

MONTHLY REPORT TO THE COLORADO RIVER BOARD OF CALIFORNIA

November 10, 2021

COLORADO RIVER BASIN WATER SUPPLY CONDITIONS REPORT

As of November 8th, the surface water elevation at Lake Powell was 3,543.85 feet with 7.15 million-acre feet (MAF) of storage, or 29% of capacity. The surface water elevation at Lake Mead was 1,066.04 feet with 8.89 MAF of storage, or 34% of capacity. As of October 31st, the total system storage was 22.49 MAF, or 38% of capacity, which is about 5.64 MAF less than the total system storage at this same time last year.

As of November 2nd, the Upper Basin reservoirs, excluding Lake Powell, were 69% of capacity at Fontenelle Reservoir in Wyoming; 78% of capacity at Flaming Gorge Reservoir in Wyoming and Utah; 93% of capacity at Morrow Point, and 25% of capacity at Blue Mesa Reservoir in Colorado; and 52% of capacity at Navajo Reservoir in New Mexico.

The October 2021 observed Lake Powell inflow was 0.32 MAF (70% of normal), and the November 2021 forecast Lake Powell inflow forecast is 0.33 MAF (79% of normal). As of November 1st, the preliminary forecasted unregulated inflow into Lake Powell for Water Year (WY) 2022 is 7.80 MAF (81% of normal). The forecast April through July 2022 unregulated inflow into Lake Powell is 5.27 MAF (82% of normal). To date, WY-2022 precipitation is 125% of normal in the Upper Colorado River Basin.

COLORADO RIVER BASIN PROGRAM UPDATES

Colorado River Basin States Activities

Both the Upper and Lower Basins continue working on important activities addressing ongoing drought conditions in the Basin. The Upper Basin and Reclamation's Upper Colorado Region is focusing efforts on development of a drought operations plan for calendar-year (CY) 2022 pursuant to the Upper Basin Drought Contingency Plan (DCP). The CY-2022 drought operations would be intended to implement additional releases of water from up-stream facilities above Lake Powell to further protect critical elevations in Lake Powell (e.g., elevations 3,525 feet or 3,490 feet). Currently, the expectation is that the Upper Basin and Reclamation CY-2022 drought operations plan would be finalized in early 2022. The Lower Basin States are also expected to receive a draft of the plan for review and comment.

On November 5th, the three Lower Basin States and Reclamation provided a webinar for over 250 participants regarding the development of the proposed Lower Basin Plan to reduce the risk of Lake Mead reaching or declining below elevation 1,020 feet during CY-2022 and CY-2023. Recently confirmed Reclamation Commissioner Camille Touton provided some introductory remarks and introduced her team. Reclamation's modeling staff provided an overview of the current risks to the reservoir system based upon recent and projected hydrologic and water supply conditions. Even though the risk of Lake Mead declining to or below elevation 1,020 feet had been significantly reduced through implementation of the DCPs in 2019, the continuing basinwide drought conditions over the past two years have again significantly increased those risks. The August 2021 24-Month Study Report minimum probable projection indicated that Lake Mead could reach or go below elevation 1,030 feet as early as July 2023.

Southern Nevada Water Authority Deputy General Manager Colby Pellegrino provided a short overview of the initial risk-management modeling that the three Lower Basin states performed to help inform development of the proposed Lower Basin Plan. The goal was essentially slow the rate of decline in storage at Lake Mead and reduce the risk of Lake Mead reaching or declining below elevation 1,020 feet. The Lower Basin States evaluated additional annual contributions ranging from 250,000 acre-feet, 500,000 acre-feet, and 750,000 acre-feet, and determined that 500,000 acre-feet was likely effective and practical to protect Lake Mead from falling to 1,020 feet.

Arizona Department of Water Resources Director Tom Buschatzke, representing the three Lower Basin States, provided an overview of the proposed Lower Basin Plan to slow the decline of Lake Mead and reduce the risk of reaching or going below elevation 1,020 feet. The basic tenets of the proposed plan include the following:

- Conservation and storage of 500,000 acre-feet in Lake Mead in each of calendar-years 2022 and 2023;
- Contributions from Lower States and water users totaling \$100 million to help fund the proposed water conservation activities;
- Involvement of the United States in creating conserved water supplies and providing up to \$100 million for water conservation activities; and
- Explore opportunities for the implementation of additional water conservation activities in Mexico under existing Minute No. 323 authorities.

While not all of the potential participants in the Lower Basin Plan have been identified, it is expected to include water users across the Lower Basin, including Native American tribes.

Conserved water supplies that could be created pursuant to this Plan could include new System Conservation, new Intentionally Created Surplus (ICS) supplies, and leaving existing ICS supplies in Lake Mead that were scheduled to be withdrawn in the future by water users. Specific participating water users, conservation volumes and implementation costs are expected to be identified and formalized in agreements to be executed in Spring 2022. These agreements need to be in place so that the Plan's proposed conservation activities can be included in the August 2022 24-Month Study Report projections.

The current expectation is to develop and execute a memorandum of understanding (MOU) in mid-December at the annual Colorado River Water Users Association (CRWUA) conference to memorialize the primary elements of the Lower Basin Plan outlined above. Signatories to the proposed MOU could include representatives of the Lower Basin States, water users, Native American tribes, the United States (through Reclamation), and potentially even Mexico.

A copy of the joint presentation that was utilized by Reclamation and the Lower Basin States during the webinar is being distributed to Board members and agencies with this monthly report.

Status of Implementation of Minute No. 323

Virtual meetings of the Minute No. 323 Oversight Group (MOG) were held on October 27-28, 2021. As has been reported previously, both sections of the International Boundary and Water Commission (IBWC) now have new Commissioners in place. The new Mexican Section (CILA) Commissioner is Adriana Resendez, and the new USIBWC Commissioner is Maria Elena Giner. The MOG received a comprehensive hydrology and water supply conditions update from Reclamation. Additionally, the co-chairs from each of the Minute No. 323 workgroups also provided the MOG with very brief status updates. Representatives of the Lower Basin States provided a very brief overview of the proposed Lower Basin Plan to further protect critical elevations in Lake Mead as a result of the August 2021 24-Month Study Report minimum probable projection that Lake Mead could reach or decline below elevation 1,030 feet. Mexico expressed interest in the proposed Plan, and the two Commissioners have committed to explore the opportunities for Mexican participation in the Plan and how that interest could be recognized at the mid-December MOU event at CRWUA in Las Vegas, Nevada.

Colorado River Basin Salinity Control Program

Colorado River Basin Salinity Control Program Implementation

The Fall meetings of the Forum Work Group and the Forum and Advisory Council were held on October 25, and 27-28, 2021 respectively in Las Vegas, Nevada, and allowed for both in-person and remote participation. During the three days of meetings the federal agencies provided updates on program funding and program implementation activities. California is now fully represented on the Forum and Advisory Council with Governor Newsom's October 14, 2021, appointments of Ms. Jessica Neuwerth from the Board and Mr. Joaquin Esquivel from the State Water Resources Control Board, who join Mr. William Hasencamp from the Metropolitan Water District of Southern California.

Short-Term Salinity Forecasts

Reclamation provided results of short-term forecasts of salinity concentrations in Lake Powell and Lake Mead based on application of the CE-QUAL-W2 model using the most probable hydrology from the September 24-Month Study. Additional forecasts of salinity at Lake Mead were shared using regression analysis derived from salinity at Lees Ferry and Upper Basin tributaries. The analysis showed a pulse of salinity at Lake Powell that peaks at nearly 590 mg/l in May of 2022 and an increasing value of salinity at Lake Mead that increased to over 610 mg/l by the end of calendar year 2022.

Paradox Valley Unit

Reclamation provided the Forum with an update on the currently shut-down brine injection well at the Paradox Valley Unit (PVU) Salinity Control Project. The project has not operated fully since a significant seismic event in March 2019. Reclamation is conducting a seismic risk analysis, which is not expected to be completed until the end of 2023. The Forum members are concerned about the extended closure of PVU, which when operational provided almost 100,000 tons of salt control per year. In the short-term Reclamation is seeking funding to conduct additional salinity control elsewhere in the basin. However, none of the potential salinity control projects would come close to replacing the salinity control afforded by a fully operational PVU.

Lower Basin Salinity Trends

The USGS provided a summary of studies being conducted on salinity trends in the Lower Basin. The technical approach applied is only able to consider salinity trends upstream of dams on

tributaries to the Lower Colorado River, and not the mainstream itself. While the analysis indicated some up and down cycles in salinity in the tributaries, there was not direct evidence of a long-term salinity trend either upward or downward in the tributaries analyzed.

Program Funding

During the Forum meeting the Basin States and Reclamation discussed the status of the Lower Colorado Basin Development Fund (LCRBDF), which is derived from power revenues generated from Hoover, Davis and Parker Dams and provides the Lower Basin cost-share funding for the Colorado River Basin Salinity Control Program. The Forum and Reclamation are considering options for bringing the projected revenues from the LCRBDF into better alignment with expected expenditures.

Hoover Dam Impeller Replacements

Reclamation provided an update to Advisory Council on newly installed replacement power turbines at Hoover Dam. The new units increased the operational efficiency by 4% over the previous units for a total efficiency of 84%, providing an additional one hundred megawatts of power capacity.

Lower Colorado River Salinity Data

The U.S. Geological Survey published a study in August 2021 and provides new real-time salinity concentration data at four locations in the Lower Colorado River area including 1) Colorado River Above Imperial Dam (Station 09429490); 2) Colorado River Below Cooper Wasteway at the Northerly International Boundary (Station 09522005); 3) Yuma Main Drain Above Arizona-Sonora Boundary (Station 09534000); and 4) the 242 Lateral Above Main Drain at the Arizona-Sonora Boundary (Station 09534550). The study developed regression models to estimate salinity concentration from specific conductivity and temperature. The study and real-time data are available at the links below.

Study - <https://pubs.er.usgs.gov/publication/sir20215080>

Data - <https://maps.waterdata.usgs.gov/mapper/index.html>

Glen Canyon Dam Adaptive Management Program

The Technical Work Group (TWG) of the Glen Canyon Dam Adaptive Management Program (GCDAMP) met via webinar on October 13 and 14. Researchers reported that as reservoir

elevations decline, it becomes more likely that nonnative fish in Lake Powell could be entrained in dam intakes and unintentionally released into the reaches of the river below Glen Canyon Dam. A new study is underway to measure the potential for fish entrainment and survival if passing through Glen Canyon Dam. The study will include a review of previous research as well as field sampling to include hydroacoustic monitoring and fish netting across various water depths. A pilot trip is planned for November 2021 with data collection beginning in January 2022 and continuing through the end of 2023. Study completion is anticipated for spring of 2024.

On October 18th, the U.S. Fish and Wildlife Service (USFWS) issued a final rule reclassifying *Gila cypha*, humpback chub, from endangered to threatened. The humpback chub was originally listed as endangered in 1974. During its review, USFWS found that the primary drivers for the humpback chub's current and future condition are diminishing river flow, increasing water temperature, expanding populations of nonnative fish, and food availability in the Grand Canyon. Low river flows and warm water temperatures may also act cumulatively to increase predation by nonnative predators. The final rule cites actions by both the Upper Basin Recovery Program and the GCDAMP as factors affecting the recovery of the species and is reliant on continued actions by both of these programs. The rule is effective November 17 and can be viewed here:

https://www.federalregister.gov/documents/2021/10/18/2021-20964/endangered-and-threatened-wildlife-and-plants-reclassification-of-the-humpback-chub-from-endangered?utm_campaign=subscription+mailing+list&utm_source=federalregister.gov&utm_medium=email.

The next meeting of the TWG is scheduled to be held in conjunction with the Annual Reporting meeting for the GCDAMP, January 11 – 13, 2022.

Lower Colorado River Multi- Species Conservation Program

The Steering Committee of the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) met on October 27. The committee received updates regarding anticipated effects of reduced water availability in 2022 on of the LCR MSCP. Arizona is preparing to implement water delivery reductions in 2022 pursuant to operation under a Tier 1 Shortage. These water delivery reductions will affect the Cibola Valley Conservation Area (CVCA). Bureau of Reclamation staff have prepared for potential reduced water supply at CVCA as part of their restoration planning for the site. Upcoming planting at the site will incorporate less density and selection of plants with lower water needs relative to plants originally anticipated for the site. Lake Mead Fish Hatchery may also be impacted by the current hydrology in the basin. Increased water temperature or reduced water supply available to the hatchery could jeopardize fish being reared

at the facility. To enable sufficient time for evaluation of impacts as well as planning, some fish at Lake Mead Fish Hatchery will be moved off site.

The Steering Committee discussed potential updates to LCR MSCP permits that may be needed to support efforts by the Lower Basin States to conserve additional water in Lake Mead in 2022. These potential actions may necessitate permit changes for increased flow between Hoover and Parker Dams. Committee members were asked to advise their respective agencies of the potential for these changes and to prepare for potential additional meetings in the near future to facilitate program adaptation.

The next meeting of the LCR MSCP will be a Financial Work Group Meeting, to be held virtually on February 17, 2022.

GENERAL ANNOUNCEMENTS AND UPDATES

USGS Baseflow Study

The U.S. Geological Survey published a new study on October 28, 2021, of projected declines in the Upper Colorado River Basin baseflow by the 2050 in response to a warming and drying climate. Baseflow is the movement of groundwater into streams and, on average, accounts for more than 50% of annual streamflow in the Upper Colorado River Basin. The study predicts that baseflow deliveries to the Lower Colorado River Basin may decline overall by the end of the 21st century despite potential increases in precipitation and baseflow in some areas. Three climate scenarios were modeled: under a warm, wet scenario, total baseflow at Lees Ferry is projected to initially increase by up to 6% (0.162 maf/yr) in the 2030s but then level out in the 2050s and ultimately decline by 3% from today's levels (0.089 maf/yr) by the 2080s. Under a hot, dry climate scenario, baseflow is predicted to decline by up to 23% (0.657 maf/yr) in the 2030s and continue to worsen over time, reaching 29% (0.835 maf/yr) in the 2050s and 33% (0.940 maf/yr) in the 2080s. An intermediate climate scenario also showed a steady decline over time. The study is published in an academic journal and copies are available for purchase at:

<https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GL095085>

Washington, D.C. Report

Confirmations

On Thursday, the Senate confirmed Ms. Camille Touton to be Commissioner of the Bureau of Reclamation and Mr. Michael Connor to Assistant Secretary of the Army for Civil Works. Ms. Touton sailed through the confirmation process with broad bipartisan support, and she was confirmed by the Senate unanimously. Ms. Touton recently served as Reclamation deputy commissioner and as professional staff on the Senate Energy and Natural Resources Committee before that.

From 2009 to 2017, Mr. Connor served in various positions at the U.S. Department of the Interior, culminating in his tenure as Deputy Secretary from 2014-2017. He also served as Counsel to the U.S. Senate Energy and Natural Resources Committee. He was confirmed by the Senate by a vote of 92-5 to the top civilian post overseeing work by the U.S. Army Corps of Engineers.

Appropriations

On October 19th, Senate Democrats unveiled the remaining nine appropriations bills that had not yet been made public (three bills, including the bill that funds Reclamation, were released in August). In theory, this is a step forward in the Fiscal Year 2022 appropriations process. However, Senate Republicans have stated their opposition because there is not yet an agreement on the topline spending amount for all twelve appropriations bills. Given that, the Democratic bills could still be subject to change. As a reminder, federal agencies are currently operating under a short-term Continuing Resolution (CR) that expires on December 3rd.

House Majority Leader Steny Hoyer said Tuesday that Democrats must finish work on Biden's \$1.75 trillion social spending package and the Senate-passed infrastructure bill before the party can devote its attention to annual government funding or act on the debt limit, to ensure the Treasury Department can continue to pay the government's bills. Given this reality, it is likely that Congress will pass another short-term continuing resolution on December 3rd to extend government funding.

Infrastructure

On October 28th, the White House and Democratic leaders announced a \$1.75 trillion "framework" on the budget reconciliation bill. The text of the Build Back Better (BBB) Act was released this week, here are some highlights:

\$970 million for replacing lead service lines in rural communities;
\$550 million for the Bureau of Reclamation to construct drinking water projects for communities without reliable water;
\$100 million for water reuse projects;
\$100 million for mitigating reduced inflows to inland water bodies in basins with a Reclamation project. (Directed at the Great Salt Lake and Salton Sea);
\$25 million to study, design, and pilot the covering of canals with solar panels; and
\$500 million to the EPA for stormwater reuse and sewer overflow grants.

House Speaker Pelosi recently indicated that she would not commit to any certain vote timeline on a pending Bipartisan Infrastructure Package (BIP) or BBB, despite having floor time potentially reserved for both. Once the BIP is passed it will go straight to the President's desk for signing. Senators Manchin (D-WV) and Sinema (D-AZ) and other moderate democrats in both the House and Senate continue to take issue with many facets of the BBB, which would be passed on a party line vote using the reconciliation process.

Colorado River Hearings

Earlier this month, the House Natural Resources Subcommittee on Water, Oceans and Wildlife, held a hearing on "Colorado River Drought Conditions and Response Measures." All seven basin state representatives, including Mr. Peter Nelson, representing the Colorado River Board of California, testified in addition to Assistant Secretary for Water and Science, Ms. Tanya Trujillo, and representatives of the tribes. The main theme of the hearing was collaboration and cooperation amongst the states and their partners, including the federal government. The tribal representatives asked for more representation in the upcoming negotiations. Mr. John Entsminger, the Nevada state representative, accurately summed up where things stand: "This river community is at a crossroads and has a simple but difficult decision to make: do we double down on the promises of last century and fight about water that simply isn't there or do we roll up our sleeves and deal with the climate realities of this century?"

The second day of the hearing on October 20th included testimony from other participants including Mr. Adel Hagekhalil, General Manager and Chief Executive Office of The Metropolitan Water District of Southern California and Mr. Enrique Martinez, General Manager of the Imperial Irrigation District. Mr. Hagekhalil spoke of the importance of the proposed partnership between Metropolitan, the Los Angeles County Sanitation District, the Southern Nevada Water Authority, Central Arizona Water Conservation District, and the Arizona Department of Water Resources to develop the largest wastewater purification facility in the United States.
