December 24-Month Study
Date: December 15, 2022

From: Water Resources Group, Salt Lake City
To: All Colorado River Annual Operating Plan (AOP) Recipients

Current Reservoir Status

	November Inflow (unregulated) (acre-feet)	Percent of Average (percent)	December 15, Midnight Elevation (feet)	December 15, Midnight Reservoir Storage (acre-feet)
Fontenelle	33,300	80	6,488.81	210,521
Flaming Gorge	39,800	82	6,009.47	2,567,504
Blue Mesa	25,500	88	7,445.90	287,334
Navajo	23,100	87	6,019.11	858,257
Powell	349,000	83	3,526.76	5,646,753

Expected Operations

The operation of Lake Powell and Lake Mead in this December 2022 24-Month Study is pursuant to the December 2007 Record of Decision on Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations of Lake Powell and Lake Mead (Interim Guidelines), and reflects the 2022 Annual Operating Plan (AOP) and draft 2023 AOP. Pursuant to the Interim Guidelines, the August 2022 24-Month Study projections of the January 1, 2023, system storage and reservoir water surface elevations set the operational tier for the coordinated operation of Lake Powell and Lake Mead during 2023.

The August 2021 24-Month Study projected the January 1, 2022, Lake Mead elevation to be at or below 1,075 feet and at or above 1,050 feet. Consistent with Section 2.D.1 of the Interim Guidelines, a Shortage Condition consistent with Section 2.D.1.a will govern the operation of Lake Mead for calendar year (CY) 2022. In addition, Section III.B of Exhibit 1 to the Lower Basin Drought Contingency Plan (DCP) Agreement will also govern the operation of Lake Mead for CY 2022. Efforts to conserve additional water in Lake Mead under a 2021 Lower Basin Memorandum of Understanding (MOU) to facilitate near-term actions to maintain the water surface elevation of Lake Mead will also take place in CY 2022.

In light of the prolonged drought, low runoff conditions, and depleted storage at Lake Powell, the Department of the Interior implemented an action under Sections 6 and 7.D of the 2007 Interim Guidelines specifically reducing the Glen Canyon Dam annual releases to 7.00 million acre-feet (maf) in water year (WY) 2022.[1] This action was undertaken in conjunction with the 2022 Drought Response Operations Plan[2] actions which together are anticipated to add approximately one million additional acre-feet of storage to Lake Powell by April 2023. The Department of Interior and Reclamation will work to

[1] For more information: https://www.usbr.gov/uc/DocLibrary/Plans/20220503-2022DROA-GlenCanyonDamOperationsDecisionLetter-508-DOI.pdf.

[2] For more information: https://www.usbr.gov/uc/DocLibrary/Plans/20220429-2022DroughtResponseOperationsPlan-ApprovalMemo-508-DOI.pdf.

determine the manner in which to operate Glen Canyon Dam to ensure the benefits of these actions are preserved.

The 2022 Plan provisions to protect a target elevation at Lake Powell of 3,525 feet through adjusting Glen Canyon Dam monthly volume releases have been incorporated into the December 2022 24-Month Study and include an adjusted monthly release volume pattern for Glen Canyon Dam that will hold back a total of 0.523 maf in Lake Powell from December 2022 through April 2023. There are continued discussions when and how that same amount of water (0.523 maf) will be released later in the water year. The annual release volume from Lake Powell for WY 2023 will continue to be 7.00 maf, or higher, according to the provisions outlined below. If future projections indicate the monthly adjustments are insufficient to protect Powell's elevation, Reclamation will again consider additional water releases from the upstream initial units of the Colorado River Storage Project according to the provisions of the 2022 Plan.

The reduction of releases from Lake Powell from 7.48 maf to 7.00 maf in WY 2022 resulted in a reduced release volume of 0.480 maf that normally would have been released from Glen Canyon Dam to Lake Mead as part of the 7.48 maf annual release volume, consistent with routine operations under the 2007 Interim Guidelines. The reduction of releases from Glen Canyon Dam in WY 2022 (resulting in increased storage in Lake Powell) did not affect the operating determinations for 2023 and was accounted for "as if" this volume of water had been delivered to Lake Mead. The 24-Month Study will continue to model 2023 and 2024 operations at lakes Powell and Mead as if the 0.480 maf had been delivered to Lake Mead for operating condition purposes both for the U.S. Lower Basin and for Mexico unless otherwise determined through additional consultation and communication as described below. The elevations listed in this report reflect the projected physical elevations at each reservoir after implementing operations as described.

Using the approach described in the immediately preceding paragraph, the August 2022 24-Month Study projected the January 1, 2023, Lake Powell elevation to be less than 3,525 feet. Consistent with Section 6.D.1 of the Interim Guidelines, Lake Powell's operations in WY 2023 will be governed by the Lower Elevation Balancing Tier with an initial projected WY release volume of 7.00 maf. Because the 2022 operations were designed to protect critical elevations at Lake Powell, Reclamation will implement Lower Elevation Balancing Tier operations in a way that continues to protect these critical elevations, or preserves the benefits of the 2022 operations to protect Lake Powell, in WY 2023. Specifically, Reclamation modeled operations in WY 2023 as follows:

- The Glen Canyon Dam annual release has initially been set to 7.00 maf, and in April 2023 Reclamation will evaluate hydrologic conditions to determine if balancing releases may be appropriate under the conditions established in the 2007 Interim Guidelines;
- Balancing releases will be limited (with a minimum of 7.00 maf) to protect Lake Powell from declining below elevation 3,525 feet at the end of December 2023;
- Balancing releases will take into account operational neutrality of the 0.480 maf that was retained in Lake Powell under the May 2022 action.[1] Any Lake Powell balancing release volume will be calculated as if the 0.480 maf had been delivered to Lake Mead in WY 2022; and
- The modeling approach for WY 2023 will apply to 2024.

Consistent with the provisions of the 2007 Interim Guidelines, and to preserve the benefits to Glen Canyon Dam facilities from 2022 Operations into 2023 and 2024, Reclamation will consult with the Basin States on monthly and annual operations. Reclamation will also ensure all appropriate consultations with

Basin Tribes, the Republic of Mexico, other federal agencies, water users and non-governmental organizations with respect to implementation of these monthly and annual operations.

Reclamation will continue to carefully monitor hydrologic and operational conditions and assess the need for additional responsive actions and/or changes to operations. Reclamation will continue to consult with the Basin States, Basin Tribes, the Republic of Mexico, and other partners on Colorado River operations to consider and determine whether additional measures should be taken to further enhance the preservation of these benefits, as well as recovery protocols, including those of future protective measures for both Lakes Powell and Mead.

The August 2022 24-Month Study projected the January 1, 2023 Lake Mead elevation, determined as if the 0.480 maf had been delivered to Lake Mead in WY 2022, to be below 1,050 feet and above 1,045 feet. Consistent with Section 2.D.1 of the Interim Guidelines, a Shortage Condition consistent with Section 2.D.1.b will govern the operation of Lake Mead for CY 2023. In addition, Section III.B of Exhibit 1 to the Lower Basin DCP Agreement will govern the operation of Lake Mead for CY 2023. Efforts to conserve additional water in Lake Mead under the 2021 MOU will also continue in CY 2023.

The 2023 operational tier determinations for Lake Powell and Lake Mead will be documented in the 2023 AOP, which is currently in development.

Current runoff projections into Lake Powell are provided by the National Weather Service's Colorado Basin River Forecast Center and are as follows. The observed unregulated inflow into Lake Powell for the month of November was 0.349 maf or 83 percent of the 30-year average from 1991 to 2020. The December 2022 unregulated inflow forecast for Lake Powell is 0.280 maf or 85 percent of the 30-year average. The 2023 April through July unregulated inflow forecast is 5.035 maf or 79 percent of average.

The 2022 AOP is available online at:
https://www.usbr.gov/lc/region/g4000/aop/AOP22.pdf.
The draft 2023 AOP is available online at:
https://www.usbr.gov/uc/water/rsvrs/ops/aop/AOP23_draft.pdf.
The Interim Guidelines are available online at:
https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.
The Colorado River DCPs are available online at:
https://www.usbr.gov/dcp/finaldocs.html.
The 2021 Lower Basin MOU is available online at:
https://www.usbr.gov/lc/region/g4000/2021_MOU.pdf.
The Upper Basin DROA is online at:
https://www.usbr.gov/dcp/droa.html.
The Upper Basin Hydrology Summary is available online at:
https://www.usbr.gov/uc/water/crsp/studies/24Month_12_ucb.pdf.

Fontenelle Reservoir

As of December 4, 2022, the Fontenelle Reservoir pool elevation is 6490.26 feet, which amounts to 66 percent of live storage capacity. Inflows for the month of November totaled approximately 33,250 acre-feet (af) or 80 percent of average.

Winter release has been set at 950 cfs to meet spring elevation targets and are forecasted to remain at this level through winter, subject to hydrology. The winter release is planned to be maintained until March or April when the ice along the Green River begins to melt.

The December final forecast for unregulated inflows into Fontenelle for the next three months projects below average conditions. December, January, and February Most Probable inflow volumes amount to 27,000 af (84 percent of average), 25,000 af (83 percent of average), and 24,000 af (86 percent of average), respectively.

The next Fontenelle Working Group meeting is scheduled for April 27, 2023 at 10:00 a.m. at Green River, WY, tentatively. Details on the meeting will be provided as we get closer to the meeting date. Prior Fontenelle Working Group meeting minutes are available online on USBR's website at https://www.usbr.gov/uc/water/crsp/wg/ft/ftcurrnt.html. The Fontenelle Working Group is an open public forum for information exchange between Reclamation and other parties associated with the operation of Fontenelle Reservoir.

Flaming Gorge

As of December 7, 2022, Flaming Gorge Reservoir pool elevation is 6009.87 feet, which amounts to 70 percent of live storage capacity. Unregulated inflow volume for the month of November is approximately 40,000 af, which is 80 percent of the average November unregulated inflow volume. The current average daily release is 1,760 cfs.

Pursuant to the 2022 Plan, which was just approved by the Upper Division States, the Upper Colorado River Commission, and the Department of the Interior, an additional 500 thousand acre-feet (kaf) will be delivered from Flaming Gorge Reservoir from May 2022 through April 2023 to Lake Powell. This volume will be added to the spring periods by increasing the Larval Trigger Study Plan (LTSP) releases to 8600 cfs for 7 days, a 3-day smallmouth bass flow spike (mid-late July, possibly earlier), as well as the summer-winter base flow period. Under a Drought Contingency Plan adopted in 2022, the total release volume to date is ~310 kaf (12/7). The total release volume under this same plan in WY2022 is 194 kaf.

The observed April through July unregulated inflow volume into Flaming Gorge Reservoir is 552,000 af (57 percent of average), a moderately dry hydrologic classification. Due to spring flows being greater than 14,000 cfs for more than 4 days in Reach 2, per the 2022 Plan, an average hydrologic operation was conducted for summer, autumn, and winter base flow.

The December forecast for unregulated inflows into Flaming Gorge for the next three months projects below average conditions. December, January, and February forecasted unregulated inflow volumes amount to 28,000 af (85 percent of average), 34,000 af (84 percent of average), and 35,000 af (77 percent of average), respectively.

Reclamation is planning to hold the next Flaming Gorge Working Group meetings on March 16, 2023 and April 20, 2023 at 10:00 am location TBD. The Flaming Gorge Working Group is an open public forum for information exchange between Reclamation and the stakeholders of Flaming Gorge Dam. The public is encouraged to attend and comment on the operations and plans presented by Reclamation at these meetings. Meeting notes from past Working Group meetings are posted on the Working Group webpage. For more information on this group and these meetings please contact Dale Hamilton at 801-379-1186.

Aspinall Unit Reservoirs

As of December 7, 2022, releases from Crystal Dam are approximately 370 cfs. Gunnison Tunnel diversions have been suspended as the irrigation season has come to an end. Flows of the Gunnison River in the Black Canyon are being maintained at about 360 cfs while flows in the Whitewater Reach of the Gunnison River are about 930 cfs.

The unregulated inflow volume in November to Blue Mesa was 25,500 af (85 percent of average). Unregulated Inflow volumes forecasted for Blue Mesa for the next three months (December, January and February) are projected to be: 22,000 af (88 percent of average), 20,000 af (83 percent of average) and 18,000 af (82 percent of average), respectively. The December 24-Month Study will be reflective of these new forecasted inflows.

The forecasted 2023 water year unregulated inflow volume to Blue Mesa is projected to be 759,900 af (84 percent of average). The water supply period (April-July) for 2023 is forecasted to be 530,000 af of unregulated inflow (83 percent of average).

Blue Mesa elevation is currently increasing and as of December 6, 2022, was 7,445.43 feet above sea level corresponding to a live storage of 284,878 af which is 34 percent of capacity. By the end of water year 2023 (September 30, 2023) Blue Mesa elevation is projected to be 7,470.50 feet with about 435,000 af of storage which will be 52 percent of capacity.

The Aspinall Unit Operations Group is an open public forum for information exchange between Reclamation and the stakeholders of the Aspinall Unit. The public is encouraged to attend and comments on the operations and plans presented by Reclamation at these meetings. Meeting notes from past working Group meetings are posted on the Operations Group webpage. For more information on this group and these meetings please contact Erik Knight in the Grand Junction Area Office at (970) 248-0629.

The next Operations Group meeting will be held January 19 2023, tentative in person in, Montrose CO, location TDB. Contact Erik Knight in the Grand Junction Area Office at (970) 248-0629 to get more information regarding this Operation Group meeting.

Navajo Reservoir

As of December 5th, the daily average release rate from Navajo Dam was 350 cfs while reservoir inflow was averaging 320 cfs. The water surface elevation was 6019.37 feet above sea level. At this elevation the live storage is 0.860 maf (52 percent of live storage capacity) and the active storage is 0.234 maf (23 percent of active storage capacity). No water is currently being diverted to the Navajo Indian Irrigation Project (NIIP) as they have shut down operations for the irrigation season. No water is being diverted to the San Juan-Chama Project (SJC) due to insufficient instream flows above Navajo.

Releases from Navajo Dam are made for authorized purposes of the Navajo Unit and are pursuant to the Record of Decision for the Navajo Reservoir Operations. Releases target the San Juan River Recovery Implementation Program's (SJRIP) recommended downstream baseflow range of 500 cfs to 1,000 cfs through the critical habitat reach of the San Juan River (Farmington, NM to Lake Powell).

Preliminary modified unregulated inflow (MUI) into Navajo in November was 23.1 kaf, which was 86 percent of average for the month. The release averaged 310 cfs and totaled 18.6 kaf, which was 67 percent of average for the month.

The most probable MUI forecast for December, January, and February is 18 kaf (87 percent of average), 17 kaf (85 percent of average), and 21 kaf (78 percent of average), respectively. Current storage levels and forecasts suggest Navajo has a 7 percent chance of conducting a spring peak release in the spring of WY 2023, and conversely, a 7 percent chance of experiencing a shortage in the fall of WY 2023, based on 1991 - 2020 hydrology.

Releases over the winter may be decreased as low as 250 cfs to save water, as described in the Navajo Record of Decision (2006) if conditions allow.

Reclamation conducts Public Operations Meetings three times per year to gather input for determining upcoming operations for Navajo Reservoir. Input from individuals, organizations, and agencies along with other factors such as weather, water rights, endangered species requirements, flood control, hydro power, recreation, fish and wildlife management, and reservoir levels, will be considered in the development of these reservoir operation plans. In addition, the meetings are used to coordinate activities and exchange information among agencies, water users, and other interested parties concerning the San Juan River and Navajo Reservoir. The next meeting will be held on Tuesday, January 17th, 2023 at 1:00 PM. This meeting is open to the public, and will be held at the Farmington Civic Center, 200 West Arrington, in Farmington, New Mexico (subject to change based on guidance at the time). The meeting will also have a virtual option.

Glen Canyon Dam / Lake Powell

Current Status

The reduction of releases from Lake Powell from 7.48 maf to 7.00 maf in water year 2022 will result in a reduced release volume of 0.480 maf that normally would have been released from Glen Canyon Dam to Lake Mead as part of the 7.48 maf annual release volume, consistent with operations under the 2007 Interim Guidelines. The reduction of releases from Glen Canyon Dam in water year 2022 (resulting in increased storage in Lake Powell) will not affect future operating determinations and will be accounted for "as if" this volume of water had been delivered to Lake Mead. The August 2022 24-Month Study modeled 2023 and 2024 operations at Lakes Powell and Mead as if the 0.480 maf had been delivered to Lake Mead for operating tier/condition purposes both for the U.S. Lower Basin and for Mexico. The elevations listed in the August 2022 24-Month Study report reflected the projected physical elevations at each reservoir after implementing operations as described for water year 2023 tier determination purposes.

Using the approach described in the immediately preceding paragraph, the August 2022 24-Month Study projected the January 1, 2023, Lake Powell elevation to be less than 3,525 feet. Consistent with Section 6.D.1 of the Interim Guidelines, Lake Powell's operations in water year 2023 are governed by the Lower Elevation Balancing Tier (LEBT) with an initial projected water year release volume of 7.00 maf. Because the 2022 operations were designed to protect critical elevations at Lake Powell, Reclamation will implement

Lower Elevation Balancing Tier operations in a way that continues to protect these critical elevations or preserves the benefits of the 2022 operations to protect Lake Powell, in water year 2023. Specifically, Reclamation modeled operations in WY 2023 as follows in the August and September 24-Month Studies:

- The Glen Canyon Dam annual release has initially been set to 7.00 maf, and in April 2023 Reclamation will evaluate hydrologic conditions to determine if balancing releases may be appropriate under the conditions established in the 2007 Interim Guidelines;

- Balancing releases will be limited (with a minimum of 7.00 maf) to protect Lake Powell from declining below elevation 3,525 feet at the end of December 2023;

- Balancing releases will take into account operational neutrality of the 0.480 maf that was retained in Lake Powell under the May 2022 action (May 3rd Letter). Any Lake Powell balancing release volume will be calculated as if the 0.480 maf had been delivered to Lake Mead in WY 2022; and

- The modeling approach for WY 2023 will apply to 2024.

In accordance with the May 3rd Letter, consistent with the provisions of the 2007 Interim Guidelines, and to preserve the benefits to Glen Canyon Dam facilities from 2022 Operations into 2023 and 2024, Reclamation will consult with the Basin States on monthly and annual operations. Reclamation will also ensure all appropriate consultation with Basin Tribes, the Republic of Mexico, other federal agencies, water users and non-governmental organizations with respect to implementation of these monthly and annual operations.

Reclamation will continue to carefully monitor hydrologic and operational conditions and assess the need for additional responsive actions and/or changes to operations. Reclamation will continue to consult with the Basin States, Basin Tribes, the Republic of Mexico and other partners on Colorado River operations to consider and determine whether additional measures should be taken to further enhance the preservation of these benefits, as well as recovery protocols, including those of future protective measures for both Lakes Powell and Mead. For additional information, the news release can be found here: https://www.usbr.gov/newsroom/news-release/4294.

The Bureau of Reclamation announced on May 3, 2022, two separate urgent drought response actions that will help prop up Lake Powell by nearly 1 maf of water over the next 12 months (May 2022 through April 2023). To protect Lake Powell, more water will flow into the lake from upstream reservoirs and less water will be released downstream:

- Under a Drought Contingency Plan adopted in 2019, approximately 500 kaf of water will come from Flaming Gorge Reservoir, located approximately 455 river miles upstream of Lake Powell.

- Another 480 kaf will be left in Lake Powell by reducing Glen Canyon Dam's annual release volume from 7.48 maf to 7.00 maf, as outlined in the 2007 Interim Guidelines that control operations of Glen Canyon Dam and Hoover Dam.

The plan can be found at the following website: https://www.usbr.gov/dcp/droa.html.

For additional information, see the following news release: https://www.usbr.gov/newsroom/#/news-release/4196.

The unregulated inflow volume to Lake Powell during November was 349 kaf (83 percent of average). The release volume from Glen Canyon Dam in November was 498 kaf. The end of November elevation and storage of Lake Powell were 3,528.02 feet (172 feet from full pool) and 5.72 maf (25 percent of live capacity), respectively.

Current Operations

Hourly releases during December 2022 will fluctuate from a low of approximately 6,029 cfs during the early morning hours to a high of 10,979 cfs during the afternoon and evening hours. The January 2022 releases are anticipated to fluctuate between a low of 5,368 cfs to a high of 9,868 cfs.

In addition to daily scheduled fluctuations for power generation, the instantaneous releases from Glen Canyon Dam may also fluctuate to provide 40 megawatts (MW) of system regulation. These instantaneous release adjustments stabilize the electrical generation and transmission system and translate to a range of about 1,300 cfs above or below the hourly scheduled release rate. Under normal system conditions, fluctuations for regulation are typically short lived and generally balance out over the hour with minimal or no noticeable impacts on downstream river flow conditions.

Releases from Glen Canyon Dam can also fluctuate beyond scheduled releases when called upon to respond to unscheduled power outages or power system emergencies. Depending on the severity of the system emergency, the response from Glen Canyon Dam can be significant, within the full range of the operating capacity of the power plant for as long as is necessary to maintain balance in the transmission system. Glen Canyon Dam currently maintains 30 MW (approximately 1,100 cfs) of generation capacity in reserve in order to respond to a system emergency even when generation rates are already high. System emergencies occur infrequently and typically require small responses from Glen Canyon Dam. However, these responses can have a noticeable impact on the river downstream of Glen Canyon Dam.

Inflow Forecasts and Model Projections

The forecast for water year 2023 unregulated inflow to Lake Powell, issued on December 1, 2022, by the Colorado Basin River Forecast Center, projects that the most probable (median) unregulated inflow volume in water year 2023 will be 7.7 maf (80 percent of average).

In addition to the December 2022 24-Month Study based on the Most Probable inflow scenario, and in accordance with the Upper Basin Drought Response Operations Agreement (DROA), Reclamation has conducted model runs in December to determine a possible range of reservoir elevations under probable most and minimum inflow scenarios. The probable maximum information was run in the October 2022 24-Month Study. The probable minimum and probable maximum model runs are conducted simultaneously in January, April, August, and October, or when necessary to incorporate changing conditions. The probable minimum inflow scenario reflects a dry hydrologic condition which statistically would be exceeded 90 percent of the time. The most probable inflow scenario reflects a median hydrologic condition which statistically would be exceeded 50 percent of the time. The probable maximum inflow scenario reflects a wet hydrologic condition which statistically would be exceeded 10 percent of the time. There is approximately an 80 percent probability that a future elevation will fall inside the range of the minimum and maximum inflow scenarios. Additionally, there are possible inflow scenarios that would result in reservoir elevations falling outside the ranges indicated in these reports.

The DROA coordination will continue until either (i) the minimum probable projected elevation remains above 3,525 feet for 24 months or (ii) the process moves to the next step when the most probable

projected elevation indicates Powell elevations below 3,525 feet and a Drought Response Operations Plan is developed. This 2022 Plan is described above and available for review here: https://www.usbr.gov/dcp/droa.html.

The December forecast for water year 2023 ranges from a minimum probable of 4.89 maf (51 percent of average) to a maximum probable of 13.39 maf (139 percent of average) with the most probable forecast for water year 2023 of 7.70 maf (80 percent of average). There is a 10 percent chance that inflows could be higher than the current maximum probable forecast and a 10 percent chance that inflows could be lower than the minimum probable forecast.

Based on the current forecast for water year 2023 of 7.70 maf unregulated, the December 24-Month Study projects Lake Powell elevation will end water year 2023 near 3522.55 feet with approximately 5.99 maf in storage (26 percent of capacity). Note that projections of elevation and storage for water year 2023 have significant uncertainty at this point in the season. Projections of end of water year 2023 elevation using the minimum inflow forecast results from the December 2022 model run for the minimum and the October maximum inflow forecast are 3,499.63 feet and 3,583.27 feet, respectively. The annual release volume from Lake Powell during water year 2023 will be 7.00 maf under the Lower Elevation Balancing Tier and will balance the contents between Powell and Mead with annual release volumes from Glen Canyon Dam between 7.00 maf and 9.50 maf as determined under Section 6.D.1 and 7.D of the Interim Guidelines as determined by the Department of the Interior as described above.

Upper Colorado River Basin Hydrology

Upper Colorado River Basin regularly experiences significant year to year hydrologic variability. The 30-year average was updated in October 2022 from 1981 through 2010 to 1991 through 2020. Shifting the period of record decreased the average unregulated inflow 1.20 maf. The period 2000-2022 is the lowest 23-year period since the closure of Glen Canyon Dam in 1963, with an average unregulated inflow of 8.29 maf, or 93 percent of the 30-year average (1991-2020). (For comparison, the 1991-2020 total water year average is 9.60 maf.) The unregulated inflow during the 2000-2022 period has ranged from a low of 2.64 maf (28 percent of average) in water year 2002 to a high of 15.97 maf (166 percent of average) in water year 2011. In water year 2021 unregulated inflow volume to Lake Powell was 3.50 maf (36 percent of average), the second driest year on record above 2002. Under the current most probable forecast, the total water year 2023 unregulated inflow to Lake Powell is projected to be 7.7 maf (80 percent of average).

At the beginning of water year 2023, total system storage in the Colorado River Basin was 19.54 maf (33 percent of 58.48 maf total system capacity). This is a decrease of 3.33 maf over the total storage at the beginning of water year 2022 when total system storage was 22.87 maf (39 percent of capacity). Since the beginning of water year 2000, total Colorado Basin storage has experienced year to year increases and decreases in response to wet and dry hydrology, ranging from a high of 94 percent of capacity at the beginning of 2000 to the now current level of 33 percent of capacity at the beginning of water year 2023. Based on current inflow forecasts, the current projected end of water year 2023 total Colorado Basin reservoir storage is approximately 18.33 maf (31 percent of total system capacity). The actual end of water year 2023 system storage may vary from this projection, primarily due to uncertainty regarding this season's runoff and reservoir inflow.

To: All Annual Operating Plan Recipients

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Subject: December 2022 Most Probable 24-Month Study

The operation of Lake Powell and Lake Mead in this December 2022 24-Month Study is pursuant to the December 2007 Record of Decision on Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations of Lake Powell and Lake Mead (Interim Guidelines), and reflects the 2022 Annual Operating Plan (AOP) and draft 2023 AOP. Pursuant to the Interim Guidelines, the August 2022 24-Month Study projections of the January 1, 2023, system storage and reservoir water surface elevations set the operational tier for the coordinated operation of Lake Powell and Lake Mead during 2023.

The August 2021 24-Month Study projected the January 1, 2022, Lake Mead elevation to be at or below 1,075 feet and at or above 1,050 feet. Consistent with Section 2.D.1 of the Interim Guidelines, a Shortage Condition consistent with Section 2.D.1.a will govern the operation of Lake Mead for calendar year (CY) 2022. In addition, Section III.B of Exhibit 1 to the Lower Basin Drought Contingency Plan (DCP) Agreement will also govern the operation of Lake Mead for CY 2022. Efforts to conserve additional water in Lake Mead under a 2021 Lower Basin Memorandum of Understanding (MOU) to facilitate near-term actions to maintain the water surface elevation of Lake Mead will also take place in CY 2022.

In light of the prolonged drought, low runoff conditions, and depleted storage at Lake Powell, the Department of the Interior implemented an action under Sections 6 and 7.D of the 2007 Interim Guidelines specifically reducing the Glen Canyon Dam annual releases to 7.00 million acre-feet (maf) in water year (WY) 2022.[1] This action was undertaken in conjunction with the 2022 Drought Response Operations Plan[2] actions which together are anticipated to add approximately one million additional acre-feet of storage to Lake Powell by April 2023. The Department of Interior and Reclamation will work to determine the manner in which to operate Glen Canyon Dam to ensure the benefits of these actions are preserved.

The 2022 Plan provisions to protect a target elevation at Lake Powell of 3,525 feet through adjusting Glen Canyon Dam monthly volume releases have been incorporated into the December 2022 24-Month Study and include an adjusted monthly release volume pattern for Glen Canyon Dam that will hold back a total of 0.523 maf in Lake Powell from December 2022 through April 2023. There are continued discussions when and how that same amount of water (0.523 maf) will be released later in the water year. The annual release volume from Lake Powell for WY 2023 will continue to be 7.00 maf, or higher, according to the provisions outlined below. If future projections indicate the monthly adjustments are insufficient to protect Powell's elevation, Reclamation will again consider additional water releases from the upstream initial units of the Colorado River Storage Project according to the provisions of the 2022 Plan.

The reduction of releases from Lake Powell from 7.48 maf to 7.00 maf in WY 2022 resulted in a reduced release volume of 0.480 maf that normally would have been released from Glen Canyon Dam to Lake Mead as part of the 7.48 maf annual release volume, consistent with routine operations under the 2007 Interim Guidelines. The reduction of releases from Glen Canyon Dam in WY 2022 (resulting in increased storage in Lake Powell) did not affect the operating determinations for 2023 and was accounted for "as if" this volume of water had been delivered to Lake Mead. The 24-Month Study will continue to model 2023 and 2024 operations at lakes Powell and Mead as if the 0.480 maf had been delivered to Lake Mead for operating condition purposes both for the U.S. Lower Basin and for Mexico unless otherwise determined through additional consultation and communication as described below. The elevations listed in this report reflect the projected physical elevations at each reservoir after implementing operations as described.

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Using the approach described in the immediately preceding paragraph, the August 2022 24-Month Study projected the January 1, 2023, Lake Powell elevation to be less than 3,525 feet. Consistent with Section 6.D.1 of the Interim Guidelines, Lake Powell's operations in WY 2023 will be governed by the Lower Elevation Balancing Tier with an initial projected WY release volume of 7.00 maf. Because the 2022 operations were designed to protect critical elevations at Lake Powell, Reclamation will implement Lower Elevation Balancing Tier operations in a way that continues to protect these critical elevations, or preserves the benefits of the 2022 operations to protect Lake Powell, in WY 2023. Specifically, Reclamation modeled operations in WY 2023 as follows:

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- Balancing releases will take into account operational neutrality of the 0.480 maf that was retained in Lake Powell under the May 2022 action.[1] Any Lake Powell balancing release volume will be calculated as if the 0.480 maf had been delivered to Lake Mead in WY 2022; and
- The modeling approach for WY 2023 will apply to 2024.

Consistent with the provisions of the 2007 Interim Guidelines, and to preserve the benefits to Glen Canyon Dam facilities from 2022 Operations into 2023 and 2024, Reclamation will consult with the Basin States on monthly and annual operations. Reclamation will also ensure all appropriate consultations with Basin Tribes, the Republic of Mexico, other federal agencies, water users and non-governmental organizations with respect to implementation of these monthly and annual operations.

Reclamation will continue to carefully monitor hydrologic and operational conditions and assess the need for additional responsive actions and/or changes to operations. Reclamation will continue to consult with the Basin States, Basin Tribes, the Republic of Mexico, and other partners on Colorado River operations to consider and determine whether additional measures should be taken to further enhance the preservation of these benefits, as well as recovery protocols, including those of future protective measures for both Lakes Powell and Mead.

The August 2022 24-Month Study projected the January 1, 2023 Lake Mead elevation, determined as if the 0.480 maf had been delivered to Lake Mead in WY 2022, to be below 1,050 feet and above 1,045 feet. Consistent with Section 2.D.1 of the Interim Guidelines, a Shortage Condition consistent with Section 2.D.1.b will govern the operation of Lake Mead for CY 2023. In addition, Section III.B of Exhibit 1 to the Lower Basin DCP Agreement will govern the operation of Lake Mead for CY 2023. Efforts to conserve additional water in Lake Mead under the 2021 MOU will also continue in CY 2023.

The 2023 operational tier determinations for Lake Powell and Lake Mead will be documented in the 2023 AOP, which is currently in development.

Current runoff projections into Lake Powell are provided by the National Weather Service's Colorado Basin River Forecast Center and are as follows. The observed unregulated inflow into Lake Powell for the month of November was 0.349 maf or 83 percent of the 30-year average from 1991 to 2020. The December 2022 unregulated inflow forecast for Lake Powell is 0.280 maf or 87 percent of the 30-year average. The 2023 April through July unregulated inflow forecast is 5.035 maf or 79 percent of average.

In this study, the CY 2022 diversion for Metropolitan Water District of Southern California (MWD) is projected to be 1.136 maf. The CY 2022 diversion for the Central Arizona Project (CAP) is projected to be 0.963 maf. Consumptive use for Nevada above Hoover (SNWP Use) is projected to be 0.222 maf for CY 2022.

Due to changing Lake Mead elevations, Hoover's generator capacity is adjusted based on estimated effective capacity and plant availability. The estimated effective capacity is based on projected Lake Mead elevations. Unit capacity tests will be performed as the lake elevation changes. This study reflects these changes in the projections.

Hoover, Davis, and Parker Dam historical gross energy figures come from Power, Operations, and Maintenance reports provided by the Lower Colorado Region's Power Office, Bureau of Reclamation, Boulder City, Nevada. Questions regarding these historical energy numbers can be directed to Colleen Dwyer at (702) 293-8420.

Runoff and inflow projections into upper basin reservoirs are provided by the National Weather Service's Colorado Basin River Forecast Center and are as follows in thousand acre-feet (kaf):

Reservoir	Observed Inflow (kaf)				Nov	Inflow Forecast (kaf)		
	Aug	Sep	Oct	Nov	%Avg	Dec	Jan	Feb
Lake Powell	368	245	437	349	83%	280	270	285
Fontenelle	56	29	40	33	79%	27	25	24
Flaming Gorge	58	32	41	40	80%	28	34	35
Blue Mesa	57	31	32	26	88%	22	20	18
Morrow Point	58	31	33	27	86%	23	22	20
Crystal	62	33	36	29	81%	26	25	23
Taylor Park	7.9	5.2	5.5	3.9	83%	3.6	3.6	3
Vallecito	18	11.5	14.2	6.8	87%	5.2	4.5	4
Navajo	53	22	44	23	86%	18	17	21
Lemon	4.4	2.6	3.5	1.32	91%	0.9	0.7	0.6
McPhee	9.6	5.8	8.7	3.3	74%	3	3.1	3.2
Ridgway	11.8	6.4	7.6	4.6	85%	3.6	3.2	3
Deerlodge	7.8	4.2	23	24	80%	22	22	22
Durango	29	18.1	22	13.7	84%	12	11	10

The 2022 AOP is available online at:
https://www.usbr.gov/lc/region/g4000/aop/AOP22.pdf.
The draft 2023 AOP is available online at:
https://www.usbr.gov/uc/water/rsvrs/ops/aop/AOP23_draft.pdf.
The Interim Guidelines are available online at:
https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.
The Colorado River DCPs are available online at:
https://www.usbr.gov/dcp/finaldocs.html.
The 2021 Lower Basin MOU is available online at:
https://www.usbr.gov/lc/region/g4000/2021_MOU.pdf.
The Upper Basin DROA is online at:
https://www.usbr.gov/dcp/droa.html.
The Upper Basin Hydrology Summary is available online at:
https://www.usbr.gov/uc/water/crsp/studies/24Month_12_ucb.pdf.

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Fontenelle Reservoir

	Date	Regulated Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	Power Release (1000 Ac-Ft)	Bypass Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)
*	Dec 2021	29	1	50	0	50	6487.63	203
H	Jan 2022	29	1	51	0	51	6483.90	180
I	Feb 2022	23	1	46	0	46	6479.63	157
S	Mar 2022	46	1	50	0	50	6478.63	151
T	Apr 2022	50	1	5	44	49	6478.74	152
O	May 2022	63	1	47	8	55	6479.96	158
R	Jun 2022	241	2	82	0	82	6503.59	315
I	Jul 2022	102	3	83	11	93	6504.34	321
C	Aug 2022	56	2	67	1	68	6502.43	306
A	Sep 2022	29	2	61	0	61	6498.08	274
	WY 2022	**744**	**15**	**617**	**67**	**685**		
L	Oct 2022	40	1	22	39	61	6494.58	249
*	Nov 2022	33	1	10	48	58	6490.90	224
	Dec 2022	27	1	58	0	58	6485.90	192
	Jan 2023	25	1	58	0	58	6479.94	158
	Feb 2023	24	0	53	0	53	6473.89	129
	Mar 2023	42	0	58	0	58	6469.91	112
	Apr 2023	65	1	34	24	59	6471.25	118
	May 2023	120	1	76	0	76	6480.45	161
	Jun 2023	265	2	102	34	136	6499.95	288
	Jul 2023	155	3	101	18	120	6504.26	320
	Aug 2023	58	2	77	0	77	6501.43	299
	Sep 2023	40	2	65	0	65	6497.73	272
	WY 2023	**894**	**14**	**716**	**164**	**880**		
	Oct 2023	45	1	68	0	68	6494.38	248
	Nov 2023	42	1	64	0	64	6491.05	225
	Dec 2023	32	1	65	0	65	6485.88	192
	Jan 2024	31	1	65	0	65	6479.89	158
	Feb 2024	29	0	60	0	60	6473.22	126
	Mar 2024	51	0	64	0	64	6469.96	112
	Apr 2024	77	1	35	21	55	6474.88	133
	May 2024	166	1	92	0	92	6488.17	206
	Jun 2024	301	2	104	110	215	6500.31	291
	Jul 2024	146	3	101	13	115	6504.10	319
	Aug 2024	59	2	70	0	70	6502.32	306
	Sep 2024	39	2	65	0	65	6498.51	277
	WY 2024	**1018**	**15**	**853**	**144**	**997**		
	Oct 2024	45	1	68	0	68	6495.19	254
	Nov 2024	42	1	65	0	65	6491.67	229

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Flaming Gorge Reservoir

	Date	Unreg Inflow (1000 Ac-Ft)	Reg Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	Power Release (1000 Ac-Ft)	Bypass Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Bank Storage (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)	Jensen Flow (1000 Ac-Ft)
*	Dec 2021	21	41	2	52	0	52	117	6017.72	2900	82
H	Jan 2022	33	55	2	52	0	52	117	6017.75	2901	80
I	Feb 2022	30	54	2	47	0	47	117	6017.87	2905	70
S	Mar 2022	74	83	3	52	0	52	118	6018.65	2932	111
T	Apr 2022	66	62	5	51	0	51	118	6018.81	2938	179
O	May 2022	88	88	7	139	48	187	114	6015.77	2769	570
R	Jun 2022	274	113	9	110	12	121	113	6015.25	2752	465
I	Jul 2022	125	110	11	79	0	79	106	6016.09	2780	137
C	Aug 2022	58	70	11	105	0	105	104	6014.73	2735	124
A	Sep 2022	32	63	9	112	0	112	102	6013.01	2680	125
	WY 2022	**897**	**837**	**70**	**927**	**60**	**987**				**2138**
L	Oct 2022	41	65	6	111	0	111	100	6011.45	2630	142
*	Nov 2022	40	63	3	102	0	102	98	6010.19	2590	132
	Dec 2022	28	59	1	107	0	107	96	6008.68	2543	129
	Jan 2023	34	67	1	108	0	108	95	6007.36	2502	130
	Feb 2023	35	64	2	98	0	98	93	6006.24	2468	120
	Mar 2023	80	96	2	72	0	72	94	6006.93	2489	130
	Apr 2023	95	89	4	70	0	70	95	6007.41	2504	250
	May 2023	170	126	6	211	0	211	91	6004.50	2415	711
	Jun 2023	335	206	8	65	0	65	96	6008.68	2543	455
	Jul 2023	175	140	11	56	0	56	99	6010.92	2613	126
	Aug 2023	65	84	10	80	0	80	99	6010.73	2607	95
	Sep 2023	46	71	9	79	0	79	98	6010.22	2591	94
	WY 2023	**1144**	**1131**	**66**	**1158**	**0**	**1158**				**2514**
	Oct 2023	52	75	6	68	0	68	98	6010.24	2592	94
	Nov 2023	51	73	3	65	0	65	99	6010.38	2596	97
	Dec 2023	34	67	1	68	0	68	98	6010.30	2594	93
	Jan 2024	42	76	1	69	0	69	99	6010.45	2598	94
	Feb 2024	43	74	2	63	0	63	99	6010.74	2607	88
	Mar 2024	85	98	3	49	0	49	101	6012.14	2652	123
	Apr 2024	111	89	4	48	0	48	102	6013.27	2688	251
	May 2024	239	165	7	217	0	217	100	6011.51	2632	730
	Jun 2024	389	303	9	60	0	60	109	6018.42	2857	427
	Jul 2024	161	130	12	57	0	57	111	6020.16	2916	117
	Aug 2024	66	77	11	78	0	78	111	6019.82	2904	97
	Sep 2024	43	69	10	77	0	77	110	6019.33	2888	90
	WY 2024	**1316**	**1295**	**69**	**918**	**0**	**918**				**2300**
	Oct 2024	52	75	6	69	0	69	110	6019.30	2887	95
	Nov 2024	50	73	3	65	0	65	110	6019.44	2891	95

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

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OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Taylor Park Reservoir

	Date	Regulated Inflow (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)
*	Dec 2021	5	5	9302.55	59
H	Jan 2022	4	4	9302.29	58
I	Feb 2022	3	4	9301.88	58
S	Mar 2022	4	4	9301.56	57
T	Apr 2022	8	6	9302.92	59
O	May 2022	27	12	9312.55	74
R	Jun 2022	26	19	9316.61	81
I	Jul 2022	11	15	9314.18	77
C	Aug 2022	8	14	9310.35	70
A	Sep 2022	5	8	9308.87	68
	WY 2022	**110**	**100**		
L	Oct 2022	6	6	9308.80	68
*	Nov 2022	4	5	9308.13	67
	Dec 2022	4	5	9307.32	66
	Jan 2023	4	5	9306.53	65
	Feb 2023	3	5	9305.32	63
	Mar 2023	3	5	9303.82	61
	Apr 2023	7	6	9304.51	62
	May 2023	25	12	9312.85	75
	Jun 2023	40	18	9325.10	97
	Jul 2023	15	21	9321.94	91
	Aug 2023	8	18	9316.38	81
	Sep 2023	6	18	9309.12	69
	WY 2023	**124**	**124**		
	Oct 2023	7	9	9307.84	67
	Nov 2023	5	5	9307.81	66
	Dec 2023	4	5	9306.99	65
	Jan 2024	5	5	9306.86	65
	Feb 2024	4	5	9306.33	64
	Mar 2024	5	5	9306.19	64
	Apr 2024	9	9	9306.19	64
	May 2024	26	15	9313.15	75
	Jun 2024	40	18	9325.36	97
	Jul 2024	15	24	9320.59	88
	Aug 2024	8	18	9314.93	78
	Sep 2024	7	18	9308.16	67
	WY 2024	**135**	**137**		
	Oct 2024	7	9	9306.86	65
	Nov 2024	5	5	9306.82	65

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Blue Mesa Reservoir

	Date	UnReg Inflow (1000 Ac-Ft)	Regulated Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	Power Release (1000 Ac-Ft)	Bypass Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)
*	Dec 2021	22	22	0	11	0	11	7434.40	231
H	Jan 2022	20	20	0	14	0	14	7435.60	236
I	Feb 2022	18	19	0	14	0	14	7436.57	241
S	Mar 2022	30	30	0	32	0	32	7436.17	239
T	Apr 2022	62	60	0	44	0	46	7438.94	252
O	May 2022	177	162	1	79	0	79	7454.56	335
R	Jun 2022	133	126	1	69	0	69	7463.76	391
I	Jul 2022	59	63	1	84	0	84	7460.15	368
C	Aug 2022	57	64	1	89	0	89	7455.69	341
A	Sep 2022	31	33	1	55	28	82	7446.72	292
	WY 2022	**661**	**652**	**6**	**566**	**28**	**595**		
L	Oct 2022	32	32	0	0	58	58	7441.74	266
*	Nov 2022	26	27	0	1	10	11	7444.83	282
	Dec 2022	22	23	0	18	0	18	7445.78	287
	Jan 2023	20	21	0	18	0	18	7446.41	290
	Feb 2023	18	20	0	16	0	16	7447.18	294
	Mar 2023	28	30	0	21	0	21	7448.92	303
	Apr 2023	50	49	1	52	0	52	7448.29	300
	May 2023	165	152	1	129	19	149	7448.74	302
	Jun 2023	235	213	1	39	0	39	7476.38	476
	Jul 2023	80	86	1	74	0	74	7477.84	486
	Aug 2023	51	61	1	79	0	79	7475.15	467
	Sep 2023	33	45	1	76	0	76	7470.50	435
	WY 2023	**760**	**759**	**6**	**523**	**87**	**610**		
	Oct 2023	36	38	0	70	0	70	7465.66	403
	Nov 2023	30	30	0	13	0	13	7468.22	420
	Dec 2023	26	27	0	14	0	14	7470.22	433
	Jan 2024	25	25	0	14	0	14	7471.88	444
	Feb 2024	23	24	0	12	0	12	7473.50	455
	Mar 2024	38	38	0	17	0	17	7476.52	477
	Apr 2024	78	78	1	28	0	28	7483.29	526
	May 2024	204	193	1	67	0	67	7499.14	651
	Jun 2024	251	229	1	115	0	115	7512.27	763
	Jul 2024	86	95	2	77	0	77	7514.07	779
	Aug 2024	55	65	1	78	0	78	7512.46	765
	Sep 2024	35	46	1	73	0	73	7509.22	737
	WY 2024	**887**	**889**	**8**	**578**	**0**	**578**		
	Oct 2024	36	38	1	71	0	71	7505.31	703
	Nov 2024	31	31	0	56	0	56	7502.35	678

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Morrow Point Reservoir

	Date	Unreg Inflow (1000 Ac-Ft)	Blue Mesa Release (1000 Ac-Ft)	Side Inflow (1000 Ac-Ft)	Total Inflow (1000 Ac-Ft)	Power Release (1000 Ac-Ft)	Bypass Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)
*	Dec 2021	23	11	1	12	16	0	16	7145.62	106
H	Jan 2022	21	14	1	15	16	0	16	7144.25	105
I	Feb 2022	19	14	1	15	14	0	14	7145.30	105
S	Mar 2022	31	32	2	33	30	0	30	7149.87	109
T	Apr 2022	65	46	3	50	47	0	47	7153.31	112
O	May 2022	186	79	9	88	89	0	89	7152.08	111
R	Jun 2022	134	69	1	70	71	0	71	7150.86	110
I	Jul 2022	60	84	1	85	84	0	84	7152.31	111
C	Aug 2022	58	89	1	90	90	0	90	7152.25	111
A	Sep 2022	31	82	1	83	78	0	78	7157.81	115
	WY 2022	**685**	**595**	**24**	**619**	**614**	**0**	**614**		
L	Oct 2022	33	58	1	59	60	0	60	7156.10	114
*	Nov 2022	26	11	1	12	21	0	21	7143.98	104
	Dec 2022	23	18	1	19	12	0	12	7153.73	112
	Jan 2023	22	18	2	20	20	0	20	7153.73	112
	Feb 2023	20	16	2	18	18	0	18	7153.73	112
	Mar 2023	30	21	2	23	23	0	23	7153.73	112
	Apr 2023	58	52	8	60	60	0	60	7153.73	112
	May 2023	180	149	15	164	164	0	164	7153.73	112
	Jun 2023	250	39	15	54	53	0	53	7153.72	112
	Jul 2023	84	74	4	78	78	0	78	7153.73	112
	Aug 2023	54	79	3	82	82	0	82	7153.73	112
	Sep 2023	34	76	1	77	77	0	77	7153.73	112
	WY 2023	**815**	**610**	**55**	**665**	**667**	**0**	**667**		
	Oct 2023	37	70	1	71	71	0	71	7153.73	112
	Nov 2023	31	13	1	14	14	0	14	7153.73	112
	Dec 2023	27	14	1	15	15	0	15	7153.73	112
	Jan 2024	26	14	1	15	15	0	15	7153.73	112
	Feb 2024	25	12	2	14	14	0	14	7153.73	112
	Mar 2024	40	17	2	19	18	0	18	7153.73	112
	Apr 2024	89	28	11	39	39	0	39	7153.73	112
	May 2024	226	67	22	89	89	0	89	7153.73	112
	Jun 2024	265	115	14	129	129	0	129	7153.72	112
	Jul 2024	90	77	4	81	81	0	81	7153.73	112
	Aug 2024	56	78	1	79	79	0	79	7153.73	112
	Sep 2024	36	73	1	74	74	0	74	7153.73	112
	WY 2024	**948**	**578**	**61**	**639**	**638**	**0**	**638**		
	Oct 2024	37	71	1	72	72	0	72	7153.73	112
	Nov 2024	32	56	1	57	57	0	57	7153.73	112

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Crystal Reservoir

	Date	Unreg Inflow (1000 Ac-Ft)	Morrow Release (1000 Ac-Ft)	Side Inflow (1000 Ac-Ft)	Total Inflow (1000 Ac-Ft)	Power Release (1000 Ac-Ft)	Bypass Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)	Tunnel Flow (1000 Ac-Ft)	Below Tunnel Flow (1000 Ac-Ft)
*	Dec 2021	27	16	4	21	20	0	21	6750.09	16	1	19
H	Jan 2022	25	16	4	21	20	0	21	6750.38	16	1	18
I	Feb 2022	22	14	3	17	18	0	18	6746.37	15	0	17
S	Mar 2022	36	30	4	34	32	1	32	6752.56	17	6	25
T	Apr 2022	73	47	8	54	54	1	54	6752.33	17	31	24
O	May 2022	203	89	17	105	92	13	106	6751.40	16	59	48
R	Jun 2022	145	71	10	82	80	2	81	6752.67	17	62	21
I	Jul 2022	64	84	5	89	90	0	90	6747.68	15	65	28
C	Aug 2022	62	90	4	94	92	0	93	6751.52	17	66	31
A	Sep 2022	33	78	2	80	69	12	80	6750.17	16	62	22
	WY 2022	**755**	**614**	**70**	**684**	**622**	**62**	**684**			**393**	**295**
L	Oct 2022	36	60	3	63	53	10	63	6751.29	16	41	21
*	Nov 2022	29	21	2	23	21	2	23	6752.92	17	0	21
	Dec 2022	26	12	3	15	15	0	15	6753.04	17	0	15
	Jan 2023	25	20	3	23	23	0	23	6753.04	17	0	23
	Feb 2023	23	18	3	21	17	4	21	6753.04	17	0	21
	Mar 2023	35	23	5	28	28	0	28	6753.04	17	5	23
	Apr 2023	69	60	11	71	71	0	71	6753.04	17	42	29
	May 2023	210	164	30	194	134	59	194	6753.04	17	62	132
	Jun 2023	280	53	30	83	83	0	83	6753.03	17	61	22
	Jul 2023	92	78	8	86	86	0	86	6753.04	17	65	21
	Aug 2023	58	82	4	86	86	0	86	6753.04	17	65	21
	Sep 2023	37	77	3	80	80	0	80	6753.04	17	55	25
	WY 2023	**920**	**667**	**105**	**772**	**697**	**75**	**771**			**396**	**373**
	Oct 2023	43	71	6	77	52	24	77	6753.04	17	55	22
	Nov 2023	36	14	5	19	19	0	19	6753.04	17	0	19
	Dec 2023	32	15	5	20	20	0	20	6753.04	17	0	20
	Jan 2024	31	15	5	20	20	0	20	6753.04	17	0	20
	Feb 2024	29	14	4	18	18	0	18	6753.04	17	0	18
	Mar 2024	46	18	6	24	24	0	24	6753.04	17	5	19
	Apr 2024	100	39	11	50	50	0	50	6753.04	17	42	8
	May 2024	251	89	25	114	114	0	114	6753.04	17	62	52
	Jun 2024	293	129	28	157	130	27	157	6753.03	17	61	96
	Jul 2024	98	81	8	89	89	0	89	6753.04	17	65	24
	Aug 2024	63	79	7	86	86	0	86	6753.04	17	65	21
	Sep 2024	42	74	6	80	80	0	80	6753.04	17	55	25
	WY 2024	**1064**	**638**	**116**	**754**	**703**	**52**	**754**			**410**	**344**
	Oct 2024	43	72	6	78	56	22	78	6753.04	17	55	23
	Nov 2024	37	57	5	62	62	0	62	6753.04	17	0	62

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Vallecito Reservoir

	Date	Regulated Inflow (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)
*	Dec 2021	4	0	7624.23	35
H	Jan 2022	4	0	7626.39	39
I	Feb 2022	3	0	7628.13	42
S	Mar 2022	7	0	7631.90	48
T	Apr 2022	27	2	7644.01	73
O	May 2022	53	33	7652.10	92
R	Jun 2022	26	34	7648.50	83
I	Jul 2022	19	32	7642.57	70
C	Aug 2022	18	28	7637.64	59
A	Sep 2022	12	26	7630.15	45
	WY 2022	**185**	**160**		
L	Oct 2022	14	3	7635.84	56
*	Nov 2022	7	0	7639.00	62
	Dec 2022	5	0	7641.17	67
	Jan 2023	4	0	7642.83	71
	Feb 2023	4	0	7644.45	74
	Mar 2023	6	0	7646.85	80
	Apr 2023	16	0	7653.26	95
	May 2023	62	31	7665.07	126
	Jun 2023	53	54	7664.32	124
	Jul 2023	16	42	7654.28	98
	Aug 2023	12	38	7643.19	71
	Sep 2023	11	30	7634.08	52
	WY 2023	**210**	**199**		
	Oct 2023	13	17	7631.75	48
	Nov 2023	9	2	7635.49	55
	Dec 2023	7	2	7638.02	60
	Jan 2024	6	2	7639.97	64
	Feb 2024	5	2	7641.45	68
	Mar 2024	10	2	7645.04	76
	Apr 2024	23	2	7653.81	96
	May 2024	68	38	7665.03	126
	Jun 2024	62	63	7664.52	124
	Jul 2024	21	41	7656.51	103
	Aug 2024	15	38	7647.02	80
	Sep 2024	16	29	7640.97	67
	WY 2024	**255**	**238**		
	Oct 2024	13	16	7639.26	63
	Nov 2024	9	2	7642.56	70

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Navajo Reservoir

BUREAU OF RECLAMATION

	Date	Mod Unreg Inflow (1000 Ac-Ft)	Azotea Tunnel Div (1000 Ac-Ft)	Reg Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	NIIP Diversion (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Live Storage (1000 Ac-Ft)	Farmington Flow (1000 Ac-Ft)
*	Dec 2021	15	0	11	0	0	18	6020.63	872	35
H	Jan 2022	14	0	10	0	0	22	6019.21	859	38
I	Feb 2022	14	0	11	1	1	20	6018.00	848	33
S	Mar 2022	41	2	32	1	4	22	6018.57	853	38
T	Apr 2022	123	17	84	2	17	20	6023.53	898	44
O	May 2022	167	30	114	3	38	18	6029.39	954	104
R	Jun 2022	47	7	50	3	37	24	6027.89	939	61
I	Jul 2022	44	5	54	3	39	35	6025.41	916	55
C	Aug 2022	53	5	56	3	38	30	6023.95	902	49
A	Sep 2022	22	1	35	2	23	40	6020.65	872	56
	WY 2022	**574**	**66**	**484**	**20**	**200**	**296**			**595**
L	Oct 2022	44	2	32	1	5	33	6019.84	865	51
*	Nov 2022	23	0	16	1	0	19	6019.52	862	35
	Dec 2022	18	0	13	0	0	18	6018.89	856	30
	Jan 2023	17	0	13	0	0	19	6018.21	850	30
	Feb 2023	21	0	17	1	0	17	6018.18	850	27
	Mar 2023	50	4	41	1	5	18	6019.99	866	32
	Apr 2023	110	13	81	2	19	18	6024.60	908	54
	May 2023	220	29	160	3	33	18	6035.44	1014	138
	Jun 2023	155	20	137	3	48	18	6041.89	1081	133
	Jul 2023	25	2	49	4	52	24	6038.98	1050	70
	Aug 2023	22	1	47	3	44	29	6036.11	1020	57
	Sep 2023	25	1	43	2	24	26	6035.20	1011	48
	WY 2023	**730**	**72**	**648**	**21**	**231**	**257**			**705**
	Oct 2023	35	2	38	1	9	19	6035.96	1019	42
	Nov 2023	30	1	22	1	0	18	6036.28	1022	36
	Dec 2023	24	0	19	1	0	18	6036.25	1022	33
	Jan 2024	22	0	18	1	0	18	6036.13	1021	31
	Feb 2024	29	1	25	1	0	17	6036.79	1027	29
	Mar 2024	92	10	74	1	6	18	6041.42	1076	41
	Apr 2024	147	18	107	2	21	18	6047.42	1142	69
	May 2024	252	34	188	3	36	18	6058.41	1272	153
	Jun 2024	187	25	163	4	52	20	6065.13	1359	164
	Jul 2024	32	2	50	5	55	22	6062.69	1327	73
	Aug 2024	23	1	44	4	46	28	6060.07	1293	57
	Sep 2024	31	2	43	3	25	22	6059.50	1286	48
	WY 2024	**904**	**96**	**791**	**26**	**251**	**239**			**779**
	Oct 2024	35	2	37	2	9	22	6059.88	1291	45
	Nov 2024	30	0	23	1	0	21	6059.96	1292	39

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Lake Powell

BUREAU OF RECLAMATION

	Date	Unreg Inflow (1000 Ac-Ft)	Regulated Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	PowerPlant Release (1000 Ac-Ft)	Bypass Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	Bank Storage (1000 Ac-Ft)	EOM Storage (1000 Ac-Ft)	Lees Ferry Gage (1000 Ac-Ft)
*	Dec 2021	266	290	16	600	0	600	3537.33	4591	6713	599
H	Jan 2022	249	269	4	673	0	673	3531.52	4561	6335	681
I	Feb 2022	215	235	4	540	0	540	3526.97	4538	6048	556
S	Mar 2022	329	327	7	574	0	574	3523.13	4519	5812	584
T	Apr 2022	594	490	12	502	0	502	3522.77	4517	5791	510
O	May 2022	1382	1212	14	598	0	598	3531.69	4561	6346	599
R	Jun 2022	1284	1198	25	598	0	598	3539.81	4604	6878	595
I	Jul 2022	491	463	28	672	0	672	3536.20	4551	6212	672
C	Aug 2022	368	444	27	713	0	713	3531.69	4529	5938	722
A	Sep 2022	245	420	24	547	0	547	3529.33	4517	5797	562
	WY 2022	**6084**	**6107**	**203**	**6999**	**0**	**6999**				**7066**
L	Oct 2022	437	535	17	480	0	480	3529.92	4520	5832	494
*	Nov 2022	349	394	17	498	0	498	3528.02	4511	5720	508
	Dec 2022	280	348	13	550	0	550	3524.59	4495	5521	552
	Jan 2023	270	344	4	500	0	500	3521.99	4484	5373	507
	Feb 2023	285	341	4	480	0	480	3519.64	4473	5242	489
	Mar 2023	435	397	6	485	0	485	3518.06	4466	5154	498
	Apr 2023	650	567	10	485	0	485	3519.27	4471	5221	502
	May 2023	1470	1356	12	600	0	600	3531.21	4526	5909	622
	Jun 2023	2150	1614	23	741	0	741	3543.88	4589	6696	762
	Jul 2023	765	692	29	759	0	759	3542.50	4582	6608	779
	Aug 2023	300	396	28	831	0	831	3535.66	4548	6179	849
	Sep 2023	309	411	25	591	0	591	3532.55	4533	5989	605
	WY 2023	**7700**	**7394**	**187**	**7000**	**0**	**7000**				**7167**
	Oct 2023	417	462	17	480	0	480	3532.00	4530	5957	493
	Nov 2023	447	433	17	500	0	500	3530.71	4524	5879	501
	Dec 2023	361	377	13	600	0	600	3527.00	4507	5661	602
	Jan 2024	350	362	4	790	0	790	3520.00	4475	5261	797
	Feb 2024	397	396	3	690	0	690	3514.98	4453	4986	699
	Mar 2024	614	499	6	730	0	730	3510.87	4435	4767	743
	Apr 2024	920	717	9	650	0	650	3511.88	4439	4820	667
	May 2024	2060	1737	12	650	0	650	3529.63	4519	5815	672
	Jun 2024	2423	1867	23	680	0	680	3546.91	4605	6894	701
	Jul 2024	711	646	29	770	0	770	3544.73	4594	6751	790
	Aug 2024	371	459	29	820	0	820	3539.07	4565	6391	838
	Sep 2024	316	406	26	645	0	645	3535.11	4545	6145	660
	WY 2024	**9387**	**8361**	**188**	**8005**	**0**	**8005**				**8162**
	Oct 2024	417	466	17	643	0	643	3532.15	4531	5966	656
	Nov 2024	450	481	17	642	0	642	3529.39	4518	5801	643

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Hoover Dam - Lake Mead

BUREAU OF RECLAMATION

	Date	Glen Release (1000 Ac-Ft)	Side Inflow Glen to Hoover (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Total Release (1000 CFS)	SNWP Use (1000 Ac-Ft)	Downstream Requirements (1000 Ac-Ft)	Bank Storage (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	EOM Storage (1000 Ac-Ft)
*	Dec 2021	600	64	36	503	8.2	10	511	579	1066.39	8915
H	Jan 2022	673	60	25	640	10.4	11	639	583	1067.09	8970
I	Feb 2022	540	58	23	590	10.6	10	590	581	1066.78	8946
S	Mar 2022	574	41	25	1010	16.4	17	1009	555	1061.49	8536
T	Apr 2022	502	30	33	1027	17.3	17	1026	522	1054.69	8026
O	May 2022	598	8	40	1083	17.6	25	1075	489	1047.69	7517
R	Jun 2022	598	16	47	889	14.9	29	877	467	1043.02	7187
I	Jul 2022	672	70	45	822	13.4	31	814	458	1040.92	7041
C	Aug 2022	713	183	48	573	9.3	25	567	473	1044.28	7275
A	Sep 2022	547	118	48	539	9.1	22	545	476	1045.03	7328
	WY 2022	**6999**	**771**	**463**	**8899**		**223**	**8888**			
L	Oct 2022	480	94	46	418	6.8	17	434	482	1046.28	7417
*	Nov 2022	498	18	40	713	12.0	9	714	467	1043.02	7187
	Dec 2022	550	69	32	424	6.9	9	424	477	1045.08	7331
	Jan 2023	500	87	22	537	8.7	10	537	478	1045.31	7348
	Feb 2023	480	88	21	557	10.0	7	557	477	1045.09	7333
	Mar 2023	485	107	22	905	14.7	16	905	455	1040.36	7003
	Apr 2023	485	72	29	1022	17.2	22	1022	424	1033.20	6517
	May 2023	600	43	36	1002	16.3	27	1002	398	1027.17	6121
	Jun 2023	741	22	43	934	15.7	32	934	383	1023.58	5890
	Jul 2023	759	56	41	846	13.8	32	846	377	1022.04	5793
	Aug 2023	831	66	44	806	13.1	31	806	377	1022.26	5807
	Sep 2023	591	62	43	678	11.4	24	678	372	1020.89	5720
	WY 2023	**7000**	**785**	**418**	**8844**		**236**	**8860**			
	Oct 2023	480	69	40	493	8.0	17	493	372	1020.87	5719
	Nov 2023	500	68	35	591	9.9	10	591	368	1019.85	5655
	Dec 2023	600	69	29	549	8.9	10	549	372	1021.05	5731
	Jan 2024	790	87	20	571	9.3	11	571	389	1025.13	5989
	Feb 2024	690	88	19	544	9.5	8	544	402	1028.15	6185
	Mar 2024	730	107	21	894	14.5	15	894	396	1026.82	6098
	Apr 2024	650	72	28	1013	17.0	16	1013	376	1021.90	5784
	May 2024	650	43	34	991	16.1	21	991	354	1016.59	5453
	Jun 2024	680	22	41	899	15.1	29	899	338	1012.48	5203
	Jul 2024	770	56	39	787	12.8	33	787	336	1011.96	5172
	Aug 2024	820	66	42	761	12.4	35	761	339	1012.72	5217
	Sep 2024	645	62	41	670	11.3	31	670	337	1012.19	5185
	WY 2024	**8005**	**810**	**388**	**8762**		**235**	**8762**			
	Oct 2024	643	69	39	488	7.9	25	488	347	1014.68	5337
	Nov 2024	642	68	34	584	9.8	14	584	352	1015.88	5409

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Davis Dam - Lake Mohave

	Date	Hoover Release (1000 Ac-Ft)	Side Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	Power Release (1000 Ac-Ft)	Spill Release (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Total Release (1000 CFS)	Reservoir Elev End of Month (Ft)	EOM Storage (1000 Ac-Ft)
*	Dec 2021	503	-6	13	465	0	465	7.6	638.32	1573
H	Jan 2022	640	-20	9	523	0	523	8.5	641.60	1661
I	Feb 2022	590	-26	8	555	0	555	10.0	641.69	1663
S	Mar 2022	1010	-38	10	931	0	931	15.1	642.79	1693
T	Apr 2022	1027	-31	13	975	0	975	16.4	643.08	1701
O	May 2022	1083	-20	14	1041	0	1041	16.9	643.35	1708
R	Jun 2022	889	-30	14	842	0	842	14.1	643.47	1712
I	Jul 2022	822	-26	12	770	0	770	12.5	643.97	1725
C	Aug 2022	573	-13	16	575	0	575	9.3	642.87	1695
A	Sep 2022	539	-6	16	617	0	617	10.4	639.17	1595
	WY 2022	**8899**	**-228**	**151**	**8495**	**0**	**8495**			
L	Oct 2022	418	-2	14	540	0	542	8.8	633.78	1454
*	Nov 2022	713	-15	13	516	0	516	8.7	640.22	1623
	Dec 2022	424	-5	13	412	0	412	6.7	640.01	1617
	Jan 2023	537	-12	9	468	0	468	7.6	641.80	1666
	Feb 2023	557	-11	8	539	0	539	9.7	641.80	1666
	Mar 2023	905	-9	10	852	0	852	13.9	643.05	1700
	Apr 2023	1022	-13	13	999	0	999	16.8	643.00	1699
	May 2023	1002	-13	14	975	0	975	15.9	643.00	1699
	Jun 2023	934	-18	14	902	0	902	15.2	643.00	1699
	Jul 2023	846	-19	12	842	0	842	13.7	642.00	1671
	Aug 2023	806	-17	15	773	0	773	12.6	642.00	1671
	Sep 2023	678	-8	16	708	0	708	11.9	640.01	1617
	WY 2023	**8844**	**-142**	**151**	**8525**	**0**	**8527**			
	Oct 2023	493	-11	14	651	0	651	10.6	633.00	1434
	Nov 2023	591	-16	13	511	0	511	8.6	635.00	1486
	Dec 2023	549	-5	13	413	0	413	6.7	639.51	1604
	Jan 2024	571	-12	9	488	0	488	7.9	641.80	1666
	Feb 2024	544	-11	8	526	0	526	9.1	641.80	1666
	Mar 2024	894	-9	10	841	0	841	13.7	643.05	1700
	Apr 2024	1013	-13	13	989	0	989	16.6	643.00	1699
	May 2024	991	-13	14	963	0	963	15.7	643.00	1699
	Jun 2024	899	-18	14	867	0	867	14.6	643.00	1699
	Jul 2024	787	-19	12	783	0	783	12.7	642.00	1671
	Aug 2024	761	-17	15	728	0	728	11.8	642.00	1671
	Sep 2024	670	-8	16	700	0	700	11.8	640.01	1617
	WY 2024	**8762**	**-151**	**151**	**8459**	**0**	**8459**			
	Oct 2024	488	-11	14	646	0	646	10.5	633.00	1434
	Nov 2024	584	-16	13	504	0	504	8.5	635.00	1486

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Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Parker Dam - Lake Havasu

BUREAU OF RECLAMATION

	Date	Davis Release (1000 Ac-Ft)	Side Inflow (1000 Ac-Ft)	Evap Losses (1000 Ac-Ft)	Total Release (1000 Ac-Ft)	Total Release (1000 CFS)	MWD Diversion (1000 Ac-Ft)	CAP Diversion (1000 Ac-Ft)	Reservoir Elev End of Month (Ft)	EOM Storage (1000 Ac-Ft)	Flow To Mexico (1000 Ac-Ft)	Flow To Mexico (1000 CFS)
*	Dec 2021	465	16	7	281	4.6	99	87	447.33	567	89	1.5
H	Jan 2022	523	-3	6	342	5.6	96	89	446.38	550	114	1.9
I	Feb 2022	555	12	8	445	8.0	4	103	446.44	551	127	2.3
S	Mar 2022	931	2	9	658	10.7	97	133	448.02	580	170	2.8
T	Apr 2022	975	6	11	737	12.4	100	141	447.11	563	161	2.7
O	May 2022	1041	8	13	741	12.0	106	150	448.68	593	145	2.4
R	Jun 2022	842	18	15	679	11.4	103	60	448.30	586	154	2.6
I	Jul 2022	770	31	17	639	10.4	106	19	448.84	596	150	2.4
C	Aug 2022	575	40	17	482	7.8	106	16	448.16	583	120	2.0
A	Sep 2022	617	15	15	458	7.7	103	52	447.96	579	108	1.8
	WY 2022	**8495**	**176**	**140**	**6231**		**1117**	**1112**			**1499**	
L	Oct 2022	542	27	12	393	6.4	106	66	447.14	564	67	1.1
*	Nov 2022	516	3	9	336	5.6	103	67	447.09	563	89	1.5
	Dec 2022	412	18	6	257	4.2	106	67	446.50	552	86	1.4
	Jan 2023	468	14	6	314	5.1	89	67	446.50	552	136	2.2
	Feb 2023	539	5	8	412	7.4	9	108	446.50	552	122	2.2
	Mar 2023	852	4	9	619	10.1	99	117	446.70	555	145	2.4
	Apr 2023	999	8	11	726	12.2	96	126	448.70	593	144	2.4
	May 2023	975	6	13	727	11.8	99	130	448.70	593	109	1.8
	Jun 2023	902	7	16	719	12.1	96	66	448.70	593	114	1.9
	Jul 2023	842	14	17	700	11.4	99	42	448.00	580	121	2.0
	Aug 2023	773	13	17	627	10.2	99	42	447.50	571	100	1.6
	Sep 2023	708	12	15	541	9.1	71	83	447.50	570	97	1.6
	WY 2023	**8527**	**130**	**139**	**6370**		**1071**	**982**			**1329**	
	Oct 2023	651	18	12	490	8.0	74	85	447.50	571	87	1.4
	Nov 2023	511	17	9	373	6.3	71	68	447.50	570	113	1.9
	Dec 2023	413	18	7	266	4.3	99	73	446.50	552	108	1.8
	Jan 2024	488	14	6	299	4.9	91	100	446.50	552	129	2.1
	Feb 2024	526	5	8	398	6.9	10	108	446.50	552	116	2.0
	Mar 2024	841	4	9	600	9.8	103	121	446.70	555	138	2.2
	Apr 2024	989	8	11	711	11.9	93	133	448.70	593	137	2.3
	May 2024	963	6	13	716	11.7	89	139	448.70	593	103	1.7
	Jun 2024	867	7	16	711	11.9	86	49	448.70	593	109	1.8
	Jul 2024	783	14	17	677	11.0	89	16	448.00	580	115	1.9
	Aug 2024	728	13	17	617	10.0	89	17	447.50	571	95	1.5
	Sep 2024	700	12	15	527	8.9	86	74	447.50	570	93	1.6
	WY 2024	**8459**	**135**	**139**	**6384**		**979**	**983**			**1344**	
	Oct 2024	646	18	12	478	7.8	89	76	447.50	571	83	1.4
	Nov 2024	504	17	9	367	6.2	86	53	447.50	570	107	1.8

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Hoover Dam - Lake Mead

BUREAU OF RECLAMATION

	Date	Power Release (1000 Ac-Ft)	Power Release (1000 CFS)	Reservoir Elev End of Month (Ft)	EOM Storage (1000 Ac-Ft)	Change In Storage (1000 Ac-Ft)	Hoover Static Head (Ft)	Hoover Gen Capacity MW	Hoover Gross Energy MKWH	Percent of Units Available	KWH/AF
*	Dec 2021	503	8.2	1066.39	8915	111	424.48	957.0	185.9	68	369.9
H	Jan 2022	640	10.4	1067.09	8970	55	420.00	993.0	236.8	67	370.2
I	Feb 2022	590	10.6	1066.78	8946	-24	420.26	994.0	220.4	67	373.2
S	Mar 2022	1010	16.4	1061.49	8536	-409	413.69	898.0	375.9	62	372.3
T	Apr 2022	1027	17.3	1054.69	8026	-511	405.75	863.0	380.5	61	370.4
O	May 2022	1083	17.6	1047.69	7517	-509	397.38	1082.0	391.7	80	361.7
R	Jun 2022	889	14.9	1043.02	7187	-330	396.77	1076.9	315.1	81	354.6
I	Jul 2022	822	13.4	1040.92	7041	-146	392.29	1236.6	287.9	94	350.1
C	Aug 2022	573	9.3	1044.28	7275	234	399.70	1224.8	200.6	94	349.9
A	Sep 2022	539	9.1	1045.03	7328	53	400.65	1157.3	188.5	88	349.7
	WY 2022	**8899**							**3240.9**		
L	Oct 2022	418	6.8	1046.28	7417	88	402.36	924.5	145.8	70	348.8
*	Nov 2022	713	12.0	1043.02	7187	-230	395.39	948.8	254.6	72	357.1
	Dec 2022	424	6.9	1045.08	7331	144	395.73	975.8	149.5	72	352.3
	Jan 2023	537	8.7	1045.31	7348	17	397.13	882.7	189.2	64	352.0
	Feb 2023	557	10.0	1045.09	7333	-15	396.33	912.1	198.5	66	356.4
	Mar 2023	905	14.7	1040.36	7003	-330	393.49	900.0	323.6	66	357.6
	Apr 2023	1022	17.2	1033.20	6517	-486	387.28	863.8	361.6	65	353.6
	May 2023	1002	16.3	1027.17	6121	-396	380.70	844.1	344.2	66	343.5
	Jun 2023	934	15.7	1023.58	5890	-230	374.67	973.7	313.6	78	335.8
	Jul 2023	846	13.8	1022.04	5793	-98	370.89	1154.0	280.4	94	331.3
	Aug 2023	806	13.1	1022.26	5807	14	369.93	1220.2	264.7	100	328.4
	Sep 2023	678	11.4	1020.89	5720	-87	370.00	1207.4	220.1	100	324.7
	WY 2023	**8844**							**3045.9**		
	Oct 2023	493	8.0	1020.87	5719	-1	374.70	826.9	166.1	69	337.0
	Nov 2023	591	9.9	1019.85	5655	-64	376.49	824.2	198.1	69	335.5
	Dec 2023	549	8.9	1021.05	5731	76	374.46	824.2	181.3	69	330.1
	Jan 2024	571	9.3	1025.13	5989	259	374.21	921.3	188.6	76	330.3
	Feb 2024	544	9.5	1028.15	6185	195	376.98	941.1	181.5	76	333.7
	Mar 2024	894	14.5	1026.82	6098	-86	376.16	1082.1	297.6	88	333.1
	Apr 2024	1013	17.0	1021.90	5784	-314	374.61	820.7	341.4	69	337.1
	May 2024	991	16.1	1016.59	5453	-331	368.99	740.0	323.2	74	326.3
	Jun 2024	899	15.1	1012.48	5203	-250	363.64	780.2	288.6	81	320.8
	Jul 2024	787	12.8	1011.96	5172	-31	359.79	957.7	247.2	100	313.9
	Aug 2024	761	12.4	1012.72	5217	46	360.23	964.1	238.5	100	313.7
	Sep 2024	670	11.3	1012.19	5185	-32	360.99	959.6	209.2	100	312.4
	WY 2024	**8762**							**2861.2**		
	Oct 2024	488	7.9	1014.68	5337	151	366.44	764.0	159.8	78	327.8
	Nov 2024	584	9.8	1015.88	5409	73	370.96	731.8	192.1	74	328.7

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Davis Dam - Lake Mohave

BUREAU OF RECLAMATION

	Date	Power Release (1000 Ac-Ft)	Power Release (1000 CFS)	Reservoir Elev End of Month (Ft)	EOM Storage (1000 Ac-Ft)	Change In Storage (1000 Ac-Ft)	Davis Static Head (Ft)	Davis Gen Capacity MW	Davis Gross Energy MKWH	Percent of Units Available	KWH/AF
*	Dec 2021	465	7.6	638.32	1573	22	137.10	192.5	56.1	75	120.6
H	Jan 2022	523	8.5	641.60	1661	88	139.02	159.6	64.6	63	123.6
I	Feb 2022	555	10.0	641.69	1663	2	140.45	174.9	72.1	69	130.0
S	Mar 2022	931	15.1	642.79	1693	30	140.26	253.3	118.7	99	127.4
T	Apr 2022	975	16.4	643.08	1701	8	137.93	255.0	124.0	100	127.1
O	May 2022	1041	16.9	643.35	1708	7	140.42	241.8	132.1	95	126.9
R	Jun 2022	842	14.1	643.47	1712	3	139.18	251.6	108.5	99	128.9
I	Jul 2022	770	12.5	643.97	1725	14	144.37	255.0	99.3	100	129.1
C	Aug 2022	575	9.3	642.87	1695	-30	141.93	253.3	74.7	99	129.9
A	Sep 2022	617	10.4	639.17	1595	-100	137.50	248.2	78.5	97	127.3
	WY 2022	**8495**							**1074.5**		
L	Oct 2022	540	8.8	633.78	1454	-141	134.35	185.9	66.9	73	123.8
*	Nov 2022	516	8.7	640.22	1623	169	141.13	154.7	62.5	61	121.1
	Dec 2022	412	6.7	640.01	1617	-6	139.70	159.6	51.9	63	125.9
	Jan 2023	468	7.6	641.80	1666	49	140.08	157.9	59.1	62	126.2
	Feb 2023	539	9.7	641.80	1666	0	140.07	193.1	68.0	76	126.2
	Mar 2023	852	13.9	643.05	1700	34	139.08	255.0	106.8	100	125.3
	Apr 2023	999	16.8	643.00	1699	-2	138.67	255.0	124.8	100	124.9
	May 2023	975	15.9	643.00	1699	0	138.96	255.0	122.0	100	125.2
	Jun 2023	902	15.2	643.00	1699	0	139.20	255.0	113.1	100	125.4
	Jul 2023	842	13.7	642.00	1671	-27	139.21	255.0	105.6	100	125.4
	Aug 2023	773	12.6	642.00	1671	0	139.13	255.0	96.9	100	125.3
	Sep 2023	708	11.9	640.01	1617	-54	138.39	255.0	88.3	100	124.7
	WY 2023	**8525**							**1065.7**		
	Oct 2023	651	10.6	633.00	1434	-183	134.41	227.0	78.8	89	121.1
	Nov 2023	511	8.6	635.00	1486	51	132.74	159.8	61.1	63	119.6
	Dec 2023	413	6.7	639.51	1604	118	136.83	154.7	50.9	61	123.3
	Jan 2024	488	7.9	641.80	1666	62	139.68	156.3	61.5	61	125.8
	Feb 2024	526	9.1	641.80	1666	0	140.30	160.0	66.4	63	126.4
	Mar 2024	841	13.7	643.05	1700	34	139.15	194.1	105.4	76	125.4
	Apr 2024	989	16.6	643.00	1699	-2	138.73	249.9	123.6	98	125.0
	May 2024	963	15.7	643.00	1699	0	139.02	255.0	120.6	100	125.2
	Jun 2024	867	14.6	643.00	1699	0	139.40	255.0	108.9	100	125.6
	Jul 2024	783	12.7	642.00	1671	-27	139.57	255.0	98.4	100	125.7
	Aug 2024	728	11.8	642.00	1671	0	139.41	255.0	91.4	100	125.6
	Sep 2024	700	11.8	640.01	1617	-54	138.45	255.0	87.3	100	124.7
	WY 2024	**8459**							**1054.4**		
	Oct 2024	646	10.5	633.00	1434	-183	134.44	227.0	78.2	89	121.1
	Nov 2024	504	8.5	635.00	1486	51	132.79	159.8	60.3	63	119.6

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Parker Dam - Lake Havasu

BUREAU OF RECLAMATION

	Date	Power Release (1000 Ac-Ft)	Power Release (1000 CFS)	Reservoir Elev End of Month (Ft)	EOM Storage (1000 Ac-Ft)	Change In Storage (1000 Ac-Ft)	Parker Static Head (Ft)	Parker Gen Capacity MW	Parker Gross Energy MKWH	Percent of Units Available	KWH/AF
*	Dec 2021	281	4.6	447.33	567	5	81.34	102.6	18.6	85	66.1
H	Jan 2022	342	5.6	446.38	550	-18	80.46	93.9	23.0	78	67.4
I	Feb 2022	445	8.0	446.44	551	1	80.54	86.8	30.9	72	69.4
S	Mar 2022	658	10.7	448.02	580	30	77.95	112.3	45.8	94	69.6
T	Apr 2022	737	12.4	447.11	563	-17	79.08	120.0	50.8	100	68.9
O	May 2022	741	12.0	448.68	593	30	84.09	120.0	51.5	100	69.5
R	Jun 2022	679	11.4	448.30	586	-7	78.23	120.0	47.2	100	69.4
I	Jul 2022	639	10.4	448.84	596	10	82.19	120.0	44.7	100	69.9
C	Aug 2022	482	7.8	448.16	583	-13	83.58	120.0	33.4	100	69.3
A	Sep 2022	458	7.7	447.96	579	-4	81.26	120.0	31.4	100	68.7
	WY 2022	**6231**							**431.0**		
L	Oct 2022	393	6.4	447.14	564	-15	81.28	91.9	27.2	77	69.1
*	Nov 2022	336	5.6	447.09	563	-1	82.54	82.0	22.8	68	68.0
	Dec 2022	257	4.2	446.50	552	-11	80.49	111.3	16.3	93	63.5
	Jan 2023	314	5.1	446.50	552	0	79.70	93.9	21.0	78	66.8
	Feb 2023	412	7.4	446.50	552	0	78.53	95.2	28.4	79	69.0
	Mar 2023	619	10.1	446.70	555	4	77.46	120.0	42.4	100	68.6
	Apr 2023	726	12.2	448.70	593	38	77.72	120.0	50.4	100	69.5
	May 2023	727	11.8	448.70	593	0	78.86	120.0	51.1	100	70.3
	Jun 2023	719	12.1	448.70	593	0	78.76	120.0	50.5	100	70.2
	Jul 2023	700	11.4	448.00	580	-13	78.68	120.0	48.8	100	69.7
	Aug 2023	627	10.2	447.50	571	-10	78.55	120.0	43.5	100	69.4
	Sep 2023	541	9.1	447.50	570	0	78.77	120.0	37.5	100	69.3
	WY 2023	**6370**							**439.9**		
	Oct 2023	490	8.0	447.50	571	0	79.28	91.0	34.3	76	70.1
	Nov 2023	373	6.3	447.50	570	0	80.10	92.0	25.6	77	68.6
	Dec 2023	266	4.3	446.50	552	-19	80.62	112.3	16.9	94	63.6
	Jan 2024	299	4.9	446.50	552	0	79.82	92.9	20.0	77	66.9
	Feb 2024	398	6.9	446.50	552	0	78.77	95.4	27.5	79	69.2
	Mar 2024	600	9.8	446.70	555	4	77.59	120.0	41.2	100	68.7
	Apr 2024	711	11.9	448.70	593	38	77.81	120.0	49.5	100	69.6
	May 2024	716	11.7	448.70	593	0	78.93	120.0	50.4	100	70.3
	Jun 2024	711	11.9	448.70	593	0	78.81	120.0	49.9	100	70.2
	Jul 2024	677	11.0	448.00	580	-13	78.83	120.0	47.3	100	69.9
	Aug 2024	617	10.0	447.50	571	-10	78.61	120.0	42.9	100	69.5
	Sep 2024	527	8.9	447.50	570	0	78.88	120.0	36.5	100	69.4
	WY 2024	**6384**							**442.0**		
	Oct 2024	478	7.8	447.50	571	0	79.37	91.0	33.5	76	70.2
	Nov 2024	367	6.2	447.50	570	0	80.15	92.0	25.2	77	68.7

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Model Run ID: 3211

Processed On: 12/14/2022 5:08:01PM

OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Upper Basin Power

	Date	Glen Canyon 1000 MWHR	Flaming Gorge 1000 MWHR	Blue Mesa 1000 MWHR	Morrow Point 1000 MWHR	Crystal Reservoir 1000 MWHR	Fontenelle Reservoir 1000 MWHR
*	Dec 2021	226	19	2	5	2	4
H	Jan 2022	252	19	3	5	1	4
I	Feb 2022	201	17	3	4	1	3
S	Mar 2022	208	19	8	9	4	3
	Winter 2022	**1259**	**123**	**34**	**50**	**17**	**19**
T	Apr 2022	179	19	11	15	10	0
O	May 2022	214	52	20	31	18	3
R	Jun 2022	222	41	18	25	16	6
I	Jul 2022	251	29	23	29	17	7
C	Aug 2022	265	39	23	31	18	6
A	Sep 2022	201	42	14	27	13	5
	Summer 2022	**1332**	**222**	**108**	**160**	**92**	**28**
L	Oct 2022	175	42	0	21	10	2
*	Nov 2022	181	38	0	6	2	1
	Dec 2022	194	35	5	4	3	4
	Jan 2023	175	35	5	7	4	4
	Feb 2023	167	32	4	6	3	3
	Mar 2023	168	23	5	8	5	3
	Winter 2023	**1060**	**205**	**19**	**52**	**26**	**17**
	Apr 2023	167	23	14	22	12	2
	May 2023	211	69	34	59	23	4
	Jun 2023	269	21	10	19	14	7
	Jul 2023	279	18	21	28	15	8
	Aug 2023	302	26	22	30	15	6
	Sep 2023	213	26	21	28	14	5
	Summer 2023	**1441**	**183**	**123**	**185**	**94**	**32**
	Oct 2023	172	22	19	25	9	5
	Nov 2023	178	21	4	5	3	4
	Dec 2023	212	22	4	5	3	4
	Jan 2024	275	23	4	5	3	4
	Feb 2024	237	21	3	5	3	4
	Mar 2024	247	16	5	7	4	4
	Winter 2024	**1322**	**125**	**39**	**53**	**27**	**25**
	Apr 2024	220	16	8	14	9	2
	May 2024	225	71	20	32	20	6
	Jun 2024	247	20	35	47	22	7
	Jul 2024	285	19	24	29	15	8
	Aug 2024	300	26	24	29	15	5
	Sep 2024	234	25	23	27	14	5
	Summer 2024	**1277**	**151**	**112**	**150**	**81**	**28**
	Oct 2024	231	23	22	26	10	5
	Nov 2024	229	22	17	20	11	5

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OPERATION PLAN FOR COLORADO RIVER SYSTEM RESERVOIRS

December 2022 24-Month Study

Most Probable Inflow*

Flood Control Criteria - Beginning of Month Conditions

Date	Flaming Gorge KAF	Blue Mesa KAF	Navajo KAF	Lake Powell KAF	Upper Basin Total KAF	Lake Mead KAF	Total KAF	Flaming Gorge KAF	Blue Mesa KAF	Navajo KAF	Tot or Max Allow KAF	Lake Powell KAF	Lake Mead KAF	Total KAF	BOM Space Required KAF	Mead Sched Rel KAF	Mead FC Rel KAF	Sys Cont MAF
	****PREDICTED SPACE****							****CREDITABLE SPACE****										
Dec 2022	1,196	543	786	17593	20119	20433	40552	1196	543	786	2525	17593	20433	40552	4580	424	0	19.1
Jan 2023	1,276	538	792	17792	20398	20289	40686	1276	538	792	2605	17792	20289	40686	5350	537	0	18.9
								****EFFECTIVE SPACE****										
Jan 2023	1,276	538	792	17792	20398	20289	40686	245	228	366	839	17792	20289	38920	5350	537	0	18.9
Feb 2023	1,350	535	798	17940	20623	20272	40895	319	226	371	916	17940	20272	39129	1500	557	0	18.7
Mar 2023	1,414	531	798	18072	20814	20287	41102	382	224	371	976	18072	20287	39336	1500	905	0	18.4
Apr 2023	1,410	521	782	18160	20872	20617	41490	374	216	348	938	18160	20617	39715	1500	1022	0	18.1
May 2023	1,389	525	740	18093	20747	21103	41850	348	218	285	852	18093	21103	40048	1500	1002	0	18.4
Jun 2023	1,434	522	634	17405	19996	21499	41495	390	202	144	736	17405	21499	39640	1500	934	0	19.5
Jul 2023	1,180	349	567	16617	18713	21730	40443	119	6	25	150	16617	21730	38498	1500	846	0	19.3
								****CREDITABLE SPACE****										
Aug 2023	1,077	338	598	16706	18719	21827	40547	1077	338	598	2013	16706	21827	40547	1500	806	0	18.8
Sep 2023	1,105	358	628	17135	19225	21813	41038	1105	358	628	2090	17135	21813	41038	2270	678	0	18.4
Oct 2023	1,148	390	637	17324	19499	21900	41399	1148	390	637	2175	17324	21900	41399	3040	493	0	18.1
Nov 2023	1,171	422	629	17357	19579	21901	41480	1171	422	629	2222	17357	21901	41480	3810	591	0	18.0
Dec 2023	1,189	405	626	17434	19655	21965	41620	1189	405	626	2220	17434	21965	41620	4580	549	0	18.0
Jan 2024	1,225	392	626	17653	19896	21889	41786	1225	392	626	2243	17653	21889	41786	5350	571	0	17.9
								****EFFECTIVE SPACE****										
Jan 2024	1,225	392	626	17653	19896	21889	41786	508	375	492	1375	17653	21889	40917	5350	571	0	17.9
Feb 2024	1,255	380	627	18052	20315	21631	41945	535	363	493	1391	18052	21631	41074	1500	544	0	17.8
Mar 2024	1,277	369	621	18328	20595	21435	42030	555	353	485	1393	18328	21435	41157	1500	894	0	17.6
Apr 2024	1,246	348	572	18547	20714	21522	42235	520	331	430	1281	18547	21522	41350	1500	1013	0	17.6
May 2024	1,189	298	506	18494	20488	21836	42324	456	281	340	1078	18494	21836	41407	1500	991	0	18.5
Jun 2024	1,172	174	375	17498	19220	22167	41387	434	144	170	749	17498	22167	40414	1500	899	0	19.9
Jul 2024	863	61	289	16420	17633	22417	40050	104	9	28	141	16420	22417	38978	1500	787	0	19.7
								****CREDITABLE SPACE****										
Aug 2024	776	45	321	16562	17704	22448	40153	776	45	321	1142	16562	22448	40153	1500	761	0	19.3
Sep 2024	801	60	355	16923	18138	22403	40541	801	60	355	1215	16923	22403	40541	2270	670	0	18.9
Oct 2024	846	88	362	17169	18464	22435	40899	846	88	362	1296	17169	22435	40899	3040	488	0	18.6
Nov 2024	871	122	357	17348	18698	22283	40981	871	122	357	1349	17348	22283	40981	3810	584	0	18.6

* Based on the Colorado River Basin Forecast Center's Most Probable Water Supply Forecast

Model Run ID: 3211

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