

SEVENTY-FOURTH ANNUAL REPORT

OF THE

UPPER COLORADO RIVER COMMISSION



SALT LAKE CITY, UTAH

SEPTEMBER 30, 2022

Upper Colorado River Basin

Colorado River Storage Project (CRSP)
Units and Participating Projects





UPPER COLORADO RIVER COMMISSION

50 South 600 East #100 • Salt Lake City, UT 84102 • 801-531-1150 • www.ucrcommission.com

June 14, 2023

President Joseph R. Biden, Jr.
The White House
Washington, D.C. 20500

Dear President Biden:

The Seventy-Fourth Annual Report of the Upper Colorado River Commission, as required by Article VIII(d)(13) of the Upper Colorado River Basin Compact of 1948 ("Compact"), is enclosed. The report has also been transmitted to the Governors of each state signatory to the Compact, including Colorado, New Mexico, Utah, Wyoming, and Arizona.

The budget of the Commission for Fiscal Year 2023 (July 1, 2022 – June 30, 2023) is included in this report as Appendix B.

Respectfully yours,

A handwritten signature in blue ink, which appears to read "Charles R. Cullom".

Charles R. Cullom
Executive Director and Secretary

Enclosure

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PREFACE

Article VIII(d)(13) of the Upper Colorado River Basin Compact requires the Upper Colorado River Commission (the Commission) to “make and transmit annually to the governors of the signatory states and the president of the United States of America, with the estimated budget, a report covering the activities of the Commission for the preceding water year.”

Article VIII(1) of the By-Laws of the Commission, as updated, specifies that “the Commission shall make and transmit annually before July 1 to the Governors of the states signatory to the Upper Colorado River Basin Compact and the to the President of the United States a report covering the activities of the Commission for the water year ending the preceding September 30.”

This Seventy-Fourth Annual Report of the Upper Colorado River Commission has been compiled pursuant to the above directions.

This Annual Report includes, among other things, the following:

- Membership of the Commission, its Committees, Advisors, and Staff as of the commencement of the 2023 Water Year
- Roster of meetings of the Commission
- Summary of the Activities of the Commission
- Engineering and Hydrologic Data
- Status of the Colorado River Storage Project (CRSP) Initial Units and other Participating Projects
- Appendices containing Commission financial data, such as budget, annual financial report, balance sheet, statements of revenue and expenses, and Commission resolutions.

A special thank you to the many staff of the U.S. Bureau of Reclamation (Reclamation) who have contributed significantly to the text of this Annual Report and the data presented herein.

COMMISSIONERS



Rebecca Mitchell (Vice Chair)
Commissioner for Colorado



Gene Shawcroft
Commissioner for Utah



Anne Castle (Chair)
Federal Commissioner



Estevan López
Commissioner for New
Mexico



Brandon Gebhart
Commissioner for Wyoming

ALTERNATE COMMISSIONERS

David Robbins	State of Colorado
John McCLOW	State of Colorado
Mike Hamman	State of New Mexico
Rolf Schmidt-Petersen	State of New Mexico
Benjamin C. Bracken	State of Wyoming
Randy Bolgiano	State of Wyoming
Keith Burron	State of Wyoming
Todd Adams	State of Utah
Teresa Wilhelmsen	State of Utah
Candice Hasenyager	State of Utah

OFFICERS OF THE COMMISSION

Chair	Anne Castle
Vice Chair	Rebecca Mitchell
Secretary	Executive Director
Treasurer	Executive Director
Assistant Treasurer	Deputy Director

COMMISSION STAFF

Executive Director	Chuck Cullom
Deputy Director/Chief Engineer	Sara G. Larsen
Staff Engineer	Don Ostler
Office Administrator	Alyx Richards
Legal Counsel	Nathan Bracken, Smith Hartvigsen
	Peter Gessel, Smith Hartvigsen

COMMITTEES

Committees and their membership at the commencement of the 2023 Water Year are as follows (the Chair and the Secretary of the Commission are ex-officio members of all committees, Article V(4) of the Commission By-Laws):

LEGAL COMMITTEE

James S. Lochhead – Colorado
Peter Fleming – Colorado
Lee E. Miller – Colorado
Lain Leoniak – Colorado
Chris Brown – Wyoming

Bennett Raley – Colorado
Beth Van Vurst – Colorado
Amy Ostdiek – Colorado
Dominique Work – New Mexico
Wendy Crowther - Utah

ENGINEERING COMMITTEE

Steve Wolff, Chair – Wyoming
Michelle Garrison – Colorado
D. Randolph Seaholm – Colorado
Dave “DK” Kanzer – Colorado
Kyle Whitaker – Colorado
Brian Macpherson – Colorado
Rolf Schmidt-Petersen – New Mexico
Ali Effati – New Mexico
Jeff Cowley – Wyoming

Mike Sullivan – Colorado
Amy Haas – Utah
Bart Leeflang – Utah
Scott McGettigan – Utah
Gawain Snow – Utah
Jared Hansen – Utah
David Jones - Utah
William Merkley - Utah
Charlie Ferrantelli – Wyoming

BUDGET COMMITTEE

Gene Shawcroft, Chair – Utah
Brandon Gebhart – Wyoming

Rebecca Mitchell – Colorado
Estevan López – New Mexico

MEETINGS OF THE COMMISSION

During the Water Year ending September 30, 2022, the Commission met as follows:

Regular Meeting No. 294 December 14, 2021	Las Vegas, NV
Special Meeting No. 295 April 21, 2022	Via webinar
Regular Meeting No. 296 June 14, 2022	Cheyenne, WY
Special Meeting No. 297 August 8, 2022	Via webinar

ACTIVITIES OF THE COMMISSION

GENERAL ACTIVITIES

Within the scope and limitations of Article I(a) of the Upper Colorado River Basin Compact of 1948 and under the powers conferred upon the Commission by Article VIII(d), the principal activities of the Commission have consisted of: 1) research and studies of an engineering and hydrologic nature of various facets of the water resources of the Colorado River Basin, especially as related to operation of the Colorado River reservoirs; 2) collection and compilation of documents related to the utilization of waters of the Colorado River System for domestic, industrial and agricultural purposes, and hydroelectric power generation; 3) legal analyses of associated laws, court decisions, reports and issues; 4) participation in activities and provision of comments on proposals to ensure and allow the beneficial consumptive use of water in the Upper Basin, including for environmental, fish and wildlife and endangered species purposes, and water quality activities; 5) cooperation with water resources agencies of the Colorado River Basin States on water and water-related issues; 6) engagement in activities designed to aid in securing planning and investigation of storage dams, reservoirs, and water resource development projects of the Colorado River Storage Project that have been authorized for construction, and to secure authorization for the construction of additional participating projects as the essential investigations and planning are completed; and, 7) analysis and study of federal water resource legislation.

SPECIFIC ACTIVITIES

The Commission, its staff, and key Commission advisors have been actively involved in matters pertaining to the administration of waters of the Colorado River. In addition to Commission meetings, many informal work meetings, webinars, and calls have been held under the authority of the Commission. Activities have included but are not limited to: monitoring of coordinated reservoir operations and shortage management through the continued implementation of the 2007 Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead (2007 Interim Guidelines); coordination on Colorado River water management issues related to

implementation of the 1944 Water Treat with the Republic of Mexico; completion and implementation of the Upper and Lower Basin Drought Contingency Plans; consideration of the augmentation of the Colorado River supply; investigation of climate change impacts to water supply; review of annual operations plans for Glen Canyon Dam; discussions regarding curtailment and curtailment avoidance; monitoring of Lees Ferry streamgage flow measurements; maintenance of Upper Basin water demand and depletion schedules and related modeling and analysis; continuation of Upper Basin agricultural consumptive use studies; involvement in future water supply and demand studies; continued implementation of Upper Colorado River Basin Fund projects; and various legal matters.

Oversight and Administration of the 2007 Interim Guidelines Coordinated Operations

During the fifteenth year of operations under the 2007 Interim Guidelines (2008 – 2022), the Commission and the states of Colorado, New Mexico, Utah, and Wyoming (the Upper Division States) continued their roles and responsibilities regarding the implementation of the Guidelines. Releases from Lake Powell to the Lower Colorado River Basin are based on the relative storage volumes and related water elevation-based operational tiers of Lake Powell and Lake Mead. During Water Year 2022, dry antecedent soil conditions persisted from the previous water year, along with higher temperatures, and reduced precipitation and runoff across the Upper Basin resulted in a substantial decrease in runoff and inflow to Lake Powell. Consistent with section 6.C.1 of the 2007 Interim Guidelines, Reclamation's August 24-Month Study determined Lake Powell to be in the Mid-Elevation Release Tier with a reduced release volume of 7.48 million acre-feet (maf) and projected declines below critical elevations in Lake Powell in the most probable and minimum cases during the Water Year. The minimum case projected Lake Powell declining below 3,490' in calendar year 2022. The August 24-Month Study also projected Lake Mead elevations triggering the Lower Basin into Level 1 Shortage Condition.

As noted, the projections of Reclamation's 24-Month Study models for water elevations at Lakes Powell and Mead each month. A review of prediction accuracy shows that Lake Powell elevations are frequently over-predicted and may result in an inaccurate tier designation. Since 2007, Commission staff and Upper Division State advisers have been working with Reclamation and the National Weather Service Colorado Basin River Forecast Center (CBRFC) to improve modeling accuracy. Modeling adjustments include the incorporation of a new method for Lake Powell inflow estimation that uses a mass balance approach, more accurate estimates of bank storage (e.g., water stored in voids in the soil cover of adjacent banks of streams and lakes), and inclusion of new hydrologic flow regimes based on reduced hydrology such as that currently experienced during the current drought of record beginning in 2000. See Table 1, for predicted and actual elevations over the 2007 Interim Guidelines implementation period.

TABLE 1. August 24-Month Study - Predicted Elevations for
December End of Month (EOM)

Year	Predicted Dec. EOM Elevation (ft)	Actual Dec. EOM Elevation (ft)	Error (ft)
2007	3,596.4	3,594.6	1.8
2008	3,625.8	3,617.9	7.9
2009	3,634.8	3,626.2	8.5
2010	3,627.5	3,626.5	1.0
2011	3,646.3	3,639.3	7.0
2012	3,614.9	3,609.8	5.1
2013	3,578.3	3,584.4	-6.1
2014	3,596.6	3,597.8	-1.1
2015	3,602.5	3,600.8	1.7
2016	3,605.8	3,600.5	5.3
2017	3,627.3	3,622.9	4.5
2018	3,586.6	3,581.9	4.7
2019	3,618.6	3,608.7	9.8
2020	3,591.6	3,582.2	9.4
2021	3,535.4	3,537.3	1.9
2022	3,521.8	3,524.8	-2.9
		Average Error	5.1

The accuracy of the 24-Month Study modeled reservoir elevations is impacted by the prediction period (5 months) and the skill in forecasting temperature, precipitation, and runoff during that time. The Commission is gathering information on possible alternative approaches that would result in the optimal coordinated management of Lakes Powell and Mead and the Colorado River System as a whole.

Upper Division States' Drought Contingency Planning

On May 20, 2019, the interstate Drought Contingency Plans (DCPs) agreements were signed and became effective for both the Upper and Lower Colorado River Basins. This followed the enactment of federal law (P.L. 116-14) authorizing the Upper and Lower Basin DCPs, which was passed by the United States Congress and signed into law by the President on April 16, 2019.

The DCPs are designed to reduce risks to the Colorado River from ongoing drought exacerbated by the effects of climate change and depleted storage in Lake Powell and Lake Mead. The Commission, its staff, and its legal and engineering advisers spent considerable time in Water Year 2022 implementing terms of the Upper Basin DCP

Upper Basin DCP Implementation

The Upper Basin DCP (consisting of the Drought Response Operations Agreement¹ (DROA) and the Demand Management Storage Agreement² (DMSA)) marks the culmination of intensive efforts dating back to 2014 (December 10, 2014 Resolution³) by the Upper Colorado River Commission and key Commission advisers and staff, to address fluctuating water elevations and depleted storage conditions at Colorado River reservoirs, particularly Lakes Powell and Mead. The Upper Basin DCP is designed to 1) protect critical elevations at Lake Powell and help ensure continued compliance with the 1922 Colorado River Compact, and 2) establish the foundation for the storage of water in the Upper Basin as part of a potential Demand Management Program that may be developed in the future.

Two agreements comprise the Upper Basin DCP: The Drought Response Operations Agreement and the Demand Management Storage Agreement. Weather modification is also a component of the Upper Basin DCP but is subject to existing agreements and programs that predate the DCP effort. The DROA provides for the development of a process based on proximity to a forecasted “Target Elevation” of 3,525 feet at Lake Powell to coordinate releases from the upstream Initial Units of the Colorado River Storage Project (CRSP). This serves to protect Lake Powell from dropping below critical elevations, at which time the operation of the reservoir (including hydropower generation) could be compromised. A related Drought Response Operation, as part of a finalized DROA Plan, would also include a recovery of water released from an upstream Initial Unit(s) once a DROA operation is concluded. Any Drought Response Operation is expressly subject to existing environmental compliance and water and power contracts at the CRSP Initial Unit(s).

Demand Management

The DMSA permanently authorizes the storage of conserved consumptive water use volumes at Lake Powell and other CRSP Initial Units free of charge for the sole purpose of assuring continued compliance with Article III of the 1922 Colorado River Compact. Storage of these volumes is contingent upon the development of an Upper Basin Demand Management Storage Program. The DMSA sets forth minimum conditions for establishing an Upper Basin Demand Management Program through 2026. However, the Agreement itself does not establish an Upper Basin Demand Management Program; rather, it sets forth a framework for the Commission to consider such a Program.

Since the execution of the DCPs, the Upper Division States and Commission staff have been engaged in investigations to address issues and questions central to

¹ Upper Colorado River Commission Website. Webpage: <http://www.ucrccommission.com/wp-content/uploads/2019/09/Attachment-A1-Drought-Response-Operations-Agreement-Final.pdf>.

² Upper Colorado River Commission Website. Webpage: <http://www.ucrccommission.com/wp-content/uploads/2020/04/Attachment-A2-Demand-Management-Storage-Agreement-Final.pdf>.

³ Upper Colorado River Commission Website. Webpage: http://www.ucrccommission.com/wp-content/uploads/2019/09/Upper_Basin_Drought_Contingency_Plan.pdf.

the potential feasibility of a Demand Management Program in the Upper Basin. While each of the four Upper Division States has intrastate processes underway to assess the potential for a basin-wide Program, Commission staff have also been engaged in interstate Demand Management investigations. These include administering an Upper Basin Demand Management investigation through funding from Reclamation. In late 2019 and early 2020, the Commission, with assistance from Upper Division State staff, solicited and reviewed proposals for contractor assistance with interstate Demand Management investigations. The interstate investigations were largely completed in Water Year 2022. UCRC staff and key Commission advisors worked to prepare summaries of the principal findings from the investigations for discussion and consideration by the Commission in Water Year 2023⁴.

At the UCRC's 296th Regular (Summer) Meeting in Cheyenne, Wyoming, the UCRC staff shared preliminary considerations regarding an interpretation of Article III of the 1922 Colorado River Compact. The staff memo is included in this annual report in Appendix C.

Water Year 2022 DROA Planning and Operations

Prior to Water Year 2022, over the summer of 2021, in response to continued declines in projected Lake Powell elevations, and with advance consultation with the Upper Division States, through the Commission, and the Governors' Representatives of the Colorado River Basin States, Reclamation invoked the "imminent need" provisions in the DROA and began additional releases from the upstream CRSP Initial Units. Under this provision, Reclamation planned to release 181,000 acre-feet in calendar year 2021. This included 125,000 acre-feet from Flaming Gorge, 36,000 acre-feet from the Aspinall Unit, and 20,000 acre-feet from Navajo Reservoir, roughly the equivalent of an additional three feet of elevation in Lake Powell. Due to drier conditions in the San Juan River, Reclamation did not conduct DROA releases from Navajo Reservoir. Reclamation completed 161,000 acre-feet of DROA releases pursuant to the "imminent need" provisions in 2021, from Flaming Gorge and Blue Mesa reservoirs.

The DROA Parties and the Commission developed a Drought Response Operations Plan for water year 2022 (2022 DROA Plan). The 2022 DROA Plan outlines DROA operations from May 2022 through April 2023. The 2022 DROA Plan consists of a Framework document that further clarifies and provides specific information for the provisions of the DROA. The Framework serves as the core document and basis for future DROA Plans. The 2022 DROA Plan includes attachments regarding specific recommendation for operation, release volumes, and related information developed for consideration by the Upper Division States acting through the UCRC and the Secretary. The 2022 DROA Plan was approved and adopted in April of 2022 at a UCRC Special Meeting. The 2022 DROA Plan included planned releases

⁴ Upper Colorado River Commission Website. Webpage: <http://www.ucrccommission.com/ucrc-demand-management-investigation/>.

of 500,000 acre-feet from Flaming Gorge to Lake Powell. The plan included provisions to adapt and respond to actual hydrologic conditions throughout the DROA 2022 Plan.

Reclamation, the Upper Division State advisors, and Commission staff also engaged in extensive outreach and coordination with other federal agencies, Lower Basin representatives, Native American Tribes, NGOs, local governments, and other interested stakeholders on the 2022 DROA Plan development through the end of the water year⁵.

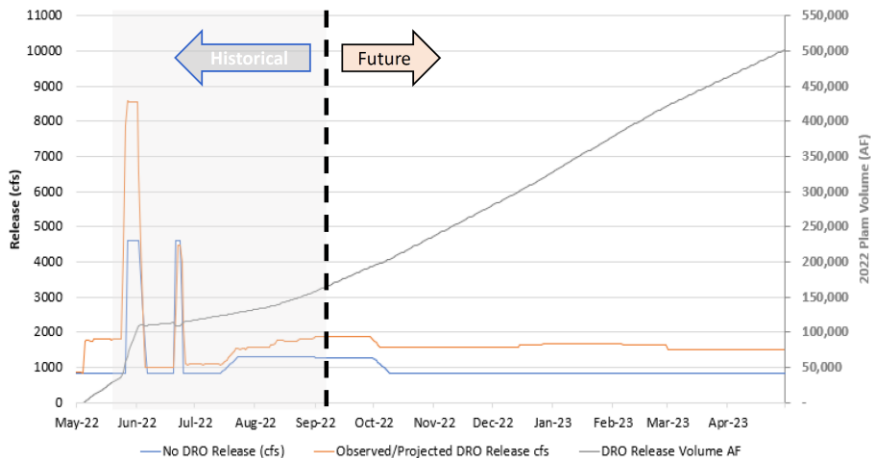


FIGURE 1. 2022 DROA Plan – Flaming Gorge – Actual and Planned DROA Releases and Cumulative Volume toward the end of WY2022.

Lower Basin DCP Implementation

The Lower Division States of Arizona, California, and Nevada, together with key water users in those states, developed the Lower Basin DCP (consisting of the LB Drought Contingency Plan Agreement⁶ and the LB Drought Operations Exhibit⁷) designed to contribute additional water to Lake Mead at predetermined elevations and to incentivize additional voluntary conservation of water to be stored at Lake Mead.

In 2021, the second year of DCP implementation for the Lower Basin, the Lake Mead elevation on January 1, 2021, was 1,083.2 feet, which required continued DCP contributions by Arizona and Nevada at Lake Mead of 192,000 and 8,000 acre-feet in the 2021 calendar year, respectively. However, due to a DCP

⁵ U.S. Bureau of Reclamation. DROA Plan and Accounting Information. Webpage: <https://www.usbr.gov/dcp/droa.html>.

⁶ Upper Colorado River Commission Website. Webpage: <http://www.ucrccommission.com/wp-content/uploads/2019/09/Attachment-B-LB-DCP-Agreement-Final.pdf>.

⁷ Upper Colorado River Commission Website. Webpage: <http://www.ucrccommission.com/wp-content/uploads/2019/09/Attachment-B-Exhibit-1-LB-Drought-Operations-1.pdf>.

deficiency of 11,392 acre-feet in 2020, Arizona was required to contribute 203,392 acre-feet in 2021.

Based on the August 2021 24-Month Study, Lake Mead's elevation on January 1, 2022, was projected to be 1,065.9 feet. In accordance with the 2007 Interim Guidelines and the applicable provisions of the Lower Basin DCP, a "Tier One" Shortage Condition was declared to govern the releases and diversions from Lake Mead in calendar year 2022. Delivery reduction volumes that are stipulated by the Shortage Condition include:

- 2007 Interim Guidelines Shortage of 320,000 acre-feet from Arizona and Nevada
- Minute 323 Delivery Reduction of 50,000 acre-feet from Mexico
- DCP Water Savings Contributions of 200,000 acre-feet from Arizona and Nevada (192,000 and 8,000 acre-feet, respectively)
- Binational Water Scarcity Contingency Plan Savings of 30,000 acre-feet from Mexico
- A Reclamation DCP Contribution of 100,000 acre-feet

The above shortages (water order/delivery reductions) and DCP contributions total 713,000 acre-feet of water that must remain or be conserved in Lake Mead for the 2022 calendar year.

In addition to the declaration of the Shortage Condition, the August 24-Month Study forecasts also triggered provisions in the Lower Basin DCP concerning further consultation when Lake Mead elevation projections decline below 1,030' (known as the "1,030' Consultation"). The intention behind the 1,030' Consultation provision is to provide additional actions to reduce the risk of declining below elevation 1,020' feet in Lake Mead. The 1,030' Consultation measures are ongoing at the end of the water year and will likely result in additional proposed conservation measures that could be taken by the Lower Division States and the Secretary of the Interior (Secretary) to protect elevations at Lake Mead.

May 2022 Additional Cooperative Actions

By April of 2022, Reclamation's forecasts for operation of Lake Powell and Lake Mead showed a significant probability of declining below critical elevations, potentially impacting water management and key infrastructure. The minimum probable April 24 Month-Study Most Probable scenario showed several months with Lake Powell declining below the water management and hydropower generation threshold of 3,490' and Lake Mead declining below elevation 1,020'. On April 8th, U.S. Department of the Interior (DOI), Assistant Secretary for Water and Science Tanya Trujillo requested input from the Colorado River Basin States Governors' representatives regarding coordinated operations of Glen Canyon Dam and Hoover Dam to address risks of declining below critical elevations. The request noted that the consideration of additional actions was consistent with

Sections 6 and 7.D of the 2007 Interim Guidelines.

On April 22nd, the Basin States responded, outlining temporary additional cooperative actions to address the risks to Glen Canyon and Hoover Dams. The Basin States proposed that planned releases from Glen Canyon Dam per the Mid-Elevation Release Tier of 7.48 maf, be reduced by 0.48 maf for Water Year 2022. In addition, for operational decisions and accounting, the 0.48 maf would be considered as if it had been released to Lake Mead. Finally, the Basin States proposed that the 2022 DROA Plan release of 0.5 maf from Flaming Gorge to Lake Powell be “...carefully monitored and be subject to consultation with the Basin States to preserve the benefits to Glen Canyon Dam...”

On May 3rd, the DOI responded to the Basin States proposal, adopting the cooperative actions for water year 2022. Interior noted that the additional cooperative actions to reduce releases from Lake Powell of 0.48 maf plus the separate but related actions in the 2022 DROA Plan serve to benefit Lake Powell in Water Year 2022.

UCRC 5-Point Plan

On June 14th, Reclamation Commissioner Camille Touton, in her testimony before the Senate Committee on Energy and Natural Resources, she described the rapidly declining storage in Lake Powell and Lake Mead. She said “....more needs to be done as the system reaches critically low levels. The system is at a tipping point.” Further, she noted “significant and additional conservation actions are required to protect the Colorado River System infrastructure and the long-term stability of the system.” Finally, in her remarks, she requested that the Basin States prepare plans to conserve from 2.0 – 4.0 maf/year in the Colorado River System to avoid a crisis on the system.

In response to the call from Commissioner Touton for additional conservation actions, the Lower Basin States, in discussions and meetings with the Upper Division States, put forward concepts outlining 2.0 maf/yr in additional conservation, largely from Arizona, California, Nevada, and possibly Mexico. The Upper Division States identified five areas of potential contributions to support the Colorado River System. In July, the Upper Division States, acting through the UCRC, provided a letter to Commissioner Touton outlining a 5-Point Plan of actions in the Upper Division States. The plan noted that for the plan to be effective, significant actions must occur in the Lower Basin. The plan components included:

- (1) Seek amendment and reauthorization of the System Conservation Pilot Project (SCPP) legislation originally enacted in 2014. The amendment will provide for extension of the authorization and reporting periods to September 30, 2026, and September 30, 2027, respectively, and seek funding to support the program in the Upper Basin. Upon obtaining reauthorization, the necessary funding, and finalizing any required agreements, the UDS and UCRC intend to reactivate the program in the Upper Basin in 2023.

(2) Commence development of a 2023 Drought Response Operations Plan (2023 DROA Plan) in August 2022 with finalization in April 2023 consistent with the Drought Response Operations Plan Framework (Framework). A 2023 DROA Plan must meet all the requirements of the Drought Response Operations Agreement and the Framework. These requirements include, but are not limited to, determining the effectiveness of any potential releases from upstream Initial Units to protect critical elevations at Glen Canyon Dam, and ensuring that the benefits provided to Glen Canyon Dam facilities and operations are preserved.

(3) Consider an Upper Basin Demand Management Program as interstate and intrastate investigations are completed.

(4) Implement, in cooperation with Reclamation, the Bipartisan Infrastructure Law for Upper Basin Drought Contingency Plan funding to accelerate enhanced measurement, monitoring, and reporting infrastructure to improve water management tools across the Upper Division States.

(5) Continue strict water management and administration within the available annual water supply in the Upper Division States, including implementation and expansion of intrastate water conservation programs and regulation and enforcement under the doctrine of prior appropriation.

At the August 8th 298th Special UCRC Meeting, the Commissioners directed the UCRC to move forward with the elements of the 5-Point Plan as outlined.

Upper Division States Tribal-States Dialogue



FIGURE 2. Upper Basin Tribal Leaders, UCRC Commissioners, and the UCRC Executive

On August 3-4th the four Upper Division State Commissioners, key Commission advisors, and UCRC staff met with Tribal Leaders and the advisors of five Upper Colorado River Basin tribal sovereigns in Ignacio, Colorado. The meeting was hosted by the Southern Ute Indian Tribe. Vice Chair for the Southern Ute Indian Tribe, Lorelei Cloud noted that the meeting between UCRC Commissioners and the Tribal Leaders from Jicarilla Apache Nation, Navajo Nation, Southern Ute Indian Tribe, Uintah-Ouray Ute Indian Tribe, and Ute Mountain Ute Tribe, was a historic first. Further, she noted that such meetings and engagement between Tribes and States should be the norm and not be historic. The meeting resulted in commitments for Tribal Leaders and UCRC Commissioners to continue to share and engage in issues regarding management of the Colorado River. The UCRC Commissioners committed to continue meeting with Tribal Leaders and meeting on reservation lands as appropriate.

On September 12-13th the Tribal-States Dialogue process continued with meetings hosted by the Ute Mountain Ute Tribe in Towaoc, Colorado. The meeting included presentations regarding Tribal governance for each of the Upper Basin Tribes as well as discussions regarding the water management structures and agencies in each of the Upper Division States. The group committed to developing a framework document outlining areas of shared interest and issues in Colorado River water management.

Negotiations with Mexico Regarding Low Elevation Reservoir Conditions and Augmentation of Supply

In 2019, the Commission and the Upper Division States were actively involved in discussions with the Department of Interior, the International Boundary and Water Commission (IBWC) and their Mexican counterparts, and representatives of the Lower Division States on additional measures for managing and sharing future shortages, as well as to meet future demands for water consistent with the terms of the 1944 United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty), and the Upper Division States' obligations under the 1922 Colorado River Compact and 1948 Upper Colorado River Basin Compact. This binational coordination occurs through the implementation of Minute 323, an implementing agreement to the 1944 Treaty. Minute 323, signed in 2017, extends many provisions of two of its predecessor minutes, Minutes 318 and 319.

In particular, Minute 323 replaces or extends measures agreed to in Minute 319, which include conditional storage of Mexican water in the United States (Mexico's Water Reserve) and reductions based upon low elevations at Lake Mead. Minute 323 also adds measures for Binational Water Scarcity Contingency Planning conditioned upon the United States adopting similar actions in the form of a Lower Basin drought contingency plan. In July 2019, the Principal Engineers of the Mexican and U.S. Sections of the IBWC issued a Joint Report (Joint Report) with

the implementing details of the Binational Water Scarcity Contingency Plan contained in Minute 323. In August of 2019, Reclamation determined that Mexico's Binational Water Scarcity Contingency Plan would commence in 2020 due to projected Lake Mead elevations on January 1, 2020. In addition to the Binational Water Scarcity Contingency Plan, Minute 323 also includes provisions regarding:

- Distribution of surplus flows
- Distribution of flows under low elevation reservoir conditions (shortage)
- Extension of cooperative measures to address emergencies (e.g., storage during earthquake-damaged infrastructure in Mexico)
- Salinity
- Flow variability in Mexico's supply
- Environmental measures
- Investment in Projects; and,
- Measures pertaining to the All-American Canal

During 2019, various workgroups formed under Minute 323 met to undertake workgroup-designated tasks under the Minute. Commission staff participates in both the Minute 323 Environmental and Hydrology Work Groups. Moreover, Commission staff participates in the Minute 323 Oversight Group, a binational steering group that meets biannually to track the implementation of Minute 323 and to provide direction and oversight of the workgroups.

In 2021, the second year of implementation of the Binational Water Scarcity Contingency Plan, the Lake Mead elevation on January 1, 2021, was projected to be 1085.3', which required contributions (Recoverable Water Savings) at Lake Mead of 41,000 acre-feet.

Based on the August 2021 24-Month Study, Lake Mead's elevation on January 1, 2022, was projected to be 1,065.9 feet. The projected Lake Mead elevation triggered a total of 80,000 acre-feet of reductions to Mexico per Minute 323, including 30,000 acre-feet of Binational Water Scarcity Contingency Plan reductions and 50,000 acre-feet of Minute 323 water delivery reductions for calendar year 2022.

Lees Ferry Streamgage and Releases from Glen Canyon Dam

The 1922 Colorado River Compact delineates the Upper and Lower Basins at Lee Ferry, Arizona, approximately sixteen miles below Glen Canyon Dam, the impoundment for Lake Powell. The nearby Lees Ferry streamgage is the closest streamflow measurement point to Lee Ferry and is therefore of great importance to the Commission. The reach between Glen Canyon Dam and the Lees Ferry streamgage is subject to gains in flow. Gains over the past seventeen years are summarized in Table 2.

TABLE 2. Gain in Reach Between Glen Canyon Dam
and the Lees Ferry Streamgage

Water Year	Acre-feet	Water Year	Acre-feet
2005	129,400	2014	87,800
2006	263,800	2015	136,100
2007	166,000	2016	117,100
2008	186,000	2017	152,300
2009	160,300	2018	157,800
2010	184,200	2019	240,100
2011	211,800	2020	194,900
2012	61,100	2021	49,300
2013	31,900	2022	66,800
		Sum	2,596,700

During Water Year 2022, the reach in question had a gain of 66,800 acre-feet. Over the same timeframe, the cumulative gain at Lees Ferry, when compared to reported Glen Canyon Dam release volumes, was approximately 2,596,700 acre-feet. The Commission continues to investigate the significance of these gains when considering current and future dam operations.

Upper Colorado River Basin Consumptive Use Study

During Water Year 2022, the Commission, the Upper Division States, and the Upper Colorado Region and Denver Offices of Reclamation finalized and concluded a study on how they might improve the speed, accuracy, support, and cost-effectiveness of agricultural consumptive water use estimates for the Upper Colorado River Basin. Phase I of the study identified methodologies used by states and Reclamation for measurement of agricultural consumptive water use, including suggestions for improvements. Phase II of the study evaluated methods and improvements that could be made when estimating agricultural evapotranspiration (ET) by expanding weather station networks. Phase II also evaluated the use of remote-sensing methods and their feasibility for use in the Upper Colorado River Basin.

Phase III of the study commenced in 2018 and continued through 2021 with an analysis of the methods conducted for each irrigation season. The study included a continued synthesis of information and recommendations concerning selected remote-sensing methods and a comparison of more traditional crop coefficients such as the Modified Blaney-Criddle and Penman-Monteith methods. In the spring of 2021, the Commission and the Upper Division States decided to extend Phase III through the 2021 irrigation season and also expand the study to support an investigation into Reclamation's Indicator Gage Method for estimating shortage throughout the Upper Basin. The 2021 irrigation season analysis was

finalized in late 2021, and technical recommendations were made to the Commission and to Reclamation regarding the various methods for calculating agricultural consumptive water use more uniformly across the Upper Colorado River Basin.

At the June 2022 UCRC Regular Meeting, the Commission adopted technical recommendations from the Consumptive Use Study including implementing eeMETRIC to estimate irrigation consumptive use in the Upper Basin, to continue to seek improvements to the methodology, and to prepare an alternative to the Inflow-Outflow Method in the future. The technical recommendation and resolution for the adoption of the new method are included in Appendix C. Reclamation also adopted the eeMETRIC method for the development of their Consumptive Uses & Losses (CU&L) Report and is planning to conduct a retrospective review of agricultural consumptive use, CU&L data, and historical natural flow estimation with available remote-sensing data from 1991 to the present. The Upper Division States and UCRC will be assisting with the refinements in approach and eventual full migration to the new method.

Commission Staff and U.S. Federal Commissioner Appointment

In December of 2021, the UCRC Commissioners announced and welcomed Chuck Cullom as its new Executive Director. Chuck brought more than 30 years of water resources management, water policy, and Colorado River experience to his new role. Prior to joining UCRC, he served as the Colorado River Programs Manager for the Central Arizona Project. He officially began his tenure as Executive Director in January of 2022. During the year, the UCRC also secured the services of Nathan Bracken and Peter Gessel (partners at Smith-Hartvigsen) for legal counsel.

In September 2022, President Biden announced his appointment of Anne Castle as the U.S. Federal Commissioner to the Upper Colorado River Commission. Ms. Castle brought a wealth of knowledge and experience, including from her service as Assistant Secretary for Water and Science, to the Commission.



FIGURE 3. Commission Staff (left to right): Chuck Cullom, Sara Larsen, Alyx Richards, Peter Gessel (S&H), Nathan Bracken (S&H), and Don Ostler



*FIGURE 4. Lake Powell and Glen Canyon Dam –
Water Elevations Continued to Decline in WY 2022*

ENGINEERING-HYDROLOGY

Streamflow and Hydrology Summary

The historical flow of the Colorado River at Lee Ferry for Water Year 2022, based on U.S. Geological Survey (USGS) streamflow measurements at the Lees Ferry and Paria River streamgages, was 7,083,200 acre-feet. The progressive 10-year total flow at Lee Ferry was 85,590,300 acre-feet from 2013 to 2022 (for more detail, see Table 8). The natural flow of the Colorado River for Water Year 2022 was estimated to be 9.11 maf, which is less than the average natural flow of 14.5 maf for the 1896-2022 period (for more detail, see Table 7). It is also less than the average natural flow of 12.2 maf since 2000, the period of the current drought.

The Upper Colorado River Basin continues to experience extended drought. During Water Year 2022, the accumulated precipitation within the basin was approximately 100% of the most recent 30-year rolling average used by the CBRFC (1991 – 2020). Unregulated inflow to Lake Powell in Water Year 2022 was 63% of the 30-year average or 6.08 maf. Snowpack in WY2022 was 96% of average but unfortunately resulted in far less than average inflow to Lake Powell due to dry antecedent soil moisture conditions, high temperatures, and early melt conditions.

Unregulated Inflow to Lake Powell
(as a Percent of that WY’s 30-Year Average)

2000 – 62%	2008 – 102%	2016 – 89%
2001 – 59%	2009 – 88%	2017 – 110%
2002 – 25%	2010 – 73%	2018 – 43%
2003 – 51%	2011 – 139%	2019 – 120%
2004 – 49%	2012 – 45%	2020 – 54%
2005 – 105%	2013 – 47%	2021 – 32%
2006 – 73%	2014 – 96%	2022 – 63%
2007 – 68%	2015 – 94%	

Unregulated inflow has been above average in only five of the last 23 years, which is the lowest 23-year period since the closure of Glen Canyon Dam in 1963. This information will be evaluated and considered during the next determination of storage volumes needed in Lake Powell to ensure that the Upper Basin is able to maintain adequate storage for a similar drought in the future.

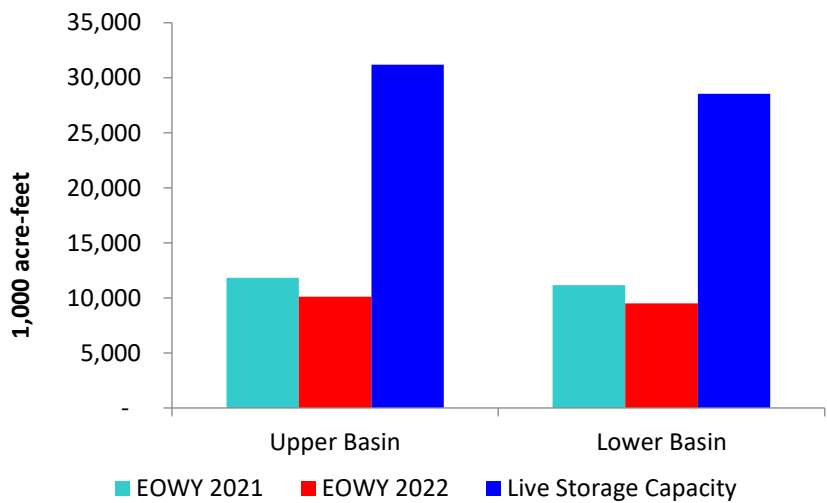
Summary of Reservoir Elevations and Storage

As of September 30, 2022, total system storage (Upper and Lower Basins) was 32.8% of capacity. Over Water Year 2022, the change in reservoir storage, excluding bank storage and evaporation, at select Upper Basin reservoirs was as

follows:

- Fontenelle increased 43,805 acre-feet
- Flaming Gorge decreased 270,052 acre-feet
- Taylor Park increased 9,520 acre-feet
- Blue Mesa increased 50,599 acre-feet
- Morrow Point decreased 4,235 acre-feet
- Crystal decreased 800 acre-feet
- Navajo decreased 78,535 acre-feet
- Lake Powell decreased 1,460,290 acre-feet

There was a combined decrease in storage in the above reservoirs of 1.7 maf (for more detail, see Table 5). Lake Powell storage decreased by 1,460,290 acre-feet and ended the water year at 23.8% of capacity, with 5.8 maf of storage at elevation 3,529.33 feet. The release volume from Lake Powell during Water Year 2022 was 6,999,100 acre-feet. A more detailed description of Lake Powell conditions can be found in the Summary of Reservoir Operations section of this report on page 99.



Reservoir storage in Lake Mead decreased during Water Year 2022 from 9.02 maf to 7.33 maf, which is 28.1% of Lake Mead’s total storage capacity. The total Colorado River System experienced a decrease in storage during Water Year 2022 of approximately 3,371,000 acre-feet and ended the year at 28.1% of capacity.

Table 3 on page 29 shows the statistical data for principal reservoirs in the Upper Colorado River Basin. Table 4 on page 30 shows the same for Lower Colorado River Basin reservoirs.

Graphs of the elevations and storage amounts related to the implementation of the LROC and the 2007 Interim Guidelines for Lake Powell, Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs in the Upper Colorado River Basin and Lake Mead in the Lower Basin are shown on pages 32 through 38 for Water Year 2022.

TABLE 3
STATISTICAL DATA FOR PRINCIPAL RESERVOIRS
IN THE COLORADO RIVER UPPER BASIN

Colorado River Storage Project (CRSP) Units

(Total Surface Capacity)

Units: Elevation = feet; Capacity = 1,000 acre-feet

	Fontenelle		Flaming Gorge		Taylor Park		Blue Mesa		Morrow Point		Crystal		Navajo		Lake Powell	
	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity
River Elev. at the Dam (Ave. Tailwater)	-	-	5,603	-	9,174	-	7,160	-	6,775	-	6,534	-	5,720	-	3,138	-
Dead Storage	6,408	0.56	5,740	40	-	-	7,358	111	6,808	-	6,670	8	5,775	13	3,370	1,893
Inactive Storage (Min. Power Pool)	-	-	5,871	273	-	-	7,393	192	7,100	75	6,700	12	5,990	673	3,490	5,890
Rated Head	6,491	234	5,946	1,102	-	-	7,438	361	7,108	80	6,740	20	-	-	3,570	11,000
Maximum Storage	6,506	345	6,040	3,789	9,330	106	7,519	941	7,160	117	6,755	25	6,085	1,709	3,700	26,215

TABLE 4
STATISTICAL DATA FOR PRINCIPAL RESERVOIRS
IN THE COLORADO RIVER LOWER BASIN

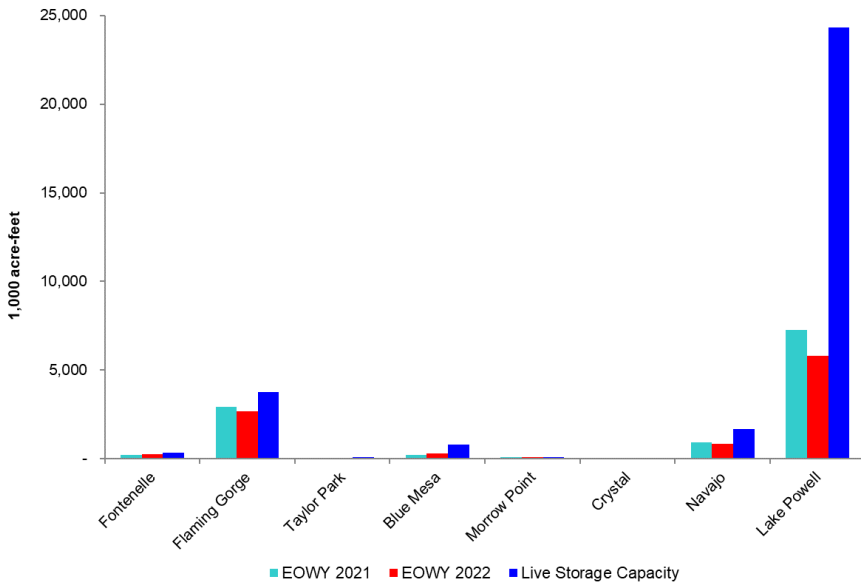
(Usable Surface Capacity)

Units: Elevation = feet; Capacity = 1,000 acre-feet

	Lake Mead		Lake Mohave		Lake Havasu	
	Elevation	Capacity	Elevation	Capacity	Elevation	Capacity
River Elev. at the Dam (Ave. Tailwater)	646	(2,378)	506	(8.5)	370	(28.6)
Dead Storage	895	-	533.4	-	400	-
Inactive Storage (Min. Power Pool)	950	7,471	570	217.5	440	439.5
Rated Head	1,122.8	13,633				
Maximum Storage	1,221.4	26,159	647	1,809.8	450	619.4

TABLE 5
STORAGE IN PRINCIPAL RESERVOIRS OF THE UPPER BASIN
 END OF WATER YEAR 2022
 LIVE STORAGE CONTENTS

	Sept 30, 2021 (acre-feet)	Percent Live Capacity	Sept 30, 2022 (acre-feet)	Percent Live Capacity	Change in Storage (acre-feet)
Fontenelle	230,408	66.8%	274,213	79.5%	43,805
Flaming Gorge	2,949,700	78.7%	2,679,648	71.5%	(270,052)
Taylor Park	58,594	55.2%	68,114	64.1%	9,520
Blue Mesa	241,051	29.1%	291,650	35.2%	50,599
Morrow Point	111,030	94.9%	115,265	98.5%	4,235
Crystal	16,934	96.6%	16,134	92.0%	(800)
Navajo	950,560	55.9%	872,025	51.3%	(78,535)
Lake Powell	7,257,712	29.8%	5,797,422	23.8%	(1,460,290)
Total	11,815,989	37.9%	10,114,471	32.4%	(1,701,518)



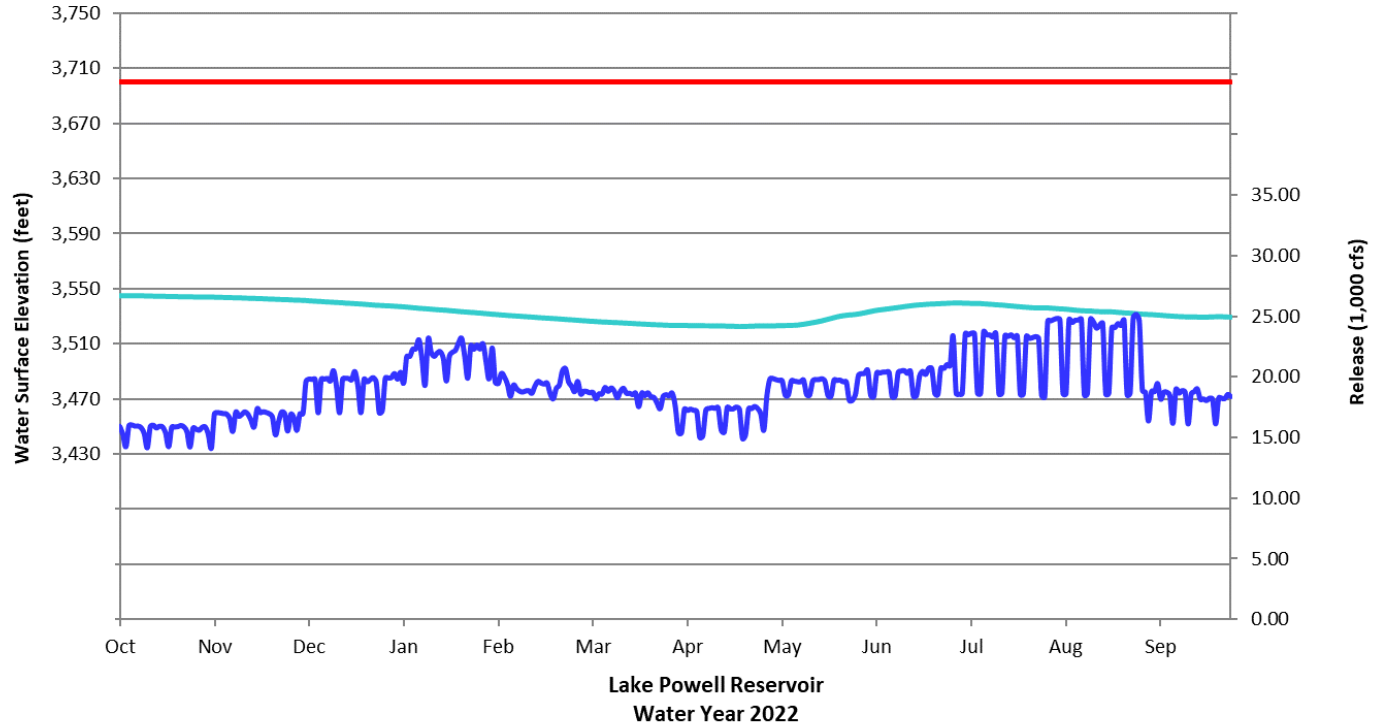
Lake Powell Reservoir - Glen Canyon Dam

Live Storage Capacity - 24,322,000 acre-feet

Power Generation Capacity - 1,320,000 kW

Live Storage on 9/30/22 - 5,797,422 acre-feet

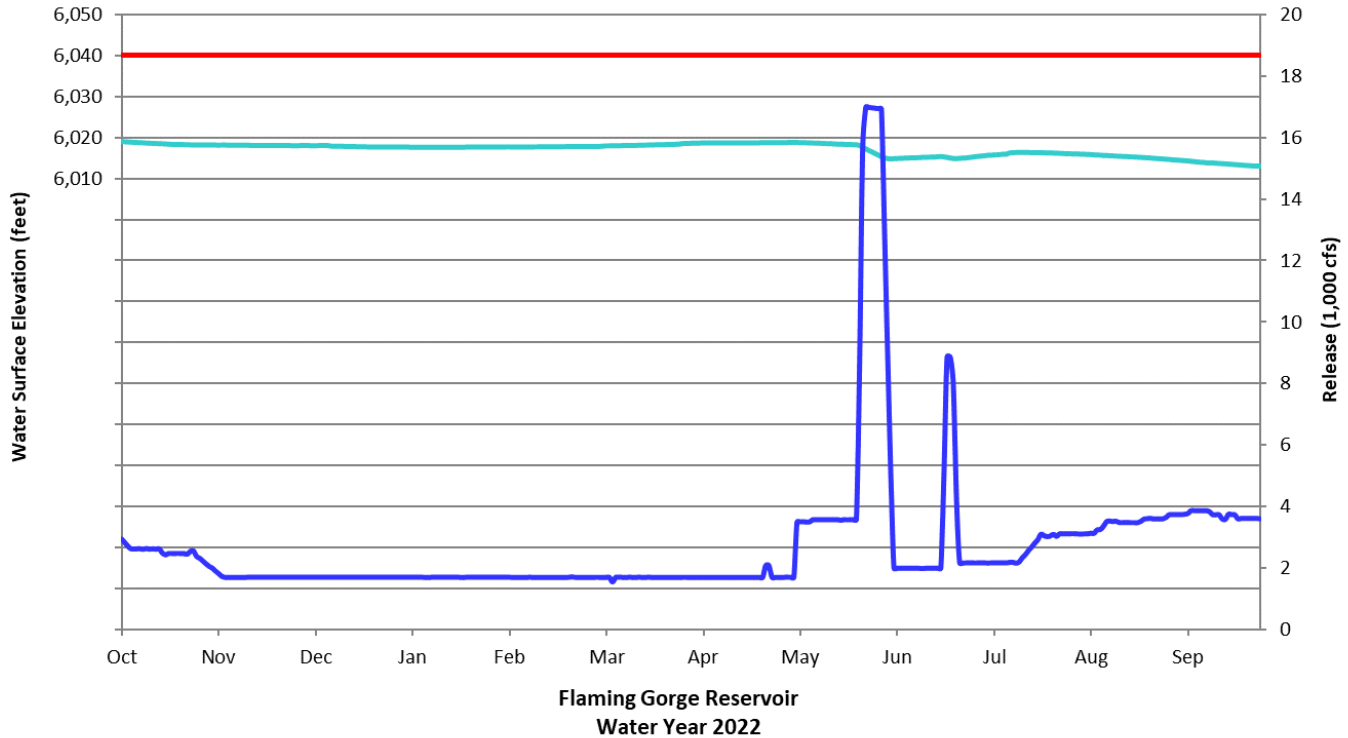
- Water Surface Elevation (feet)
- Maximum Storage Elev = 3,700 feet
- Release (1,000 cfs)



Flaming Gorge Reservoir

Live Storage Capacity - 3,749,000 acre-feet
Power Generation Capacity - 151,500 kW
Live Storage on 9/30/22 - 2,679,648 acre-feet

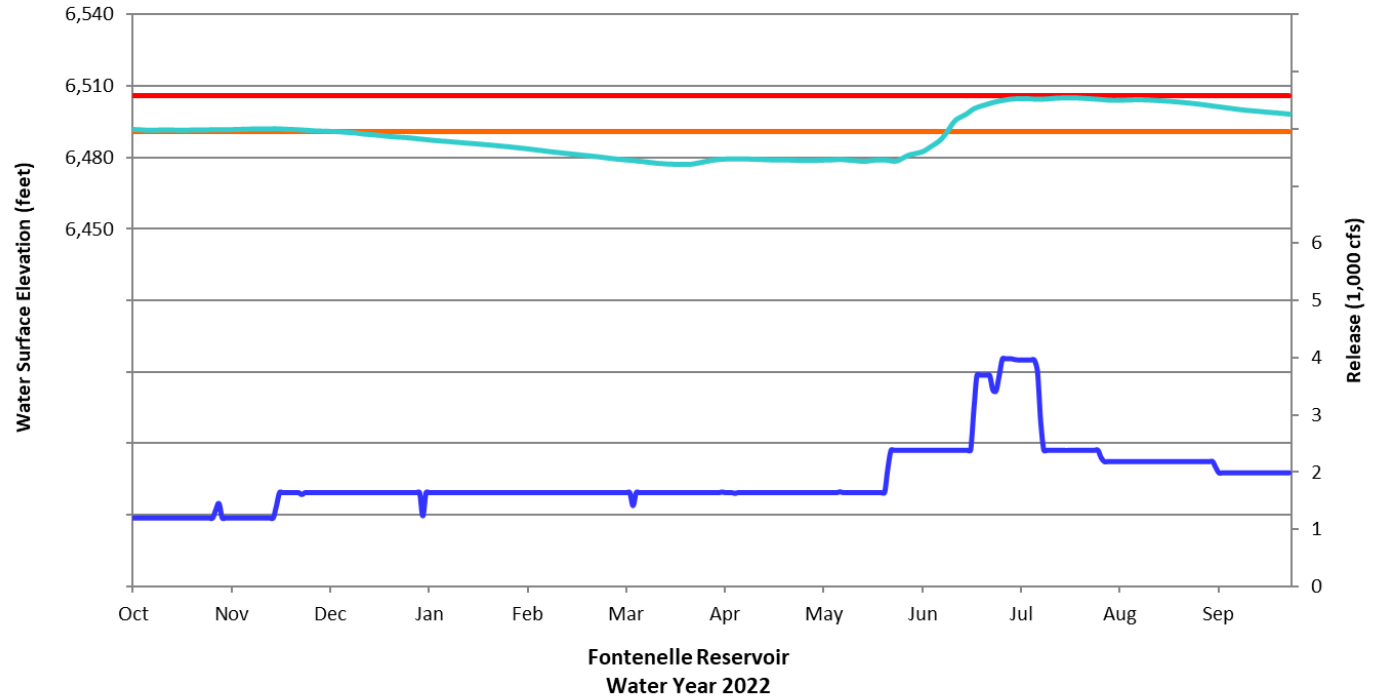
Water Surface Elevation (feet)
Maximum Storage Elev = 6,040 feet
Release (1,000 cfs)



Fontenelle Reservoir

Live Storage Capacity - 344,800 acre-feet
Power Generation Capacity - 10,000 kW
Live Storage on 9/30/22 - 274,213 acre-feet

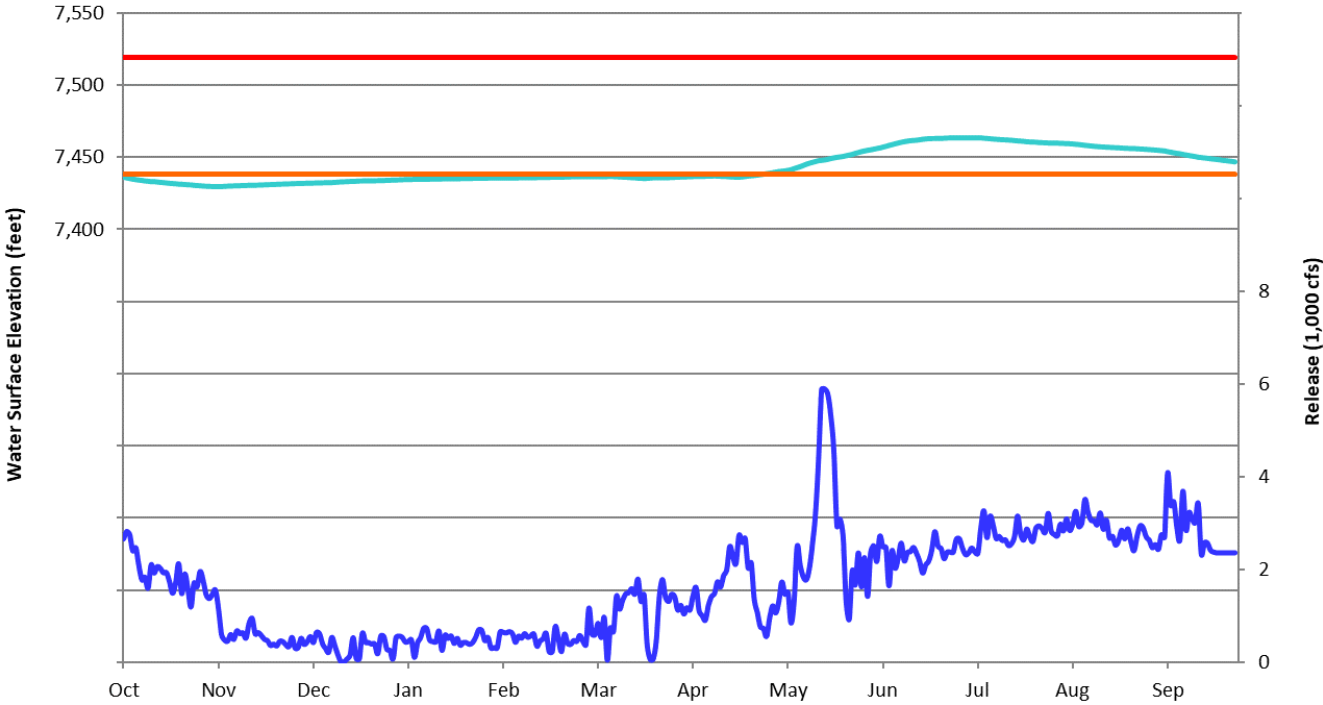
- Maximum Storage Elev = 6,506 feet
- Rated Head Elevation = 6,491 feet
- Water Surface Elevation (feet)
- Release (1,000 cfs)



Blue Mesa Reservoir

Live Storage Capacity - 829,000 acre-feet
Power Generation Capacity - 86,400 kW
Live Storage 9/30/22 - 291,649 acre-feet

- Water Surface Elevation (feet)
- Maximum Storage Elev = 7,519 feet
- Rated Head Elevation = 7,438 feet
- Release (1,000 cfs)



Blue Mesa Reservoir
Water Year 2022

Navajo Reservoir

Live Storage Capacity - 1,701,300 acre-feet

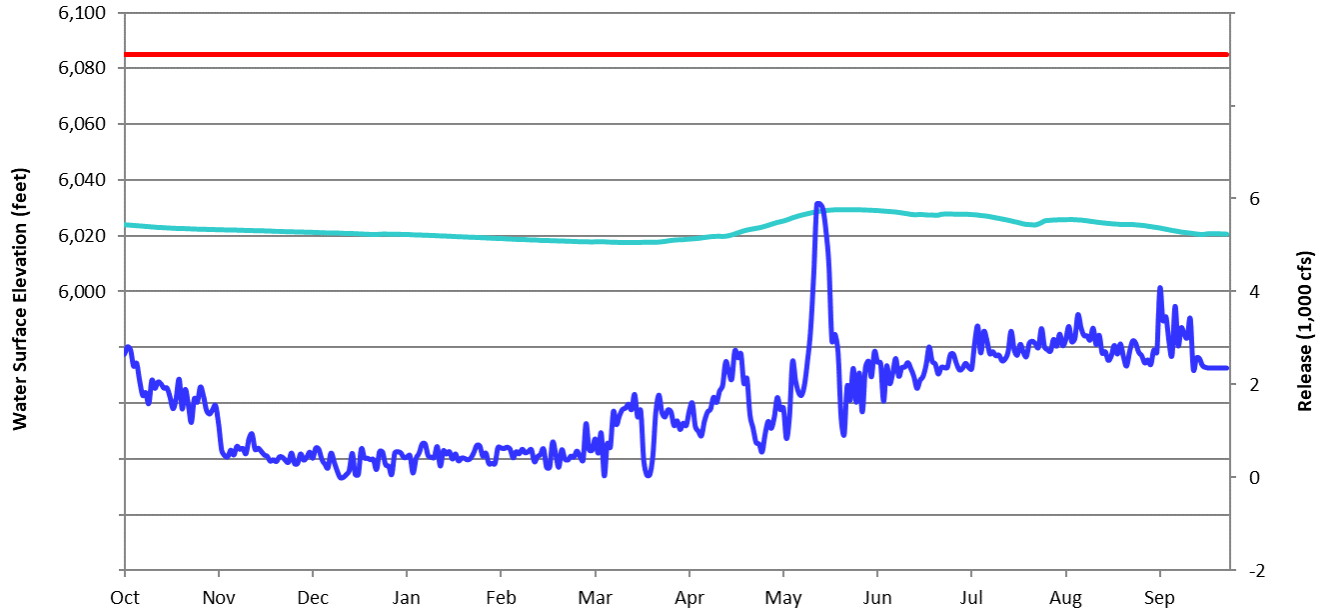
Power Generation Capacity - 0 KW

Live Storage 9/30/22 - 872,025 acre-feet

Water Surface Elevation (feet)

Maximum Storage Elev = 6,085 feet

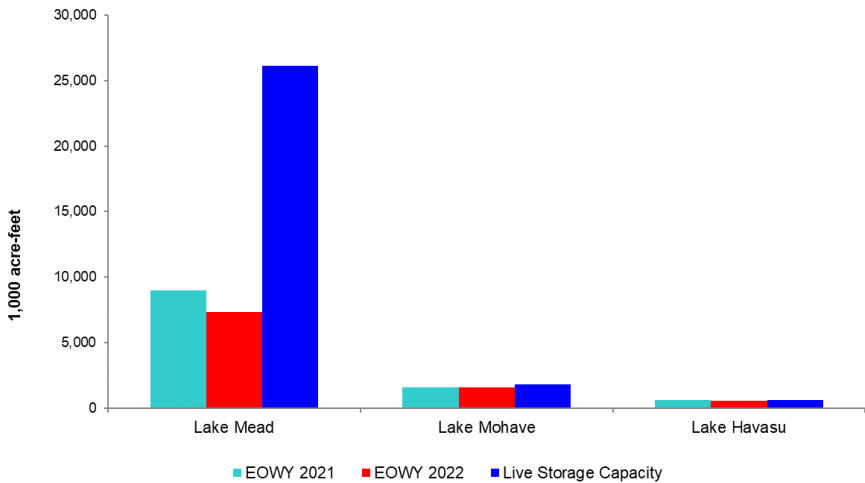
Release (1,000 cfs)



Navajo Reservoir
Water Year 2022

TABLE 6
STORAGE IN PRINCIPAL RESERVOIRS OF THE LOWER BASIN
 END OF WATER YEAR 2022
 LIVE STORAGE CONTENTS

	September 30, 2021 (acre-feet)	% Live Capacity	September 30, 2022 (acre-feet)	% Live Capacity	Change in Storage (acre-feet)
Lake Mead	9,016,000	34.5%	7,328,000	28.1%	(1,688,000)
Lake Mohave	1,565,300	86.6%	1,595,200	88.2%	29,900
Lake Havasu	589,500	95.2%	579,200	93.5%	(10,300)
Total	11,170,800	39.1%	9,502,400	33.3%	(1,668,400)

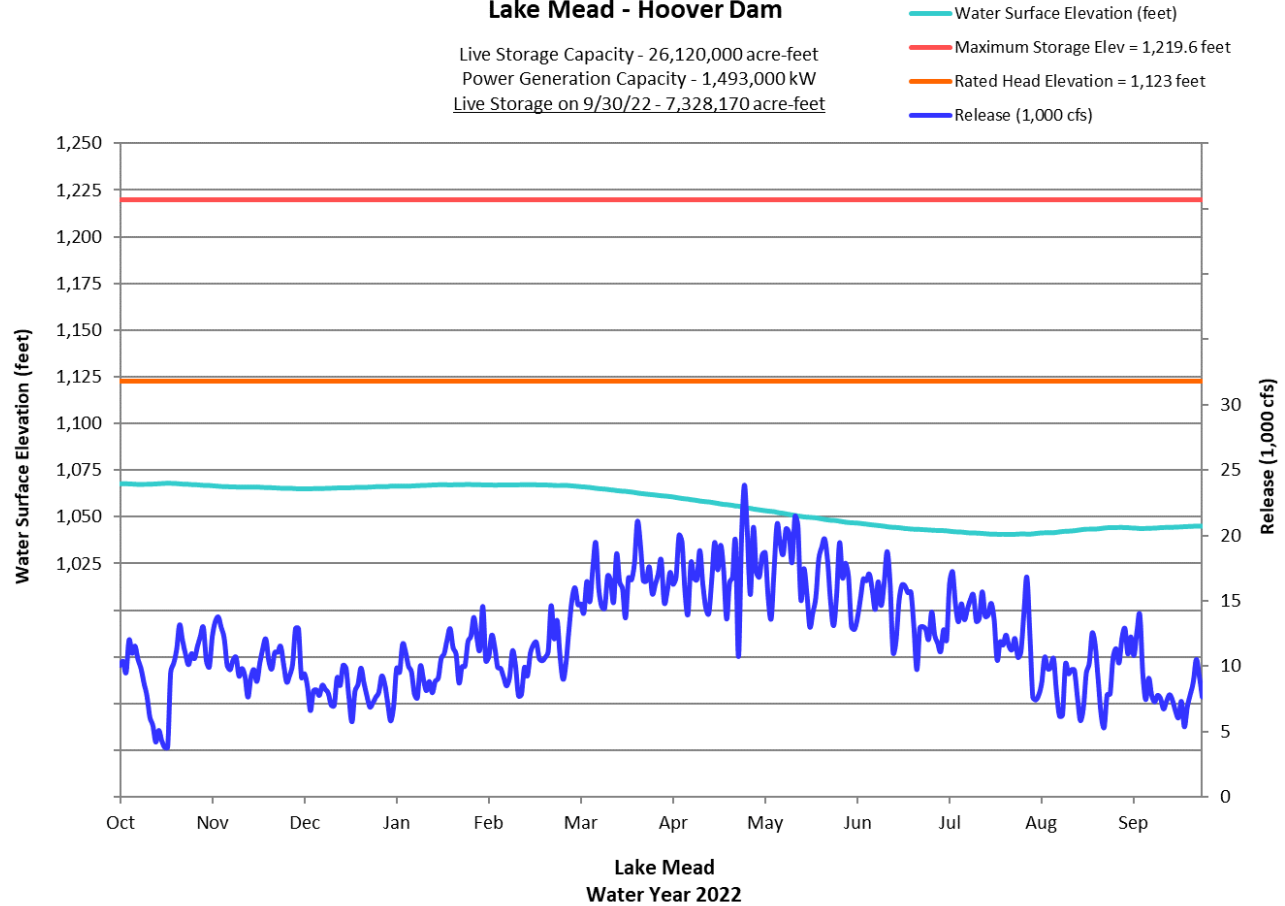


Lake Mead - Hoover Dam

Live Storage Capacity - 26,120,000 acre-feet

Power Generation Capacity - 1,493,000 kW

Live Storage on 9/30/22 - 7,328,170 acre-feet



Flows of the Colorado River

Table 7 on pages 42 through 44 shows the estimated natural flow of the Colorado River at Lee Ferry, Arizona for each water year from 1896 through 2022. Column (4) of the table shows the average natural flow for any given year within the period computed through water year 2022. Column (5) shows the average natural flow for a given year within the period computed since 1896. Column (6) shows the average natural flow for each progressive ten-year period beginning with the ten-year period ending on September 30, 1905. The difference between the natural flow for a given year and the average flow over the 126-year period, 1896 through 2022, is shown in column (7).

Article III(d) of the 1922 Colorado River Compact stipulates that “the States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in a continuing progressive series beginning with the first day of October next succeeding the ratification of this Compact.” Prior to the storage of water in CRSP reservoirs, which began in 1962, the flow of the river at Lee Ferry in any ten consecutive years was greatly in excess of the 75,000,000 acre-feet required by the Compact. Beginning in 1962, CRSP reservoirs have regulated the river above Glen Canyon Dam.

Table 8 on page 45, shows the historic flow at Lee Ferry for the period 1954 through 2022 and the historic flow for each progressive ten-year period from 1954 through 2022, beginning with the ten-year period ending September 30, 1962, the commencement of storage in CRSP reservoirs.

The flow at Lee Ferry during the ten-year period ending on September 30, 2022, was 85,590,300 acre-feet. The graphs on pages 46 and 47 illustrate some of the pertinent historical flows through the Colorado River System above Lee Ferry. The first graph on page 46 is entitled “Colorado River Natural and Historical Flow Volumes at Lee Ferry, Arizona (Water Year 2022).” The top of each red vertical bar represents the estimated natural flow of the river, i.e., the flow of the river in millions of acre-feet past Lee Ferry for a given year had it not been depleted by human activities. The lower black bars represent the estimated or measured historic flow at Lee Ferry, and the difference between the two sections of the bar in any given year shows the stream depletion or the amount of water estimated to have been removed by human activity from the natural supply upstream from Lee Ferry.

Of note, in 1977 and again in 1981, the historic flow at Lee Ferry exceeded the natural flow. Beginning in 1962, part of this depletion at Lee Ferry was caused by the retention and storage of water in storage units of the CRSP. The horizontal line (at 14.5 maf) is the estimated long-term average natural flow from 1896 through 2022. As the 1922 Colorado River Compact is administered based on

running averages over ten-year periods, the progressive ten-year average historic and natural flows are displayed on this graph.

The second graph on page 47, entitled “Lee Ferry Average Annual Natural and Historic Flow for Select Periods,” illustrates the historic measured flow at Lee Ferry and natural flow averages for several selected periods of record. The periods selected are those referenced most often for various purposes related to Colorado River System operations.

On page 45, from the bottom bars to the top.

- 1) For the longest period shown, 1896-2022, the estimated average annual natural flow is 14.5 maf, and the average annual historic measured flow is 11.6 maf.
- 2) For the period 1896-1921, prior to the 1922 Colorado River Compact, the estimated average annual natural flow was 16.8 maf, which is considerably greater than for any other period selected, including the long-term average. A streamgage station at Lee Ferry, Arizona was not installed until 1921. The natural flow at Lee Ferry prior to the 1922 Compact was estimated based on records obtained at other stations (e.g., the streamgage on the Colorado River at Yuma, Arizona for the period 1902-1921).
- 3) For the second-longest period shown, 1906-2022, the estimated average annual natural flow is 14.5 maf, and the average annual historic measured flow is 11.4 maf. Many of the early records for this series of years as well as for the 1896-2022 period are based on estimates of flows made at other streamgage stations, as mentioned in (2) above. This average is about equal to the 15 maf estimated for the 1906-1967 period, which was used as the basis for justification of a water supply for the Central Arizona Project authorized in 1968.
- 4) The estimated average annual natural flow during the 1914-2022 period is 14.3 maf. This period is an extension of the 1914-1965 period used in the Upper Colorado Region Comprehensive Framework studies of 1971. The average annual natural flow for the 1914-1965 period is 14.6 maf.
- 5) The average annual natural flow for the period 1914-1945 is 15.6 maf. This was the period of record used by the negotiators of the Upper Colorado River Basin Compact.
- 6) For the period 1922-2022, which is the period of record since the signing of the Colorado River Compact, the average annual natural flow is 13.9 maf, and the average annual historic measured flow is 10.5 maf. Records for this series of years are based upon actual measurements of flows at the Lees Ferry streamgage. The ten-year progressive moving average flow since 1922 is considerably less than the ten-year progressive moving average flow prior to 1922.
- 7) The 1931-2018 or “early pluvial removed” period of record is currently used for hydrologic modeling purposes by Reclamation. It excludes a

- period of unusual wetness prevalent in the pre-1931 period.
- 8) Two completely unrelated ten-year periods of minimum flows have occurred since 1930. During these periods, 1931-1940 and 1954-1963, the average annual natural flow amounts to 11.8 maf and 11.6 maf, respectively.
 - 9) For a 12-year period, 1953-1964, the average annual natural flow amounted to 11.6 maf.
 - 10) Since Glen Canyon Dam's closure in 1963, the estimated natural flow for the subsequent 59 years is 14.0 maf. The estimated historical measured flow for the same period (1964-2022) is 9.6 maf.
 - 11) The 1988-2019 period, or "stress test hydrology" period of record, is currently used by Reclamation for hydrologic modeling purposes and was used during the development of the DCPs to evaluate the relative risk of various operational scenarios. It comprises a period of more extreme dryness that may represent changing hydrology due to climate change. The estimated natural flow for this period is 13.3 maf, while the historic flow for the same period is 9.2 maf.
 - 12) The estimated average annual natural flow and historic measured flow amounts recorded for the 2000-2022 period of record (now generally referred to as the "Millennium Drought") are used as the extent years of the most recent extended drought and further illustrate the trend within the Upper Basin of reduced hydrologic flow. The estimated natural flow for this period is 12.2 maf.

TABLE 7
ESTIMATED NATURAL FLOW VOLUMES AT LEE FERRY
(million acre-feet)

1	2	3	4	5	6	7
Years to 2022	End of Water Year	Estimated Natural Flow	Average to 2022	Average Since 1896	Progressive 10-Year Average	Natural Flow Minus 125-Year Average
127	1896	10.1	14.5	10.1		-4.4
126	1897	18.0	14.5	14.1		3.5
125	1898	13.8	14.5	14.0		-0.7
124	1899	15.9	14.5	14.5		1.4
123	1900	13.2	14.5	14.2		-1.3
122	1901	13.6	14.5	14.1		-0.9
121	1902	9.4	14.5	13.4		-5.1
120	1903	14.8	14.5	13.6		0.3
119	1904	15.6	14.5	13.8		1.1
118	1905	16.0	14.5	14.0	14.0	1.5
117	1906	19.1	14.5	14.5	14.9	4.6
116	1907	23.4	14.5	15.2	15.5	8.9
115	1908	12.9	14.4	15.1	15.4	-1.6
114	1909	23.3	14.4	15.7	16.1	8.8
113	1910	14.2	14.3	15.6	16.2	-0.3
112	1911	16.0	14.3	15.6	16.5	1.5
111	1912	20.5	14.3	15.9	17.6	6.0
110	1913	14.5	14.3	15.8	17.6	0.0
109	1914	21.2	14.3	16.1	18.1	6.7
108	1915	14.0	14.2	16.0	17.9	-0.5
107	1916	19.2	14.2	16.1	17.9	4.7
106	1917	24.0	14.2	16.5	18.0	9.5
105	1918	15.4	14.1	16.4	18.2	0.9
104	1919	12.5	14.0	16.3	17.2	-2.0
103	1920	22.0	14.1	16.5	17.9	7.5
102	1921	23.0	14.0	16.8	18.6	8.5
101	1922	18.3	13.9	16.8	18.4	3.8
100	1923	18.3	13.9	16.9	18.8	3.8
99	1924	14.2	13.8	16.8	18.1	-0.3
98	1925	13.0	13.8	16.6	18.0	-1.5
97	1926	15.9	13.8	16.6	17.7	1.4
96	1927	18.6	13.8	16.7	17.1	4.1
95	1928	17.3	13.7	16.7	17.3	2.8
94	1929	21.4	13.7	16.8	18.2	6.9
93	1930	14.9	13.6	16.8	17.5	0.4
92	1931	7.8	13.6	16.5	16.0	-6.7
91	1932	17.2	13.7	16.6	15.9	2.7
90	1933	11.4	13.6	16.4	15.2	-3.1
89	1934	5.6	13.7	16.1	14.3	-8.9
88	1935	11.6	13.7	16.0	14.2	-2.9
87	1936	13.8	13.8	16.0	14.0	-0.7
86	1937	13.7	13.8	15.9	13.5	-0.8

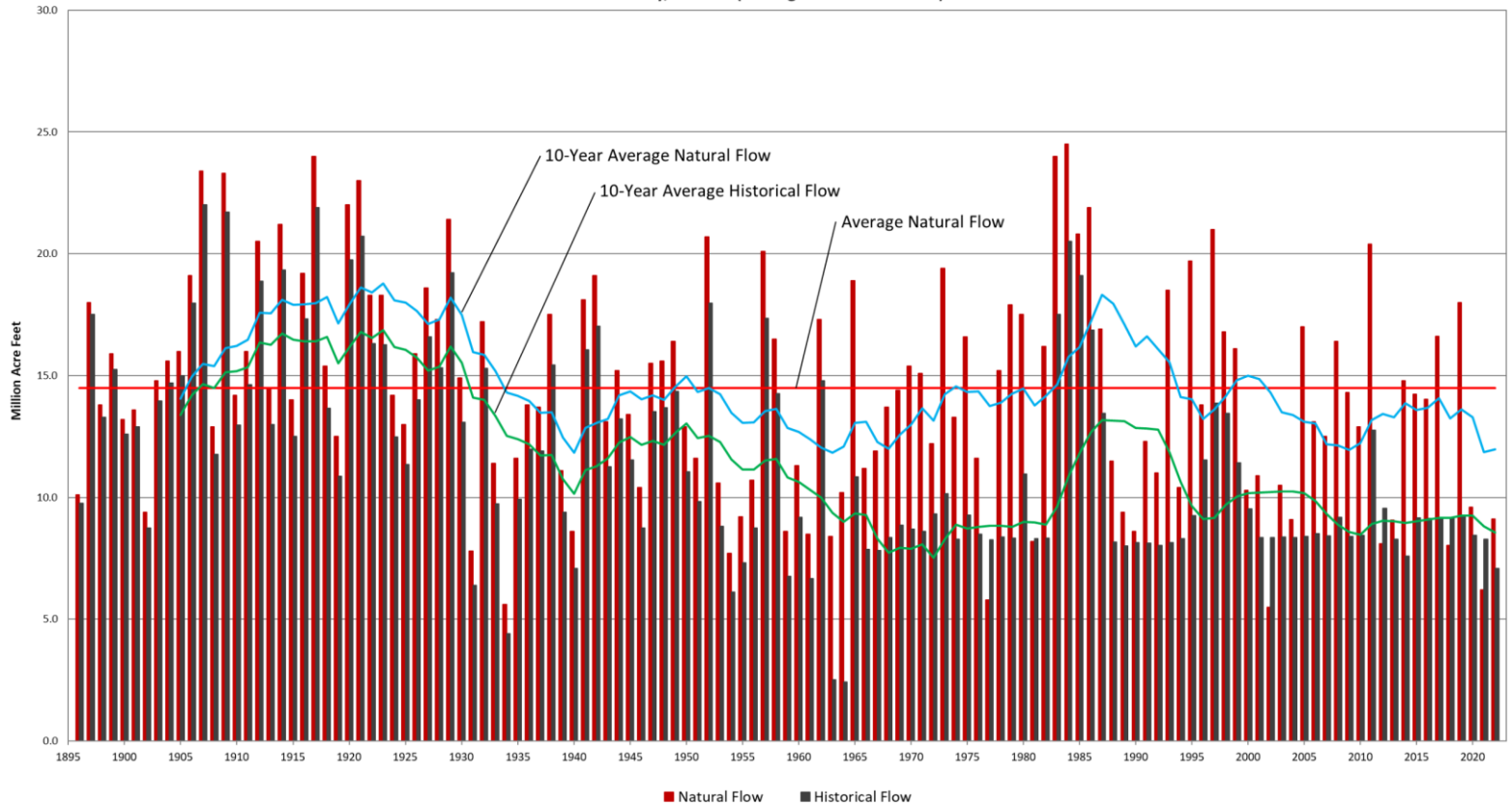
1	2	3	4	5	6	7
Years to 2022	End of Water Year	Estimated Natural Flow	Average to 2022	Average Since 1896	Progressive 10-Year Average	Natural Flow Minus 125-Year Average
85	1938	17.5	13.8	16.0	13.5	3.0
84	1939	11.1	13.7	15.8	12.5	-3.4
83	1940	8.6	13.8	15.7	11.8	-5.9
82	1941	18.1	13.8	15.7	12.9	3.6
81	1942	19.1	13.8	15.8	13.1	4.6
80	1943	13.1	13.7	15.8	13.2	-1.4
79	1944	15.2	13.7	15.7	14.2	0.7
78	1945	13.4	13.7	15.7	14.4	-1.1
77	1946	10.4	13.7	15.6	14.0	-4.1
76	1947	15.5	13.7	15.6	14.2	1.0
75	1948	15.6	13.7	15.6	14.0	1.1
74	1949	16.4	13.7	15.6	14.5	1.9
73	1950	12.9	13.7	15.6	15.0	-1.6
72	1951	11.6	13.7	15.5	14.3	-2.9
71	1952	20.7	13.7	15.6	14.5	6.2
70	1953	10.6	13.6	15.5	14.2	-3.9
69	1954	7.7	13.6	15.4	13.5	-6.8
68	1955	9.2	13.7	15.3	13.1	-5.3
67	1956	10.7	13.8	15.2	13.1	-3.8
66	1957	20.1	13.8	15.3	13.6	5.6
65	1958	16.5	13.7	15.3	13.6	2.0
64	1959	8.6	13.7	15.2	12.9	-5.9
63	1960	11.3	13.8	15.1	12.7	-3.2
62	1961	8.5	13.8	15.0	12.4	-6.0
61	1962	17.3	13.9	15.0	12.1	2.8
60	1963	8.4	13.8	15.0	11.8	-6.1
59	1964	10.2	13.9	14.9	12.1	-4.3
58	1965	18.9	14.0	14.9	13.1	4.4
57	1966	11.2	13.9	14.9	13.1	-3.3
56	1967	11.9	14.0	14.8	12.3	-2.6
55	1968	13.7	14.0	14.8	12.0	-0.8
54	1969	14.4	14.0	14.8	12.6	-0.1
53	1970	15.4	14.0	14.8	13.0	0.9
52	1971	15.1	14.0	14.8	13.7	0.6
51	1972	12.2	14.0	14.8	13.1	-2.3
50	1973	19.4	14.0	14.9	14.2	4.9
49	1974	13.3	13.9	14.8	14.6	-1.2
48	1975	16.6	13.9	14.9	14.3	2.1
47	1976	11.6	13.8	14.8	14.4	-2.9
46	1977	5.8	13.9	14.7	13.8	-8.7
45	1978	15.2	14.1	14.7	13.9	0.7
44	1979	17.9	14.0	14.8	14.3	3.4
43	1980	17.5	13.9	14.8	14.5	3.0
42	1981	8.2	13.9	14.7	13.8	-6.3
41	1982	16.2	14.0	14.7	14.2	1.7

1	2	3	4	5	6	7
Years to 2022	End of Water Year	Estimated Natural Flow	Average to 2022	Average Since 1896	Progressive 10-Year Average	Natural Flow Minus 125-Year Average
40	1983	24.0	13.9	14.8	14.6	9.5
39	1984	24.5	13.7	14.9	15.8	10.0
38	1985	20.8	13.4	15.0	16.2	6.3
37	1986	21.9	13.2	15.1	17.2	7.4
36	1987	16.9	13.0	15.1	18.3	2.4
35	1988	11.5	12.9	15.1	17.9	-3.0
34	1989	9.4	12.9	15.0	17.1	-5.1
33	1990	8.6	13.0	14.9	16.2	-5.9
32	1991	12.3	13.1	14.9	16.6	-2.2
31	1992	11.0	13.2	14.9	16.1	-3.5
30	1993	18.5	13.2	14.9	15.5	4.0
29	1994	10.4	13.1	14.9	14.1	-4.1
28	1995	19.7	13.1	14.9	14.0	5.2
27	1996	13.8	12.9	14.9	13.2	-0.7
26	1997	21.0	12.9	15.0	13.6	6.5
25	1998	16.8	12.5	15.0	14.2	2.3
24	1999	16.1	12.4	15.0	14.8	1.6
23	2000	10.3	12.2	14.9	15.0	-4.2
22	2001	10.9	12.3	14.9	14.9	-3.6
21	2002	5.5	12.4	14.8	14.3	-9.0
20	2003	10.5	12.7	14.8	13.5	-4.0
19	2004	9.1	12.8	14.7	13.4	-5.4
18	2005	17.0	13.0	14.7	13.1	2.5
17	2006	13.1	12.8	14.7	13.0	-1.4
16	2007	12.5	12.8	14.7	12.2	-2.0
15	2008	16.4	12.8	14.7	12.1	1.9
14	2009	14.3	12.5	14.7	12.0	-0.2
13	2010	12.9	12.4	14.7	12.2	-1.6
12	2011	20.4	12.3	14.8	13.2	5.9
11	2012	8.1	11.6	14.7	13.4	-6.4
10	2013	9.1	12.0	14.6	13.3	-5.4
9	2014	14.8	12.3	14.5	13.9	0.3
8	2015	14.2	12.0	14.6	13.6	-0.2
7	2016	14.0	11.7	14.6	13.7	-0.5
6	2017	16.6	11.3	14.7	14.1	2.1
5	2018	8.0	10.2	14.6	13.2	-6.5
4	2019	18.0	10.7	14.6	13.6	3.5
3	2020	9.6	8.3	14.6	13.3	-4.9
2	2021	6.2	7.7	14.5	11.9	-8.3
1	2022	9.1	9.1	14.5	12.0	-5.4
Maximum		24.5			18.8	10.0
Minimum		5.5			11.8	-9.0
Average		14.5			14.6	0.0

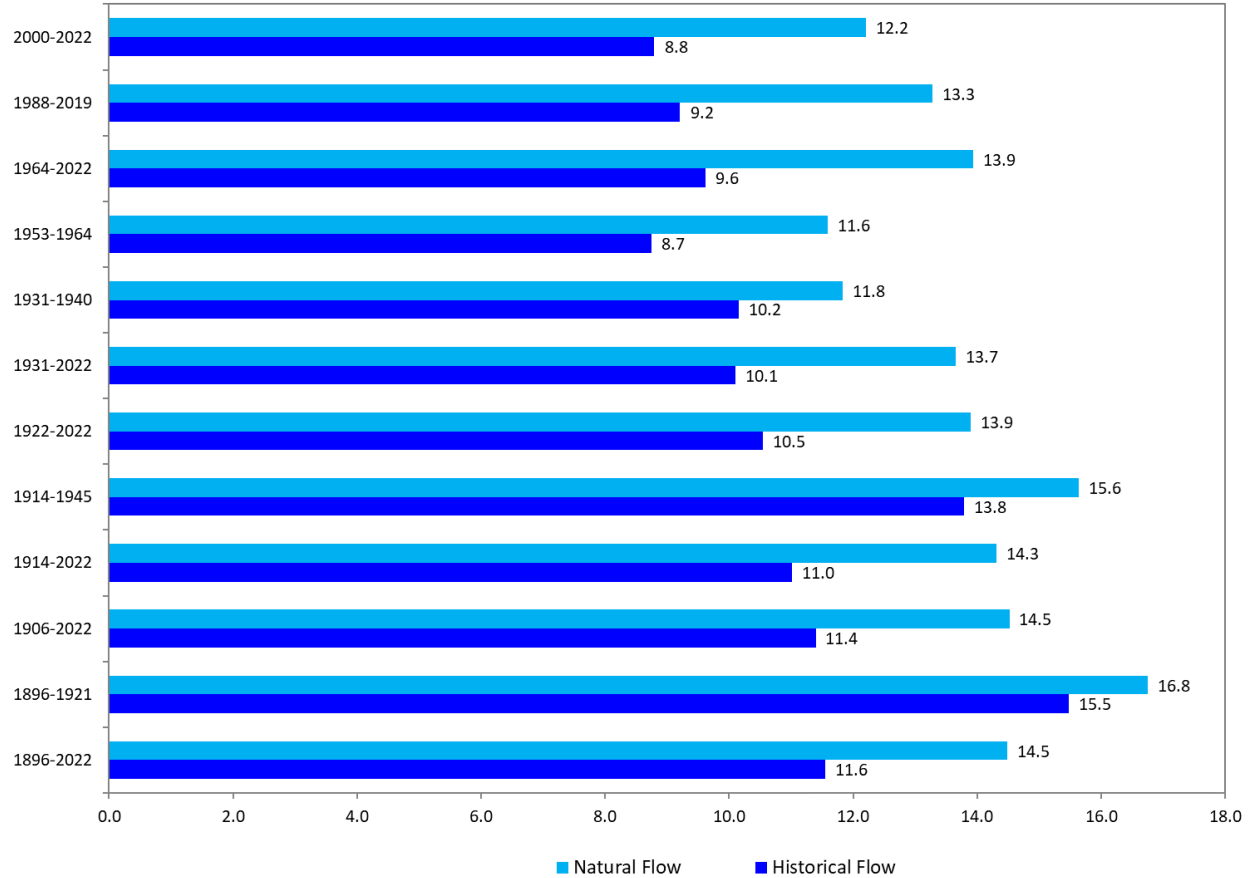
TABLE 8
HISTORIC FLOW AT LEE FERRY
1954 - 2021

End of Water Year	Historic Flow at Lee Ferry (maf)	10-Year Progressive Flow at Lee Ferry (kaf)	End of Water Year	Historic Flow at Lee Ferry (maf)	10-Year Progressive Flow at Lee Ferry (kaf)
1954	6.116	115,636	1989	7.994	131,205
1955	7.307	111,403	1990	8.151	128,406
1956	8.750	111,409	1991	8.131	128,221
1957	17.340	115,239	1992	8.023	127,921
1958	14.260	115,809	1993	8.137	118,537
1959	6.756	108,205	1994	8.304	106,324
1960	9.192	106,337	1995	9.242	96,457
1961	6.674	103,180	1996	11.532	91,123
1962	14.790	99,990	1997	13.874	91,547
1963	2.520	93,705	1998	13.440	96,827
1964	2.427	90,016	1999	11.430	100,264
1965	10.835	93,544	2000	9.529	101,642
1966	7.870	92,664	2001	8.361	101,872
1967	7.824	83,148	2002	8.347	102,197
1968	8.358	77,246	2003	8.372	102,432
1969	8.850	79,340	2004	8.348	102,475
1970	8.688	78,836	2005	8.395	101,628
1971	8.607	80,769	2006	8.507	98,603
1972	9.330	75,309	2007	8.421	93,150
1973	10.141	82,930	2008	9.180	88,890
1974	8.277	88,780	2009	8.406	85,866
1975	9.274	87,219	2010	8.437	84,774
1976	8.494	87,843	2011	12.753	89,166
1977	8.269	88,288	2012	9.542	90,361
1978	8.369	88,299	2013	8.289	90,277
1979	8.333	87,782	2014	7.590	89,519
1980	10.950	90,044	2015	9.157	90,282
1981	8.316	89,753	2016	9.138	90,913
1982	8.323	88,746	2017	9.170	91,661
1983	17.520	96,125	2018	9.171	91,653
1984	20.518	108,366	2019	9.264	92,511
1985	19.109	118,201	2020	8.436	92,509
1986	16.866	126,573	2021	8.293	88,049
1987	13.450	131,754	2022	7.083	85,590
1988	8.160	131,545			
Table Note: Storage in Flaming Gorge and Navajo Reservoirs began in 1962. Storage in Lake Powell began in 1963. Storage in Fontanelle Reservoir began in 1964.					

Colorado River Natural and Historical Flow Volume
at Lee Ferry, Arizona (Through Water Year 2022)



**Lee Ferry Average Annual Natural and Historical
Flow Volumes For Select Periods (maf)**



LEGAL MATTERS

Litigation Summary

Save the Colorado v. United States Department of the Interior, CV-19-08285 (D. Ariz. 2022).

In 2019, Save the Colorado, Living Rivers, and the Center for Biological Diversity (Plaintiffs) filed a Complaint against the U.S. Department of Interior and the Secretary of the Interior (Defendants), challenging the Department's adoption of the Glen Canyon Long-Term Experimental and Management Plan (LTEMP). The Plaintiffs' claims concerned the adequacy of the Defendants' consideration of climate change, as well as the Plaintiffs' eleven proposed alternatives, in the LTEMP Final Environmental Impact Statement (FEIS).

There were no significant filings in this case during Water Year 2022. Commission legal staff and Upper Division State advisors continue to inform the Commissioners and other interested parties about developments in the courts related to this case.

COLORADO RIVER SALINITY PROGRAM

The Upper Colorado River Commission has continued its interest and involvement in the Colorado River Basin salinity control efforts. The Commission staff has worked with representatives of the Commission’s member States, particularly through the Colorado River Basin Salinity Control Forum (Forum), which is composed of representatives from the seven Colorado River Basin States. The Forum has developed water quality standards, including a plan of implementation, to meet Clean Water Act requirements. Section 303 of the Clean Water Act requires that water quality standards be reviewed at least once during each three-year period. In 2020, the Forum reviewed the existing State-adopted and Environmental Protection Agency-approved numeric salinity criteria and found no reason to change them for three Lower Basin mainstem stations, as follows:

Salinity in (mg/l)

Below Hoover Dam	723
Below Parker Dam	747
At Imperial Dam	879

The Forum then updated its plan of implementation. The Forum is now in the middle of its Review process and will again review the numeric criteria and update its plan of implementation. For a number of years, the States, the Upper Colorado River Commission, and the Forum have worked with Reclamation to continue to update its river model (CRSS) that can reproduce flows and salinity concentrations of the past and predict probabilities of flows and salinity concentrations in the future. This model is used as a tool in the preparation of the reviews.

The Salinity Control Program has been successful in implementing controls that have reduced the average concentrations at all three downstream stations by about 100mg/L. The salinity standards are based on long-term average flows, and the river model can assist with the analysis of future salinity control needs. The 2020 Review recognized existing measures in place which control about 1.2 million tons of salt annually and the need to implement new measures over the triennial review period to control an additional 62,400 tons annually. Looking to out years, the Forum identified a program to control a total of 1.70 million tons annually by the year 2040. The Salinity Control Program is not designed to offset short-term variances caused by short-term hydrologic differences from the norm.

The Forum has also been heavily involved in working with Reclamation on identifying a brine disposal alternative for Reclamation’s Paradox Valley Unit. This unit has historically reduced the salt load of the Colorado River by about 100,000 tons of salt per year, but seismic concerns from deep-well injection have caused Reclamation to seek a new disposal alternative. The Forum has also been working with the federal agencies in responding to a deficit in cost-share funding from the Lower Colorado River Basin Development Fund.

COLORADO RIVER STORAGE PROJECT (CRSP) AND PARTICIPATING PROJECTS

AUTHORIZED STORAGE UNITS

Information relative to storage units and participating projects has been provided by the United States Department of the Interior, Bureau of Reclamation, Interior Region 7: Upper Colorado Basin.

The guiding force behind development and management of water in the Upper Basin is the Colorado River Storage Project (CRSP). Authorized by the Colorado River Storage Project Act of 1956 (Public Law [P.L.] 485, 84th Congress, 70 Stat. 105) (CRSPA), the CRSP allows for the comprehensive development of water resources of the Upper Basin States while providing for long-term regulatory storage of water to meet the entitlements of the Lower Basin. The CRSP is one of the most complex and extensive river resource developments in the world and was integral to the development of the arid West.

Four initial storage units were authorized by the 1956 Act: the Glen Canyon Unit on the Colorado River in Arizona and Utah; the Flaming Gorge Unit on the Green River in Utah and Wyoming; the Navajo Unit on the San Juan River in Colorado and New Mexico; and the Wayne N. Aspinall Unit, formerly named the Curecanti Unit and rededicated in July 1981, on the Gunnison River in Colorado. The Aspinall Unit consists of Blue Mesa, Morrow Point, and Crystal dams and reservoirs. Combined, the four main storage units provide about 30.6 million acre-feet of live water storage capacity. The CRSPA also authorized the construction of eleven participating projects. Additional participating projects have been authorized by subsequent Congressional legislation.

As stated in the CRSPA, the CRSP was authorized “[I]n order to initiate the comprehensive development of the water resources of the Upper Colorado River Basin, for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the provisions of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the reclamation of arid and semiarid land, for the control of floods, and for the generation of hydroelectric power, as an incident of the foregoing purposes.” Key benefits are also provided for recreation and for fish and wildlife needs and other environmental considerations per the Colorado River Basin Project Act of 1968 (CRBPA), National Environmental Policy Act of 1969 (NEPA), Endangered Species Act of 1973 (ESA), and Grand Canyon Protection Act of 1992 (GCPA).

The CRSP initial storage units and authorized participating projects are described in this 74th Annual Report and earlier annual reports of the Upper Colorado River Commission. Outlined below are updates on construction, operation and

maintenance, power generation, recreational use, invasive mussel control, planning investigation activities, reservoir operations, and appropriations of funds for the storage units and participating projects accomplished during the past water year (October 1, 2021 to September 30, 2022), the federal fiscal year (October 1, 2021 to September 30, 2022), and the calendar year (2022). Significant upcoming or projected information is also included for some storage units and projects.

Glen Canyon Unit

Glen Canyon Dam and Lake Powell Reservoir comprises the key storage unit of the CRSP and is the largest of the initial four, providing about 80% of the storage and generating capacity. Construction of the dam was completed in 1963.



FIGURE 5. Glen Canyon Dam and Low Lake Powell Elevations

At optimum conditions, the eight generators at Glen Canyon Dam can produce 1,320 megawatts of power. Water is drawn into the power penstock intakes about 200-230 feet below the surface of Lake Powell at full pool, which results in clear cold water with year-round temperatures of 45°F to 50°F being released from Glen Canyon Dam. During protracted droughts, such as has occurred since 2000, Lake Powell elevations decline to levels where warmer water is drawn through the penstocks and released downstream.

Since the damming of the river in 1963, there has been only one flow release that approached average pre-dam spring floods. In 1983, unanticipated hydrologic events in the Upper Colorado River Basin, combined with a lack of available storage

space in Lake Powell resulted in emergency releases from Glen Canyon Dam that reached 93,000 cubic feet per second (cfs). Except for the flood events of the mid-1980s, historic daily releases prior to the preparation of the final 1995 Glen Canyon Dam Environmental Impact Statement (EIS) generally ranged between 1,000 cfs and 25,000 cfs, with flows averaging between 5,000 cfs and 20,000 cfs.

The Colorado River ecosystem below the dam has changed significantly from its pre-dam natural character as a result of the construction and operation of Glen Canyon Dam. In addition, the dam's highly variable flow releases from 1964 to 1991 caused concern over resource degradation resulting from dam operations. Because of these concerns, the Secretary of the Interior (Secretary) adopted interim operating criteria in October 1991 that narrowed the range of daily powerplant fluctuations.

Responding to concerns that changes to the Colorado River ecosystem were resulting from dam operations, Reclamation launched the Glen Canyon Environmental Studies program in 1982. The research program's first phase (1982-1988) focused on developing baseline resource assessments of physical and biotic resources. The second phase (1989-1996) introduced experimental dam releases and expanded research programs in native and non-native fishes, hydrology and aquatic habitats, terrestrial flora and fauna, cultural and ethnic resources, and social and economic impacts.

By the late 1980s, sufficient knowledge had been developed to raise concerns that downstream impacts were occurring and that additional information needed to be developed to quantify the effects and to develop management actions that could avoid and/or mitigate the impacts. This collective information, and other factors, led to a July 1989 decision by the Secretary to direct Reclamation to prepare an EIS on the operation of Glen Canyon Dam. The intent was to evaluate alternative dam operation strategies to lessen the impacts of operations on downstream resources.

In October 1992, President George H.W. Bush signed into law the Reclamation Projects Authorization and Adjustment Act, P.L. 102-575. Responding to continued concerns over potential impacts of Glen Canyon Dam operations on downstream resources, Congress included the Grand Canyon Protection Act (GCPA) as Title 18 of this Act. Section 1802(a) of the GCPA requires the Secretary to operate Glen Canyon Dam:

"... in accordance with the additional criteria and operating plans specified in Section 1804 and exercise other authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use."

The GCPA directs the Secretary to implement this section in a manner fully consistent with all existing laws that govern the allocation, appropriation,

development, and exportation of the waters of the Colorado River Basin.

Section 1804 of the GCPA required preparation of an EIS, adoption of operating criteria and plans, reports to Congress, and allocation of costs. The Operation of Glen Canyon Dam Final Environmental Impact Statement (FEIS) was filed with the Environmental Protection Agency in March 1995 and a Record of Decision (ROD) was signed in October 1996. Following the signing of the ROD, the Secretary adopted a formal set of operating criteria (February 1997) and the 1997 Annual Plan of Operations. This action terminated the 1991 interim operating criteria.

The signing of the 1996 ROD began a new chapter in the history of Glen Canyon Dam. In addition to meeting traditional water and power needs, the dam was now being operated in a more environmentally-sensitive manner. The EIS process demonstrated the value of a cooperative, integrative approach to dealing with complex environmental issues. The inclusion of stakeholders resulted in a process that served to guide future operations of Glen Canyon Dam and became a template for other river systems.

Adaptive Management

The Glen Canyon Dam Adaptive Management Program (AMP) was implemented following the 1996 ROD on the Operation of Glen Canyon Dam FEIS to comply with consultation requirements of the GCPA.⁸ The 2016 ROD for the Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP) FEIS confirmed the continuation of the AMP. The AMP provides an organizational structure and process to ensure the use of scientific information in decision making for Glen Canyon Dam operations and protection of downstream resources in Glen Canyon and Grand Canyon consistent with the GCPA.

The AMP includes the Adaptive Management Work Group (AMWG) federal advisory committee, Secretary's Designee, Technical Work Group, U.S. Geological Survey's Grand Canyon Monitoring and Research Center, and independent scientific review panels. Regional Directors from Department of the Interior bureaus such as Reclamation and the National Park Service (NPS) also facilitate communication and cooperation within the AMP. The AMWG makes recommendations to the Secretary concerning Glen Canyon Dam operations and other management actions to protect resources downstream of the dam consistent with the GCPA and other applicable provisions of federal law.

A diverse group of 25 stakeholders from federal, state, and tribal governments; contractors who purchase power from Glen Canyon Dam; and environmental and recreational organizations participate in the AMP and each has a voice in formal recommendations. The AMP stakeholders have divergent views on the interpretation of the GCPA, particularly regarding how it may or may not amend

⁸ U.S. Bureau of Reclamation. Glen Canyon Dam Adaptive Management Program. Website accessed at: <https://www.usbr.gov/uc/progact/amp/index.html>.

previous statutes related to the operation of Glen Canyon Dam. While each stakeholder represents their own interests, they also work together for the common good of protecting the ecosystem downstream from Glen Canyon Dam and meeting provisions of the GCPA, ESA, National Historic Preservation Act, and other relevant federal laws.

Current efforts in the AMP include improving the status of the endangered razorback sucker⁹ and the threatened humpback chub, the conservation of sediment to rebuild beaches in Glen and Grand canyons, and the protection of cultural resources. With water levels declining to historically low levels, which contributes to higher water temperatures in Lake Powell, juvenile smallmouth bass were found in the Colorado River below the dam, which are a threat to downstream native fish, including the humpback chub and razorback suckers. Reclamation is pursuing implementation of flow options at Glen Canyon Dam to respond to invasive smallmouth bass below the dam.¹⁰

The AMP will continue to make progress in forming partnerships among participants, understanding resource issues, and experimenting with dam operations and other management actions to better accomplish the intent of the LTEMP ROD and GCPA.

Record of Decision for the Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead

Against the backdrop of the worst drought in over a century on the Colorado River, and pursuant to a Secretarial directive to finish this effort by 2007, Reclamation worked with the Basin States through a NEPA process to develop interim operational guidelines for Lake Powell and Lake Mead to address drought and low reservoir conditions. These operational guidelines provided Colorado River water users and managers in the United States a greater degree of certainty about how the two large reservoirs on the Colorado River will be operated under low water conditions, and when – and by how much – water deliveries will be reduced to the Lower Basin states of Arizona, California, and Nevada in the event of drought or other low reservoir conditions. In a separate, cooperative process, Reclamation worked through the State Department to consult with Mexico regarding potential water delivery reductions to Mexico under the 1944 Treaty with the United States.

A ROD was signed by the Secretary in December 2007 that implements the interim operational guidelines that will be in place through 2026. The key components of the guidelines are: (1) a shortage strategy for Lake Mead and the Lower Division states, (2) coordinated operations of Lakes Powell and Mead through a full range

⁹ U.S. Bureau of Reclamation. Larval Trigger Study Plan Pays Off Big for Razorback Sucker in 2022. Accessed at: https://www.usbr.gov/newsroom/news-release/4393?field_story=1&filterBy=region®ion=Upper%20Colorado%20Basin.

¹⁰ U.S. Bureau of Reclamation. Protecting threatened and endangered fish below Glen Canyon Dam. Accessed at: https://www.usbr.gov/newsroom/news-release/4315?field_story=1&filterBy=region®ion=Upper%20Colorado%20Basin.

of operations, (3) a mechanism for the creation and delivery of conserved system and non-system water in Lake Mead (Intentionally Created Surplus), and (4) the modification and extension of the existing Interim Surplus Guidelines.

Consistent with Section XI.G.7.D. of the 2007 Interim Guidelines Record of Decision (2007 Interim Guidelines), Reclamation completed a review of the implementation of the Guidelines (7.D. Review).¹¹ The review is a retrospective look at past operations and actions under the 2007 Interim Guidelines and is not a consideration of future activities. Through the 7.D. Review, Reclamation built a technical foundation to inform future consideration of operations and brings partners, stakeholders, and the public to a common understanding of past operations and their effectiveness. The 7.D. Review was completed in December 2020.

Several reservoir and water management decisional documents and agreements that govern the operation of Lake Powell and Lake Mead expire at the end of 2026. These include the 2007 Interim Guidelines, some provisions of the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty).



FIGURE 6. Image of the rock wall on the side of Glen Canyon Dam showing the bathtub ring levels.

In June 2022, Reclamation issued a Federal Register Notice as a pre-scoping tool to receive specific input on the stakeholder engagement process along with what should be included for post-2026 reservoir operations.¹² The comment period was

¹¹ U.S. Bureau of Reclamation. 7.D. Review & Report Background. Accessed at: <https://www.usbr.gov/ColoradoRiverBasin/7DReview.html>.

¹² U.S. Bureau of Reclamation. Post-2026 Colorado River Reservoir Operational Strategies for Lake Powell and Lake Mead. Accessed at: <https://www.usbr.gov/ColoradoRiverBasin/Post2026Ops.html>.

open through Sept. 1, 2022. Reclamation was particularly interested in receiving specific recommendations that recognize the need for robust policies that withstand a broad range of future conditions and are not based on a single set of assumptions about water supply and demand; the current and emerging operational challenges resulting from low runoff conditions; and the need for engagement and inclusivity, including all Basin tribes and Mexico, in Colorado River decision-making processes. The comments received will help develop operating strategies for post-2026 prior to the initiation of a formal process pursuant to the NEPA in early 2023.

As directed by the Secretary in December 2010, Reclamation and the National Park Service (NPS) developed the LTEMP EIS for Glen Canyon Dam. A Notice of Intent was published in the *Federal Register* in July 2011 that identified Reclamation and the NPS as co-leads in keeping with their respective authorities for dam operations and park management. Scoping was completed early in 2012, and the LTEMP draft EIS was published in January 2016. The LTEMP FEIS was published in October 2016, and the Secretary signed the LTEMP ROD in December 2016. The FEIS and ROD provide a comprehensive framework for adaptively managing Glen Canyon Dam over the next 20 years, consistent with the GCPA and other provisions of applicable federal law.

The purpose of the LTEMP is to guide facility operations through the use of scientific understanding of the ecosystem downstream from Glen Canyon Dam to protect, mitigate adverse effects to, and improve important downstream resources, while maintaining compliance with relevant laws, including the GCPA, ESA, and the numerous compacts, federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the “Law of the River.” The LTEMP EIS development process involved extensive coordination with 15 cooperating agencies (including six Native American tribes). A primary function of the LTEMP is to continue successful experimentation under the Glen Canyon Dam AMP.

Dam operations and other actions under the jurisdiction of the Secretary were considered in the LTEMP EIS alternatives that are consistent with the scope of the GCPA. The EIS identified a preferred alternative, which was developed later in the EIS process by combining attributes of the existing alternatives to achieve the best balance of resources given the purpose and need for the EIS. The selected alternative includes high-flow experiments, more equal monthly release volumes than the No Action Alternative and several new tools for fish management. The selected alternative is expected to improve sediment conditions below the dam and have slightly positive effects on endangered fish (humpback chub) but have slightly negative impacts (approximately 0.17% increase in cost) to hydropower. The ROD specified a phased implementation, with LTEMP monthly volumes beginning January 1, 2017, and experiments beginning after October 1, 2017.

The LTEMP EIS five-year development process included extensive stakeholder outreach and consultation. Stakeholder involvement through the scoping process, draft EIS review period, and subsequent outreach efforts were instrumental in assuring a full range of alternatives. The LTEMP includes a communication and consultation process that ensures input and consultation with stakeholders throughout the 20-year implementation.

Drought Contingency Planning

In 2019, the Upper Basin and Lower Basin Drought Contingency Plans (DCP) were signed. The DCPs outline strategies to address the ongoing historic drought in the Colorado River Basin. The Upper Colorado Basin DCP is designed to reduce the risk of reaching critical elevations at Lake Powell and to help assure continued compliance with the 1922 Colorado River Compact.

The Drought Response Operations Agreement (DROA) is one element of the Upper Colorado Basin DCP. The DROA identifies a process to temporarily move water stored in the Colorado River Storage Project (CRSP) Initial Units above Lake Powell — Aspinall, Flaming Gorge, and Navajo — to Lake Powell when it is projected to approach elevation 3,525 feet, which was identified in the DROA as the target elevation. This elevation provides a 35-foot buffer above the critical elevation of 3,490 feet, where water management and hydropower operations could be compromised.

Maintaining an elevation above 3,525 feet will help ensure compliance with interstate water compact obligations, maintain the ability to generate hydropower at Glen Canyon Dam, and minimize adverse effects to resources and infrastructure in the Upper Basin. Starting in July 2021, drought response operations were implemented under the DROA, and 161,000 ac-ft of supplemental water was released from Flaming Gorge Reservoir (125,000 ac-ft) and Blue Mesa Reservoir (36,000 ac-ft). The DROA Parties agreed to release an additional 500,000 ac-ft of water from Flaming Gorge to boost elevations at Lake Powell beginning in May 2022. Also in May 2022, for the first time in history, the annual release volume from Glen Canyon Dam was reduced from 7.48 million ac-ft to 7.0 million ac-ft. Combined, the 2022 drought response actions will add approximately 1 million ac-ft of water to Lake Powell, which is equivalent to approximately 16 feet in elevation. In 2020, 2021, and 2022, conditions prompted the implementation of the Lower Basin Drought Contingency Plan and the Binational Water Scarcity Contingency Plan. Arizona, Nevada, and Mexico contributed water savings to Lake Mead in the amounts of 192,000 ac-ft, 8,000 ac-ft, and 41,000 ac-ft each year, respectively. These water savings contributions are in addition to the shortage reductions.

Lake Powell Pipeline

The Lake Powell Pipeline project is an integral part of the future of Washington

County, Utah. Based on the current conditions of the river, the ongoing work amongst the Basin States and Reclamation, Washington County Water Conservancy District has shifted their efforts to accomplish and support the ongoing work on the river. Washington County has also spent significant time and resources to work together with the adjacent municipalities to institute stricter regulations related to water conservation for new and existing construction. Additionally, they are going through feasibility level studies to improve their ability to use their existing supply through water reuse, recycling, and desalination. For the moment, the Lake Powell Pipeline cannot be Washington County's number one priority. However, their plan is to get through the post-2026 operations process mentioned earlier, their planning and implementation phase on reuse, and pick up where they left off with the project. Reclamation stands ready to assist them at that time.

Recreational Use

Glen Canyon National Recreation Area (NRA), which surrounds Lake Powell, hosted 2,866,095 visitors in 2022. The National Park Service (NPS) has concession-operated facilities at Wahweap, Halls Crossing, and Bullfrog Basin on the reservoir, as well as at Lees Ferry, located 15.8 miles below Glen Canyon Dam. The Navajo Nation operates a marina at Antelope Point. Due to the ongoing drought, the marinas and services at Dangling Rope and Hite were closed during 2022, and most boat launch ramps were closed early in the season to motorized and nonmotorized craft, while hand-launched watercraft were permitted in some areas, but at user's own risk.

Rainbow Bridge, considered a sacred site by Native Americans, saw 81 visitors during calendar year 2022. This is due to the low lake levels making access by boat impossible and hiking to the bridge an approximate 2-mile muddy trail slog. The NPS has requested that visitors respect the site and keep from approaching too closely or walking under the bridge. Personal watercraft use in the Rainbow Bridge area has been banned since 2000. No dock access from the water is available since October 20, 2021, due to low water and debris and mud from rainstorms.

The Carl B. Hayden Visitor Center, adjacent to Glen Canyon Dam and powerplant in Page, Arizona, is owned and maintained by Reclamation and operated by the NPS. The visitor center was opened March 3, 2021, after being closed since March 2020 during the COVID-19 pandemic. Guided tours of the dam remain unavailable.

Invasive Mussel Control

Invasive Quagga mussels were confirmed in Lake Powell in 2012 and are now found throughout the reservoir. Veligers are passing through the dam and adult mussels are prevalent in the Glen Canyon stretch of the river below the dam; small numbers have also been found in the Grand Canyon stretch.

The mussels have not yet adversely affected the operation of Glen Canyon Dam

and Powerplant due to a proactive approach to mussel control and prevention. The most noticeable of the impacts thus far have been to the dam fixed wheel gates and the plant cooling water systems. Maintenance on the fixed wheel gates has increased due to the gates being coated with two to three inches of quagga mussels and quagga mussel shell debris has been noticed in plant water lines fed by Lake Powell (raw water). To combat these issues, the Glen Canyon Field Division is in the process of installing mussel control equipment (strainers and ultraviolet light systems) on the raw water lines to prevent mussels from obstructing flow in the lines.

Reclamation supported an evaluation and installation of a dip tank for decontamination of boats leaving Lake Powell. The dip tank at the Stateline launch ramp was readily accepted by the boating community, which reduced the time it took a boat to get decontaminated prior to leaving Lake Powell. Another dip tank is planned to be installed on the upper end of Lake Powell, at Bullfrog, with funding help from Reclamation. Glen Canyon Dam is continuing efforts to monitor mussel population growth which will help anticipate the magnitude of the impacts and calibrate the response.

Flaming Gorge Unit

Construction of Flaming Gorge Dam was completed in 1962. The dam is located on the Green River in northeastern Utah, about 32 miles downstream from the Utah-Wyoming border. In December 1962, the waters of the Green River began filling the reservoir behind Flaming Gorge Dam. Nearly a year later, in September 1963, President John F. Kennedy initiated the first power generation at Flaming Gorge Powerplant. There are three generating units in the Flaming Gorge Powerplant. Upgrading of the units in 1992 increased the plant's nameplate capacity from 108 megawatts to about 151 megawatts. Flaming Gorge Powerplant produces approximately 500,000,000 kilowatt-hours of energy annually to Arizona, Colorado, Nebraska, Nevada, New Mexico, Utah, and Wyoming.

Flaming Gorge Reservoir extends as far as 91 miles upstream and is part of the Flaming Gorge NRA. When the reservoir is full, at elevation 6,040 feet above sea level, it has a capacity of 3,711,306 ac-ft and a surface area of 42,020 acres. Within the reservoir area there are two distinct types of land: a mountainous area in Utah and a desert area in Wyoming.



FIGURE 7. Overlook of Flaming Gorge Dam near Dutch John, Utah. This hydropower dam is on the Green River and is part of the Colorado River Storage Project.

Community of Dutch John

The community of Dutch John, Utah, located about two miles northeast of the dam, was founded by the Secretary in 1958 as a community to house personnel, administrative offices, and equipment for construction and operation of Flaming Gorge Dam and powerplant. Dutch John was managed by Reclamation as a residential area to house staff involved in the operation, maintenance, and administration of Flaming Gorge Dam until 1998 when it was privatized and transferred to the local government.

Flow and Temperature Recommendations and Larval Trigger Study Plan

In September 2000, a final report entitled *Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam* was published by the Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Recovery Program). The report, prepared by a multi-disciplinary team, synthesizes research conducted on endangered fish in the Green River under the Upper Colorado Recovery Program and presents flow recommendations for three reaches of the Green River. In 2006, Reclamation completed a NEPA process for implementation of an operation at Flaming Gorge Dam that meets the flow recommendations. The Operation of Flaming Gorge Dam FEIS was published in November 2005 and a ROD was signed in February 2006. Flaming Gorge Dam is operated in accordance with the 2006 ROD and the September 2005 Biological Opinion on the Operation of Flaming Gorge Dam.

Reclamation has worked with the Upper Colorado Recovery Program to implement the Larval Trigger Study Plan (LTSP) since 2012, which involves timing spring peak flows with the emergence of larval razorback sucker. The goal of these operations is to provide the larval fish access to rearing habitat in floodplain wetlands. Thousands of wild spawned razorback sucker have resulted from these operations since their implementation, which is a significant step toward recovery of razorback sucker. In 2019 and in 2020, Reclamation operated Flaming Gorge Dam to provide several days of access to floodplain wetlands for larval fish, which resulted in production of several hundred razorback sucker in 2019 (plus at least two, wild-spawned bonytail) but only 32 fish in 2020 due to excessive growth of cattails. 2020 was also the first year in which LTSP-produced razorback sucker were documented as mature fish on a spawning bar near Jensen, Utah, the first evidence of recruitment to adulthood resulting from the LTSP process. Reclamation also worked within the flexibility of the ROD in 2019 and 2020 to provide relatively high base flows during summer months, which optimizes nursery habitat for the endangered Colorado pikeminnow. Due to these ongoing efforts, 2022 proved to be an exceptionally bountiful year for wetland-reared razorback sucker in the Green River, with old reproduction records being shattered.

Recreational Use

The interagency agreement between Reclamation and Ashley National Forest (U.S. Forest Service, USFS) for joint management of facilities within the primary jurisdiction area expired December 31, 2013, and the U.S. Forest Service declined to enter into another agreement. As a result, operation of the visitor center is now Reclamation's sole responsibility. The visitor center is operated under a license agreement with the Intermountain Natural History Association (INHA) from April to mid-October. The license was renewed in 2019 for another 5-year term. INHA reports that 50,754 people visited the center from April-October of 2022. Public tours are no longer offered at this location, but a portion of the walkway across the dam was opened and allowed visitors to view the riverside of the dam.

There is a new effort to develop a memorandum of agreement between Reclamation and the U.S. Forest Service to better define responsibilities below the high-water line and to formalize how the agencies will work together within the larger national recreation area. There is also an effort underway to remodel the interior of the visitor center, update the exhibits, and remodel the public restrooms. The acquisitions package is being prepared and is planned to go to bid in 2024. Work will not start until after the October seasonal closure.

The Flaming Gorge National Recreation Area, located in the states of Utah and Wyoming, is administered by the Ashley National Forest. The 2022 visitation figures are broken down into overnight stays, which totaled 54,879, and day use for the river, at 38,164 visitors, which is a partial number, since not all visitors were counted. The USFS reports that "while the numbers are down in FY22 compared to

the Covid years of 2020 and 2021, they are 30% higher than 2017.”

Invasive Mussel Control

Invasive mussel control at Flaming Gorge Reservoir is the responsibility of the states of Utah and Wyoming as well as marina owners and visitors. Reclamation periodically performs plankton towing (a sampling method) and sends the samples to its labs in Denver where tests are completed to detect the presence of veligers. The Utah Division of Wildlife Resources reports that DNA has been detected at Flaming Gorge during sampling at least once, but the reservoir is not considered to be infested at this time since no adult or juvenile (veliger) mussels have been found in water samples sent for lab analyses. A rapid response plan (in case of suspected infestation) was signed and put in place in May 2021. Monitoring for invasive mussels continued in 2022 and shows no presence of veligers or adult mussels.

Navajo Unit

Navajo Dam was completed in 1963. The water stored behind Navajo Dam, pursuant to the CRSPA, provides a water supply for the Navajo Indian Irrigation Project near Farmington, New Mexico, and the Hammond Project, a CRSPA participating project. In addition, water for the Jicarilla Apache Nation is also available in Navajo Reservoir pursuant to the December 8, 1992, contract between the Jicarilla Apache Nation and the United States which was executed as part of the Jicarilla Apache Nation Water Rights Settlement Act of January 3, 1992 (P.L. 102-441). The water supply for the Navajo-Gallup Water Supply Project will also be provided in part by Navajo Reservoir, as was provided in the Omnibus Public Land Management Act of March 30, 2009 (P.L. 111-11).

Reclamation published the Navajo Reservoir Operations FEIS on April 20, 2006, and the ROD was signed on July 31, 2006. Reclamation’s decision was to implement the preferred alternative identified in the 2006 ROD with reservoir releases ranging from 250 to 5,000 cfs. The preferred alternative, to the extent possible, implements criteria needed to assist in meeting flow recommendations for the endangered fish in the San Juan River, while assisting both current and future water development in the San Juan River Basin to proceed in compliance with the ESA and other state and federal laws. Navajo Dam is operated in accordance with the 2006 ROD.

Recreational Use

Recreation at Navajo Reservoir is managed by the states of Colorado and New Mexico through recreation leases with Reclamation. The Colorado portion of the reservoir, or Navajo State Park, is managed by Colorado Parks and Wildlife (CPW). The New Mexico portion of the reservoir, or Navajo Lake State Park, is managed by the New Mexico State Parks Division (New Mexico State Parks). New Mexico State Parks returned a large portion of the lands around Navajo Reservoir to Reclamation for management after a new statewide recreation lease agreement was signed in 2018. It will, however, continue boating patrols for enforcement of boating laws

outside its formal boundary. Visitation for Navajo Reservoir was reported to be 250,015 on the Colorado side during 2022, and 837,865 on the New Mexico side.

Invasive Mussel Control

Reclamation is working with both recreation managing entities to develop effective solutions to manage the spread of invasive mussels including educating the public and providing materials such as signs and brochures and contracting for private inspection and decontamination services in New Mexico. CPW is conducting boat inspections and has a portable boat wash and decontamination unit at Arboles, Colorado. Reclamation engaged the services of a private contractor in 2016 to assist the New Mexico Department of Game and Fish (NMDGF) with boat inspection and decontamination services at Navajo Reservoir. Numbers are reported by both agencies on the calendar year. For the New Mexico side, a total of 14,032 inspections occurred during the 2022 calendar year and 108 decontaminations were performed. On the Colorado side, 12,095 total inspections were performed with 357 hot water decontaminations and one zebra/quagga interception. The reservoir continues to be monitored and sampling done periodically.

A split sample from August 20, 2021, was sent to the lab performing qPCR analysis, and a portion of that sample was sent to the CPW microscopy lab. Both labs showed the presence of mussel DNA. Four additional samples were collected from the Pine Marina (NM) area on September 7, 2021. Two samples from September 7, 2021, were reported positive (Pine Slips and Pine 2). To summarize, five samples at Pine Marina from August and September 2021 were sent to the CPW microscopy lab. All five samples (three of which had positive mussel results via qPCR reporting) did not indicate the presence of veligers. Based on the Rapid Response protocol, there was no confirmation of the positive result on August 20, 2021, nor September 7, 2021. Eight more samples were collected on September 17, 2021, four within the Pine Marina and four routine sites spread across the reservoir.

New Mexico Department of Game and Fish also sampled a houseboat (in Pine Marina for 16 years) and a Cabin Cruiser (in Pine Marina for 2 years) that had just been taken out of the water for inspection, but neither showed any indication of invasive mussels. There are substrate samplers at both Sims and Pine Marinas. Both are continuously checked, and no presence of adult mussels have been found on either of them.

Based on the results thus far, the designation of Navajo Reservoir was changed from undetected/negative to inconclusive in late 2021. Increased sampling occurred throughout 2022 for one full year after the initial positive tests. No additional positive detections were made from those samples. Per the Navajo Reservoir Incident Rapid Response Plan, Navajo Reservoir was downgraded from Inconclusive to Negative.

As a CRSP-Memorandum of Agreement (MOA) Basin Fund project, Reclamation is working on a redesign of a permanent boat inspection and decontamination station at the Pine Marina recreation area and a new permanent boat inspection and decontamination area at the Sims Mesa Marina recreation area at Navajo Lake State Park in New Mexico. Design drawings for the inspection and decontamination site are 90% complete, with the goal of having construction of both sites awarded in the same contract to save costs.

Wayne N. Aspinall Unit

The Wayne N. Aspinall Unit (Aspinall Unit) includes Blue Mesa, Morrow Point, and Crystal dams, reservoirs, and powerplants. Construction of the three Aspinall Unit dams was completed in 1976. The Aspinall Unit in Gunnison and Montrose counties, Colorado, on the Gunnison River upstream from Black Canyon of the Gunnison National Park. At optimum operations, the generators at Blue Mesa, Morrow Point, and Crystal powerplants can produce a total of 291 MW of power.

Similar to Glen Canyon, Flaming Gorge, and Navajo dams, the Aspinall Unit is being evaluated to determine how operations can be modified to assist in the recovery of downstream endangered fish. Flow recommendations for endangered fish in the Gunnison River were completed in 2003. Reclamation published the Aspinall Unit Operations FEIS in February 2012. The preferred alternative provides operational guidance for the Aspinall Unit for specific downstream spring peak and duration flows that are dependent on forecasted inflow to the Aspinall Unit reservoirs. It also provides base flows outside of the spring runoff period. The U.S. Fish and Wildlife Service completed a programmatic biological opinion for the EIS which addresses proposed operation changes as well as coverage of existing water uses in the Gunnison Basin. The biological opinion also completes ESA compliance for the Dallas Creek and Dolores projects. The ROD was issued in May 2012.

Recreational Use

Recreation use for the Aspinall Unit is managed by the NPS as the Curecanti National Recreation Area (NRA). Visitation to the NRA for calendar year 2022 was reported to be 992,749. Visitation to the Black Canyon of the Gunnison located below Crystal Dam and adjacent to the Curecanti NRA was reported to be 297,257 for this same time-period.

In 1965, the NPS entered into an agreement with Reclamation to construct and manage recreational facilities and to manage natural and cultural resources and recreation on, and adjacent to, the three reservoirs. This area became known as the Curecanti NRA. The NRA is currently identified by an administrative boundary that has not been established by legislation.



FIGURE 8. Blue Mesa/Curecanti showing the same area after construction.

Invasive Mussel Control

The State of Colorado, working in partnership with the NPS, has instituted an aggressive program to prevent the spread of quagga and zebra mussels into its waters, including the three Aspinall Unit reservoirs. All motorized and watercraft requiring a trailer to launch at Curecanti NRA are required to be inspected for invasive mussels and, if necessary, decontaminated. In addition to the mandatory inspection prior to launch, and for compliance with the State of Colorado's Aquatic Nuisance Species (ANS) protocols, all motorized watercraft leaving Blue Mesa, Morrow Point, or Crystal reservoirs will undergo a second inspection to verify the watercraft has been cleaned, drained, and dried. Reclamation is continuing to test for zebra or quagga mussels in mountain lakes and so far, has found no evidence of either mussels or veligers.

INVASIVE MUSSEL CONTROL

Invasive species threaten the operation of CRSP facilities. An Upper Colorado Basin Invasive Mussel Response Plan was developed in 2010. The program focuses on four areas: monitoring and sampling, engineering solutions, maintenance techniques, and operational practices. Reclamation has also launched an extensive public outreach campaign to educate the public with radio and television spots as well as print advertisements in local tourism magazines. In 2021 a Regional Notification Protocol was completed describing who should be notified in the event of a positive aquatic invasive species (AIS) lab sample.

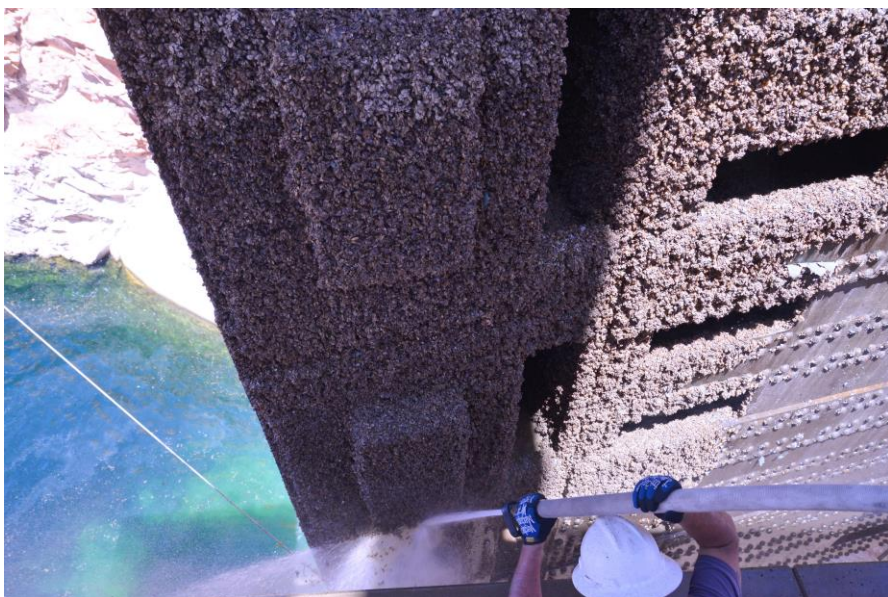


FIGURE 10. Quagga mussels accumulated on a fixed wheel gate pulled out of the water for maintenance at Glen Canyon Dam, Arizona.

In 2018, Colorado’s governor signed the Mussel-free Colorado Act, which requires that all boaters registering vessels in the State of Colorado purchase an ANS stamp. In addition, the Act increases existing penalties and imposes new penalties on several actions regarding invasive species violations.

In 2019, the Western Colorado Area Office created and funded a 5-year 50% cost-share grant with Colorado Parks & Wildlife (CPW) for \$151,656 for ANS boat inspection and decontamination on seven reservoirs: Navajo, Mancos/Jackson Gulch, Ridgway, Crawford, Paonia, Vega and Rifle Gap. Previous ANS funding was included in the Operations and Maintenance Grant with CPW. This grant allows more direct earmarking of funding specifically for ANS.

TABLE 9. Total Annual Inspections and Decontaminations
on Western Colorado Area Office Reservoirs

Location	Total Inspection	Incoming	Outgoing	Off-Water	Total Decons	ZQM Interceptions
Crawford	818	447	361	10	16	0
Lake Nighthorse	5,140	2,511	2,629	0	92	0
Mancos	72	44	28	0	0	0
McPhee Reservoir	8,082	4,250	3,813	19	184	26

Navajo	12,095	6,117	5,934	44	357	1
Paonia Reservoir	304	123	181	0	0	0
Ridgway	5,905	3,154	2,750	1	63	0
Rifle Gap	2,956	1,631	1,292	33	130	1
Taylor Park Reservoir	2,742	1,389	1,353	0	11	0
Vallecito Reservoir	5,177	2,632	2,526	19	57	1
Vega Reservoir	1,434	903	531	0	5	0
TOTALS:	46,247	24,145	21,959	143	917	29

Courtesy of CPW (Robert Walters, DNR)

Please refer to Table 9 above for the total annual inspections and decontaminations on Reclamation Reservoirs in Western Colorado in 2022. In partnership with the Dolores Water Conservancy District, CPW (and as funding is available the U.S. Forest Service), Reclamation contributed \$30,000 toward McPhee Reservoir inspections and decontaminations. Reclamation is working with DWCD, DPW and the U.S. Forest Service on plans to update the inspection station for McPhee Reservoir. On Lake Nighthorse, within Durango City Limits, Reclamation contributed approximately \$20,000, and provides the decontamination unit. Lemon Reservoir remains closed to motorized boating.

Colorado's U.S. Senator Michael Bennett introduced the "Stop the Spread of Invasive Mussels Act of 2019", that was passed to allow federal agencies to implement containment or prevention actions. There is no funding attached to this Act.

The State of New Mexico has a smaller aquatic invasive species program that provides public outreach and education, spot inspections, and decontaminations when needed. In 2022, Reclamation entered a new contract with Advenco to conduct boat inspections and decontaminations at Navajo Reservoir (New Mexico side) and Elephant Butte Reservoir in New Mexico. Both boat ramps on the New Mexico side of Navajo Reservoir are staffed by the contractor. CPW staffs the inspections on the Colorado side. During calendar year 2022, Advenco inspected 14,032 boats at Navajo Reservoir and decontaminated 108 of them. At Elephant Butte, Advenco inspected 18,050 boats and decontaminated 200 of them.

The State of Utah continues to monitor park waters and, in conjunction with the NPS, has implemented mandatory boat inspections and decontaminations to minimize the spread of invasive mussels from Lake Powell and to manage park operations now that quagga mussels are present. The focus of this effort has shifted from prevention to containment and incorporates science and lessons

learned from the Lake Mead National Recreation Area. In 2021 a private contractor worked with the State of Utah Division of Wildlife (DWR), with help in funding from Reclamation, constructed a dip tank to decontaminate boats on a trailer rather than using the hot water spray system. The diptank reduces the time required for decontamination of a boat. This system was installed in May 2021 at Lake Powell at the State Line launch ramp near the Wahweap marina which is down lake near Glen Canyon Dam. The dip tank decontamination system was so positively accepted by the boating community, another dip tank was constructed up lake at Bullfrog.



FIGURE 11. Decontamination dip tank and site at Lake Powell Stateline launch ramp.

In 2021, staff with the Utah Division of Wildlife Resources and Utah State Parks inspected 319,168 watercraft statewide. This is a decrease from the number of inspections in 2020, most likely due to the low reservoir levels resulting from the ongoing drought. Of the boats inspected, 7,315 required a decontamination

In 2021 Reclamation and the NPS at Glen Canyon began a research study to determine if the use of ultrasonic sound will inhibit quagga mussel settlement and biofilm growth.

Smallmouth bass and other nonnative fish inhabit the upper part of the water column of Lake Powell. On July 1, 2022, National Park Service (NPS) reported the presence of juvenile smallmouth bass below Glen Canyon Dam. Reclamation, U.S. Fish Wildlife Service, along with NPS, Basin States, Tribes, and other stakeholders began consideration of coordinated rapid response actions to reduce the risk of establishment of smallmouth bass in the Grand Canyon below Glen Canyon Dam.

The presence of smallmouth bass poses a threat to the threatened humpback chub population near Glen Canyon Dam.

CRSP POWER GENERATION

The CRSP is one of Reclamation’s key hydropower producing projects. The CRSP’s combined installed capacity is over 1,800 MW with Glen Canyon Dam accounting for 1,320 MW alone. On average, the CRSP generates 5.6 billion kilowatt-hours per year, which accounts for about 15% of Reclamation’s total annual production of approximately 40 billion kilowatt-hours. The CRSP supplies power to nearly six million people living in Arizona, Colorado, Nebraska, Nevada, New Mexico, Utah, and Wyoming.

During fiscal years 2020 and 2021, generation at CRSP powerplants amounted to 4.99 and 4.27 billion kilowatt-hours, respectively. The major portion for those same years, 3.65 and 3.34 billion kilowatt-hours respectively, was produced at Glen Canyon Dam. The balance was produced at Flaming Gorge, Blue Mesa, Morrow Point, Crystal, Fontenelle, McPhee, and Towaoc powerplants. These amounts are shown in Table 10.

TABLE 10. Gross Generation (Kilowatt-Hours) and Percentage of Change for Fiscal Years 2021 and 2022

Powerplant	Fiscal Year 2021	Fiscal Year 2022	% Change
Glen Canyon	3,344,868,999	2,579,514,043	-22.9
Flaming Gorge	311,217,386	342,841,663	10.2
Blue Mesa	184,790,259	141,332,520	-23.5
Morrow Point	248,350,299	207,524,431	-16.4
Crystal	138,396,530	107,546,296	-22.3
Fontenelle	29,724,323	46,337,073	55.9
McPhee	611,524	841,624	37.6
Towaoc	7,859,602	7,548,971	-3.9
Total	4,265,818,922	3,433,486,621	-19.5

CRSP Facility Upgrades

Over the next several years, nearly \$135 million will be spent on major replacements at CRSP facilities. This work will help ensure that CRSP facilities throughout the Colorado River Basin remain reliable and efficient for many years to come. Examples of some of the major projects include:

Glen Canyon Powerplant

Glen Canyon Dam Hydraulic Valve Operating System is planned for fiscal years

(FY) 2023-2025. Reclamation will begin to look at design on the Glen Canyon Dam Hydraulic Valve Operating System in late FY2023 with a potential major construction date of FY 2025 at a cost estimate of \$14 million. This project will replace/refurbish the fixed wheel gates, ring followers gates, hollow jet valves, and will include a relining of the river outlet works.

Station Service Equipment Replacement is planned for FY 2023 at a cost estimate of \$6.1 million. The station service equipment consists of transformers, substations, switchgear, and breakers. It provides power to several critical plant components. The equipment is nearly 60 years old, exceeding its service life by 20 years. The original manufacturer has been out of business for several decades. Parts and support for maintaining this equipment has become increasingly difficult to find.

2 MW Diesel Gen Set (Black Start Generator) Glen Canyon Powerplant, by contract, with Western Area Power Administration (WAPA) (#RPRO12MA80001, Exhibit A4), is designated as a black start facility to aid in the restoration of the Bulk Electrical System (BES) and to supply shutdown power to Arizona Public Service (APS) should a system blackout occur. Installation of the generator is planned for FY2023 for \$1.3 million.

The generator will allow one on-site operator the ability to easily and rapidly return the powerplant to service during a power transmission grid emergency while continuing to operate the other plants in the Upper Colorado Basin within their control.

Blue Mesa Powerplant

Butterfly Valve – Blue Mesa will look to begin replacement of the Butterfly Valve with a contract solicitation to be issued in March 2023 with contract awarded in 2023.

The fabrication and installation will occur in FY 2025 at a cost estimate of \$12 million total project cost. The current age of the Butterfly Valve is 56 years old. Benefits of replacing the Butterfly Valves are enabling maintenance to be performed on wicket gates and turbine as well as reduced sump pump cycling during outages. Potential for efficiency gains that will save water while producing the same amount of power and incorporation of isolation that will enhance future operational flexibility.

Blue Mesa and Crystal Station Service Switchgears – Crystal has resumed work on this project after a delay in contractor supply chain. It is expected to be completed June 2023. The Blue Mesa switchgear has not been installed. This will require a project extension until Fall 2023. Tentative project closeout is Q1 2024.

The power distribution equipment powers all the ancillary equipment within the

powerplant and dam such as pumps, computers, compressors, gates, and lighting. Cost for each switchgear is estimated to be \$1.9 million at Blue Mesa and \$1.7 million at Crystal.

Flaming Gorge Powerplant

Flaming Gorge's Station Service Switchgear will be replaced in FY 2023 at an estimated cost of \$4.2 million. This power distribution equipment powers all the ancillary equipment within the powerplant and dam such as pumps, computers, compressors, gates, and lighting.

AUTHORIZED PARTICIPATING PROJECTS

Twenty-two participating projects were originally authorized by Congress between 1956 and 1968. Eleven were authorized by the CRSP Act (CRSPA) of April 11, 1956 (70 Stat. 105), one was authorized in the 1956 Act by terms of its authorizing Act of June 28, 1949 (63 Stat. 277), two were authorized by the Act of June 13, 1962 (76 Stat. 96), three were authorized by the Act of September 2, 1964 (78 Stat. 852), and five were authorized by the Act of September 30, 1968 (82 Stat. 886). Of the 22 originally authorized participating projects, ten are in Colorado, two in New Mexico, two in Utah, three in Wyoming, three in both Colorado and New Mexico, one in both Colorado and Wyoming, and one in both Utah and Wyoming. In the 1968 Colorado River Basin Project Act, the Pine River Extension Project was deleted, leaving 21 participating projects authorized by Congress. On March 30, 2009, the Omnibus Public Land Management Act (123 Stat. 991) amended the CRSPA to include the Navajo-Gallup Water Supply Project in New Mexico as a participating project, increasing the number to 23 participating projects currently authorized by Congress.

Participating projects develop, or would develop, water in the Upper Colorado River system for irrigation, municipal and industrial uses, and other purposes, and participate in the use of revenues from the Upper Colorado River Basin Fund to help repay the costs of irrigation features that are beyond the ability of the water users to repay. The Basin Fund receives revenues from hydropower and water service sales.

To date, 17 of the currently authorized 23 participating projects have either been completed or are in the process of completion. The five remaining participating projects were deemed infeasible or economically unjustified and were never constructed. Table 11 shows the seventeen participating projects that have been completed or are in the process of completion.

The 11 participating projects originally authorized in 1956 are:

1. Central Utah (Initial Phase), Utah
2. Emery County, Utah
3. Florida, Colorado
4. Hammond, New Mexico
5. La Barge, Wyoming

6. Lyman, Utah and Wyoming
7. Paonia, Colorado (works additional to existing project)
8. Pine River Extension, Colorado and New Mexico
9. Seedskaadee, Wyoming
10. Silt, Colorado
11. Smith Fork, Colorado
12. In the 1956 Act, the Eden Project in Wyoming, by terms of its authorizing Act of June 28, 1949, became financially related to the CRSP as a participating project.

In 1962, authorizing legislation named the following two as participating projects:

13. Navajo Indian Irrigation, New Mexico (being constructed for the Bureau of Indian Affairs by Reclamation)
14. San Juan-Chama, Colorado and New Mexico

In 1964, authorizing legislation named an additional three as participating projects:

15. Bostwick Park, Colorado
16. Fruitland Mesa, Colorado
17. Savery-Pot Hook, Colorado and Wyoming; however, this was found to be infeasible and was not constructed

The CRBPA of September 30, 1968, authorized five additional projects as participating projects, but deleted the Pine River Extension Project as a participating project:

18. Animas-La Plata, Colorado and New Mexico
19. Dallas Creek, Colorado
20. Dolores, Colorado
21. San Miguel, Colorado
22. West Divide, Colorado

The Omnibus Public Land Management Act of 2009 amended the CRSPA of 1956 to include the following as a participating project:

23. Navajo-Gallup Water Supply, New Mexico

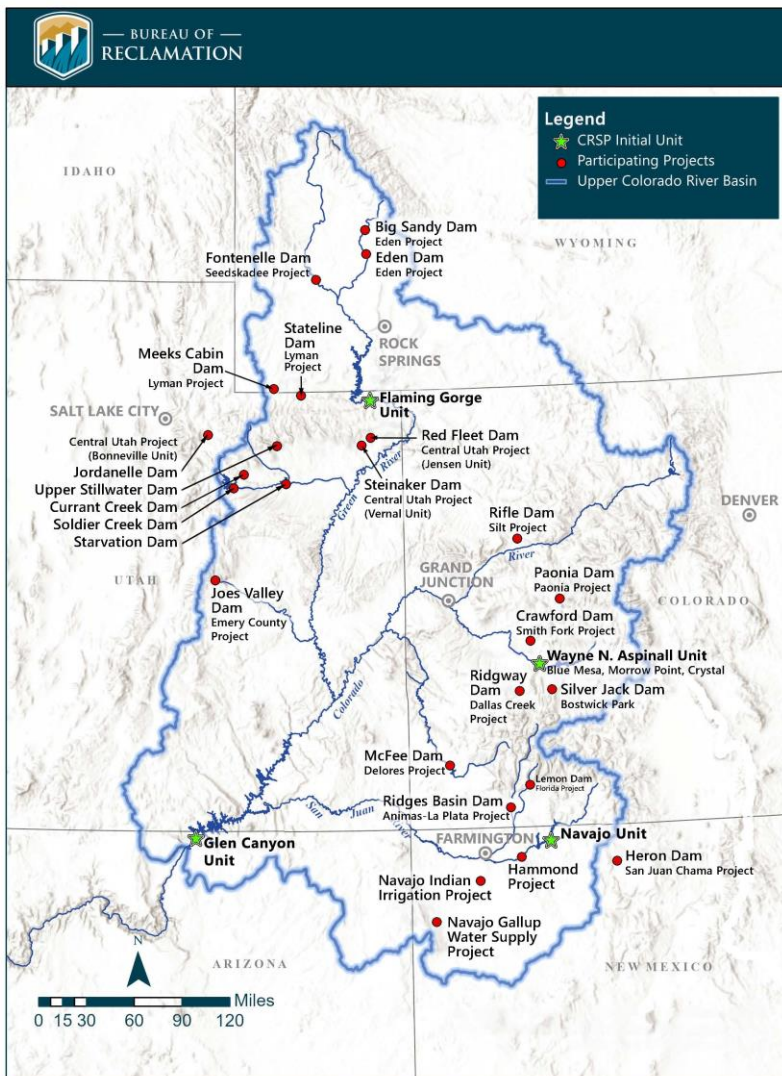


FIGURE 12. Upper Colorado River Basin – Map of CRSP Projects

**TABLE 11. CRSP Participating Projects
Completed or in the Process of Completion**

#	Project	State(s)	Dam	Year Completed
1.	Eden	Wyoming	Big Sandy	1952
----	Eden	Wyoming	Eden	1959
2.	Central Utah (Vernal Unit)	Utah	Steinaker	1962
3.	Hammond	New Mexico	---	1962
4.	Paonia	Colorado	Paonia	1962
5.	Smith Fork	Colorado	Crawford	1962
6.	Florida	Colorado	Lemon	1963
7.	Emery County	Utah	Joes Valley	1966
8.	Silt	Colorado	Rifle Gap	1966
9.	Seedskaadee	Wyoming	Fontenelle	1968
---	*Central Utah (Bonneville Unit)	Utah	Starvation	1970
10.	Bostwick Park	Colorado	Silver Jack	1971
11.	Lyman	Utah and Wyoming	Meeks Cabin	1971
12.	San Juan-Chama	Colorado and New Mexico	Heron	1971
---	*Central Utah (Bonneville Unit)	Utah	Soldier Creek	1973
---	*Central Utah (Bonneville Unit)	Utah	Currant Creek	1975
---	Lyman	Utah and Wyoming	Stateline	1979
---	*Central Utah (Jensen Unit)	Utah	Red Fleet	1980
---	*Central Utah (Bonneville Unit)	Utah	Upper Stillwater	1987
13.	Dallas Creek	Colorado	Ridgway	1991
---	*Central Utah (Bonneville Unit)	Utah	Jordanelle	1993
14.	Dolores	Colorado	McPhee	1998
15.	*Animas-La Plata	Colorado and New Mexico	Ridges Basin	2011
16.	*Navajo Indian Irrigation	New Mexico	---	Under Construction
17.	*Navajo-Gallup Water Supply	New Mexico	---	Under Construction
*In the process of completion.				

The present status of construction, investigation, and recreational facilities for the 23 authorized CRSP participating projects is as follows:

Colorado

Bostwick Park Project

The Bostwick Park Project is located in west-central Colorado near the city of Montrose. The project develops flows of Cimarron Creek, a tributary of the Gunnison River, for irrigation and for benefits to sport fishing and recreation. A full and supplemental supply of irrigation water is available for 6,100 acres of land. Silver Jack Dam (completed in 1971) is located on Cimarron Creek about 20 miles above the junction with the Gunnison River. Project water stored in Silver Jack Reservoir is released to Cimarron Creek. The releases, along with usable natural flows, are diverted from the creek into the existing Cimarron Canal 2.5 miles below the dam and conveyed 23 miles to the vicinity of the project land. The U.S. Forest Service developed recreation facilities under a cooperative arrangement with Reclamation. Facilities include access roads, campgrounds (60 units in three loops), two group areas, picnicking facilities, restrooms, a boat dock, trails, fences, landscaping, and an administration site. At 8,900 feet in elevation, use is seasonal. The reservoir is managed as a non-motorized boating lake with three species of trout. Access for anglers is fairly easy at designated access points around the 293-acre reservoir.

Dallas Creek Project

The Dallas Creek Project is located on the Uncompahgre River in west-central Colorado. The area served by the project comprises most of the Uncompahgre River Basin and includes lands in Montrose, Delta, and Ouray counties. Ridgway Dam and Reservoir, the primary features of the project, are located on the Uncompahgre River a few miles north of the town of Ridgway.

Block notice number one was issued for the Dallas Creek Project on May 31, 1989, covering all municipal and industrial water use. The notice involved 28,100 acre-feet of water. Repayment on that notice began in 1990. Block notice number two was issued on March 21, 1990. The notice included all irrigation waters for the project, involving 11,200 acre-feet. The notice was issued to Tri-County Water Conservancy District. The first payment under the repayment contract was made in February 1993 and will continue until February 2042.

A 40-year lease of power privilege between Tri-County Water Conservation District and the United States was signed on February 6, 2012, allowing for the construction and operation of a hydropower facility with a capacity of seven MWs, generating approximately 22,000 Megawatt hours per year. Construction of the hydropower facility was completed in early 2014 and operation of the powerplant began in April 2014.

Recreation at Ridgway Reservoir is managed by CPW under an agreement with Reclamation. There are numerous picnicking and campsites available including miles of trails around the reservoir and downstream of Ridgway Dam. The park has become so popular that all the campsites were put on a reservation system beginning with the 2019 recreation season. Reclamation and Ridgway State Park have implemented a seasonal closure of the area east of Highway 550 to public access to protect wintering big game. Fishing at Ridgway is good and CPW, to protect native fish downstream, encourages anglers to catch as many smallmouth bass as they can since the species was illegally stocked in the early 2000s. The WCAO completed constructions of a fish screen around the reservoir's gloryhole spillway in January 2022. The fish screen will prevent the invasive smallmouth bass from entering the river downstream.

Reclamation is working closely with CPW to develop effective solutions to manage the spread of invasive mussels including educating the public and providing materials such as signs and brochures. CPW is conducting mandatory boat inspections and decontaminations at Ridgway and boat ramps are closed to trailered boats at the end of September of each year. Reclamation and CPW designed a permanent boat inspection and decontamination area at the reservoir. However, construction contract bids were over budget, so the project was not awarded and cancelled in 2018. WCAO has revisited their plans for ANS at Ridgway State Park, and CPW has identified a different location for the inspection and decontamination station, by their current station near the boat ramp.

Reclamation engineers and surveyors created a new design for this station in 2020 and 2021 and awarded the construction contract with work scheduled to be completed in 2023. CPW has replaced their standard hot water decontamination units with on-demand hot water units in 2021 and installed additional propane and electricity at the site to accommodate the on-demand units. These units will be more consistent and reliable in supplying the needed hot water to the units. They are also catching and recycling all water used at the decontamination station.

Dolores Project

The Dolores Project, located in the Dolores and San Juan River basins in southwestern Colorado, uses water from the Dolores River for irrigation, municipal and industrial use, recreation, fish and wildlife, and production of hydroelectric power. Primary storage of Dolores River flows for all project purposes is provided by McPhee Reservoir, formed by McPhee Dam and Great Cut Dike. Dolores Project construction began in 1976. By fiscal year 1995, all primary project facilities were completed and in operation. In 1996, Reclamation signed petitions allocating the last approximately 1,800 acre-feet of full-service irrigation water to full-service users. Reclamation substantially completed construction of the Dolores Project in fiscal year 1998. The final cost allocation for the project was completed in October 2000 and approved by the Upper Colorado Basin Regional Director by memorandum dated January 25, 2001.

To mitigate construction of salinity control modifications to the Upper Hermana, Lone Pine, and Rocky Ford Laterals (parts of the Dolores Project), 55 acres of new wetlands were developed at the Lone Dome wetlands area below McPhee Dam. To complete the remaining 20 acres of mitigation, Reclamation developed Simon Draw wetlands near the Totten Reservoir area. A long-term management agreement between Reclamation and CPW for operation and maintenance of the Lone Dome wetlands area is in place. Reclamation's Western Colorado Area Office operates and maintains Simon Draw wetlands.

Hydroelectric power generation is a component of the Dolores Project with McPhee and Towaoc Canal powerplants. McPhee Powerplant is located at the downstream toe of McPhee Dam along the left abutment with an installed capacity of 1.3 MWs. Towaoc Canal Powerplant is located on the Towaoc Canal, five miles north of Cortez, Colorado, in Montezuma County with an installed capacity of 11.5 MWs.

Recreation at McPhee Reservoir is under the jurisdiction of the U.S. Forest Service through an agreement with Reclamation, and through legislation that expanded the boundary of the San Juan National Forest to include the reservoir. The reservoir has 50 miles of shoreline and two recreation complexes with campgrounds, day-use areas, and boat launch ramps. There is also a marina concession to serve visitors.

The Lone Dome Recreation Area is located below McPhee Dam and includes twelve miles of public access to the Dolores River. This area is comprised of lands administered by the U.S. Forest Service, Bureau of Land Management (BLM), and CPW. Senate Bill 4542 was introduced by Senator Bennet (D-CO) in July 2022 to establish the Dolores River National Conservation Area and the Dolores River Special Management Area below McPhee Dam to protect private water rights in the state, and for other purposes, including releasing the areas from further study for potential addition to the Wild and Scenic Rivers System. The Senate Energy and Natural Resources Committee held a hearing for the bill on December 1, 2022. An identical bill (H.R. 8601) was introduced to the House of Representatives at the same time and was referred to the House Committee on Natural Resources.

Reclamation is working closely with partners including the Dolores Water Conservancy District, CPW, and the Forest Service, and was able to institute a funding agreement for boat inspections and a decontamination program to prevent invasive mussels from invading the reservoir. Because of the reservoir's proximity to Lake Powell, boat launch ramp closure hours were implemented in 2017 and locked gates were installed for times when boat inspections were not available.

Florida Project

Lemon Dam is the principal feature of the Florida Project. The dam, completed in 1963, is in southwestern Colorado on the Florida River, approximately fourteen miles northeast of the City of Durango in La Plata County. Flows in the Florida River are stored in the reservoir formed by the dam, and regulated releases can provide supplemental irrigation water for 19,450 acres. In addition to the construction of Lemon Dam, Reclamation work included rebuilding the Florida Farmers Diversion Dam, enlarging 3.9 miles of the Florida Farmers Ditch to its junction with the Florida Canal, enlarging 1.8 miles of the Florida Canal, and building a new lateral system to serve about 3,360 acres of land on the southwest portion of Florida Mesa. Project funds were advanced to the Florida Water Conservancy District to rehabilitate, enlarge, and extend portions of the Florida Farmers Ditch and Florida Canal distribution systems that serve remaining lands on Florida Mesa. The 1,190 acres of project land located in the Florida River Valley will continue to be served by numerous small ditches without the expenditure of project funds.

Lemon Powerplant, completed in 1989, has a capacity of 0.12 MWs. The powerplant was constructed and is operated by the Florida Water Conservancy District under a lease of power privilege contract.

A conversion contract for 2,500 acre-feet of Florida Project water to be available for municipal and industrial purposes was negotiated and executed in early 2014. A similar contract for 114 acre-feet was executed in 2009, which made water originally tied to the land inundated by the reservoir available for augmentation purposes.

Lemon Reservoir provides important recreation and fish and wildlife benefits; however, its primary purpose is to provide irrigation water and flood control. Recreation at Lemon Reservoir is under the jurisdiction of the U.S. Forest Service through an agreement with Reclamation. This is a high-elevation reservoir (8,500 feet) with seasonal use. The Miller Creek Campground has twelve campsites, restrooms, potable water, boat launch ramp and parking area, and a day-use picnic area. The Upper Lemon Day-Use Area provides access for fishing and hiking and includes restrooms and a parking area.

Reclamation partnered with the U.S. Forest Service, La Plata County, and the Florida Water Conservancy District to close the boat ramp at Lemon Reservoir to motorized boating in 2017 and the prohibition on motorized boating remains in place. The reservoir remains open to non-motorized boats.

Fruitland Mesa Project

The Fruitland Mesa Project was found to be infeasible and was not constructed.

Paonia Project

The Paonia Project, located in west-central Colorado, provides full and

supplemental irrigation water supplies for 15,300 acres of land in the vicinity of Paonia and Hotchkiss. Project construction includes Paonia Dam and Reservoir and enlargement and extension of Fire Mountain Canal. Paonia Dam controls and regulates the runoff of Muddy Creek, a tributary of the North Fork of the Gunnison River.

Recreation at Paonia Reservoir is managed by Colorado Parks and Wildlife under an agreement with Reclamation. The original recreation facilities were built in 1963 and CPW assumed management in 1965. There are two campgrounds, a picnic area, and boat launching facilities. CPW, in coordination with Reclamation, converted the Anthracite Day Use area at the base of the dam to a small campground that has five RV full hookup sites and four tent sites. CPW completed an overhaul of the water well to provide clean drinking water to both the campground and CPW shop facilities. Recreational attractions include the landscape surrounding the park, waterskiing, camping, and northern pike fishing.

Reclamation is working closely with CPW to develop effective solutions to manage the spread of invasive mussels including educating the public and providing materials such as signs and brochures. Funded through a 50/50 cost share agreement between CPW and Reclamation, all motorized and trailered boats are required to be inspected on site for ANS and decontamination, if necessary, before launching from the boat ramp.

San Miguel Project

The San Miguel Project was found to be economically unjustified and was not constructed.

Silt Project

The Silt Project is located in west-central Colorado near the towns of Rifle and Silt. The project stores the flows of Rifle Creek and pumps water from the Colorado River to supply irrigation water for approximately 7,000 acres of land. Principal features of the project are Rifle Gap Dam and Reservoir, a pumping plant, and a lateral system.

Recreation at Rifle Gap Reservoir is managed by CPW under an agreement with Reclamation. Recreation facilities include numerous campgrounds, picnic sites, a boat ramp, group use area, restrooms, and parking areas. Recreation activities include motorized water sports, swimming, sailing, windsurfing, and fishing. Although Rifle Gap is a small reservoir, it is a popular one with five camp loops and 89 campsites; several campsites are accessible to persons with disabilities.

Reclamation is working closely with CPW to develop effective solutions to manage the spread of invasive mussels including educating the public and providing materials such as signs and brochures. Funded through a 50/50 cost share agreement between CPW and Reclamation, all motorized and trailered boats are

required to be inspected on site for ANS and decontamination, if necessary, before launching from the boat ramp.

Smith Fork Project

The Smith Fork Project, located about 30 miles southeast of Delta, Colorado, supplements the irrigation water supply for approximately 8,200 acres in Delta and Montrose counties and provides a full water supply for 1,423 acres of land previously not irrigated. Constructed features of the project include Crawford Dam and Reservoir, Smith Fork Diversion Dam, Smith Fork Feeder Canal, Aspen Canal, Clipper Canal, and recreation facilities. Recreation at Crawford Reservoir is managed by CPW under an agreement with Reclamation. Boating, scuba diving, water skiing, jet skiing, windsurfing, swimming, fishing, and camping are some of the offerings at the park. There are two campgrounds with 66 sites, a group day-use area, and 30 sites for day use; several campsites are accessible to persons with disabilities. The Clear Fork Campground was recently expanded, and the traditional tent sites were converted to 15 new RV full hookup sites with power, water, and sewage at each site, while still preserving 6-day use picnic sites. The camper services building was also upgraded with more showers and modern amenities. There are also plans to add a new playground area in the campground to accommodate young visitors.

Reclamation is working closely with CPW to develop effective solutions to manage the spread of invasive mussels including educating the public and providing materials such as signs and brochures.

West Divide Project

The West Divide Project was found to be economically unjustified and was not constructed.

New Mexico

Hammond Project

The Hammond Project is in northwestern New Mexico along the southern bank of the San Juan River and opposite the towns of Blanco, Bloomfield, and Farmington, New Mexico. The project provides an irrigation supply for 3,933 acres. Major project works consist of the Hammond Diversion Dam on the San Juan River (completed in 1962), the Main Gravity Canal, a hydraulic-turbine-driven pumping plant and an auxiliary pumping plant, three major laterals, minor distribution laterals, and the drainage system. Most of the irrigation supply is obtained from direct diversions of the natural streamflow of the San Juan River. When necessary, these flows are supplemented by storage releases from Navajo Reservoir, a major feature of the CRSP. Water is diverted from the river by the Hammond Diversion Dam and turned into the 27.4-mile-long Main Canal. Major diversions from the canal are made by the East and West Highline laterals, which are served by the Hammond Pumping Plant, and the Gravity Extension lateral. Small diversions are

made by minor laterals.

Navajo-Gallup Water Supply Project

The Navajo-Gallup Water Supply Project (NGWSP) was authorized for construction by the Omnibus Public Land Management Act of 2009 (P.L. 111-11) and is the cornerstone of the Navajo Nation water rights settlement in the San Juan River Basin in New Mexico. Construction on the project began in 2012. When completed, the Navajo-Gallup Water Supply Project will consist of two water treatment plants, 300 miles of pipeline, 19 pumping plants, and numerous water regulation and storage facilities. The project will convey a reliable municipal and industrial water supply to the eastern section of the Navajo Nation; the southwestern part of the Jicarilla Apache Nation; and the City of Gallup, New Mexico, from diversions from the San Juan River Basin in northern New Mexico and via two separate pipeline laterals – the San Juan Lateral (SJL) and the Cutter Lateral. The project will provide a drinking water supply designed to serve the region for at least a 40-year time horizon once completed and is envisioned to be a catalyst for spurring economic growth and development and improving living conditions for the project service area.

Reclamation is the lead agency in the design and construction of the project, but in order to help meet the Congressionally mandated completion date of 2024, the Navajo Nation, the City of Gallup, and the Indian Health Service will also be responsible for design and construction of certain features of the project via financial assistance agreements with Reclamation.

Construction of the project is well underway with construction completion achieved on the Cutter Lateral in 2021. A major milestone was achieved in October 2020, when the first water deliveries from the Cutter Lateral Water Treatment Plant on the Cutter Lateral were initiated, and by May 2021, eight Navajo public water systems with an estimated population of 6,000 people or approximately 1,500 households were receiving Project water. Reclamation declared substantial completion and transferred the Reclamation reaches on the Cutter Lateral (Reaches 22a, 22b, and Reach 21/Cutter Lateral Water Treatment Plant) to operation and maintenance status in October 2021, having completed one year of commissioning to test the facilities, and transferred the operation, maintenance, and replacement (OM&R) responsibility to the Navajo Tribal Utility Authority in June 2022.

On the San Juan Lateral (SJL), FY 2022 activities included construction completion on Block 4c-8 between Naschitti, NM and Little Water, NM. Construction continued on Pumping Plants 4 and 7 in the Sheep Springs and Twin Lake Navajo chapters, respectively. Reclamation awarded a contract for pipeline construction on the Navajo Code Talkers Sublateral in December 2021, as well as for Pumping Plants 2 and 3 located in the Sanostee chapter in September 2022. Construction on Navajo Code Talkers began in May 2022. Construction on Pumping Plants 2 and 3 is

scheduled to begin in the spring 2023. Both projects are anticipated to be complete in FY 2024. Reclamation also completed the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the northern reaches (Reaches 1-4b) of the San Juan Lateral, which was necessary to incorporate the San Juan Generating Station's water system facilities and related pipeline alignment changes. Other activities include continuing design work and right-of-way acquisition on the SJL Intake (Reach 1), Block 2-3, Pumping Plant 1, the SJL Water Treatment Plant, and Block 4a-4b. Reclamation plans to award a construction contract for Block 4a-4b and solicit a design-build contract for the SJL Water Treatment Plant in 2023. The project authorization ceiling at the October 2021 price level is \$1.353 billion and represents an approximate \$513 million funding gap from the latest project cost estimate. In 2022, Reclamation continued to provide technical and logistical support to the project participants in their drafting of legislative amendments to notably address the funding gap and extend the project completion date to 2029, among other proposed changes.



FIGURE 13. Navajo-Gallup Water Supply Project - Aerial image of the Cutter Lateral Water Treatment Plant which as of May 2021 is delivering drinking water to 6,000 people in eight Navajo communities.

Navajo Indian Irrigation Project

The Navajo Indian Irrigation Project (NIIP) was authorized in 1962 by P.L. 87-483, with amendments, to develop the necessary infrastructure to deliver San Juan River water to not more than 110,630 acres of farmland in the northeastern part of the Navajo Reservation near Farmington, New Mexico. In a 1962 Memorandum of Agreement, which defined the roles and responsibilities of the Bureau of Indian Affairs (BIA) and Reclamation, the BIA was required to provide funding from its budget appropriation and Reclamation was designated to design and construct the project.

The project has been under construction for over 60 years and is now approximately 75% complete with many of the project features now requiring rehabilitation. The primary issue affecting NIIP completion is insufficient construction funding, which has been inconsistent throughout the history of the project and has ranged from a peak of \$28.9 million in 1976 to \$0 in 1984 and 1986. Funding levels have remained static at approximately \$3 million per year since 2011.

As of fiscal year 2019, On-Farm Development by BIA is completed, and Block 9, Stage 1, two Pumping Plant and associated laterals are providing project water to approximately 3,600 acres. Reclamation continues implementing the recommendations from the 2018 Modernization Study and completed the Power Factor Corrections for Block 4 in 2022. Now there are just two remaining projects: G7.5LA Pumping Plant ventilation and Pumping Plants 4-7 standard operating procedure preparation. The fiscal year 2023 construction budget will be used to complete that remaining work.

Utah

Central Utah Project

The Central Utah Project (CUP), located in the central and east central part of Utah, was constructed in part by Reclamation and is now being completed by the Central Utah Water Conservancy District in Orem, Utah, the local project sponsor, under the authority of the Central Utah Project Completion Act (CUPCA) of 1992. It is the largest water resources development program ever undertaken in the State of Utah. The CUP provides water for irrigation and municipal and industrial uses. Benefits include recreation, fish and wildlife, flood control, water conservation, water quality control, hydropower generation, and area development.

The Initial Phase, authorized in 1964, originally consisted of four units: Bonneville, Jensen, Upalco, and Vernal. An Ultimate Phase consisted of the Ute Indian Unit. A sixth unit; the Uintah Unit, was authorized by separate legislation in 1968. The largest of the six units is the Bonneville Unit which involves the diversion of water from the Uintah Basin, a part of the Colorado River Basin, to the Great Basin, with associated resource developments in both basins. The other units – Jensen, Uintah, Upalco, Ute Indian, and Vernal – were intended to provide for local development in the Uintah Basin.

Of the original six units Bonneville is the only remaining active unit. The Jensen and Vernal Units are completed. The Uintah and Upalco units were replaced and deauthorized. The Ute Indian Unit was deauthorized by Congress in the CUPCA.

Bonneville Unit

The completed Bonneville Unit will deliver a permanent supply of 42,000 acre-feet of irrigation water and 157,750 acre-feet of municipal and industrial water. A key

feature of the Bonneville Unit is the trans-basin diversion of 101,900 acre-feet (annual average) of water from the Uintah Basin to the Wasatch Front (Utah County cities and the Salt Lake City metropolitan area).

Central Utah Project Completion Act of 1992

Legislation enacted in 1992 (P.L. 102-575, CUPCA), significantly reformed implementation of the CUP. Among many changes, the Act increased the ceiling to allow completion of the Bonneville Unit of the CUP, authorized new portions and deauthorized old portions of the original plan and provided the Ute Indian Rights Settlement. The legislation provides that the project's local sponsor, the Central Utah Water Conservancy District (District), will plan and construct the remaining CUP-Bonneville Unit features; the Utah Reclamation Mitigation and Conservation Commission, an independent federal commission created under CUPCA, will complete the associated fish and wildlife mitigation; the Secretary will oversee implementation of CUPCA; and the District and/or Department of the Interior may contract with Reclamation for technical services. The Department of the Interior's CUPCA Office and the District completed a Definite Plan Report in 2004 that will ensure that the Bonneville Unit is completed under the remaining ceiling.

Utah Lake Drainage Basin Water Delivery System (Utah Lake System)

The final component of the Bonneville Unit to be constructed is the Utah Lake System. The Department of the Interior published the Utah Lake System FEIS on September 30, 2004, and on December 22, 2004, the Assistant Secretary for Water and Science signed the ROD. Construction began in 2007 and as of 2022, 43 miles of large diameter pipeline have been constructed with 4 miles remaining to be constructed.

Hydroelectric Power Generation

In 2005, the Department of the Interior selected the District and Heber Light & Power as joint lessees for power development at Jordanelle Dam. Construction of the 12-megawatt facility began in 2006, and the hydropower facility, which has been certified by the Low Impact Hydropower Institute, began generating power on July 1, 2008.

The Department of the Interior, the District, Reclamation, and Western Area Power Administration partnered to implement the Olmsted Hydroelectric Powerplant Replacement Project. Completed in September 2018, this project replaced a 100-year-old facility, provides 13 megawatts of capacity, and protects CUP water rights. Two hydroelectric power generation facilities are planned for construction under the Utah Lake System. These facilities will have a combined capacity of 50 megawatts.

Reservoirs and High Mountain Lakes.

The Bonneville Unit includes five reservoirs constructed by Reclamation as storage facilities for project irrigation, municipal and industrial storage, and recreational

use. The five reservoirs are Jordanelle, Strawberry, Starvation, Currant Creek, and Upper Stillwater. In addition, three high mountain lakes, Washington Lake, Lost Lake, and Trial Lake, were reconstructed to provide storage in conjunction with the municipal and industrial system.



FIGURE 14. Jordanelle Reservoir and Dam

Jordanelle Reservoir is the newest reservoir with recreation facilities completed in 1998. Recreation and public use are managed by the Utah Division of Parks and Recreation under an agreement with Reclamation. There are two main developed recreation areas: Hailstone and Rock Cliff. Hailstone is a large, developed campground and day-use area located on the west side of the reservoir. Rock Cliff is located on the southeast side of the reservoir and offers a quieter experience with walk-in campgrounds; however, the area will be redeveloped and expanded to accommodate more visitors. Ross Creek, more primitive in nature, on the northeast end of the lake features access to the perimeter trail, parking lot with vault toilets, and a nonmotorized boat launch for hand-carried craft such as kayaks and canoes. This area, too, will be expanded to accommodate the increasing number of users at this popular reservoir near the most heavily populated region of the State. Reclamation, Utah State Parks, and the Jordanelle Special Service District are working through water and wastewater issues currently. Strawberry Reservoir was enlarged in 1974 under authority of the CRSPA of 1956 (before the enactment of CUPCA). Soldier Creek Dam, completed in 1973, expanded the capacity of Strawberry Reservoir from 283,000 acre-feet to a maximum capacity of 1,106,500 acre-feet and a total surface area of 17,163 acres. The original Strawberry Dam, constructed by Reclamation in 1922, was deliberately breached in 1985. As part of Reclamation's commitment to provide recreation opportunities,

new facilities were built. There are four main developed areas: Strawberry Bay, Soldier Creek, Renegade Point, and Aspen Grove. Recreation management is under the jurisdiction of the U.S. Forest Service.

Starvation Reservoir, the first Bonneville Unit facility to be constructed, is a large reservoir on the Strawberry River in the Uintah Basin. The reservoir, filled by surplus winter and spring flows from the Duchesne and Strawberry rivers, is large enough for all water sports, and has a state park with a campground. Starvation State Park was established in 1972, two years after construction of Starvation Dam. In 2019, the park was rededicated in memory of Fred Hayes, who was the director of the Utah Division of Parks and Recreation from 2012 until his death in 2018. It is now known as Fred Hayes State Park at Starvation. Mr. Hayes began his career with Utah State Parks in 1982 as a seasonal ranger at Starvation.

Currant Creek Reservoir is a high elevation lake (7,680 feet) with a mixed open and timbered setting. Development began in 1977 with construction of Currant Creek Dam. Currant Creek Reservoir finished filling in 1982. The reservoir shoreline is 85% under the jurisdiction of the U.S. Forest Service while the remaining 15% is private with restricted access. Recreation management at Currant Creek is under the jurisdiction of the U.S. Forest Service, Uinta National Forest.

Upper Stillwater Reservoir is another high mountain reservoir that has one main campground. The reservoir serves as a popular trailhead into the High Uintas Wilderness with the boundary located only one mile north of the dam near the high-water line for the reservoir. Recreation management is under the jurisdiction of the U.S. Forest Service, Ashley National Forest.

The managed recreation season at Upper Stillwater Reservoir is from June through September with high use on holidays and weekends. Boating use is restricted to non-motorized craft.

High Mountain Lakes include Washington Lake, Trial Lake, and Lost Lake with a total reservoir capacity of 5,788 acre-feet. Located in the Wasatch Cache National Forest, these lakes were reconstructed to provide irrigation water for Summit County, Utah. Recreation at the lakes is managed by the U.S. Forest Service and allows non-motorized boating and fishing. The lakes are at an elevation of over 9,500 feet and are only accessible during the summer months. The CUPCA also authorized the stabilization of additional high mountain lakes. As part of the Uintah Basin Replacement Project, the Utah Reclamation Mitigation and Conservation Commission stabilized 13 lakes. Authorization remains for additional lake stabilization in the Uinta Mountains.



FIGURE 15. Water from the spillway of Upper Stillwater Dam flows from the reservoir and into Rock Creek, 31 miles northwest of Duchesne, Utah.

Jensen Unit

The Jensen Unit in northeastern Utah provides about 5,300 acre-feet of water for municipal and industrial uses and 4,600 acre-feet for irrigation. Key project features include Red Fleet Dam and Reservoir, Tyzack Aqueduct Reach 1, and Tyzack Aqueduct Reach 2. Recreation at Red Fleet is managed by the Utah Division of Parks and Recreation under an agreement with Reclamation.

Uintah and Upalco Units

Section 203(a) of the CUPCA of 1992 provided for the construction of the Uintah Basin Replacement Project in place of the Uintah and Upalco units which were never constructed. P.L. 107-366, enacted December 19, 2002, deauthorized the Uintah and Upalco units, transferring the unexpended budget authority to units of the CUP for construction of the Uintah Basin Replacement Project, Utah Lake System, and other CUPCA purposes. The district completed construction of the primary features (including the enlarged Big Sand Wash Dam) of the Uintah Basin Replacement Project. The Big Sand Wash Feeder Diversion Structure and Pipeline was completed in March of 2004. The Big Sand Wash Reservoir enlargement was completed in September 2006 followed by completion of the Big Sand Wash Roosevelt Pipeline in September 2008. In 2020, title to all features of the Uintah Basin Replacement Project was transferred to the Moon Lake Water Users Association under the authority of Title VIII of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (Public Law No: 116-9).

Ute Indian Unit

The Ute Indian Unit was deauthorized in 1992 by Section 201(b) of the CUPCA.

Vernal Unit

The Vernal Unit in northeastern Utah supplies supplemental irrigation water to about 14,700 acres and approximately 1,600 acre-feet of municipal and industrial water annually to the communities of Vernal, Naples, and Maeser. Key project features include Steinaker Dam and Reservoir, Fort Thornburgh Diversion Dam, Steinaker Service Canal, and Steinaker Feeder Canal.

Recreation at Steinaker is managed by the Utah Division of Parks and Recreation under an agreement with Reclamation.

Wyoming

Eden Project

The Eden Project furnishes an irrigation water supply for 17,010 acres. Project lands are in the vicinity of the towns of Farson and Eden in southwestern Wyoming about 40 miles north of Rock Springs. Project features include Big Sandy Dam and Reservoir, Eden Dam and Reservoir, Little Sandy Feeder Canal, Big Sandy Feeder Canal, Means Canal, Little Sandy Canal, Eden Canal, and three laterals and a drainage system. Big Sandy Dam (completed in 1952) was constructed to replace some storage in the existing off-stream Eden Reservoir and to supply water for additional project lands. The Means Canal conveys water from Big Sandy Reservoir to the Westside Lateral, which serves lands on the west side of Big Sandy Creek, the Farson Lateral, which serves lands on the east side of the creek, and the Eden Canal which supplies the Eden lateral. The Eden Lateral supplies water to lands in Eden. Little Sandy Diversion Dam diverts water into the Little Sandy Feeder Canal. Water can be diverted from Big Sandy Dam to Eden Reservoir through the Big Sandy Feeder Canal. Water is drawn from Eden Reservoir to serve Eden Canal and Farson Lateral.

Reclamation and the Wyoming Water Development Office (WWDO) have moved forward with plans to increase the storage of Big Sandy Reservoir, and as a result, firm up the project water supply. Reclamation's Denver Technical Service Center completed designs to raise the top of active conservation 5 feet. The project will incorporate a filter diaphragm around the outlet works, additional toe drains at the left abutment, cutoff wall in the dike, a rebuilt diversion in the dike, and replacement of drop structures in the Big Sandy feeder canal, a final environmental assessment and finding of no significant impact was completed in June 2020. Project construction began in fall of 2021 and is expected to be complete by fall of 2023.

Recreation facilities at Big Sandy Reservoir are administered by Reclamation's Provo Area Office. As part of the dam enlargement, recreation facilities will need

to be moved and rehabilitated. At this time, the boat ramp extension needs to be designed and Reclamation staff through the Provo force account crew are planning to accomplish the work. The design of recreation facilities is scheduled to begin mid-April 2022 for construction to begin during Autumn 2022.

In 2010, the Wyoming Game and Fish Commission implemented emergency regulations to stop the spread of aquatic invasive species in Wyoming waters. Under this regulation, all watercrafts are required to purchase and display an aquatic invasive species decal. Funds raised from purchase of the decals are used to pay for public education programs and prevention efforts to keep invasive quagga and zebra mussels from being introduced. Efforts include watercraft inspections, decontamination if warranted, and possible criminal and civil penalties for anyone found violating the regulations. To date, no mussels have been detected in Wyoming waters.

La Barge Project

The La Barge Project was found to be infeasible and was not constructed.

Seedskadee Project

The Seedskadee Project is in the Upper Green River Basin in southwestern Wyoming. It provides storage and regulation of the flows of the Green River for power generation, municipal and industrial use, fish and wildlife, and recreation. Principal features of the project include Fontenelle Dam, powerplant, and reservoir. The reservoir is operated for municipal and industrial water use, power production, flood control, and the downstream fishery and wildlife refuge.

Fontenelle Reservoir has an active capacity of 256,952 acre-feet and a total capacity of 334,411 acre-feet, with a surface area of approx. 7,861 acres. The lake is 20 miles in length when full and has a shoreline of approximately 56 miles. On October 23, 2018, President Donald Trump signed into law America's Water Infrastructure Act of 2018 (P.L. 115-270). Section 4310 of this bill authorizes Reclamation to plan and construct the Fontenelle Riprap Project, which will expand the yield of Fontenelle Reservoir in Wyoming. The project will allow Wyoming to further develop its apportionment under the Upper Colorado River Basin Compact. Any work related to the expansion of the reservoir will be funded by the State of Wyoming.

Reclamation manages approximately 147,000 acres of withdrawn land adjacent to and downstream of Fontenelle Dam and Reservoir that are no longer needed for project purposes. Reclamation submitted a request to revoke its withdrawal of these lands to the BLM on December 31, 2014. The BLM reviewed the revocation request and completed field authorizations reviews. A Finding of No Significant Impact was developed and signed. Before sending the completed package to the Department of the Interior for review and final approval, additional concerns were brought forward from the BLM. This caused Reclamation to reassess all withdrawn

land. Adjustments were made, as to which lands should be prepared for revocation. The new and revised package was sent to the Bureau of Land Management (BLM) in January 2022. The intent of this effort is to return lands to the public domain to be managed by the BLM.

Recreation facilities at Fontenelle Reservoir are managed by BLM under an agreement with Reclamation. Fontenelle Creek Recreation Area is the only developed site on the reservoir, although there are three other campgrounds (Tailrace, Weeping Rock, and Slate Creek) located below Fontenelle Dam, along the Green River, that are more primitive.

In 2010, the Wyoming Game and Fish Commission implemented emergency regulations to stop the spread of aquatic invasive species in Wyoming waters. Efforts include watercraft inspections, decontamination if warranted, and possible criminal and civil penalties for anyone found violating the regulations.

The State of Wyoming wishes to contract for additional water from Fontenelle Reservoir. Fontenelle's current active capacity is approximately 264,250 acre-feet of which 139,000 acre-feet is available to Wyoming in addition to 120,000 acre-feet already under contract. Extension of the riprap would increase the active capacity to approximately 344,000 acre-feet adding about 79,750 acre-feet available for contracting. Further analysis is needed to consider potential impacts to operations at lower levels for power generation, instream flows, and water deliveries.

Passage of H.R. 648 – 115th Congress, allows the extension of the riprap on the face of the dam to allow the state to contract for all remaining water (less dead storage) in the reservoir. This bill authorized an amendment to Definite Plan Report for the Seedskaadee Project to provide for the study, design, planning, and construction activities that will enable the use of all active storage capacity of Fontenelle Dam and Reservoir, including the placement of sufficient riprap on the upstream face of the dam to allow such storage capacity to be used for authorized project purposes. The bill requires the State of Wyoming to provide funds for any work carried out with regards to the additional capacity. The Department of the Interior has recently entered into a Technical Service Agreement with the state for the planning, design, related preconstruction activities such as environmental and cultural resource compliance, and construction of any modification of the Fontenelle Dam.

Colorado and New Mexico

Animas-La Plata Project

The Animas-La Plata Project is in southwestern Colorado and northwestern New Mexico and was first authorized by the CRBPA of 1968 (P.L. 90-537). In 1988, it was incorporated into the Colorado Ute Indian Water Rights Settlement Act (P.L. 100-

585). The Colorado Ute Settlement Act Amendments of 2000 (Title III of P.L. 106-554, December 21, 2000) provide for implementation and completion of the project. Approval to begin construction was granted in October 2001 and initial site work started in April 2002. Construction of Ridges Basin Dam, the Durango Pumping Plant, and Lake Nighthorse (formerly called Ridges Basin Reservoir) will provide the Southern Ute Indian and Ute Mountain Ute Tribes with a reliable water supply for their future needs, while protecting scarce water resources for existing water users in southwestern Colorado and northwestern New Mexico. It remains a priority of the Secretary to complete the Animas-La Plata Project in a cost effective and efficient manner.

The Animas-La Plata Project consists of four major components: Ridges Basin Dam, Durango Pumping Plant, and Ridges Basin Inlet Conduit located in Colorado; and the Navajo Nation Municipal Pipeline (NNMP) located in New Mexico. The NNMP consists of approximately 30 miles of 24-inch diameter pipeline running from Farmington, New Mexico, to Shiprock, New Mexico, and will provide for the conveyance of 4,680 acre-feet of municipal water per year to Navajo Nation communities. The project consists of various other elements including multiple utility and road relocations; fish, wildlife, and wetlands mitigation; a permanent operating facility; and cultural resources investigations. The reservoir formed by Ridges Basin Dam was named Lake Nighthorse in honor of Senator Ben Nighthorse Campbell who played an instrumental role in the Colorado Ute Settlement and construction of the Animas-La Plata Project.

All Colorado features of the Animas-La Plata project are currently operational. In August 2012, water was released from Lake Nighthorse down Basin Creek to successfully test the Basin Creek features. An operation and maintenance contract has been signed with the Animas-La Plata Operations, Maintenance and Replacement Association (ALP OM&R Association) that allows project sponsors to operate Colorado project features. Transfer of OM&R responsibilities to the ALP OM&R Association occurred on April 1, 2013. Lake Nighthorse began filling on May 4, 2009 and filled for the first time on June 29, 2011. The maximum water surface elevation of 6,882 feet equates to 123,541 acre-feet in storage and a water surface area of approximately 1,500 acres.

In New Mexico, completion of the NNMP has been delayed due to damages caused by a landslide in May 2014. In 2022, a Feasibility Study to evaluate alternatives and recommend a robust solution to replace the damaged section of pipe was completed with a recommendation for using a horizontal directional drill to install and protect the pipeline from future landslides recommended as the preferred alternative. Final design and NEPA compliance activities are planned in FY 2023, with construction slated to begin in 2024 and completion scheduled by 2025.

Lake Nighthorse opened to recreation in the spring of 2018. The recreation area is managed by the City of Durango. Recreation opportunities at Lake Nighthorse include swimming, boating, fishing, and picnicking. Motorized boat use is allowed

from May 15 to November 15. All motorized boats are inspected for invasive species and are subject to decontamination before entering the water. The entry area is being redesigned to better accommodate traffic flow and inspection and decontamination of boats. The city completed the installation of a sandy swim beach with amenities recently.

To protect cultural resources in the area, recreation is only allowed in developed areas and 25 feet above the high-water level around the reservoir. Land around Lake Nighthorse that is off-limits to recreation has been posted with no trespass signs and all visitors receive a brochure with rules for recreating at the lake. Destruction or removal of cultural resources will be prosecuted. Reclamation will continue to work with all partners and stakeholders regarding recreation management at Lake Nighthorse.



FIGURE 16. Newest addition to Lake Nighthorse by the City of Durango with funding assistance from Reclamation.

To protect cultural resources in the area, recreation is only allowed in developed areas and 25 feet above the high-water level around the reservoir. Land around Lake Nighthorse that is off-limits to recreation has been posted with no trespass signs and all visitors receive a brochure with rules for recreating at the lake. Destruction or removal of cultural resources will be prosecuted. Reclamation will continue to work with all partners and stakeholders regarding recreation management at Lake Nighthorse.

San Juan-Chama Project

The San Juan-Chama Project consists of a system of diversion structures and tunnels for transmountain movement of water from the San Juan River Basin to the Rio Grande Basin. Primary purposes of the San Juan-Chama Project are to furnish a water supply to the Middle Rio Grande Valley for municipal, domestic, and industrial uses. The project is also authorized to provide supplemental irrigation water and incidental recreation and fish and wildlife benefits. The regulating and storage reservoir is formed by Heron Dam on Willow Creek just above the point where Willow Creek enters the Rio Chama. Heron Reservoir is operated by Reclamation in compliance with applicable federal and state laws including the San Juan-Chama Project authorization and the Rio Grande and

Colorado compacts. Only imported San Juan-Chama Project water is stored in Heron Reservoir.

The Pojoaque Irrigation Unit, made up of Nambe Falls Dam and storage reservoir, provides supplemental irrigation water for about 2,800 acres in the Pojoaque Valley. It serves the Pojoaque Valley Irrigation District and the Indian pueblos of San Ildefonso, Nambé, and Pojoaque.

Reclamation, in coordination with the Western Area Power Administration, is considering hydroelectric power development on the San Juan-Chama Project under a lease of power privilege at up to four conduit drops along the project. Reclamation selected the Albuquerque Bernalillo County Water Utility Authority as the preliminary lessee. However, they elected to discontinue the project.

Recreation at Heron Reservoir is managed by New Mexico State Parks under an agreement with Reclamation. Recreation at Nambé Falls Reservoir is managed by the Nambé Pueblo under an agreement with Reclamation.

In April 2009, New Mexico's governor signed the Aquatic Invasive Species Control Act. The Act allows the New Mexico Department of Game and Fish to take actions to protect New Mexico's waters from the negative impacts of aquatic invasive species. To date, no evidence of invasive mussels has been found at Heron Reservoir. Nambé Pueblo does not have an active mussel inspection program; therefore, the status of Nambé Falls Reservoir is unknown.

Utah and Wyoming

Lyman Project

The Lyman Project lands are in southwestern Wyoming; however, much of the drainage area and one storage feature are in Utah, just across the Utah-Wyoming state line. The Lyman Project includes Meeks Cabin Dam and Reservoir and Stateline Dam and Reservoir. The project regulates the flows of Blacks Fork and the east fork of Smiths Fork for irrigation, municipal and industrial use, fish and wildlife conservation, and recreation. Recreation at Meeks Cabin and Stateline dams and reservoirs is the responsibility of the U.S. Forest Service, Wasatch-Cache National Forest, under authority of P.L. 89-72, as amended.

Recreational Uses at CRSP Reservoirs

CRSP facilities provide a kaleidoscope of scenic and recreational opportunities that have significant economic benefits. While exact use figures are not available, it is estimated that recreation visits to CRSP initial facilities totaled around 5.2 million for calendar year 2022, demonstrating the high value placed on outdoor recreation opportunities in the Intermountain West. Recreation use at participating projects increased that number to approximately 7.3 million. Recreation at CRSP facilities is a strong economic driver in the affected states, with some smaller and more rural

areas being almost entirely dependent upon the dollars that recreation brings to their communities.

OTHER RECLAMATION PROJECTS IN THE UPPER COLORADO RIVER BASIN

Significant Reclamation projects in the Upper Colorado River Basin that either use water from the Colorado River or are transbasin water diversion projects are discussed below. While these projects are not part of the CRSP, they are worth noting.

Colorado

Colorado-Big Thompson Project

The Colorado-Big Thompson Project is a multipurpose transmountain, transbasin water diversion and delivery project located in Colorado. The project stores, regulates, and diverts water from the Colorado River west of the Rocky Mountains, providing supplemental water for irrigation of 640,000 acres of land east of the Rocky Mountains. The project historically diverts 230,000 acre-feet annually from the headwaters of the Colorado River with a maximum possible diversion of 310,000 acre-feet. The Northern Water Conservancy District apportions the water diverted from the West Slope, which is used for irrigation in more than 120 ditches and 60 reservoirs. Besides irrigation water uses, the project also provides water for industrial, hydroelectric power, recreation, and environmental uses for a growing population of approximately 960,000.

Although the Colorado-Big Thompson Project is not a participating project of the CRSP, it does utilize water diverted from the Upper Colorado River system to the eastern slope of Colorado.

Colorado-Big Thompson Project storage as of September 30, 2022, was at 71% of capacity. Storage reservoir volumes were as follows:

- West Slope - Lake Granby, 430,584 acre-feet
- Grand Lake, 749 acre-feet
- Shadow Mountain, 17,035 acre-feet
- Willow Creek, 8,300 acre-feet
- Green Mountain, 77,171 acre-feet
- East Slope - Carter Lake, 83,407 acre-feet, and
- Horsetooth, 92,141 acre-feet

During water year 2022, transmountain diversions from the Colorado River Basin in Colorado by the Colorado-Big Thompson Project via the Adams Tunnel totaled 212,800 acre-feet.

Fryingpan-Arkansas Project

The Fryingpan-Arkansas Project is a multipurpose transmountain, transbasin water diversion and delivery project located in Colorado. It was designed for an average annual diversion of 69,200 acre-feet of surplus water from the Fryingpan River and other tributaries of the Roaring Fork River, on the western slope of the Rocky Mountains, to the Arkansas River Basin on the eastern slope. The historical average imports are 55,545 acre-feet. The Fryingpan-Arkansas Project originally provided a supplemental supply of irrigation water for 280,600 acres of farmland and currently provides a supplemental supply of water for 265,000 acres in the Arkansas Valley. Total project supplies may be further increased through use and reuse of project water.

Although the Fryingpan-Arkansas Project is not a participating project of the CRSP, it does utilize water diverted from the Upper Colorado River system to the eastern slope of Colorado.

Fryingpan-Arkansas Project storage as of September 30, 2022, was at 94% of capacity, excluding Pueblo Reservoir flood storage. Storage reservoir volumes were as follows:

- West Slope - Ruedi Reservoir, 72,102 acre-feet
- East Slope - Turquoise Lake, 86,030 acre-feet
- Combined Mt. Elbert Forebay and Twin Lakes Reservoir, 119,120 acre-feet, and
- Pueblo Reservoir, 178,121 acre-feet

During water year 2022, transmountain diversions from the Colorado River Basin in Colorado by the Fryingpan-Arkansas Project via the Charles H. Boustead Tunnel totaled 51,685 acre-feet.

PLANNING INVESTIGATION ACTIVITIES

The Upper Colorado Basin General Planning Activities (GPA) budget for fiscal year 2021 was \$661,000. The GPA program focuses on planning activities that cross regional boundaries and includes Reclamation-wide planning tasks, unanticipated short-term studies, work related to interstate and international agreements, technical assistance to states and tribes, and other environmental and interagency coordination activities. GPA activities are not funded by any other projects or planning programs such as Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) programs, including: Baseline Assessments (BAs), Reservoir Operations Pilots (ROPs), Applied Science Grants (ASGs), Basin Studies, Water Operation Pilots (WOPs), Water Marketing Strategy Grants (WMSG), Environmental Water Resources Projects (EWRP), Drought Response, Title XVI Water Reclamation and Reuse, Cooperative Watershed Management (CWM), and UCB's Water Conservation Field Services Program (WCFS).

Reclamation conducts BAs to develop water supply and demand information,

guidance, and tools needed to conduct planning activities across Reclamation's mission areas. The ROPs conduct pilot studies to identify possible improvements to reservoir operations by incorporating improved scientific information and enhancing operational flexibility to maximize benefits from the existing system. The ASGs develop hydrologic information and water management tools and improve modeling and forecasting capabilities. Basin Studies are collaborative studies, cost-shared with non-federal partners, to evaluate water supply and demand and help ensure reliable water supplies by identifying strategies to address imbalances in water supply and demand. WOPs allow entities that have completed a basin study to build on the analyses and strategies developed in the basin study. EWRP is focused on realizing environmental benefits and increasing the reliability of water resources.

The WMSG provides grants to conduct planning activities in developing a water marketing strategy that establish or expand water marketing activities between willing participants, in compliance with state and federal laws. The Drought Response Program provides assistance to develop a drought contingency plan or to update an existing plan to meet the required elements described in the Drought Response Framework to build long-term resiliency to drought. The Title XVI Water Reclamation and Reuse Program focuses on identifying and investigating opportunities to reclaim and reuse wastewater and naturally impaired ground and surface water. The CWM Program Phase I provides funding for watershed group development, watershed restoration planning, and watershed management project design.

The WCFS Program provides UCB entities technical and financial assistance toward the development of water conservation plans and system optimization reviews that identify water management improvements and application of new water conservation technologies through demonstration activities in the UCB.

RESERVOIR OPERATIONS

Each year Reclamation prepares the Annual Operating Plan (AOP) for Colorado River reservoirs. The purpose of the AOP is to report on past year's operations and illustrate the potential range of reservoir operations that might be expected in the upcoming water year. Information from the 2023 AOP is summarized below.

For a detailed discussion of reservoir operations in 2022 and the range of probable projected 2023 operations for each of the four main storage units of the CRSP, please visit the 2023 AOP webpage to view it in its entirety.¹³

2022 Hydrology Summary and Reservoir Status

Much below average streamflows were observed throughout the Colorado River

¹³ U.S. Bureau of Reclamation. Annual Operating Plan. Accessed at: <https://www.usbr.gov/uc/water/rsvrs/ops/aop/>.

Basin during water year 2022. Unregulated inflow to Lake Powell in water year 2022 was 6.08 million acre-feet (maf), or 63% of the 30-year average, which is 9.60 maf. Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 64%, 71%, and 63% of average, respectively. On September 30, 2022, the cumulative precipitation received within the Upper Colorado River Basin for water year 2022 was 100% of median.

Snowpack conditions trended below average across most of the Colorado River Basin throughout the snow accumulation season. The basinwide snow water equivalent measured 96% of the median peak on March 24, 2022, which is around two weeks earlier than the peak seasonal accumulation day of April 6. On April 1, 2022, the snow water equivalents for the Green River, Upper Colorado River Headwaters, and San Juan River Basins were 75%, 89%, and 103% of median, respectively.

During the 2022 spring runoff period, inflows to Lake Powell peaked on June 3, 2022, at approximately 28,300 cubic feet per second. The April through July unregulated inflow volume for Lake Powell was 3.75 maf, which was 59% of average.

The Colorado River total system storage experienced a net decrease of 3.38 maf in water year 2022. Reservoir storage in Lake Powell decreased during water year 2022 by 1.46 maf. Reservoir storage in Lake Mead decreased during water year 2022 by 1.69 maf. At the beginning of water year 2022 (October 1, 2021), Colorado River total system storage was 38% of capacity. As of September 30, 2022, the end of water year 2022, total system storage was 33% of capacity.

System Conservation

During ongoing drought in the Colorado River Basin, storage in Colorado River system reservoirs has declined from nearly full to less than half of capacity. Entities that rely on Colorado River water were concerned with the extended drought and declining reservoir levels at Lake Powell and Lake Mead. In response, several programs were implemented to test approaches that might help mitigate the impacts of the drought.

The purpose of the pilot program was to explore and learn about the effectiveness of voluntary, temporary, compensated measures that could be used, when needed, to help maintain water levels in Lakes Powell and Mead above critical levels. All water conserved as a result of the pilot program was considered Colorado River system water. To facilitate administration and implementation of the System Conservation Pilot Program (SCPP) in the Upper Basin, the Commission and other Funding Partners entered into a facilitation agreement in May 2015 clarifying how the program would be administered by the UCRC in the Upper Basin. The program was funded and extended for a fourth year into 2018, when it was discontinued by the UCRC.

Over the four-year life of the SCPP, 64 projects were implemented in the Upper Basin, resulting in approximately 47,100 acre-feet of system water created, and 11 projects were implemented in the Lower Basin, resulting in approximately 147,000 acre-feet of system water created. In June 2018, the UCRC passed a resolution to cease acting as the contracting entity for SCPP in the Upper Basin (after fulfilling its commitments for 2018) in favor of focusing its efforts on investigating outstanding considerations related to demand management.

In 2021, Reclamation provided a report to Congress that evaluated the effectiveness of the Pilot System Conservation Program (Pilot Program) through 2019. The Pilot Program tested new approaches to conserve water in the Colorado River System. Water conserved as a result of the Pilot Program was for the sole purpose of increasing storage levels in Lake Powell and Lake Mead and did not accrue to the benefit or use of any individual water user. According to the report, the Pilot Program successfully demonstrated that voluntary, compensated water conservation projects can conserve water in the Colorado River System and help mitigate the impacts of drought. The report concluded that widespread interest in system conservation activities and shared Pilot Program experience gained by participating parties will serve as a platform for future collaboration on system conservation activities to help mitigate drought in the Colorado River Basin, and that the Department of the Interior supports such activities and recommends they be continued.

In 2022, the Upper Division States and the UCRC developed and adopted a 5-Point Plan, which put forward strategic activities to help improve the Colorado River System. The first listed element of the 5-Point Plan is the re-authorization and re-initiation of the SCPP, with the subsequent steps of developing the agreements, legislation, and funding that would enable SCPP activities to take place in the Upper Basin in 2023, among other activities.

Projected Upper Basin Delivery for 2023

Taking into account (1) the existing water storage conditions in the basin, (2) the August 2022 24-Month Study projection of the most probable near-term water supply conditions in the basin, (3) the concept of operational neutrality as outlined in the Lake Powell annual operating decision in water year 2022, (4) the concept of preserving the benefits to Glen Canyon Dam facilities and operations in 2023 of the operating decisions made in water year 2022, and (5) Section 6.D.1 of the 2007 Interim Guidelines, Reclamation determined that the Lower Elevation Balancing Tier would govern the operation of Lake Powell for water year 2023. Subject to decisions regarding the preservation of the benefits to Glen Canyon Dam facilities and operations, the August 2022 24-Month Study of the most probable inflow scenario determined that the water year 2023 release from Glen Canyon Dam would be 7.0 maf.

Summary of Reservoir Operations in 2022 and Projected 2023 Reservoir Operations

The operation of Colorado River reservoirs has affected some aquatic and riparian resources. Controlled releases from dams have modified temperature, sediment load, and flow patterns, resulting in increased productivity of some riparian and non-native aquatic resources and the development of economically significant sport fisheries. However, these same releases can have detrimental effects on endangered and other native species. Operating strategies designed to protect and enhance aquatic and riparian resources have been established after appropriate NEPA compliance at several locations in the Colorado River Basin.

In the Upper Basin, public stakeholder work groups have been established at Fontenelle Dam, Flaming Gorge Dam, the Aspinall Unit, and Navajo Dam. These workgroups provide a public forum for dissemination of information regarding ongoing and projected reservoir operations throughout the year and allow stakeholders the opportunity to provide information and feedback with respect to ongoing reservoir operations. Additionally, the Glen Canyon Dam AMWG was established in 1997 as a chartered committee under the Federal Advisory Committee Act of 1972.

Modifications to projected operations are routinely made based on changes in forecasted conditions or other relevant factors. Within the parameters set forth in the Law of the River and consistent with the Upper Colorado Recovery Program, the San Juan River Basin Recovery Implementation Program (San Juan Recovery Program), Section 7 consultations under the ESA, and other downstream concerns, modifications to projected monthly operations may be based on other factors in addition to changes in streamflow forecasts. Decisions on spring peak releases and downstream habitat target flows may be made midway through the runoff season. Reclamation will conduct meetings with Recovery Program participants, the U.S. Fish and Wildlife Service, other federal agencies, representatives of the Basin states, and with public stakeholder work groups to facilitate the discussions necessary to finalize site-specific projected operations.

FISH AND WILDLIFE

During the 1960s and 1970s, growing public concern over the environment resulted in new federal environmental laws. The enactment of the Colorado River Basin Project Act of 1968, National Environmental Policy Act (NEPA) of 1969, Endangered Species Act (ESA) of 1973, and Grand Canyon Protection Act (GCPA) of 1992 has resulted in new compliance requirements as well as authorization in some cases for CRSP units to modify operations for fish and wildlife and other environmental protection purposes. Additionally, the Reclamation Projects Authorization and Adjustment Act, signed October 30, 1992 (P.L. 102-575), was authorized to protect, restore, and enhance wetland and upland ecosystems for the conservation of fish and wildlife resources in the Upper Colorado River Basin, including fish and wildlife resources adversely affected by construction and

operation of the CRSP.

Since its inception in 1956, the CRSP has grown to include the participation of two significant endangered fish Recovery Programs: the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program (SJRIP).

The Upper Colorado Endangered Fish Recovery Program, established in 1988, is a cooperative effort among the states of Colorado, Utah, and Wyoming; representatives from the water development, hydroelectric consumer, and environmental communities; and affected federal agencies including Reclamation, the NPS, U.S. Fish and Wildlife Service, and Western Area Power Administration. The intent of the program is to recover the four endangered Colorado River fish species (humpback chub, bonytail, Colorado pikeminnow, and razorback sucker) while the states continue to develop their Colorado River Compact entitlements. With its demonstrated successes, the Upper Colorado Recovery Program has become a national model for its collaborative conservation efforts to protect endangered species.

The SJRIP, established in 1992, is ongoing in the San Juan River Basin with participation from the states of Colorado and New Mexico; four Native American tribes and nations including the Jicarilla Apache, Navajo, Southern Ute Indian, and Ute Mountain Ute Indian; and affected federal agencies including Reclamation, the Bureau of Indian Affairs, BLM, and U.S. Fish and Wildlife Service. The goal of the SJRIP is to protect and recover the native fish communities in the San Juan River while providing for continued water development per state/federal laws.

As a result of activities being conducted by both the Upper Colorado and the SJRIP, aggressive efforts are being made to stock enough Colorado pikeminnow, razorback sucker, and bonytail to provide the basis for self-sustaining populations that lead to downlisting and de-listing of the species. Capital projects constructed include fish passages, fish screens, habitat improvement projects, hatcheries, levee breeches, storage reservoirs, and irrigation system upgrades. In addition, existing CRSP storage facilities are now being operated to enhance natural resources. To date, the two Recovery Programs have served as the prudent alternative for water projects depleting more than 3.7 million acre-feet of water annually while avoiding ESA related litigation.

The John D. Dingell, Jr. Conservation, Management, and Recreation Act of 2019 (P.L. 1169) reauthorized federal funding for both Recovery Programs through fiscal year 2023. As required by the amended legislation, the Secretary must submit a Report to Congress, which was extended through 2022, describing the accomplishments of the Recovery Programs to date, the status of the endangered fish, expenditures of the Recovery Programs, and activities to be carried out under the Recovery Programs after September 30, 2023. Capital construction funding using appropriated funds is authorized through 2023. The partners in both

programs are working on new authorizing language for the two Recovery Programs which will extend the programs for another 15 years.

APPROPRIATIONS OF FUNDS BY THE UNITED STATES CONGRESS

The funds appropriated¹⁴ for fiscal year 2022 for construction of the CRSP and participating projects, recreational, fish, and wildlife activities were \$104,796,000. Recreational, fish and wildlife activities received a total of \$3,322,000.

TABLE 12. Colorado River Storage Project Fiscal Year 2022 Program

	FY2021	FY 2022
CRSP Initial Units & Participating Projects		
Initial Units, CRSP	\$0	\$20,000,000
Participating, CRSP	\$13,683,000	\$15,897,000
Salinity, CRBSCP	\$15,722,000	\$12,557,000
CRSP Indian Water Rights Settlement		
Navajo-Gallup Water Supply	\$43,601,000	\$56,342,000
TOTAL – Upper Colorado River Appropriated Funds	\$73,006,000	\$104,796,000
Recreation and Fish and Wildlife Facilities		
Recreational Facilities	\$390,000	\$390,000
Fish and Wildlife Facilities	\$2,932,000	\$2,932,000
TOTAL – CRSP Section 8	\$3,322,000	\$3,322,000
TOTAL – Construction & Section 8	\$76,331,000	\$108,118,000

TABLE 13. Appropriations Approved by Congress
for the Colorado River Project and Participating Storage Projects¹⁵

Fiscal Year	Amount
1957	13,000,000
1958	35,142,000
1959	68,033,000
1960	74,460,000
1961	58,700,000
1962	52,535,000
1963	108,576,000
1964	94,037,000
1965	55,800,000

¹⁴ Approved by Congress, minus rescissions.

¹⁵ This information was prepared in good faith on the basis of information available at the date of publication.

1966	45,328,000
1967	46,648,000
1968	39,600,000
1969	27,700,000
1970	25,740,000
1971	24,230,000
1972	27,284,000
1973	45,770,000
1974	24,426,000
1975	22,967,000
1976	53,722,000
1977	55,200,000
1978	67,051,000
1979	76,799,000
1980	81,502,000
1981	125,686,000
1982	130,063,000
1983	132,942,000
1984	161,104,000
1985	163,503,000
1986	97,412,000
1987	110,929,000
1988	143,143,000
1989	174,005,000
1990	163,653,000
1991	145,063,000
1992	92,093,000
1993	69,333,000
1994	46,507,000
1995	23,272,000
1996	27,049,000
1997	22,410,000
1998	17,565,000
1999	10,560,000
2000	13,908,000
2001	14,403,000
2002	16,000,000
2003	35,000,000
2004	55,640,000
2005	57,512,000
2006	64,320,000
2007	69,815,000
2008	65,175,000
2009	50,653,000
2010	63,144,000
2011	25,658,000
2012	39,376,000
2013	53,905,000
2014	86,047,000

2015	108,390,000
2016	122,080,000
2017	116,364,000
2018	101,470,000
2019	122,227,000
2020	110,464,000
2021	76,328,000
2022	108,118,000
Total	\$4,656,544,000
Plus: NIIP appropriations (funds transferred to Reclamation only)	\$632,810,000
TOTAL APPROPRIATIONS	\$5,289,254,000
Excluding non-reimbursable funds for fish and wildlife, recreation, etc., under Section 8 of P.L. 485, 84 th Congress, and all under financing and recession actions.	

Table 13 shows the total funds (rounded to the nearest \$1,000) approved by the United States Congress for the CRSP and participating projects and chargeable against the limitations of various authorizing Acts (P.L. 485, 84th Congress, CRSPA, as amended in 1972 by P.L. 32-370 and in 1988 by P.L. 100-563; P.L. 87-485, San Juan-Chama and Navajo Indian Irrigation Projects Act; P.L. 88-568, Savery-Pot Hook, Bostwick Park, and Fruitland Mesa Projects Act; and P.L. 90-537, CRBPA).

COLORADO RIVER BASIN TITLE II SALINITY CONTROL PROGRAM

Information relative to the Colorado River Basin Title II Salinity Control Program in the Colorado River Basin has been provided by the United States Department of the Interior, Bureau of Reclamation and Land Management, and the United States Department of Agriculture (USDA), NRCS. Discussion of the Title II, Colorado River Basin Salinity Control Act, P.L. 93-320, (approved June 24, 1974) (Salinity Control Act) and its amendments can be found in earlier versions of this annual report.

Reclamation's salinity control programs in the Colorado River Basin are described below. They include the Colorado River Basinwide and the Basin States Salinity Control Programs. The BLM's salinity control program in the Colorado River Basin and the NRCS's salinity control activities in the Colorado River Basin are also described in this section. Additional information on these programs can be found in earlier annual reports of the Upper Colorado River Commission.

COLORADO RIVER BASINWIDE SALINITY CONTROL PROGRAM

The Colorado River Basinwide Salinity Control Program (Basinwide Program) is being implemented under the authorities provided by the 1995 amendment (P.L. 104-20) to the Salinity Control Act. Through the Basinwide Program, projects are selected through Funding Opportunity Announcements (FOAs).

In 2022, \$7 million of appropriations and \$3 million of Basin Funds were devoted to Reclamation's Basinwide Program for a total of \$10 million. It is estimated that the facilities installed with the \$10 million will control over 9,500 tons of salt loading each year. As of September 30, 2022, Reclamation calculates the appropriation ceiling to be \$661,696; total expenditures are \$525,659,912; and the remaining ceiling balance is \$136,035,715.

Reclamation is implementing salinity control through the Basinwide Program in the project areas shown below:

Colorado

Clipper Center Lateral Pipeline Project

Selected under the 2015 FOA, the Crawford Clipper Ditch Company was awarded a \$3.15 million cooperative grant to pipe approximately 4.3 miles of existing, unlined earthen irrigation canals located near Crawford, Colorado, and along Cottonwood Creek, a tributary to the Gunnison River. This will result in an annual salt load reduction of approximately 2,606 tons to the Colorado River, at a cost effectiveness of \$50.43 per ton. The piping project will consist of buried HDPE and PVC pipe. The cooperative agreement was executed in March 2016 and construction began the winter of 2019. The pipeline was completed in the spring

of 2020, and the habitat mitigation was completed in the summer of 2020. The Company requested and was granted a modification to use the remaining funds to pipe 2,400 ft of the Clipper West lateral and was completed in Winter of 2022.

Gould Canal A in Montrose, Colorado

Selected under the 2017 FOA, the Fruitland Irrigation Company was awarded a \$4.4 million cooperative grant for four stages of work. "Section 1" will be piping approximately 1.17 miles of existing open earth irrigation canal with buried HP Storm or similar pipe. "Upper Tunnel" consists of slip liner construction for the upper tunnel. "Section 3" includes lining approximately 1.41 miles of unlined canal with 30 mil PVC membrane with shotcrete cover. "Section 4" consists of lining approximately 0.76 miles of unlined canal downstream of Section 3 using the same method. All four section will be responsible for controlling approximately 3,175 tons of salt annually. Fruitland Irrigation Company requested and received a modification to change a portion of sections 3 and 4 from a lined canal to a pipeline. Construction of the pipeline began in the fall of 2020. The project is expected to be completed by the spring of 2023.

Gould Canal B in Montrose, Colorado

Selected under the 2017 FOA, the Fruitland Irrigation Company was awarded a \$3.565 million cooperative grant for three stages of work. "Lower Tunnel" consists of slip liner construction for the lower tunnel. Section 2 includes lining approximately 2.10 miles of unlined irrigation canal with 30 mil PVC membrane with shotcrete cover. Section 5 consists of lining roughly 2.30 miles of unlined canal using the same methods as Section 2. These improvements will control 2,564 tons of salt annually. Fruitland Irrigation Company requested and received a modification to change a portion of section 2 from a lined canal to a pipeline. Construction of the pipeline began in the fall of 2020. The project is expected to be completed by September 30, 2023.

Grand Valley Irrigation Company (GVIC) 550 Salinity Control Program

Selected under the 2019 FOA, the GVIC was awarded a \$1.2 million cooperative grant to line approximately 1.0 mile of their main irrigation canal within the Grand Valley. This will result in a salt load reduction of approximately 743 tons annually at a cost effectiveness of \$62.70 per ton. The canal lining will consist of a 30-mil PVC membrane with 3-4 inches of shotcrete cover. The cooperative agreement was executed in July 2020. Construction began in November 2021 and projected to be completed in September 2025.

Grand Valley WUA Government Highline Canal – Reach 1A Lower

Selected under the 2019 FOA, the Grand Valley Water Users Association (GVWUA) was awarded a \$4.691 million cooperative grant to line approximately 1.2 miles of their main irrigation canal within the Grand Valley. This will result in a salt load reduction of approximately 3,083 tons annually at a cost effectiveness of \$57.75 per ton. The canal lining will consist of a 30-mil PVC membrane with 3-4 inches of

shotcrete cover. The cooperative agreement was executed in June 2020, construction began in November of 2020, and is scheduled to be completed by September 2025.

Needle Rock Ditch

Selected in the 2019 FOA, the Needle Rock Ditch Piping Project near Crawford, CO, was selected to be awarded a \$5,932 to replace approximately 6.7 miles of existing earthen irrigation canals and laterals with buried PVC pipe. This project will control 2,952 tons of salt annually. Construction began in November 2021 and expected to be completed by the end of September 2024.

Paradox Valley Unit

From 1996 to 2019, the Paradox Valley Unit intercepted an average of 95,000 tons of salt annually and disposed of it by injecting it into a 16,000-foot well. Operations were suspended in March 2019 following a M4.6 earthquake that occurred near the well. An analysis was initiated in 2021 to determine the risk of seismicity with future operation of the well.

A six-month test at a reduced injection rate was conducted from June to December 2022 to evaluate the performance of the injection well and injection zone formation following the three-year shutdown. The test results indicated no adverse effects to the well or formation from the extended shut-in, and low rates and magnitudes of seismicity during the test. Additionally, geomechanical modeling results indicate that pore pressures within 2 to 3 km of the injection well will only increase slightly from the present values over a five-year period if injection continued at the rate of 115 gpm. Following analyses of the six-month injection test and geomechanical modeling results, the decision was made to continue the test at 115 gpm until results of a seismic risk analysis have been evaluated which is scheduled for late 2023.

Because the existing brine injection well is nearing the end of its useful life, Reclamation investigated alternatives for disposing the brine. Reclamation prepared an EIS to evaluate the impacts of alternative methods of salinity control at Paradox with three action alternatives and a “no action” alternative being evaluated. The three action alternatives were a new deep injection well, evaporation ponds, and zero liquid discharge technology. The Final EIS was published in December 2020 which identified the No Action alternative as the preferred alternative. No Record of Decision (ROD) was issued to allow other potential alternatives to be considered in the future.

Upon completion and evaluation of the seismic risk analysis, a decision on continuing operation of the well will be made.

Uncompahgre Valley Water Users Association (UVWUA) – Phase 9 East Side Laterals Project

As a result of the 2015 FOA, the UVWUA was selected to be awarded a \$5.363 million cooperative agreement for Phase 9 of the East Side Laterals. This phase involves piping or abandoning an additional 21.6 miles of laterals off the Selig and East Canals, resulting in an expected annual salt reduction of 6,030 tons, at a cost effectiveness of \$37.07 per ton. A portion of the project is funded by the Natural Resources Conservation Service (NRCS) through the Regional Conservation Partnership Program. The cooperative agreement was executed in September 2017. Construction began in 2018 and the first and second phases of the project was completed. The last phase of the project will be completed by January of 2024.

Upper Stewart Ditch, Paonia, Colorado

Selected under the 2017 FOA, the Stewart Ditch & Reservoir Company was awarded a \$2.507 million cooperative grant. This pipeline project will eliminate and replace 13,142 feet of open earthen canal, 450 feet of existing corrugated metal pipe, and 243 feet of miscellaneous piped sections. The proposed pipeline starts at the west side of Lamborn Mesa Road in Paonia, Colorado, and continues west until it reaches the existing Stewart Ditch pipeline. In this stretch of canal there is a 450-foot section of existing 42-inch CMP pipe that will be removed and replaced with new PVC pipe. This will result in an annual salt load reduction of approximately 1,622 tons to the Colorado River at a cost effectiveness of \$58.67 per ton. The cooperative agreement was executed in August 2018 and construction began in the fall of 2020. The project is expected to be completed by December of 2023.

Tuner/Lone Cabin Ditch

CO, was awarded a \$7,663,723 cooperative agreement. The project will replace approximately 25 miles of existing earthen irrigation canals and laterals with buried pipe. This project will control 3,398 tons of salt annually. Construction is scheduled to begin in November 2022 and expected to be completed by December 2024.

Webber Ditch Piping Project, Mancos Colorado

Selected under the 2019 FOA, the Webber Ditch Company was awarded a \$3.3 million cooperative grant for piping approximately 4.24 miles of existing earthen irrigation canal. The pipeline will consist of buried PVC pipe. This will result in a salt load reduction of approximately 2,066 tons annually at a cost effectiveness of \$59.99 per ton. The cooperative agreement was executed in July 2020. Construction will begin in 2023 and completed in the fall of 2025.

New Mexico

San Juan Dineh Water Users (SJRDWU) – Shiprock Lateral Conversion Phase II

Selected in the 2019 FOA, a cooperative agreement was executed with the SJRDWU in 2020 for the amount of \$1.2M. The project will control 751 tons of salt annually with a cost effectiveness of \$60.64 per ton. The proposed project is to

convert 15 laterals from earthen ditches into underground pressurized pipelines and to convert two sections of the Hogback Canal into a pipeline resulting in the elimination of a sluiceway that discharges flow back to the San Juan River via an artificial earthen channel. Overall, the proposed project will convert 6,393 ft of main canal into a pipeline, 47,110 ft of earthen laterals into underground pressurized pipeline, and eliminate a 2,770 ft of earthen sluiceway channel.

Utah

Ashley Upper and Highline Canals Rehabilitation Project

This project was selected under the 2015 FOA. This project is located in Uintah County in the vicinity of Vernal, Utah. The proposed project will eliminate the open and unlined Ashley Upper Canal and Highline Canal of a combined length of about 29.3 miles (Ashley Upper Canal 13.1 miles and Highline Canal 16.2 miles). They will be replaced with about 21.9 miles (115,500 feet) of HDPE and PVC pipeline ranging in diameter from 63 inches to 10 inches. The salt load reduction estimate for the project is 2,713 tons per year and the estimated cost effectiveness is \$54 per ton per year. A cooperative agreement was executed in September 2016 with the Ashley Upper Irrigation Company in the amount of \$3.51 million from the Basinwide Program. Funding in the amount of \$10.4 million is being provided by a loan from the Utah Board of Water Resources. Construction began in the fall of 2020 and is expected to be completed in the winter of 2023.

BASIN STATES SALINITY CONTROL PROGRAM

P.L. 110-246, signed into law on June 18, 2008, amended the Salinity Control Act creating the Basin States Salinity Control Program (BSP) to be implemented by the Secretary through Reclamation. Funds expended through the BSP come from Basin Funds.

In 2022, Reclamation expended \$9.7 million through the BSP. While some of the funds were provided to state agencies and NRCS offices in the states of Colorado, Utah, and Wyoming to assist in implementing the BSP, most of the funds were utilized for the salinity control projects described below. Funds were also expended to conduct research, studies, and investigations for further implementation of the program.

Reclamation solicits projects through a FOA for both the Basinwide Program and the BSP. Through the FOA process, projects are ranked into a competitive range, but due to lack of funding not all projects in the competitive range are able to be funded through the Basinwide Program. Reclamation approves some of these projects to be funded through the BSP.

Bureau of Reclamation

Reclamation is implementing salinity control through the BSP in the projects shown

below:

Muddy Creek Irrigation Company Piping Project Phase III

Reclamation executed a cooperative agreement with Muddy Creek Irrigation Company in September of 2018 and construction began in October 2019. The project budget is \$4,583,000 to pipe approximately 7.3 miles of existing, unlined earthen irrigation ditch located near Emery, Utah. This will result in an annual salt load reduction of approximately 3,010 tons to the Colorado River at a cost effectiveness of \$57.78 per ton. The piping project will consist of buried HDPE pipe and the work was completed December of 2022.

Root & Ratliff Pipeline Project

Selected in the 2017 FOA, Root & Ratliff Ditch Company, located in Mancos, Colorado, will replace 29,000 feet of earthen canals with just over 27,248 feet of PVC pipe. This project will result in an annual salt load reduction of approximately 2,347 tons to the Colorado River at a cost effectiveness of \$58.21 per ton. The cooperative agreement was executed in September 2018, construction began in the fall of 2020, and was completed May 2022.

Shinn Park/Waterdog Laterals Salinity Reduction Project

Located near Montrose, Colorado, the Shinn Park/Waterdog Laterals Salinity Reduction Project will include piping two Bostwick Park Water Conservancy District laterals. The Shinn Park lateral of approximately 17,370 feet of open, earthen ditch will be replaced with HDPE pipe. The Waterdog lateral will pipe approximately 23,540 feet of open, earthen ditch with HDPE pipe. The two laterals will result in an annual salt load reduction of approximately 3,304 tons to the Colorado River at a cost effectiveness of \$59.16 per ton. The cooperative agreement was executed in September 2018, construction began in the fall of 2019, and is expected be completed by September 2023.

Jerdan, West, Hamilton Laterals Pipeline Project

Selected in the 2017 FOA, the Crawford Clipper Ditch Company near Crawford, Colorado, was selected to be awarded a \$5 million cooperative agreement for piping approximately 6.7 miles of existing earthen irrigation canal. The pipe will consist of buried PVC pipe. This project will control 2,584 tons of salt annually with 20 acres of potential on farm improvements. Construction began in November 2021 and expected to be completed by December of 2023.

Interstate Canal Salinity Reduction Project

This project was selected from the 2019 FOA. A cooperative agreement was executed in September 2020 for \$4.7M. This project, located in Southwestern Wyoming, adjacent to the Wyoming- Utah border near McKinnon, Wyoming, will replace approximately 13.1 miles of an unlined earthen canal with a pressurized HDPE pipeline system resulting in the annual reduction of 2,295 reportable tons of

salt in the Colorado River. This project is in the pre-construction phase with construction expected to begin in the Spring of 2024.

Pilot Rock Ditch Piping Project

This project was selected from the 2019 FOA. A cooperative agreement was executed with the Pilot Rock Ditch company in June 2020 for \$1.1M. This project, located near Crawford, CO, will replace approximately 1.5 miles of an unlined earthen canal with a pressurized pipeline system. This will result in the annual reduction of 665 reportable tons of salt in the Colorado River. This project is in the pre-construction phase with construction expected to begin in the Spring/Summer of 2023.

Short Ditch Extension Piping

This project was selected from the 2019 FOA. A cooperative agreement was executed with the Short Ditch Extension Company in July 2020 for \$694,605. This project, located near Hotchkiss, CO, will replace approximately 1.1 miles of an unlined earthen canal with a pressurized pipeline system. This project will result in the annual reduction of 419 reportable tons of salt in the Colorado River. This project is in the pre-construction phase with construction expected to be completed in September 2023.

Colorado Water Conservation Board

Lower Gunnison Basin Salinity Program Coordinator

The Colorado Department of Agriculture continues to employ a full-time salinity program field coordinator. His position is funded by the Basin States Program. This makes it possible for the State of Colorado to give input on salinity projects and work that is going on in the state. The coordinator has now begun working with potential applicants for the next FOA.

Utah Department of Agriculture and Food

The Utah Department of Agriculture and Food (UDAF) received two projects from Reclamation's 2015 FOA to be funded under the BSP. Those two projects are the Antelope and North Laterals Salinity Project and the Rock Point Canal Project.

Uintah Basin Salinity Coordinator

UDAF, through its agreement with Reclamation, continues to employ the Uintah Basin Salinity Coordinator using BSP funds. With concurrence from the Salinity Forum, Reclamation, in 2017, approved the coordinator to work with entities in other areas of the Colorado River Basin in Utah.

Wyoming Water Development Commission

A new agreement between Reclamation and the Wyoming Water Development Commission (WWDC) was put in place in 2021 to use BSP funds that will end in

2026. This agreement is similar to agreements with the UDAF and Colorado State Conservation Board.

BUREAU OF LAND MANAGEMENT SALINITY CONTROL PROGRAM

The BLM administers about 53 million acres of public land within the Colorado River Basin (CRB) and is required to reduce salt transport from these lands under the CRB Salinity Control Act of 1974 (as amended). In FY2022, the BLM allocated \$2 million to salinity control program projects in five western states and the BLM’s National Operations Center (NOC).

Program Administration

The BLM’s Aquatic Resources Program fosters a watershed approach to improve water quality on public lands in support of the agency’s multiple use and sustained yield mission. The Program coordinates activities within the BLM to achieve the objectives of the CRB Salinity Control Program. In FY22, the BLM continued to implement projects to control and monitor nonpoint sources of salt and sediment pollution on public lands to improve the usability of water for aquatic ecosystems, agriculture, and human consumption in collaboration with Federal, State, and local partners.

Since 2015, the BLM has allocated an average of \$1.7 million per year to the CRB Salinity Control Program to support salinity and sediment control projects, assessment, monitoring, and modeling activities, and data management.

Table 14. FY 2022 Allocation of CRB Salinity Control Program Funding
(SC = Salinity control; MD = Model development and support;
and AM = Assessment and monitoring).

Project	Activity	Funding	Partners
Arizona			
Gyp Pockets Erosion Control	SC	85,000	Arizona Association of Conservation Districts; USGS, USFS
Fort Pearce Flood/Salinity Control Structure Repair and Maintenance	SC	150,000	
Flat Top Dam Salinity Control Through Tamarisk Removal	AM	75,000	
Water Resource Monitoring		42,300	
Colorado			
Monitoring Salt Loading from the Pine Gulch Fire	AM	125,000	USGS

Uncompahgre Salinity	AM	34,000	San Juan Soil and Water Conservation District
Soil Stabilization			
Deer Creek Retention	SC	17,700	
Dam Maintenance			
Horse Creek Headcut	SC	75,000	
Stabilization			
New Mexico			
Rosa Mesa Salinity	SC	250,000	San Juan Soil and Water Conservation District
Control			
Candy Kitchen	SC	82,000	
Vegetation Management			
National Operations Center			
NOC Geospatial	DM	10,000	Colorado State University; Texas A&M University
Program			
Informational Management System	DM	90,000	
Utah			
San Juan Salinity and	AM	46,000	USGS; USFS; Dixie Conservation District; UT Watershed Restoration Initiative
Sediment Monitoring			
St. Sediment Retention	SC	130,000	
Structure Maintenance			
Grand Staircase-National	SC	100,000	
Escalante Salinity			
Monument Control			
Kanab Escalante	SC	60,000	
Planning Area Salinity			
Control			
Paria River District	AM	74,000	
Water Quality Inventory			
and Monitoring			
Wyoming			
Muddy Creek Watershed	SC	142,000	USFWS; WY Game and Fish Department; Trout Unlimited; Saratoga-Encampment-Rawlins, Little Snake River, Sublette County Conservation Districts; WY Wildlife and Natural Resource Trust; University of WY
Habitat Improvement			
Savery Creek	SC	100,000	
Restoration			
Upper Bird Draw and	SC	312,000	Conservation Districts; WY Wildlife and Natural Resource Trust; University of WY
Wildcat Canyon Culvert Replacement			

Arizona

Gyp Pockets Erosion Control Project: The BLM CRB Salinity Control and Rangeland Programs collaborated with the U.S. Forest Service Equipment Crew to repair and maintain the structures designed to prevent salt and sediment erosion in the Gyp Pockets area. Repairs and improvements to the Gyp Reservoir system resulted in the removal of approximately 238,194 cubic yards of sediment and **15,953 tons of salt** from Upper Gyp Basin, Lower Gyp Basin, and the Overflow Reservoir in the Gyp Pockets area. An additional 25,625 cubic yards of sediment and **1,716 tons of salt** were removed from four sediment retention ponds in the area.

Fort Pearce Flood/Salinity Control Structure Repair and Maintenance: The BLM initiated a project to inventory approximately 243 sediment retention structures in the Fort Pearce sub-basin and prioritize their repair and maintenance. The BLM collaborated with the Arizona Association of Conservation Districts to develop an agreement to implement this project. Work will begin after the agreement is approved.

Flat Top Dam Salinity Control Tamarisk Removal: The BLM initiated a project to remove invasive tamarisk present across the embankment faces of earthen dike and dam structures in the Flat Top grazing allotment. Tamarisk removal will reduce soil salinity and pressure on dam/dike infrastructure and will focus on two major tributary drainages to Fort Pearce Wash. The BLM collaborated with the Arizona Association of Conservation Districts to develop an agreement to implement this project. Work will begin after the agreement is approved.

Colorado

Monitoring Salt Loading from the Pine Gulch Fire: The Pine Gulch Fire burned 138,680 acres northwest of Grand Junction in the fall of 2020. Hillslope erosion monitoring continued following five rain events. Seven silt fences and five rain gages were installed in the Big Salt watershed. Field data will be analyzed over the upcoming fiscal year.

Deer Creek Retention Dam Repair: Work continued to repair and stabilize the Deer Creek Retention Dam, located about six miles upstream of the Colorado River in Horseshoe Canyon. In FY20, earth work to repair erosional features and stabilize overflow channels was completed. In FY21, a temporary steel-jack fence was placed while environmental compliance was completed. In FY22, a permanent metal buck and rail fence was installed.

Horse Creek Headcut Stabilization: The Horse Creek watershed is a tributary to the Colorado River north of Gypsum, CO. The BLM identified headcuts throughout the watershed and established channel cross-sections upstream and downstream of one of the larger headcuts. HEC RAS modeling was conducted to determine

appropriate grade control structures to reduce erosion and salinity transport. Construction is planned to begin in November 2022.

Uncompahgre Salinity Soil Stabilization: The BLM worked with consultants to develop soil health treatment approaches, application rates, and plot sizes for a multi-year study to improve soil health in saltbush ecological sites in the Uncompahgre Field Office area. A compost source from a local supplier was located, soil samples were collected for tailoring the proper fertilizer components, and a seed mix was secured. Baseline upland sampling is scheduled for October 2022 and application of materials is planned prior to the onset of winter 2022.

Zone L Geomorphic Salinity Analysis: The BLM is collaborating with the USGS to study erosion rates in Zone L Off-Highway Vehicle area. A seasonal crew completed repeat stream and bank erosion studies and data is being processed. The USGS completed a report.

Characterization of Salinity Distribution in Stinking Water Gulch: The BLM collaborated with the USGS to complete a study of four basins representing different land use histories near Rangely, CO to better understand how land uses affect sediment, salinity, and selenium distribution and storage in Mancos Shale landscapes. The project is 95% complete. A draft report is being prepared for publication review in late 2022.

Monitoring Effects of Dead Dog Fire: The BLM collaborated with the USGS to analyze the effects of a rangeland wildfire on sediment and salinity loading in a basin in Stinking Water Gulch near Rangely, CO. The project is using pre- and post-wildfire aerial imagery collected in 2016 and 2021, and soil data collected from multiple locations in the watershed. A final report will be completed and submitted to peer reviewers in October 2022.

National Operations Center

The BLM continued to collaborate with Texas A&M University AgriLife Research and Colorado State University to enhance the Agricultural Policy/Environmental eXtender (APEX) model to simulate soil erosion and salt transport on BLM-managed lands within the Colorado River Basin. FY22 was the final year of the five-year cooperative agreement with Texas A&M and a no-cost extension was granted to finalize project deliverables. The NOC Geospatial Program developed a geospatial tool to assist the BLM in visualizing the geographic distribution of the BLM's salinity control projects (Figure 4).

New Mexico

Candy Kitchen Salinity Project: The BLM initiated a project to apply vegetation treatments to 2150 acres in the Candy Kitchen area within the San Juan River watershed. Funding from the CRB Salinity Control Program and the Bipartisan Infrastructure Law was obligated to this project.

Rosa Mesa Salinity Project: The BLM ordered seed from the BLM seed warehouse for rangeland vegetation improvement and recreation impacted soil stabilization projects, and allocated funding to an agreement with the San Juan Soil and Water Conservation District for sediment retention pond maintenance in the San Juan River watershed.

Utah

Grand Staircase Escalante National Monument and Kanab Escalante Planning Area Salinity Control: Fifteen sediment retention structures were cleaned and repaired between July 1, 2021, and July 1, 2022. Work focused on the Telegraph Flat Head Cut Repair Project on the southern border of the Monument and on large sediment retention structures located near Big Water, UT. The BLM estimates that a total of 45,364 cubic yards of sediment were removed from these structures and used to repair and maintain the dams, and that **4,406 tons of salt** were removed from the structures.

A new protocol was established for collecting GIS data for completed projects and sediment basin mapping resumed in July 2022. The BLM collaborated with the USGS to collect information for five salinity control ponds using a drone. Data will be collected over four years to provide a more accurate account of sediment movement and deposition within the ponds.

Paria River District Water Quality Inventory and Monitoring: The BLM collaborated with RedFish Environmental to implement the Grand Staircase Escalante National Monument and the Kanab Field Office water quality monitoring and analysis plan to improve understanding of salinity loading in the Paria and Escalante Rivers. Sampling results will be provided to the BLM in October 2022.

St. George Field Office Salinity Control: The BLM repaired 17 sediment control structures within the Gould Wash and Fort Pearce watersheds, which are tributary to the Virgin River. The BLM estimates that approximately 29,194 cubic yards of sediment were removed, and **1,955 tons of salt** were retained from existing structures in this area in the previous fiscal year (FY21), which enhanced the capacity of reservoirs such as Gould Reservoir to capture and store sediment following storm events.

San Juan River Salinity and Sediment Monitoring: The BLM continued to collaborate with the USGS to collect sediment and streamflow data at the San Juan River stream gauge (09379500) near Bluff, UT. The data are also being used by the Utah Department of Environmental Quality to improve understanding of the effects of the Gold King Mine release on the San Juan River and Lake Powell. Data from this project was entered into the USGS real-time streamflow network.

Salinity Loads in the Upper CRB: The BLM continued to collaborate with the USGS

on a multi-year project to better understand how high-flow events affect salinity in the Upper CRB. Automated water sampling equipment will continue to sample during high-flow events through November 2022. These data will be used to validate models to quantify the effectiveness of salinity control activities.

Wyoming

Upper Bird Draw and Wildcat Canyon Culvert Replacement: Roads to support oil and gas development channelize surface runoff and create headcuts and incised channels downstream of nearly all the culvert outlets and earthen dams in this project area. The BLM worked with a contractor to replace undersized culverts in Wildcat Canyon and Upper Bird Draw and to install three new culverts in Bird Draw. Unfortunately, on the evening of August 5, 2022, torrential rainfall associated with a severe thunderstorm cell caused flash flooding throughout project area closing Hwy 189 from Big Piney to LaBarge and causing substantial erosion that damaged roads, well pads, and stream channels throughout the area. All work completed on the Upper Bird Draw culvert had to be redone.

Savery Creek Restoration Project: Savery Creek is a major tributary to the Little Snake River. The BLM continued to cooperate with multiple partners on a multi-year project to implement natural channel design techniques on target reaches of Savery Creek below High Savery Reservoir to reduce in-channel erosion, sedimentation, and salt loading. A new agreement with TU was awarded to fund construction of Phase III of the project.

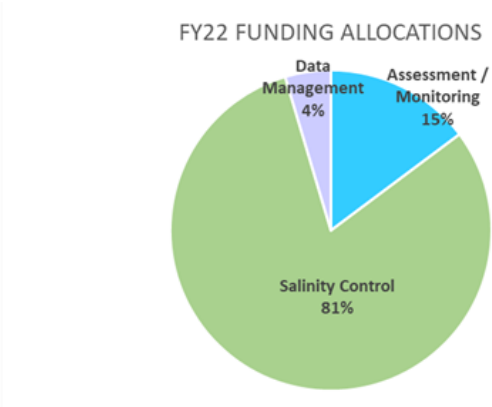
Muddy Creek Habitat Improvement: Muddy Creek is a major tributary to the Little Snake River. Intense grazing and other land uses are causing miles of incised channels. The BLM is working with multiple partners to build upon previous restoration work in the upper part of the watershed to increase the health and resiliency of the riverscape using low-tech process-based restoration methods. Untreated wood posts, fencing materials for riparian exclosures, and riparian plantings were purchased to implement the watershed scale restoration project. Structure locations were sited, geomorphic and biological data was collected for pre/post project analysis, and wetlands were delineated for permitting requirements. The BLM estimates the project will retain 74 tons of salt on the landscape.

The Littlefield Creek is a tributary to Muddy Creek. The BLM worked with multiple partners and leveraged multiple funding sources to remove a fish barrier and reconnect 2000-ft of incised channel downstream of the barrier with its historic floodplain. The project is anticipated to be completed by October 2022. The BLM estimates the project will retain 620 tons of salt on the landscape.

Summary

In FY22, the BLM continued to construct, maintain, and repair salinity and sediment and control structures, stabilize erosion on saline soils, restore degraded aquatic

habitat, monitor, and assess non-point sources of salt and sediment, and support projects that will improve the effectiveness of salinity control activities in the Colorado River Basin. The figure below summarizes the percentage of FY22 funding allocated toward these activities.



NATURAL RESOURCES CONSERVATION SERVICE SALINITY CONTROL PROGRAM

The NRCS of the USDA conducts CRBSCP activities primarily under the authorities of the Environmental Quality Incentives Program (EQIP). EQIP was authorized by the 1985 Food Security Act (1985 Farm Bill) but received its first appropriation with passage of PL104-127, Federal Agricultural Improvement Act of 1996, a.k.a. “1996 Farm Bill.”

EQIP has been reauthorized four times; (1) PL 107-171, The Farm Security and Rural Investment Act of 2002, (2) PL 110-246, The Food, Conservation, and Energy Act of 2008, and (3) PL 113-79, The Agricultural Act of 2014, and most recently (4) PL 115-334, The Agriculture Improvement Act of 2018 enacted on December 20, 2018.

Through EQIP, NRCS offers voluntary technical and financial assistance to agricultural producers, including Native American tribes, to assist decision-makers to install conservation practices that correct environmental problems and that meet their environmental goals. Within the twelve salinity project areas, producers may be offered additional financial incentives and technical assistance to implement salinity control measures with the primary goal of reducing offsite and downstream damages to the Colorado River and its tributaries and to replace wildlife habit impacted because of the salinity measures.

In the past, progress in implementing salinity controls within established salinity control units (Units) was controlled primarily by annual federal appropriations. In recent years funding levels have generally been adequate to fund applications for initial treatment within established units with additional funds being expended to upgraded systems previously implemented under the SCP which have reached

their NRCS practice lifespan. Funding is likewise available for projects outside of established salinity control units (known as Tier II or Out of Project Area (OPA)).

The passage of the Agriculture Improvement Act of 2018 authorized NRCS to work directly with Water Management Entities (WMEs). Previously NRCS was restricted to working with individual producers resulting in a relatively well-defined division of responsibility for salinity control. The Bureau of Reclamation (BOR) was primarily responsible for off-farm measures while NRCS was primarily responsible for on-farm irrigation improvements and near-farm conveyances. It was initially anticipated that there would be significant interest in NRCS funding for WME sponsored projects, however, interest has been somewhat subdued thus far.

NRCS is also authorized under the authorization of PL-566, The Watershed Protection and Flood Prevention Act of 1954, to develop and implement watershed scale plans including certain Agricultural Water Management and Water Quality practices that are supportive of the salinity control program. Similarly, the Resource Conservation Partnership Program authorizes NRCS to fund conveyance improvements. NRCS is currently developing PL-566 and RCPP plans within existing Units that will pipe canals and facilitate on-farm practices. NRCS and BOR are collaborating on this effort to ensure effective cooperation.

Following are fund allocations to the NRCS Salinity Control Program for FY2022. At present NRCS leadership teams in Colorado, Utah, and Wyoming anticipate obligating the majority of the funds allocated to Salinity EQIP in FY2022.

<u>Allocation</u>	
Colorado	\$7,500,000
Utah	\$7,155,000
Wyoming	\$400,000
Total	\$15,055,000

Through FY2022 NRCS has obligated \$440M in Financial Assistance (FA) and an expended an estimated \$189M in Technical Assistance (TA) to salinity control measures.

Program History

The Salinity Control Act provides funds for additional implementation from the Basin States Salinity Program. From the 1970s through 1986, the Agricultural Conservation Program (ACP) administered by the Agricultural Stabilization and Conservation Service (ASCS) provided financial assistance (cost share) to land users through long term agreements (LTAs) and the Soil Conservation Service (SCS) provided the technical assistance to plan, design, and certify practice implementation.

From 1987 through 1996, the Colorado River Salinity Control Program (CRSCP) received dedicated annual funding, again with the ASCS administering the financial assistance and SCS providing the technical assistance. In 1995, Public Law 103-354 authorized the reorganization of several agencies of USDA. The ASCS was reorganized as the Farm Service Agency. The SCS was reorganized as the NRCS. Financial administration of the CRSCP was transferred to the NRCS where it has remained to the present.

The Federal Agricultural Improvement and Reform Act (FAIRA) of 1996 (Public Law 104127) combined four existing programs including the CRBSCP into the newly authorized EQIP. Since the 1996, EQIP has been reauthorized through five consecutive farm bills and is currently authorized through FY 2023.

Monitoring and Evaluation

NRCS personnel from project and area offices monitor and evaluate the effectiveness and quantity of salinity control, wildlife habitat, and economic trends in order to improve overall performance and management of the program. The program continues to function effectively and economically, though the nominal cost per ton of salt control is escalating in some areas. Cost escalation is believed to result from project selection processes that favor the most cost-effective salinity control measures.

Status of Planning and Implementation

Through FY2021 NRCS has funded installation of approximately 360,000 acres for the purpose of salinity control. NRCS continues to provide technical and financial assistance to landowners and operators to implement on-farm salinity control measures in ten approved project areas in three Upper Basin states.

Grand Valley, Colorado

Implementation has been underway in this unit since 1979 and NRCS considers that the salt control measures of the project have been successfully completed as planned. In 2010, a status report was compiled from field visits and observations. The report indicated that at least 12,000 irrigated acres are no longer in agricultural production. Of the remaining 44,700 acres still in production, 42,435 acres or 95% had received varying levels of treatment. This unit has been designated as complete, but additional implementation continues at a reduced rate. No new contracts were obligated in FY2022.

Lower Gunnison Basin, Colorado

This project, which began in 1988, encompasses the irrigated farmland in the Gunnison and Uncompahgre River valleys. The Unit was expanded into the upper headwaters of the Uncompahgre River in 2010. Implementation continues in Delta, Montrose, and Ouray Counties. About 70% of the salt control goal has been achieved.

In 2022, about \$4.8M was obligated into 36 new contracts to treat 1,119 acres on-farm and 6,320 feet of WME pipeline to control 1,949 tons of salt annually. There were eight new wildlife habitat contracts obligated on 408 acres.

Mancos Valley, Colorado

This project, near the town of Mancos, Colorado, was initiated and approved for funding and implementation by USDA-NRCS in April 2004. In 2022, five new EQIP contracts were developed for \$249,297 to control 67 tons of salt on 186 acres. There were no new wildlife habitat contracts obligated.

McElmo Creek, Colorado

Implementation was initiated in this unit in 1990. In 2022, six new contracts were developed for \$432,689 to control 210 tons of salt on 217 acres. There were no new wildlife habitat contracts obligated.

Silt, Colorado

The Silt Project, authorized in 2006, is Colorado's newest project. In 2022, three new contracts were developed for \$149,638 to control 15 tons of salt on 31 acres. There were no new wildlife habitat contracts obligated.

Green River, Utah

In 2022, three new contracts were developed for \$197,791 to control 220 tons of salt on 69 acres. There were no new wildlife habitat contracts obligated.

Manila-Washam, Utah

In 2022, one new contract was obligated for \$117,646. When implemented, these measures will control about 203 tons on 84 acres. There were no new wildlife habitat contracts obligated.

Muddy Creek, Utah

In 2022, 18 new contracts were obligated for about \$2.6M. When implemented, these projects will control 1,718 tons on 1,175 acres. The canals and appurtenant delivery systems to Muddy Creek are currently being piped through various State, Local, and Federal funding sources. Interest for on-farm improvements in Muddy Creek is strong and completion of improvements to the delivery system is expected to facilitate a rapid conversion of the entire unit from flood to sprinkler irrigation. NRCS anticipates completion of the majority of the work in the Muddy Creek Unit within the next five years. There were no new wildlife habitat contracts obligated.

Price-San Rafael, Utah

The original salt control goal established by the 1993 EIS has been reached and applications for flood to sprinkler conversion have begun to decline. In 2022, 12 new contracts were obligated for a sum of about \$674,086. When implemented,

these measures will control about 238 tons on 257 acres. There were no new wildlife habitat contracts obligated.

Uintah Basin, Utah

Implementation began in this unit in 1980. The original salt control goal was reached several years ago but about 60,000 acres might still be improved. Producer participation has exceeded the original projections. In 2022, 31 new contracts were obligated for a sum of about \$2.9M. When implemented, these measures will control about 1,311 tons on 879 acres. There were four new wildlife habitat contracts obligated on 31 acres.

Big Sandy River, Wyoming

Implementation has been underway in this unit since 1988. Approximately 13,800 acres of the planned 15,700 acres have been treated (88%) and about 71% of the salt control goal has been reached. No new contracts were obligated in the Big Sandy Unit. Remaining untreated acres are largely controlled by producers not interested in implementing salinity controls, so salinity funds were not allocated to the Big Sandy Unit in 2022.

Henrys Fork (of the Green River), Wyoming

The Henrys Fork Project was officially adopted with the issuance of the Record of Decision, June 2013. In 2022, one new contract was obligated in the Henrys Fork Project Area for a cost of \$112,000 that will control 74 tons of salt on 90 acres. There were no new wildlife habitat contracts obligated.

San Juan Basin, New Mexico and Arizona

The San Juan River Dineh Water Users, Inc. (SJRDWU, Inc.) has developed considerable irrigation infrastructure, but has not been active in the SCP. While NRCS has never designated this area a salinity control project there is hope that the improvement of delivery infrastructure will spur on-farm irrigation improvements.

Areas Beyond Current Project Boundaries

Even though some relatively high salt loading basins exist in both Colorado and New Mexico, local sponsors have not yet been inclined to pursue a salinity project designation.

NRCS continues to have success in funding salinity control practices outside of its five designated project areas but within the Colorado River Basin (known as Tier II projects). In 2022, Colorado NRCS obligated 17 Tier II contracts on 470 acres to control 810 tons of salt at a cost of \$1.2M. Utah NRCS obligated two Tier II contracts on 60 acres to control 25 tons at a cost of \$69,820. Wyoming NRCS obligated no Tier II contracts.

Upper Colorado River Commission

APPENDIX A Annual Financial Report

For the Fiscal Year Ended
June 30, 2022

Upper Colorado River Commission

Annual Financial Report

**With Auditors' Report
Thereon**

Year Ended June 30, 2022

Upper Colorado River Commission

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INDEPENDENT AUDITORS' REPORT

The Commissioners of the Upper Colorado River Commission
Salt Lake City, Utah

Opinions

We have audited the accompanying financial statements of the governmental activities and the aggregate remaining fund information of the Upper Colorado River Commission, as of and for the year ended June 30, 2022, and the related notes to the financial statements, which collectively comprise the Commission's basic financial statements as listed in the table of contents.

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, and the aggregate remaining fund information of the Upper Colorado River Commission, as of June 30, 2022, and the respective changes in financial position thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Upper Colorado River Commission and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error. In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Upper Colorado River Commission's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with generally accepted auditing standards and Government Auditing Standards will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with generally accepted auditing standards and Government Auditing

Standards, we:

- Exercise professional judgement and maintain professional skepticism throughout the audit
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an

opinion on the effectiveness of the Upper Colorado River Commission's internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Upper Colorado River Commission's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, and budgetary comparison information be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Upper Colorado River Commission's basic financial statements. The accompanying Schedule of Cash Receipts and Disbursements, and Detail of Personal Services and Current Operating Expenditures-Budget to Actual are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Schedule of Cash Receipts and Disbursements, and Detail of Personal Services and Current Operating Expenditures - Budget to Actual are fairly stated in all material respects, in relation to the basic financial statements as a whole.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated September 3, 2021, on our consideration of the Upper Colorado River Commission's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Upper Colorado River Commission's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Upper Colorado River Commission's internal control over financial reporting and compliance.

Wink & Associates, P.C.

Ogden, Utah
November 15, 2022

Upper Colorado River Commission

Management's Discussion and Analysis

June 30, 2022

The overall assets of the Commission exceed its liabilities by \$2,011,474, a decrease of \$18,105 over the prior year. The decrease is due to the expenditures of grants received in the prior year and expended in the current year.

Report Layout

Besides this Management's Discussion and Analysis (MD&A), the report consists of government-wide statements, fund financial statements, and the notes to the financial statements. The first two statements are condensed and present a government-wide view of the Commission's finances. Within this view, all Commission operations are categorized and reported as governmental activities. Governmental activities include basic services and administration. The Commission does not have any business-type activities. These government-wide statements are designed to be more corporate-like in that all activities are consolidated into a total for the Commission.

The Statement of Net Position focuses on resources available for future operations. In simple terms, this statement presents a snap-shot view of the assets the Commission, the liabilities it owes and the net difference. The net difference is further separated into amounts restricted for specific purposes and unrestricted amounts.

The Statement of Activities focuses gross and net costs of the Commission's programs and the extent to which such programs rely upon general revenues. This statement summarizes and simplifies the user's analysis to determine the extent to which programs are self-supporting and/or subsidized by general revenues.

The notes to the financial statements provide additional disclosures required by governmental accounting standards and provide information to assist the reader in understanding the Commission's financial condition.

The MD&A is intended to explain the significant changes in financial position and differences in operation between the current and prior years. Significant changes from the prior year are explained in the following paragraphs.

Upper Colorado River Commission

Management's Discussion and Analysis

June 30, 2022

Commission as a Whole

Government-wide Financial Statements

A condensed version of the Statement of Net Position follows:

	Net Position at Year-end June 30	
	2022	2021
Cash & investments	\$ 1,218,093	\$ 1,192,530
Capital assets (net)	892,748	886,116
Total assets	<u>2,110,841</u>	<u>2,078,646</u>
Current liabilities	85,318	27,667
Non-current liabilities	14,049	32,116
Total liabilities	<u>99,367</u>	<u>59,783</u>
Net position:		
Invested in capital assets	892,748	886,116
Restricted – demand management	101,555	4,948
Unrestricted	<u>1,017,171</u>	<u>1,127,619</u>
Total net position	<u>\$ 2,011,474</u>	<u>\$ 2,018,683</u>

During the year ended June 30, 2022, the change in net position was due to the increase of Demand Management grant revenue

A condensed version of the Statement of Activities follows:

	Governmental Activities For the year ended June 30	
	2022	2021
Revenues		
Program Revenues	\$ 176	\$ 170
State Assessments	535,749	535,749
Grants and Contributions	414,080	94,904
General Revenues		
Interest	<u>5,559</u>	<u>5,961</u>
Gain on sale of asset		<u>969,907</u>
Total Revenues	<u>955,564</u>	<u>1,606,691</u>
Expenses		
Administration	973,669	526,062
SCPP	=	=
Total Expenses	<u>973,669</u>	<u>526,062</u>
Change in net position	(18,105)	1,080,629
Beginning net position	<u>2,029,579</u>	<u>948,950</u>
Ending net position	<u>\$ 2,011,474</u>	<u>\$ 2,029,579</u>

The Demand Management grant revenues and expenditures increased during the year. The Demand Management grant varies from year to year depending on the needs of the Commission.

Upper Colorado River Commission
Management's Discussion and Analysis
June 30, 2022

Capital Assets

At June 30, 2022 the Commission had \$892,748 invested in capital assets, consisting primarily of a new office condo, furniture & equipment. The change in capital assets during the year consisted of the purchase of new equipment for a new Executive Director.

Capital Assets at Year-end

	2022	2021
Building	\$ 882,960	\$ 882,960
Furniture & equipment	21,108	11,936
Subtotal	904,068	894,896
Less: Accumulated Depreciation	(11,320)	(8,778)
Capital assets, net	\$ 892,748	\$ 886,116

Financial Contact

The Commission's financial statements are designed to present users (citizens, taxpayers, state governments) with a general overview of the Commission's finances and to demonstrate the Commission's accountability. If you have questions about the report or need additional financial information, please contact the Commission's secretary at 50 South 600 East, Suite #100, Salt Lake City, UT 84102.

Basic Financial Statements

Upper Colorado River Commission
Statement of Net Position
June 30, 2022

<u>Assets</u>	<u>Governmental Activities</u>
Cash & cash equivalents	
Operations	\$ 1,075,046
Unpaid leave	41,492
Restricted cash	
Demand Management	101,555
Capital assets	
Building	882,960
Furniture & equipment	21,108
Less: accumulated depreciation	(11,320)
Total Assets	<u>2,110,841</u>
<u>Liabilities</u>	
Accounts payable	55,404
Accrued payroll liabilities	4,914
Prepaid Assessments	25,000
Total current liabilities	<u>85,318</u>
Noncurrent liabilities:	
Accrued compensated absences	14,049
Total noncurrent liabilities	<u>14,049</u>
Total Liabilities	<u>99,367</u>
<u>Net Position</u>	
Net investment in capital assets	892,748
Restricted – demand management	101,555
Unrestricted	1,017,171
Total Net Position	<u>\$ 2,011,474</u>

See accompanying notes to the basic financial statements.

Upper Colorado River Commission
Statement of Activities
June 30, 2022

		Program Revenues		Net Revenue and Changes in Net Position
		Charges for Services	Operating grants and contributions	Total
Governmental Activities:	Expenses			
General administration	\$ 973,669	176	949,829	(23,664)
Total governmental activities	\$ 973,669	176	929,829	(23,664)
General revenues:				
Interest				5,559
Total general revenues				5,559
Change in Net Position				(18,105)
Net Position - Beginning of Year (as adjusted)				2,029,579
Net Position - End of Year				<u>\$2,011,474</u>

See accompanying notes to the basic financial statements.

Upper Colorado River Commission
Balance Sheet
Governmental Funds
June 30, 2022

	<u>General Fund</u>
<u>Assets</u>	
Petty cash	25
Cash in Bank	106,753
Utah public treasurers' investment pool	
Operations	968,268
Unpaid Leave	41,492
	<u>1,116,538</u>
Restricted cash	
Cash in bank	101,555
Total Assets	<u>1,218,093</u>
<u>Liabilities</u>	
Accounts payable	55,404
Accrued payroll liability	4,914
Accrued benefits	-
Prepaid assessments	25,000
Total Liabilities	<u>85,318</u>
<u>Fund Balance</u>	
Restricted – demand mgmt	101,555
Assigned to:	
Unpaid leave	41,492
Unassigned	989,728
Total Fund Balance	<u>1,132,775</u>
Total Liabilities and Fund Balance	<u><u>1,218,093</u></u>

Reconciliation of the Statement of Net Position to the Balance Sheet

Amounts reported for governmental activities in the statement of net position are different because:

Total fund balance report above	\$1,132,775
Capital assets used in governmental activities are not financial resources and, therefore, are not reported in the funds	892,748
Compensated absences are not due and payable in the current period and, therefore, are not reported in the funds	(14,049)
Net position of governmental activities (page 8)	<u>\$ 2,011,474</u>

See accompanying notes to the basic financial statements.

Upper Colorado River Commission
Statement of Revenues, Expenditures, and Changes in Fund Balance
Governmental Funds
For the Year Ended June 30, 2022

	<u>General Fund</u>
<u>Revenues</u>	
Assessments	\$ 535,749
Grants – federal/demand mgmt	411,511
Grants - NM	2,569
Interest	5,559
Workers compensation refund	176
Total Revenues	<u>955,564</u>
<u>Expenditures</u>	
Personnel Services	443,752
Travel	24,013
Current operating	56,224
Capital Outlay	3,284
Building related expenses	19,159
Grants – federal/demand mgmt. expense	451,936
Total Expenditures	<u>998,368</u>
Net change in fund balance	(42,804)
Fund Balance – beginning of year (as adjusted)	1,175,579
Fund Balance – end of year	<u>\$ 1,132,775</u>

Reconciliation of the Statement of Revenues, Expenditures and Changes in Fund Balances of Governmental Funds to the Statement of Activities

Net change in fund balance (as reported above)	\$ (42,804)
Governmental funds report capital outlays as expenditures. However, in the statement of activities, the cost of those assets is allocated over their estimated useful lives as depreciation expense. This is the amount by which depreciation exceeded capital outlays in the current period.	6,631
The expense for accrued compensated absences reported in the statement of activities does not require the use of current financial resources and, therefore, are not reported as expenditures in governmental funds.	18,068
Change in net position of governmental activities (page 9)	<u>\$ (18,105)</u>

See accompanying notes to the basic financial statements

Upper Colorado River Commission
Statement of Revenues, Expenditures, and Changes in Fund Balance
Budget and Actual – General Fund
For the Year Ended June 30, 2022

	Original & Final Budget	Actual	Variance w/Final Budget
<u>Revenues</u>			
Assessments	\$ 535,749	535,749	-
Grants – federal/demand mgmt.	411,511	411,511	-
Grants – NM	2,567	2,569	-
Interest		5,559	5,559
Total Revenues	949,829	955,564	5,735
<u>Expenditures</u>			
Personnel services	431,040	443,752	(12,712)
Travel	42,230	24,013	18,218
Current operating	56,200	56,224	(24)
Capital outlay	5,670	3,284	2,386
Contingencies	6,180	-	6,180
Building related expenses	19,159	19,159	-
Grants – federal/demand mgmt.	452,097	451,936	161
Total Expenditures	1,012,576	998,368	14,208
Net change in fund balance	(62,747)	(42,804)	19,943
Fund Balance – beginning of year (as adjusted)	1,175,579	1,175,579	-
Fund Balance – end of year	1,112,832	1,132,775	19,943

See accompanying notes to the basic financial statements.

Note 1 - Summary of Significant Accounting Policies

A. Reporting entity

The Commission was formed pursuant to the terms of the Upper Colorado River Basin Compact on October 11, 1948, and consented to by the Congress of the United States of America by Act on April 6, 1949, as an administrative agency representing the Upper Division States of the Colorado Basin, namely Colorado, New Mexico, Utah, and Wyoming. The Commission consists of one commissioner representing each of the four states and one representing the United States of America. The activities of the commission are conducted for the purpose of promoting and securing agricultural and industrial development of the Upper Basin's water resources.

The Commission has no component units that are included with this report.

B. Basis of Presentation - Government-wide financial statements

While separate government-wide and fund financial statements are presented, they are interrelated. The governmental activities column incorporates data from the governmental fund. The Commission does not currently have any business-type activities.

C. Basis of Presentation - Fund financial statements

The fund financial statements provide information about the Commission's funds. Statements for the governmental fund category is presented. The emphasis of fund financial statements is on major governmental funds, each displayed in a separate column. The Commission has two governmental funds, General and System Conservation Pilot Program, and both are reported as major funds in the fund financial statements.

D. Measurement focus and basis of accounting

Government wide financial statements

The accounting and financial reporting treatment is determined by the applicable measurement focus and basis of accounting. Measurement focus indicates the type of resources being measured such as current financial resources or economic resources. The basis of accounting indicates the timing of transactions or events for recognition in the financial statements.

The government-wide statements are prepared using the economic resources measurement focus and the accrual basis of accounting. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows.

The governmental fund financial statements are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. For this purpose, the government considers revenues to be available if they are collected within 60 days of the end of the current fiscal period. Expenditures generally are recorded when a liability is incurred, as under accrual accounting. However, debt service expenditures, as well as expenditures related to compensated absences, and claims and judgments, are recorded only when payment is due. General capital asset acquisitions are reported as expenditures in governmental funds. Issuance of long-term debt and acquisitions under capital leases are reported as other financing sources.

E. Budgetary Information

Annual budgets are prepared on the modified accrual basis of accounting and adopted as required by the compact. The Commission approves the annual budget in total and by major sub-items as identified in the statement of revenues, expenditures and changes in fund balance - budget and actual. The Executive Director has authority to transfer budget accounts within the sub-items with Commissioner approval required to transfer monies between expenditure categories. Currently no formal budget is adopted for the SCPP program.

F. Assets, liabilities, deferred outflow/inflows of resources, and net position/fund balance

Cash & cash equivalents

The government's cash and cash equivalents are considered to be cash on hand, demand deposits, and short-term investments with original maturities of three months or less from the date of acquisition.

Capital Assets and Depreciation

Capital assets, which include property and equipment, are reported in the governmental activities column in the government-wide financial statements. Capital assets are defined by the Commission as assets with an initial, individual cost of more than \$1,000 and an estimated useful life in excess of one year.

Depreciation of capital assets is computed and recorded by the straight-line method. Estimated useful lives of the various classes of depreciable capital assets are as follows: buildings, 40 years; improvements, 10 to 15 years; furniture and equipment, 3 to 15 years.

Fund balance policies

Fund balance of governmental funds is reported in various categories based on the nature of any limitations requiring the use of resources for specific purposes. The Commission itself can establish limitations on the use of resources through either a commitment (committed fund balance) or an assignment (assigned fund balance).

Net Position / Fund Balance

Government-wide Financial Statements

Equity is classified in the government-wide financial statements as net assets and can be displayed in three components:

Net investment in capital assets, net of related debt - Capital assets including restricted assets, net of accumulated depreciation and reduced by any debt related to the acquisition or improvement of the assets.

Restricted net position - Net position with constraints placed on the use either by (1) external groups or (2) law through constitutional provisions or enabling legislation.

Unrestricted net position - All other net positions that do not meet the definition of "restricted" or "net investment in capital assets, net of related debt."

Fund Financial Statements

In the fund financial statements, governmental fund equity is classified as fund balance. Fund balance is further classified as Nonspendable, Restricted, Committed, Assigned, or Unassigned. Description of each classification is as follows:

Nonspendable fund balance - Amounts that cannot be spent because they are either (a) not in spendable form, or (b) legally or contractually required to be maintained intact.

Restricted fund balance - Amounts restricted by enabling legislation. Also if, (a) externally imposed by creditors, grantors, contributors, or laws and regulations of other governments, or (b) imposed by law through constitutional provisions or enabling legislation.

Committed fund balance - Amounts that can only be used for specific purposes pursuant to constraints imposed by formal action of the Commission's highest level of decision making authority.

Assigned fund balance - Amounts that are constrained by the Commission's intent to be used for specific purposes, but are neither restricted nor committed.

Unassigned fund balance - Residual classification of the General Fund. This classification represents fund balance that has not been restricted, committed, or assigned specific purposes within the general fund.

G. Unpaid Compensated Absences

According to Commission policy each employee accrues annual leave based on years of service with the commission. Employees may accumulate a maximum of 30 days of unused annual leave, which is paid in cash upon termination of employment. The Commission's secretary may grant additional carryover to employees provided that: (1) the employee requests the carryover in writing prior to June 30, and (2) the employee uses the additional carryover within 90 days of the start of the fiscal year.

The Obligation for Compensated Absences has been broken down into two components; current and non-current. The current portion is classified as part of the general fund and is an estimate of the amounts that will be paid within the next operating year. The non-current portion is maintained separately and represents a reconciling item between the fund and government-wide presentations.

Note 2 - Stewardship, compliance, and accountability

Accounting and Reporting

The Commission is not required to report to any individual state or federal agency, other than for single audit when applicable. Financial reports are given to each Commissioner and is reviewed by them. The Commission is exempt from federal income tax reporting under 501(c) (1) of the internal revenue code.

Note 3 - Detail notes on all activities and funds

Deposits and investments

The Commissioners have authorized the Commission to deposit funds in demand accounts at Wells Fargo Bank and with the Utah Public Treasurers' Investment Pool. Following are discussions of the Commission's exposure to various risks related to its cash management activities.

Deposits

Custodial credit risk - Deposits. In the case of deposits, this is the risk that in the event of a bank failure, the government's deposits may not be returned to it. As of June 30, 2022, all of the bank deposits (\$209,259) are insured.

Investments

The Utah State Treasurer's Office operates the Public Treasurers' Investment Fund (PTIF). The PTIF is available for investment of funds administered by any Utah public treasurer and is not registered with the SEC as an investment company. The PTIF is authorized and regulated by the Money Management Act (Utah Code, Title 51, Chapter 7). The Act established the Money Management Council which oversees the activities of the State Treasurer and the PTIF and details the types of authorized investments. Deposits in the PTIF are not insured or otherwise guaranteed by the State of Utah, and participants share proportionally in any realized gains or losses on investments.

The PTIF operates and reports to participants on an amortized cost basis. The income, gains, and losses of the PTIF, net of administration fees, are allocated based upon the participant's average daily balance. The fair value of the PTIF investment pool is approximately equal to the value of the pool shares.

Fair Value of Investments - The Commission measures and records its investments using fair value measurement guidelines established by generally accepted accounting principles. These guidelines recognize a three-tiered fair value hierarchy, as follows:

- Level 1: Quoted prices for identical investments in active markets;
- Level 2: Observable inputs other than quoted market prices; and,
- Level 3: Unobservable inputs.

	Measurement		
	Level 1	Level 2	Level 3
Investments by fair value level			
Utah Public Treasurers' Investment Fund	\$ -	1,009,760	-
Total investments measure at fair value	\$ -	1,009,760	-

- Utah Public Treasurers' Investment Fund: application of the June 30, 2021 fair value factor, as calculated by the Utah State Treasurer, to the Entity's average daily balance in the Fund.

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2022

Interest rate risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The Commission's policy for managing its exposure to fair value loss arising from increasing interest rates is to invest only with the Utah PTIF.

As of June 30, 2021, the Commission's investments had the following maturities:

Investment Maturities (in years)

Investment Type	Investment Maturities (in years)		
	Less than 1	1-5	6 or more
Utah Public Treasurers' Investment Fund	\$ 1,009,760	-	-
Total investments measure at fair value	\$ 1,009,760	-	-

Credit risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Commission's policy for reducing its exposure to credit risk is to comply with the State's Money Management Act, as previously discussed.

Investment Type	Quality Ratings		
	AA	A	Unrated
Utah Public Treasurers' Investment Fund	-	-	\$ 1,009,760
Total investments measure at fair value	-	-	\$ 1,009,760

Concentration of credit risk. The Commission's investment in the Utah Public Treasurer's Investment Fund has no concentration of credit risk.

Custodial credit risk - Investments. For an investment, this is the risk that, in the event of the failure of the counterparty, the Commission will not be able to recover the value of its investments that are in the possession of an outside party. The Commission is authorized to invest in the Utah Public Treasurer's Investment Fund (PTIF), an external pooled investment fund managed by the Utah State Treasurer and subject to the Act and Council requirements. The PTIF is not registered with the SEC as an investment company, and deposits in the PTIF are not insured or otherwise guaranteed by the State of Utah. The PTIF operates and reports to participants on an amortized cost basis. The income, gains, and losses, net of administration fees, of the PTIF are allocated based upon the participants' average daily balances.

Components of deposits and investments (including interest earning deposits) at June 30, 2020, are as follows:

Cash on deposit	\$ 106,778
Utah State Treasurer's Investment Pool	1,009,760
Restricted cash	101,555
Total	<u>\$ 1,218,093</u>

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2022

Capital Assets

Capital asset activity for the year ended June 30, 2022, is as follows:

	Balance at June 30, 2021	Additions	Disposals	Balance at June 30, 2021
Capital assets being depreciated:				
Building	882,960	-	-	882,960
Furniture & Equipment	11,934	11,559	2,385	21,108
Total capital assets being depreciated	894,894	11,559	2,385	904,068
Less accumulated depreciation for:				
Building	1,840	1,840	-	3,680
Furniture & Equipment	6,938	3,087	2,385	7,640
Total accumulated depreciation	8,778	4,927	2,385	11,320
Total capital assets, being depreciated, net	886,116	6,632	-	892,748
Capital assets, net	886,116	6,632	-	892,748

Depreciation expense of \$4,927 was charged to the general administration activity of the Commission.

Note 4 - Other notes

Employee Retirement Plan

The Commission's employee pension plan is a 401(K) defined contribution plan which covers all of the present employees. The Commission contributes 7% of the employees' gross salaries. In addition, the Commission will match contributions made by employees up to a maximum of 3%. Accordingly, the maximum allowable contribution by the Commission is 10%. The employees are allowed to contribute up to the maximum allowed by law. The employer's share of the pension plan contribution for the year ended June 30, 2022 was \$24,319.

Risk Management

The Commission is exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; errors and omissions; and natural disasters for which the government carries commercial insurance.

Subsequent Events

Subsequent events have been evaluated through September 3, 2021 the date the financial statements were available to be issued. There have been no subsequent events that provide additional evidence about conditions that existed at the date of the balance sheet.

Prior Period Adjustment

A prior period adjustment was made to adjust payroll accruals and uncleared checks in prior years. The total adjustment of \$10,869 was an increase in the fund balance.

Supplemental Schedules

Upper Colorado River Commission
General Fund
Supplemental Schedule of Cash Receipts and Disbursements
For the Year Ended June 30, 2022

Cash at June 30, 2021 (as adjusted)		\$ 1,185,852
Cash Receipts:		
Assessments	560,749	
Interest	5,559	
Grant – NM	2,569	
Grant – Demand Management	411,511	
Other	176	
		980,564
Cash Disbursements:		
Personnel Services	428,239	
Travel	24,119	
Current Operating	54,515	
Capital Outlay	3,413	
Contingency	317	
Building related expense	19,159	
Grants	418,561	
		948,323
Cash at June 30, 2022		<u>\$ 1,218,093</u>

Upper Colorado River Commission
General Fund
Detail of Personal Services and Current Operating
Expenditures – Budget to Actual (Accrual Basis)
For the Year Ended June 30, 2022

Summary of Personal Services with Budget Comparisons	<u>Budget</u>	<u>Actual</u>	Variance w/Final Budget
Salaries/wages	\$ 304,150	334,881	(30,731)
Social security	20,060	22,190	(2,130)
Pension fund contributions	26,220	24,319	1,901
Employee medical insurance	80,610	62,362,	18,248
	<hr/>	<hr/>	
	\$ 431,040	443,752	(12,712)
	<hr/>	<hr/>	

Summary of Current Operating
Expenditures with Budget Total Comparison

Audit and accounting	\$ 10,200	10,385	(185)
Building repair & maintenance	12,300	10,818	1,482
Insurance	4,200	2,331	1,869
Janitorial	2,070	2,140	(70)
Library	2,580	1,606	974
Meetings, including reporter	3,300	9,456	(6156)
Memberships and registrations	4,950	1,565	3,385
Office supplies and postage	4,500	6,319	(1,819)
Printing	2,400	2,806	(406)
Telephone	5,200	4,602	598
Utilities	4,500	4,196	304
	<hr/>	<hr/>	
	56,200	56,224	(24)
	<hr/>	<hr/>	

Other Reports

INDEPENDENT AUDITORS' REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

The Commissioners of the Upper Colorado River Commission
Salt Lake City, Utah

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards issued by the Comptroller General of the United States, the financial statements of the governmental activities of the Upper Colorado River Commission, as of and for the year ended June 30, 2022, which comprise Upper Colorado River Commission's basic financial statements and have issued our report thereon dated November 15, 2022.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered Upper Colorado River Commission's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Upper Colorado River Commission's internal control. Accordingly, we do not express an opinion on the effectiveness of Upper Colorado River Commission's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or, significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Upper Colorado River Commission's financial statements are free of material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Wink & Associates, P.C.

Ogden, Utah
November 15, 2022

Upper Colorado River Commission

APPENDIX B Budget

For the Fiscal Year Ending
June 30, 2023

**APPROVED FY2023 BUDGET
UPPER COLORADO RIVER COMMISSION
Fiscal Year ending June 30, 2023**

Approved on June 14, 2022

Personnel Costs inc. Pension, Social Security, and Benefits	\$ 607,660.00
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Travel	\$ 44,350.00
Current Expense	\$ 57,900.00
Capital Expenses	\$ 5,840.00
Contingency	\$ 6,370.00
Transfer of Carryover to Operating Expense	\$ (139,779.00)
Total	\$ 582,341.00

2022 State Assessments

Colorado - 51.75%	\$ 301,361.47
New Mexico - 11.25%	\$ 65,513.36
Utah - 23%	\$ 133,938.43
Wyoming - 14%	\$ 81,527.74
Total	\$ 582,341.00

Upper Colorado River Commission

APPENDIX C Resolutions

For the Water Year Ending
Sept. 30, 2022



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
December 14, 2021

WHEREAS, the Upper Colorado River Commission (Commission) maintains an account with the Utah Public Treasurers' Investment Fund (PTIF) for holding states' assessment money and sinking fund; and

WHEREAS, the Commission's Interim Executive Director, Sara Larsen, as well as the Commission's Office Administrator, Alyxandra Richards, are to be given access to PTIF in lieu of the hire of an Executive Director and the retirement of [the] current Office Administrator, Teri Gomm; and

WHEREAS, Sara Larsen and Alyxandra Richards will be authorized to add or delete users to access and/or transact with PTIF accounts; to add, delete, or make changes to bank accounts tied to PTIF accounts; to open or close PTIF accounts, and to execute any necessary forms in connection with such changes on behalf of the Commission;

BE IT FURTHER RESOLVED that Sara and Alyxandra be, and hereby are, authorized and directed to take any and all actions in PTIF, and execute and deliver such documents as they deem necessary or appropriate, to affect the foregoing resolution.

CERTIFICATE

I, SARA G. LARSEN, Interim Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above Resolution was unanimously adopted by the Upper Colorado River Commission at its Meeting held in Las Vegas, Nevada on December 14, 2021.

WITNESS my hand this 14 day of December 2021.

SARA G. LARSEN

Interim Executive Director and Secretary



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
HONORING AMY HAAS

WHEREAS, Amy is well known to many for her decades of experience addressing and solving Colorado River Basin issues and priorities in a variety of roles; and

WHEREAS, Amy served as both General Counsel and as Acting Director of the New Mexico Interstate Streams Commission from 2009 to 2017; and

WHEREAS, Amy was appointed by Governor Martinez in March 2015 to serve as New Mexico's Commissioner on the Upper Colorado River Commission and as New Mexico's Colorado River Basin States Representative; and

WHEREAS, from June 2017 to June 2018, Amy served as the Deputy Director and General Counsel for the Upper Colorado River Commission; and

WHEREAS, from July 2018 to July 2021 she served as the Executive Director and Secretary of the Upper Colorado River Commission; the first woman to serve in this capacity in the organization's 73-year history; and

WHEREAS, during her tenure as Executive Director, Amy played a critical role in the development and finalization of the Upper Basin Drought Contingency Plan, and during its subsequent implementation by initiating the Commission's Demand Management Feasibility Investigation, and by facilitating discussions when the Drought Response Operations Agreement was activated; and

WHEREAS, Amy has provided valuable input on other critical components of the Law of the River, including the domestic agreements required for the implementation of Minutes 319 and 323 to the 1944 United-States-Mexico Treaty; as well as fostering and improving relationships with many Colorado River Basin colleagues in Mexico through her work on the International Boundary and Water Commission's various workgroups and initiatives.

WHEREAS, Amy was instrumental in the utilization of the Upper Division States' Upper Colorado River Basin Funds for important and necessary water development projects through the execution and implementation of the First and Second Memorandum of Agreement; and

WHEREAS, during her tenure as Executive Director, Amy played a pivotal role in updating and invigorating the Commission's organizational policies, updating its by-laws, healthcare and other benefit plans, staffing, and significantly improving its organizational and technical capabilities; and

WHEREAS, Amy also led the Commission's efforts to acquire and renovate a safe, beautiful, and

extremely functional new Commission office in downtown Salt Lake City, with many other complementary benefits to the Commission; and

WHEREAS, Amy has demonstrated visionary leadership during a pivotal time on the Colorado River, emphasizing science-based decision-making and fostering collaborative approaches while also maintaining a spirit of professionalism and collegiality;

NOW, THEREFORE BE IT RESOLVED that the Upper Colorado River Commission, at its meeting held in Las Vegas, Nevada on December 14, 2021, does hereby express its gratitude and appreciation for the dedicated service and depth of knowledge provided by Amy Haas in addressing the many legal, technical, and policy-related challenges the Upper Colorado River Basin has faced during her tenure; and

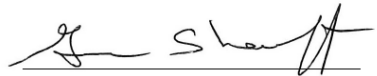
BE IT FURTHER RESOLVED that the Upper Colorado River Commission, its advisers and staff wish Amy Haas and her family every happiness and the best of health in their future professional and personal endeavors; and

BE IT FINALLY RESOLVED that the Interim Executive Director of the Upper Colorado River Commission is directed to transmit copies of this Resolution to Amy Haas and to the Governor of Utah.



PATRICK T. TYRRELL

Commissioner for Wyoming



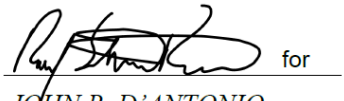
GENE SHAWCROFT

Commissioner for Utah



REBECCA MITCHELL

Commissioner for Colorado

 for

JOHN R. D'ANTONIO


Commissioner for New Mexico



UPPER COLORADO RIVER COMMISSION

50 S. 600 E. Ste #100 • Salt Lake City, UT 84102 • 801-531-1150 •
www.ucrccommission.com

MEMORANDUM

To: Chuck Cullom, UCRC Executive Director
From: Nathan Bracken, UCRC General Counsel 
Re: Proposed Guidance for the UCRC Commissioners Regarding Article III of the 1922 Colorado River Compact
Date: May 16, 2022

I. INTRODUCTION

The UCRC Commissioners requested that UCRC staff develop a proposed guidance document for the Commissioners regarding Article III of the 1922 Colorado River Compact. This document was prepared in consultation with Upper Division States' legal advisors. It is for discussion purposes only, is subject to revisions, and has not been approved by the Commissioners.

To provide the necessary context, Article III of the Colorado River Compact states in relevant part:

(a) There is hereby apportioned from the Colorado River System in perpetuity to the Upper Basin and to the Lower Basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the support of any rights which may now exist.

(b) In addition to the apportionment in paragraph (a), the Lower Basin is hereby given the right to increase its beneficial consumptive use of such waters by one million acre-feet per annum.

(c) If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the Colorado River System, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then, the burden of such deficiency shall be equally borne by the Upper Basin and the Lower Basin, and whenever

necessary the States of the Upper Division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (d).

(d) The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten

consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact.

(e) The States of the Upper Division shall not withhold water, and the States of the Lower Division shall not require the delivery of water, which cannot reasonably be applied to domestic and agricultural uses.

II. PROPOSED GUIDANCE

The following guidance is proposed to inform future discussions regarding Article III:

- *Article III(a) apportions the exclusive beneficial consumptive use of 7.5 million acre-feet per annum to the Upper Basin and the Lower Basin, respectively. Article III(b) apportions an additional 1 million acre-feet per annum of beneficial consumptive use to the Lower Basin from Lower Basin tributaries. The apportionments include consumptive beneficial use from all Colorado River tributaries.*
- *Pursuant to Article III(d), the Upper Division States will not cause the flow of the Colorado River at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet over any ten consecutive years. This is not a delivery requirement and it does not require a minimum annual flow at Lee Ferry. Rather, it is a non-depletion obligation which requires inquiry into the causes of the flow dropping below 75,000,000 acre-feet over any ten consecutive years. Additionally, Article III requires consideration of whether Colorado River system water is being reasonably applied to beneficial uses by the States of the Lower Division.*
- *Article III(c) provides that the obligation to Mexico is first supplied by surplus. Surplus is water over and above the beneficial consumptive use apportioned in Articles III(a) and (b). At a minimum, before the Upper Division States are required to deliver any water at Lee Ferry to satisfy half the obligation to Mexico under Article III(c): 1) the surplus must be insufficient to satisfy Mexico's right; 2) the deficiency must be recognized; and 3) the delivery must be necessary.*



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
Consumptive Use Measurement in the
Upper Colorado River Basin
June 14th 2022

WHEREAS the Upper Colorado River Commission (Commission) supports water resource development in the Upper Colorado River Basin to enable the Upper Division States to develop their apportionments of Colorado River water while meeting obligations under the 1922 Colorado River Compact; and

WHEREAS at the time of the 1948 Compact's adoption, the inflow-outflow method was thought to be the best available method for determining consumptive use; and

WHEREAS following the adoption of the 1948 Compact, the Commission has expended significant engineering and scientific resources to adapt the inflow-outflow method to produce the desired consumptive use information for the Upper Basin, but there is now general recognition that the inflow-outflow method is no longer the best available method for determining consumptive use of irrigated agriculture; and

WHEREAS a more current and uniform methodology is needed to determine consumptive uses that treats the Upper Division States the same for water modeling and fulfilling the Commission's duties under the 1948 Compact; and

WHEREAS the Upper Division States and the Bureau of Reclamation (Reclamation) currently use multiple, differing methods to estimate the consumptive use of irrigated agriculture, but they do not produce uniform data that can be used to make consumptive use determinations in a timely manner; and

WHEREAS, over the past nine years, the Upper Division States, Commission staff, and Reclamation have worked together as part of a Consumptive Use Study Workgroup (Workgroup) to evaluate various methods for determining the consumptive use of irrigated agriculture in the Upper Basin; and

WHEREAS the Workgroup has issued the attached technical recommendation to the Commission, which is fully incorporated into this Resolution; and

WHEREAS the Workgroup recommends the use of the Automated METRIC (eeMETRIC) method to determine the consumptive use of irrigated agriculture for water modeling and fulfilling the Commission's duties under the 1948 Compact; and

WHEREAS, in making its recommendation, the Workgroup found that eeMETRIC is the most appropriate method available to the Commission for use in determining consumptive use for irrigated agriculture in the Upper Basin; and

WHEREAS the Workgroup also recommended that the Commission continue to monitor and increase its understanding of eeMETRIC and other consumptive use estimation methods for irrigated agriculture; and

WHEREAS, for estimating consumptive uses other than irrigated agriculture, the Workgroup recommended that the Commission continue to work directly with the Upper Division States and in coordination with Reclamation to utilize the best estimation procedures applicable for those sectors; and

WHEREAS the Workgroup's recommendations are specific to water modeling and fulfilling the Commission's duties under the 1948 Compact and are not intended to replace or affect any existing intrastate consumptive use programs or processes;

NOW, THEREFORE BE IT RESOLVED that the Commission accepts the attached technical recommendation from the Workgroup; and

BE IT FURTHER RESOLVED that the eeMETRIC method is not intended to replace or affect any existing intrastate consumptive use processes or programs consistent with Article XV(b) of the 1948 Compact; and

BE IT FURTHER RESOLVED that the Commission and Upper Division States unanimously support the Commission's use of eeMETRIC to measure Upper Basin agricultural consumptive use; and

BE IT FURTHER RESOLVED, for estimating other non-irrigated agriculture consumptive uses, the Commission will continue to work directly with the Upper Division States and in coordination with Reclamation to utilize the estimation procedures applicable for those water use sectors; and

BE IT FURTHER RESOLVED that, as the science evolves and improved consumptive use measurement methods develop, the Commission will continue to work with the Upper Division States and coordinate with Reclamation to monitor progress and institute improvements; and

BE IT FURTHER RESOLVED that Commission staff are instructed to work expeditiously with the Upper Division States to develop a comprehensive alternative to the Inflow-Outflow Method for all water use sectors for the Commission's future consideration; and

BE IT FURTHER RESOLVED that Commission staff are instructed to work with the Upper Division States and Reclamation to implement the use of eeMETRIC to measure agricultural consumptive use consistent with this Resolution; and

BE IT FURTHER RESOLVED that this Resolution shall be transmitted to the Regional Director of the Upper Colorado Region of the Bureau of Reclamation in Salt Lake City, Utah.

CERTIFICATE

I, Charles R. Cullom, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the Upper Colorado River Commission unanimously adopted the above Resolution at its meeting held on June 14th, 2022, in Cheyenne, Wyoming.

Witness my hand on this 14 day of June 2022.



Charles Cullom
Executive Director and Secretary

Consumptive Use Study Workgroup Technical Recommendation to the Commission Background

Article VI of the 1948 Upper Colorado River Compact states, "The Commission shall determine the quantity of the consumptive use of water, which use is apportioned by Article III hereof, for the Upper Basin and for each State of the Upper Basin by the inflow-outflow method in terms of man-made depletions of the virgin flow at Lee Ferry." However, this method is not in use today. There is general recognition that this method is outdated, inaccurate, and infeasible. Article VI further provides that the Commission may adopt a different method by unanimous action.

Over the past nine years, the Upper Division States, Commission staff, and Reclamation, through the CU Study Workgroup, have been working together on an irrigated lands CU estimation study focused on the Upper Colorado River Basin (UCRB) that includes: 1) a review and analysis of the various CU estimation methods currently used by the States and Reclamation, 2) a review and expansion of climate and meteorological information to enable the consideration of state-of-the-art CU estimation methods, and 3) a detailed trial and evaluation of two crop coefficient methods (CCMs) and several remote sensing methods (RSMs).

Through the use of the States' Upper Colorado River Basin Fund MOA revenues and with additional support from Reclamation, the CU Study Workgroup conducted the CU Study. The goal of the study was to provide a comprehensive analysis of CU estimation methods for agricultural irrigation that could be deployed across the entire UCRB.

CU Study Final Report Recommendation

The final report of the CU Study recommends the following procedures:

1) For Irrigated Acreage Mapping, the development of more frequently updated irrigated acreage maps. This involves the review and integration of GIS data provided by the Upper Division States using a new remote-sensing-based mapping technique for defining irrigated land extents.

2) For Reference evaporation (ET) (ET_{ref}), the use of the ASCE Standardized Penman-Monteith reference crop equation for alfalfa, which is also the standard reference crop used by METRIC and SSEBOP (the RSM models in the study). For supporting climate data, the bias-corrected gridMET dataset was recommended.

3) For Potential ET (ET_{pot}), the use of the ASCE Standardized Penman-Monteith alfalfa-based reference ET_{ref} with a new supplemental dual crop coefficient model (the ET Demands model) as a backup method for estimating CU.

4) For Actual ET, the contractors recommended the use of the Automated METRIC (eeMETRIC) method, which can be developed with the OpenET platform or independently, as it consistently performed better than the SSEBOP method. The contractors also recommended continued monitoring and increased understanding of eeMETRIC and other CU estimation methods and ensembles as developed by the OpenET platform.

5) For Effective Precipitation, the contractors recommended (with continued oversight, development, and investigation) the use of a supplemental model (ET Demands).

Based on the CU Study Final Report and its recommendations, Commission staff requested that the CU Study Workgroup develop and provide a technical recommendation to the Commissioners identifying the most appropriate CU estimation method for application across the UCRB for use by the Commission as a potential replacement for the consumptive use component of inflow-outflow method.

CU Study Workgroup Recommendation to the Commission

Based on considerations regarding accuracy, consistency with the best available science, relative cost, and the ability of the method to produce timely information, the CU Study Workgroup recommends the Commission consider adopting the procedures outlined in the CU Study Final Report Recommendations above and further described in the CU Study and technical appendices. The potential adoption of this CU method by the Commission is not intended to replace or affect any existing intrastate CU programs or processes. The CU Study Workgroup recognizes that this technical recommendation may necessitate a discussion of other non-technical considerations.

This recommended CU method relates only to the use of these methods for interstate purposes, for the uniform estimation of irrigated lands' CU across the Upper Division States and pursuant to Article IV of the Upper Colorado River Basin Compact. For all other water use sectors and transit loss, the CU Study Workgroup recommends the Commission continue to work directly with the Upper Division States and Reclamation to utilize the estimation procedures applicable for those sectors, including direct metering, use of existing statistical estimation methods, and other science-based methods.

Supporting Considerations

1. There are multiple irrigated lands CU estimation methods presently in use by the Upper Division States and Reclamation and the information is not generated every year. Likewise, current CU estimation methods do not produce data in a timely manner.
2. To date, Reclamation has been using the modified Blaney-Criddle method with its proprietary Indicator Gage Method to develop the irrigated lands portion of its Consumptive Use and Losses (CU&L) data. Reclamation intends to move forward with the above-mentioned CU method to recalculate and republish historic CU&L data for future reporting. Reclamation has indicated that it would prefer to adopt the recommended method jointly with the Commission and the Upper Division States.
3. Modified Blaney-Criddle is no longer recommended by the American Society of Engineers (ASCE) and is no longer recognized as state-of-the-science.
4. Reclamation uses estimated CU to compute the Upper Colorado River Basin (UCRB) natural flows each year. The computed natural flow data are then used in Reclamation's Colorado River Simulation System (CRSS) model, which will likely be used to support long-term-planning considerations. Better agreement between Reclamation's and the States' CU estimates has the potential to improve the performance of the CRSS model.
5. The recommended irrigation CU method directly estimates actual ET and does not require an additional adjustment from ET_{pot} , such as the Indicator Gage Method.
6. There is the potential for cost-sharing agreements or supplementary funding with Reclamation that may offset additional near-term costs to the States of implementing the recommended CU method. The long-term O&M costs related to the implementation of a comprehensive CU program using the recommended CU method and the potential for cost-sharing with Reclamation need further investigation.
7. CU estimation methods are a rapidly developing field of science, and new or updated methods are expected to improve CU results in the future. Reclamation, the Commission, and the Upper Division States may need to conduct/establish periodic reviews to understand and evaluate these new developments in CU estimation science.



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
Updated 2016 Upper Division States Depletion Demand Schedule
June 14, 2022

WHEREAS the Upper Colorado River Commission (Commission) supports water resource development in the Upper Colorado River Basin to enable the Upper Division States of Colorado, New Mexico, Utah, and Wyoming to develop their respective apportionments of Colorado River water while meeting the Compact requirements at Lee Ferry; and

WHEREAS Depletion Demand Schedules issued by the Commission are not a prediction of future water use or depletions. The Depletion Demand Schedules are estimates that presume the continuation of the observed historically available supply and other demand drivers used for planning purposes and are useful for modeling purposes. The Depletion Demand Schedules are used by the Bureau of Reclamation (Reclamation) in its Colorado River Simulation System (CRSS) modeling of Colorado River system operations; and

WHEREAS on June 6th, 2017, the Commission adopted the 2016 Upper Basin Depletion Demand Schedule; and

WHEREAS the 2016 UCRC Depletion Demand Schedule used historical average depletions intentionally limited to reflect assumed hydrologic conditions prior to its inclusion in CRSS; and

WHEREAS recent improvements and refinements to CRSS, undertaken by Reclamation and the Upper Division States, necessitated adjustments to the 2016 UCRC Depletion Demand Schedule in order to more accurately characterize Upper Division depletions under a broad range of supply conditions; and

WHEREAS this updated 2016 Upper Basin Depletion Demand Schedule (Updated 2016 Schedule) reflects a more accurate representation of demands resulting in a more accurate estimation of depletions under a broader range of hydrologic conditions in CRSS; and

WHEREAS the Updated 2016 Schedule, in conjunction with improvements and refinements to CRSS, results in a significant reduction in error and bias for the Upper Colorado River Basin, including modeled inflow to Lake Powell; and

WHEREAS the Upper Division States recognize the use of the Updated 2016 Schedule for planning and modeling purposes but also acknowledge that these estimates may be changed in the future based upon new assumptions or information; and

WHEREAS the Updated 2016 Schedule does not constitute an interpretation of, nor shall anyone construe it as interpreting or in any manner limiting or constraining, Upper Colorado River Basin Compact apportionments;

NOW, THEREFORE BE IT RESOLVED that the Commission requests that the attached

Updated 2016 Schedule of projected estimates of Upper Colorado River Division States demands be used for planning purposes, modeling, and water supply studies within the Colorado River Basin; and

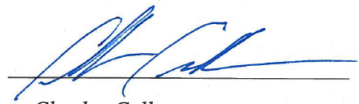
BE IT FURTHER RESOLVED *that the Updated 2016 Schedule supersedes the 2016 Depletion Demand Schedule in its entirety; and*

BE IT FINALLY RESOLVED *that this resolution shall be transmitted to the Regional Director of the Upper Colorado Region of the Bureau of Reclamation in Salt Lake City, Utah, and as appropriate to other federal, state, and congressional officials who may need to use these demand estimates.*

CERTIFICATE

I, CHARLES CULLOM, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above resolution was unanimously adopted by the Upper Colorado River Commission at its meeting held on June 14th, 2022, in Cheyenne, Wyoming.

WITNESS my hand this 14 day of June 2022.



*Charles Cullom
Executive Director and Secretary*

Upper Colorado River Division States
Updated 2016 Current and Future Depletion Demand Schedule ^{1,2,5}
Total Upper Colorado River Division States
June 14, 2022
(Units: 1,000 acre-feet)

ITEM	Current/Historic	YEAR								
		2020	2030	2040	2050	2060	2070			
Agriculture-Irrigation & Stock	3,548	3,567	3,596	3,620	3,629	3,633	3,622			
Potential Agriculture-Irrigation & Stock		0	0	0	0	0	0			
Municipal/Industrial	106	115	132	144	158	167	172			
Potential Municipal/Industrial		2	4	12	14	16	16			
Self-Served Industrial	12	12	12	12	12	12	12			
Potential Self-Served Industrial		0	0	0	0	0	0			
Energy	148	151	158	163	168	173	178			
Potential Energy		5	10	10	15	10	0			
Minerals	53	57	65	73	81	94	103			
Potential Minerals		2	8	17	26	31	33			
Export	1,055	1,085	1,167	1,239	1,302	1,377	1,513			
Potential Export		50	75	100	125	100	0			
UT Tribal Water Settlements*	0	2	70	141	148	153	153			
Reservoir Evaporation (in-state)	261	261	261	261	261	261	261			
Potential Reservoir Evaporation		0	0	0	0	0	0			
TOTAL Forecasted Depletions	5,183	5,309	5,558	5,792	5,939	6,027	6,063			
Shared CRSP Evap (0.520mat)*	520	520	520	520	520	520	520			
TOTAL	5,703	5,829	6,078	6,312	6,459	6,547	6,583			

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletions.

Note 2: This depletion schedule is for planning purposes only. It is not a tabulation or determination of water rights or actual uses.

Note 3: Existing Tribal uses are captured by the Agricultural and M&I sectors, and future Tribal uses are represented in the Tribal Settlements category.

Note 4: "Shared CRSP Evap" refers to evaporation from the reservoir constructed under the Colorado River Storage Project (CRSP) Act that are used to regulate compact deliveries at Lee Ferry and generate CRSP hydroelectric power. These include Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit. This evaporation amount is the anticipated long-term average. Evaporation will vary annually depending on reservoir storage and climatic conditions.

Note 5: To find more materials related to this Depletion Demand Schedule, please follow this link to the Upper Colorado River Commission's Depletion Demand Schedule webpage: <http://www.ucrccommission.com/upper-colorado-river-division-states-depletion-demand-schedule/>.

Upper Colorado River Division States
Updated 2016 Current and Future Depletion Demand Schedule ^{1,2,4}
Colorado
June 14, 2022

(Units: 1,000 acre-feet)

ITEM	Current/Historic	YEAR					
		2020	2030	2040	2050	2060	2070
Agriculture-Irrigation & Stock ²	1,863	1,863	1,869	1,870	1,876	1,877	1,863
Potential Agriculture-Irrigation & Stock		0	0	0	0	0	0
Municipal/Industrial	61	60	65	65	71	70	71
Potential Municipal/Industrial		0	0	5	5	5	5
Self-Served Industrial	11	11	11	11	11	11	11
Potential Self-Served Industrial		0	0	0	0	0	0
Energy	30	33	40	45	50	55	60
Potential Energy		5	10	10	15	10	0
Minerals	32	35	40	45	50	60	66
Potential Minerals		0	0	3	5	4	0
Export	732	740	775	800	850	900	1,013
Potential Export		50	75	100	125	100	0
Reservoir Evaporation (in-state)	130	130	130	130	130	130	130
Potential Reservoir Evaporation		0	0	0	0	0	0
TOTAL Forecasted Depletions	2,859	2,927	3,015	3,084	3,188	3,222	3,219

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletions.

Note 2: This depletion schedule is for planning purposes only. It is not a tabulation or determination of water rights or actual use.

Note 3: Increases in current/historic Agriculture depletions represent a change in consumptive use calculation methodology. There has been no documented evidence of increase in actual consumptive use over this time frame. 2015 calculations used the modified Blaney-Childle method with elevation adjustments. We anticipate an additional increase in calculated consumptive use if the Penman-Moore method is used in the future.

Note 4: To find more materials related to this Depletion Demand Schedule, please follow this link to the Upper Colorado River Commission's Depletion Demand Schedule webpage: <http://www.ucrcommission.com/upper-colorado-river-division-states-depletion-demand-schedules/>.

Upper Colorado River Division States
Updated 2016 Current and Future Depletion Demand Schedule^{1,2,4}
New Mexico
June 14, 2022
(Units: 1,000 acre-feet)

ITEM	YEAR									
	Current/Historic	2020	2030	2040	2050	2060	2070			
Agriculture-Irrigation & Stock	323	341	361	381	381	381	381			
Potential Agriculture-Irrigation & Stock		0	0	0	0	0	0			
Municipal/Industrial	16	23	32	41	47	54	55			
Potential Municipal/Industrial		0	0	0	0	0	0			
Self-Served Industrial	1	1	1	1	1	1	1			
Potential Self-Served Industrial		0	0	0	0	0	0			
Energy	54	54	54	54	54	54	54			
Potential Energy		0	0	0	0	0	0			
Minerals	2	2	2	2	2	2	2			
Potential Minerals		0	0	0	0	0	0			
Export ³	175	175	186	190	190	190	190			
Potential Export		0	0	0	0	0	0			
Reservoir Evaporation (in-state)	29	29	29	29	29	29	29			
Potential Reservoir Evaporation		0	0	0	0	0	0			
TOTAL Forecasted Depletions	600	625	665	698	704	711	712			

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletions.

Note 2: This depletion schedule is for planning purposes only. It is not a tabulation or determination of water rights or actual uses.

Note 3: One of the exports of the Colorado River Basin water to New Mexico is the San Juan-Chama Project (SJCP). This federally authorized project consists of three points of diversion on three streams in southwest Colorado, all of which are tributary to the San Juan River above Navajo Reservoir.

Water is then routed into a series of tunnels crossing the Continental Divide into the Rio Grande Basin. The SJCP Diversions are subject to several practical and legal constraints. While the points of diversion are operated to maximize diversions as constrained, annual exports fluctuate widely in part due to annual variation in the hydrology of the catchments above the points of diversion. Based on historical operations and tunnels capacity, demand in this schedule is set at 175,000 acre-feet per year. Setting Project demand at a lower amount in CRSS would under-simulate wetter years in which more water is available for diversion.

The amount reflected in this schedule is solely for the purposes of characterizing the SJCP performance in CRSS more accurately.

This amount is different from, and should NOT be confused with the maximum amount allowed by law and should not be used for any shortage determinations in the San Juan Basin.

The projected increase from 2030 onward is related to the Navajo-Gallup Water Supply Project coming on line.

Note 4: To find more materials related to this Depletion Demand Schedule, please follow this link to the Upper Colorado River Commission's Depletion Demand Schedule webpage: <http://www.uccommission.com/upper-colorado-river-division-states-depletion-demand-schedules/>.

Upper Colorado River Division States Updated 2016 Current and Future Depletion Demand Schedule ^{1,2,5}

June 14, 2022
(Units: 1,000 acre-feet)

ITEM	Current/Historic	YEAR					
		2020	2030	2040	2050	2060	2070
Agriculture-Irrigation & Stock	772	772	772	772	772	772	772
Potential Agriculture-Irrigation & Stock	0	0	0	0	0	0	0
Municipal/Industrial	18	18	19	20	21	23	24
Potential Municipal/Industrial	0	0	0	0	0	0	0
Self-Served Industrial	0	0	0	0	0	0	0
Potential Self-Served Industrial	0	0	0	0	0	0	0
Energy	36	36	36	36	36	36	36
Potential Energy	0	0	0	0	0	0	0
Minerals	0	0	0	0	0	0	0
Potential Minerals	0	0	0	0	0	0	0
Export	135	156	190	230	241	264	287
Potential Export	0	0	0	0	0	0	0
UT Tribal Water Settlements ⁴	0	2	70	141	148	153	153
Reservoir Evaporation (in-state)	75	75	75	75	75	75	75
Potential Reservoir Evaporation	0	0	0	0	0	0	0
TOTAL Forecasted Depletions	1,036	1,059	1,162	1,274	1,293	1,323	1,347

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletions.

Note 2: This depletion schedule is for planning purposes only. It is not a tabulation or determination of water rights or actual uses.

Note 3: Mineral uses are included in the M&I Sector

Note 4: Existing Tribal uses are captured by the Agricultural and M&I sectors, and future Tribal uses are represented in the Tribal Settlements category.

Note 5: To find more materials related to this Depletion Demand Schedule, please follow this link to the Upper Colorado River Commission's Depletion Demand Schedule webpage: <http://www.ucrcommission.com/upper-colorado-river-division-states-depletion-demand-schedule/>.

Upper Colorado River Division States
Updated 2016 Current and Future Depletion Demand Schedule ^{1,2,4}
Wyoming
June 14, 2022
(Units: 1,000 acre-feet)

ITEM	YEAR									
	Current/Historic	2020	2030	2040	2050	2060	2070			
Agriculture-Irrigation & Stock	590	591	594	597	600	603	606			
Potential Agriculture-Irrigation & Stock	0	0	0	0	0	0	0			
Municipal/Industrial	11	14	16	18	19	20	22			
Potential Municipal/Industrial	0	2	4	7	9	11	11			
Self-Served Industrial	0	0	0	0	0	0	0			
Potential Self-Served Industrial	0	0	0	0	0	0	0			
Energy	28	28	28	28	28	28	28			
Potential Energy	0	0	0	0	0	0	0			
Minerals	19	20	23	26	29	32	35			
Potential Minerals	0	2	8	14	21	27	33			
Export	13	14	16	19	21	23	23			
Potential Export	0	0	0	0	0	0	0			
Reservoir Evaporation (in-state)	27	27	27	27	27	27	27			
Potential Reservoir Evaporation	0	0	0	0	0	0	0			
TOTAL Forecasted Depletions	688	698	716	736	754	771	785			

Note 1: This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletions.

Note 2: This depletion schedule is for planning purposes only. It is not a tabulation or determination of water rights or actual uses.

Note 3: Wyoming's Current/Historic Agriculture Consumptive Use was calculated using a Periman-Monteith procedure. The 2007 estimates were calculated using a Blaney-Criddle procedure. This change in methodology primarily accounts for the increase in estimated consumptive use from irrigated lands. There has been no documented actual increase in consumptive use over this time frame.

We do believe the Periman-Monteith methodology is more accurate than Blaney-Criddle.

Note 4: To find more materials related to this Depletion Demand Schedule, please follow this link to the Upper Colorado River Commission's Depletion Demand Schedule webpage: <http://www.ucrrcommission.com/upper-colorado-river-division-states-depletion-demand-schedules/>.



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
HONORING JOHN R. D'ANTONIO, JR.

WHEREAS Mr. John R. D'Antonio, Jr. served as the New Mexico State Engineer and Secretary to the New Mexico Interstate Stream Commission from 2003 to 2011, and again from 2019 to 2021; and

WHEREAS John served as the Upper Colorado River Commissioner for New Mexico from 2003 to 2011, and again from 2019 to 2021; and

WHEREAS John has worked tirelessly to protect New Mexico's compact entitlements to the waters of the Colorado River Basin and is regarded by all as a competent and knowledgeable professional whose judgment can be trusted; and

WHEREAS John has rendered long, meritorious service to the Upper Colorado River Commission in matters related to the conservation, utilization, and development of the water and related land resources of the Upper Colorado River Basin; and

WHEREAS John's contributions include work on the Colorado River Basin Salinity Control Forum and the Colorado River Basin Salinity Control Advisory Council; the Navajo Nation Water Rights Settlement; the Navajo-Gallup Water Supply Project; the Colorado River Interim Guideline\$ for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead, and many other Colorado River Basin projects; and

WHEREAS John's efforts in facilitating a series of discussions amongst the Upper Division States to methodically identify and strengthen areas of agreement in 2021 helped improve common understanding of issues and communication pathways within the Upper Basin; and

WHEREAS, as a result of his leadership and professional conduct in addressing numerous matters regarding the administration of the Colorado River, his fellow Commissioners, their advisers, and staff have developed great respect, admiration, and appreciation for John;

NOW, THEREFORE BE IT RESOLVED that the Upper Colorado River Commission, at its meeting in Cheyenne, WY on June 14th, 2022 does hereby express the gratitude and appreciation of the Commission and its staff for the untiring service and counsel rendered by John in addressing the many technical and political water resource problems that have confronted the Commission during his tenure as the Commissioner for New Mexico; and

BE IT FURTHER RESOLVED that the Upper Colorado River Commission, its advisers, and staff sincerely wish John, his wife Cassandra, and their family the best of all health, happiness,


and prosperity in all their future endeavors.

BE IT FINALLY RESOLVED that the Executive Director of the Upper Colorado River Commission is directed to transmit copies of this Resolution to John R. D'Antonio, the New Mexico Upper Colorado River Commissioner, and the Governor of the State of New Mexico.



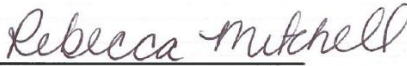
PATRICK T. TYRRELL

Commissioner for Wyoming



GENE SHAWCROFT

Commissioner for Utah



REBECCA MITCHELL

Commissioner for Colorado



ESTEVAN LOPEZ

Commissioner for New Mexico



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
HONORING PATRICK T. TYRRELL

WHEREAS Pat Tyrrell has had a long and distinguished career managing western water resources, which includes serving as the Wyoming State Engineer longer than any person in the history of that State; and

WHEREAS Pat served as Wyoming's Commissioner to the Upper Colorado River Commission (Commission) for 20 years, and as Vice-Chair of the Commission for 16 years; and

WHEREAS during Pat's tenure on the Commission, the Colorado River Basin has faced daunting and unprecedented challenges resulting from the worst drought on record and increasingly depleted storage supplies; and

WHEREAS Pat was instrumental in developing and fostering consensus and the collaboration necessary to create and implement the innovative and proactive solutions which have been critical to addressing the Basin's unprecedented challenges; and

WHEREAS, while representing Wyoming and the Upper Colorado River Basin, Pat provided sound leadership on numerous issues in the Basin, including surplus and shortage guidelines for the Lower Basin, coordinated operations of Lake Powell and Lake Mead, salinity control, Glen Canyon Dam operations to address resources in the Grand Canyon, recovery of endangered fish, water conservation programs, water use measurement and accounting, cooperative actions with the country of Mexico, basin-wide drought contingency plans, and federal legislation affecting the Basin; and

WHEREAS Pat has rendered long, faithful, and meritorious service to both the Commission and the State of Wyoming in negotiations relating to the conservation, utilization, and development of the Upper Colorado River Basin's water with numerous water organizations, federal agencies, and the seven Colorado River Basin States; and

WHEREAS Pat always honorably and faithfully performed his duties with the Commission in a manner that generated the respect of the Commission members, its advisers, and staff; and

WHEREAS the Commission has benefited greatly from Pat's leadership, vision, experience, and common-sense approach to water issues, and his exceptional ability to distill and convey complex issues and solutions in an engaging way that resonated with water users and other stakeholders;

NOW, THEREFORE BE IT RESOLVED that the Upper Colorado River Commission, at its meeting held on June 14th, 2022, does hereby express its deepest gratitude and appreciation for the dedicated service and leadership provided by Pat Tyrrell in the development and protection of the

water and other resources of the Upper Colorado River Basin; and

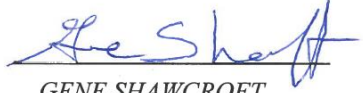
BE IT FURTHER RESOLVED that the Upper Colorado River Commission, its advisers, and staff wish Pat Tyrrell, his wife Barbara, and their family every happiness and the best of health in their future professional and personal endeavors; and

BE IT FINALLY RESOLVED that the Executive Director of the Upper Colorado River Commission is directed to transmit copies of this Resolution to Pat Tyrrell and the Governor of the state of Wyoming.



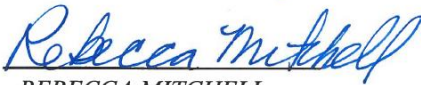
BRANDON GEBHART

Commissioner for Wyoming



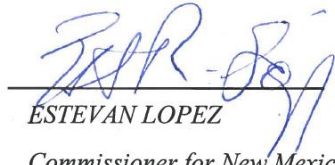
GENE SHAWCROFT

Commissioner for Utah



REBECCA MITCHELL

Commissioner for Colorado



ESTEVAN LOPEZ

Commissioner for New Mexico



RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
HONORING NORMAN K. JOHNSON

WHEREAS Norman ("Norm") Johnson has worked on Colorado River Basin issues for more than forty years; and

WHEREAS Norm is well known throughout the Colorado River Basin community for his vast experience and knowledge regarding Colorado River Basin issues; and

WHEREAS Norm served as legal counsel for the Western States Water Council from May 1982 through June 1994, where he was vice-chair of the Legal Committee and was involved in Colorado River basin issues; and

WHEREAS Norm joined the office of the Utah Attorney General in June of 1994 and has diligently represented the State of Utah in matters related to the Colorado River Basin for twenty-eight years; and

WHEREAS Norm has served on the Upper Colorado River Commission Legal Committee since 2002 and as Chair of the Legal Committee since 2007; and

WHEREAS Norm has thoughtfully and wisely advised Utah 's Upper Colorado River Commissioner for many years, helping to balance the discussion of critical issues while supporting Utah's interests; and

WHEREAS, as counsel for the State of Utah, Norm has had outstanding success in negotiating the settlement of federal reserve water rights impacting the Colorado River Basin, including the Zion National Park Water Right Settlement Agreement, the Ute Indian Water Compact, and the Navajo Utah Water Rights Settlement; and

WHEREAS Norm played a critical role in negotiating and drafting components of the Law of the River, including the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead, the Upper Basin Drought Contingency Plan, and the Drought Response Operations Agreement;

NOW, THEREFORE BE IT RESOLVED that the Upper Colorado River Commission, at its meeting held on June 14, 2022, does hereby express its gratitude and appreciation for the dedicated service of Norm Johnson in addressing the many legal challenges the Upper Colorado River Basin has faced over the years of his involvement; and

BE IT FURTHER RESOLVED that the Upper Colorado River Commission, its advisors, and staff wish Norm Johnson, his wife Julie, their four children, and the rest of their family every happiness and best of health in their future endeavors; and,

BE IT FINALLY RESOLVED that the Executive Director of the Upper Colorado River
CERTIFICATE

I, Charles Cullom, Executive Director of the Upper Colorado River Commission, do hereby certify that the foregoing Resolution was unanimously adopted by the Upper Colorado River Commission at its meeting on June 14th, 2022 in Cheyenne, Wyoming.

WITNESS my hand this 14 day of June, 2022.



Charles Cullom

Executive Director and Secretary

Commission is directed to transmit copies of this Resolution to Norm Johnson, the Utah Upper Colorado River Commissioner, and the Governor of the State of Utah.

Upper Colorado River Commission

APPENDIX D Transmountain Diversions

For the Water Year Ending
Sept. 30, 2022

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO (2013 – 2022)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	10-YEAR AVERAGE
TO PLATTE RIVER BASIN											
Grand River Ditch	17,692	15,490	12,641	14,070	15,915	7,244	9,712	18,094	12,980	19,360	14,320
Eureka Ditch	0	0	0	0	0	0	0	0	0	0	0
Alva B. Adams Tunnel	237,200	203,300	113,014	242,900	241,335	116,939	289,300	210,493	245,500	212,800	211,278
Berthoud Pass Ditch	558	600	366	738	805	208	638	632	400	435	538
Moffat Water Tunnel	57,781	18,500	26,828	26,450	43,231	24,835	49,980	55,238	44,188	43,360	39,039
Boreas Pass Ditch	103	181	113	119	116	36	157	130	118	103	118
Vidler Tunnel	291	670	668	380	403	135	518	412	18	402	390
Harold D. Roberts Tunnel	84,842	13,550	8,870	37,470	92,227	46,646	48,110	66,035	101,405	103,800	60,295
Straight Creek Tunnel	225	322	291	265	256	102	263	236	150	189	230
TO ARKANSAS RIVER BASIN											
Hoosier Pass Tunnel	9,295	9,370	6,493	7,820	12,605	4,295	7,940	10,986	10,290	8,390	8,748
Columbine Ditch	1,350	2,408	1,348	926	1,860	1,320	2,620	1,452	1,230	1,350	1,586
Ewing Ditch	769	1,553	711	466	1,080	524	1,920	658	420	633	873
Wurtz Ditch	1,639	3,398	499	1206	2,340	1,380	3,750	2,012	1,520	2,230	1,997
Homestake Tunnel	19,495	17,771	4,185	2,143	22,600	19,430	34,040	23,831	27,830	23,580	19,490
Twin Lakes Tunnel	37,782	62,747	17,650	17,814	31,570	31,060	37,910	36,540	32,620	35,680	34,137
Charles H. Boustead Tunnel	47,019	81,010	70,731	31,366	70,080	40,930	97,200	53,240	34,430	51,730	57,774
Busk-Ivanhoe Tunnel	4,128	5,852	2,554	2,400	2,920	1,550	4,260	3,250	3,230	2,230	3,237
Larkspur Ditch	64	305	517	177	503	101	403	271	213	274	283
TO RIO GRANDE BASIN											
Tarbell Ditch	424	920	0	0	479	162	2	319	623	560	349
Tabor Ditch	361	1,020	1,387	1,020	1,020	259	1,260	588	741	434	809
Treasure Pass Ditch	180	245	303	319	458	155	440	212	259	240	281
Don La Font Ditches No. 1 & 2	309	229	309	347	371	45	213	87	254	116	228
Williams Creek-Squaw Pass Ditch	296	384	517	318	448	184	356	281	231	203	322
Pine River-Weminuche Pass Ditch	525	448	934	639	593	163	444	479	402	123	475
Weminuche Pass Ditch	718	1,270	2,918	2,020	1,440	322	752	877	916	639	1,187
TOTAL	523,046	441,543	273,849	391,373	544,655	298,025	592,188	486,353	519,968	508,861	457,986

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO TO RIO GRANDE BASIN IN NEW MEXICO (2013 – 2022)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	10-YEAR AVERAGE
San Juan-Chama Diversions	40,953	61,963	94,048	94,310	163,168	36,511	139,062	45,071	57,466	61,749	79,430

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN TO THE GREAT BASIN IN UTAH (2013 – 2022)

Broadbent Supply Ditch (Wyoming)	507	830	1,000	1,061	1,240	1,734	1,515	840	836	1,163	1,073
Fairview Tunnel	1,881	2,078	1,332	2,241	2,550	716	2,087	1366	505	1,955	1,671
Ephraim Tunnel	1,742	2,678	3,412	1,621	2,450	1,493	1,829	2,078	1,470	2,047	2,082
Spring City Tunnel	4,023	4,344	4,171	3,736	4,656	2,223	3,833	3,000	2,700	2,950	3,564
Central Utah Project, Bonneville Unit*	36,437	43,815	44,345	41,982	29,410	34,962	46,715	49,284	45,270	46,045	41,827
Hobble Creek Ditch	0	0	0	0	0	0	0	0	0	0	0
Strawberry-Willow Creek Ditch	0	0	0	0	0	0	0	0	0	0	0
Strawberry Water Users Association*	69,600	60,723	63,264	63,499	55,549	74,796	42,479	71,998	65,823	52,725	62,046
Duchesne Tunnel	24,144	42,769	29,638	35,577	37,561	24,314	36,431	32,996	16,139	33,873	31,344
TOTAL	138,334	157,238	147,163	149,717	133,417	140,238	134,889	161,562	132,743	140,758	143,606

TRANSMOUNTAIN DIVERSIONS FROM GREAT BASIN IN UTAH TO COLORADO RIVER BASIN IN UTAH (2013 – 2022)

Tropic and East Fork Canal	5,640	3,115	4,444	9,648	4,916	4,834	5,000	4,800	4,000	4,000	5,040
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TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN TO NORTH PLATTE BASIN IN WYOMING (2013 – 2022)

City of Cheyenne	12,784	8,063	5,945	7,553	5,673	6,170	14,500	7,660	9,419	13,201	9,097
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ALL TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN (2013 – 2022)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	10-YEAR AVERAGE
TOTAL	712,577	668,791	519,660	636,405	845,097	479,210	878,739	698,946	718,696	723,669	688,607

