

October 28, 2021

# NOTICE OF REGULAR MEETING OF THE COLORADO RIVER BOARD

**NOTICE IS HEREBY GIVEN** pursuant to the call of the Chairperson, Peter Nelson, by the undersigned Executive Director of the Colorado River Board of California that a regular meeting of the Board Members is to be held as follows:

Date: Wednesday, November 10, 2021

Time: 10:00 a.m.

Place: Pursuant to Government Code section 11133, this meeting will be held virtually

via Zoom Webinar. Board members will receive instructions separately. The

public are welcome to attend. Attendees may access this meeting using the following:

Webinar Link: https://us02web.zoom.us/j/87658053297

Telephone: US: +1 669 900 9128, enter Meeting ID: 876 5805 3297, followed

by #; then press # again to connect.

The Colorado River Board of California welcomes any comments from members of the public pertaining to items included on this agenda and related topics. If members of the public wish to make a comment regarding items on the agenda, there are three options for consideration: (1) Public comments may be submitted by electronic mail, and should be addressed to the Board's Chairman, Mr. Peter Nelson, at <a href="mailto:crb@crb.ca.gov">crb@crb.ca.gov</a> and will be accepted up until 10:00 a.m. on the day of the meeting; (2) During the meeting, members of the public may submit comments by participating in the Zoom Webinar and utilizing the "Q&A" feature in the control panel; or (3) By calling into the Zoom Webinar using the telephone number above and pressing \*9 to "Raise Hand." Please note, written submissions will be read aloud at the public comment period to the extent they fit within the five-minute time limit.

If accommodations from individuals with disabilities are required, such persons should provide a request at least 24 hours in advance of the meeting by electronic mail to the Board's staff member, Mr. Brian Alvarez at <a href="mailto:balvarez@crb.ca.gov">balvarez@crb.ca.gov</a>.

Requests for additional information may be directed to: Mr. Christopher S. Harris, Executive Director, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, CA 91203-1068, or 818-500-1625. A copy of this Notice and Agenda may be found on the Colorado River Board's web page at <a href="https://www.crb.ca.gov">www.crb.ca.gov</a>.

A copy of the meeting agenda, showing the matters to be considered and transacted, is attached.

Christopher S. Harris Executive Director

# Regular Meeting COLORADO RIVER BOARD OF CALIFORNIA Wednesday, November 10, 2021 10:00 a.m.

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated upon and may be subject to action by the Board. Items may not necessarily be taken up in the order shown.

#### **COVID-19 BOARD OPERATIONS NOTICE**

The Board will conduct this public meeting remotely in accordance with the authority provided by Government Code section 11133, new legislation (AB 361) that was enacted and effective as of September 16, 2021.

- 1. Call to Order
- 2. Opportunity for the Public to Address the Board<sup>1</sup> (Limited to 5 minutes)
- 3. Administration
  - a. Consideration and approval of September 15, 2021, Board meeting Minutes (Action)
- 4. Colorado River Basin and Local Water Supply and Operations Reports
- 5. Colorado River Basin Programs Staff Reports
- 6. Executive Session<sup>2</sup>
- 7. Other Business
- 8. Future Agenda Items/Announcements

Next Scheduled Board Meeting: December 14, 2021

10:00 a.m., Pacific Caesars Palace Augustus III Room

3570 Las Vegas Boulevard South

Las Vegas, NV 89109

<sup>&</sup>lt;sup>1</sup> In accordance with California Government Code, Section 54954.3(a).

<sup>&</sup>lt;sup>2</sup> An Executive Session may be held by the Board pursuant to provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code and Sections 12516 and 12519 of the Water Code to discuss matters concerning interstate claims to the use of Colorado River System waters in judicial proceedings, administrative proceedings, and/or negotiations with representatives from the other Basin states or federal government.

# Minutes of Meeting COLORADO RIVER BOARD OF CALIFORNIA

Wednesday, September 15, 2021

A meeting of the Colorado River Board of California (Board) was held virtually on Wednesday, September 15, 2021, using the Zoom Webinar meeting platform.

#### Board Members and Alternates Present:

David DeJesus (MWD Alternate) Peter Nelson, Chairman (CVWD)

Castulo Estrada (CVWD Alternate)

Dana B. Fisher, Jr. (PVID)

John B. Hamby (IID)

Jeanine Jones (DWR Designee)

Henry Kuiper (Public Member)

Glen D. Peterson (MWD)

David R. Pettijohn (LADWP)

Jack Seiler (PVID Alternate)

David Vigil (DFW Alternate)

Mark Watton (SDCWA Alternate)

Delon Kwan (LADWP Alternate)

Board Members and Alternates Absent:

James Hanks (IID Alternate) Jim Madaffer (SDCWA)

Christopher Hayes (DFW Designee)

Others Present:

Steven Abbott Aaron Mead Brian Alvarez Cary Meister Justina Arce Dylan Mohamed Jim Barrett Jessica Neuwerth Robert Cheng Jessica Rangel **Dennis Davis** Shana Rapoport Dan Denham Angela Rashid JR Echard Kelly Rodgers Tom Ryan Guillermo Gonzalez

Roberta Saligumba Melissa Haley Keith Scoular Christopher Harris Alex Heide Gary Tavetian Joanna Hoff **Rob Thomson** Sabrina Tsui Michael Hughes Ned Hyduke Sara Tucker Rich Juricich Cherie Watte Larry Lai Virginia Wei Laura Lamdin Jerry Zimmerman

**Enrique Martinez** 

#### **CALL TO ORDER**

Chairman Nelson announced the presence of a quorum and called the meeting to order at 10:02 a.m.

#### OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE BOARD

Chairman Nelson invited members of the audience to address the Board on items on the agenda or matters related to the Board. Hearing none, Chairman Nelson moved to the next item on the agenda.

#### **ADMINISTRATION**

Chairman Nelson asked for a motion to approve the July 14, 2021, meeting minutes. Mr. Peterson moved that the minutes be approved, seconded by Mr. Kuiper. By roll-call vote, the minutes were approved. Mr. Vigil abstained.

#### **COLORADO RIVER BASIN WATER REPORTS**

#### **Colorado River Basin Report**

Mr. Juricich reported that as of September 13<sup>th</sup>, the water level at Lake Powell was 3,548.25 feet with 7.46 million-acre feet (MAF) of storage, or 31% of capacity. The water level at Lake Mead was 1,067.72 feet with 9.02 MAF of storage, or 35% of capacity. The total system storage was 23.38 MAF, or 39% of capacity, which is 5.97 MAF less than system storage at this time last year.

Mr. Juricich reported that as of September 1<sup>st</sup>, the unregulated inflow into Lake Powell for Water Year-2021 (WY-2021) is 3.56 MAF, or 33% of normal and the WY-2021 forecasted April to July inflow to Lake Powell is 1.85 MAF, or 26% of normal. For WY-2021, the observed August inflow to Lake Powell was 0.29 MAF, or 59% of normal. The September inflow forecast to Lake Powell is 0.20 MAF, or 49% of normal. Mr. Juricich reported that overall precipitation conditions in the Upper Colorado River Basin were 82% of normal.

Mr. Juricich reported that the Basin experienced strong monsoonal activity during July and August which increased the unregulated inflow into Lake Powell by 200,000 AF. He also noted that Lake Mead benefitted from the increased monsoonal activity, stating that the July and August

intervening flows to Lake Mead were 146% and 109% of the 5-year average, respectively. He added that Arizona measured it second wettest July on record.

Mr. Juricich reported that La Nina conditions are anticipated for the 2021-2022 winter season, stating that La Nina conditions correlate with below-normal winter precipitation in the southwestern U.S.

Mr. Juricich reported on the August 24-Month Study projections for reservoir elevations for Lakes Powell and Mead, stating elevations for Lakes Powell and Mead for January 2022, sets the operational tiers for both reservoirs for the following year. He stated that Lake Powell's elevation on January 1, 2022, is projected to be 3,530.40 feet and will operate in the Mid-Elevation Release Tier for Water Year 2022 (WY-22). The Glen Canyon Dam will release 7.48 MAF for WY-22 without the potential for a mid-year adjustment in April 2022. Lake Mead's January 1, 2022, elevation is projected to be 1,065.85 feet and will operated in a Level 1 Shortage Condition for the first time. In addition, in Calendar Year 2022 (CY-22), the required shortage reduction and water savings contributions from Arizona, Nevada and Mexico will total 0.613 MAF. Mr. Juricich stated that the projected operations for Lakes Powell and Mead will be incorporated into the 2022 Colorado River Annual Operating Plan.

Mr. Juricich reported that the minimum probable elevation for Lake Mead was projected to be below the elevation of 1,030 feet in July 2023. This elevation triggers a consultation between the Secretary of the Interior and the Lower Division States to identify what potential, additional actions might be taken to protect Lake Mead from falling below the elevation of 1,020 feet. Mr. Juricich noted that formal discussions have not started, but the Lower Basin States are starting to discuss options and strategies for the next year. He explained that a work group has been established to develop options ranging from additional water conservation actions to examining environmental compliance issues and constraints. He stated that the work group plans to report back to the Lower Basin principals at the end of September.

Mr. Juricich reported that through September 12<sup>th</sup>, the Brock and Senator Wash regulating reservoirs captured 88,950 AF and 53,710 AF, respectively. He also reported that the excess deliveries to Mexico were 51,198 AF, compared to 88,950 AF last year. Finally, the total amount of saline drainage water bypassed to the Cienega de Santa Clara in Mexico was 84,408 AF.

Mr. Juricich reported that Reclamation provided a preview of the Colorado River Simulation System (CRSS) results for the August 2021 5-Year projections, also known as the "5-Year Table", which highlights the key operation of Lakes Powell and Mead through 2026. Mr. Juricich explained that Reclamation provided a "preview" of the projections because it made significant changes to the CRSS assumptions. He stated that in the past, Reclamation developed the projections using two different input hydrology data sets – the Full Natural Flow for the period of 1906 – 2019 and the Stress Test, for the period 1988 – 2019. For the new 5-year projections,

Reclamation decided to discontinue use of the Full Natural Flow hydrology and use the Stress Test hydrology, which is more representative of drier conditions the Basin has experienced over the last few decades. The Stress Test hydrology has a long-term average of 13.3 MAF, while the Full Natural Flow has a long-term average of 14.8 MAF.

Mr. Juricich reported that Reclamation would no longer include the operations of the Upper Basin Drought Response Agreement (DROA) in its 5-Year projections in 2022 through 2026 because it will be difficult to determine the volume of emergency flows upstream of Lake Powell. Mr. Juricich reported that the updated 5-Year projections are expected to be released at the end of September.

#### **State and Local Report**

Ms. Jones, representing the California Department of Water Resources (DWR), reported that California has experienced an extraordinarily dry water year and it will be the second driest water year since 1977. She noted that quite a few of the larger urban areas in the State received less than 50% of average annual precipitation this year. Ms. Jones also stated that the southeastern corner of California benefitted from the summer monsoonal activity.

Ms. Jones reported on statewide reservoir conditions, noting that the largest Central Valley Project and State Water Project reservoirs storage levels are at record lows. She added that the storage in San Luis reservoir was reduced to make dam safety repairs and its elevation has never recovered and will reach its second record low point.

Ms. Jones reported on the Basin Characterization Model (BCM). She added that DWR provided USGS with funding to further develop the BCM to cover the Colorado River Basin. She explained that the BCM was used to analyze the climatic moisture deficit. Ms. Jones shared images and data of the accumulated moisture deficit in California from 2012 to 2019, noting that 2020 was the hottest on record at the time, and the state endured many wildfires. Ms. Jones stated that the BCM can be used as a diagnostic tool to assess the potential areas of high wildfire risk and it can also be used to back calculate how runoff efficiency changes as conditions stay hotter and drier. She added that for the Colorado River Basin, the dry conditions in the Upper and Lower Basin are similar to conditions in California, therefore it is expected that a lot of precipitation will be needed in the Basin before it can recover from the drought.

Mr. Peterson, representing The Metropolitan Water District of Southern California (MWD), reported that total reservoir storage is 78% of capacity. He noted that MWD is anticipating serious issues with the western branch of MWD's service area that are dependent on State Water Project (SWP) water due to California drought issues. He also added that the Colorado aqueduct is on a 7-pump flow, noting that it would normally operate at an 8-pump flow, but MWD is taking less due to conservation efforts.

Vice Chairman Pettijohn, representing the Los Angeles Department of Water and Power (LADWP), concurred with Mr. Peterson's assessment of the issues anticipated with the low SWP allocation for portions of MWD's service area. He added that if the SWP doesn't produce a minimum of 20% of the current entitlements, several sections of MWD's service area will have a difficult year meeting demands.

#### STATUS OF COLORADO RIVER BASIN PROGRAMS

#### **Draft California Guiding Principles for the Post 2026 Period**

Mr. Harris provided an update on the draft California guiding principles for the Post 2026 process. Board staff received comment letters from the Quechan and Colorado River Indian Tribes associated with the Board's draft guiding principles. The letters were generally supportive of principles promoting water supply management and flexibility options, and supportive of Lower Colorado River ecological restoration processes. Mr. Harris described how staff were working on response letters to each Tribal Council that acknowledges Tribal interest in a more formal process for engaging with the Board.

#### **Colorado River Basin Salinity Control Program**

Colorado River Basin Salinity Control Program Implementation

Mr. Juricich provided an update on the implementation of the Colorado River Basin Salinity Control Program including a preview of the upcoming Salinity Forum Work Group meeting scheduled for September 20-21 in Salt Lake City, Utah. Topics covered included updates on the Paradox Valley Unit salinity control project, preparation of the 2023 Triennial Review of Salinity Control Standards, and updates for federal agency programs, studies, and funding. A graphic was presented that shows recent flow and salt load in the Dolores River in Paradox Valley. Mr. Juricich described that the low flows in the River during the summer resulted in an upwelling of highly saline brine water into the River. Monsoon rains washed this saline water downstream contributing to the salt load in the Colorado River.

#### **Status of Minute No. 323 Implementation**

Board Staff Ms. Neuwerth reported that the Environmental Work Group for Minute 323 met via webinar on August 25<sup>th</sup>. Ms. Neuwerth noted that under Minute 323, 210,000 acre-feet of water is allocated for environmental purposes, to be provided in equal part by the U.S. Federal government, Mexican Federal government, and NGOs. The environmental work group designed and implemented delivery of 35,000 acre-feet of U.S. Federal water to the Colorado River Delta in summer 2021. The water is being delivered through local canals and infrastructure to Reach 4

of the Delta, which has a large number of habitat restoration sites. Ms. Neuwerth reported that the work group will be evaluating the effects of this water delivery over the coming months and planning for water deliveries in 2022. In response to a question, Ms. Neuwerth noted that the habitats in the Delta are supplied with water on an ongoing basis through NGO water deliveries under the Minute.

Mr. Harris reported that Ms. Maria-Elena Giner was recently appointed as Commissioner for the U.S. Section of the International Boundary and Water Commission. Mr. Harris noted that Ms. Giner has significant experience in water issues along the U.S. Mexico border. Mr. Harris also reported that the Commissioner for the Mexican Section of the International Boundary and Water Commission had recently stepped down to join CONAQUA and that a new Commissioner had not yet been nominated.

#### Status of the Glen Canyon Dam Adaptive Management Program

Ms. Neuwerth reported that the Glen Canyon Dam Adaptive Management Workgroup (AMWG) held a two-day meeting in August. Ms. Neuwerth reported that the meeting included a panel during which federal agencies discussed current challenges. The AMWG also received a report on the status of fish in the Grand Canyon. Unusually low numbers of juvenile humpback chub have been found in the Little Colorado River in recent years, triggering a provision of the Long-Term Experimental and Management Plan (LTEMP). More robust modeling information on humpback chub will be provided at the program's Annual Reporting Meeting in January.

Ms. Neuwerth reported that the group is considering potential impacts to resources if a fall high flow experiment (HFE) were to be conducted.

Finally, Ms. Neuwerth reported that the Technical Work Group will be meeting October 13<sup>th</sup> and 14<sup>th</sup>.

#### **GENERAL ANNOUNCEMENTS**

#### Washington, D.C. Updates

Mr. Harris reported on the Senate Appropriations Committee. Mr. Harris indicated that the Senate Appropriations Committee marked up its FY-2022 Energy and Water bill. Mr. Harris also reported that Congress will need to pass a continuing resolution (CR) that would fund agencies at current levels until at least late-November.

Mr. Harris reported on the White House infrastructure negotiations. Mr. Harris stated that Congress is still grappling with passing both a \$1.2 trillion bipartisan infrastructure bill and a

proposed \$3.5 trillion partisan budget reconciliation bill. Mr. Harris also noted that House progressives will not support the bipartisan funding infrastructure until they are assured that the Senate will back the \$3.5 trillion reconciliation effort.

Mr. Harris reported on the Waters of the United States Rule. Mr. Harris stated that the EPA and the U.S. Army Corps of Engineers have stopped using the prior administration's controversial definition of which streams and wetlands are protected under the Clean Water Act; and, in the interim, the EPA will rely on regulations and guidance used prior to 2015 to determine which waterways are now protected.

#### **Next Scheduled Board Meeting**

Finally, Mr. Harris noted that the next meeting of the Colorado River Board would be held on October 13, 2021, and would also be held virtually using the Zoom Webinar meeting platform.

#### **ADJOURNMENT**

With no further items to be brought before the Board, Chairman Nelson adjourned the meeting at 11:02 a.m.

#### LOWER COLORADO WATER SUPPLY REPORT

### River Operations Bureau of Reclamation

Questions:	BCOOWaterops@usbr.gov
(702)293-	8373

ttp://www.usbr.gov/lc/region/g4000/weekly.pdf				
was a second sec		Content	Elev. (Feet	7-Day
	PERCENT	1000	above mean	Release
CURRENT STORAGE	FULL	ac-ft (kaf)	sea level)	(CFS)
LAKE POWELL	30%	7,181	3,544.25	7,800
* LAKE MEAD	<b>34</b> %	8,945	1,066.77	11,300
LAKE MOHAVE	81%	1,471	634.42	10,400
LAKE HAVASU	95%	587	448.37	6,100
TOTAL SYSTEM CONTENTS **	38%	22,551		
As of 10/31/2021				
SYSTEM CONTENT LAST YEAR	<b>47</b> %	28,240		
*Percent based on capacity of 26,120 kaf or **Total System Contents includes Upper & Low	er Colorado River	Reservoirs, less Lak	e Mead exclusive flo	ood control space
Salt/Verde System	69%	1,585		
Painted Rock Dam	0%	0	530.00	0
Alamo Dam	10%	98	1,112.47	25
orecasted Water Use for Calendar Year	2021 (as of 11/	1/2021) (values in	n kaf)	
NEVADA			244	
SOUTHERN NEVADA WATER SYSTEM				218
OTHERS				26
CALIFORNIA			4,348	
METROPOLITAN WATER DISTRICT OF CA	LIFORNIA			1,076
IRRIGATION DISTRICTS				3,256
OTHERS				17
ARIZONA			2,439	
CENTRAL ARIZONA PROJECT				1,368
OTHERS				1,071
TOTAL LOWER BASIN USE				7,032
DELIVERY TO MEXICO - 2021 (Mexico So	cheduled Delivery	+ Preliminary Yearly	Excess <sup>1</sup> )	1,492
OTHER SIGNIFICANT INFORMATION				
UNREGULATED INFLOW INTO LAKE POWELL -	OCTOBER MID-MON	TH FORECAST DATED	10/18/2021	
		MILLION	N ACRE-FEET	% of Normal
PRELIMINARY OBSERVED WATER YEAR 202	<b>1</b> <sup>2</sup>		3.502	328
OBSERVED APRIL-JULY 2021 <sup>2</sup>			1.834	269
SEPTEMBER OBSERVED INFLOW <sup>2</sup>			0.159	39%
OCTOBER INFLOW FORECAST <sup>3</sup>			0.255	56%
		Upper Colora		:/Verde Basin
WATER YEAR 2022 PRECIP TO DATE		138% (3	.3")	169% (1.8")

 $<sup>^1</sup>$ Delivery to Mexico forecasted yearly excess calculated using year-to-date observed and projected excess.

NA% (NA")

0% (NA")

CURRENT BASIN SNOWPACK

 $<sup>^2\</sup>mbox{WY}$  2021 statistics are based on the 30-year period from 1981-2010

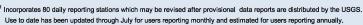
 $<sup>^3\</sup>mbox{WY}$  2022 statistics are based on the 30-year period from 1991-2020

 $<sup>^4\</sup>mbox{Precipitation}$  values may vary significantly from week-to-week early in the water year.



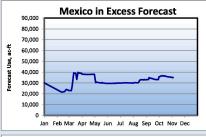
ARIZONA, CALIFORNIA, NEVADA, MEXICO FORECAST OF END OF YEAR CONSUMPTIVE USE FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS <sup>1</sup> (ACRE-FEET)

WATER USE SUMMARY	Use To Date CY 2021	Forecast Use CY 2021	Approved Use <sup>2</sup> CY 2021	Approv CY 202
ARIZONA CALIFORNIA NEVADA	2,140,993 3,863,810 223,528	2,440,479 4,349,406 244,465	2,440,705 4,349,406 244,465	(22
STATES TOTAL <sup>3</sup>	6,228,331	7,034,350	7,034,576	(22
TOTAL DELIVERIES MEXICO IN SATISFACTION OF TREATY REQUIREMENTS <sup>4</sup> CREATION OF MEXICO'S RECOVERABLE WATER SAVINGS <sup>5</sup> CREATION OF MEXICO'S WATER RESERVE <sup>6</sup> DELIVERY OF MEXICO'S WATER RESERVE <sup>7</sup> TOTAL TO MEXICO IN SATISFACTION OF TREATY REQUIREMENTS <sup>8</sup>	1,313,048 25,359 36,994 (34,182) 1,341,219	1,456,683 41,000 37,340 (35,023) 1,500,000		
WATER BYPASSED PURSUANT TO IBWC MINUTE NO. 242 10	28,533 95,887	35,026 114,886		
TOTAL LOWER BASIN & MEXICO 11	7,665,799	8,640,945		

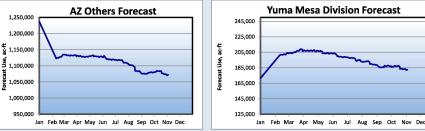


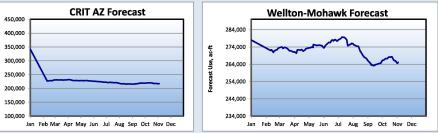
These values reflect adjusted apportionments. See Adjusted Apportionment calculation on each state page

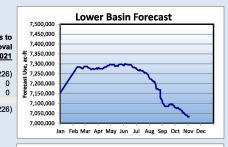
<sup>11</sup> Includes States Total, Deliveries to Mexico in Satisfaction of Treaty, To Mexico in Excess of Treaty, and Water Bypassed Pursuant IBWC Minute 242

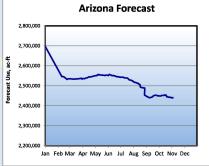


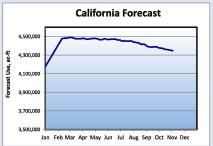


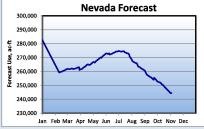
















Graph notes: January 1 forecast use is scheduled use in accordance with the Annual Operating Plan's state entitlements, available unused entitlements, and over-run paybacks. A downward sloping line indicates use at a lower rate than scheduled, upward sloping is above schedule, and a flat line indicates a use rate equal to schedule. Lower priority users such as CAP, MWD, and Robt.B.Griffith may adjust use rates to meet state entitlements as higher priority use deviates from schedule. Abrupt changes in the forecast use line may be due to a diversion schedule change or monthly updating of provisional realtime diversions.

<sup>3</sup> Includes unmeasured returns based on estimated consumptive use/diversion ratios by user from studies provided by Arizona

Department of Water Resources, Colorado River Board of California, and Reclamation.

Includes deliveries to Mexico at the Northerly International Boundary (including delivery from Mexico's Water Reserve), Southerly International Boundary, Limitrophe, and Diversion Channel Discharge; and diversions at Parker Dam for Emergency Delivery to Tijuana; does not include Creation of Mexico's Water Reserve or Creation of Mexico's Recoverable Water Savings.

Water deferred by Mexico pursuant to Section IV of IBWC Minute 323 and the Joint Report of the Principal Engineers with the Implementing Details of the Binational Water Scarcity Contingency Plan in the Colorado River Basin, dated July 11, 2019. (Mexico's required Binational Water Scarcity Contingency Plan Contribution).

Water deferred by Mexico pursuant to Section V of IBWC Minute 323.

Delivery from Mexico's Water Reserve pursuant to Section V.E.13 of IBWC Minute 323. Pursuant to Sections VIII.A and VIII.B of IBWC Minute 323, this water is being delivered for environmental purposes within Mexico.

In accordance with the procedure documented in USIBWC's letter to the Mexican Section of the IBWC dated July 25, 2017 regarding the the calculation process applied when accounting for the quantity and quality of the volumes of Mexico's Water Reserve and Mexico's Recoverable Water Savings during creation and delivery, "Total Delivery to Mexico in Satisfaction of Treaty Requirements" adds in Mexico's Water Reserve and Mexico's Recoverable Water Savings creation and subtracts out Mexico's Water Reserve and Mexico's Recoverable Water Savings delivery.

Mexico excess forecast is based on the 5-year average for the period 2015-2019.

<sup>&</sup>lt;sup>0</sup> Bypass forecast is based on the average for the period 1990-2019.

ions and uses that are pending approval are noted in red

Italics.

Water users with a consumptive use entitlement - Excess to Estimated Use column indicates overmu/underrun of entitlement. Dash in this column indicates water user has a diversion entitlement.

Water user with a diversion entitlement - Excess to Approved Diversion column indicates overmu/underrun of entitlement. Dash in this column indicates weter user has a consumptive use entitlement.

ARIZONA WATER USERS
FORECAST OF END OF YEAR CONSUMPTIVE USE

FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS

Arizona Schedules and Approvals
Historic Use Records (Water Accou

				Excess to				Excess to
	Use	Forecast	Estimated	Estimated	Diversion	Forecast	Approved	Approved
	To Date	Use	Use	Use	To Date	Diversion	Diversion	Diversion
WATER USER	CY 2021							
ARIZONA PUMPERS	14,339	15,828	15,828		22,061	24,351	24,351	0
LAKE MEAD NRA, AZ - Diversions from Lake Mead	70	76	76		70	76	76	0
LAKE MEAD NRA, AZ - Diversions from Lake Mohave	187	220	220		187	220	220	0
DAVIS DAM PROJECT	2	2	2		15	17	17	0
BULLHEAD CITY	6.847	8.098	8,163		10.684	12,637	12,720	-83
MOHAVE WATER CONSERVATION DISTRICT	612	676	676		915	1,010	1,010	0
BROOKE WATER LLC	274	323	323		412	485	485	o
MOHAVE VALLEY I.D.D.	12,155	14,056	15.932		22,508	26,025	29,503	-3,478
FORT MOJAVE INDIAN RESERVATION, AZ	34,515	37,107	44,550		63,917	68,717	82,500	-13,783
GOLDEN SHORES WATER CONSERVATION DISTRICT	259	286	286		387	427	427	0
HAVASU NATIONAL WILDLIFE REFUGE	3,829	4,019	3,564		31,910	34,135	41,835	-7,700
LAKE HAVASU CITY	6,944	8,258	9,021		11,200	13,320	14,550	-1,230
CENTRAL ARIZONA PROJECT	1,155,596	1,368,576			1,155,596	1,368,576		_
TOWN OF PARKER	484	530	430		733	854	917	-63
COLORADO RIVER INDIAN RESERVATION, AZ	213,194	217.010	226,280		441,354	493,295	509.647	-16,352
EHRENBURG IMPROVEMENT ASSOCIATION	210	232	232		294	325	325	0
CIBOLA VALLEY 1	14,202	14,350	15,618		19,864	20,072	21,843	-1,771
CIBOLA NATIONAL WILDLIFE REFUGE	13,615	14,264	14,264	0	21,960	23,005	23,005	-1,,,,
IMPERIAL NATIONAL WILDLIFE REFUGE	2.002	2.605	3,799	-1,194	3,228	4,200	6,128	-1,928
BLM PERMITEES (PARKER DAM to IMPERIAL DAM)	765	844	844	-1,104	1,177	1,299	1,299	-1,320
CHA CHA, LLC	835	985	1,365		1,285	1,515	2,100	-585
BEATTIE FARMS	489	567	722		752	875	1,110	-235
YUMA PROVING GROUND	474	513	516	_	474	513	516	-3
GILA MONSTER FARMS	3,924	4,495	5,273		7,047	8,073	9,156	-1,083
WELLTON-MOHAWK IDD	245,440	265,125	278,000	-12,875	357,829	403,714	423,333	-19,619
BLM PERMITEES (BELOW IMPERIAL DAM)	67	74	74	-12,070	103	114	114	-10,015
CITY OF YUMA	11,325	13.856	16.201	-2,345	20,922	25,388	27,500	-2,112
MARINE CORPS AIR STATION YUMA	1,094	1,254	1,320	-2,040	1,094	1,254	1,320	-66
UNION PACIFIC RAILROAD	21	25	29		40	48	48	-00
UNIVERSITY OF ARIZONA	904	1,017	1,050		904	1,017	1,050	-33
YUMA UNION HIGH SCHOOL DISTRICT	109	126	150		148	171	200	-29
DESERT LAWN MEMORIAL	21	23	23	_	30	33	33	-23
NORTH GILA VALLEY IRRRIGATION DISTRICT	8.284	9.024	11,563		38.442	43.742	44,200	-458
YUMA IRRIGATION DISTRICT	32,954	37,363	37,835		63,344	72,097	69,900	2,197
YUMA MESA I.D.D.	120.576	136.015	150,455	_	203,400	231,101	242,080	-10,979
UNIT "B" IRRIGATION DISTRICT	16.322	17.937	20.816	_	24.053	26.640	29,400	-2,760
FORT YUMA INDIAN RESERVATION	1,353	1,494	1,494	_	2,083	2,299	2,299	-2,700
YUMA COUNTY WATER USERS' ASSOCIATION	215,862	242,102	242,377		297,795	345,928	360,400	-14,472
COCOPAH INDIAN RESERVATION	632	897	1,686	_	798	1,204	2,585	-1,381
RECLAMATION-YUMA AREA OFFICE	206	227	227		206	227	2,363	-1,361
RETURN FROM SOUTH GILA WELLS	200	221	221		200	221	221	٩
INC. TORIN TROIN SOOTH GILA WEELS								
TOTAL ARIZONA	2,140,993	2,440,479	2,500,784		2,829,221	3,258,999	3,357,929	
CAP	1,155,596	1,368,576				1,368,576		
ALL OTHERS	985,397	1,071,903	1,131,284			1,890,423	1,988,429	
YUMA MESA DIVISION, GILA PROJECT	161,814	182,402	199,853	-17,451		346,940		
ARIZONA ADJUSTED APPORTIONMENT CALCULATION								
Arizona Basic Apportionment		2,800,000						
System Conservation Water - Pilot System Conservation Program <sup>2</sup>		(360)						
System Conservation Water - Colorado River Indian Tribes (CRIT) <sup>3</sup>		(50,000)						
System Conservation water - Colorado River Indian Tribes (CRIT)		(50,000)						

System Conservation Water - Colorado River Indian Tribes (CRIT) <sup>3</sup>
System Conservation Water - Fort McDowell Yavapai Nation (FMYN) <sup>4</sup> 50,000) (13,933)System Conservation Water - Mohave Valley I.D.D. (MVIDD) 5 (6,925) System Conservation Water - Gila River Indian Community (GRIC) 6 (40,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) 7 (4,685) Creation of Extraordinary Conservation ICS - GRIC (Estimated) 8,9 (40.000)Arizona DCP Contribution 10 (203,392)Total State Adjusted Apportionment 2.440.705 Excess to Total State Adjusted Apportionment (226)

Estimated Allowable Use for CAP

1 Includes the following water users within the Cibola Valley: Cibola Valley IDD. Arizona Game and Fish Commission, GSC Farms, Red River Land Co., Western Water, and the Hopi Tribe,

1.368.326

NOTES: Click on Arizona Schedules and Approvals above for incoming diversion schedules and approvals.

<sup>&</sup>lt;sup>2</sup> The estimated amount of System Conservation Water that will be created by the City of Bullhead City pursuant to System Conservation Implementation Agreement (SCIA) No. 15-XX-30-W0587, as main in Lake Mead to benefit system storage.

<sup>3</sup> System Conservation Water to be created by CRIT pursuant to the Agreement Among the United States of America, Through the Department of the Interior, Bureau of Reclamation, the State of Arizona, Through the Arizona Department of Water Resources, the Central Arizona Water Conservation District, and the Colorado River Indian Tribes to Fund the Creation of Colorado River System Water Through Voluntary Water Conservation and Reductions in use During Calendar Years 2020-2022. This System Conservation Water will remain in Lake Mead to benefit system storage.

<sup>4</sup> CAP water being conserved by FMYN pursuant to SCIA No. 20-XX-30-W0688, which will remain in Lake Mead to benefit system storage. In accordance with this SCIA and Section 3.b of the Drought Contingency Plan Agreement (LB DCP Agreement), the Bureau of Reclamation intends to apply this water towards the Secretary of the Interior's commitment to create or conserve 100,000 AF per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the Lower Basin.

<sup>&</sup>lt;sup>5</sup> System Conservation Water to be created by MVIDD pursuant to SCIA No. 20-XX-30-W0686, which will remain in Lake Mead to benefit system storage. In accordance with this SCIA and Section 3.b of the LB DCP Agreement, Reclamation intends to apply this water towards the Secretary's commitment to create or conserve 100,000 AF per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the Lower Basin.

<sup>&</sup>lt;sup>6</sup> CAP water being conserved by GRIC pursuant to SCIA No. 21-XX-30-W0713, which will remain in Lake Mead to benefit system storage. In accordance with this SCIA and Section 3.b of the LB DCP Agreement, Reclamation intends to apply this water towards the Secretary's commitment to create or conserve 100,000 AF per annum or more of Colorado River System water to contribute to conserve of water supplies in Lake Mead and other Colorado River reservoirs in the Lower Basin.

<sup>7</sup> CRIT has been approved to create up to 4,685 AF of Extraordinary Conservation (EC) ICS in 2021. The actual amount of EC ICS created by CRIT will be based on final accounting and verification.

<sup>&</sup>lt;sup>8</sup> CAP water being conserved by GRIC in 2021 to create EC ICS. The actual amount of EC ICS created by GRIC will be based on final accounting and verification

<sup>&</sup>lt;sup>9</sup> When combined with the approved EC ICS creation amounts of other ICS Creators in the state of Arizona, the total amount of EC ICS approved for creation in the state of Arizona is 110,185 AF, which exceeds the state's annual creation limit set forth in Section XI.G.3.B.4 of the 2007 Interim Guidelines. In accordance with Section XI.G.3.B.4 and Section IV.B of the Lower Basin Drought Contingency Operations (LBOps), the total amount of EC ICS that may be created by the states of Arizona, California, and Nevada in 2021 will be limited to 625,000 AF. Additionally, the total amount accumulated in Arizona's ICS accounts will be limited in accordance with Section IV.C. of LBOps.

<sup>10</sup> In accordance with Sections III.B.1.a and III.E.4 of LBOps, the state of Arizona is required to make a DCP Contribution in the total amount of 203,392 AF in 2021. This includes the annual contribution amount required under Section III.B.1.a of LBOps (192,000 AF) and the state's 2020 DCP Contribution Deliciency amount of 11,392 AF, as shown in Table 23 in the 2020 Colorado River Accounting and Water Use Report. In accordance with the Agreement Regarding Lower Basin Drought Contingency Plan Obligations, it is currently anticipated that the required DCP Contribution will be made by the Central Arizona Water Conservation District (CAWCD) through the simultaneous creation and conversion of EC ICS to DCP ICS and the creation of Non-ICS Water (reductions in consumptive use). CAWCD has been approved to create up to 60,500 AF of EC ICS in 2021. The actual amount of EC ICS created by CAWCD and credited toward the DCP Contribution will be based on final accounting and



LOWER COLORADO BASIN REGION
CY 2021

CALIFORNIA WATER USERS

FORECAST OF END OF YEAR CONSUMPTIVE USE

FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS

California Schedules and Approvals

**Historic Use Records (Water Accounting Reports)** 

NOTE:

Diversions and uses that are pending approval are noted in red

Water users with a consumptive use entitlement - Excess to
Estimated Use column indicates overrun/underrun of entitlement.
Dash in this column indicates water user has a diversion entitlement.
Water user with a diversion entitlement - Excess to Approved
Diversion column indicates overrun/underrun of entitlement. Dash is
this column indicates water user has a consumptive use entitlement.

				Excess to				Excess to
	Use	Forecast	Estimated	Estimated	Diversion	Forecast	Approved	Approved
	To Date	Use	Use	Use	To Date	Diversion	Diversion	Diversion
WATER USER	CY 2021							
CALIFORNIA PUMPERS	1,326	1,464	1,464		2,397	2,646	2,646	0
FORT MOJAVE INDIAN RESERVATION, CA	6,573	7,355	8,996		12,220	13,673	16,720	-3,047
CITY OF NEEDLES (includes LCWSP use)	1,045	1,241	1,605	-364	1,704	1,979	2,261	-282
METROPOLITAN WATER DISTRICT	887,766	1,075,956			890,167	1,078,767		
COLORADO RIVER INDIAN RESERVATION, CA	4,542	5,014	5,014	_	7,526	8,307	8,307	0
PALO VERDE IRRIGATION DISTRICT	336,199	335,360	343,672	_	709,086	769,819	774,000	-4,181
YUMA PROJECT RESERVATION DIVISION	32,096	37,307	46,687	_	66,172	78,415	90,394	-11,979
YUMA PROJECT RESERVATION DIVISION - INDIAN UNIT					35,916	41,739	45,384	-3,645
YUMA PROJECT RESERVATION DIVISION - BARD UNIT					30,256	36,676	45,010	-8,334
YUMA ISLAND PUMPERS	1,604	1,770	1,770		2,898	3,199	3,199	0
FORT YUMA INDIAN RESERVATION - RANCH 5	1,151	1,273	938	_	2,083	2,303	1,696	607
IMPERIAL IRRIGATION DISTRICT 1	2,276,468	2,521,550	2,622,800	-101,250	2,353,447	2,617,532	2,694,973	
SALTON SEA SALINITY MANAGEMENT	0	0	0	0	0	0	0	
COACHELLA VALLEY WATER DISTRICT	314,317	360,317	379,000	-18,683	337,379	387,176	390,812	
OTHER LCWSP CONTRACTORS	477	527	527	_	835	922	922	0
CITY OF WINTERHAVEN	57	63	63	_	82	91	91	0
CHEMEHUEVI INDIAN RESERVATION	189	209	209	_	10,273	11,340	11,340	0
TOTAL CALIFORNIA	3.863.810	4.349.406			4.396.269	4.976.169	5.075.574	

### CALIFORNIA ADJUSTED APPORTIONMENT CALCULATION California Basic Apportionment

California Basic Apportionment 4,400,000

System Conservation Water - Pilot System Conservation Program 2 (145)

System Conservation Water - PVID Fallowing Program 3 (12,650)

IID Creation of Extraordinary Conservation ICS - Stored in Lake Mead (Estimated) 4 (1,579)

MWD Creation of Extraordinary Conservation ICS (Estimated) 5 (36,220)

Total State Adjusted Apportionment 4,349,406

Excess to Total State Adjusted Apportionment 0

Estimated Allowable Use for MWD 1,112,176

<sup>&</sup>lt;sup>5</sup> MWD has been approved to create up to 450,000 AF of EC ICS in 2021, less the amount of EC ICS created by IID, and further limited to the amount that, when added to the EC ICS created by the states of Arizona and Nevada, does not exceed 625,000 AF. The actual amount of EC ICS created by MWD will be based on final accounting and verification.



As shown here, IID's Approved Diversion and Estimated Use values reflect the maximum amount of Colorado River water available to IID in 2021.

<sup>&</sup>lt;sup>2</sup> System Consevation Water to be conserved by the City of Needles pursuant to System Conservation Implementation Agreement No. 15-XX-30-W0596, executed under the Pilot System Conservation Program. This water will remain in Lake Mead to benefit system storage.

<sup>&</sup>lt;sup>3</sup> The estimated amount of System Conservation Water that will be created pursuant to Funding Agreement No. 21-XX-30-W0714 (Funding Agreement). This System Conservation Water will remain in Lake Mead to benefit system storage. In accordance with the Funding Agreement, the Bureau of Reclamation intends to apply 50 percent this water towards the Secretary of the Interior's commitment to create or conserve 100,000 AF or more per annum of System Conservation Water pursuant to Section 3.b of the Lower Basin Drought Contingency Plan Agreement.

<sup>&</sup>lt;sup>4</sup> IID has been approved to create up to 62,000 AF of "Additional Conserved Water" in 2021 for purposes including, but not limited to, the creation of ICS. Due to limitations set forth in the California ICS Agreement, IID may currently only store up to 1,579 AF in its Lake Mead ICS Account. Should IID elect to use "Additional Conserved Water" to create and credit EC ICS to the ICS account of another California contractor through application of Section XI.G.3.B.8 of the 2007 Interim Guidelines, IID must first obtain written agreement of the contractor. The actual amount of "Additional Conserved Water" created by IID in 2021 will be based on final accounting and verification.



NOTE:

Diversions and uses that are pending approval are noted in red

 Water users with a consumptive use entitlement - Excess to Estimated Use column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a diversion entitlement. Water user with a diversion entitlement - Excess to Approved
 Diversion column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a consumptive use entitlement.

#### **NEVADA WATER USERS**

FORECAST OF END OF YEAR CONSUMPTIVE USE

FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS

**Nevada Schedules and Approvals** 

**Historic Use Records (Water Accounting Reports)** 

				Excess to				Excess to
	Use	Forecast	Estimated	Estimated	Diversion	Forecast	Approved	Approved
	To Date	Use	Use	Use	To Date	Diversion	Diversion	Diversion
WATER USER	CY 2021	CY 2021	CY 2021	CY 2021	CY 2021	CY 2021	CY 2021	CY 2021
ROBERT B. GRIFFITH WATER PROJECT (SNWS)	399,135	450,792	452,709	-1,917	398,900	450,557	452,709	-2,152
LAKE MEAD NRA, NV - Diversions from Lake Mead	513	712	1,500		513	712	1,500	-788
LAKE MEAD NRA, NV - Diversions from Lake Mohave	211	278	500		211	278	500	-222
BASIC MANAGEMENT INC.	4,800	6,118	8,208		4,800	6,118	8,208	-2,090
CITY OF HENDERSON (BMI DELIVERY)	9,277	12,616	15,878		9,277	12,616	15,878	-3,262
NEVADA DEPARTMENT OF WILDLIFE	10	12	12	0	893	1,101	1,000	
PACIFIC COAST BUILDING PRODUCTS INC.	800	942	928		800	942	928	14
BOULDER CANYON PROJECT	156	172	172		272	300	300	0
BIG BEND WATER DISTRICT	1,607	2,199	4,733		3,338	4,708	10,000	-5,292
FORT MOJAVE INDIAN TRIBE	2,526	2,785	4,020		3,772	4,159	6,000	-1,841
LAS VEGAS WASH RETURN FLOWS	-195,507	-232,161	-229,923					
TOTAL NEVADA	223,528	244,465	258,737	-1,917	422,776	481,491	497,023	-15,633
SOUTHERN NEVADA WATER SYSTEM (SNWS)	203,628	218,631				450,557		
ALL OTHERS	19,900	25,834				30,934		
NEVADA USES ABOVE HOOVER	219,395	239,481				472,624		
NEVADA USES BELOW HOOVER	4,133	4,984				8,867		
THE WAST GOLD BLEGT HOUTEN	7,100	4,004				3,007		

#### Tributary Conservation (TC) Intentionally Created Surplus (ICS)

Southern Nevada Water Authority (SNWA) Creation of TC ICS (Approved) 1

43,000

300,000

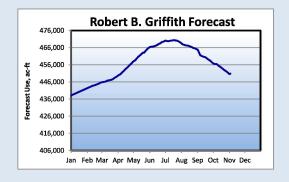
#### **NEVADA ADJUSTED APPORTIONMENT CALCULATION**

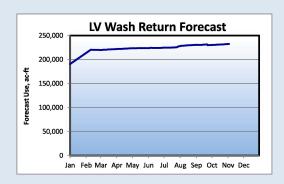
Excess to Total State Adjusted Apportionment

Nevada Basic Apportionment SNWA Creation of Extraordinary Conservation (EC) ICS (Estimated) 2 Total State Adjusted Apportionment

(55,535) 244,465 0

<sup>2</sup> SNWA has been approved to create up to 100,000 AF of EC ICS in 2021. The actual amount of EC ICS created by SNWA will be based on final accounting and verification. The total amount accumulated in Nevada's ICS accounts will be limited in accordance with Section IV.C. of the Lower Basin Drought Contingency Operations.





NOTES: Click on Nevada Schedules and Approvals above for incoming diversion schedules and approvals.

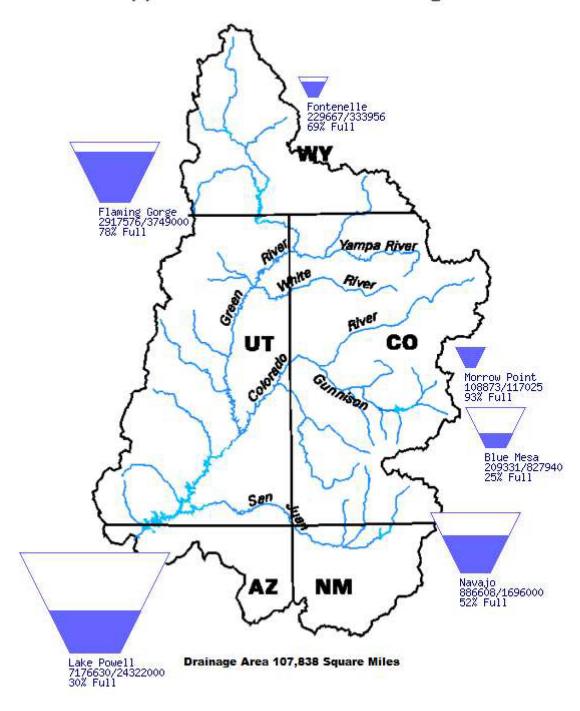
<sup>1</sup> SNWA has been approved to create up to 43,000 AF of TC ICS in 2021. The actual amount of TC ICS created by SNWA will be based on final accounting and verification.

### **Upper Colorado Region Water Resources Group**

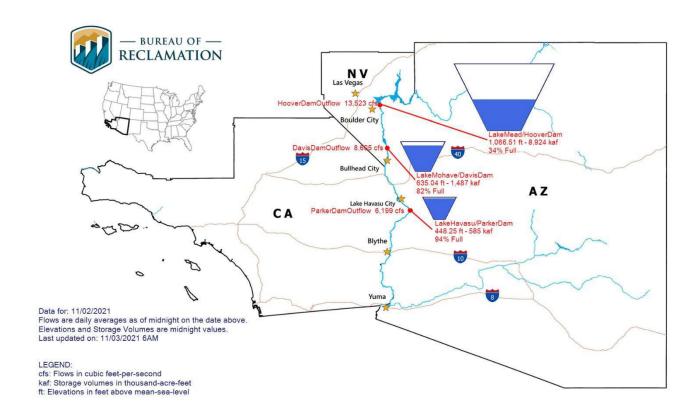
**River Basin Tea-Cup Diagrams** 

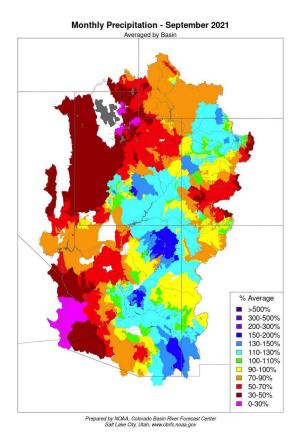
Data Current as of: 11/02/2021

## Upper Colorado River Drainage Basin

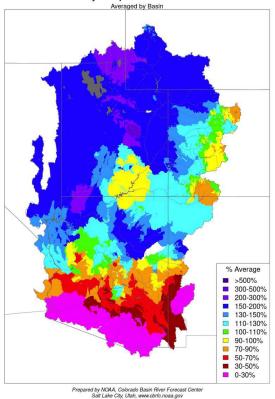


### **Lower Colorado River Teacup Diagram**

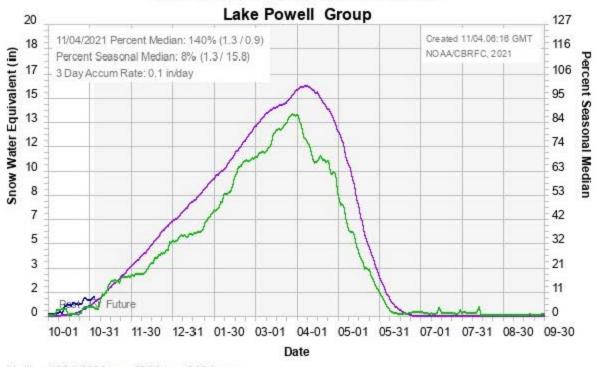




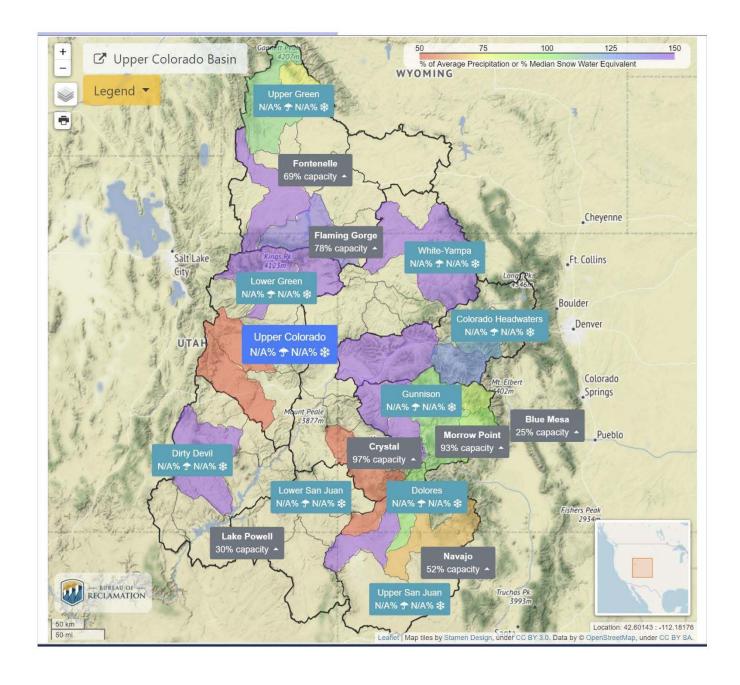




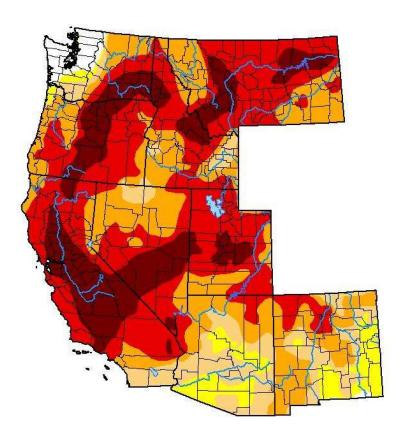
#### Colorado Basin River Forecast Center



Median 1991-2020 - 2022 - 2021 -



U.S. Drought Monitor
West



#### October 26, 2021

(Released Thursday, Oct. 28, 2021) Valid 8 a.m. EDT

Drought Conditions (Percent Area)

J	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.14	97.86	92.07	80.39	53.90	18.24
Last Week 10-19-2021	2.40	97.60	91.86	80.42	58.32	20.21
3 Month's Ago 07-27-2021	0.95	99.05	95.55	86.18	64.60	24.63
Start of Calendar Year 12-29-2020	13.52	86.48	75.49	63.25	45.40	23.76
Start of Water Year 09-28-2021	1.32	98.68	93.35	81.07	58.72	21.77
One Year Ago 10-27-2020	9.38	90.62	74.29	53.70	38.41	5.04

#### Intensity:

None D2 Severe Drought
D0 Abnormally Dry D3 Extreme Drought
D1 Moderate Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

### Author:

Richard Heim NCEI/NOAA

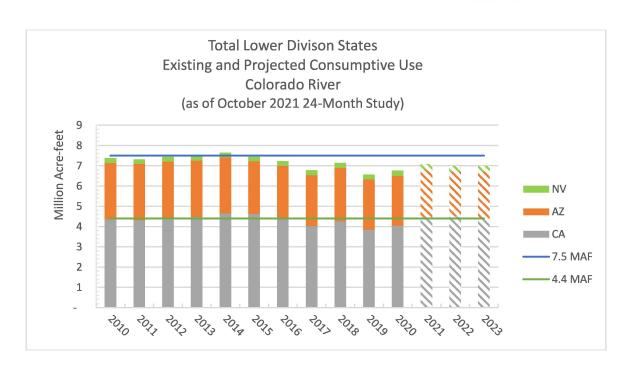


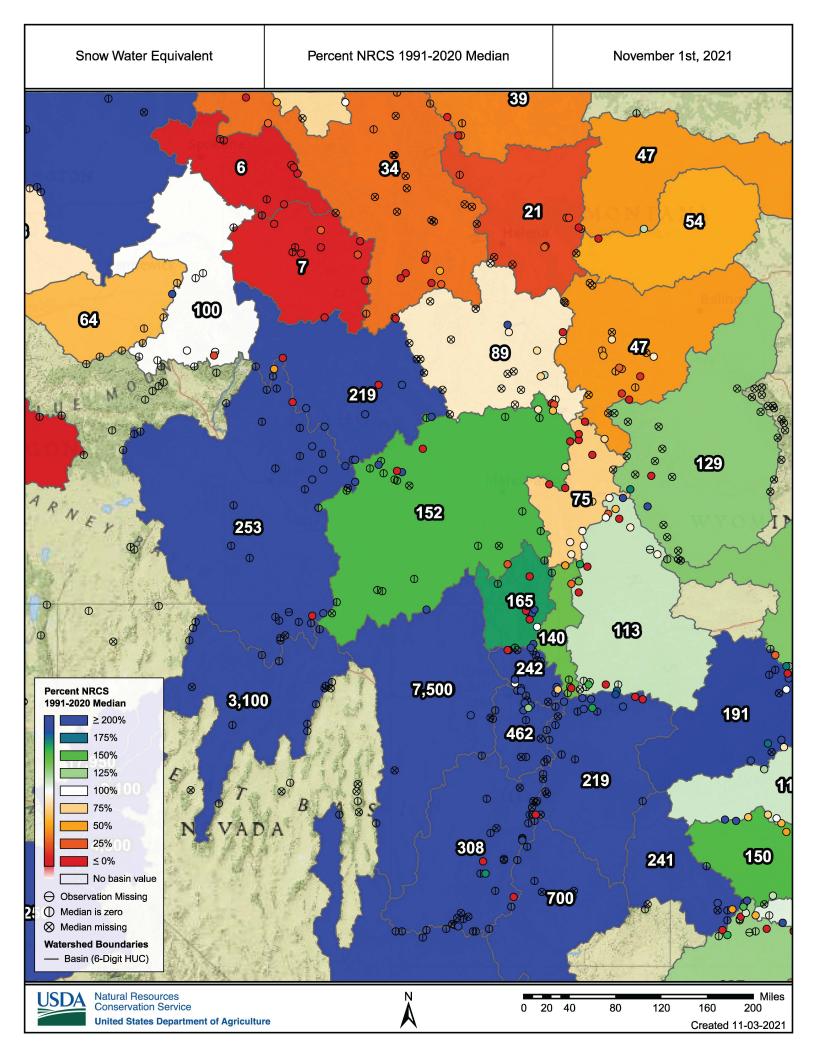


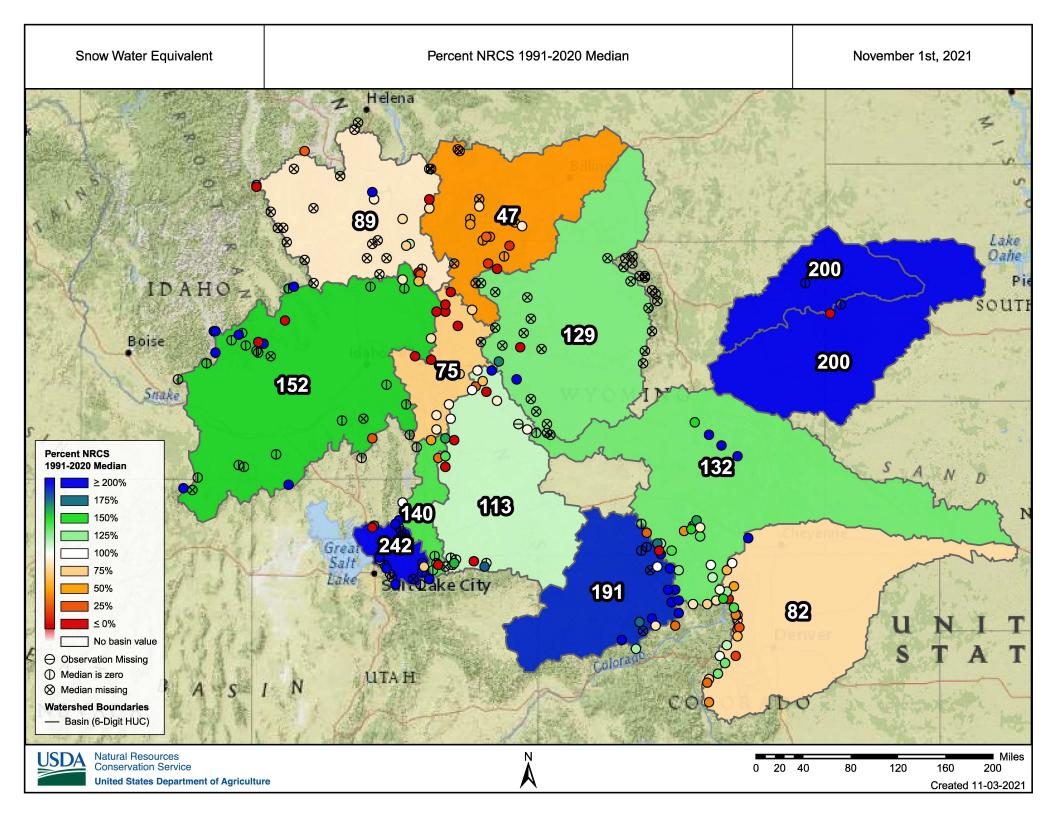




droughtmonitor.unl.edu







# October 2021 24-Month Study Projections Lake Powell and Lake Mead: End of Month Elevation Charts



#### **Explanation of Hydrologic Scenarios**

In addition to the October 2021 24-Month Study based on the Most Probable inflow scenario, Reclamation has conducted model runs in October to determine a possible range of reservoir elevations under Probable Minimum and Probable Maximum inflow scenarios. The Probable Minimum inflow scenario reflects a dry hydrologic condition which statistically would be exceeded 90% of the time. The Most Probable inflow scenario reflects a median hydrologic condition which statistically would be exceeded 50% of the time. The Probable Maximum inflow scenario reflects a wet hydrologic condition which statistically would be exceeded 10% of the time. There is approximately an 80% 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 results in reservoir elevations falling outside the ranges indicated in these reports.

Consistent with the Upper Basin DROA provisions to protect a target elevation at Lake Powell of 3,525 feet, these October 2021 24-Month scenarios include releases from the upstream initial units of the Colorado River Storage Project Act to deliver an additional 181 thousand acre-feet (kaf) to Lake Powell by the end of December 2021 and is included in all three model runs described above. The additional releases began in July and will continue to be implemented on the following schedule:

Upper Basin [	Drouaht I	Response	Operations	Releases
---------------	-----------	----------	------------	----------

	Jul (kaf)	Aug (kaf)	Sep (kaf)	Oct (kaf)	Nov (kaf)	Dec (kaf)	Total (kaf)
Flaming Gorge Reservoir	13	42	43	27	0	0	125
Blue Mesa Reservoir	0	14	18	4	0	0	36
Navajo Reservoir	0	0	0	0	10	10	20
Total	13	56	61	31	10	10	181

The releases detailed above are in addition to the already established releases determined by operational plans for each of the identified facilities. The additional delivery of 181 kaf is equivalent to Lake Powell's elevation of approximately three feet.

#### October 2021 Probable Minimum 24-Month Study<sup>1</sup>

The water year 2022 unregulated inflow in the Probable Minimum inflow scenario is 4.00 million acre-feet (maf), or 42% of average. Consistent with the Interim Guidelines, the October Probable Minimum 24-Month Study includes a release volume from Glen Canyon Dam of 7.48 maf in water year 2022 and 7.00 maf in water year 2023. Under the probable minimum scenario, Lake Powell's elevation is projected to be 3,482.53 feet on December 31, 2022. With intervening flows between Lake Powell and Lake Mead of 0.764 maf in calendar year 2022, Lake Mead's elevation is projected to be 1,047.86 feet on December 31, 2022.

#### October 2021 Most Probable 24-Month Study<sup>1</sup>

The water year 2022 unregulated inflow into Lake Powell in the August Most Probable inflow scenario is 7.40 maf, or 77% of average. Consistent with the Interim Guidelines, the October Probable Minimum 24-Month Study includes a release volume from Glen Canyon Dam of 7.48 maf in water year 2022 and 7.82 maf in water year 2023. Under the most probable scenario, Lake Powell's elevation is projected to be 3,528.08 feet on December 31, 2022. With intervening flows between Lake Powell and Lake Mead of 0.875 maf in calendar year 2022, Lake Mead's elevation is projected to be 1,050.63 feet on December 31, 2022.

#### October 2021 Probable Maximum 24-Month Study<sup>1</sup>

The water year 2022 unregulated inflow in the Probable Maximum inflow scenario is 15.60 maf, or 162% of average. Consistent with the Interim Guidelines, the October Probable Minimum 24-Month Study includes a release volume from Glen Canyon Dam of 7.48 maf in water year 2022 and 9.00 maf in water year 2023. Under the probable maximum scenario, Lake Powell's elevation is projected to be 3,608.84 feet on December 31, 2022. With intervening flows between Lake Powell and Lake Mead of 0.994 maf in calendar year 2022, Lake Mead's elevation is projected to be 1,061.17 feet on December 31, 2022.

The 2021 AOP is available online at: https://www.usbr.gov/uc/water/rsvrs/ops/aop/AOP21.pdf.

The Draft 2022 AOP is available online at: <a href="https://www.usbr.gov/lc/region/g4000/AOP2022/2022%20AOP">https://www.usbr.gov/lc/region/g4000/AOP2022/2022%20AOP</a> <a href="https://www.usbr.gov/lc/region/g4000/AOP2022/2022%20AOP">https://www.usbr.gov/lc/region/g4000/AOP2022/20

The Interim Guidelines are available online at: https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.

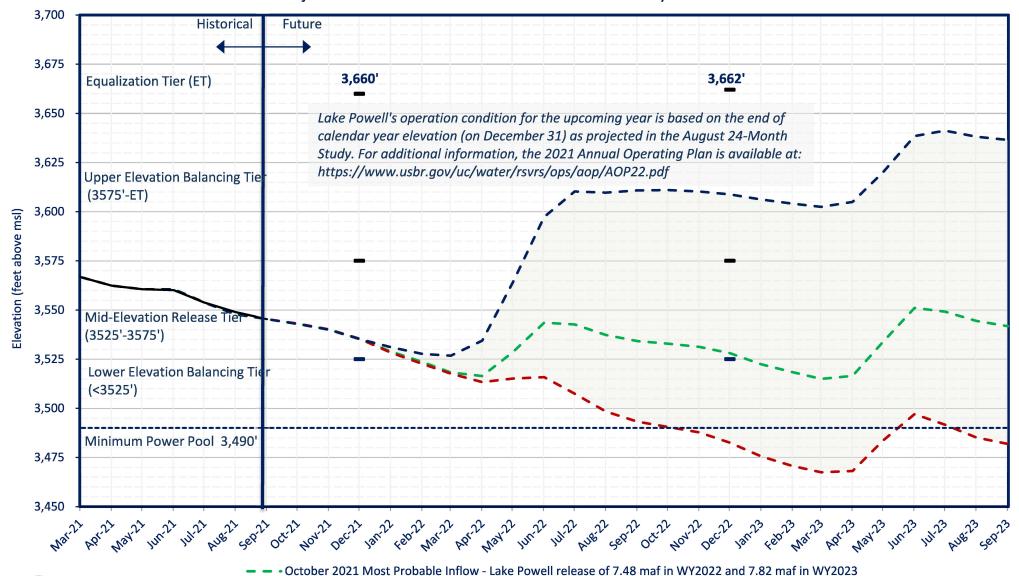
The Colorado River DCPs are available online at: https://www.usbr.gov/dcp/finaldocs.html.

The Upper Basin Hydrology Summary is available online at: <a href="https://www.usbr.gov/uc/water/crsp/studies/24Month">https://www.usbr.gov/uc/water/crsp/studies/24Month</a> 10 ucb.pdf.

<sup>&</sup>lt;sup>1</sup> This October 2021 24-Month Study includes the Colorado Basin River Forecast Center shift to the 1991-2020 period of record. All statistics shown in the study refer to this new 30-year period of record.

#### **Lake Powell End of Month Elevations**

Projections from the October 2021 24-Month Study Inflow Scenarios

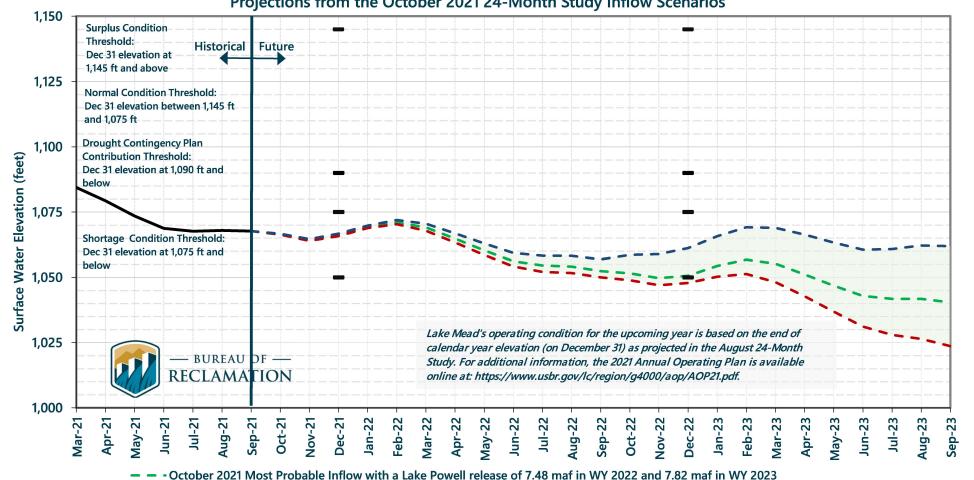




- October 2021 Minimum Probable Inflow Lake Powell release of 7.48 maf in WY2022 and 7.0 maf in WY2023
- October 2021 Maximum Probable Inflow Lake Powell release of 7.48 maf in WY2022 and 9.0 maf in WY2023
- **Historical Elevations**



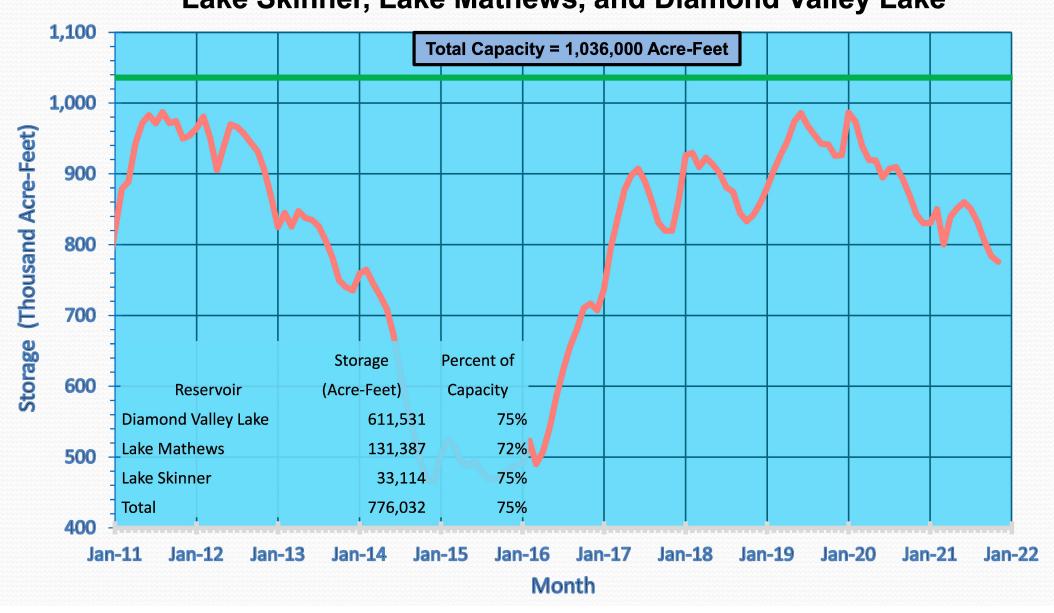




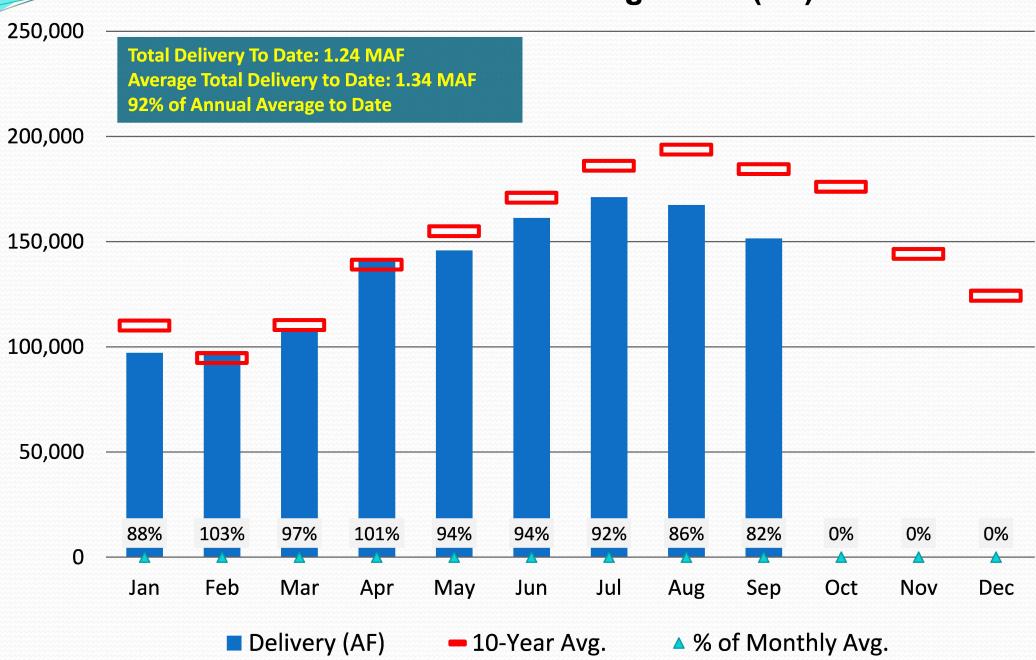
- October 2021 Minimum Probable Inflow with a Lake Powell release of 7.48 maf in WY 2022 and 7.00 maf in WY 2023
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The Drought Response Operations Agreement (DROA) is available online at: https://www.usbr.gov/dcp/finaldocs.html.

# MWD's Combined Reservoir Storage as of November 1, 2021 Lake Skinner, Lake Mathews, and Diamond Valley Lake



# 2021 Water Deliveries to Agencies (AF)





### United States Department of the Interior

BUREAU OF RECLAMATION 125 South State Street, Room 8100 Salt Lake City, UT 84138-1102



VIA ELECTRONIC MAIL ONLY

#### Memorandum

To: Chief of Staff

Office of the Assistant Secretary for Water and Science

From: Wayne G. Pullan

Chair, Glen Canyon Leadership Team

Secretary's Designee to the Adaptive Management Work Group (acting)

Subject: Notification of Decision to Not Implement a Fall 2021 High Flow Experiment at

Glen Canyon Dam

On September 28, 2021, the Glen Canyon Planning/Implementation Team (PI Team) finalized its recommendation regarding a potential fall High Flow Experiment (HFE) at Glen Canyon Dam in November 2021 (Attachment - Final Recommendation Regarding a Fall 2021 High Flow Experiment at Glen Canyon Dam, November 2021). While the PI Team reached consensus in its opposition to a 192-hour extended duration fall HFE, members were divided in the assessment of a shorter 60-hour fall HFE. The recommendation was developed and evaluated within the adaptive management framework and provisions of the 2016 Record of Decision for the Glen Canyon Dam Long Term Experimental and Management Plan Final Environmental Impact Statement (LTEMP ROD) concerning annual planning for flow-based experiments.

In accordance with the LTEMP, the Department may make the decision to conduct flow-based experiments (e.g., High Flow Experiments, Bug Flows, Trout Management Flows, and Low Summer Flows) at Glen Canyon Dam if it is determined that there are no unacceptable adverse impacts on other resource conditions. LTEMP states that "Prior to implementation of any experiment, the relative effects of the experiment on the following resource areas will be evaluated and considered: (1) water quality and water delivery, (2) humpback chub, (3) sediment, (4) riparian ecosystems, (5) historic properties and traditional cultural properties, (6) Tribal concerns, (7) hydropower production and WAPA's assessment of the status of the Basin Fund, (8) the rainbow trout fishery, (9) recreation, and (10) other resources." Water Year 2021 was the fourth full year of implementing the process for annual experimental planning under the LTEMP ROD. For future experimental planning, the Department welcomes input from each Leadership Team member as to whether the current process or another process should be used to satisfy the coordination and communication requirements under the LTEMP ROD.

Traditionally Associated Tribes shall be notified at least 30 days in advance of planned experimental flows. On September 20, 2021, notification of the possible fall HFE and offer for consultation was emailed to the Tribes and Parties to the LTEMP National Historic Preservation Act Section 106 Programmatic Agreement (LTEMP PA). No requests for consultation regarding the potential fall HFE were received.

The LTEMP ROD specifies the representation requirements for planning experiments at Glen Canyon Dam and is based on past successful planning and implementation of flow-based experiments. The PI Team includes technical representatives from the Bureau of Reclamation (Reclamation), the National Park Service (NPS), the U.S. Fish and Wildlife Service (FWS), the Bureau of Indian Affairs (BIA), the U.S. Geological Survey's (USGS) Grand Canyon Monitoring and Research Center (GCMRC), Western Area Power Administration (WAPA), the Arizona Game and Fish Department (AZGFD), the seven Colorado River Basin States (States), and the Upper Colorado River Commission (UCRC). The Glen Canyon Leadership Team (Leadership Team) is made up of decision makers from these same agencies and states along with the UCRC.

The Leadership Team has reviewed and considered the PI Team's recommendation, including the assessment of key resources that may be impacted or affected by a 60-hour fall HFE. The Leadership Team met via webinar on September 29, 2021 and, consistent with the PI Team's recommendation, members were divided in their assessment of a 60-hour fall HFE.

The 2021 water year was an historically difficult year for the Western states, including tribes, fisheries, wildlife, farmers, ranchers, and communities. The Colorado River Basin is experiencing its 22<sup>nd</sup> year of drought and many years of low-runoff conditions. Following two extremely dry periods of runoff in 2020 (54% of average annual inflow) and 2021 (33% of average annual inflow), the two reservoirs (Lake Mead and Lake Powell) are at their lowest levels since they were originally filled. The Colorado River Drought Contingency Plan Authorization Act (P.L. 116-14) directs Interior to "operate Colorado River reservoirs" according to Drought Contingency Plan agreements, including the Drought Response Operations Agreement (DROA), which establishes an objective for Glen Canyon Dam operations to minimize the risk of falling below a "Target Elevation" of 3525 feet (ft). The potential effect of a HFE on the Target Elevation is an appropriate consideration when determining whether to conduct a HFE.

As a response to the hydrologic conditions and the need to protect critical levels at Lake Powell as part of the DROA, Reclamation began releasing water from upper reservoirs to Lake Powell in July under the Emergency Action provisions of DROA. These releases from upper reservoirs are to help reduce the risk of Lake Powell going below the DROA-identified Target Elevation of 3525 ft. These DROA actions will continue through the calendar year. While these actions have helped to reduce the risk for next year, it is likely that additional actions may or will be needed to protect critical levels.

The sediment triggers outlined by LTEMP ROD have been met to consider a 2021 fall HFE. Advocates for the 2021 fall HFE are concerned that the ability to implement HFEs in the future may be limited, should drought conditions continue. They also cite the much-needed sediment

resource benefits from a fall HFE given that it has been three years since the most recent HFE (fall 2018) was triggered and implemented. Implementation of a fall HFE would not impact the annual release volume from Lake Powell, which is set at 7.48 maf in WY 2022. Due to relatively low winter flows, sandbar increases would be retained through winter such that the 60-hour fall HFE would result in a net 20% increase to sandbar size in April 2022 relative to October 2021.

The majority of Leadership Team members indicated that one or more of the following concerns amount to unacceptable adverse impacts on resource areas as identified for consideration by the LTEMP ROD.

Implementation of a 60-hour fall HFE would temporarily reduce Lake Powell reservoir elevation by approximately 2 feet, which reduction is contrary to the objective of an approximately 3 feet of elevation increase made possible due to additional releases from upper basin initial units (Flaming Gorge, Navajo, and Aspinall) currently being implemented under the DROA. As a result, Leadership Team members have indicated that implementation of a fall HFE in November 2021 may result in reduced support for future drought response operations—which releases will likely be necessary to avoid the water elevation dropping below 3,525 at Lake Powell. Further, under most probable hydrology a 60-hour fall HFE is projected to result in up to 15 additional days below 3,525 ft and an annual minimum elevation 0.7 ft lower than if no HFE were to be implemented. While these impacts to reservoir elevation could be mitigated by reallocation (reducing) releases in December, January, and February rather than March, April, and May, doing so would result in a greater direct cost to the Basin Fund for purchase power. The current condition and projections for the Basin Fund have elicited unprecedent actions by WAPA and Reclamation including deferred maintenance, a proposed rate increase, elimination of certain firm supply provisions in contracts, and a one-time pursuit of appropriations for environmental program base funding. The proposed HFE would worsen the condition of the Basin fund; direct costs to the Basin Fund are estimated at \$1.30M for March, April, May reallocation and at \$3.04M for December, January, February reallocation. The majority of Leadership Team members indicated that one or more of these concerns amount to unacceptable adverse impacts.

Based on the concerns expressed by both the Leadership Team and the PI Team, the determination of unacceptable adverse impacts, and the lack of consensus to implement a 60-hour fall HFE, I concur with the determination of unacceptable adverse impacts and I have decided not to conduct a fall HFE in November 2021. We will continue to work with our partners in future HFEs and in the protection of the Grand Canyon and our most important resources.

I am grateful to both the Leadership and the Planning/Implementation Teams for their dedication and commitment to the process for annual experimental planning and for your continued support of the Glen Canyon Dam Adaptive Management Program.

For the hearing impaired please call the Federal Relay System at (800) 877-8339 (TTY).

Attachment - Final Recommendation Regarding a Fall 2021 High Flow Experiment (HFE) at Glen Canyon Dam, November 2021

cc: Camille Calimlim Touton, Deputy Commissioner

Press Release

Humpback Chub Reclassified from Endangered to Threatened: Collaboration by Partners Has Improved Conservation Status

Action follows years of stakeholder collaboration to save this unique Colorado River Basin fish

October 15, 2021

#### Contact(s):

Joe Szuszwalak, 303-236-4336, joseph szuszwalak@fws.gov



Humpback chub (*Gila cypha*) as seen in the Little Colorado River, Summer 2021.© *Freshwaters Illustrated / USFWS* 

**DENVER** — Thanks to the hard work of state, regional, Tribal and federal agencies, as well as private partners, significant progress has been made conserving and recovering the humpback chub. Following a review of the best available science, the U.S. Fish and Wildlife Service is announcing that it has reclassified the humpback chub from endangered to threatened under the Endangered Species Act (ESA). Today's announcement follows the publication of the proposed rule in January 2020 and subsequent public comment period.

"Today's action is the result of the collaborative conservation that is needed to ensure the recovery of listed species," said Matt Hogan, Acting Regional Director for the Service. "Reclassifying this distinctive fish from endangered to threatened is the result of many years of cooperative work by conservation partners in the Upper Colorado River Endangered Fish Recovery Program and the Glen Canyon Dam Adaptive Management Program. We thank everyone involved for their efforts as we look toward addressing the remaining challenges in the Colorado River Basin."

The humpback chub was first documented in the Lower Colorado River Basin in the Grand Canyon in the 1940s and the upper Colorado River Basin in the 1970s. It was placed on the list of endangered species in 1967 due to impacts from the alteration of river habitats by large mainstem dams. This fish is uniquely adapted to live in the swift and turbulent whitewater found in the river's canyon-bound areas. The fleshy hump behind its head, which gives the fish its name, evolved to make it harder to be eaten by predators, and its large, curved fins allow the humpback chub to maintain its position in the swiftly moving current.



Westwater Canyon, UT – typical swiftwater habitat of the humpback chub. *Credit: Brian Hines, Utah Division of Wildlife Resources* 

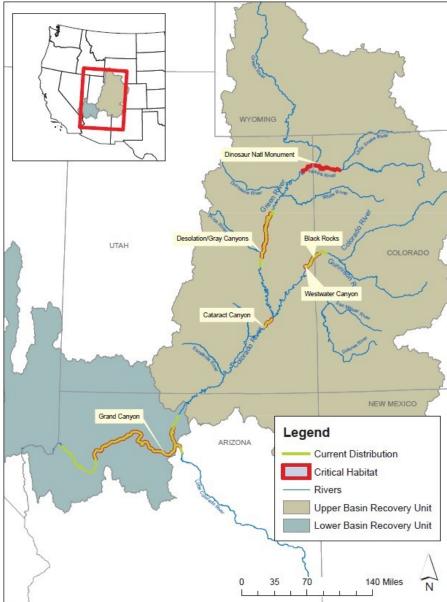
The Upper Basin Recovery Program's conservation and management actions have resulted in improved habitat and river flow conditions for the humpback chub over the past 15 years. These efforts have increased the Westwater Canyon population to more than 3,000 adults and stabilized populations in Black Rocks, Desolation & Gray, and Cataract canyons. All populations in the Upper Basin have stabilized or increased, even as Lake Powell elevations have declined. Flow conditions have also improved during this period, as partners have refined flow management.

Water releases along the river continue to support this and other endangered species in the basin. In the Lower Basin population, there are now more than 12,000 individuals in the Little

Colorado River and the Colorado River at their confluence and increasing densities in the Grand Canyon's western end due to the receding Lake Mead exposing river habitat. Additionally, successful efforts to reintroduce humpback chub into Havasu Creek and upstream portions of the Little Colorado River have expanded their range.

Ongoing multi-stakeholder partnerships are managing flows to improve habitat conditions for listed and sensitive riparian species in the Colorado River Basin, even as storage in the lakes decline. Drought conditions in 2021 highlight the continued importance of multi-stakeholder partnership programs in managing river conditions for these species and human needs. The final rule to reclassify the humpback chub from endangered to threatened does not relinquish ongoing monitoring or conservation actions; ESA protection to the species continues under this status.

Humpback chub conservation partners include the states of Utah, Colorado, Arizona, and New Mexico, as well as Tribal agencies, water users, power customers, recreational interests, and environmental organizations. Federal partners include the Bureau of Reclamation, National Park Service, and the Western Area Power Administration. These partners have all played a critical role in reaching conservation milestones for the species.



Humpback chub occupied range and critical habitat.

Credit: Julie Stahli/USFWS

In response to public comments, the final rule includes updated monitoring data demonstrating populations are more resilient than previously described. It also includes updated information on the potential effects of climate change on water availability in the Colorado River Basin.

Ongoing threats to the humpback chub that Recovery Program partners are addressing include threats from nonnative species such as smallmouth bass in the upper basin, uncertainties related to river flow, and the outcomes of a new cooperative agreement among partners in the Upper Basin Recovery Program.

As part of the final rule reclassifying the species from endangered to threatened, the Service has also finalized a 4(d) rule that reduces the regulatory requirements for state fish and wildlife agencies and other non-federal stakeholders when working to protect and recover the humpback chub. Examples of this work include creating refuge populations, expanding the range of the species, removing non-native fish species and creating catch-and-release fishing opportunities.

#### Learn more about 4(d) rules.

The final rule to reclassify the humpback chub from endangered to threatened is available for public inspection in the *Reading Room* today, and will be published in the *Federal Register* on October 18, 2021.