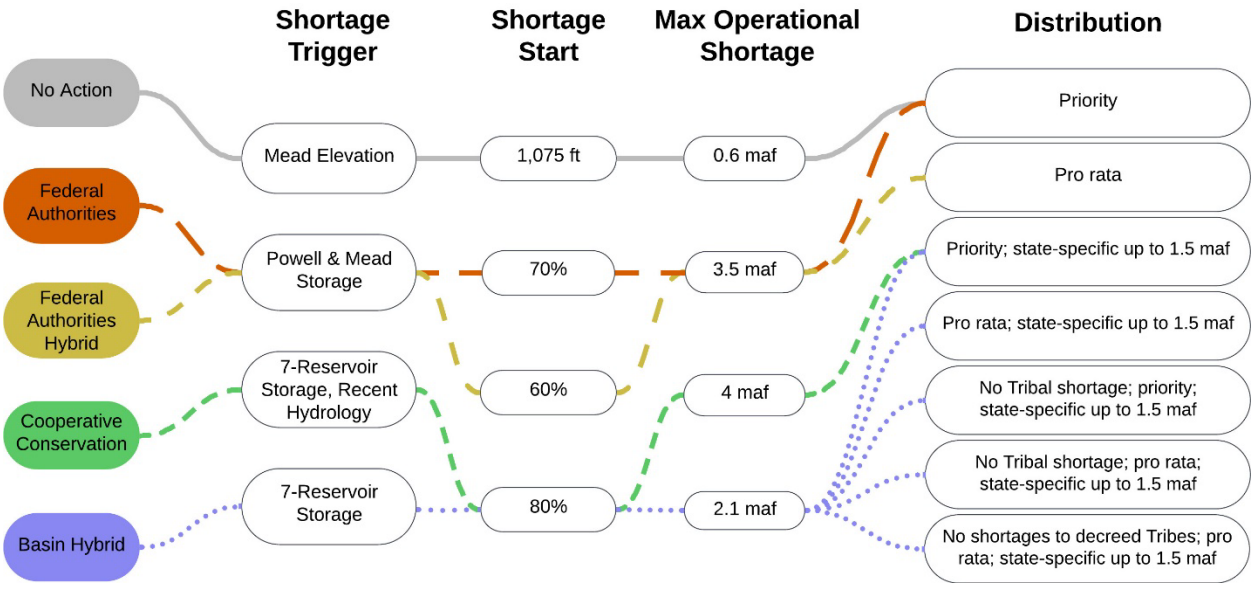
8. Range of Alternatives

The draft EIS will incorporate a reasonable and broad range of alternatives in accordance with NEPA. It is important that the range is sufficient to cover reasonable permutations of operations and provide flexibility to incorporate public input between the draft and final EIS. The figures below summarize the range of alternatives for each operational element. For each figure below, the individual lines connect each alternative with the approach(es) Reclamation plans to analyze within that alternative.

8.1 Shortage Guidelines to Reduce Deliveries from Lake Mead

Figure 11, Lower Basin Shortage Guidelines, shows the various approaches being considered for the factors that would trigger Lower Basin Shortage, the metric at which shortages would start, the maximum Lower Basin shortage amount, and the method(s) by which shortages would be distributed.

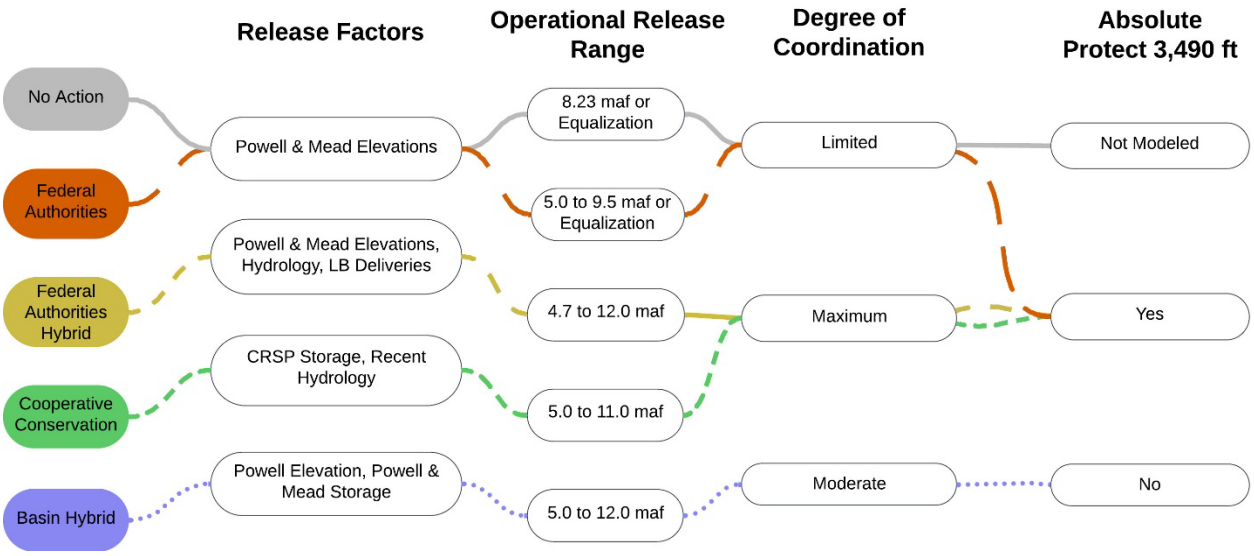
Figure 11
Lower Basin Shortage Guidelines



8.2 Coordinated Reservoir Operations of Lake Powell and Lake Mead

Figure 12, Coordinated Operations of Lake Powell and Lake Mead, shows the approaches being considered for the factors that would determine Lake Powell annual release volumes, the range of annual release volumes that would vary based on those factors, the degree of coordination of operations between Lake Powell and Lake Mead (that is, how dependent operations of Lake Powell would be on conditions at Lake Mead), and whether Lake Powell releases would be adjusted to prevent elevations from dropping below 3,490 feet to protect critical infrastructure.

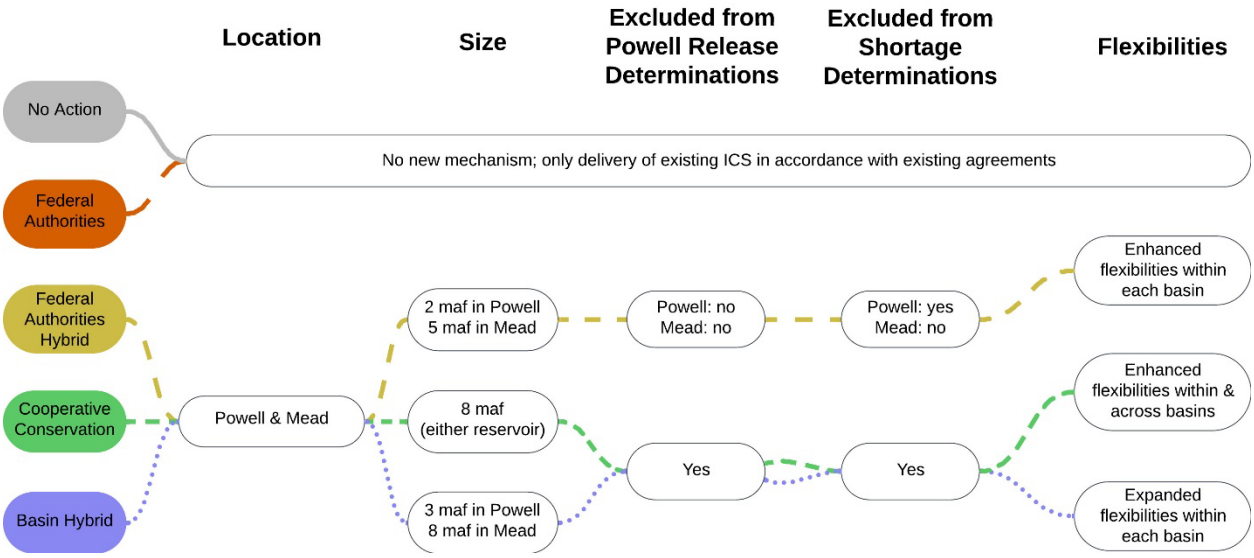
Figure 12
Coordinated Operations of Lake Powell and Lake Mead



8.3 Lake Mead and/or Lake Powell Storage and Delivery of Conserved System and Non-System Water

Figure 13, Storage and Delivery of Conserved System and Non-System Water, shows the various approaches being considered to incorporate this mechanism, including which reservoir(s) would store conserved water, the maximum amount of conserved water that could be stored, whether stored conserved water is excluded from determinations of Lake Powell releases and shortage volumes, and the level of flexibilities for transactions of stored conserved water between users.

Figure 13
Storage and Delivery of Conserved System and Non-System Water



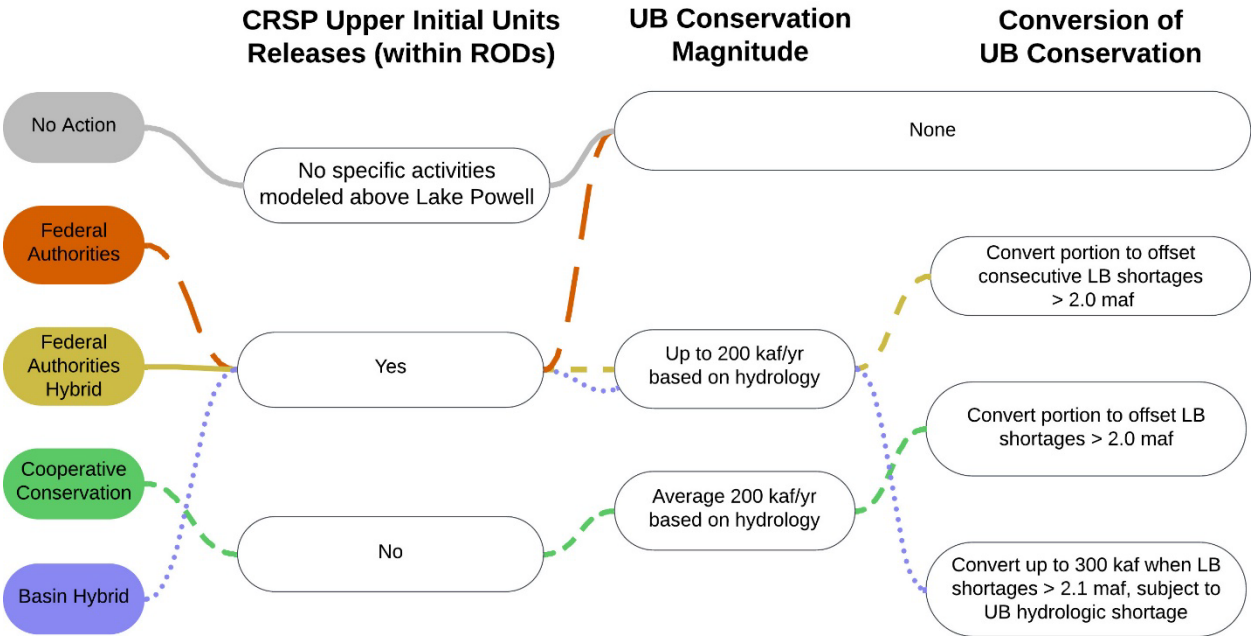
8.4 Surplus Guidelines to Increase Deliveries from Lake Mead

All five alternatives allocate surplus in the Lower Basin if Lake Mead is in Flood Control conditions. The Cooperative Conservation Alternative only uses the Flood Control strategy to allocate surplus; the other four alternatives allocate surplus below Flood Control conditions using the 70R spill avoidance strategy. The Basin Hybrid Alternative has a third surplus strategy in addition to Flood Control and 70R that allocates 250 kaf to the Lower Basin when the total system effective storage is greater than 85 percent full and Lake Mead elevation is above 1,160 feet.

8.5 Additional Activities Above Lake Powell

Figure 14, Additional Activities Above Lake Powell, shows the varying approaches to releases from CRSP Upper Initial Units to protect Glen Canyon Dam, the assumptions about the amount of annual Upper Basin conservation, and rules for when Upper Basin conserved water would be converted to system water.

Figure 14
Additional Activities Above Lake Powell



9. Next Steps

As noted above, this report provides more detailed information regarding Reclamation's anticipated range of alternatives that were released publicly on November 20, 2024, for full impact analysis in the upcoming draft EIS, which is currently under development. Following publication of this report, Reclamation will continue its efforts working with partners and stakeholders in the Basin, preparing the environmental impact analysis that will be contained in the draft EIS, and beginning to analyze additional information submitted after November 20, 2024.

Information in this report remains subject to refinement and revision as work proceeds on the draft EIS. The Department is not requesting comments on this report and will be providing an appropriate opportunity for public review and comment throughout the remaining steps of this ongoing NEPA process.

Special Considerations Regarding Use of Pro Rata Shortage Distributions in Alternatives

As part of the ongoing NEPA process to develop Operating Guidelines in compliance with Section 602 of Public Law 90-537 for the Coordinated Operation of Lake Powell and Lake Mead, Reclamation intends to analyze certain Hoover Dam operations that would release water controlled by the United States for irrigation and domestic use in the States of Arizona, California and Nevada under conditions when there is insufficient mainstream Colorado River water to satisfy annual consumptive use of 7,500,000 acre-feet. The Decree enjoins the United States, its officers, attorneys, agents and employees from operating regulatory structures controlled by the United States and from releasing water controlled by the United States other than in accordance with the provisions of the Decree, which includes, among other issues, accounting for water use consistent with the Decree's established priority dates, and providing for satisfaction of present perfected rights in the order of their priority dates without regard to state lines. Reclamation intends to analyze alternatives for these operations that are fully consistent with the injunction imposed by Article II of the Decree. 547 U.S. 150, 154–58 (2006).

In addition, Reclamation intends to identify and analyze aspects of alternatives for operations that would provide for water use that are or may be inconsistent with the Decree (for example, reductions of releases for irrigation and domestic use in the States of Arizona, California, and Nevada starting at 1.5 maf, which exceeds average annual evaporative and system losses at and below Lake Mead, and distributed pro-rata to all entities that receive water from the mainstream in the Lower Basin pursuant to the Decree). Reclamation acknowledges that it needs additional agreements or other legal authority to implement any operations that are inconsistent with the Decree. But Reclamation has also determined that, based on public input received during the scoping and alternative development phases of the NEPA process, analysis of these operations will present a broader range of operations and impacts for agency and stakeholder consideration, review, and input, and will foster meaningful and informed decision-making among Reclamation and Colorado River Basin stakeholders. Reclamation also acknowledges its Trust responsibility to Basin Tribes and input received from Tribes and other entities during the alternative development phase of the NEPA process that Reclamation should not analyze an operation that is inconsistent with, and would represent a violation of, the Decree. Reclamation recognizes that such operations may ultimately not be implemented. Reclamation will identify and fully consider any input from Tribes on this matter in the NEPA process and commits that this input will help inform any final decision. Reclamation also recognizes that the Supreme Court retains jurisdiction of this suit for the purpose of any order, direction, or modification of the Decree, or any supplementary Decree, that may at any time be deemed proper in relation to the subject matter in controversy, and that any of the parties may apply at the foot of this decree for its amendment or for further relief. Decree at Article IX, pages 166–67. As in the 2001 Interim Surplus Guidelines and 2007 Interim Guidelines, the Secretary anticipates retaining all applicable authority to respond to emergency conditions in any decision reached in this NEPA process.