BUREAU OF RECLAMATION

Draft Supplemental Environmental Impact Statement for Near-term Colorado River Operations

Glen Canyon Dam Adaptive Management Work Group

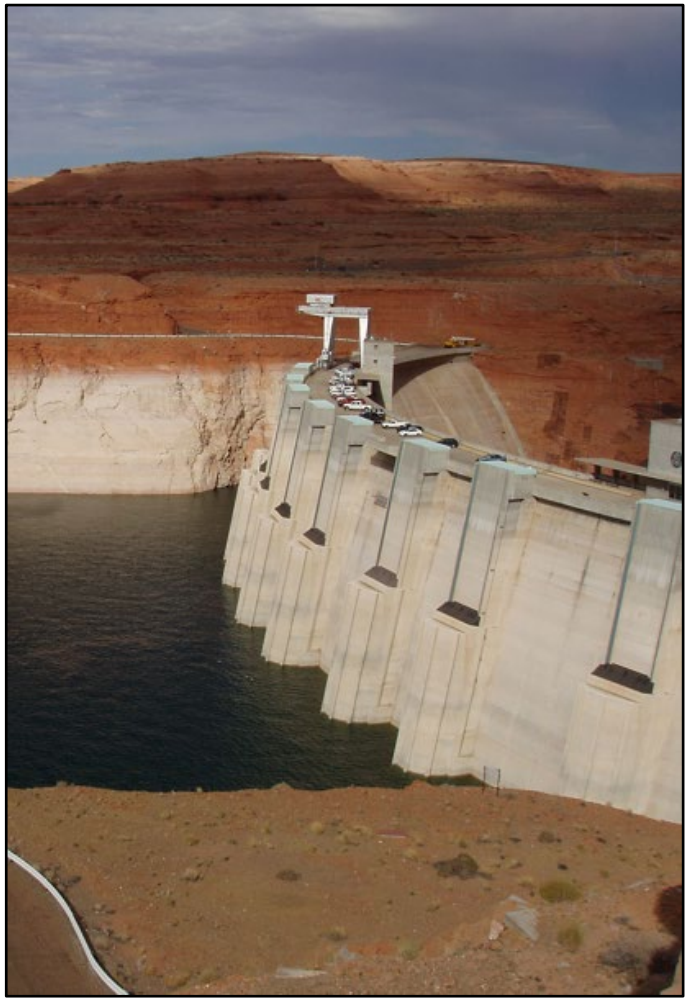
May 17, 2023

Katrina A Grantz
Deputy Regional Director
Bureau of Reclamation
Upper Colorado Basin

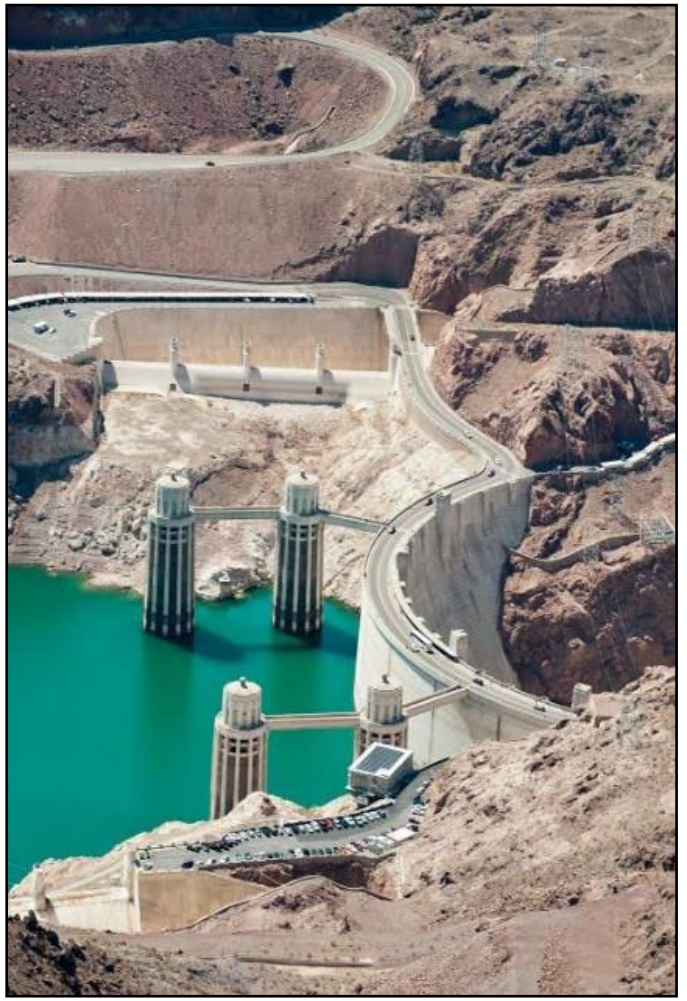
BUREAU OF RECLAMATION

Project Overview

Colorado River – Current Conditions



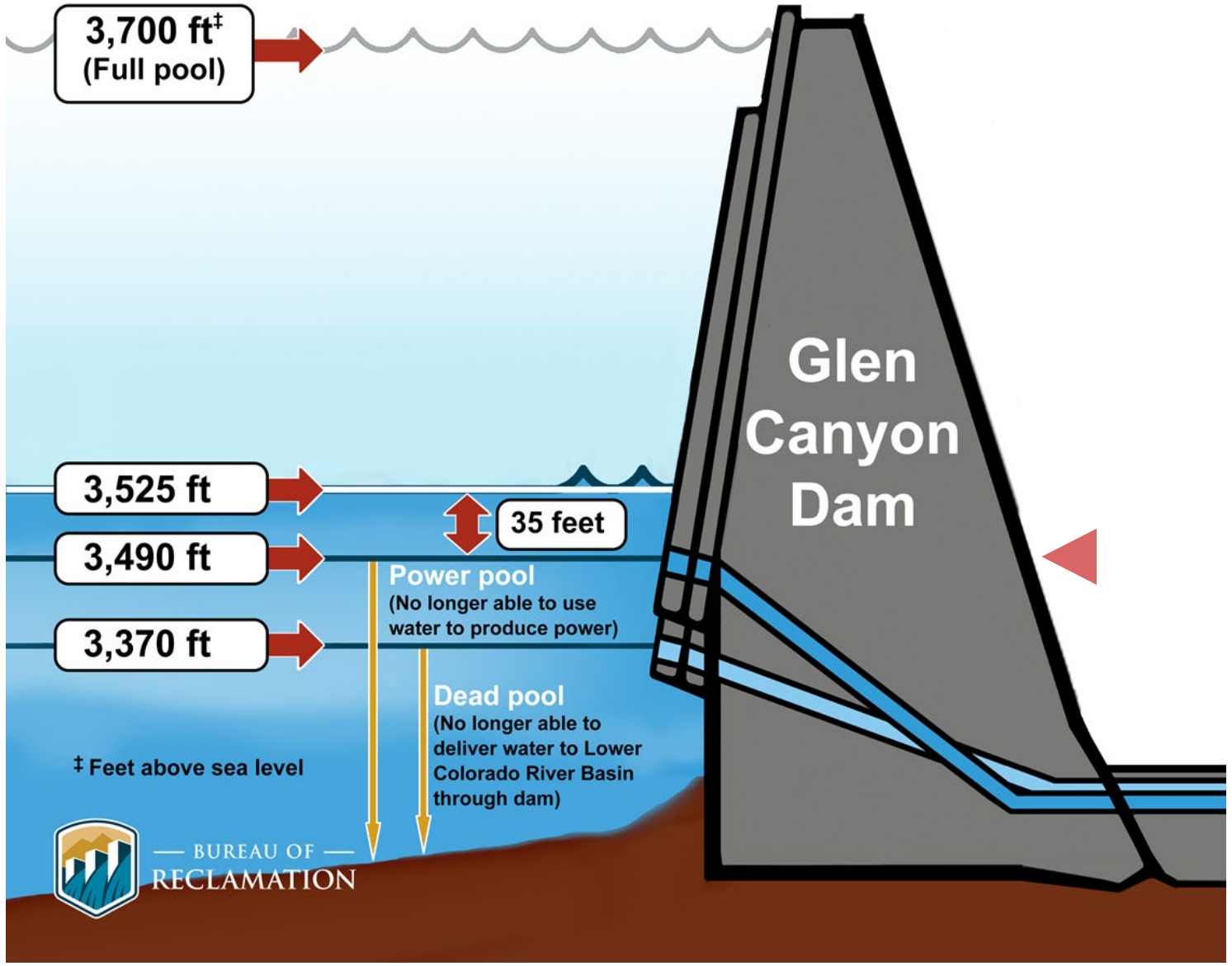
Lake Powell near Glen Canyon Dam



Lake Mead near Hoover Dam

- Driest 23-year period on record (2000-2022)
- Flows in 2020-2022 were 37% to 63% of average
- Lake Powell and Lake Mead are near historically low water levels

Lake Powell Key Elevations



Could drop below elevation 3,490 ft before 2026 under current rules

Supplemental EIS and Why it is Important

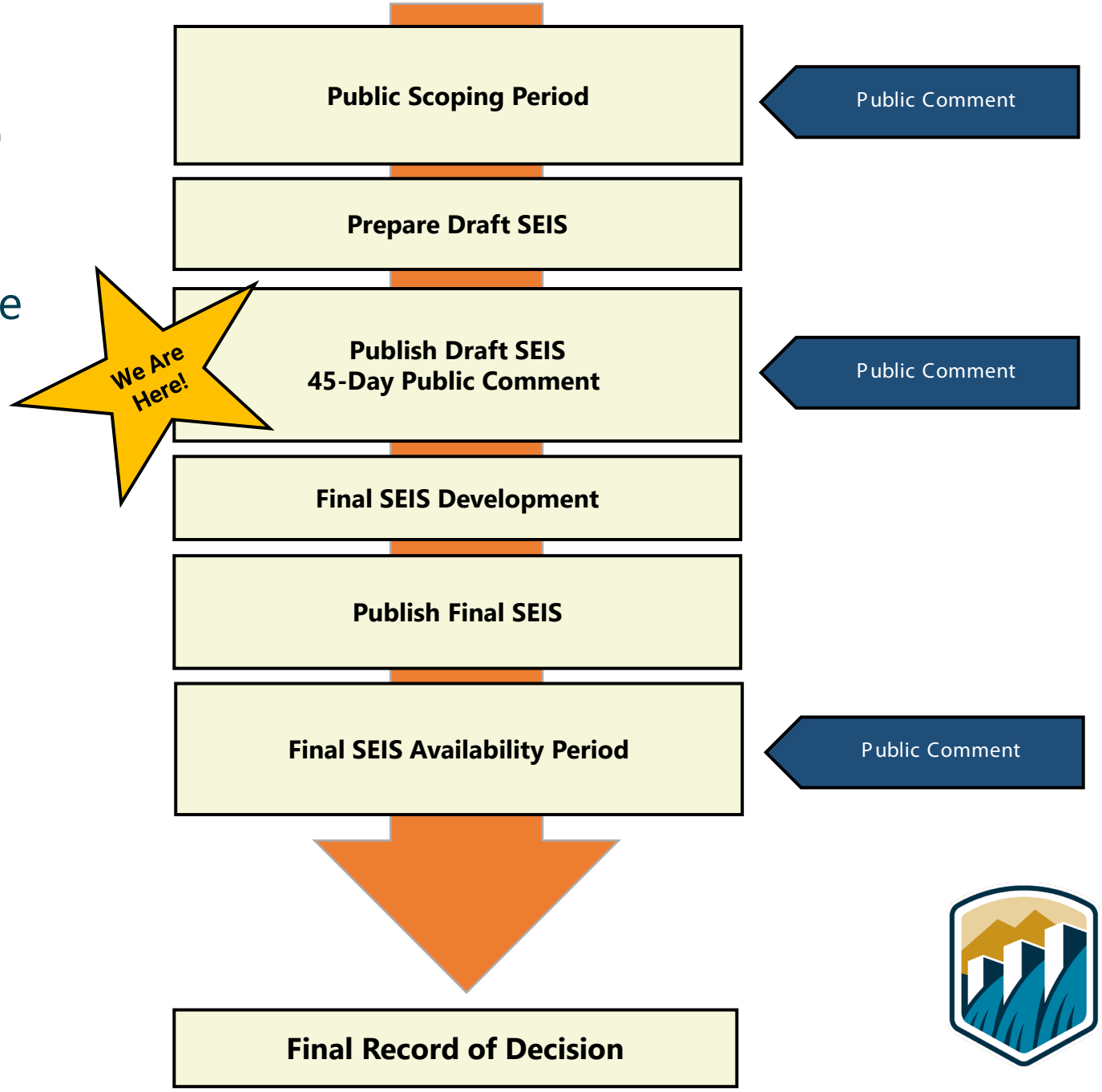
- In 2022, the Department of the Interior proposed development of a Supplemental Environmental Impact Statement (SEIS) to:
  - Supplement the 2007 EIS and Interim Guidelines
  - Respond to the potential for worsening drought conditions
  - Modify operating guidelines to inform operations in Water Years 2024-2026
- The SEIS does not replace, supplant, or supersede the post-2026 guidelines development process

Supplemental EIS and Why it is Important

- Focuses on addressing potential low-runoff and low-reservoir elevations
- Analyzes scenarios to react to low-level conditions, but doesn't predict actual operations
- Focuses on 2024-2026
- Doesn't change other operational agreements or contractual distribution of water within Reclamation projects
- Focuses on Lake Powell, downstream along the Colorado River floodplain, to international boundary with Mexico

SEIS NEPA Schedule

- November 17, 2022 - Notice of Intent (NOI) to develop a SEIS published in the *Federal Register*
- November 17-December 20, 2022 - Public Scoping Period
- April 14, 2023 – EPA's Notice of Availability (NOA) of the Draft SEIS published in the *Federal Register*
- April 14-May 30, 2023 – Public Comment Period for Draft SEIS
- Summer 2023 – Finalize SEIS
- Final Record of Decision



Draft Supplemental EIS Comment Period

- We are seeking public feedback on:
  - Draft alternatives
  - Missing alternatives
  - Methodologies to distribute available Colorado River water
  - Draft impacts/missing impacts
  - Other issues within scope of the document

BUREAU OF RECLAMATION

Alternatives Analyzed

Overview of Alternatives

- Action alternatives are designed to manage reservoirs at lower elevations due to low-runoff conditions
- There is no preferred alternative at this time
- Reclamation is proposing modifications to the following sections of the 2007 Interim Guidelines:
  - Determination of Lake Mead Operation / Shortage Conditions (Section 2.D)
  - Coordinated Reservoir Operations / Mid-Elevation Release Tier and Lower Elevation Balancing Tier (Section 6.C and 6.D)
  - Implementation Guidelines / Mid-Year Review (Section 7.C)

No Action Alternative

- Current operations do not change
- Continued implementation through 2026:
  - 2007 Interim Guidelines for Operation of Lake Powell and Lake Mead
  - Minute 323 to the 1944 Water Treaty with Mexico including the Binational Water Scarcity Plan
  - 2019 Drought Contingency Plan Contributions for Lower Basin States (AZ, CA, NV)
  - 2019 Drought Contingency Plan for the Upper Basin

No Action Alternative

- Models operational changes for both Glen Canyon and Hoover Dams:
  - Shortages
    - Total Lower Division States' shortages and DCP contributions according to priority of 200,000 af below 1,090 feet up to 1.1 maf below 1,025 feet
  - Coordinated Reservoir Operations
    - Below 3,575 feet and at or above 3,525 feet at Lake Powell, initial release of 7.48 maf and adjust as high as 8.23 maf
    - Below 3,525 feet, release 7.0 maf to 9.5 maf to balance Lake Powell and Lake Mead storage
  - Implementation Guidelines
    - Mid-year review may adjust Lake Powell operations up or down or reduce shortages from Lake Mead (allow additional deliveries to Lower Basin water users)

Action Alternative 1

Models operational changes for Glen Canyon and Hoover Dams as follows:

- Shortages
  - Models total Lower Division States' shortages and DCP contributions up to 2.083 maf, with additional shortages distributed according to concept of priority
  - Also models shortages up to 4.0 maf, if needed
- Coordinated Reservoir Operations
  - Below 3,575 feet at Lake Powell, initial release of 6.0 maf and adjust as high as 8.23 maf
  - Below 3,500 feet, reduce releases so Lake Powell ends water year at 3,500 feet
- Implementation Guidelines
  - Mid-year review may adjust Lake Powell operations up or down or reduce/increase shortages from Lake Mead (allow additional or reduced deliveries to Lower Basin water users)

Action Alternative 2

Models operational changes for both Glen Canyon and Hoover Dams

- Shortages
  - Same as Action Alternative 1, except Lower Division States' additional shortages distributed in the same percentage across all water users
- Coordinated Reservoir Operations
  - Same as Action Alternative 1
- Implementation Guidelines
  - Same as Action Alternative 1

Analysis of Impacts

Resources Analyzed in Detail

- Hydrologic Resources
- Water Deliveries
- Biological Resources
- Cultural Resources
- Indian Trust Assets
- Recreation
- Socioeconomics
- Air Quality
- Electrical Power Resources
- Environmental Justice
- Paleontological Resources
- Visual Resources
- Water Quality

For more details on resource impacts, see Draft SEIS Chapter 3

Anticipated Impacts of No Action

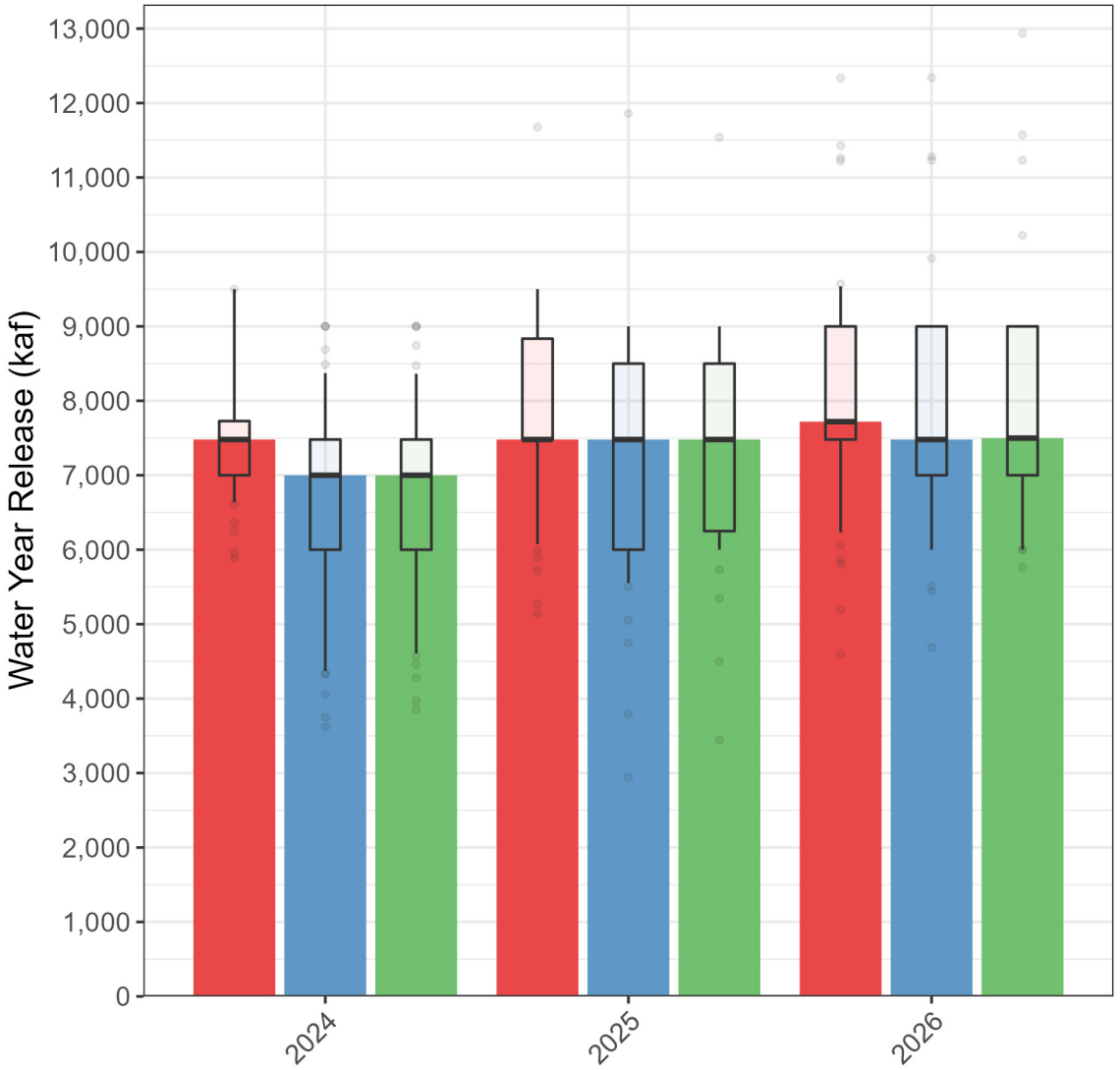
- Critically low elevations at Lake Powell and Lake Mead
- Water delivery and operations limitations
- Loss of hydropower production
- Flow limitations in the Grand Canyon
- Limited flows for ecological programs
- Reduced water availability to water users basin-wide
- U.S.-Mexico Water Treaty obligation

Hydrologic Resources

- Reservoir Releases and Elevations

For more details on resource impacts, see Draft SEIS Chapter 3

Glen Canyon Dam Water Year Releases

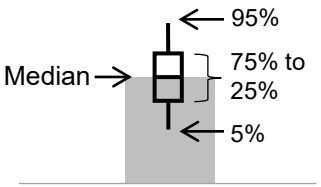


No Action Alt.

Action Alt. 1

Action Alt. 2

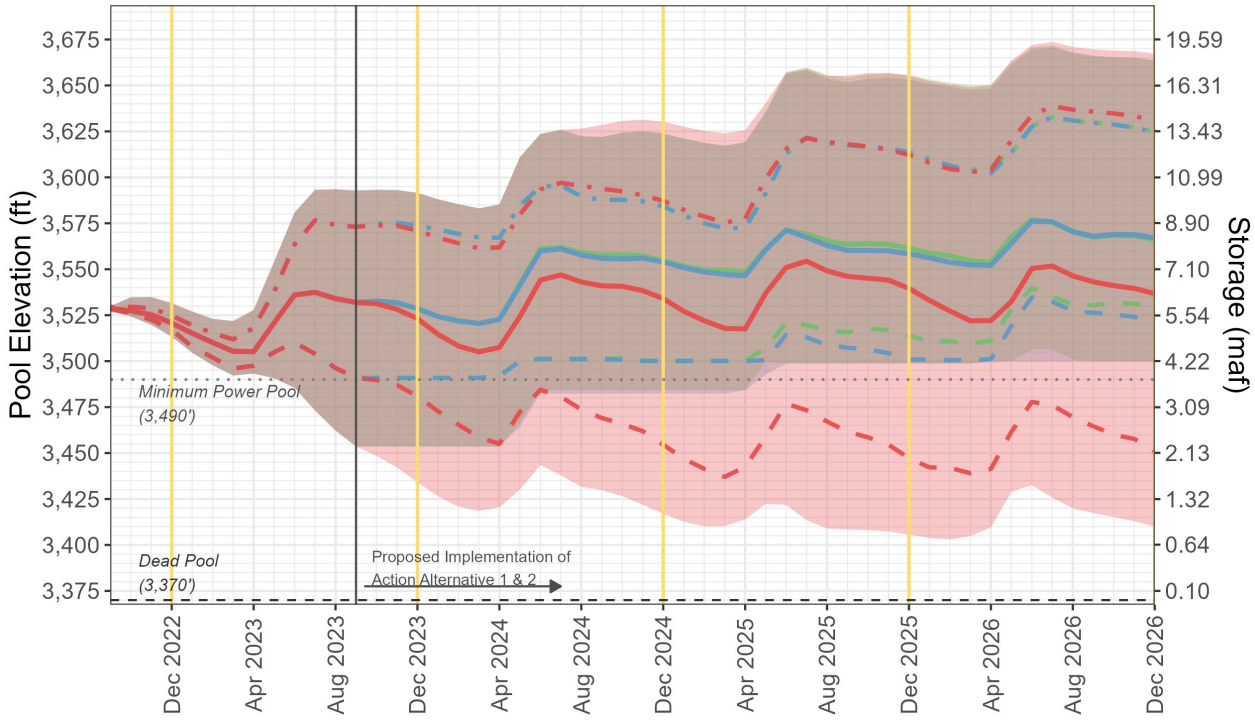
Legend



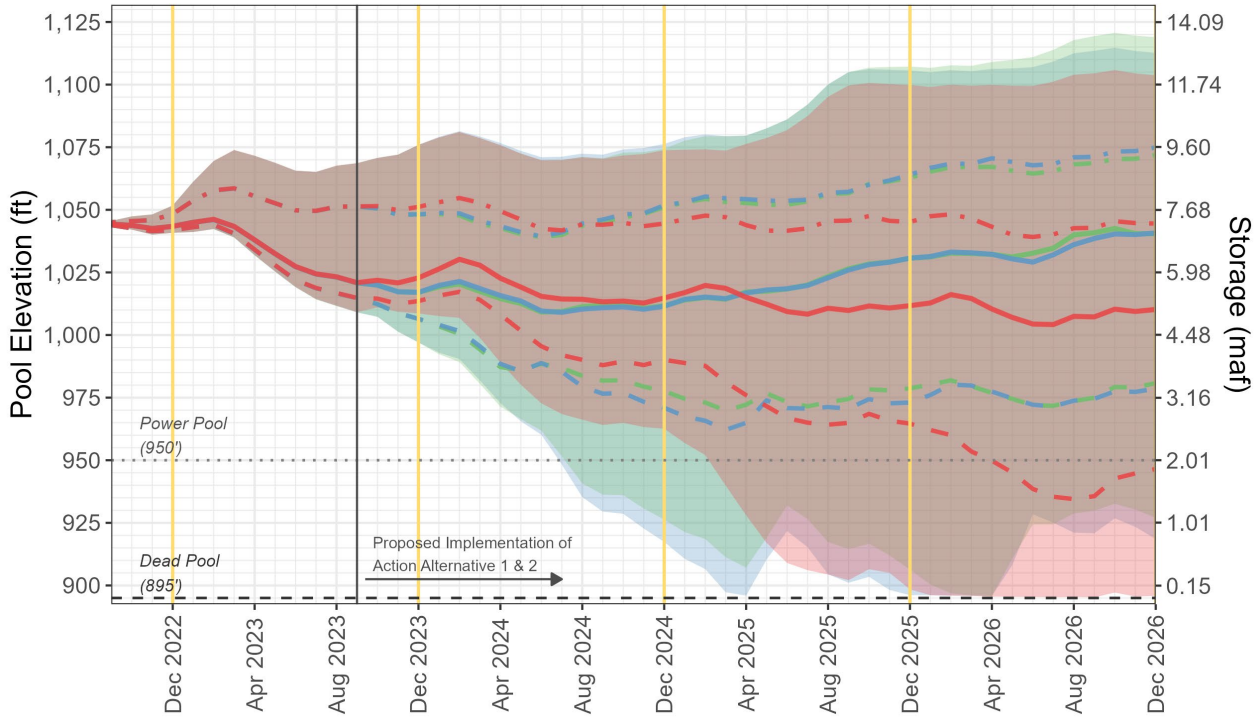
For more details on resource impacts, see Draft SEIS Chapter 3

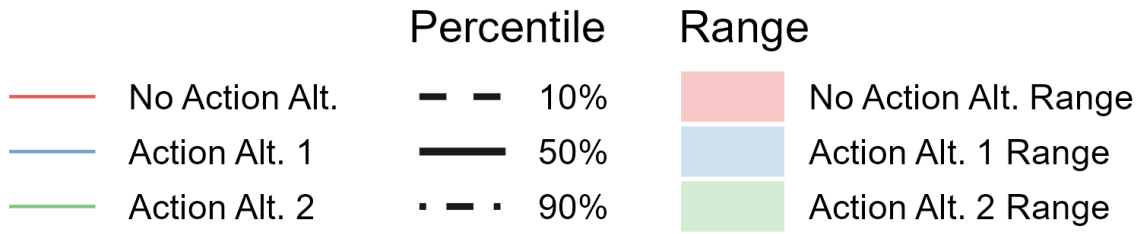
Hydrologic Resources - Reservoir Elevations

Lake Powell End-of-Month Pool Elevations



Lake Mead End-of-Month Pool Elevations





*All statistics calculated are reflective of the hydrology scenarios and other assumptions used in modeling and they are not intended to be predictive. However, it is meaningful to compare statistics across alternatives to differentiate performance.

Example Streamflow Trace Analysis – 80% ESP of 2011-2014

- To illustrate the continued need, despite the good hydrology in 2023, Reclamation modeled plausible hydrological scenarios (an Ensemble Streamflow Prediction or ESP trace), using climate (temperature and precipitation) data from 2011 to 2014.
- 2011 was a very wet year (166% of average) followed by 3 dry years.
- Reclamation modeled 80% of the 2011-2014 streamflow trace to provide a more conservative analysis.

Lake Powell Water Year (WY) Unregulated Inflow

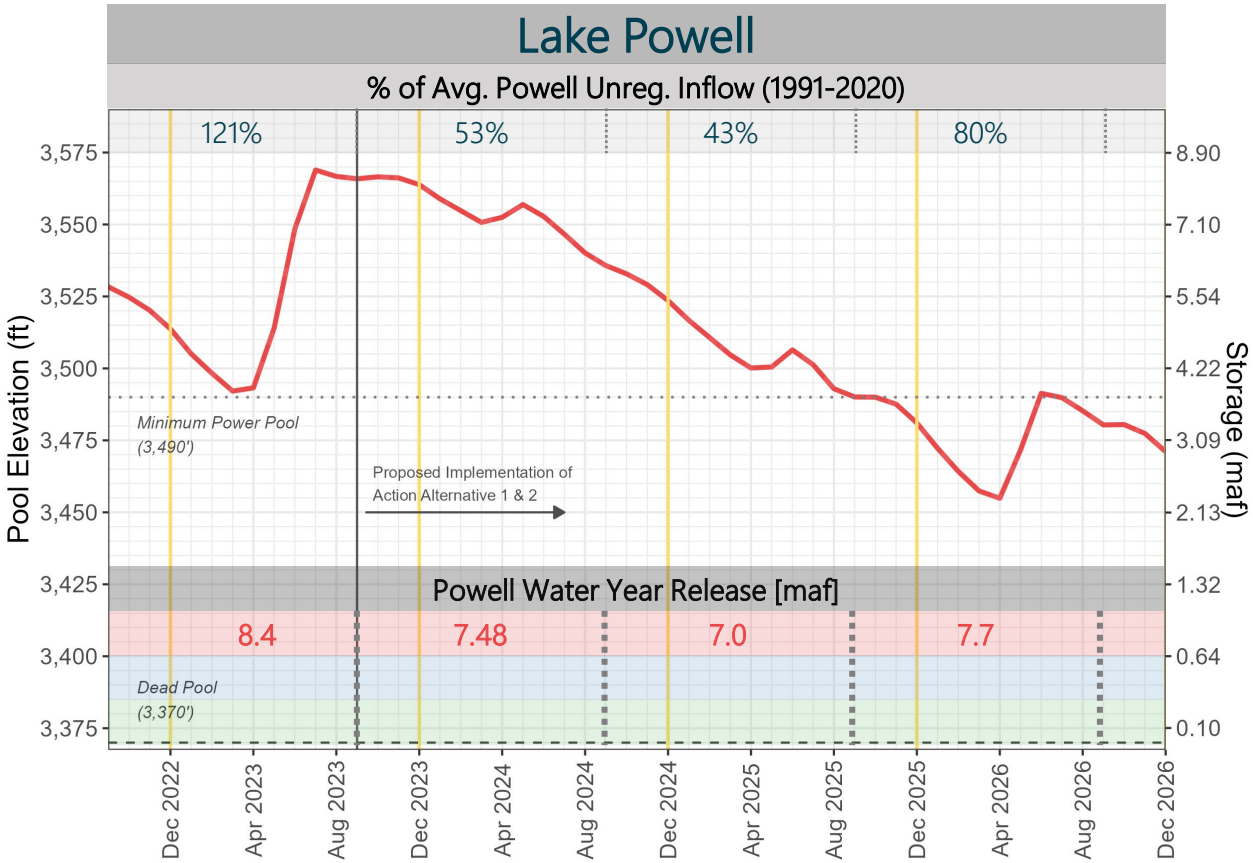
	2023	2024	2025	2026
% of Avg. (1991-2020)	121%	53%	43%	80%
WY Volume (kaf)	11,620	5,090	4,130	7,680

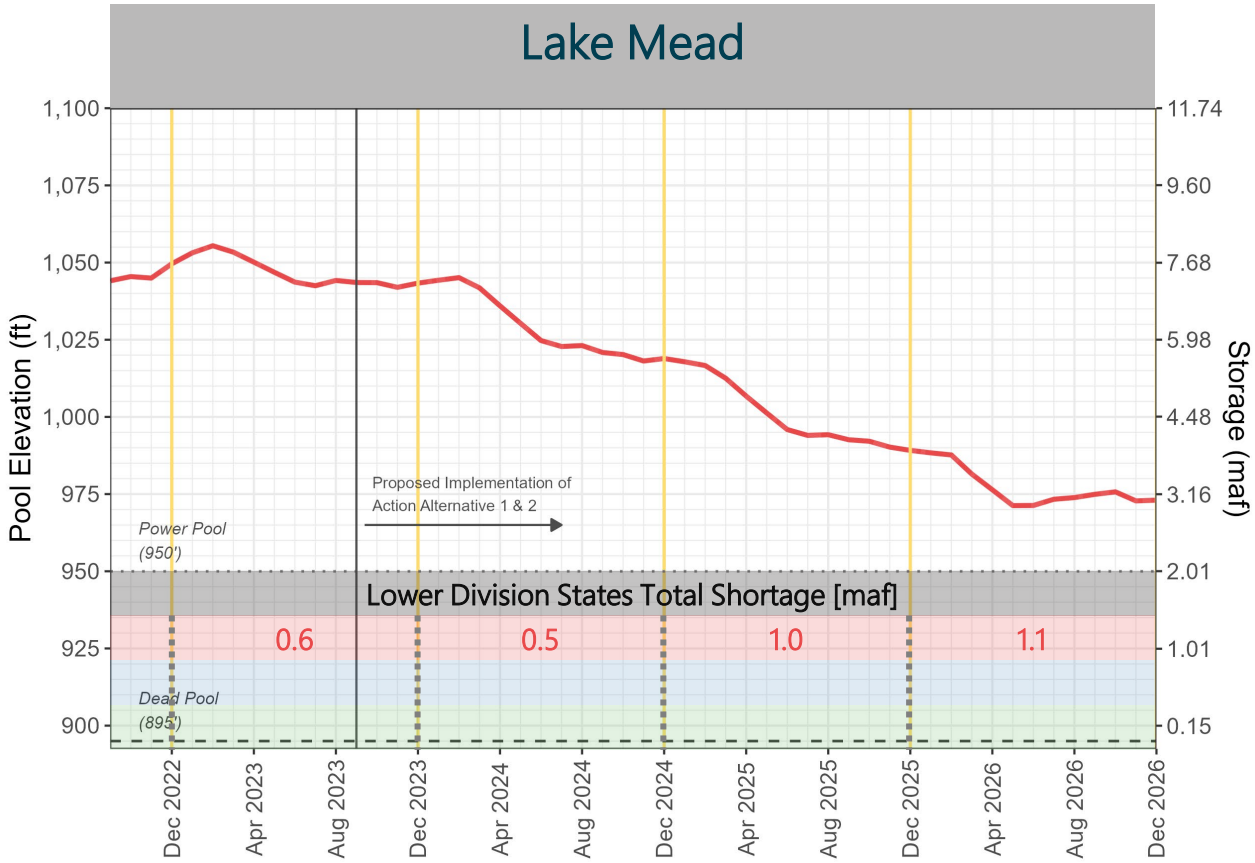
2024 and **2026** are similar to:
2020 (5,850 kaf) &
2022 (6,370 kaf)

2025 is similar to:
2021 (3,500 kaf)

Example Streamflow Trace Analysis – 80% ESP of 2011-2014

End-of-Month Pool Elevation





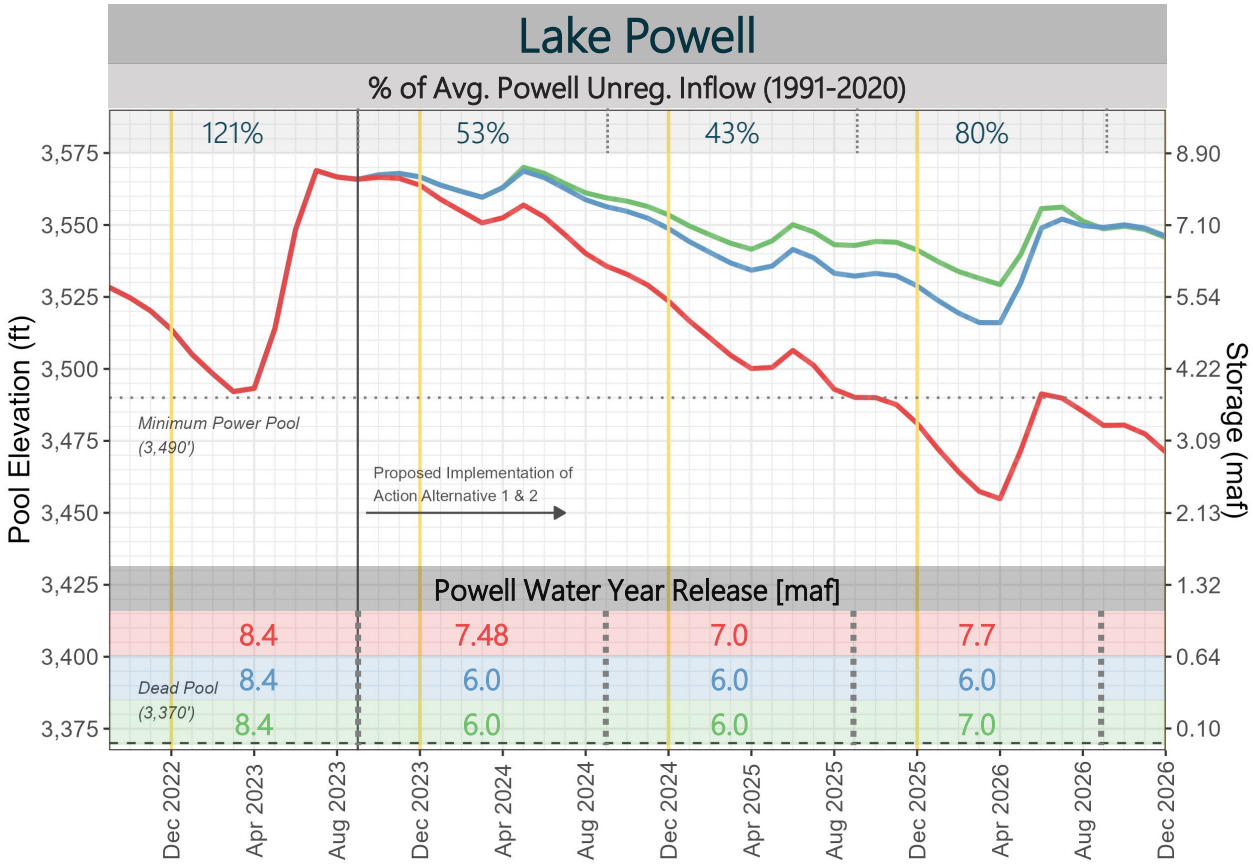
No Action Alt.

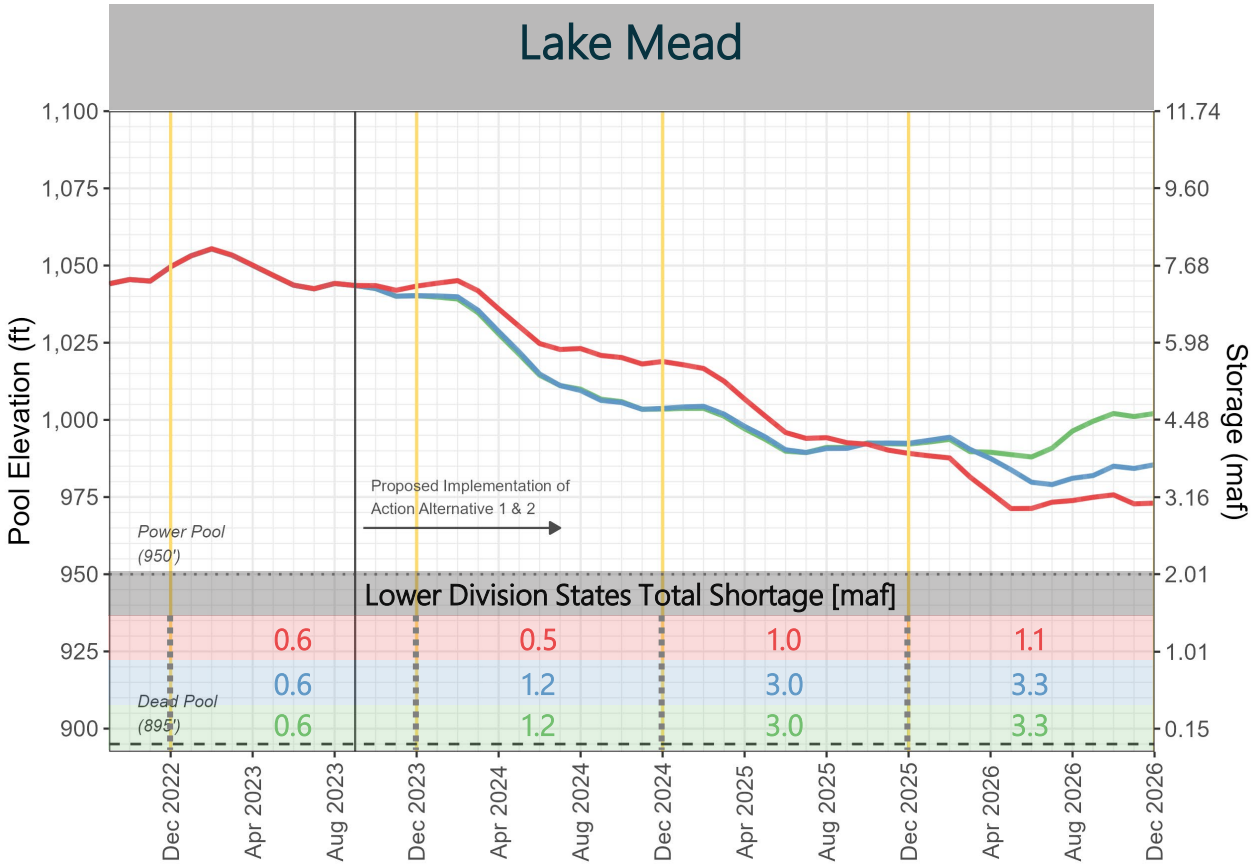
Action Alt. 1

Action Alt. 2

Example Streamflow Trace Analysis – 80% ESP of 2011-2014

End-of-Month Pool Elevation





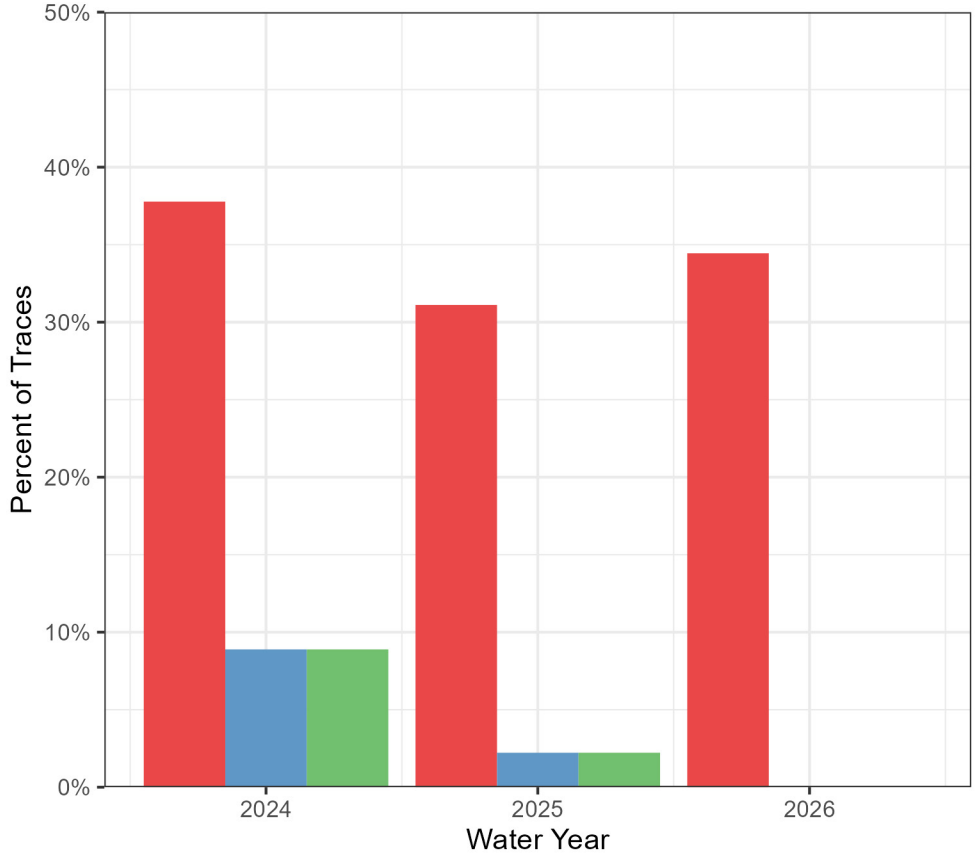
No Action Alt.

Action Alt. 1

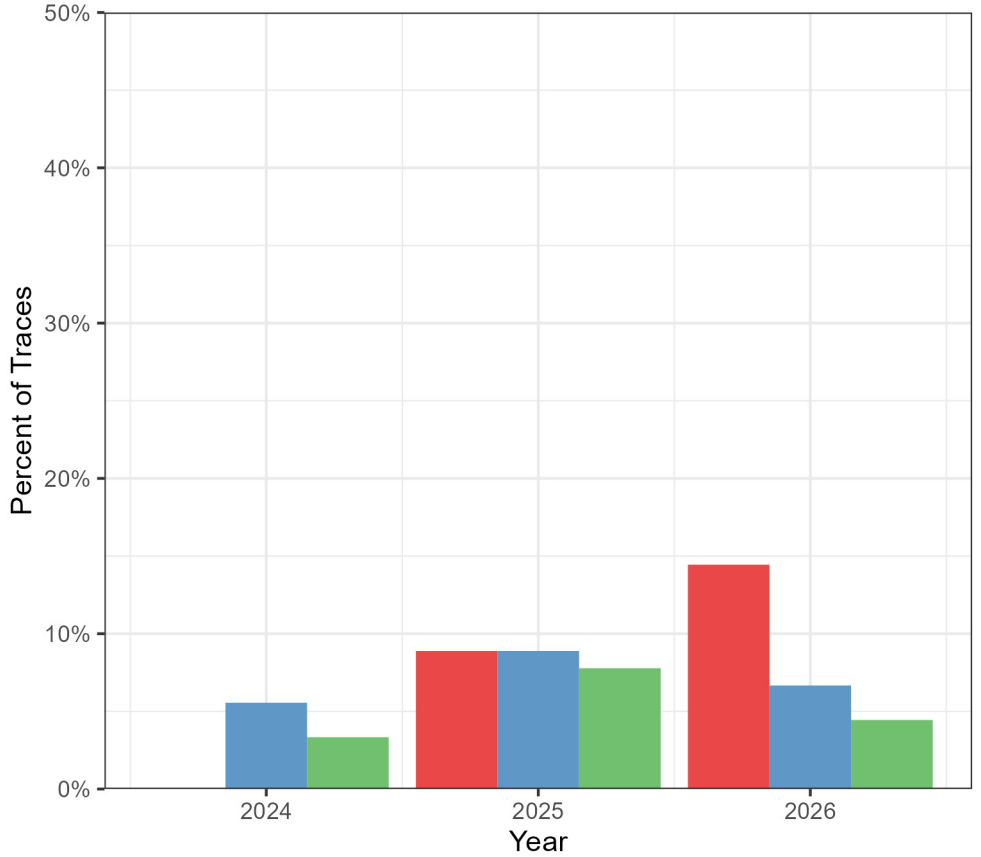
Action Alt. 2

Hydrologic Resources – Reservoir Elevations

Lake Powell Minimum Water Year Elevation
Percent of Traces Less than Elevation 3,490 feet



Lake Mead Minimum Annual Elevation
Percent of Traces Less than Elevation 950 feet



*All statistics calculated are reflective of the hydrology scenarios and other assumptions used in modeling and they are not intended to be predictive. However, it is meaningful to compare statistics across alternatives to differentiate performance.

Lake Powell modeled monthly releases

- Alternatives 1 and 2 include annual releases below 7.0 maf

Table 1. Monthly release volumes under LTEMP

	Monthly Release Volume (thousand acre-feet)										
Total Annual	**6,000**	**7,000**	**7,480**	**8,230**	**9,000**	**9,500**	**10,500**	**11,000**	**12,000**	**13,000**	**14,000**
October	411	480	480	643	643	643	643	643	643	643	643
November	429	500	500	642	642	642	642	642	642	642	642
December	514	600	600	716	716	716	716	716	716	716	716
January	569	664	723	763	857	919	1041	1,102	1,225	1,347	1,470
February	503	587	639	675	758	813	921	975	1,083	1,192	1,300
March	531	620	675	713	801	858	973	1,030	1,144	1,259	1,373
April	473	552	601	635	713	764	866	917	1,019	1,121	1,223
May	471	550	599	632	710	761	862	913	1,014	1,116	1,217
June	495	577	628	663	745	798	905	958	1,064	1,171	1,277
July	559	652	709	749	852	902	1,022	1,082	1,202	1,322	1,443
August	597	696	758	800	899	963	1,091	1,156	1,284	1,413	1,537
September	447	522	568	600	674	722	819	861	963	1,059	1,160

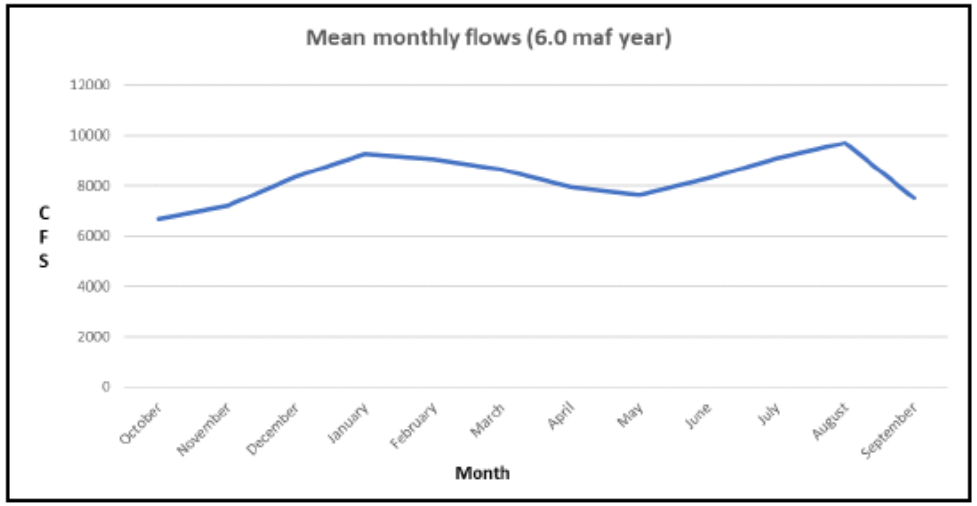


Figure 1. Mean monthly releases under a 6.0-maf release year following the 7.0-maf release pattern described in LTEMP.

Ways to Comment

Comments should be submitted by May 30, 2023

- Webform via the project website:

  https://www.usbr.gov/ColoradoRiverBasin/SEIS.html
- Send an email: CRinterimops@usbr.gov
- Telephone message: (602) 609-6739
- By mail to:

  Reclamation 2007 Interim Guidelines SEIS Project Manager
  Upper Colorado Basin Region
  125 South State Street, Suite 8100
  Salt Lake City, Utah 84138

For more information

- Project Website: https://www.usbr.gov/ColoradoRiverBasin/SEIS.html
- Draft SEIS document is posted on the project website
  - Paper copies are located at the Lower Colorado Basin and Upper Colorado Basin Regional Offices
- Send questions to: CRInterimops@usbr.gov
- Call the project telephone line: (602) 609-6739

Thank you

Katrina Grantz
kgrantz@usbr.gov

Extra Slides Follow