SEVENTIETH ANNUAL REPORT

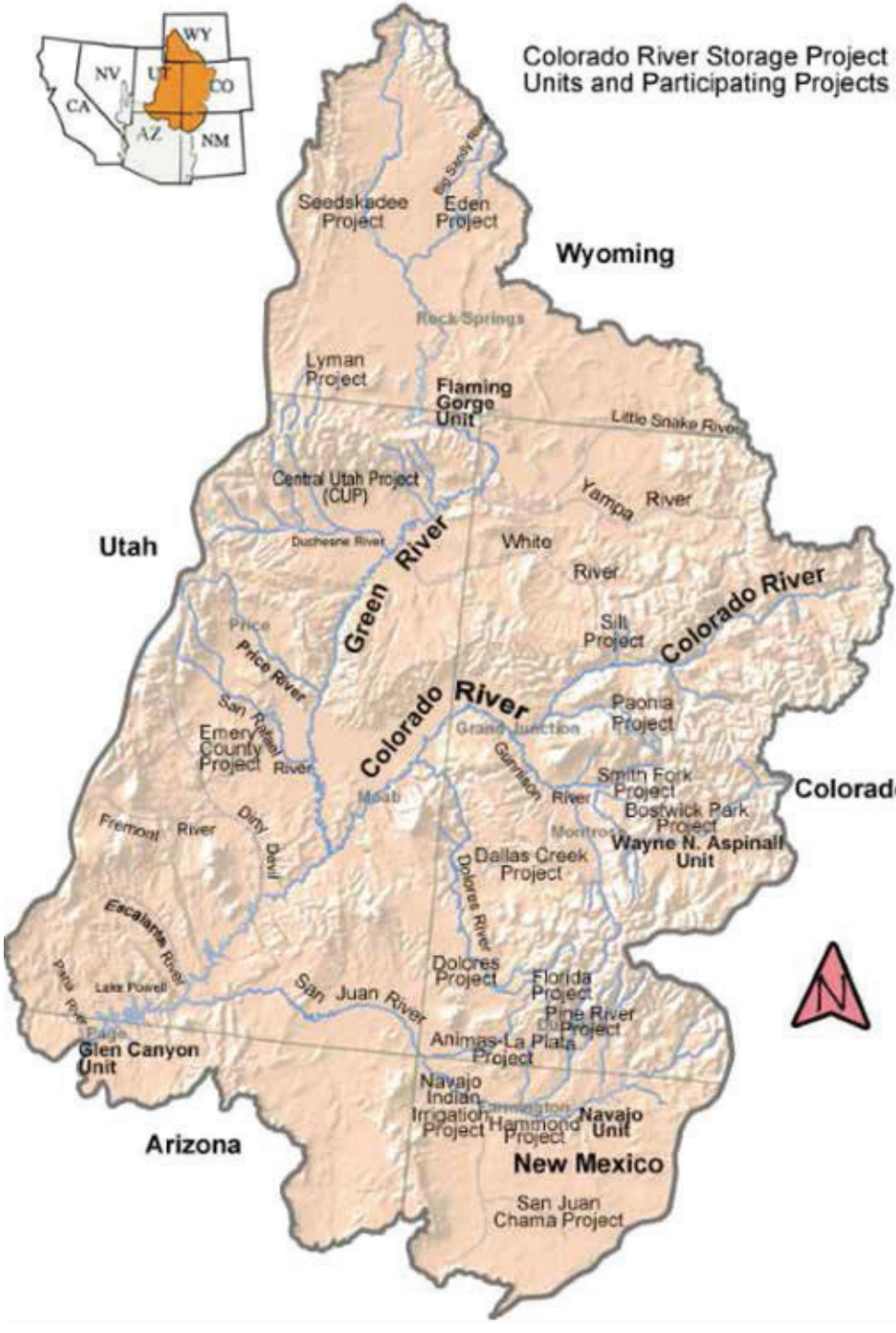
OF THE

Upper Colorado River Commission

SALT LAKE CITY, UTAH

SEPTEMBER 30, 2018

Upper Colorado River Basin



UPPER COLORADO
RIVER COMMISSION
355 South 400 East • Salt Lake City • Utah 84111 • 801-531-1150
website: www.ucrcommission.com

December 18, 2018

President Donald S. Trump
The White House
Washington, D.C. 20500

Dear President Trump:

Article VIII(b) of the Upper Colorado River Basin Compact requires that the Commission shall adopt and transmit to the Governors of the four States of Utah, Colorado, Wyoming and New Mexico, a budget covering an estimate of its expenses for the following year, and of the amount payable by each State.

In accordance with the above provision, we are enclosing a copy of the budget for the fiscal year ending June 30, 2019, adopted by the Upper Colorado River Commissioners on June 20, 2018 in Santa Fe.

By similar letter, we are also providing copies of the 2019 budget to the Governors of the four member States for use in their budget processes. The assessments to be paid by each State are shown as a part of the enclosed budget.

Sincerely,

Amy I. Haas

Amy I. Haas
Executive Director and Secretary

Enclosure

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Acknowledgements:

The Upper Colorado Region of the U.S. Bureau of Reclamation contributed substantially to the text and technical content of this report.

PREFACE

Article VIII(d)(13) of the Upper Colorado River Basin Compact requires the Upper Colorado River 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 specifies that "the Commission shall make and transmit annually on or before April 1 to the Governors of the states signatory to the Upper Colorado River Basin Compact and to the President of the United States a report covering the activities of the Commission for the water year ending the preceding September 30."

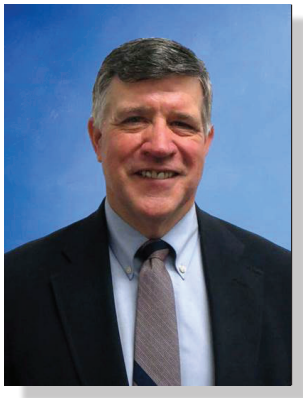
This Seventieth Annual Report of the Upper Colorado River Commission has been compiled pursuant to the above directives.

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

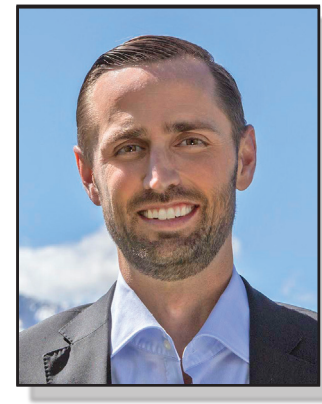
- Membership of the Commission, its Committees, Advisors, and Staff;
- Roster of meetings of the Commission;
- Brief discussion of the activities of the Commission;
- Engineering and hydrologic data;
- Pertinent legal information;
- Information pertaining to congressional legislation;
- Map of the Upper Colorado River Basin;
- Status of the Storage Units and participating projects of the Colorado River Storage Project;
- Appendices containing: Fiscal data, such as budget, balance sheet, statements of revenue and expense.

A special thanks is in order to the many staff of the U.S. Bureau of Reclamation who have contributed most significantly to the text and data presented herein.

COMMISSIONERS



Tom Blaine
Commissioner for
New Mexico



James Eklund
Commissioner for
Colorado

Felicity Hannay
Chairwoman
Commissioner for
United States

Eric L. Millis
Commissioner for
Utah

Patrick T. Tyrrell
Commissioner for
Wyoming

ALTERNATE COMMISSIONERS

John R. Stulp	State of Colorado
John McClow	State of Colorado
Kent Jones	State of Utah
Robert V. King	State of Utah
Benjamin C. Bracken	State of Wyoming
Randy Bolgiano	State of Wyoming
Keith Burron	State of Wyoming
Rolf Schmidt - Petersen	State of New Mexico

OFFICERS OF THE COMMISSION

Chairwoman	Felicity Hannay
Vice Chairman	Patrick T. Tyrrell
Secretary	Executive Director
Treasurer	Executive Director
Assistant Treasurer	Deputy Director

STAFF

Executive Director	Don A. Ostler (succeeded by Amy I. Haas on July 1, 2018)
Deputy Executive Director	Amy I. Haas (through June 30, 2018)
Administrative Assistant	TeriKay Gomm

COMMITTEES

The Committees of the Commission convened several times during the year. Committees and their membership at the date of this report are as follows (the Chairman and the Secretary of the Commission are ex-officio members of all committees, Article V(4) of the By-Laws):

Legal Committee:

Norman K. Johnson, Chairman – Utah
Cynthia H. Coffman - Colorado
Scott Balcomb – Colorado
Jim Lochhead – Colorado
Bennett Raley – Colorado
Lee Miller - Colorado
Peter Fleming – Colorado
Beth VanVurst – Colorado
Barry Spear – Colorado
Karen Kwon – Colorado
Lain Leoniak - Colorado
Chris Brown – Wyoming
Amy Ostdiek – Colorado

Engineering Committee:

Eric Kuhn, Chairman - Colorado
Bruce Whitehead - Colorado
Mike Sullivan - Colorado
D. Randolph Seaholm - Colorado
Michelle Garrison - Colorado
Marc Waage - Colorado
Brenna Mefford - Colorado
Paul Harms - New Mexico
Robert King - Utah
Kent Jones - Utah
Scott McGettigan - Utah
Gawain Snow - Utah
Jared Hansen - Utah
Steve Wolff - Wyoming

Budget Committee:

James Eklund – Colorado
Eric L. Millis – Utah
Patrick T. Tyrrell – Wyoming
Tom Blaine – New Mexico

GENERAL ADVISORS TO COMMISSIONERS

The following individuals serve as advisors to their respective Commissioner:

Utah:
Gene Shawcroft
Manager
Central Utah Water Conservancy District
Orem, Utah

Gawain Snow
General Manager
Uintah Water Conservancy District
Vernal, Utah

Colorado:
John R. Stulp
Denver, Colorado
Special Policy Advisor to the Governor for Water
IBCC Director

MEETINGS OF THE COMMISSION

During the Water year ending September 30, 2018, the Commission met as follows:

Meeting No. 279 December 13, 2017	Las Vegas, NV
Meeting No. 280 January 19, 2018	By Phone
Meeting No. 281 April 30, 2018	Salt Lake City, UT
Meeting No. 282 June 20, 2018	Santa Fe, NM

ACTIVITIES OF THE COMMISSION

General Activities:

Within the scope and limitations of Article 1(a) of the Upper Colorado River Basin Compact and under the powers conferred upon the Commission by Article VIII(d), the principal activities of the Commission have consisted of: (A) 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; (B) collection and compilation of documents relating to the utilization of waters of the Colorado River System for domestic, industrial and agricultural purposes, and the generation of hydroelectric power; (C) legal analyses of associated laws, court decisions, reports and problems; (D) participating in activities and providing comments on proposals that would insure and allow the beneficial consumptive uses in the Upper Basin, including environmental, fish and wildlife, endangered species and water quality activities; (E) cooperation with water resources agencies of the Colorado River Basin States on water and water-related problems; (F) 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 (G) analysis and study of water resource bills introduced in the U.S. Congress for enactment, the preparation of evidence and argument and the presentation of testimony before Congressional committees.

Specific Activities:

The Commission, its full-time staff and the Engineering and Legal Committees have been actively involved in matters pertinent to the administration of waters of the Colorado River. In addition to the above Commission meetings, many additional work meetings, Committee meetings, work group meetings and calls have been held under the authority of the Commission. Activities have included but are not limited to: meetings regarding implementation of coordinated reservoir operations and shortage management, coordination with Mexico on water management issues, augmentation of the Colorado River supply, climate change impacts to water supply, annual operations plans for Glen Canyon Dam, curtailment avoidance, Lees Ferry gage flow measurements, Upper Basin water demand and depletion schedules, future water supply and demand studies, continued implementation of Colorado River Basin Fund projects, drought contingency planning efforts in both the Upper and Lower Basins, System Conservation Pilot Program administration and various legal matters.

Oversight and Administration of Implementation of the 2007 Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Interim Guidelines):

During the eleventh year of operation under the Interim Guidelines, the Commission and the states of Colorado, New Mexico, Utah and Wyoming (the Upper Division States) continued to be heavily involved in implementation of the Guidelines. Based upon the relative storage volumes in Lakes Powell and Mead and the application of the Interim Guidelines, the annual release from Lake Powell to the Lower Colorado River Basin has been 9.0 million acre-feet (maf) in 2015, 2016, 2017 and 2018, respectively. Since the August 24-month study is used to predict storage elevations in Lake Powell and Lake Mead for the following calendar year, which elevations then determine the operational and release tier for the following year, the Commission has focused much attention on the accuracy of the modeled predictions. In a previous year, modeling over-prediction of elevation placed Lake Powell in the equalization tier and consequently was subject to increased releases when, in fact, the reservoir elevations never achieved the equalization level the following calendar year. Since inaccuracy in model predictions can have serious consequences for the release volume from Lake Powell, every effort has been made to work with Reclamation to improve the model. It was determined that the assumptions for bank storage, Powell inflow and the averaging period for hydrology, as well as forecast error, may be affecting accuracy. During 2012, modifications to the 24-month study model were made incorporating mass balance assumptions for inflow, new estimates of bank storage and an updated 30-year hydrology average. The Commission continues to evaluate the accuracy of the 24-month study predictions; however, more work needs to be done to improve the accuracy of the application of the Guidelines. For example, in water year 2013, the difference between the August 24-month study predicted elevation and the actual elevation of Lake Powell for January 1 was 5.3

feet. In water year 2014, the difference between the August 24-month study prediction and the actual January 1 elevation was just 1.0 foot and, in water year 2015, 1.8 feet. In water year 2016, there was an over-prediction of 1.9 feet and in water year 2017 the over-prediction was 5.34 feet. The August 2017, 24-month study over-predicted the actual January 1, 2018 elevation of Lake Powell by 4.49 feet. The Commission will continue to monitor this issue. The accuracy of reservoir elevation predictions five months in advance of January 1 to facilitate Interim Guidelines decisions depends both on the accuracy of the model to approximate reservoir elevations and on the ability to predict weather, precipitation and runoff during the period. The Commission is currently gathering information on possible changes based upon operating experience that may be required when the Interim Guidelines are considered for extension beyond the year 2026.

Negotiations with Mexico Regarding Shortage Sharing and Augmentation of the Supply: Minutes 319 and 323

In 2018, the Commission and Upper Division States were actively involved in discussions with the Department of Interior, International Boundary and Water Commission (IBWC) and their Mexican counterparts, and representatives of the Lower Division States on how to better manage and share future shortages, as well as 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), as well as the Upper Division States' obligations under the 1922 Colorado River Compact and 1948 Upper Colorado River Basin Compact. These binational discussions focused on activities associated with two historic implementing agreements ("minutes") to the 1944 Water Treaty. Minute 319 to the 1944 Water Treaty was signed in November 2012 by the U.S. and Mexican Commissioners of the IBWC. From 2012 to 2017, the Commission and its staff have been actively involved in the implementation of Minute 319, including using storage more efficiently and implementing additional conservation measures in both nations. Considerable effort was also expended to evaluate means of enhancing supply and in evaluating the implications of water operations changes for salinity and water quality. In 2018, the Principal Engineers of the Mexican and United States Sections of the IBWC issued a Joint Report with the results of an investigation of the different aspects of two elements of Minute 319: water for the environment, and the Intentionally Created Mexican Allocation ("ICMA")/Intentionally Created Surplus ("ICS") exchange pilot program. Of note, the Joint Report concluded that 158,088 acre-feet of water for the environment was created by the United States, Mexico and non-governmental organizations in the form of pulse and base flows for the Colorado River Limitrophe and its delta over the term of the Minute. The Joint Report also noted that approximately 50 infrastructure projects either have been completed or are under contract, and projects are expected to be completed in 2019. Furthermore, the Joint Report stated that Mexico converted approximately 124,000 acre-feet of ICMA for use in the United States as ICS. Also, in 2018, the IBWC released the "Minute 319 Colorado River Limitrophe and Delta Environmental Flows Monitoring Final Report" that documents the impact of environmental water delivery to the riparian corridor of the Colorado River along the U.S.-Mexico border and Delta from 2012 through 2017 in accordance with Minute 319.

Concurrently with the implementation of Minute 319, Commission staff and representatives of the Basin States worked with the Department of the Interior and IBWC as well as representatives from the Government of Mexico, to extend and modify Minute 319. This culminated in the formal signing of Minute 323 to the 1944 Mexican Water Treaty in September 2017. This Minute replaced or extended measures agreed to in Minute 319 and 318 which included conditional storage of Mexican water in the United States as well as shortage criteria based upon low elevations of storage in lake Mead. Minute 323 also added additional measures for Binational Water Scarcity Contingency Planning conditioned upon the United States adopting similar measures in the form of a Lower Basin drought contingency plan. The execution of Minute 323 was made possible by the Commission, Basin States and certain Colorado River contractors signing necessary domestic agreements as a prerequisite to the exchange of letters between the United States and Mexico making the minute operational. Minute 323 includes provisions regarding:

1) Distribution of surplus flows
2) Distribution of flows under low elevation reservoir conditions (shortage)
3) Binational Water Scarcity Contingency Plan
4) Extension of cooperative measures to address emergencies (e.g., storage during earthquake-damaged infrastructure in Mexico)
5) Salinity
6) Flow variability in Mexico's supply
7) Environmental measures
8) Investment in Projects; and,
9) Measures pertaining to the All American Canal

Beginning in late 2017 through 2018, various work groups formed under Minute 323 began to meet to discuss work group-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

Don and Kathryn Ostler displaying a photograph of Rainbow Bridge given to Don by the Commission in recognition of his retirement.

Commission staff, from left to right: Amy Haas, Don Ostler and TeriKay Gomm

323 Operating Group, a binational steering group that meets biannually to track the implementation of Minute 323 and 319 and provide direction and oversight of the work groups.

Implementation of the Colorado River Basin Fund MOA:

Implementation activities continue on the 2011 Memorandum of Agreement (MOA) between the Upper Division States, the Colorado River Energy Distributors Association, Reclamation and the Western Area Power Administration to allow basin funds to be used for future state development projects as well as operation, maintenance, and replacement of existing Colorado River Storage Project (CRSP)-related projects. Projects have been proposed for funding and are now in the process of implementation as new projects are being developed and proposed. Over $100 million in projects to benefit Upper Basin states have been approved. In addition, UCRC staff has spent a considerable amount of time working with Reclamation and other MOA parties to clarify eligibility requirements, accounting procedures and communication protocols between the federal and non-federal parties to the MOA in the context of biannual meetings and intervening webinars and conference calls.

Lees Ferry Stream Gage on the Colorado River:

The Commission continues to study the differences between flow measurement at Glen Canyon Dam and Lees Ferry, which is nearest to the Colorado River Compact measuring point at Lee Ferry, Arizona (16 miles below Glen Canyon Dam). The Lees Ferry flow measuring point is extremely important in administration of the 1922 Colorado River Compact. The United States Geological Survey (USGS), after consultation with the Commission, has completed improvements to flow measuring equipment that have improved its accuracy. In addition, during water year 2011, the USGS conducted field measurements of inflow between Glen Canyon Dam and Lees Ferry, which documented gains in flow. During the 2018 water year, the gain between the Dam and Lees Ferry was 157,100. Over the last ten years, the cumulative gain at Lees Ferry compared to Glen Canyon Dam release records is 1,362,000 ac-ft, with annual gains shown in table below. The Commission is continuing to evaluate how this information should be incorporated into dam operations.

Water year	Difference Between Glen Canyon Dam releases and Lees Ferry Gage (ac-ft)	Water year	Difference Between Glen Canyon Dam releases and Lees Ferry Gage (ac-ft)
2005	156,000	2012	108,000
2006	264,000	2013	32,000
2007	166,000	2014	104,000
2008	186,000	2015	135,000
2009	160,000	2016	118,000
2010	184,000	2017	151,000
2011	213,000	2018	157,100

Upper Division States Drought Contingency Planning:

The Commission and its engineering and legal advisors spent considerable time in 2018 developing the Upper Basin drought contingency plan, as well as negotiating the terms of an agreement with the Lower Basin to allow both basins to enforce the terms of the drought contingency plans against the other and the United States. The Upper Basin drought contingency plan seeks to avoid or reduce the adverse effects on Upper Basin water users from low reservoir conditions. Evaluations include analyzing how to optimize and coordinate storage at CRSP Initial Units to mitigate the effects of low reservoir conditions on water users, as well as evaluation of voluntary conservation of consumptive water uses (demand management). The components of the Upper Basin plan will include continuation and expansion of current weather modification efforts, coordinated drought operation of the Initial Units of the CRSP to avoid critical low elevations in Powell, federally-authorized storage of demand management volumes at the Initial Units and detailed study of the feasibility of a demand management program to avoid critical low reservoir elevations. Preliminary modeling indicates that these actions may significantly reduce the risk of critical low reservoir conditions occurring in Lake Powell. These actions have the potential of reducing the risk of compact compliance issues and will help avoid loss of power generation with all of its many benefits. The Commission and states are interested in having an acceptable contingency plan available if and when necessary to address these very low probability hydrologic scenarios that have serious consequences. Activities in 2018 included constituting a “Coordination Committee” mid-year with

representatives from both basins (including UCRC staff) to draft the necessary agreements for the plans, as well as federal legislation to authorize the plans, with the goal of completing the drought contingency plans by the end of calendar year 2018.

Colorado River Basin Supply and Demand Study:

The Commission, all seven Colorado River Basin States, many large water users within the Basin and the Department of the Interior have participated in completion of a study to quantify current and future demand and supply using various assumptions for future hydrology to identify possible imbalances. All methods to address the supply imbalance, including conservation, efficiency and augmentation, are now being evaluated. Efforts during water year 2018 include evaluating next steps, including detailed work with stakeholder committees and Tribal interests on agricultural conservation, municipal and industrial conservation as well as environmental flow needs.

System Conservation Pilot Program:

In response to the current 18 year drought in the Colorado River Basin and declining reservoir elevations, four major water suppliers including Central Arizona Project, Denver Water, The Metropolitan Water District of Southern California, and Southern Nevada Water Authority, together with Reclamation, contributed significant funding during calendar years 2015-2018 to assist the Colorado River Basin States in demand management activities in the Upper and Lower Basins. Specifically, the purpose of this funding was to support voluntary and temporary water conservation projects to demonstrate the viability of reducing water demand in order to avoid critical low reservoir conditions. The Upper Colorado River Commission acted as the contracting agency for administering these funds through the "System Conservation Pilot Program" in the Upper Basin (SCPP, Pilot Program), and awarding projects to conserve water dedicated to the Colorado River System. In addition to funding both projects and administrative costs, Reclamation also provided in-kind support for the Pilot Program for each of its four years in the form of a Reclamation engineer who was detailed to the Commission as SCPP program manager.

There was a total of 64 SCPP projects selected for funding from 2015 through 2018. The total project cost for the four-year Upper Basin Pilot Program was $8.525 million and resulted in the reduction of an estimated 47,425 acre-feet of conserved consumptive use. Most of the conservation came from the agriculture sector. Notably, the estimated conserved consumptive use in 2018 alone (25,320 acre-feet) was greater than the estimated conservation in 2015 through 2017 combined (22,110 acre-feet).

The operation of the Pilot Program demonstrated that there is significant interest from the agriculture community to participate in such a program. This was particularly evident in the number of applications for participation received over the life of the SCPP: at its inception in 2015, only 15 project applications were submitted. However, by 2017, 46 applications were submitted, followed by 30 applications in 2018. Moreover, the number of projects selected in 2015 (10) virtually doubled in 2018 (19). The Pilot Program also generated valuable information relative to the cost of conservation, the effort and resources required to administer the program, the potential for larger- scale demand management efforts to avoid low critical reservoir conditions, and the interest of stakeholders to help fund such a program.

Notwithstanding the relative success of the Pilot Program in the Upper Basin, the Commission adopted a resolution in June 2018 suspending the Commission's role as contracting entity for the SCPP after 2018. The Commission's action reflected its interest in focusing on outstanding considerations related to demand management identified as a consequence of administering the SCPP, especially given the role of demand management in the Upper Basin drought contingency plan. Among the outstanding considerations, the Commission acknowledged that any viable demand management program requires the ability to accumulate and store water over multiple years to sufficiently address the risk of Lake Powell dropping below critical elevations. Accordingly, the Commission believes that securing permanent storage space at Lake Powell and possibly other Initial Units of the CRSP for demand management volumes is essential for any longer-term program. Furthermore, the Commission recognized the need for accurate measurement and accounting of water conserved as part of a demand management program. Additionally, the Commission acknowledged the need to identify legal and technical mechanisms by which to "shepherd" conserved volumes across state lines and into Lake Powell and other CRSP reservoirs while avoiding diversion by downstream water users.

While suspending the Commission's administration of the SCPP, the Commission nevertheless resolved to continue to explore the feasibility of developing demand management programs in the Upper Basin to protect Lake Powell from reaching critical elevations in order to ensure continued compliance with the Colorado River Compact. The Commission further resolved to work with other parties to develop new pilot programs and investigate the outstanding considerations related to demand management, and to support intrastate demand management efforts.

Staffing:

2018 saw the retirement of Don A. Ostler, the Executive Director and Secretary of the Commission since 2004. Don's distinguished tenure at the Commission included his work on the Interim Guidelines, Minutes 318, 319 and 323 of the 1944 Water Treaty with Mexico, the implementation of a consumptive use study in the Upper Basin, the Colorado River Basin Supply and Demand Study, the administration of the System Conservation Pilot Program in the Upper Basin and CRSP Basin Fund MOA, and the development of the Upper Basin drought contingency plan. At its June 2018 meeting, the Commissioners, federal water managers and colleagues from both the Upper and Lower Division States recognized Don's 14 years of service to the Commission. On July 1, 2018, Amy I. Haas replaced Don as the Executive Director and Secretary of the Commission.

A. ENGINEERING-HYDROLOGY

1. Stream Flow and Hydrology Summary

The historical flow of the Colorado River at Lee Ferry for water year 2018 based upon USGS stream flow records at the Lee's Ferry and Paria River gages was 9,157,132 acre-feet. The progressive 10-year total flow at Lee Ferry was 92,133,000 acre-feet (2009 to 2018).

The virgin or natural flow of the Colorado River at Lee Ferry was estimated to be 8.0 million acre-feet, which is less than the average virgin flow for the period of record of 14.6 million acre-feet (1896 to 2018). During our period of record, 1896 to 2018, there have been just 5 other years with a lower natural flow, although there are several additional years that had a natural flow close but slightly higher than 2018.

In the Upper Colorado River Basin during water year 2018, the overall precipitation accumulated through September 30, 2018 was approximately 78% of average based upon the most recent, 30 year rolling average used by the River Forecast Center. Unregulated inflow to Lake Powell in water year 2018 was about 43% of the 30-year average, or 9.21 maf.

The Upper Colorado River Basin continues to experience a protracted drought that began in October 1999. Unregulated inflow to Lake Powell has varied during this time as follows:

Unregulated Inflow to Lake Powell

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

Inflow has been above average in only 4 of the last 19 years, which is the lowest 19-year period since the closure of Glen Canyon Dam in 1963. This information will be evaluated and considered during the next determination of storage needed in Lake Powell to ensure that the Upper Basin is able to get through a similar drought in the future without a curtailment of use.

Runoff adjusted for change in storage in Colorado River Storage Project reservoirs for the water year ending September 30, 2018 was 32% of the long-term average at the San Juan River station near Bluff, Utah and 49% of the long-term average at the Colorado River Station near Cisco, Utah. The volumes of runoff at these stations were 483,004 acre-feet and 2,505,087 acre-feet, respectively. Runoff at the Green River station near Green River, Utah was 67% of the long-term average and totaled 2,874,506 acre-feet.

2. Summary of Reservoir Levels and Contents

As of September 30, 2018, total system storage (Upper and Lower Basins) was 51.4% of capacity. For the period October 1, 2017 through September 30, 2018, the change in reservoir storage, excluding bank storage and evaporation, at selected Upper Basin reservoirs was as follows:

- Fontenelle decreased 712 acre-feet
- Flaming Gorge decreased 113,280 acre-feet
- Taylor Park increased 28,783 acre-feet

- Blue Mesa decreased 449,873 acre-feet
- Morrow Point decreased 71,385 acre-feet
- Crystal increased 6,142 acre-feet
- Navajo decreased 369,650 acre-feet
- Lake Powell decreased 3,636,726 acre-feet

The virgin flow[1] of the Colorado River at Lee Ferry[2] for the 2018 water year was estimated to be 8.0 million acre-feet.[3]

Observed inflows to Lake Powell during water year 2018 were below average (43%); Lake Powell storage decreased by 3,636.7 kaf and ended the water year at 45.3% of capacity, with 11.02 maf of storage at elevation 3,592.3 feet. A more detailed description of Lake Powell conditions is found in section H of this report. The release from Lake Powell during Water year 2018 was 9.0 maf.

Reservoir storage in Lake Mead decreased during water year 2018 from 10,181,580 acre-feet to 9,869813 acre-feet, which is 37.8% of capacity. The total Colorado River System experienced a loss in storage during Water year 2018 of approximately 4,927,000 acre-feet and ended the year at 47.0% of capacity.

Table 1 on page 15 shows the statistical data for principal reservoirs in the Upper Colorado River Basin. Table 2 on page 16 shows the same information for the Lower Colorado River Basin reservoirs.

The results of the long-range reservoir operation procedures and the Interim Guidelines for Lower Basin Shortage and Coordinated Reservoir Operating Criteria as adopted by the Secretary of the Interior for Powell, Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs in the Upper Colorado River Basin and Lake Mead in the Lower Basin are illustrated on pages 17 through 24 for the 2018 water year.

3. Flows of Colorado River

Table 3 on pages 26 and 27 shows the estimated virgin flow of the Colorado River at Lee Ferry, Arizona for each water year from 1896 through 2018. Column (4) of the table shows the average virgin flow for any given year within the period computed through water year 2018. Column (5) shows the average virgin flow for a given year within the period computed since water year 1896. Column (6) shows the average virgin flow for each progressive ten-year period beginning with the ten-year period ending on September 30, 1905. The difference between the virgin flow for a given year and the average flow over the 123-year period, 1896 through 2018 is shown in column (7)

Article III (d) of the 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 the Colorado River Storage Project 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, Colorado River Storage Project reservoirs have regulated the river above Glen Canyon Dam. Table 4 on page 28 shows the historic flow at Lee Ferry for the period 1954 through 2018. The historic flow for each progressive ten-year period from 1954 through 2018, beginning with the ten-year period ending September 30, 1962, the commencement of storage in Colorado River Storage Project reservoirs, is shown in Column (3).

In each consecutive ten-year period, the total flow equaled or exceeded the 75,000,000 acre-feet required by the Compact. The flow at Lee Ferry during the ten-year period ending September 30, 2018, was 92,133,000 acre-feet. The graphs on pages 29 and 30 illustrate some of the pertinent historical facts related to the amounts of water produced by the Colorado River System above Lee Ferry, Arizona, the compact division point between the Upper and Lower Colorado River Basins. The first graph on page 29 is entitled "Colorado River Flow at Lee Ferry, Arizona." The top of each vertical bar represents the estimated virgin 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 activities of man. Each vertical bar has two components: The lower shaded part represents the estimated or measured historic flow at Lee Ferry, and the difference between

1 Virgin flow is the estimated flow of the stream if it were in its natural state and unaffected by the activities of man.
2 Lee Ferry, Arizona is the division point between the upper and lower basins of the Colorado River as defined in the Colorado River Compact. It is located about one mile downstream from the mouth of the Paria River and about 16 miles downstream from Glen Canyon Dam.
3 Based on provisional records subject to revision.

the two sections of the bar in any given year represents the stream depletion, or the amount of water estimated to have been removed by man from the virgin supply upstream from Lee Ferry. It is worth noting that in 1977, and again in 1981, the historic flow at Lee Ferry exceeded the virgin 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 Colorado River Storage Project. The horizontal line (at approximately 14.6 million acre-feet) shows the long-term average virgin flow from 1896 through 2018. Because the Colorado River Compact is administered based on running averages covering periods of ten years, the progressive ten-year average historic and virgin flows are displayed on this graph.

The second graph on page 30 , entitled "Lee Ferry Average Annual Virgin Flow for Selected Periods," is a graphical representation of historic and virgin flow averages for several periods of record. The periods of water years selected were those to which reference is usually made for various purposes in documents pertaining to the Colorado River System.

Several important hydrologic facts are apparent from these two graphs on pages 29 and 30 .

(1) A vast majority of the high flows occurred prior to 1929.

(2) Since the 1924-1933 decade, the progressive ten-year average virgin flow has not exceeded the average virgin flow except in the 1941-1950 and the exceptionally wet 1975-1984 through 1984-1993 decades.

(3) For the period 1896-1921, which is prior to the 1922 Colorado River Compact, the average virgin flow was estimated to be 16.8 million acre-feet per year, which is considerably greater than for any other period selected, including the long-term average. A stream-gaging station at Lees Ferry, Arizona was not installed until 1921. Thus, the virgin flow at Lees Ferry prior to the 1922 Compact is estimated based upon records obtained at other stations, e.g. the stream gage on the Colorado River at Yuma, Arizona for the period 1902-1921.

(4) For the longest period shown, 1896-2018, the estimated average annual virgin flow is 14.6 million acre-feet, and the average annual historic flow is 11.7 million acre-feet.

(5) For the next longest period, 1906-2018, the estimated average annual virgin flow is 14.7 million acre-feet, and the average annual historic flow is 11.5 million acre-feet. Many of the early records for this series of years as well as for the 1896-2018 period are based upon the estimates of flows made at other gaging stations, as mentioned in (3) above. This average is about equal to the 15.0 million acre-feet 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.

(6) The estimated average annual virgin flow during the 1914-2018 periods is 14.4 million acre-feet. This period is an extension of the 1914-1965 period used in the Upper Colorado Region Comprehensive Framework studies of 1971. The average annual virgin flow for the 1914-1965 periods is 14.6 million acre-feet.

(7) The average annual virgin flow for the period 1914-1945 is 15.6 million acre-feet. This was the period of record used by the negotiators of the Upper Colorado River Basin Compact of 1948.

(8) For the period 1922-2018, which is the period of record since the signing of the Colorado River Compact, the average annual virgin flow is 14.0 million acre-feet, and the average annual historic flow is 10.6 million acre-feet. Records for this series of years are based upon actual measurements of flows at Lees Ferry. The ten-year moving average flow since 1922 is considerably less than the ten-year moving average flow prior to 1922.

(9) Two completely unrelated ten-year periods of minimum flows have occurred since 1930. During these periods, 1931-1940 and 1954-1963, the average annual virgin flow amounts to only 11.8 million acre-feet and 11.6 million acre-feet.

(10) For a 12-year period, 1953-1964, the average annual virgin flow amounts to only 11.6 million acre-feet.

(11) Since Glen Canyon Dam's closure in 1963, the estimated virgin flow for the subsequent 50 years is 14.3 million acre-feet. The estimated historical flow for the same period (1964-2018) is 9.7 million acre-feet.

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Glen Canyon Dam Test Releases - Courtesy of Bureau of Reclamation - T. Ross Reeve

Table 1

STATISTICAL DATA FOR PRINCIPAL RESERVIORS IN COLORADO RIVER BASIN

UPPER BASIN

Colorado River Storage Project
(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.	Cap	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.	Elev.	Cap.
River elevation at dam (average tailwater)	—	—	5,603	0	9,174	0	7,160	0	6,775	0	6,534	0	5,720	0	3,138	0
Dead Storage	6,408	0.56	5,740	40	—	—	7,358	111	6,808	0	6,670	8	5,775	13	3,370	1,893
Inactive Storage (minimum power pool)	—	—	5,871	273	—	—	7,393	192	7,100	75	6,700	12	5,990[4]	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

[4] The elevation for inactive storage for Navajo Reservoir is required for the Navajo Indian Irrigation Project.

Table 2

STATISTICAL DATA FOR PRINCIPAL RESERVOIRS IN COLORADO RIVER BASIN

LOWER BASIN

(Usable Surface Capacity)

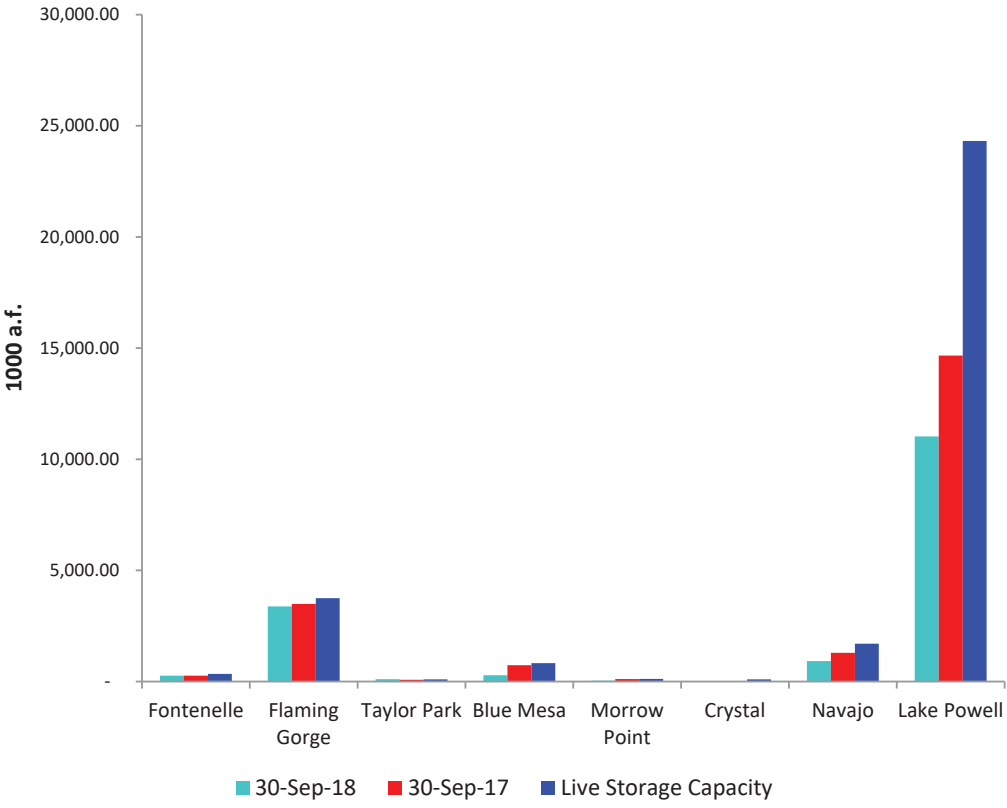
(Units: Elevation = feet; Capacity = 1,000 acre-feet)

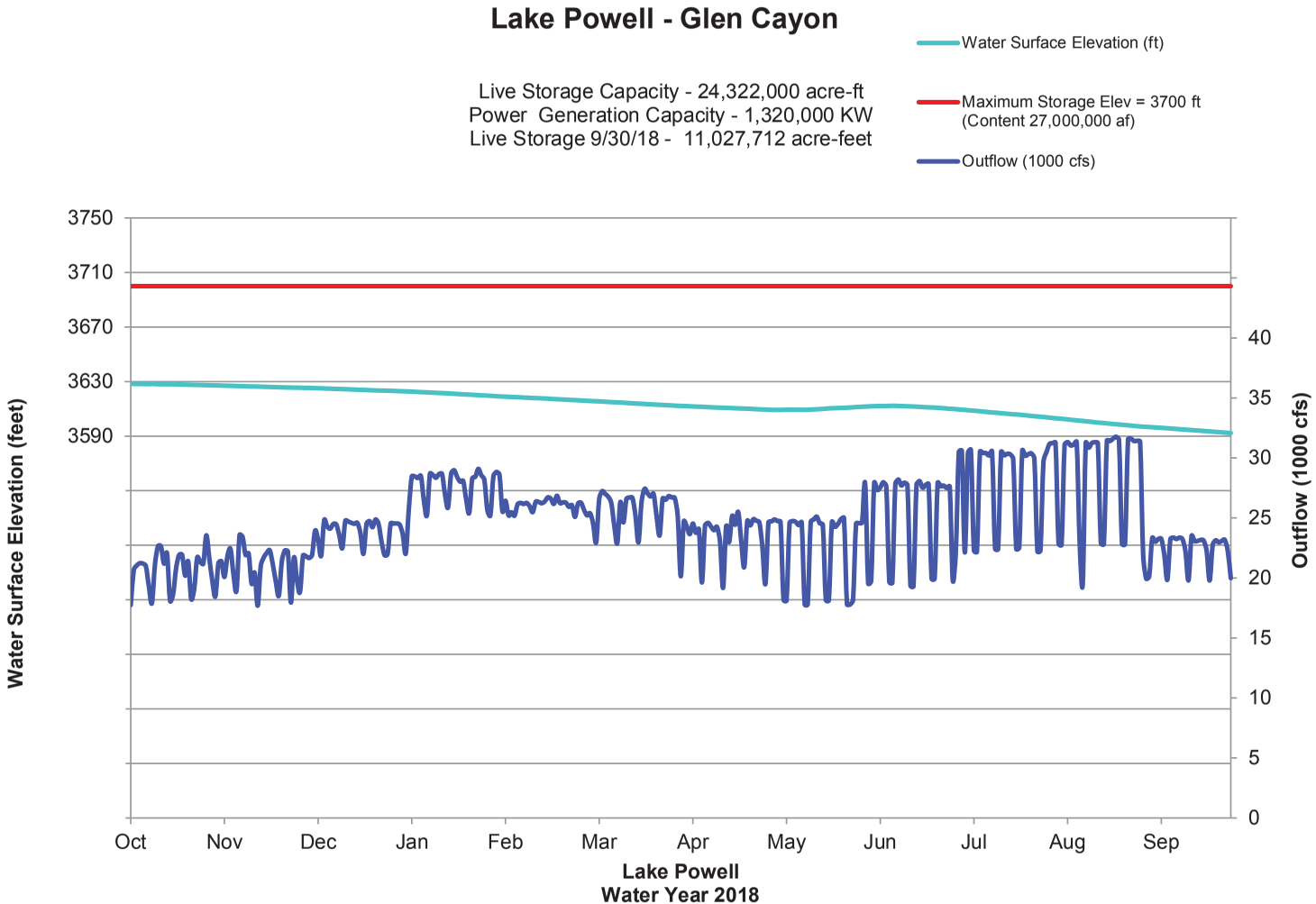
	Lake Mead		Lake Mohave		Lake Havasu	
	Elev.	Capacity	Elev.	Capacity	Elev.	Capacity
River elevation at dam (average tailwater)	646	-2,378	506	-8.5	370	-28.6
Dead Storage	895	0	533.39	0	400	0
Inactive Storage (minimum power pool)	1,050	7,471	570	217.5	440[5]	439.4
Rated Head	1,122.80	13,633	-	-	-	-
Maximum Storage (without surcharge)	1,221.40	26,159	647	1,809.80	450	619.4

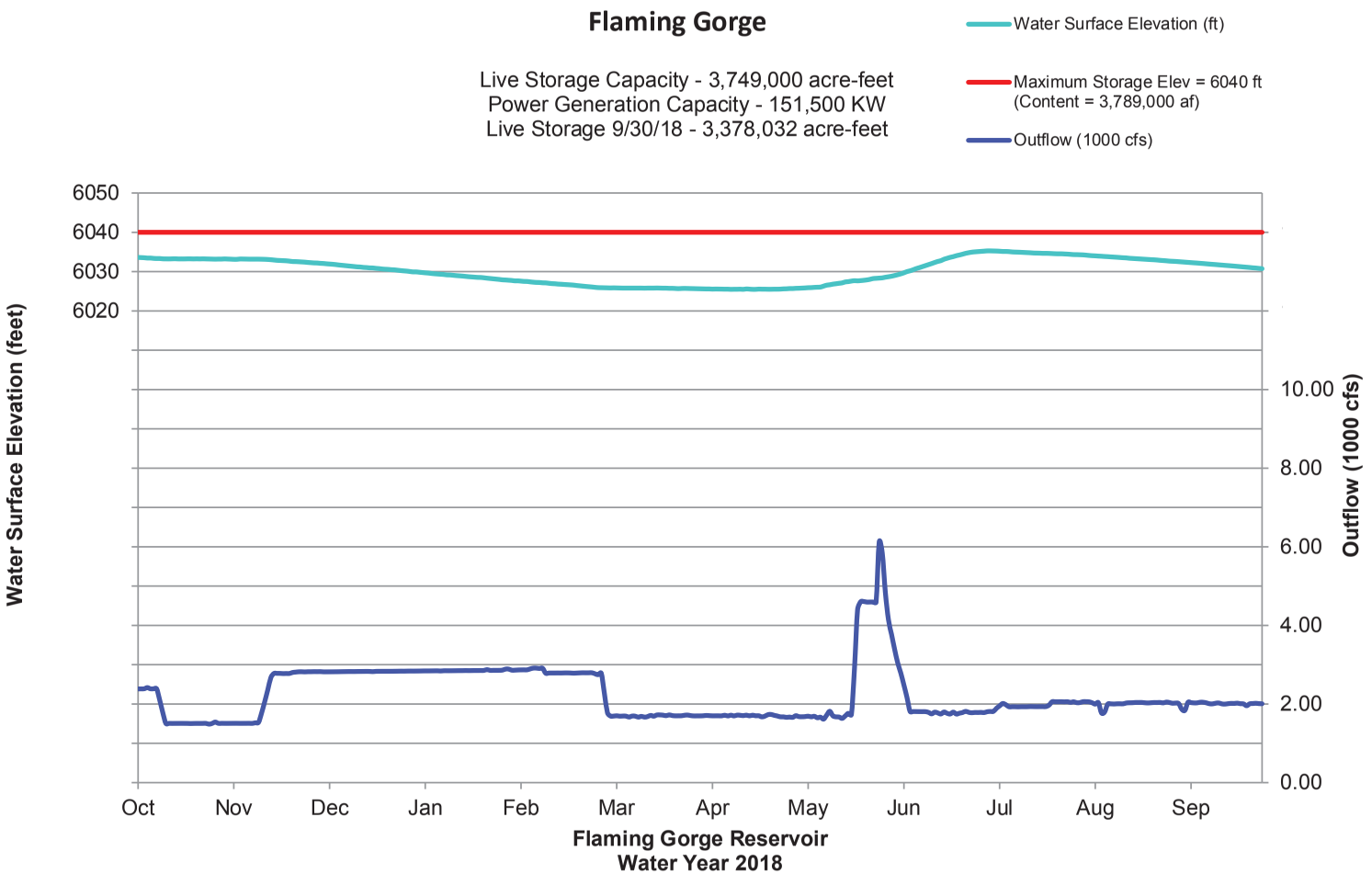
[5] The elevation for inactive storage for Lake Havasu is the contractual minimum for delivery to Metropolitan Water District's Colorado River Aqueduct.

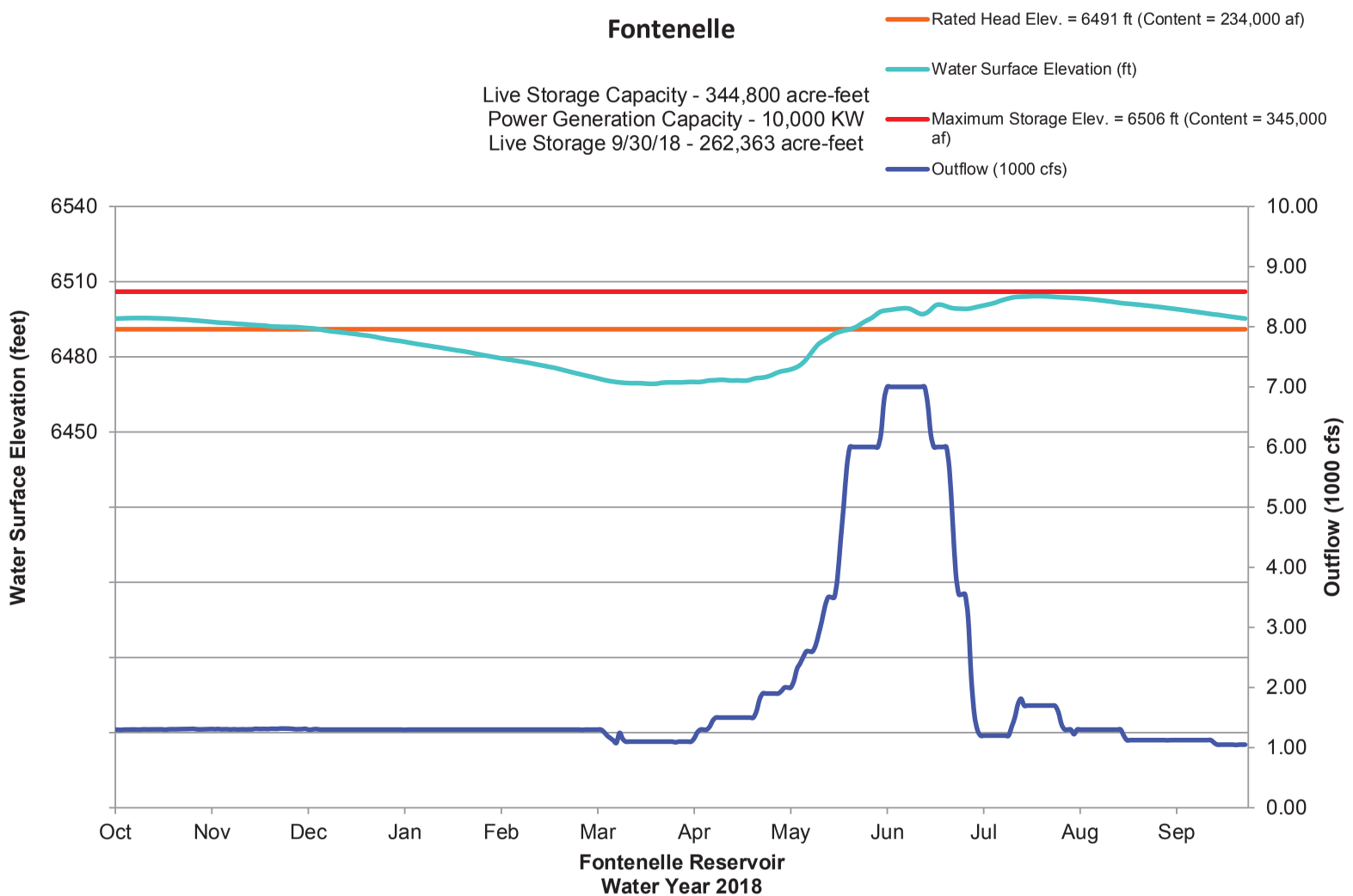
Storage in Principle Reservoirs at the End of Water Year 2018
Upper Basin
Live Storage Contents

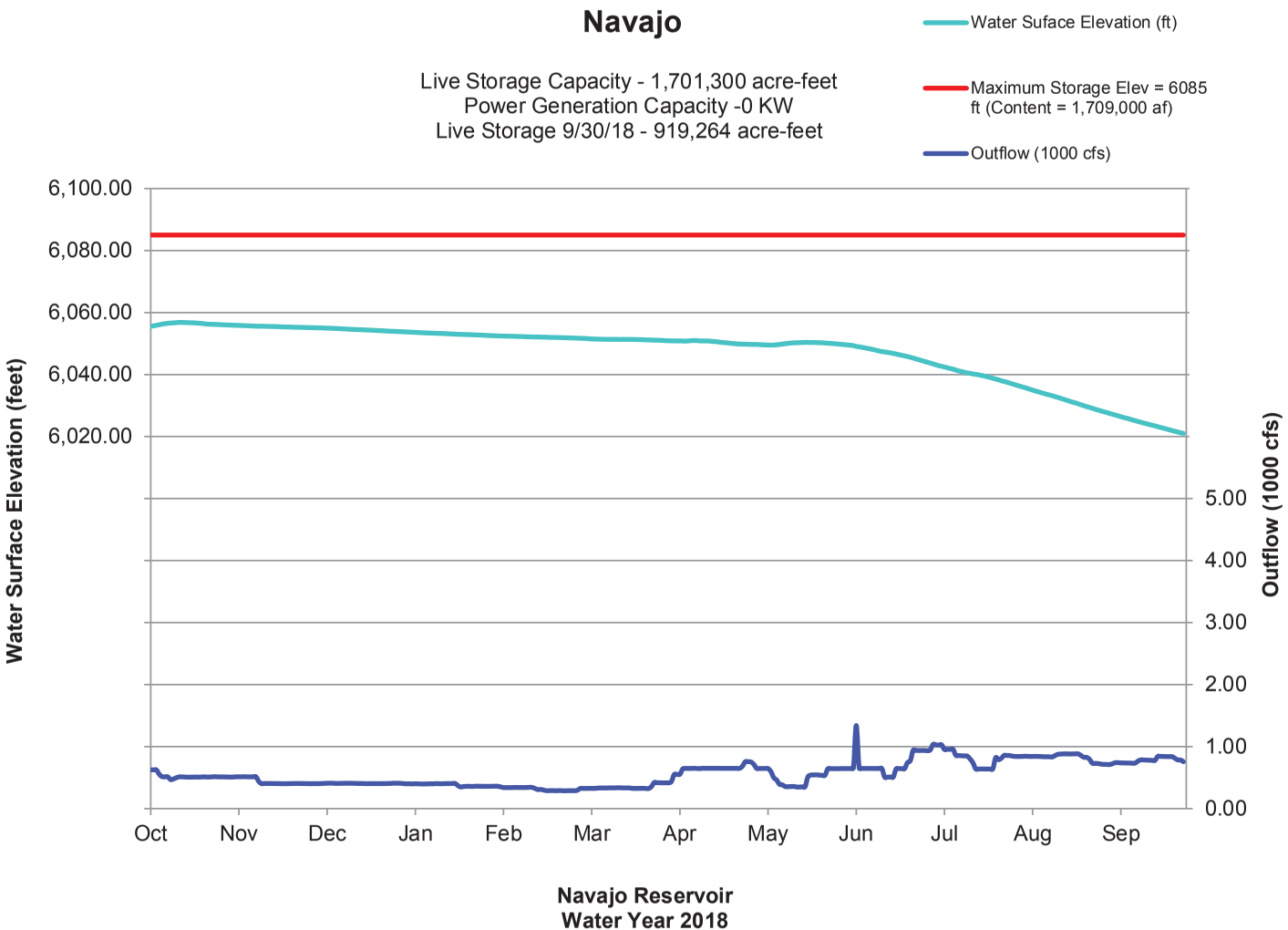
Reservoir	Sept 30, 2018 (acre-feet)	Percent Live Capacity	Sept 30, 2017 (acre-feet)	Percent Live Capacity	Change in Contents (acre-feet)
Fontenelle	262363	76.1%	263075	76.3%	(712)
Flaming Gorge	3378032	90.1%	3491312	93.1%	(113,280)
Taylor Park	106200	100.0%	77417	72.9%	28,783
Blue Mesa	282401	34.1%	732274	88.3%	(449,873)
Morrow Point	42120	36.0%	113505	97.0%	(71,385)
Crystal	12891	73.5%	6748.63	38.5%	6,142
Navajo	919264	54.0%	1288914	75.8%	(369,650)
Lake Powell	11027712	45.3%	14664438	60.3%	(3,636,726)
Total	16,030,983	51.4%	20,637,684	66.2%	(4,606,701)

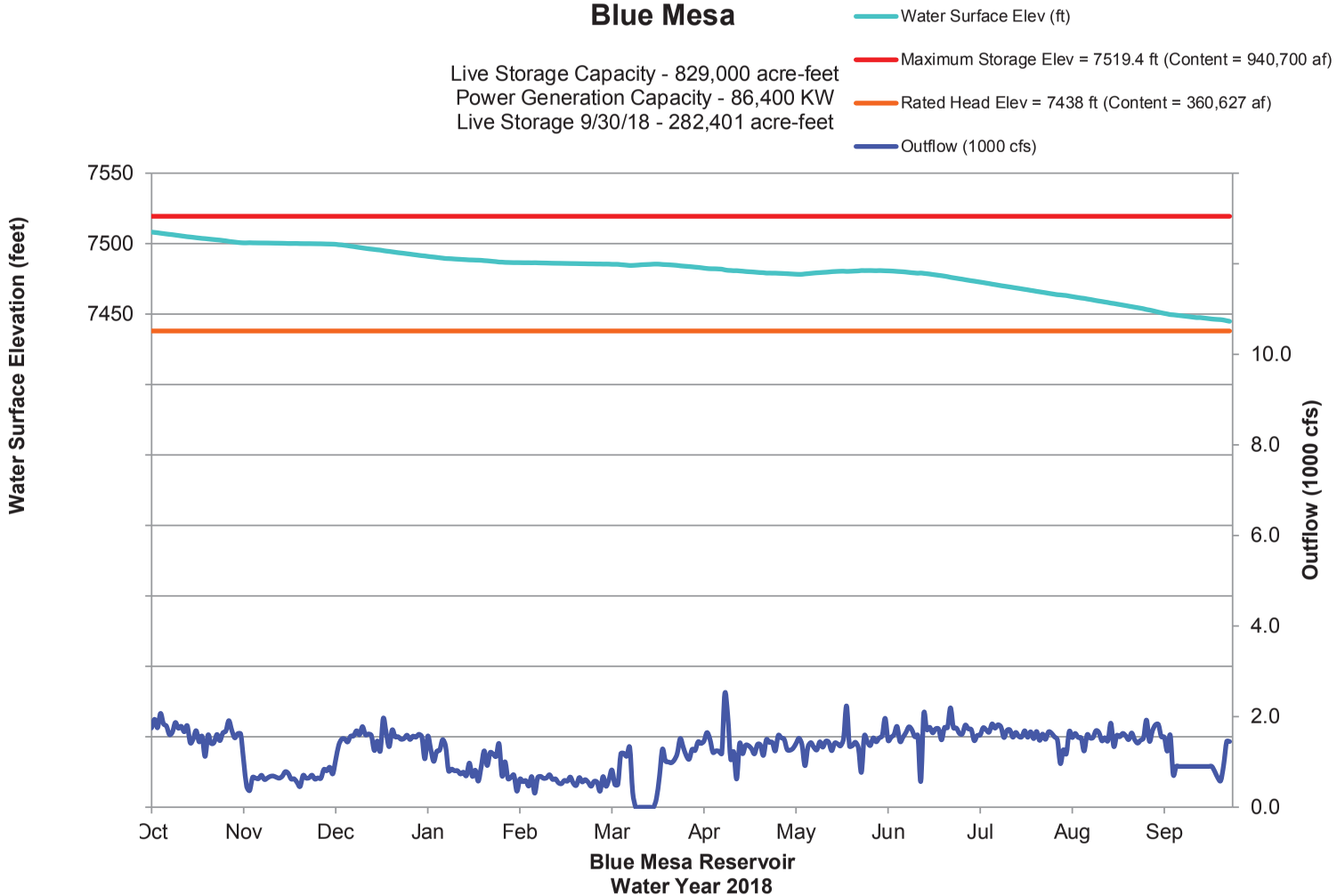



Lake Powell - Glen Cayon
Live Storage Capacity - 24,322,000 acre-ft
Power Generation Capacity - 1,320,000 KW
Live Storage 9/30/18 - 11,027,712 acre-feet
Water Surface Elevation (ft)
Maximum Storage Elev = 3700 ft
(Content 27,000,000 af)
Outflow (1000 cfs)
Water Surface Elevation (feet)
Outflow (1000 cfs)
3750
3710
3670
3630
3590
40
35
30
25
20
15
10
5
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Lake Powell
Water Year 2018


Flaming Gorge
Live Storage Capacity - 3,749,000 acre-feet
Power Generation Capacity - 151,500 KW
Live Storage 9/30/18 - 3,378,032 acre-feet
Water Surface Elevation (ft)
Maximum Storage Elev = 6040 ft
(Content = 3,789,000 af)
Outflow (1000 cfs)
Water Surface Elevation (feet)
6050
6040
6030
6020
Outflow (1000 cfs)
10.00
8.00
6.00
4.00
2.00
0.00
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Flaming Gorge Reservoir
Water Year 2018

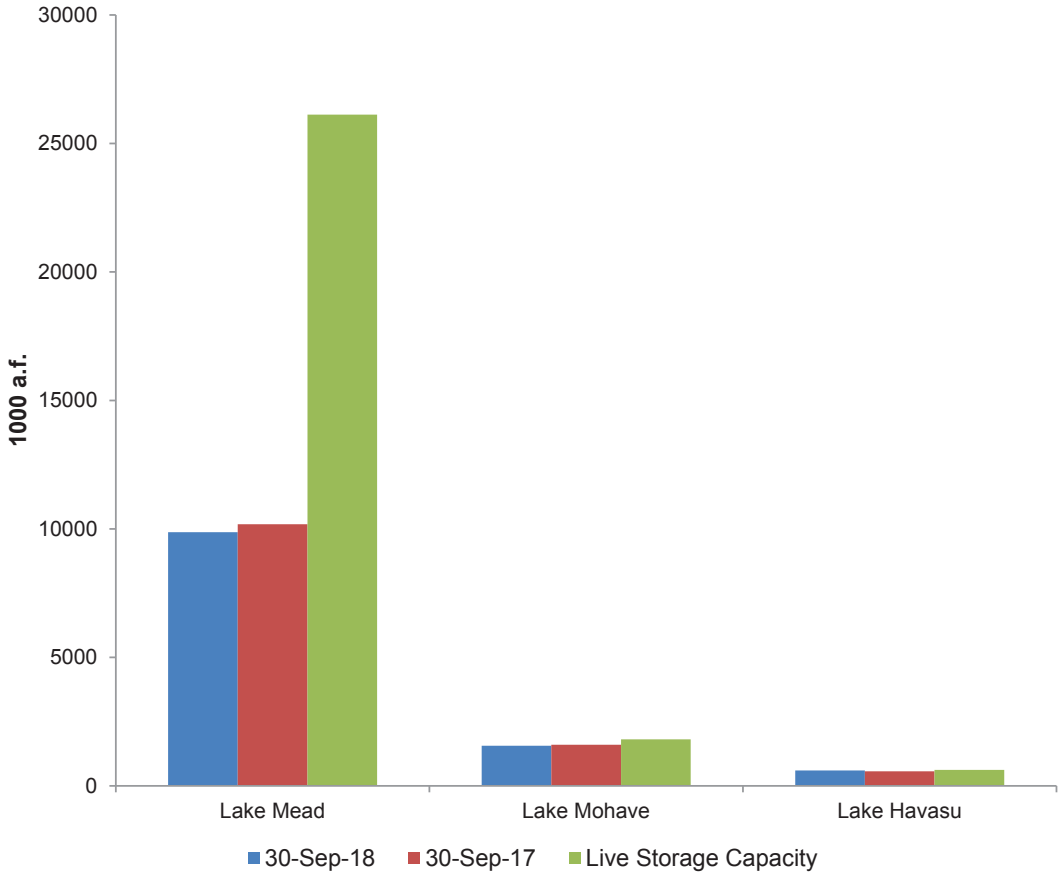

Fontenelle
Live Storage Capacity - 344,800 acre-feet
Power Generation Capacity - 10,000 KW
Live Storage 9/30/18 - 262,363 acre-feet
Rated Head Elev. = 6491 ft (Content = 234,000 af)
Water Surface Elevation (ft)
Maximum Storage Elev. = 6506 ft (Content = 345,000 af)
Outflow (1000 cfs)
Water Surface Elevation (feet)
6540
6510
6480
6450
Outflow (1000 cfs)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Fontenelle Reservoir
Water Year 2018

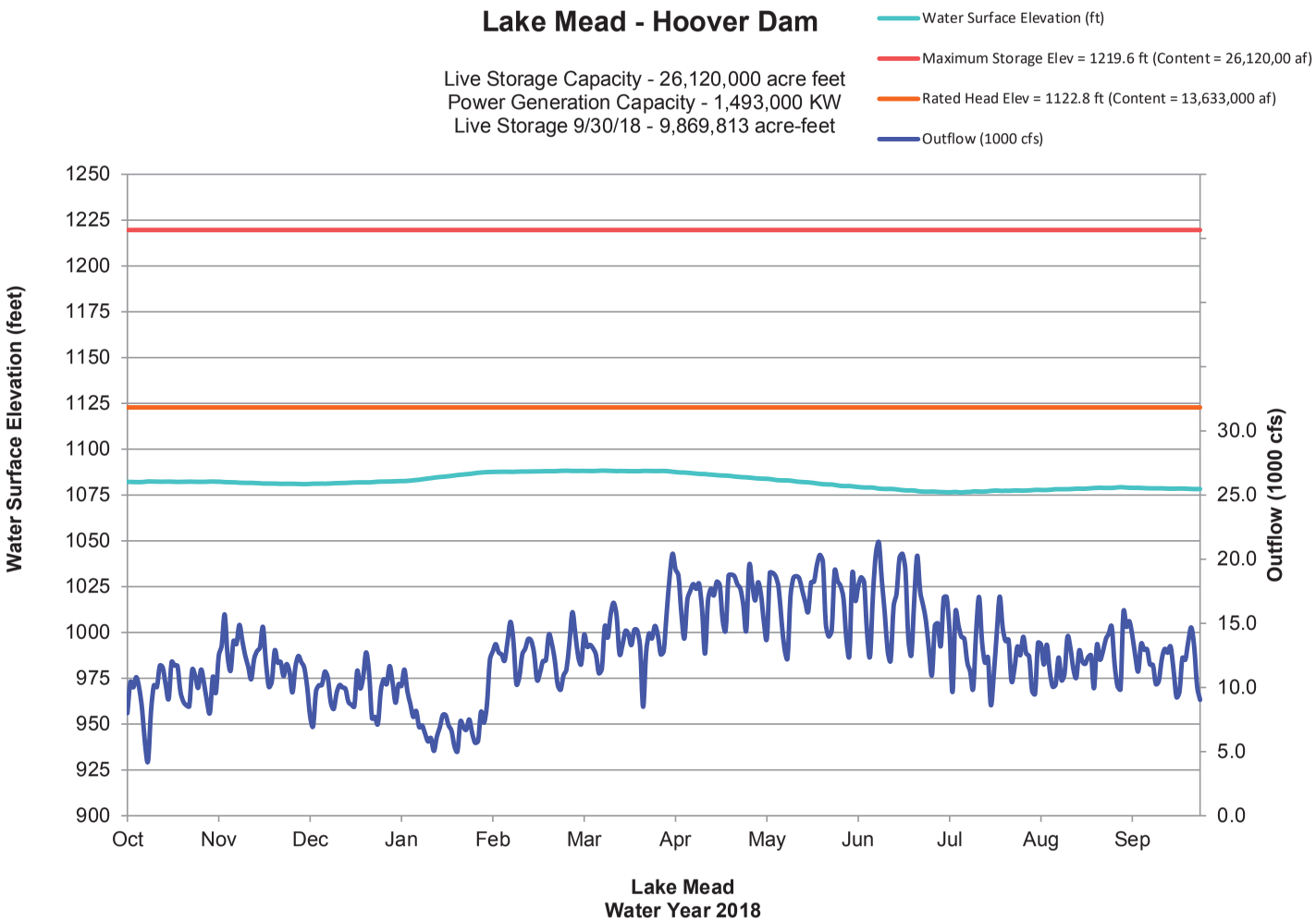

Navajo
Live Storage Capacity - 1,701,300 acre-feet
Power Generation Capacity -0 KW
Live Storage 9/30/18 - 919,264 acre-feet
Water Suface Elevation (ft)
Maximum Storage Elev = 6085 ft (Content = 1,709,000 af)
Outflow (1000 cfs)
6,100.00
6,080.00
6,060.00
6,040.00
6,020.00
Water Surface Elevation (feet)
5.00
4.00
3.00
2.00
1.00
0.00
Outflow (1000 cfs)
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Navajo Reservoir
Water Year 2018


Blue Mesa
Live Storage Capacity - 829,000 acre-feet
Power Generation Capacity - 86,400 KW
Live Storage 9/30/18 - 282,401 acre-feet
Water Surface Elev (ft)
Maximum Storage Elev = 7519.4 ft (Content = 940,700 af)
Rated Head Elev = 7438 ft (Content = 360,627 af)
Outflow (1000 cfs)
Water Surface Elevation (feet)
7550
7500
7450
10.0
8.0
6.0
4.0
2.0
0.0
Outflow (1000 cfs)
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Blue Mesa Reservoir
Water Year 2018

Storage in Principle Reservoirs – End of Water Year 2018
Lower Basin
Live Storage Contents

Reservoir	Sept 30, 2018 (acre-feet)	Percent Live Capacity	Sept 30, 2017 (acre-feet)	Percent Live Capacity	Change in Contents (acre-feet)
Lake Mead	9869813.4	37.8%	10181560	39.0%	(311,747)
Lake Mohave	1560754.7	86.3%	1603215.5	88.7%	(42,461)
Lake Havasu	598430	96.6%	564275.2	91.1%	34,155
Total	12,028,998	42.1%	12,349,051	43.3%	(320,053)




Lake Mead - Hoover Dam
Live Storage Capacity - 26,120,000 acre feet
Power Generation Capacity - 1,493,000 KW
Live Storage 9/30/18 - 9,869,813 acre-feet
Water Surface Elevation (ft)
Maximum Storage Elev = 1219.6 ft (Content = 26,120,00 af)
Rated Head Elev = 1122.8 ft (Content = 13,633,000 af)
Outflow (1000 cfs)
Water Surface Elevation (feet)
Outflow (1000 cfs)
1250
1225
1200
1175
1150
1125
1100
1075
1050
1025
1000
975
950
925
900
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Lake Mead
Water Year 2018

4. Colorado River Salinity Program

The Upper Colorado River Commission has continued its interest and involvement in the Colorado River Basin salinity problem. The Commission staff has worked with representatives of the Commission's member States, particularly the Colorado River Basin Salinity Control 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 the Environmental Protection Agency Regulation (40 CFR Part 120 Water Quality Standards-Colorado River System: Salinity Control Policy and Standards Procedures).

Section 303 of the Clean Water Act requires that water quality standards be reviewed from time to time and at least once during each three-year period. The Forum, in 2017, reviewed the existing State-adopted and Environmental Protection Agency-approved numeric salinity criteria and found no reason to recommend changes for the three Lower Basin mainstem stations which are as follows:

The values are:

	Salinity in (mg/l)
Below Hoover Dam	723
Below Parker Dam	747
At Imperial Dam	879

It then updated 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 updated 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 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 just over 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 2017 Review recognized existing measures in place which control about 1.33 million tons of salt annually and the need to implement new measures over the triennial review period to control an additional 63,500 tons annually. Looking to out years the Forum identified a program to control a total of 1.66 million tons annually by the year 2035. The Salinity Control Program is not designed to offset short-term variances caused by short-term hydrologic variances from the norm. The Forum has now begun its 2020 Review process.

Table 3
ESTIMATED VIRGIN FLOW AT LEE FERRY
(million acre-feet)

(1) Years to 2018	(2) Year Ending Sept. 30	(3) Estimated Virgin Flow	(4) Average to 2018	(5) Average Since 1896	(6) Progressive 10-year Moving Average	(7) Virgin Flow Minus 114-year Average
123	1896	10.1	14.6	10.1		-4.5
122	1897	18.0	14.6	14.1		3.4
121	1898	13.8	14.6	14.0		-0.8
120	1899	15.9	14.6	14.5		1.3
119	1900	13.2	14.6	14.2		-1.4
118	1901	13.6	14.6	14.1		-1.0
117	1902	9.4	14.6	13.4		-5.2
116	1903	14.8	14.7	13.6		0.2
115	1904	15.6	14.7	13.8		1.0
114	1905	16.0	14.7	14.0	14.0	1.4
113	1906	19.1	14.7	14.5	14.9	4.5
112	1907	23.4	14.6	15.2	15.5	8.8
111	1908	12.9	14.5	15.1	15.4	-1.7
110	1909	23.3	14.6	15.7	16.1	8.7
109	1910	14.2	14.5	15.6	16.2	-0.4
108	1911	16.0	14.5	15.6	16.5	1.4
107	1912	20.5	14.5	15.9	17.6	5.9
106	1913	14.5	14.4	15.8	17.6	-0.1
105	1914	21.2	14.4	16.1	18.1	6.6
104	1915	14.0	14.3	16.0	17.9	-0.6
103	1916	19.2	14.3	16.1	17.9	4.6
102	1917	24.0	14.3	16.5	18.0	9.4
101	1918	15.4	14.2	16.4	18.2	0.8
100	1919	12.5	14.2	16.3	17.2	-2.1
99	1920	22.0	14.2	16.5	17.9	7.4
98	1921	23.0	14.1	16.8	18.6	8.4
97	1922	18.3	14.0	16.8	18.4	3.7
96	1923	18.3	14.0	16.9	18.8	3.7
95	1924	14.2	13.9	16.8	18.1	-0.4
94	1925	13.0	13.9	16.6	18.0	-1.6
93	1926	15.9	13.9	16.6	17.7	1.3
92	1927	18.6	13.9	16.7	17.1	4.0
91	1928	17.3	13.9	16.7	17.3	2.7
90	1929	21.4	13.8	16.8	18.2	6.8
89	1930	14.9	13.8	16.8	17.5	0.3
88	1931	7.8	13.7	16.5	16.0	-6.8
87	1932	17.2	13.8	16.6	15.9	2.6
86	1933	11.4	13.8	16.4	15.2	-3.2
85	1934	5.6	13.8	16.1	14.3	-9.0
84	1935	11.6	13.9	16.0	14.2	-3.0
83	1936	13.8	13.9	16.0	14.0	-0.8
82	1937	13.7	13.9	15.9	13.5	-0.9
81	1938	17.5	13.9	16.0	13.5	2.9
80	1939	11.1	13.9	15.8	12.5	-3.5
79	1940	8.6	13.9	15.7	11.8	-6.0
78	1941	18.1	14.0	15.7	12.9	3.5
77	1942	19.1	13.9	15.8	13.1	4.5
76	1943	13.1	13.9	15.7	13.4	-1.5
75	1944	15.2	13.9	15.7	14.1	0.6
74	1945	13.4	13.9	15.7	14.4	0.6
73	1946	10.4	13.9	15.6	14.0	-1.2
72	1947	15.5	13.9	15.6	14.2	-4.2
71	1948	15.6	13.9	15.6	14.0	0.9
70	1949	16.4	13.9	15.6	14.5	1.8
69	1950	12.9	13.8	15.6	15.0	-1.7
68	1951	11.6	13.8	15.5	14.3	-3.0
67	1952	20.7	13.9	15.6	14.5	6.1
66	1953	10.6	13.8	15.5	14.2	-4.0
65	1954	7.7	13.8	15.4	13.5	-6.9
64	1955	9.2	13.9	15.3	13.1	-5.4
63	1956	10.7	14.0	15.2	13.1	-3.9
62	1957	20.1	14.0	15.3	13.6	5.5
61	1958	16.5	13.9	15.3	13.6	1.9
60	1959	8.6	13.9	15.2	12.9	-6.0
59	1960	11.3	14.0	15.1	12.7	-3.3
58	1961	8.5	14.0	15.0	12.4	-6.1

Table 3
ESTIMATED VIRGIN FLOW AT LEE FERRY
(million acre-feet)

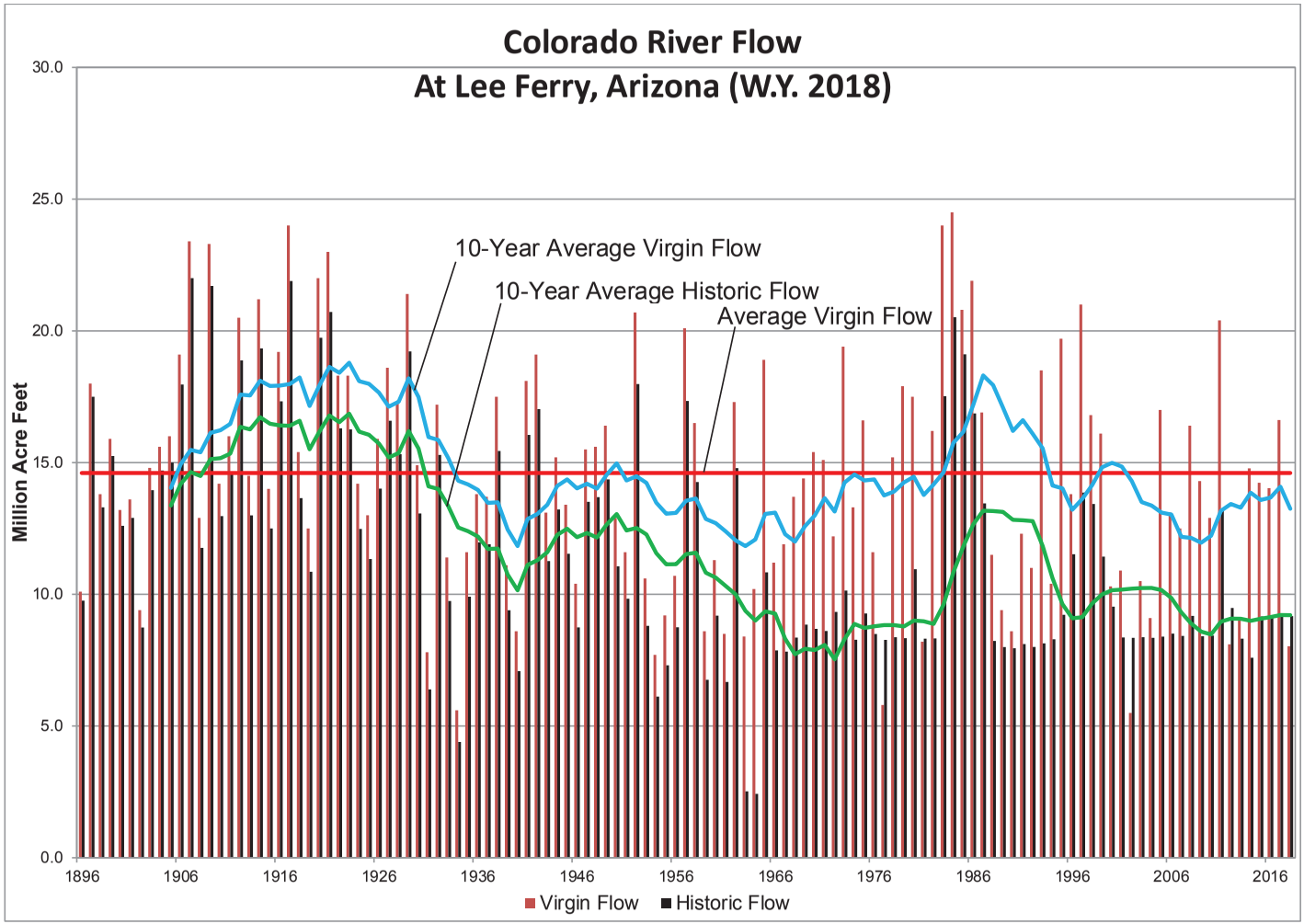
(1) Years to 2018	(2) Year Ending Sept. 30	(3) Estimated Virgin Flow	(4) Average to 2018	(5) Average Since 1896	(6) Progressive 10-year Moving Average	(7) Virgin Flow Minus 114-year Average
57	1962	17.3	14.1	15.0	12.1	2.7
56	1963	8.4	14.1	15.0	11.8	-6.2
55	1964	10.2	14.2	14.9	12.1	-4.4
54	1965	18.9	14.2	14.9	13.1	4.3
53	1966	11.2	14.2	14.9	13.1	-3.4
52	1967	11.9	14.2	14.8	12.3	-2.7
51	1968	13.7	14.3	14.8	12.0	-0.9
50	1969	14.4	14.3	14.8	12.6	-0.2
49	1970	15.4	14.3	14.8	13.0	0.8
48	1971	15.1	14.2	14.8	13.7	0.5
47	1972	12.2	14.2	14.8	13.1	-2.4
46	1973	19.4	14.3	14.9	14.2	4.8
45	1974	13.3	14.2	14.8	14.6	-1.3
44	1975	16.6	14.2	14.9	14.3	2.0
43	1976	11.6	14.1	14.8	14.4	-3.0
42	1977	5.8	14.2	14.7	13.8	-8.8
41	1978	15.2	14.4	14.7	13.9	0.6
40	1979	17.9	14.4	14.8	14.3	3.3
39	1980	17.5	14.3	14.8	14.5	2.9
38	1981	8.2	14.2	14.7	13.8	-6.4
37	1982	16.2	14.4	14.7	14.2	1.6
36	1983	24.0	14.3	14.8	14.6	9.4
35	1984	24.5	14.0	14.9	15.8	9.9
34	1985	20.8	13.7	15.0	16.2	6.2
33	1986	21.9	13.5	15.1	17.2	7.3
32	1987	16.9	13.2	15.1	18.3	2.3
31	1988	11.5	13.1	15.1	17.9	-3.1
30	1989	9.4	13.2	15.0	17.1	-5.2
29	1990	8.6	13.3	14.9	16.2	-6.0
28	1991	12.3	13.5	14.9	16.6	-2.3
27	1992	11.0	13.5	14.9	16.1	-3.6
26	1993	18.5	13.6	14.9	15.5	3.9
25	1994	10.4	13.4	14.9	14.1	-4.2
24	1995	19.7	13.5	14.9	14.0	5.1
23	1996	13.8	13.3	14.9	13.2	-0.8
22	1997	21.0	13.3	15.0	13.6	6.4
21	1998	16.8	12.9	15.0	14.2	2.2
20	1999	16.1	12.7	15.0	14.8	1.5
19	2000	10.3	12.5	14.9	15.0	-4.3
18	2001	10.9	12.6	14.9	14.9	-3.7
17	2002	5.5	12.7	14.8	14.3	-9.1
16	2003	10.5	13.2	14.8	13.5	-4.1
15	2004	9.1	13.4	14.7	13.4	-5.5
14	2005	17.0	13.7	14.7	13.1	2.4
13	2006	13.1	13.4	14.7	13.0	-1.5
12	2007	12.5	13.4	14.7	12.2	-2.1
11	2008	16.4	13.5	14.7	12.1	1.8
10	2009	14.3	13.2	14.7	12.0	-0.3
9	2010	12.9	13.1	14.7	12.2	-1.7
8	2011	20.4	13.2	14.8	13.2	5.8
7	2012	8.1	12.1	14.7	13.4	-6.5
6	2013	9.1	12.8	14.6	13.3	-5.6
5	2014	14.8	13.5	14.7	13.9	0.1
4	2015	14.2	13.2	14.6	13.6	-0.4
3	2016	14.0	12.9	14.6	13.7	-0.6
2	2017	16.6	12.3	14.7	14.1	2.0
1	2018	8.0	8.0	14.6	13.2	-6.6
Maximum		24.5			18.8	9.8
Minimum		5.5			11.8	-9.1
Average		14.6			14.7	0.0

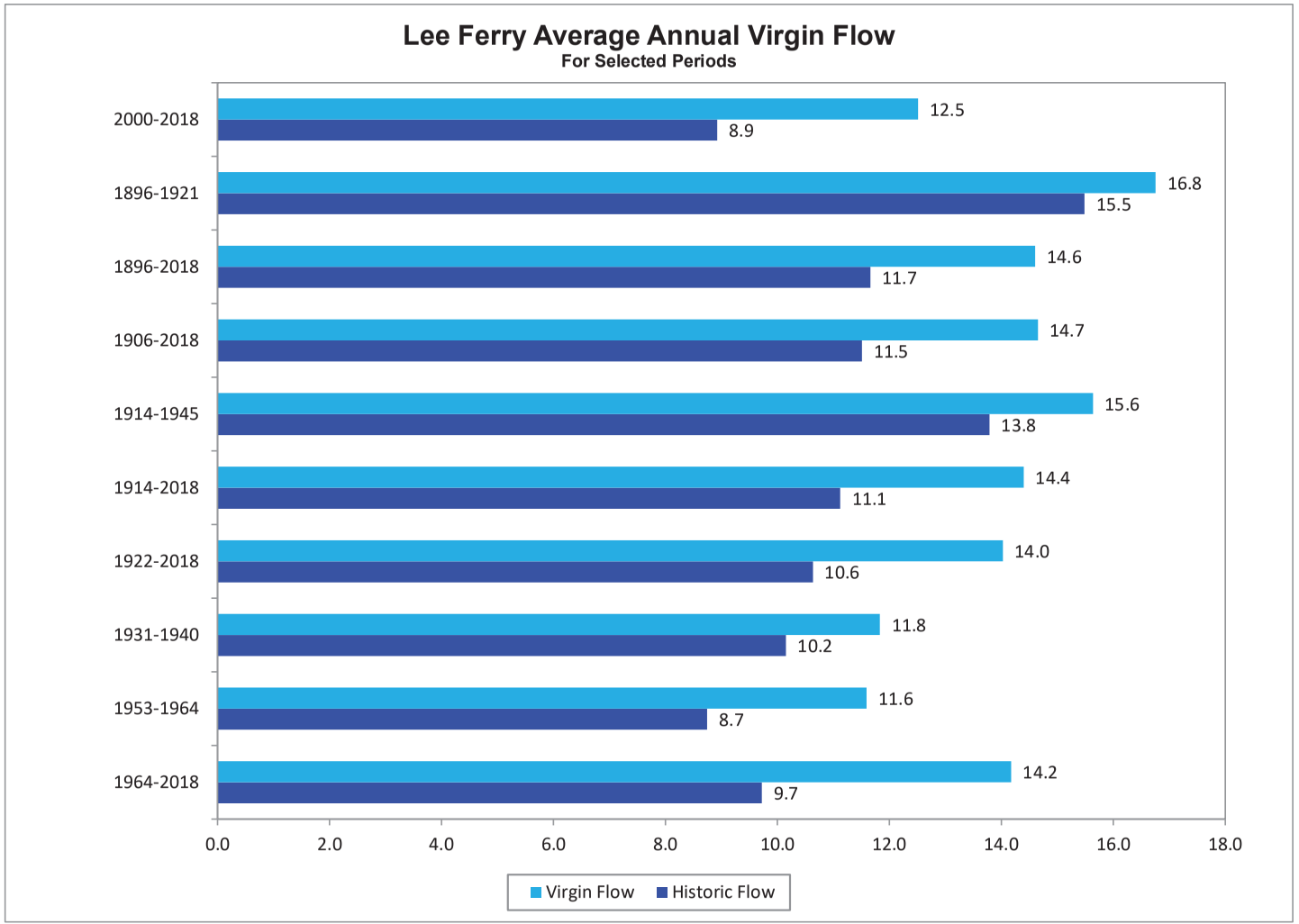
Table 4
HISTORIC FLOW AT LEE FERRY
1954-2018

Water Year Ending Sept. 30	Historic Flow (1,000 a.f.)	Progressive 10- Year Total (1,000 a.f.)
1954	6,116	
1955	7,307	
1956	8,750	
1957	17,340	
1958	14,260	
1959	6,756	
1960	9,192	
1961	6,674	
1962	14,790	
1963	2,520	93,705
1964	2,427	90,016
1965	10,835	93,544
1966	7,870	92,664
1967	7,824	83,148
1968	8,358	77,246
1969	8,850	79,340
1970	8,688	78,836
1971	8,607	80,769
1972	9,330	75,309
1973	10,141	82,930
1974	8,277	88,780
1975	9,274	87,219
1976	8,494	87,843
1977	8,269	88,288
1978	8,369	88,299
1979	8,333	87,782
1980	10,950	90,044
1981	8,316	89,753
1982	8,323	88,746
1983	17,520	96,125
1984	20,518	108,366
1985	19,109	118,201
1986	16,866	126,573
1987	13,450	131,754
1988	8,160	131,545
1989	7,995	131,207
1990	8,125	128,382
1991	8,132	128,198
1992	8.023	127.898
1993	8,137	118,515
1994	8,306	106,303
1995	9,242	96,436
1996	11,530	91,100
1997	13,873	91,523
1998	13,441	96,804
1999	11,540	100,349
2000	9,530	101,754
2001	8,361	101,983
2002	8,348	102,308
2003	8,372	102,543
2004	8,348	102,585
2005	8,395	101,738
2006	8,508	98,716
2007	8,422	93,265
2008	9,180	89,004
2009	8,406	85,870
2010	8,436	84,777
2011	13,227	89,643
2012	9,534	90,829
2013	8,289	90,746
2014	7,590	89,988
2015	9,157	90,750
2016	9,138	91,380
2017	9,175	92,133
2018	9,171	92,124

Storage in Flaming Gorge Reservoir began in 1962.
Storage in Glen Canyon Reservoir began in 1963.
Storage in Fontenelle Reservoir began in 1964.

Based upon provisional streamflow records subject to revision.*


Colorado River Flow
At Lee Ferry, Arizona (W.Y. 2018)
Million Acre Feet
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1896
1906
1916
1926
1936
1946
1956
1966
1976
1986
1996
2006
2016
10-Year Average Virgin Flow
10-Year Average Historic Flow
Average Virgin Flow
Virgin Flow
Historic Flow


Lee Ferry Average Annual Virgin Flow
For Selected Periods
2000-2018
12.5
8.9
1896-1921
16.8
15.5
1896-2018
14.6
11.7
1906-2018
14.7
11.5
1914-1945
15.6
13.8
1914-2018
14.4
11.1
1922-2018
14.0
10.6
1931-1940
11.8
10.2
1953-1964
11.6
8.7
1964-2018
14.2
9.7
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Virgin Flow
Historic Flow

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COLORADO RIVER STORAGE PROJECT AND PARTICIPATING PROJECTS

A. 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 (Reclamation).

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 by 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 11 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 70th 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, 2017, to September 30, 2018), fiscal year (October 1, 2017, to September 30, 2018), and calendar year (2018). Significant upcoming or projected information is also included for some storage units and projects.

1. Glen Canyon Unit

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

At optimum operations, the eight generators at Glen Canyon Dam are capable of producing 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 from 2000-2018, 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, a combination of 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.

As a result of the construction and operation of Glen Canyon Dam, the Colorado River ecosystem below the dam has changed significantly from its pre-dam natural character. 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 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 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.

a. 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. 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 program has been primarily funded by hydropower revenues. 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. AMP stakeholders have divergent views on the interpretation of the GCPA, particularly with regard to how it may or may not amend 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 humpback chub and razorback sucker, the conservation of sediment to rebuild beaches in Glen and Grand canyons, and the protection of cultural resources. Concerns related to recent increases of non-native brown trout in Glen Canyon and appropriate management actions in response to those increases are a developing issue in the AMP.

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.

b. 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 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 provide 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 in the Lower Basin to the 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. The ROD 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 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.

c. Record of Decision for the Glen Canyon Dam Long-Term Experimental and Management Plan Final Environmental Impact Statement

As directed by the Secretary in December 2010, Reclamation and the 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 use of our 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 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 to endangered fish (humpback chub), but have slightly negative impacts (approximately 0.17 percent 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 was 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.

d. Recreational Use

Glen Canyon National Recreation Area (NRA), which surrounds Lake Powell, hosted 5,848,071 visitors through November 2018 (due to the government shutdown, figures for December 2018 were not available). The NPS has concession-operated facilities at Wahweap, Dangling Rope, Halls Crossing, Hite, and Bullfrog Basin on the reservoir, and at Lees Ferry located 15.8 miles below Glen Canyon Dam. The Navajo Nation operates a marina at Antelope Point.

Rainbow Bridge, considered a sacred site by Native Americans, saw visitation of 109,354 through October 2018 (due to the government shutdown, figures for November and December 2018 were not available). 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.

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 Glen Canyon Natural History Association conducts public tours of the dam and reports that 46,788 people took the dam tour during calendar year 2018, while 592,098 people stopped at the visitor center to take in the new exhibits and offerings.

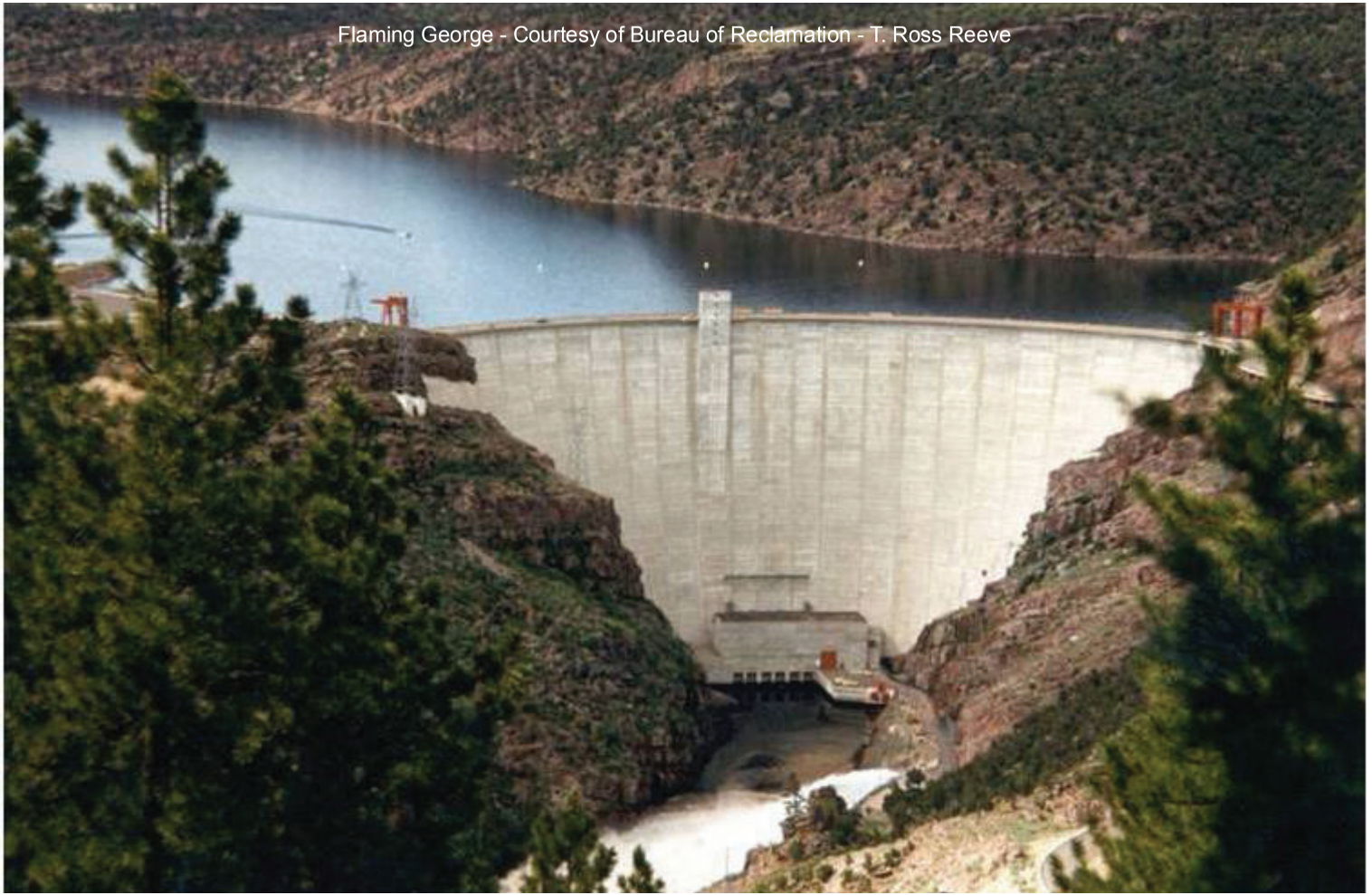
e. Invasive Mussel Control

Quagga mussels were confirmed in Lake Powell in 2012 and are now found throughout the reservoir. As a result, Lake Powell is considered to be infested. Veligers (young mussels) 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.

In 2015, a substantial increase in the number of quagga mussels was observed in Lake Powell. During a fixed wheel gate inspection, the number of attached quagga mussels was too large to effectively count. Additionally, small colonies of quagga mussels have been found within the plant piping systems. At this point in time, the mussels have not adversely affected the operation of the powerplant and dam; however, they are expected to have negative impacts in the future. The Glen Canyon Field Division has chosen to mitigate the problem by installing new strainer baskets and micro-filtration on the plant piping systems. Installation of this equipment will be completed in 2020.

2. 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


Flaming George - Courtesy of Bureau of Reclamation - T. Ross Reeve

generation at Flaming Gorge Powerplant. There are three generating units in the Flaming Gorge Powerplant. Uprating 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 which is distributed by the Western Area Power Administration 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 3,788,900 acre-feet 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.

a. Community of Dutch John

The community of Dutch John Utah, located about 2 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.

b. 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 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 2018, a relatively dry year, Reclamation operated Flaming Gorge Dam to provide several days of access to floodplain wetlands for larval fish, but due to other factors, few fish survived through the fall months. Reclamation is currently working with the Upper Colorado Recovery Program to evaluate the flow and temperature recommendations for their effectiveness in recovery of endangered fish and a report is expected in early 2019.

c. Recreational Use

The interagency agreement between Reclamation and Ashley National Forest (U.S. Forest Service) 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. INHA reports that 41,503 people visited the center during the 2018 operating season.

Public tours of the dam are conducted April 15 through October 15 of each year through a contract with Choice Services, Inc. Tours of the inside of the dam are conducted when the security threat advisory is low. When the security threat advisory is high, tours of the inside of the dam are suspended and tourists are taken to a dam overlook area where guides present information about construction and operation of the dam. The contractor reported that there were 10,976 visitors who participated in the dam tour during calendar year 2018.

An effort is underway to remodel the interior of the visitor center, update the exhibits, and remodel the public restrooms. The goal is to have the work completed and open to the public by the 2020 season.

The Flaming Gorge National Recreation Area, located in the states of Utah and Wyoming, is administered by the Ashley National Forest. The U.S. Forest Service does not estimate visitor use statistics by feature, so no figures are available for the Flaming Gorge NRA.

Due to budget restraints, low visitation, and high maintenance, the U.S. Forest Service is currently planning the closure of 12 recreation sites on the east side of the forest from Sweetwater County, Wyoming, to Uintah County, Utah. Nine of the sites are within the boundaries of the Flaming Gorge NRA and include the Upper Marsh Creek boat ramp; Lucerne Group campground; Antelope Flat, Sheep Creek Bay, Red Canyon, Greendale, Skull Creek, and Red Springs campgrounds, and the Navajo Cliffs picnic area. The project is under analysis with a decision expected in March 2019 and implementation scheduled no earlier than June 2019.

d. 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. Monitoring for invasive mussels continued in 2018 and shows no presence of veligers or adult mussels.

3. 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 that is 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.


Navajo Dam, New Mexico, Courtesy of Bureau of Reclamation

a. 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 back to Reclamation for management now that the new statewide recreation lease agreement has been signed. New Mexico State Parks wants to reduce its footprint and responsibility to the developed areas and nearby heavily visited primitive areas due to reduced resources. It will, however, continue boating patrols for enforcement of boating laws outside its formal boundary.

Visitation for Navajo Reservoir was reported to be 555,990 on the Colorado side from July 1, 2017, through June 30, 2018, and 557,547 on the New Mexico side during that same time period.

b. 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. CPW is conducting boat inspections and has a portable boat wash and decontamination unit at Arboles. Due to funding limitations, staffing reductions, and liability issues, New Mexico State Parks is no longer able to perform boat inspections/decontaminations for invasive mussels at any of the reservoirs it manages for Reclamation. The New Mexico Department of Game and Fish (NMDGF) has authority under state law for mussel control, as well as an inspection and decontamination program. Reclamation engaged the services of a private contractor in 2016 to assist the NMDGF with boat inspection and decontamination services at Navajo Reservoir. A total of 17,574 inspections and 86 decontaminations were performed in 2018. To date, mussel testing results in the reservoir have been negative. Reclamation is working with New Mexico State Parks and the NMDGF for design and construction of boat inspection and decontamination facilities at Navajo Lake State Park. Construction is expected to begin in the fall of 2019.

4. 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 is located 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 are capable of producing a total of 290 megawatts 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.

a. Recreational Use

Recreation use for the Aspinall Unit is managed by the NPS as the Curecanti National Recreation Area. Visitation to the NRA for calendar year 2018 was reported to be 931,512. Visitation to the Black Canyon of the Gunnison located below Crystal Dam and adjacent to the Curecanti NRA was reported to be 308,962 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 National Recreation Area. The NRA is currently identified by an administrative boundary that has not been established by legislation. Draft legislation has been written by Senator Michael Bennet (D-CO), but not yet introduced.

b. Invasive Mussel Control

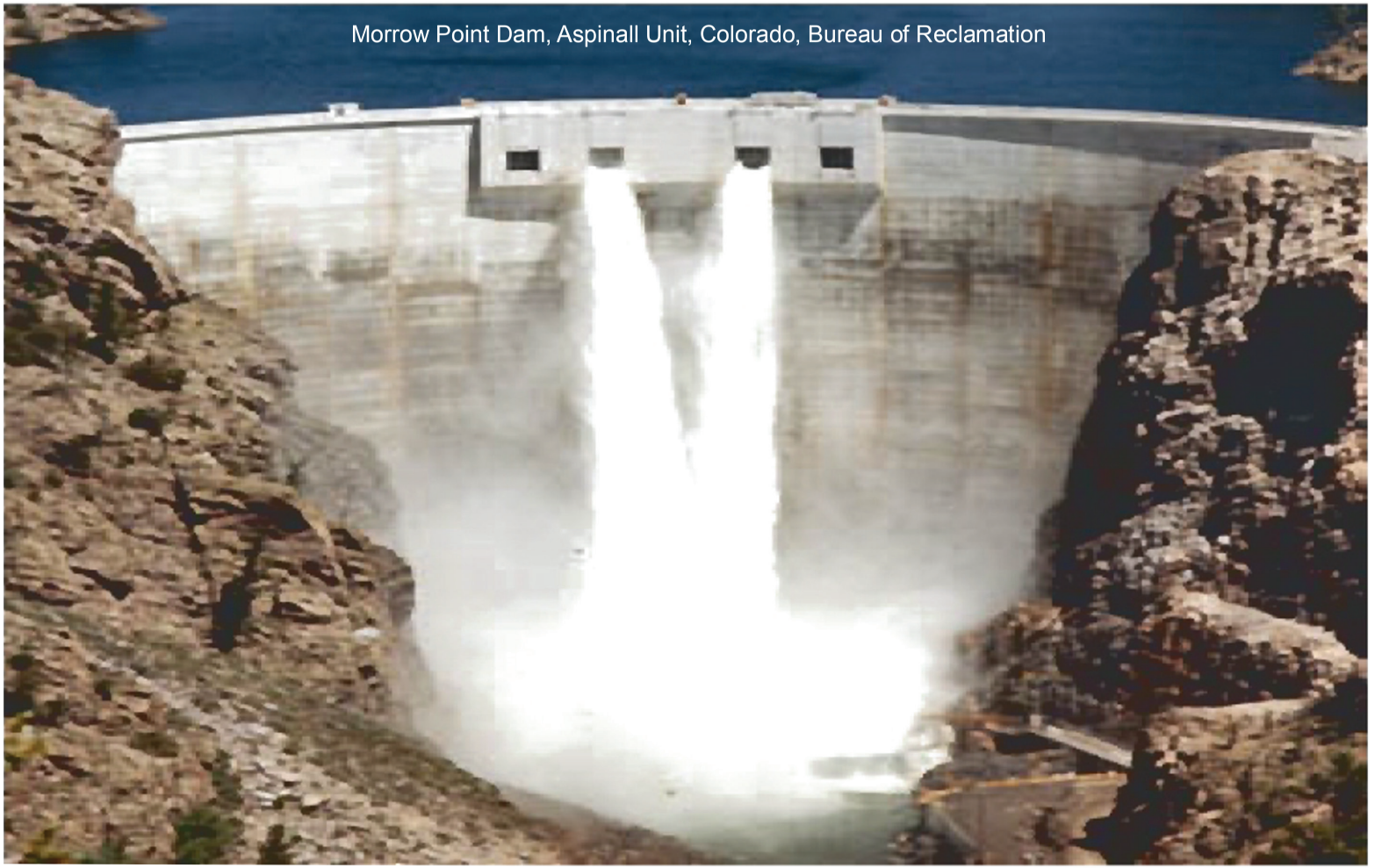
The State of Colorado, working in partnership with the NPS, has instituted an aggressive program to prevent the spread of quagga and zebra mussels into its waters, including the three Aspinall Unit reservoirs. All motorized watercraft launching in Curecanti NRA are required to be inspected for invasive mussels and, if necessary, decontaminated. In addition to the mandatory inspection prior to launch, and to be in compliance with the State of Colorado's Aquatic Nuisance Species 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.

B. INVASIVE MUSSEL CONTROL

Invasive species threaten the operation of CRSP facilities. An Upper Colorado Region 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 2017, the Upper Colorado Region conducted a value planning study to determine ways to prevent the further spread of quagga mussels throughout the region. This effort brought together state, federal, and university personnel from more than 10 different disciplines and three states. The study highlighted the need for an economic study quantifying the financial impacts of a quagga infestation and the need to develop an assessment process for determining and comparing the susceptibility of water bodies.

The State of Colorado's Aquatic Nuisance Species (ANS) program was funded through severance tax of oil and gas production; this tax was all but eliminated in 2016. And while the State lost the majority of its ANS funding for boat inspection activities in 2017 due to a decision by the Colorado Supreme Court, Reclamation received funding from the Secretary that kept boat ramps open full time in 2017 and contributed towards keeping inspection stations open in 2018. 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. Reclamation anticipates that additional funding through the Act will be available for inspections in 2019.

The State of New Mexico has a smaller aquatic invasive species program that provides public outreach and education, spot inspections, and decontaminations when needed. Reclamation


Morrow Point Dam, Aspinall Unit, Colorado, Bureau of Reclamation

has entered into a contract with Rocky Mountain Recreation 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 2018, Rocky Mountain Recreation inspected 17,574 boats at Navajo Reservoir and decontaminated 86 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 main focus of this effort has shifted from prevention to containment and incorporates science and lessons learned from the Lake Mead National Recreation Area. However, in 2018, the Utah Department of Wildlife Resources inspection staff stopped over 120 infested boats, quarantining 100 of them.

C. STORAGE UNITS FISHERY INFORMATION

The Glen Canyon, Flaming Gorge, Navajo, and Wayne N. Aspinall storage units continue to provide excellent warm- and cold-water fishing both in the reservoirs and in the tailwater streams below the dams.

Lake Powell is almost exclusively a warm-water fishery with bluegill, striped bass, crappie, walleye, channel catfish, and smallmouth and largemouth bass as the targeted species. Lake Powell is consistently a high-quality fishery, even during lower water elevations. It is unknown at this time how the presence of invasive mussels will impact the fishery at Lake Powell, although if impacts from other lakes where they are present is any indication, the fishery may fall off over the next few years, with fewer fish and less robust game species available.

There is some anecdotal evidence that striped bass may eat at least some of the mussels. There is also evidence that some diving ducks and other species of fish may eat the mussels, but they are not providing effective control due to the high reproduction rate of the mussels. In addition, it is suspected that the mussels concentrate the botulism toxin, resulting in waterfowl mortality. Mussels also remove phytoplankton from the water column causing disruptions to the food web, and their waste products further alter the ecosystem.

The cool, clear depths of Flaming Gorge Reservoir remain ideal for several species of trout, including cutthroat, rainbow, lake, and brown. Kokanee salmon, smallmouth bass, and channel catfish are also abundant game fish. Fisheries managers are urging anglers to catch small size lake trout and keep them to improve the numbers and sizes of other sports fish, including the larger lake trout. Due to the presence of illegally stocked and invasive burbot, the Utah Division of Wildlife Resources requires any burbot caught to be killed. There is no limit on the number of burbot that can be taken from either the Utah or Wyoming sides of the reservoir. The annual “Burbot Bash” on the Utah side was held January 25-27, 2019. Over 200 teams brought in over 3,800 fish. The next event, the “Burbot Classic,” was held February 4, 2019.

Navajo Reservoir provides both cold- and warm-water fisheries including catfish, crappie, and smallmouth bass in the shallows and near the reservoir surface. Kokanee salmon, northern pike, and many varieties of trout are found in the deeper, colder waters. Annually, during the late fall and early winter months, there is a snagging season for kokanee after the spawn and before the fish die.

The Aspinall Unit reservoirs are exclusively cold-water fisheries with six species of sport fish available: rainbow, mackinaw, brown, lake, and brook trout, as well as kokanee salmon. At one time,

the Aspinall Unit reservoirs boasted the largest kokanee salmon fishery in the United States. However, kokanee populations decreased to below an estimated 200,000 several years ago due to predation by lake trout. At that time, CPW started a program to rebuild the population through increased stocking and continued removal of lake trout. The kokanee population is now estimated to be around 400,000.

The four tailwaters (the Colorado River below Glen Canyon Dam, the Green River below Flaming Gorge Dam, the San Juan River below Navajo Dam, and the Gunnison River below Crystal Dam) have provided excellent trout fishing that many view as some of the best in the western United States. The Flaming Gorge tailwater is designated a "blue ribbon" fishery by the Utah Division of Wildlife Resources and fish populations in the river have been counted as high as 22,000 individuals per river mile; the highest concentration in the West. The 7 miles between Flaming Gorge Dam and Little Hole accommodate approximately 80 percent of the estimated 150,000 anglers who fish the Green River every year. New Mexico Game and Fish estimates that the tailwaters below Navajo Dam see 271,000 angler hours per year and, on almost any day of the week, visitors can see anglers and guides plying the waters. The 26 miles of the Gunnison River below Crystal Dam through the Black Canyon are designated a "gold medal" fishery by CPW.

With the discovery of invasive adult mussels in the Colorado River below Glen Canyon Dam, it is unknown at this time how they might affect the fishery there. Another invasive, the green sunfish, was discovered in the summer of 2015 about 4 miles below Glen Canyon Dam. Due to concerns for endangered native fish species, treatments to eradicate green sunfish populations were taken in 2015 and 2016 and the monitoring of persisting populations continues. To further combat invasive species, the NPS developed an Expanded Non-native Aquatic Species Management Plan and Environmental Assessment, which was open to public comment through December 14, 2017. As part of the outreach effort for the expanded plan, public open houses and webinars were held throughout December 2017.

D. CRSP POWER GENERATION

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

During fiscal years 2017 and 2018, generation at CRSP powerplants amounted to 5.56 and 5.51 billion kilowatt-hours, respectively. The major portion for those same years, 3.98 and 4.06 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.

Table 5 lists the gross generation for fiscal years 2017 and 2018 and the percentage of change:

Table 5
Gross Generation (Kilowatt-Hours)
and Percentage of Change for
Fiscal Years 2017 and 2018

Powerplant	Fiscal Year 2017	Fiscal Year 2018	Percent Change
Glen Canyon	3,978,016,000	4,058,096,000	2.0
Flaming Gorge	780,786,000	631,398,400	-19.1
Blue Mesa	288,015,750	239,250,800	-16.9
Morrow Point	313,550,200	322,980,570	3.0
Crystal	139,329,000	181,974,000	30.6
Fontenelle	32,383,000	67,139,000	107.3
McPhee	5,340,059	2,683,151	-49.8
Towaoc	18,068,176	11,405,162	-36.9
Total	**5,555,488,185**	**5,514,927,083**	-0.7

1. CRSP Facility Upgrades

Over the next several years, nearly $130 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:

a. Glen Canyon Powerplant

In fiscal years 2019 and 2020, Reclamation will replace the Glen Canyon Dam generator step-up transformers at a cost of $42.8 million. This project will replace the original transformers that have been in service for more than 50 years. This is one step in a much larger powerplant replacement project that has included turbine replacement and generator rewinds and will include plant switch gear replacement in the near future.

b. Blue Mesa Powerplant

The station service transformers at Blue Mesa were replaced in fiscal year 2018 after being in service since 1966. These transformers power all ancillary equipment such as pumps, computers, compressors, gates, and lighting inside the powerplant and dam. Generator rewinds and exciter replacements are scheduled to commence in July 2019. The old exciters are obsolete and not supported by the manufacturer. By replacing the static exciter with modern digital exciters, Reclamation expects to reduce maintenance costs and increase reliability. The generator windings are at the end of their service life and replacement of windings and refurbishment of the poles will enable continued operation for the next 25 years.

c. Morrow Point and Flaming Gorge Powerplants

Exciters in these facilities were replaced in fiscal years 2017 and 2018. The old exciters were obsolete and not supported by the manufacturer. By replacing the static exciters with modern digital exciters, Reclamation expects to reduce maintenance costs and increase reliability.

E. AUTHORIZED PARTICIPATING PROJECTS

Twenty-two participating projects were *originally* authorized by Congress between 1956 and 1968. Eleven were authorized by the 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 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 22 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 is provided revenues from hydropower and water service sales.

To date, 17 of the currently authorized 22 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.

A list of the 23 participating projects that have been authorized by Congress is shown below:

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. Seedskadee, Wyoming,
10. Silt, Colorado, and
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), and
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, and
17. Savery-Pot Hook, Colorado and Wyoming.

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, and
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.

Table 6 shows the 17 participating projects that have been completed or are in the process of completion:

Table 6
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.	Seedskadee	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
---	*Central Utah (Uintah Basin Replacement Project)	Utah	Big Sand Wash (enlarged)	2006
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:

1. Colorado

a. 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.

b. 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 7 megawatts, 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 of the campsites will be 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 considered to be good and CPW, in an effort 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.

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 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 cancelled in 2018.

c. 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 Regional Director by memorandum dated January 25, 2001.

In order 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. In order 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 megawatts. Towaoc Canal Powerplant is located on the Towaoc Canal, 5 miles north of Cortez, Colorado, in Montezuma County with an installed capacity of 11.5 megawatts.

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. Montezuma County is exploring the potential for legislation to transfer title of the recreation areas at McPhee Reservoir to the county.

The Lone Dome Recreation Area is located below McPhee Dam and includes 12 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.

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.

d. Florida Project

Lemon Dam is the principal feature of the Florida Project. The dam, completed in 1963, is located in southwestern Colorado on the Florida River, approximately 14 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 megawatts. 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 is expected to be 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 12 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 from 2017 through 2019. The Forest Service received no complaints regarding the closure in 2017. Design and construction of boat inspection and decontamination facilities at the reservoir is currently on hold and may not be needed. The reservoir remains open to non-motorized boats.

e. Fruitland Mesa Project

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

f. 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 CPS 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. 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.

g. San Miguel Project

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

h. 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.

i. 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.

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.

j. West Divide Project

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

2. New Mexico

a. Hammond Project

The Hammond Project is located 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.

b. Navajo-Gallup Water Supply Project

The Navajo-Gallup Water Supply Project 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 and the Cutter Lateral. Based upon projected populations in the year 2040, the project would provide enough water to serve approximately 203,000 people in the Navajo Nation, 1,300 people in the Jicarilla Apache Nation, and approximately 47,000 people in the City of Gallup.

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. In 2018, construction continued on Block 9-11 on the San Juan Lateral, and Reclamation awarded a financial assistance agreement to the Navajo Nation for the design and construction of the Crownpoint Lateral. On the Cutter Lateral, construction was substantially completed on Reach 22A and construction continued on Reach 22B. Final design work on the Cutter Lateral Water Treatment Plant continued and construction was initiated in October 2018. Design and construction performed by the City of Gallup, Navajo Nation, and Indian Health Service on portions of the Navajo-Gallup Water Supply Project, utilizing financial assistance provided by Reclamation, also continued. Also in 2018, the Western Area Power Administration, under an interagency agreement with Reclamation, continued working with the Navajo Tribal Utility Authority and other local power providers to ensure that necessary facilities were in place to serve electrical power to the project. In 2019, Reclamation anticipates continuing construction of the features listed above and continuing design work, right-of-way acquisition, and environmental permitting on all other features. The project authorization ceiling at the October 2018 price level is $1.160 billion.

c. 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 54 years and is now approximately 70 percent 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.

Accomplishments in fiscal year 2017 included Reclamation's technical assistance to the BIA for the operation and maintenance of the Gallegos Pumping Plant and completion of the design and specifications for the repairs to the approach walls for a tunnel on the NIIP Gravity Main Canal. The fiscal year 2018 construction budget will be used to fund work on future scheduled feature transfers.

3. Utah

a. 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. Work on the Uintah and Upalco units was discontinued. The Ute Indian Unit was deauthorized by Congress in the CUPCA.

(i). 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, provided the Ute Indian Rights Settlement, and more. 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 2018, 34 miles of large diameter pipeline have been constructed with 24 miles remaining to be constructed.

Hydroelectric Power Generation. In 2005, the Department of the Interior selected the Central Utah Water Conservancy 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, Central Utah Water Conservancy 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 were reconstructed to provide storage in conjunction with the municipal and industrial system.

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.

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.

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 percent under the jurisdiction


Jordanelle Dam, Bonneville Unit, CUP, courtesy of Bureau of Reclamation

of the U.S. Forest Service while the remaining 15 percent 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. A new memorandum of agreement between Reclamation and the U.S. Forest Service was signed in 2009. 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 and fishing is not allowed from any watercraft.

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 still remains for additional lake stabilization in the Uinta Mountains.

(ii). 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.

(iii). Uintah and Upalco Units

Section 203(a) of the CUPCA of 1992 provided for the construction of the Uintah Basin Replacement Project to replace, in part, the Uintah and Upalco units which had never been 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 Central Utah Water Conservancy District has 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.

(iv). Ute Indian Unit

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

(v). 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.

Following observed "sloughing" of riprap on the Steinaker Dam face, a Level 1 Emergency Response was issued on September 24, 2014, and subsequently terminated on October 10, 2014. Enhanced monitoring of the dam began immediately upon notification of the sloughing. After extensive study by Reclamation engineers, corrective work on the dam slope began in 2018. Repair work involves replacing the sloughed material and decreasing the slope of the abutment. Engineers and contractors are working year-round to fix the facility in an attempt to begin filling the reservoir in late spring of 2019. Presently, it is Reclamation's assumption that the reservoir will remain drained until approximately 2020.

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

b. Emery County Project

The Emery County Project is located in east-central Utah near the towns of Huntington, Castle Dale, and Orangeville. The project, which includes an irrigable area of almost 19,000 acres, is in the Green River Basin. Principal construction features of the project are Joes Valley Dam and Reservoir on Seely Creek; Swasey Diversion Dam 10 miles downstream from Joes Valley Dam; Cottonwood Creek-Huntington Canal; Huntington North Service Canal; and Huntington North Dam and East and West Dikes, which form Huntington North Reservoir. The project provides an estimated average of 28,100 acre-feet of water annually for irrigation of 18,755 acres, of which 771 acres is land previously unirrigated. In the mid-1970s, the irrigable acreage was reduced to 14,171 with 4,604 acres designated "not for service." In 1981, the irrigable area was increased to 16,170 acres with 2,605 acres in the "not for service" category. The project supplies 6,000 acre-feet of water for industrial and municipal purposes.

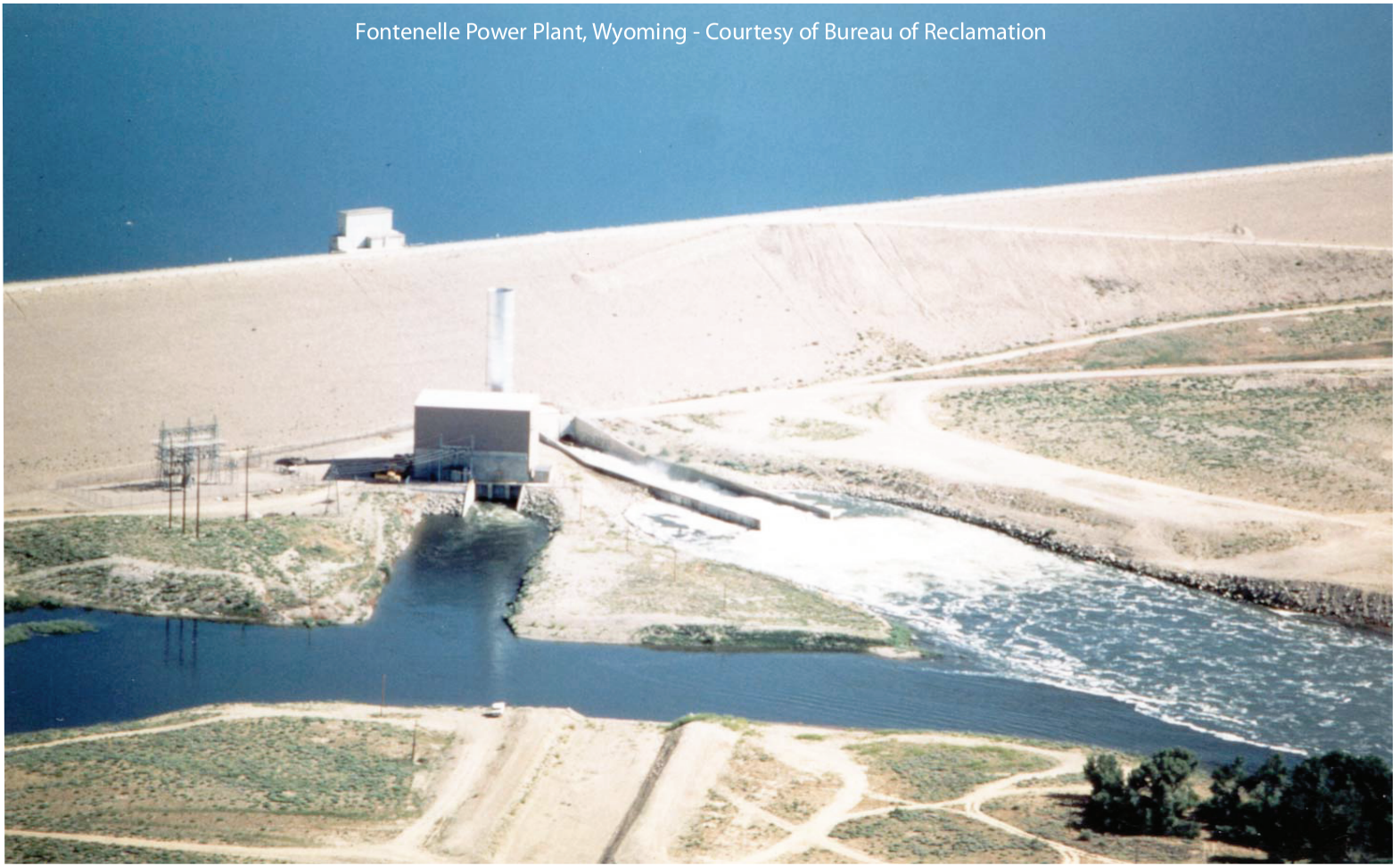
Recreation facilities have been constructed at both Joes Valley and Huntington North reservoirs. Recreation facilities at Joes Valley are operated by the U.S. Forest Service and recreation at Huntington North is managed by the Utah Division of Parks and Recreation, both under agreements with Reclamation. Invasive mussels have not been detected in either reservoir.

4. Wyoming

a. 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, Eden Canal, and a lateral and 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, and to the Eden Canal which serves lands on the east side of the creek. 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 is finalizing designs needed to raise the top of active conservation 5 feet. Final designs will incorporate a filter diaphragm around the outlet



Fontenelle Power Plant, Wyoming - Courtesy of Bureau of Reclamation

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 feeder canal. NEPA compliance work as well as work associated with acquisition of the necessary permits and clearances required for the modifications continues.

Recreation facilities at Big Sandy Reservoir are administered by Reclamation's Provo Area Office. 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 watercraft 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.

b. La Barge Project

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

c. Seedskadee Project

The Seedskadee Project is located 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 150,500 acre-feet and a total capacity of 345,360 acre-feet, with a surface area of 8,058 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 develop further its allotment under the Colorado River Compact. Any work related to the expansion of the reservoir will be funded by the State of Wyoming.

Reclamation manages approximately 135,000 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 is reviewing the revocation request and performing field authorizations. All but 40 authorizations were field verified during the summer of 2016 and the agency is currently working to complete its review. If acceptable, the withdrawal will be relinquished and the lands returned to the public trust to be managed by the BLM.

Recreation facilities at Fontenelle Reservoir are managed by the 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.

5. Colorado and New Mexico

a. Animas-La Plata Project

The Animas-La Plata Project is located 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, 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 and is now scheduled to occur in 2020.

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 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.

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.

b. Pine River Extension Project

The Pine River Extension Project was found to be infeasible and was deleted in the 1968 CRBPA.

c. 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. Under these laws, only imported San Juan-Chama Project water may be stored in Heron Reservoir; there are no provisions for storing native Rio Grande water. Thus, all native Rio Grande water is released to the river below Heron Dam.

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, Nambe, 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 Albuquerque Bernalillo County Water Utility Authority as the preliminary lessee and is working to execute a preliminary lease and funding agreement for the development of non-federal hydropower on the project.

Recreation at Heron Reservoir is managed by New Mexico State Parks under an agreement with Reclamation. Recreation at Nambe Falls Reservoir is managed by the Nambe 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. The Pojoaque Pueblo does not have an active mussel inspection program; therefore, the status of Nambe Falls reservoir is unknown at this time.

6. Colorado and Wyoming

a. Savery-Pot Hook Project

The Savery-Pot Hook Project was found to be infeasible and was not constructed.

7. Utah and Wyoming

a. 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.

F. RECREATIONAL USE AT 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 8.9 million for calendar year 2018, demonstrating the high value placed on outdoor recreation opportunities in the Intermountain West. Recreation use at participating projects increased that number to about 10.8 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.

For detailed information concerning recreational opportunities at CRSP and participating project reservoirs, please visit the following website: *https://www.recreation.gov*.

G. 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.

1. Colorado

a. 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 720,000 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.

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, 2018, was at 70 percent of capacity. Storage reservoir volumes were as follows:

- West Slope
  - Lake Granby, 463,151 acre-feet;
  - Grand Lake, 808 acre-feet;
  - Shadow Mountain, 16,876 acre-feet;
  - Willow Creek, 7,785 acre-feet;
  - Green Mountain, 70,308 acre-feet;
- East Slope
  - Carter Lake, 47,344 acre-feet; and
  - Horsetooth, 91,477 acre-feet.

During water year 2018, transmountain diversions from the Colorado River Basin in Colorado by the Colorado-Big Thompson Project via the Adams Tunnel totaled 236,589 acre-feet.

b. Fryingpan-Arkansas Project

The Fryingpan-Arkansas Project is a multipurpose transmountain, transbasin water diversion and delivery project located in Colorado. It makes possible 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 52,200 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 200,000 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, 2018, was at 76 percent of capacity, excluding Pueblo Reservoir flood storage. Storage reservoir volumes were as follows:

- West Slope
  - Ruedi Reservoir, 64,620 acre-feet;
- East Slope
  - Turquoise Lake, 99,960 acre-feet;
  - Combined Mt. Elbert Forebay and Twin Lakes Reservoir, 106,045 acre-feet; and
  - Pueblo Reservoir, 189,469 acre-feet.

During water year 2018, transmountain diversions from the Colorado River Basin in Colorado by the Fryingpan-Arkansas Project via the Charles H. Boustead Tunnel totaled 39,100 acre-feet.

c. Uncompahgre Project

The Uncompahgre Project is located on the western slope of the Rocky Mountains in west-central Colorado. Project lands surround the town of Montrose and extend 34 miles along both sides of the Uncompahgre River to Delta, Colorado. Project features include Taylor Park Dam and Reservoir, the Gunnison Tunnel, seven diversion dams, 128 miles of main canals, 438 miles of laterals, and 216 miles of drains. The systems divert water from the Uncompahgre and Gunnison rivers to serve over 76,000 acres of project land. Project water released from Taylor Park Reservoir passes through the Aspinall Unit, one of the four initial storage units of the CRSP, before it is diverted through the Gunnison Tunnel into the Uncompahgre Valley.

H. PLANNING INVESTIGATION ACTIVITIES

The Upper Colorado Region General Planning Activities (GPA) budget for fiscal year 2018 was $576,000. There was no funding from this program directed to activities within the Upper Colorado River Basin. 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 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 Water Assessments (BWAs), Site-Specific Pilots (SSPs), Applied Science Grants (ASGs), Basin Studies, Water Marketing, Drought Response, Title XVI Water Reclamation and Reuse, Water Conservation Field Services (WCFS), and Cooperative Watershed Management (CWM).

Reclamation conducts BWAs to develop water supply and demand information, guidance, and tools needed to conduct planning activities across Reclamation's mission areas. The SSPs Program conducts 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 inform how drought impacts water management, develop tools and information to inform watershed management, and develop platforms to improve access and use of water resources data by resource managers in the West. 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.

The Water Marketing Grants Program provides grants to conduct planning activities in developing a water marketing strategy to establish or expand water markets or water marketing transactions. The Drought Response Program provides assistance to water users for drought contingency planning, including consideration of climate change information, and to take actions that will 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 WCFS Program assists with the development or updates of water conservation and management plans to identify water management problems, evaluate options, highlight accomplishments, and plan for improvements. The CWM Program supports the formation and development of locally led watershed groups to facilitate the development of multi-stakeholder watershed management projects. Reclamation solicits input from the states on their watershed needs and activities and will continue to consult with the states to tailor the CWM Program in accordance with state watershed management plans. Under the WaterSMART Program, approximately $700,000 was funded toward planning in the Upper Colorado River Basin for 2018.

I. 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 2019 AOP is summarized below.

For a detailed discussion of reservoir operations in 2018 and the range of probable projected 2019 operations for each of the four main storage units of the CRSP, please visit the following website to view the 2019 AOP in its entirety: *https://www.usbr.gov/uc/water/rsvrs/ops/aop/index.html.*

1. 2018 Hydrology Summary and Reservoir Status

Below average stream flows were observed throughout much of the Colorado River Basin during water year 2018. Unregulated inflow to Lake Powell in water year 2018 was 4.610 million acre-feet (maf), or 43 percent of the 30-year average, which is 10.83 maf. Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 101, 45, and 25 percent of average, respectively. Of note, 2018 unregulated inflow into Powell was the third driest on record, following 2002 and 1977.

Precipitation in the Upper Colorado River Basin was below average during water year 2018.

On September 30, 2018, the cumulative precipitation received within the Upper Colorado River Basin for water year 2018 was 66 percent of average.

Snowpack conditions trended below average across most of the Colorado River Basin throughout the snow accumulation season. The basin-wide snow water equivalent measured 73 percent of average on April 1, 2017. Total seasonal accumulation peaked at approximately 73 percent of average on March 03, 2017. On April 1, 2017, the snow water equivalents for the Green River, Upper Colorado River Headwaters, and San Juan River Basins were 107, 88, and 56 percent of average, respectively.

During the 2018 spring runoff period, inflows to Lake Powell peaked on May 29, 2018, at approximately 23,300 cubic feet per second. The April through July unregulated inflow volume for Lake Powell was 2.60 maf, which was 36 percent of average.

The Colorado River total system storage experienced a net decrease of .89 maf in water year 2018. Reservoir storage in Lake Powell decreased during water year 2018 by 3.64 maf. Reservoir storage in Lake Mead decreased during water year 2018 by 0.312 maf. At the beginning of water year 2018 (October 1, 2017), Colorado River total system storage was 55 percent of capacity. As of September 30, 2018, the end of water year 2018, total system storage was 47 percent of capacity, the lowest system capacity on record.

2. Drought Contingency Planning

In 2018, the Colorado River Basin experienced its 19th year of drought – the worst in recorded history and one of the worst droughts in the past 1,200 plus years. In response to these historic drought conditions, officials in the seven Colorado River Basin states, the Department of the Interior, and the Republic of Mexico worked diligently through 2018 to develop a set of draft documents that would implement Drought Contingency Plans (DCPs) in the Upper and Lower Basins.

The Upper Basin Drought Contingency Plan (Upper Basin Plan) is aimed at (1) maintaining the ability to meet a Colorado River Compact call, which would require the Upper Basin to release additional water to the Lower Basin under the Compact, and (2) at reducing the risk of power generation loss at Glen Canyon Dam. The Upper Basin Plan includes three major components: (1) drought response operations of initial unit CRSP reservoirs above Lake Powell to release water to Lake Powell if it is projected to reach critically low elevations; (2) development of state-based programs for demand management (i.e., voluntary, compensated reduction of consumptive use) including storage of conserved water in CRSP initial unit reservoirs; and (3) augmentation (primarily weather modification and cloud seeding).

A situation where Lake Powell would drop to critical power generation elevation and require implementation of the Upper Basin Plan is a low probability, but would have significant impacts. Reclamation conducted modeling of the combined Upper and Lower Basin DCPs and found that joint implementation of both plans would benefit the Colorado River Basin. The Upper and Lower Basin states are seeking to finalize the Upper and Lower Basin DCPs through a set of agreements and federal legislation.

3. 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 are being implemented to help mitigate the impacts of the drought.

In 2013, a pilot fallowing program agreement was executed between the Central Arizona Water Conservation District (CAWCD), through the Central Arizona Groundwater Replenishment District, and the Yuma Mesa Irrigation and Drainage District. The water that was conserved under this program during 2014 through 2016 will remain in Lake Mead as system water.

In 2014, an $11 million funding agreement to establish a pilot program for the creation of Colorado River system water was executed among Reclamation, the CAWCD, Metropolitan Water District of Southern California (MWD), Denver Water, and Southern Nevada Water Authority (SNWA) (the Funding Partners). The funding agreement established the System Conservation Pilot Program for funding the creation of Colorado River system water through voluntary, compensated water conservation actions and reductions in water use beginning in 2015.

The purpose of the pilot program was to explore and learn about the effectiveness of voluntary, 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 in the Upper Basin, the Upper Colorado River Commission and the Funding Partners entered into a facilitation agreement in May 2015 clarifying how the program would be administered in the Upper Basin. The program was funded and extended for a fourth year into 2018.

Over the four years of the System Conservation Pilot Program implementation, 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. Additional implementation agreements may be implemented in 2019 in the Lower Basin. In June 2018, the Upper Colorado River Commission passed a resolution to cease acting as the contracting entity for the System Conservation Pilot Program 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 addition to the above activities, Reclamation, CAWCD, MWD, SNWA, and the Lower Division States signed a Memorandum of Understanding in December 2014 to use best efforts to implement further voluntary measures designed to add to storage in Lake Mead. Furthermore, Congress has provided authorization for additional funding through Reclamation for drought-related activities to increase Colorado River system water in Lake Powell, Lake Mead, and other Colorado River system reservoirs for the benefit of the system. A report evaluating the effectiveness of the water conservation pilot projects will be sent to Congress in 2019, including a recommendation on whether activities undertaken by the pilot projects should be continued.

4. Projected Upper Basin Delivery for 2019

Taking into account the existing water storage conditions in the Upper Basin, the August 2018 24-Month Study projection of the most probable near-term water supply conditions in the Upper Basin, and Section 6.B of the 2007 Interim Guidelines for the Coordinated Operations of Lake Powell and Lake Mead, the Upper Elevation Balancing Tier will govern the operation of Lake Powell for water year 2019. The August 2018 24-Month Study of the most probable inflow scenario projects the water year 2019 release from Glen Canyon Dam to be 9.00 maf. Given the hydrologic variability of the Colorado River System and based on actual 2019 water year operations, the projected water year release from Lake Powell in 2019 will likely be 9.0 maf under the most likely range of inflow

scenarios forecasted for water year 2019. However, releases could range anywhere between 8.23 maf to greater than 9.0 maf depending on actual hydrological conditions.

5. Summary of Reservoir Operations in 2018 and Projected 2019 Reservoir Operations

The operation of the 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 work groups 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

J. FISH AND WILDLIFE

During the 1960s and 1970s, growing public concern over the environment resulted in new federal environmental laws. The enactment of the CRBPA of 1968, NEPA of 1969, ESA of 1973, and 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 Utah 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 Recovery Program and the San Juan Recovery Program.

The Upper Colorado Recovery Program, established in 1988, is a cooperative effort among the states of Colorado, New Mexico, 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 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 San Juan Recovery Program, 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 San Juan Recovery Program is to protect and recover the native fish communities in the San Juan River while providing for continued water development consistent with state and federal laws.

As a result of activities being conducted by both the Upper Colorado and San Juan Recovery Programs, aggressive efforts are being made to stock sufficient numbers of Colorado pikeminnow, razorback sucker, and bonytail to provide the basis for self-sustaining populations that lead to down-listing 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 re-operated to enhance natural flow regimes. To date, the two Recovery Programs have served as the reasonable and prudent alternative for many water projects depleting more than 3.7 million acre-feet of water annually while avoiding ESA related litigation.

In January 2013, the Endangered Fish Recovery Programs Extension Act of 2012 (P.L. 112-672), which reauthorized federal funding for both Recovery Programs, was signed. With this amendment, funding will continue through 2019 for base funded activities (~$8 million per year) using CRSP hydropower revenues. As required by the authorizing legislation, the Secretary submitted a Report to Congress in 2016 regarding the need to reauthorize the use of hydropower revenues beyond 2019. Capital construction funding using appropriated funds is authorized through 2023. The Recovery Programs received $3,795,000 in appropriated funding for fiscal year 2018 and $4,302,000 was requested for fiscal year 2019.

K. APPROPRIATIONS OF FUNDS BY THE UNITED STATES CONGRESS

The funds appropriated[1] for fiscal year 2018 for construction of the CRSP and participating projects and recreational and fish and wildlife activities totaled $70,495,000. Recreational and fish and wildlife activities received a total of $2,770,000.

In fiscal year 2018, Reclamation expended $10,374,000 in appropriations in its Colorado River Basinwide Salinity Control Program. The Natural Resources Conservation Service (NRCS) expended $17,618,425 in appropriations in its Colorado River Basin Salinity Control Program.

Table 7 is a summary of action by the 114th and 115th Congresses pertaining to approval of funds for the construction program of the CRSP and participating projects and recreational and fish and wildlife activities.

Table 8 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

[1] Approved by Congress minus rescissions.

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).

Table 7
Colorado River Storage Project
Fiscal Year 2018 Program

Project	Budget Request	House Allowance	Senate Allowance	Appropriated
Construction Program				
CRSP Participating Projects				
Initial Units, CRSP	$57,000	$0	$0	$57,000
Navajo-Gallup Water Supply	67,668,000	0	0	67,668,000
TOTAL – Upper Colorado River Basin Fund	$67,725,000	$0	$0	$67,725,000
Recreation and Fish and Wildlife Facilities				
Recreational Facilities	$100,000	$0	$0	$100,000
Fish and Wildlife Facilities	2,670,000	0	0	2,670,000
TOTAL – CRSP Section 8	$2,770,000	$0	$0	$2,770,000
TOTAL – Construction and Section 8	**$70,495,000**	**$0**	**$0**	**$70,495,000**

Table 8
Appropriations Approved by Congress for the Colorado River Storage Project and Participating Projects[2]

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
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

[2] The information in Table 8 has been prepared in good faith on the basis of information available at the date of publication.

2011.....25,658,000
2012.....39,376,000
2013.....32,740,000
2014.....71,344,000
2015.....98,212,000
2016.....102,226,000
2017.....100,087,000
2018.....82,639,000

TOTAL..... $4,138,394,000

Plus: Navajo Indian Irrigation Project appropriations.....624,210,851
(funds transferred to Reclamation only)

TOTAL APPROPRIATIONS $4,762,604,851
Excluding non-reimbursable funds for fish and wildlife, recreation, etc., under Section 8 of P.L. 485, 84th Congress, and all under financing and rescission actions.

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, Bureaus 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.

A. 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 2018, $10.374 million of appropriations and $4.446 million of Basin Funds were received into Reclamation's Basinwide Program for a total of $14.820 million. It is estimated that the facilities installed with the $14.820 million will control over 10,700 tons of salt loading each year. As of September 30, 2018, Reclamation calculates the appropriation ceiling to be $648,159,000; total expenditures are $495,951,000; and the remaining ceiling balance is $152,208,000.

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

1. Colorado

a. Cattleman's Ditch Salinity Control – Phase 2

Selected under the 2015 FOA, the Cedar Canon Iron Springs Ditch and Reservoir Company was awarded a $2.67 million cooperative grant to pipe approximately 6 miles of existing, unlined earthen irrigation canal and laterals located near Crawford, Colorado, and along Alkali Creek, a tributary to the Gunnison River. This will result in an annual salt load reduction of approximately 2,183 tons to the Colorado River at a cost effectiveness of $51 per ton. The piping project will consist of buried high density poly-ethylene (HDPE), polyvinyl chloride (PVC), and gravity flow pipe. The cooperative agreement was executed in the spring of 2016 and construction began in the fall of 2017. The project is expected to be completed in the spring of 2019.

b. Cattleman's Harts, Hart/McLaughlin, Rockwell, Poulsen Ditches

Selected in the 2012 FOA, this project involves piping a portion of the Cattleman's Ditch, operated by the Cedar Canon Iron Springs Ditch and Reservoir Company. The ditch is supplied by Crystal Creek, a tributary to the Gunnison River near Crawford, Colorado. In July 2013, Reclamation entered into an agreement to provide up to $2.01 million to pipe 6.3 miles of existing laterals with an

expected salt load reduction of about 1,855 tons/year, at a cost effectiveness of $47.72 per ton. Construction began in the fall of 2015 and was completed in the spring of 2018.

c. 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 will begin in 2019. The project is expected to be completed in the spring of 2020.

d. Fire Mountain Canal Salinity Reduction Piping Project

Selected under the 2015 FOA, the Fire Mountain Canal and Reservoir Company was awarded a $2.95 million cooperative grant to pipe or abandon approximately 4.24 miles of existing, unlined earthen irrigation canals located near Hotchkiss, Colorado, and along the north side of the North Fork of the Gunnison River. This will result in an annual salt load reduction of approximately 2,365 tons to the Colorado River at a cost effectiveness of $52.07 per ton. A portion of the project is funded by the NRCS through the Regional Conservation Partnership Program for $1.32 million. A cooperative agreement was executed in September 2017 and construction began in December 2018. The project is expected to be completed in the spring of 2019.

e. Gould Canal A in Montrose, Colorado

Selected under the 2017 FOA, the Fruitland Irrigation Company was awarded a $4.294 million cooperative grant. Project A includes piping of 6,718 feet of open canal in the current alignment and slip lining a 1,670-foot-long tunnel and lining 24,943 feet of open canal with a shotcrete liner system, located near Crawford, Colorado, and along Crystal Creek, a tributary to the Gunnison River. This will result in an annual salt load reduction of approximately 3,137 tons to the Colorado River, at a cost effectiveness of $51.94 per ton. The cooperative agreement was executed in August 2018 and construction will begin in fall of 2019. The project is expected to be completed in the fall of 2022.

f. Gould Canal B in Montrose, Colorado

Selected under the 2017 FOA, the Fruitland Irrigation Company was awarded a $3.545 million cooperative grant. Project B includes slip lining a 2,560-foot-long tunnel and lining 29,575 feet of open canal with a shotcrete liner system, located near Crawford, Colorado, and along Crystal Creek, a tributary to the Gunnison River. This will result in an annual salt load reduction of approximately 2,564 tons to the Colorado River, at a cost effectiveness of $52.47 per ton. The cooperative agreement was executed in August 2018 and construction will begin in fall of 2019. The project is expected to be completed in the fall of 2022.

g. Grand Valley Irrigation Company (GVIC) Canal Improvement Grant 2012

As a result of selection under the 2012 FOA, the GVIC was selected to be awarded a $4.9 million cooperative grant to line about 2.4 miles of their main canal within the Grand Valley. A salt loading reduction of approximately 4,001 tons annually is expected at a cost effectiveness of $53.31 per ton. The canal lining will consist of a PVC membrane with a shotcrete cover. The cooperative

agreement was executed in fiscal year 2014 and construction began in December 2014. It was completed in 2018.

h. Grand Valley Irrigation Company (GVIC) Canal Lining Phase 4 Project

Selected under the 2015 FOA, the GVIC was awarded a $2.8 million cooperative grant to line approximately 1.65 miles of their main irrigation canal within the Grand Valley. This will result in a salt load reduction of approximately 2,363 tons annually at a cost effectiveness of $49.64 per ton. The canal lining will consist of a 30-mile PVC membrane with 3 to 4 inches of shotcrete cover. A cooperative agreement was executed in August 2016 and construction began in January 2018. The project is expected to be completed in the spring of 2020.

i. Grand Valley Water Users Association Government Highline Canal – Reach 1A Middle

Selected under the 2015 FOA, the Grand Valley Water Users Association was awarded a $3.6 million cooperative grant to line approximately 0.97 miles of their main irrigation canal within the Grand Valley. This will result in a salt load reduction of approximately 2,583 tons annually at a cost effectiveness of $58.63 per ton. The canal lining will consist of a 30-mile PVC membrane with 3 to 4 inches of shotcrete cover. A cooperative agreement was executed in April 2016 and construction began in November 2016. The project is expected to be completed in the spring of 2019.

j. North Delta Canal – Phase 1

Selected under the 2015 FOA, the North Delta Irrigation Company was awarded a $5.56 million cooperative grant to pipe approximately 5.97 miles of existing, unlined earthen irrigation canals located near Delta, Colorado, and along the north side of the Gunnison River. This will result in an annual salt load reduction of approximately 4,383 tons to the Colorado River at a cost effectiveness of $52.92 per ton. The piping project will consist of 1.41 miles of buried HDPE pipe and 3.02 miles of gravity flow pipe (piping is providing a 1.54-mile shortcut). A cooperative agreement was executed in April 2016 and construction began in 2018. The project is expected to be completed in the spring of 2020.

k. Orchard Ranch Ditch Piping Project

Selected under the 2015 FOA, the Orchard Ranch Ditch Company was awarded a $1.28 million cooperative grant to pipe approximately 2 miles of existing, unlined earthen irrigation canals located near Orchard City, Colorado, and along Surface Creek, a tributary to the Gunnison River. This will result in an annual salt load reduction of approximately 1,004 tons to the Colorado River at a cost effectiveness of $53.16 per ton. The piping project will consist of buried HDPE pipe. A cooperative agreement was executed in April 2016 and construction began in November 2018. The project is expected to be completed in the spring of 2019.

l. Paradox Valley Unit

The Paradox Valley Unit, operating since 1996, continues to intercept and dispose of approximately 95,000 tons of salt annually by injecting it down a 14,000-foot well. Reclamation continues to have meetings and discussions on the Alternatives Study and Environmental Impact Statement with the BLM, Environmental Protection Agency, Colorado Department of Public Health and Environment, cooperating agencies, and other stakeholders. A ROD on the Alternatives Study and Environmental Impact Statement is expected in 2020.

m. Uncompahgre Valley Water Users Association (UVWUA) – Phase 8 East Side Laterals Project

As a result of the 2012 FOA, the UVWUA was selected to be awarded a $3.5 million cooperative agreement for Phase 8 of the East Side Laterals. This phase involves piping an additional 14.1 miles of laterals off the South Canal, East Canal, and Loutzenhiser Canal, resulting in an expected annual salt reduction of 3,307 tons, at a cost effectiveness of $49.86 per ton. A cooperative agreement was executed in fiscal year 2014. Construction began in the summer of 2015 and was completed in 2018.

n. 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 $5.4 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 of 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 NRCS through the Regional Conservation Partnership Program. The cooperative agreement was executed in September 2017. Construction began in 2018 and will continue to 2021.

o. 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 will begin in the fall of 2019. The project is expected to be completed in the fall of 2022.

2. New Mexico

a. San Juan River Navajo Irrigation Projects – Lateral Conversion Project

This project was selected under the 2015 FOA. The proposed project will replace 15 secondary earthen laterals totaling 182,917 feet with underground pressurized pipelines. The salt load reduction estimate for the project is 4,381 tons per year and the estimated cost effectiveness is $46 per ton per year. A cooperative agreement was executed in August 2016 with the San Juan River Dineh Water Users, Inc., in the amount of $4.84 million from the Basinwide Program. Funding in the amount of $1.89 million will be provided by the Navajo Nation Department of Water Resources Water Settlement Funding. Construction began in the summer of 2018 and is scheduled to be completed in the fall of 2021.

3. Utah

a. Ashley Upper and Highline Canals Rehabilitation Project

This project was selected under the 2015 FOA. 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 is scheduled to begin in the fall of 2019 and be completed in 2021.

B. 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 2018, Reclamation expended $3.7 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. Reclamation then decides whether to fund and manage these projects itself or to approve these projects to be funded and managed by the appropriate state agency through its agreement with the state agency.

1. Bureau of Reclamation

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

a. Minnesota L-75 Lateral Salinity Control Project

Reclamation executed a cooperative agreement with the Minnesota L-75 Lateral Company in March 2016 and construction began in the winter of 2017-2018. The project budget was $153,412 to pipe approximately 3,100 feet of existing, unlined earthen irrigation ditch located near Paonia, Colorado, and along the south side of the North Fork of the Gunnison River. This will result in an annual salt load reduction of approximately 129 tons to the Colorado River at a cost effectiveness of $49.57 per ton. The piping project consisted of buried PVC pipe and was completed in the spring of 2018.

b. Muddy Creek Irrigation Company Piping Project Phase III

Reclamation executed a cooperative agreement with Muddy Creek Irrigation Company in September of 2018 and construction is scheduled to begin 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 is expected to be completed in 2022.

c. 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 with construction planned to begin in the fall of 2019 and be completed in 2020.

d. 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 $47.51 per ton. The cooperative agreement was executed in September 2018 with construction planned to begin in the fall of 2019 and be completed in 2021.

e. Whiterocks and Mosby Canals Rehabilitation Project

The proposed project will eliminate about 10.2 miles of the open unlined Whiterocks Canal and 3.5 miles of the open unlined Mosby Canal for a combined length of about 13.7 miles. They will be replaced with a HDPE pipeline ranging in diameter from 36 inches to 16 inches. The salt load reduction estimate for the project is 1,635 tons per year and the estimated cost effectiveness is $61.50 per ton per year. A cooperative agreement was executed in September 2016 with the Whiterocks Irrigation Company in the amount of $2.41 million from the BSP. Funding in the amount of $1.97 million is being provided by a loan from the Utah Board of Water Resources. Construction is scheduled to begin in the fall of 2017 and be completed in 2019.

2. Colorado State Conservation Board

a. Lower Gunnison Basin Salinity Program Coordinator

The Lower Gunnison Basin Salinity Program Coordinator position was vacant from April 2018 until the end of the year when a person was selected for the position. Reclamation, with concurrence from the Colorado River Basin Salinity Control Forum (Salinity Forum), approved the coordinator to assist entities in other areas in the Basin in Colorado to prepare for FOAs.

3. 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.

a. Antelope and North Laterals Salinity Project

UDAF executed a grant agreement with the Sheep Creek Irrigation Company in Manila, Utah, to complete this project. This is a canal piping project with two laterals of the Sheep Creek Canal to control 1,474 tons of salt per year at a cost of $1.948 million. During the 2016-2017 winter construction season, Sheep Creek Irrigation Company substantially completed the piping of the Antelope and North laterals. Both of these new pipelines were put in use during the 2017 irrigation season. During the 2017 irrigation season, a storm event washed significant debris into the system resulting in overflows. Since the original project came in under budget, Sheep Creek Irrigation Company proposed and was approved to use the remaining funding to rebuild the diversion structure to eliminate large debris inflows. This work will be completed in 2019.

b. Rock Point Canal Project

UDAF executed a grant agreement with Rock Point Irrigation Company to complete this project. The project is a rehabilitation project in the Vernal area to pipe the Rock Point Canal, controlling 740 tons of salt. The total project cost is $1.423 million, with $976,549 coming from the BSP. Rock Point Irrigation Company has obtained all easements and completed NEPA clearance to begin construction. Construction began in the fall of 2018. Because Steinaker Dam will be drained in 2019, Rock Point Irrigation Company will need to adjust their construction timeline and method of water delivery until Steinaker is refilled.

c. 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 Basin in Utah. The value of the coordinator position has been demonstrated by projects being selected in the 2015 and 2017 FOAs to be awarded funding. The coordinator has also been successful in helping entities submit applications through the NRCS Regional Conservation Partnership Program.

4. Wyoming Water Development Commission

A new agreement between Reclamation and the Wyoming Water Development Commission (WWDC) was put in place in 2016 to use BSP funds that will end in 2020. The new agreement is similar to agreements with the UDAF and Colorado State Conservation Board. The agreement has a value of $2,800,000 for the construction of projects and salinity studies in Wyoming.

The WWDC provides state funding through grants and loans for water studies, master plans, and construction projects across Wyoming. WWDC project funding is provided to a public entity for projects including, but not limited to, transmission pipelines, storage, reservoirs, irrigation improvements, canal to pipe conversions, and system improvements. Day-to-day operations are managed by the Wyoming Water Development Office. The WWDO construction division will be administering the construction and study components of the Wyoming BSP.

a. Eden Valley, Farson/Eden Pipeline Project

This project came through Reclamation's 2015 FOA. The project is for a canal-to-pipeline conversion project with the Eden Valley Irrigation and Drainage District. The project will convert approximately 6 miles of irrigation canal to pipeline. The project includes piping the Farson F-2, F-3, F-4, and F-5 laterals. The project budget is $4.39 million with $2.366 million in funding provided by

the WWDC and $2 million provided by the Wyoming BSP. The project will result in salt control of 1,619 tons and a cost effectiveness of $52.11 per ton. Design was completed in early 2018 and a construction contract was awarded shortly thereafter. Construction began in October 2018 and should be completed by the end of May 2019.

C. BUREAU OF LAND MANAGEMENT SALINITY CONTROL PROGRAM

The 2018 budget included a total allocation of $1,500,000 for Colorado River Basin Salinity Control projects funded through the Soil, Water, and Air Management Program. State soil, water, and air program leads assist BLM field offices with support for salinity control projects and reporting requirements. From fiscal year 2015 to fiscal year 2018, the salinity program has increased from 1,248 salt tons retained within the Colorado River Basin to approximately 9,269,100 salt tons retained on BLM land as verified through several BLM programs.

The salinity sub-program-funded projects and their deamortized carryover from prior years account for 177,507 salt tons retained in fiscal year 2018. This improvement reflects the ability of the projects to implement more erosion control practices on saline lands that decrease top soil loss with increased salinity funding. The 22 funded projects are presented in Table 9. In January 2018, BLM released *A Framework for Improving the Effectiveness of the Colorado River Basin Salinity Control Program, 2018-2023*. All salinity efforts fit within this framework and continue to meet BLM's mission. Table 10 lists the salt tons retained accomplishments per state, respectively.

Table 9
Bureau of Land Management Salinity Control Projects
Fiscal Year 2018

#	State	Funding	Description
1.	AZ	150,000	Arizona Strip Field Office Salinity Control Structures
2.	CO	75,000	Geomorphic Salinity Analysis (U.S. Geological Survey)
3.	CO	57,000	Determining Soil Erosion Rates and Potential Salinity Reductions-GJFO
4.	CO	50,000	Piceance Basin Groundwater Evaluation (U.S. Geological Survey)
5.	CO	140,000	Long-term Impacts on Salinity and Sediment Transport (U.S. Geological Survey)
6.	NM	100,000	Simon Canyon – Farmington Field Office
7.	NM	10,000	San Juan River Watershed – Maintenance, La Manga (FFO)
8.	NM	90,000	SJRW – Tamarisk Removal, Reseeding (FFO)
9.	NOC	50,000	Enhancement of APEX with MODFLOW-Ground/Surface Water Postdoc (Affects all Colorado River Basin)
10.	NOC	240,000	Enhancement of APEX with Multiple Salinity-Related Transport Tools (Affects all Colorado River Basin)
11.	UT	20,000	Pariette Lab Analyses
12.	UT	60,000	Kanab Field Office Salinity Control
13.	UT	60,000	Telegraph Flat Head Cut/Gully Restoration for Salinity Reduction
14.	UT	70,000	GSENM/KFO Sediment, Erosion, Salinity Loading Rates
15.	UT	23,000	SJR Sediment Monitoring at U.S. Geological Survey Stream Gage, Bluff, UT (U.S. Geological Survey)
16.	UT	75,000	GSENM Salinity Control
17.	WY	25,000	Muddy Creek Habitat Improvement – Rawlins

18.	WY	25,000	Savery Creek Stabilization – Rawlins
19.	WY	5,000	Upper Green River Hydrogeology Workshop – State Office
20.	WY	15,000	Willow Creek Drainage Repair
21.	WY	130,000	Big Piney/La Barge Watershed Restoration
22.	WY	30,000	Bitter Creek Stabilization Project
TOTAL: $1,500,000			

Table 10
Salinity States and their Contributions to Retaining Sediment/Salts on BLM Lands

State	Tons of Salt Retained from FY 2018 Salinity Funded Projects	*§Carryover of Salt Tons Retained Since FY 2004	Cumulative Total Salt Tons Retained from Salinity Funded Projects	Final Salt Tons Retained on BLM Lands from Salinity Funded Projects
AZ	3,790	7,747	11,537	
CO	0	6,000	6,000	
NM	23,709	41,675	65,384	**177,507**
UT	8,976	27,829	36,705	
WY	52,399	5,482	57,881	

* Numbers reported are subject to the updating of BLM data.
§ Deamortization has been applied to carryover salt tons.

1. Arizona

a. Arizona Strip Field Office Salinity Control Structures

Across the Arizona Strip, there are hundreds of erosion control structures that have been built and continue to be repaired to slow storm water runoff, reduce salinity, and prevent valuable soil loss that end in the Colorado River system. This project helped to address maintenance on numerous structures. Tamarisk removal also occurred. In fiscal year 2018, salt control in the Arizona Strip for the work completed between fiscal year 2016 to fiscal year 2018 was 3,790 tons.

2. Colorado

a. Geomorphic Salinity Analysis

This U.S. Geological Survey and BLM project focuses on characterizing the dominant processes controlling sediment and salinity mobilization in ephemeral streams on BLM land in Mancos Shale landscapes of the Grand Valley to determine geomorphic response thresholds including channel geometry, stream classification, and quantification of additional channel characteristics to develop a conceptual model of channel change processes and cycles.

b. Long-term Impacts on Salinity and Sediment Transport

The U.S. Geological Survey is documenting historical water quality as measured by their gages in the Colorado River Basin to reflect the sediment control from all public lands.

c. Paired Basin Study with Energy Development (Stinking Water Gulch)

This is the final data collection year for the Paired Basin Study that aims to provide insight into how different land uses affect the distribution, storage, and release of sediment, salinity, and selenium in surface-water systems. This study is a collaboration of the U.S. Geological Survey and BLM Uncompahgre Field Office.

d. U.S. Geological Survey Yellow Creek Streamflow Site

This is the final year of salinity funding for the U.S. Geological Survey streamflow site above Crooked Wash to bracket an area on the White River (White River Dome and Piceance and Yellow Creeks) known to be responsible for increasing salinity loads in the White River.

3. New Mexico

a. San Juan River Watershed (SJRW) Integrated Salinity Reduction and Vegetation Management

The BLM's Farmington Field Office manages the entire SJRW. Many approaches to salinity reductions are necessary to minimize transport to the Colorado River including the removal of Pinyon-Juniper trees, reseeding projects, thinning trees, establishment of understory growth with native riparian habitat, sediment fences, sediment retention structures cleaned and dams built, roads improved, and silt traps built to help curtail sediment and salt loading into the Colorado River. The SJRW projects have resulted in 24,252 salt tons retained on the land.

b. San Juan River Watershed Maintenance

This project has been successful in the reduction of salinity transport and remains for the maintenance of La Manga Canyon and one major structure.

c. Simon Canyon

Approximately 35 acres of Pinyon-Juniper encroachment have been thinned and seeded; approximately 500 acres of Pinyon-Juniper encroachment in the Simon Canyon Watershed and Middle Mesa have been treated using heavy equipment; and the areas have been reseeded yielding an approximate 3,100 salt tons retained.

4. National Operations Center (NOC)

a. Enhancement of APEX with MODFLOW-Ground/Surface Water and Multiple Salinity Related Transport Tools

The NOC BLM Salinity Coordinator has been co-developing and collaborating with Texas A&M University-Blackland Research Station developers of the Agricultural Policy Environmental Extender Model on a BLM-Colorado River Basin Rangeland version to capture salinity transport across BLM landscapes that may impact Colorado River water quality as measured by U.S.

Geological Survey gages. This work builds on the previous five years of data collection from saline rainfall-runoff sites, soils, climate, and vegetation to establish proper hydrologic conditions.

The most representative hydrologic simulation of each site must be used to obtain the true salt sources and sinks from the databases. Site specific information is input, and APEX is run on a daily time-step with parameter input for several biophysical components. Several BLM management program salt reduction savings are being added in addition to the salinity funded projects including grazing, oil and gas, fuels treatment effectiveness monitoring (125,830 salt tons, 2010-2018, UT, CO), emergency stabilization and rehabilitation (8,945,237 salt tons retained with revegetation and monitoring for 12 fires since 2002, UT, CO, NM, WY), abandoned mine lands, and off-highway vehicle roads (89,700 miles of dirt roads within the Colorado River Basin equates to 20,560 salt tons retained through their maintenance). More salt totals will be included with further updates and review of program databases. The spatial accounting is taken only one time.

Work continues on the development of a field to watershed-scale and water quality Colorado River Basin rangeland model that can efficiently and effectively quantify and identify past, present, and future management activities and sources and sinks as related to sediment and salinity. While the tools are being developed, the data required are being measured in the field. The NRCS is assisting with rangeland plant information.

5. Utah

a. Assessment of Erosion, Sediment Yield, and Salinity Loading on BLM Lands

Grand Staircase-Escalante National Monument (GSENM) and the Kanab Field Office are collaborating with the U.S. Geological Survey to quantify sediment and salinity loading rates in reservoirs, structures, and other impoundments.

b. Grand Staircase Escalante National Monument Salinity Control

The GSENM continues to stabilize two wide active incised head cuts on Telegraph Flat near the southern border of the Monument.

c. Kanab Field Office Salinity Control

There are numerous erosion control structures that have been constructed and are in need of maintenance. In 2018, several settling ponds were cleaned and reservoir holding capacities increased.

6. Wyoming

a. Cottonwood Creek Headcut Repair

This project stabilized a headcut on Cottonwood Creek, an intermittent tributary to Lower Muddy Creek.

b. Muddy Creek Watershed Stabilization

There are two stream restoration projects underway to restore degraded stream channels and improve riparian and aquatic habitat across the watershed.

c. Pierotto Drop Structure

The BLM participates in a multi-agency project to address the potential degradation to adjacent BLM managed lands, per the Wyden Amendment, to maintain the existing location of the headcut, prevent future degradation of the stream channel, maintain existing water tables, and retain salts within geologic deposits. The final project was successful throughout fiscal year 2018; approximately 52,399 tons of salt were retained on the landscape and not eroded into the river system.

d. Savery Creek Stabilization

The Savery Creek project is a multi-year project. The mass wasting and channel breaks are being addressed through implementing natural channel design techniques on the target reaches that would reduce in-channel erosion, sedimentation, and salinity loadings. Restoration efforts are restoring stability to the system and improved aquatic habitat and riparian health.

D. NATURAL RESOURCES CONSERVATION SERVICE SALINITY CONTROL PROGRAM

The USDA's Environmental Quality Incentives Program (EQIP), which currently provides the vehicle for USDA salinity control activities in the Colorado River Basin, is administered by the NRCS. In fiscal year 2018, $14.7 million in appropriations was obligated for new EQIP contracts with individual entities to install salinity control measures. An additional $3 million in appropriations was used to provide technical assistance (planning, engineering design, construction inspections, etc.) to these entities.

Salinity control is currently being implemented by the NRCS in 13 authorized project areas: five in Colorado, one in New Mexico and Arizona, five in Utah, and two in Wyoming.

1. Colorado

a. Grand Valley Unit

The NRCS considers its Grand Valley Project to be completed. The salt control goal has been exceeded and habitat replacement is complete. The NRCS continues to accept applications to improve irrigation systems that result in additional salt control. In 2018, seven new contracts were developed in this unit to treat 117 acres at a cost of $266,356.

b. Lower Gunnison Basin Unit

The Lower Gunnison Basin Unit, initiated in 1988, is the largest of the USDA salinity control units and is located in Delta, Montrose, and Ouray counties. Over 171,000 acres are planned for treatment. Currently, about 72,600 acres have been treated. The application of salinity reduction and wildlife habitat replacement practices continues to be an integral part of implementation of the Lower Gunnison Basin Unit. In 2018, 48 new contracts were developed on 2,424 acres for planned salt control of about 2,701 tons for $5,950,789. The project is about 66 percent complete and controls approximately 129,000 tons of salt annually.

c. Mancos Valley Unit

The Mancos Valley Unit, initiated in 2004, is bounded by the San Juan National Forest to the north, Mesa Verde National Park to the east, and the Southern Ute Indian Reservation to the south. NRCS developed one new salinity control contract to control 39 tons on 36 acres in 2018 for $94,207. The project has achieved about 37 percent of its salt control goal of 11,940 tons.

d. McElmo Creek Unit

Implementation of the McElmo Creek Unit was initiated in 1990. Currently, about 65 percent of the salt control goal of 46,000 tons has been implemented. Eleven new contracts were developed in 2018 to treat 197 acres and control 213 tons of salt annually.

e. Silt Area Project

The Silt Project, authorized in 2006, is Colorado's newest project. Through 2018, 2,521 tons of annual salt control have been implemented, or about 63 percent of the project goal. One new contract was developed in 2018 on 11 acres to control nine tons annually.

2. New Mexico and Arizona

a. San Juan River Unit

For 30 miles downstream from Farmington, New Mexico, and on both sides of the San Juan River, lies 8,400 acres of irrigated cropland that is part of the Navajo Nation. This area is served by the San Juan River Dineh Water Users, Inc., irrigation company. These lands contribute significant salt load to the San Juan River, and later to the Colorado River. The NRCS provides technical and financial assistance to Native American farmers who plan to improve irrigation delivery and application.

3. Utah

a. Green River Project

The Green River Project is Utah's newest project and was adopted in 2010 with a goal of controlling 6,540 tons of salt annually. Through 2018, about 20 percent of the salt control goal has been realized. Three new contracts were developed in 2018 to control 458 tons annually on 141 acres.

b. Manila-Washam Area

In 2006, a salinity control plan and an environmental assessment were completed by the NRCS on irrigated lands near the community of Manila, Utah, along the border with Wyoming. The project would ultimately treat about 11,000 acres with a goal of reducing salt loading by about 17,000 tons annually. Reclamation has assisted in the improvement of most of the off-farm delivery systems to the project area so that water deliveries are now better managed with seepage, spillage, and wastage eliminated. Through 2018, 58 percent of the salt control goal has been reached. In 2018, three new contracts were developed that will control 137 tons annually on 153 acres. The wildlife habitat replacement requirements are currently deficient and NRCS continues to promote additional habitat contracts.

c. Muddy Creek Unit

In 2003-2004, the NRCS conducted planning activities for salt control in cropland areas irrigated from Muddy Creek near the town of Emery, Utah. The Muddy Creek Unit was officially approved in 2005. Plans for the project area include piping the current earthen ditches in order to deliver pressurized water to individual farms. Ultimately, the opportunity exists to convert about 6,000 acres of flood-irrigated cropland to sprinkled cropland. Through 2018 about 600 acres have been converted. The Emery Canal is being piped and will facilitate future treatment of most of the target acres for this project. In 2018, NRCS developed ten new group pipeline contracts for $1,124,007 that will control 1,199 tons of salt annually and facilitate future on-farm irrigation projects.

d. Price-San Rafael Rivers Salinity Control Unit

Reclamation and the NRCS issued a joint EIS for the Price-San Rafael Rivers Salinity Control Unit in December 1993. The ROD indicated that more than 36,000 acres of irrigated lands would receive salt control measures and that several hundred miles of earthen canals and laterals would be replaced with buried pipelines. Each agency has proceeded to implement control measures as its funding and authority allows. The larger units (Ferron, Wellington, Moore Group, Carbon Canal, and Huntington-Cleveland) have been substantially implemented; both on farm and off farm. In 2018, 21 new contracts were developed on 1,219 acres and will control about 3,537 tons of salt annually.

e. Uintah Basin Unit

Implementation of the USDA on-farm portion of the Uintah Basin Unit started in 1980. Side-roll and center pivot sprinkler systems predominate in the project area. In 2018, 44 new contracts were developed on 1,330 acres and will control 867 tons of salt annually. Landowner participation has exceeded expectations to such an extent that the original salt control goal has been exceeded. Currently, more than 151,000 tons of annual salt control occurs on the irrigated agricultural lands.

4. Wyoming

a. Big Sandy River Unit

On-farm salinity control implementation has been underway on the Big Sandy River Unit since 1988. The original goal for salinity reduction is 70 percent complete and wildlife habitat replacement is complete, though there may have been some loss of habitat in recent years. More than 58,000 tons of annual salt control has been achieved on the project. Where practical, farmers have converted nearly all surface flood irrigation to low-pressure sprinkler irrigation systems for salinity control. There were five new contracts in 2018 to treat 165 acres that will control about 260 tons of salt annually.

b. Henrys Fork River Unit

The Henrys Fork River Unit is the NRCS's newest salinity control project area; authorized in 2013. Through 2018, eight contracts have been developed on 284 acres. Progress is expected to be slow in this project area due to the current low prices for irrigated alfalfa and grass hay, the predominant crops grown in the area.

5. Additional Projects

In 2010, the NRCS began to quantify the salt control being provided by EQIP irrigation improvement contracts in areas outside of the approved project areas, but within the Upper Colorado River Basin. These have been named "Tier II" areas. In 2018, the Colorado NRCS developed nine new EQIP contracts on 870 acres in Tier II areas.

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Upper Colorado River Commission

APPENDIX A

Annual Financial Report

For the Year Ended
June 30, 2018

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Upper Colorado River Commission

Annual Financial Report

With Auditors' Report Thereon

Year Ended June 30, 2018

Upper Colorado River Commission

Table of Contents

Ulrich & Associates, PC
Certified Public Accountants

INDEPENDENT AUDITORS' REPORT

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

Report on the Financial Statements

We have audited the accompanying financial statements of the governmental activities and each major fund information of the Upper Colorado River Commission as of and for the year ended June 30, 2018, and the related notes, to the financial statements, which collectively comprise the Commission's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes 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.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. 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. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Members of Utah Association of CPA's | American Institute of CPA's

Charles E. Ulrich, CPA | Michael E. Ulrich, CPA
Heather Christopherson, CPA
Kaela Cornwell, CPA

4991 South Harrison | Ogden, Utah 84403
Tel] 801.627.2100 | Fax] 801.475.6548
website] www.ulrichcpa.com

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities and each major fund information of the Upper Colorado River Commission as of June 30, 2018, and the respective changes in financial position thereof and the budgetary comparison for the general fund for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Other Matters

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.

Other lnformation

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Upper Colorado River Commission's financial statements as a whole. The supplemental schedule of cash receipts and disbursements, and the supplemental schedule of expenses – budget to actual, are presented for purposes of additional analysis and are not a required part of the financial statements. These schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements taken as a whole.

Ulrich & Associates, PC

November 7, 2018

Upper Colorado River Commission
Management's Discussion and Analysis
June 30, 2018

This discussion and analysis is intended to be an easily readable analysis of the Upper Colorado River Commission (the Commission) financial activities based on currently known facts, decisions, or conditions. This analysis focuses on current year activities and should be read in conjunction with the financial statements that follow.

Financial Highlights

The overall assets of the Commission exceed it's liabilities by $2,626,165, an increase of $1,739,109 over the prior year. This increase is due to current funding received from non federal funders for the System Conservation Pilot Program.

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.

Basic Financial Statements

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.

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

	2018	2017
Cash & investments	$ 2,700,912	879,107
Capital assets (net)	35,440	37,332
Total assets	2,736,352	916,439
Current liabilities	99,917	8,648
Non-current liabilities	10,270	20,735
Total liabilities	110,187	29,383
Net position:		
Invested in capital assets	35,440	37,332
Restricted -SCPP	1,995,924	307,551
Unrestricted	594,801	542,173
Total net position	$ 2,626,165	887,056

During the year ended June 30, 2018, the biggest change in net position came about because of funding from non federal funders for the System Conservation Pilot Program project.

A condensed version of the Statement of Activities follows:

Governmental Activities
For the year ended June 30

	2018	2017
Revenues		
Program Revenues	$ (300)	587
Grants and Contributions	4,737,720	1,256,567
General Revenues		
Interest	11,338	6,354
Total Revenues	4,748,758	1,263,508
Expenses		
Administration	455,003	378,075
SCPP	2,554,646	1,525,349
Total Expenses	3,009,649	1,903,424
Change in net position	1,739,109	(639,916)
Beginning net position	887,056	1,526,972
Ending net position	$ 2,626,165	887,056

The receipt of funding from non federal funders for the SCPP program, created the increase in the net position.

Capital Assets

At June 30, 2018 the Commission had $35,440 invested in capital assets, consisting primarily of a building and furniture & equipment. The change in capital assets during the year consisted of purchases of computer equipment and continued depreciation expense.

Capital Assets at Year-end

	2018	2017
Land	$ 24,159	24,159
Building	85,055	85,055
Improvements	2,207	2,207
Furniture & equipment	82,084	82,846
Subtotal	193,505	194,267
Less: Accumulated Depreciation	(158,065)	(156,935)
Capital assets, net	$ 35,440	$ 37,332

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 355 South 400 East, Salt Lake City, UT 84111.

Basic Financial Statements

Upper Colorado River Commission
Statement of Net Position
June 30, 2018

	Governmental Activities
Assets	
Cash & cash equivalents	
Operations	$ 642,407
Unpaid leave	62,581
Restricted cash	
SCPP	1,995,924
Capital assets	
Land	24,159
Building	85,055
Improvements other than building	2,207
Furniture & equipment	82,084
Less: accumulated depreciation	(158,065)
Total Assets	2,736,352
Liabilities	
Accounts payable	10,070
Retirement payable	2,948
Compensated absences	28,235
Prepaid Assessments	58,664
Total current liabilities	99,917
Noncurrent liabilities:	
Accrued compensated absences	10,270
Total noncurrent liabilities	10,270
Total Liabilities	110,187
Net Position	
Invested in capital assets	35,440
Restricted - SCPP	1,995,924
Unrestricted	594,801
Total Net Position	$ 2,626,165

See accompanying notes to the basic financial statements

Upper Colorado River Commission
Statement of Activities
For the Year ended June 30, 2018

	Expenses	Program Revenues: Charges for services	Program Revenues: Operating grants and contributions	Net Revenue and Changes in Net Position: Total
Governmental activities:				
General administration	$ 455,003	(300)	494,701	39,398
SCPP	2,554,646	-	4,243,019	1,688,373
Total governmental activities	$ 3,009,649	(300)	4,737,720	1,727,771
General revenues:				
Interest				11,338
Total general revenues				11,338
Change in Net Position				1,739,109
Net Position - Beginning of Year				887,056
Net Position - End of Year				$ 2,626,165

See accompanying notes to the basic financial statements

Upper Colorado River Commission

Balance Sheet
Governmental Funds
June 30, 2018

	General Fund	SCPP Fund	Total
Assets			
Petty cash	$ 25	-	25
Cash in bank	82,260	-	82,260
Utah public treasurers' investment pool			-
Operations	560,122	-	560,122
Unpaid leave	62,581	-	62,581
	704,988	-	704,988
Restricted cash			
Cash in bank - SCPP	-	1,995,924	1,995,924
Total Assets	704,988	1,995,924	2,700,912
Liabilities			
Accounts payable	10,070	-	10,070
Accrued liabilities	2,948	-	2,948
Accrued benefits	28,235	-	28,235
Prepaid assessments	58,664	-	58,664
Total Liabilities	99,917	-	99,917
Fund Balance			
Restricted - SCPP	-	1,995,924	1,995,924
Assigned to:			
Unpaid leave	62,581	-	62,581
Unassigned	542,490	-	542,490
Total Fund Balance	605,071	1,995,924	2,600,995
Total Liabilities and Fund Balance	$ 704,988	1,995,924	2,700,912

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 reported above	$ 2,600,995
Capital assets used in governmental activities are not financial resources and, therefore, are not reported in the funds	35,440
Compensated absences are not due and payable in the current period and, therefore, are not reported in the funds	(10,270)
Net position of governmental activities (page 8)	$ 2,626,165

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, 2018

	General Fund	SCPP Fund	Total
Revenues			
Assessments	$ 494,701	-	494,701
Grants - federal	-	85,000	85,000
Non federal funders	-	4,158,019	4,158,019
Interest	11,338	-	11,338
Waternews subscription refunds	(300)	-	(300)
Total Revenues	505,739	4,243,019	4,748,758
Expenditures			
Personal services	398,561	-	398,561
Travel	30,279	-	30,279
Current operating	31,860	136,166	168,026
Capital outlay	2,876	-	2,876
Contingencies	-	-	-
SCPP project payments	-	2,418,480	2,418,480
Total Expenditures	463,576	2,554,646	3,018,222
Excess of revenues over expenditures	42,163	1,688,373	1,730,536
Fund Balance - beginning of year	562,908	307,551	870,459
Fund Balance - end of year	$ 605,071	1,995,924	2,600,995

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)	$ 1,730,536
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.	(1,892)
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.	10,465
Change in net position of governmental activities (page 9)	$ 1,739,109

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, 2018

	Original & Final Budget	Actual	Variance w/Final Budget
Revenues			
Assessments	$ 494,701	494,701	-
Interest	-	11,338	11,338
Waternews subscriptions & refunds	400	(300)	(700)
Total Revenues	495,101	505,739	10,638
Expenditures			
Personal services	407,415	398,561	8,854
Travel	38,000	30,279	7,721
Current operating	50,150	31,860	18,290
Capital outlay	5,500	2,876	2,624
Contingencies	5,000	-	5,000
Total Expenditures	506,065	463,576	42,489
Excess of revenues over expenditures	(10,964)	42,163	53,127
Fund Balance - beginning of year	562,908	562,908	-
Fund Balance - end of year	$ 551,944	605,071	53,127

See accompanying notes to the basic financial statements

Upper Colorado River Commission

Statement of Revenues, Expenditures, and Changes in Fund Balance
Actual and Budget - System Conservation Pilot Program
For the Year Ended June 30, 2018

	Original & Final Budget	Actual	Variance w/Final Budget
Revenues			
Grants - federal	$ -	85,000	85,000
Non federal funders	-	4,158,019	4,158,019
Total Revenues	-	4,243,019	4,243,019
Expenditures			
Consultants & operations	-	136,166	(136,166)
SCPP project payments	-	2,418,480	(2,418,480)
Total Expenditures	-	2,554,646	(2,554,646)
Excess of revenues over expenditures	-	1,688,373	1,688,373
Fund Balance - beginning of year	307,551	307,551	-
Fund Balance - end of year	$ 307,551	1,995,924	1,688,373

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 Unites 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, 30 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:

Invested 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 "invested 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. 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, 2018, $250,000 of the bank deposits are insured, the remaining $4,857,111 balance of deposits was exposed to custodial credit risk because it was uninsured.

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		
Investments by fair value level	Level 1	Level 2	Level 3
Utah Public Treasurers' Investment Fund	$ -	622,703	-
Total investments measure at fair value	$ -	622,703	-

• Utah Public Treasurers' Investment Fund: application of the June 30, 2018 fair value factor, as calculated by the Utah State Treasurer, to the Entity's average daily balance in the Fund.

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, 2018, the Commission's investments had the following maturities:

	Investment Maturities (in years)		
Investment Type	Less than 1	1-5	6 or more
Utah Public Treasurers' Investment Fund	$ 622,703	-	-
Total investments measure at fair value	$ 622,703	-	-

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.

	Quality Ratings		
Investment Type	AA	A	Unrated
Utah Public Treasurers' Investment Fund	$ -	-	622,703
Total investments measure at fair value	$ -	-	622,703

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, 2018, are as follows:

Cash on deposit	$ 82,285
Utah State Treasurer's Investment Pool	622,703
Restricted cash - SCPP	1,995,924
Total	$ 2,700,912

Capital Assets

Capital asset activity for the year ended June 30, 2018, is as follows:

	Balance at June 30, 2017	Additions	Disposals	Balance at June 30, 2018
Capital assets not being depreciated:				
Land	$ 24,159	-	-	24,159
Total capital assets not being depreciated	24,159	-	-	24,159
Capital assets being depreciated:				
Building	85,055		-	85,055
Improvements	2,207	-	-	2,207
Furniture & Equipment	82,846	2,640	3,402	82,084
Total capital assets being depreciated	170,108	2,640	3,402	169,346
Less accumulated depreciation for:				
Building	75,802	1,642	-	77,444
Improvements	2,207	-	-	2,207
Furniture & Equipment	78,926	2,890	3,402	78,414
Total accumulated depreciation	156,935	4,532	3,402	158,065
Total capital assets, being depreciated, net	13,173	(1,892)	-	11,281
Capital assets, net	$ 37,332	(1,892)	-	35,440

Depreciation expense of $4,532 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, 2018 was $28,873, which includes $200 of administrative costs.

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 November 7, 2018 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.

Supplemental Schedules

Upper Colorado River Commission
General Fund
Supplemental Schedule of Cash Receipts and Disbursements
For the Year Ended June 30, 2018

Cash at June 30, 2017		$ 571,556
Cash Receipts:		
Assessments	553,365	
Interest	11,337	
Refunds	75	
Waternews Subscriptions (Refunded)	(375)	
		564,402
Cash Disbursements:		
Personal Services	371,009	
Travel	27,616	
Current Operating	32,108	
Capital Outlay	237	
Contingency	-	
		430,970
Cash at June 30, 2018		$ 704,988

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, 2018

	Budget	Actual	Variance w/Final Budget
Summary of Personal Services with Budget Comparisons			
Executive director	$ 114,678	143,831	(29,153)
Administrative secretary	37,843	37,843	-
General counsel	107,800	109,292	(1,492)
Consulting services	25,538	700	24,838
Social security	19,806	19,300	506
Pension fund contributions	26,340	28,873	(2,533)
Employee medical insurance	75,410	58,722	16,688
	$ 407,415	398,561	8,854
Summary of Current Operating Expenditures with Budget Total Comparison			
Audit and accounting	$ 5,350	4,800	550
Building repair & maintenance	5,000	4,274	726
Insurance	3,600	3,001	599
Janitorial	1,800	1,560	240
Library	9,100	475	8,625
Meetings, including reporter	2,900	2,950	(50)
Memberships and registrations	3,400	717	2,683
Office supplies and postage	3,600	4,577	(977)
Printing	4,430	675	3,755
Telephone	5,300	4,815	485
Utilities	5,670	4,016	1,654
	$ 50,150	31,860	18,290

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Upper Colorado River Commission

APPENDIX B

BUDGET

Fiscal Year Ending June 30, 2019

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APPROVED FY 2019 Budget
UPPER COLORADO RIVER COMMISSION
Fiscal Year ending June 30, 2019

	As Approved 6/20/2018
Personnel Costs inc. pension, SS & health	417,648.00
staff salaries, benefits and pension	
Travel	39,000.00
Current Expense	44,700.00
Janitor	1,900.00
Capital Expense	5,500.00
Contingency	5,000.00
Emergency IT	2,000.00
TOTAL	535,748.00
Funding to capitalize leave sinking fund from FY 18 carryover	20,000.00

2019 State Assessments

	Percents	
Colorado	51.75%	277,250.00
New Mexico	11.25%	60,271.00
Utah	23%	123,222.00
Wyoming	14%	75,005.00
Total		535,748.00

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Upper Colorado River Commission

APPENDIX C

RESOLUTIONS

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RESOLUTION
of the
UPPER COLORADO RIVER COMMISSION
June 20, 2018

Regarding the Emergency Upper Basin Drought Contingency Plan
Demand Management

WHEREAS, on December 10, 2014 the Upper Colorado River Commission (Commission) adopted a Resolution Regarding Development of an Emergency Upper Basin Drought Contingency Plan (UB DCP) in response to the drought in the Colorado River Basin beginning in 2000 and currently in its nineteenth year;

WHEREAS, the UB DCP consists of three primary elements, generally described as follows: 1) continue and expand weather modification programs in the Upper Colorado River Basin; 2) develop and finalize a plan for drought operations of the Colorado River Storage Project Act initial units; and 3) explore the feasibility of developing and employing temporary, voluntary, and compensated demand management program(s) within the Upper Basin;

WHEREAS, the purposes of a demand management program are to reduce consumptive uses, if and when needed, to protect against impacts from Lake Powell reaching critical elevations to help assure full compliance with the Colorado River Compact without impairing the right to exercise any existing Upper Basin water rights in the future;

WHEREAS, to inform its investigation of demand management programs, the Commission committed to support pilot programs such as those contemplated under the July 30, 2014 System Conservation Agreement. The Commission has served as the contracting entity for the Colorado River System Conservation Pilot Program in the Upper Basin (Pilot) since 2015;

WHEREAS, the primary objective of the Pilot was to assess the feasibility of system conservation as a future means of increasing storage at Lake Powell. The Pilot served as a mechanism to reduce uses and conserve water for the benefit of the Colorado River System while investigating some of the administrative and operational considerations associated with performing demand management activities in each of the Upper Division States;

WHEREAS, after four years of facilitating the Pilot, the Commission recognized, in a February 2018 report, that many Upper Basin water users have shown significant interest and willingness to participate in demand management activities;

WHEREAS, although the Pilot has helped explore the feasibility of some aspects of demand management programs, it does not provide a means for the Upper Division States to account, store and release conserved water in a way which will help assure full compliance with the Colorado River Compact in times of drought;

WHEREAS, the Commission recognizes that no demand management program is likely to conserve enough water in any single year to sufficiently address the risk of Lake Powell dropping below critical elevations, or help assure full compliance with the Colorado River Compact;

WHEREAS, the Commission believes that any viable demand management program requires the ability to accumulate and store conserved water over multiple years. However, no means for accounting, measuring, conveying or storing water have currently been established. As such, any water that is currently conserved is subject to use by downstream water users or release from existing system storage prior to being needed in response to emergency drought conditions, thereby defeating the intended purposes of any demand management;

WHEREAS, the Commission recognizes that additional administrative, technical, operational, economic and legal considerations must also be investigated to fully inform the feasibility and usefulness of developing a demand management program in the Upper Basin;

WHEREAS, the Commission finds that the Pilot does not allow the Upper Division States to sufficiently investigate storage or the additional administrative, technical, operational, economic and legal considerations necessary to explore the feasibility of demand management as part of its ongoing emergency drought contingency planning efforts; and

WHEREAS, the Commission believes that the Upper Division States, acting through the Commission, must be active participants in the development and implementation of any demand management program in the Upper Basin, and desires to evaluate the lessons learned and build upon the interest gained during the Pilot to inform its continuing investigation of ways to achieve the purposes of demand management.

NOW, THEREFORE, BE IT RESOLVED that the Commission commits to continue to explore the feasibility of developing demand management program(s) within the Upper Basin to protect Lake Powell from reaching critical elevations to help assure full compliance with the Colorado River Compact;

BE IT FURTHER RESOLVED that the Commission will temporarily cease to act as the contracting entity for the Pilot in the Upper Basin after fulfilling its commitments for 2018 in favor of focusing its efforts on investigating outstanding considerations related to demand management;

BE IT FURTHER RESOLVED that the Commission commits to:

i. Work with interested parties to adapt the existing Pilot, or develop new pilots, to investigate outstanding considerations related to demand management;
ii. Work with interested entities to explore other possible mechanisms or opportunities to investigate outstanding considerations related to demand management; and
iii. Support intrastate efforts to explore demand management mechanisms and considerations within each of the Upper Division States.

BE IT FINALLY RESOLVED that the Commission hereby directs its staff to continue to work in an expeditious manner with the Upper Division States' respective engineering and legal advisers to explore the feasibility of developing and using demand management.

FELICITY HANNAY, Chairperson
United States of America

ERIC L. MILLIS
State of Utah

TOM BLAINE
State of New Mexico

L. JAMES EKLUND
State of Colorado

PATRICK T. TYRRELL
State of Wyoming

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Upper Colorado
River Commission

APPENDIX D

TRANSMOUNTAIN DIVERSIONS

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TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO 2009 - 2018

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10YEAR AVERAGE
TO PLATTE RIVER BASIN											
Grand River Ditch	19,385	14,033	17,080	9,832	17,692	15,490	12,641	14,070	15,915	7,244	14,338
Eureka Ditch	0	0	0	0	0	0	0			0	0
Alva B. Adams Tunnel	243,307	225,799	247,800	292,314	237,200	203,300	113,014	242,900	241,335	116,939	216,391
Berthoud Pass Ditch	727	534	841	403	558	600	366	738	805	208	578
Moffat Water Tunnel	44,455	31,034	51,780	43,749	57,781	18,500	26,828	26,450	43,231	24,835	36,864
Boreas Pass Ditch	209	181	237	4	103	181	113	119	116	36	130
Vidler Tunnel	1,285	954	400	441	291	670	668	380	403	135	563
Harold D. Roberts Tunnel	57,286	54,280	79,310	115,972	84,842	13,550	8,870	37,470	92,227	46,646	59,045
Straight Creek Tunnel	267	218	347	183	225	322	291	265	256	102	248
TO ARKANSAS RIVER BASIN											
Hoosier Pass Tunnel	10,230	10,345	3,137	4,586	9,295	9,370	6,493	7,820	12,605	4,295	7,818
Columbine Ditch	78	352	230	673	1,350	2,408	1,348	926	1,860	1,320	1,054
Ewing Ditch	1,200	919	1,492	257	769	1,553	711	466	1,080	524	897
Wurtz Ditch	2,920	1,690	3,246	803	1,639	3,398	499	1206	2,340	1,380	1,912
Homestake Tunnel	50,510	9,010	32,231	43,350	19,495	17,771	4,185	2,143	22,600	19,430	22,072
Twin Lakes Tunnel	58,740	46,810	66,326	23,250	37,782	62,747	17,650	17,814	31,570	31,060	39,375
Charles H. Boustead Tunnel	83,840	56,660	99,804	13,960	47,019	81,010	70,731	31,366	70,080	40,930	59,540
Busk-Ivanhoe Tunnel	3,320	3,250	4,039	2,990	4,128	5,852	2,554	2,400	2,920	1,550	3,300
Larkspur Ditch	375	234	310	48	64	305	517	177	503	101	263
TO RIO GRANDE BASIN											
Tarbell Ditch	744	578	185	424	920	0	0	0	479	162	400
Tabor Ditch	506	591	347	361	1,020	1,387	1,020	1,020	1,020	259	734
Treasure Pass Ditch	183	262	213	180	245	303	319	319	458	155	258
Don La Font Ditches No. 1 & 2	22	296	184	309	229	309	347	347	371	45	227
Williams Creek-Squaw Pass Ditch	303	395	337	296	384	517	318	318	448	184	344
Pine River-Weminuche Pass Ditch	274	307	244	525	448	934	639	639	593	163	448
Weminuche Pass Ditch	653	229	219	718	1,270	2,918	2,020	2,020	1,440	322	1,064
TOTAL	581,344	458,988	611,266	554,545	523,046	441,543	273,849	391,373	544,655	298,025	467,863

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN COLORADO TO RIO GRANDE BASIN IN NEW MEXICO

2009 - 2018	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10 Year AVERAGE
San Juan-Chama Diversions	106,382	132,458	92,826	51,775	40,953	61,963	94,048	94,310	163,168	36,511	87,463

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN IN UTAH
2009 - 2018

TO GREAT BASIN	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10 YEAR AVERAGE
Broadbent Supply Ditch (Wyoming)	1,455	994	367	377	507	830	1,000	1,061	1,240	1,734	957
Fairview Tunnel	1,429	1,300	2,032	2,175	1,881	2,078	1,332	2,241	2,550	716	1,773
Ephraim Tunnel	4,221	7,120	1,522	2,145	1,742	2,678	3,412	1,621	2,450	1,493	2,840
Spring City Tunnel	2,800	2,850	4,908	3,421	4,023	4,344	4,171	3,736	4,656	2,223	3,713
Central Utah Project, Bonneville Unit*	37,229	33,233	39,780	27,817	36,437	43,815	44,345	41,982	29,410	34,962	36,901
Hobble Creek Ditch	0	0	0	0	0	0	0	0	0		0
Strawberry-Willow Creek Ditch	0	0	0	0	0	0	0	0	0		0
Strawberry Water Users Association*	45,971	65,740	38,418	71,817	69,600	60,723	63,264	63,499	55,549	74,796	60,938
Duchesne Tunnel	29,492	27,128	10,581	20,712	24,144	42,769	29,638	35,577	37,561	24,314	28,192
TOTAL	122,597	138,365	97,607	128,463	138,334	157,238	147,163	149,717	133,417	140,238	135,314

TRANSMOUNTAIN DIVERSIONS FROM GREAT BASIN IN UTAH TO COLORADO RIVER BASIN IN UTAH
2009 - 2018

Tropic and East Fork Canal	4,258	5,329	4,667	5,100	5,640	3,115	4,444	9,648	4,916	4,834	5,195

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN TO NORTH PLATTE BASIN IN WYOMING 2009 - 2018	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10 YEAR AVERAGE
City of Cheyenne	10,063	11,608	5,262	5,754	12,784	8,063	5,945	7,553	5,673	6,170	7,888

TRANSMOUNTAIN DIVERSIONS FROM COLORADO RIVER BASIN 2009 - 2018	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10 YEAR AVERAGE
TOTAL	819,228	739,190	805,395	738,537	712,577	668,791	519,660	636,405	845,097	479,210	696,409