

SIXTY-NINTH ANNUAL REPORT

OF THE

Upper Colorado River Commission

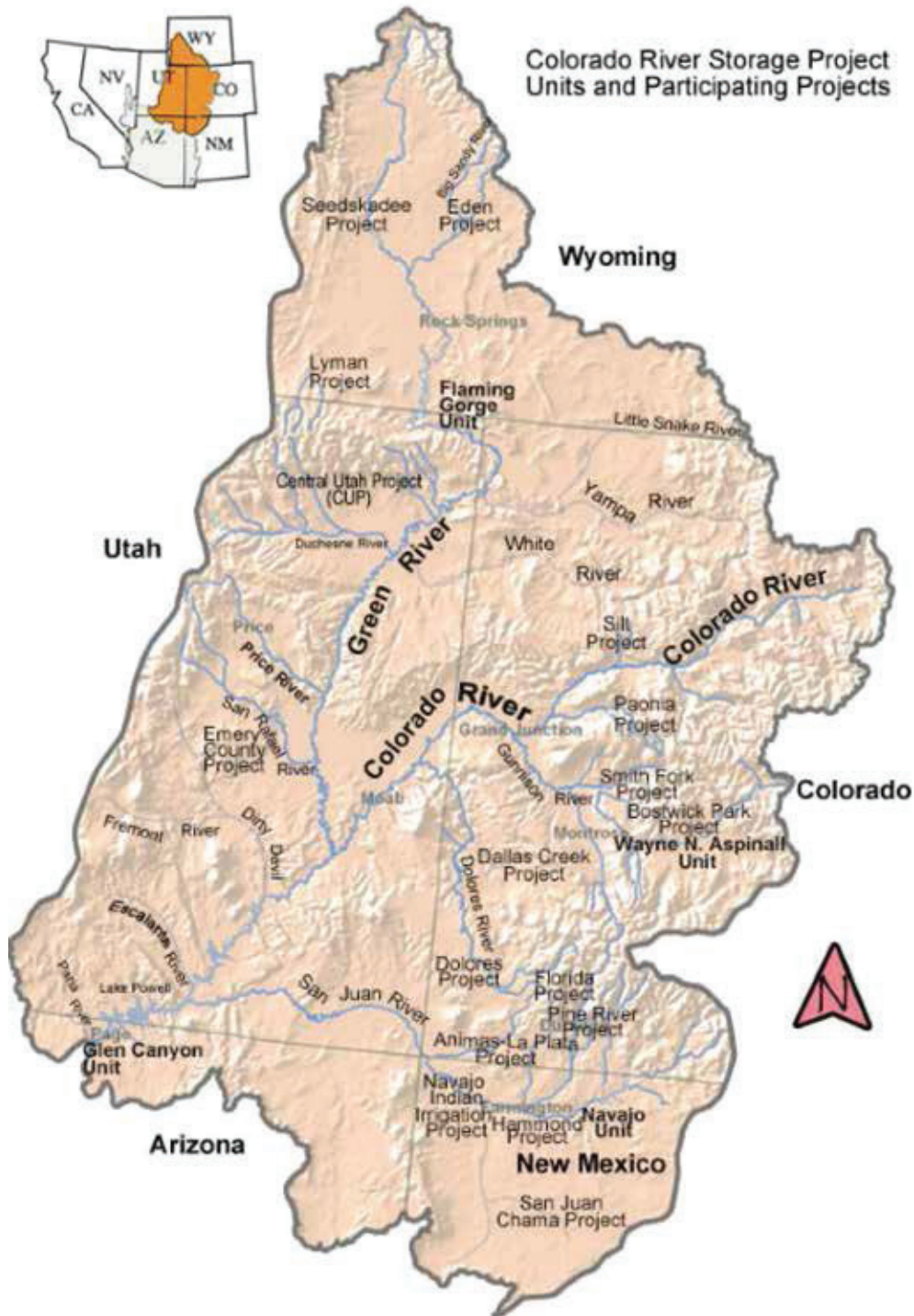


SALT LAKE CITY, UTAH

SEPTEMBER 30, 2017

Upper Colorado River Basin

Colorado River Storage Project
Units and Participating Projects





UPPER COLORADO RIVER COMMISSION

355 South 400 East • Salt Lake City • Utah 84111 • 801-531-1150 • FAX 801-531-9705

April 1, 2018

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

Dear President Trump:

The Sixty-Ninth Annual Report of the Upper Colorado River Commission, as required by Article VIII(d)(13) of the Upper Colorado River Basin Compact, is enclosed.

The budget of the Commission for fiscal year 2018 (July 1, 2017 – June 30, 2018) is included in this report as Appendix B.

In accordance with Article VIII of the Upper Colorado River Basin Compact this report has also been transmitted to the Governor of each State signatory to the Upper Colorado River Basin Compact, which includes Colorado, New Mexico, Utah, Wyoming and Arizona.

Respectfully yours,

A handwritten signature in blue ink, appearing to read "Don A. Ostler".

Don A. Ostler, P.E.
Executive Director

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.

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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 Sixty-ninth 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, Advisers, 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.

COMMISSION



Amy Haas
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
Dallin W. Jensen	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

OFFICERS OF THE COMMISSION

Chairwoman	Felicity Hannay
Vice Chairman	Patrick T. Tyrrell
Secretary	Don A. Ostler
Treasurer	Silvia Norman
Assistant Treasurer	Sergio Boderó

STAFF

Executive Director	Don A. Ostler
Assistant to the Executive Director and General Counsel	Jane Bird
Administrative Secretary	Teri Kay 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
Amy Haas – New Mexico
Steve Farris – 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
Kristen Green – New Mexico

Paul Harms - New Mexico
Kevin Flanigan – 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
Amy Haas – New Mexico

GENERAL ADVISERS 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, 2017 the Commission met as follows:

Meeting No. 275 December 17, 2016	Las Vegas, Nevada
Meeting No. 276 February 24, 2017	By Phone
Meeting No. 277 June 2, 2017	Moran, Wyoming
Meeting No. 278 August 25, 2017	By Phone

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) providing education and information 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) undertaking analysis and study of water resource bills introduced in the U.S. Congress for enactment, and the preparation of evidence and argument and the presentation of testimony before the Committees of the Congress, as necessary.

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-referenced Commission meetings, a large number of additional work meetings, Committee meetings, work groups and conference 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, including environmental 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, drought mitigation/contingency planning, Pilot System Conservation Projects and various legal matters.

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

The Commission and Upper Division States continue to be heavily involved in the implementation of the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead ("Interim Guidelines"), now in their tenth year of operation. Under the Interim Guidelines operating rules, the release from Lake Powell to the Lower Colorado River Basin during Water Year 2014 was dropped for the first time from 8.23 million acre-feet (maf) to 7.48 maf, reflecting low storage conditions at that time in Lake Powell. Based upon the relative storage volumes in Lakes Powell and Mead and the application of the Interim Guidelines, the release from Lake Powell to the Lower Colorado River Basin has been 9.0 maf in 2015, 2016 and 2017, respectively. Since the August 24-month study is used to predict storage elevations in Lake Powell and Lake Mead which 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, an over-prediction of elevation placed Lake Powell in the equalization tier when in actuality the reservoir elevations never achieved the equalization level. 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. 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 during 2012. The Commission continues to evaluate the accuracy

of the 24-month study predictions, and more work needs to be done. In Water Year 2013, the difference between the August 24-month study forecast elevation and actual elevation of Lake Powell for January 1 was 5.3 feet. In Water Year 2014, the difference between the August prediction and 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. On January 1, 2018 the August 24 month study over-predicted the elevation of Lake Powell by 4.49 feet. The Commission will continue to monitor this issue. It must be understood that 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, but also on the ability to predict weather, precipitation and runoff during the period. The Commission is also gathering information on possible changes to future guidelines based upon operating experience that may improve the guidelines or may be needed if they are extended beyond the year 2026.

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

The Commission and Upper Division States were actively involved with the Department of the Interior in discussion with Mexican counterparts on how to better manage and share future shortages as well as meet future demands for water. This includes using storage more efficiently, as well as implementing additional conservation measures within both nations. Considerable effort was also expended to evaluate means of enhancing the supply and in evaluating possible effects to salinity and water quality. Minute 319, an agreement implementing the Colorado River provisions of the Water Treaty of 1944 between the United States and Mexico ("1944 Treaty"), was signed on November 20, 2012 in Coronado, California by the U.S. and Mexican Commissioners of the International Boundary and Water Commission (IBWC). During 2017 the Commission and its staff were actively involved with the Department of the Interior and the International Boundary and Water Commission (IBWC) in implementing Minute 319, including evaluating basin hydrology and possible new shortage triggers as well as implementation details for new projects to conserve or provide water and the delivery of environmental flows.

Concurrent with the implementation of Minute 319, during 2015, 2016 and 2017 Commission staff and representatives of the Basin States worked with the Department of the Interior and International Boundary and Water Commission as well as representatives from the Government of Mexico to extend and modify Minute 319. This culminated in the formal signing of Minute 323 of the 1944 Treaty on September 21, 2017 in Ciudad Juarez, Chihuahua, Mexico. Minute 323 replaced or extended measures agreed to in Minutes 319 and 318, in particular conditional storage of Mexican water in the United States, as well as shortage sharing based upon low elevations in Lake Mead. Minute 323 also added measures for Mexico's participation in binational drought contingency efforts ("Binational Water Scarcity Contingency Plan") that would entail saving specified volumes of water at certain low reservoir elevations for recovery when reservoir conditions improve.

The execution of Minute 323, and subsequent implementation of its terms, was made possible by the Commission, Basin States and certain Colorado River water users signing various domestic agreements in Santa Fe, New Mexico 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 (such as deferring Mexican water deliveries in the event of an emergency, such as an earthquake, that would prevent it from using its full allotment)
- 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

Implementation of the Colorado River Basin Fund MOA:

Agreement was reached during Water Year 2011 on a Memorandum of Agreement (MOA) with the Colorado River Energy Distributors Association, Reclamation, Western Area Power Administration and the states of Colorado, New Mexico, Utah and Wyoming (the "Upper Division States") to allow the use of revenues from the Upper Colorado River Basin Fund for future state development projects as well as



Upper Basin Signatories to Minute 323 domestic agreements



Basin States Principals executing Minute 323 domestic agreements



U.S. Commissioner Edward Drusina and Mexican Commissioner Roberto Salmon after exchanging letters to implement Minute 323

operation, maintenance, and replacement of existing Colorado River Storage Project (“CRSP”) - related projects and activities. Projects have been proposed for funding and are now in the process of implementation as new projects are being developed and proposed. Approximately \$100 million in projects to benefit the four Upper Division States have been approved. In addition, during 2017, a considerable amount of time was spent by UCRC and Upper Division States staff working with Reclamation and the other MOA signatories to clarify eligibility requirements and to develop standard operating procedures for the submission of projects and the expenditure of funds under the MOA .

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). This 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. Approximately 150,956 additional acre-ft. passed Lee Ferry than was released from the Dam in Water Year 2017. From 2008 to 2018, the average increase in flow at Lee Ferry compared to the Dam release is 139,091 acre-ft. per year. Over the last ten years, the cumulative gain at Lees Ferry compared to Glen Canyon Dam release records is 1,390,900 ac-ft. The Commission is continuing to evaluate how this information should be incorporated into dam operations and the implications, if any, for the Upper Basin’s obligations under the 1922 Colorado River Compact

Upper Division States Drought Contingency Planning:

The Commission and its engineering and legal advisors are continuing to develop a drought contingency plan to avoid or reduce the adverse effects on Upper Basin water users resulting from low reservoir conditions. Evaluations include analyzing how to optimize and coordinate CRSP storage to mitigate adverse effects, as well as analysis of voluntary conservation and water banking opportunities. The components of the Upper Division Plan include continuation and expansion of current weather modification efforts, coordinated drought operation of CRSP reservoirs to avoid critical low elevations in Powell, and detailed study of demand management actions 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 non-compliance and will help avoid loss of power generation and all of its attendant benefits for the Upper Colorado River Basin. The Commission and Upper Division States are committed to having an acceptable contingency plan for these very low-probability hydrology scenarios that have significant consequences. The Upper Division Plan has been vetted by stakeholders. Discussions are ongoing between the Department of the Interior, Upper Division States and the Commission to formalize a drought operation plan.

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, were evaluated. Efforts in recent years have been to evaluate next steps including detailed work with stakeholder committees on agricultural conservation, municipal and industrial conservation as well as environmental flow needs. This work continued during Water Year 2017.

System Conservation Pilot Program:

In response to the current 16 year drought in the Colorado River Basin and declining reservoir elevations, four major water suppliers including the Central Arizona Project, Denver Water, The Metropolitan Water District of Southern California, and Southern Nevada Water Authority, along with the U.S. Bureau of Reclamation, contributed \$11 million on a Pilot Program to assist the Colorado River Basin States in their drought contingency planning efforts; specifically, to fund water conservation projects in a cooperative, temporary and voluntary manner to demonstrate the viability of reducing water demand in order to avoid critical low reservoir conditions. Of the \$11 million, \$2.75 million was to be spent on projects in the Upper Basin. The Upper Colorado River Commission has become the Upper Basin contracting agency for administering these funds and awarding projects. Additional funding was provided by Reclamation and the other funders in 2017.

There were a total of 45 projects selected for funding between 2015 and 2017. The total cost of projects through 2017 was \$4.56 million and resulted in approximately 22,120 acre-feet of conserved consumptive use. The vast majority of conservation came from the agricultural sector.

The operation of the Pilot Program has demonstrated that there is significant interest from the agriculture community to participate in such a program. It has 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 critical low reservoir conditions, as well as the interest of stakeholders to help fund such a program.

The System Conservation Pilot Program was extended to operate for one more year during the 2018 irrigation season.

A. ENGINEERING-HYDROLOGY

1. Stream Flow and Hydrology Summary

The historical flow of the Colorado River at Lee Ferry for Water Year 2017 based upon USGS stream flow records at the Lee's Ferry and Paria River gages was 9,157,000 acre-feet. The progressive 10-year total flow at Lee Ferry was 92,133,000 acre-feet (2008 to 2017).

The virgin or natural flow of the Colorado River at Lee Ferry was estimated to be 16.6 million acre-feet, which is more than the average virgin flow for the period of record of 14.7 million acre-feet (1896 to 2017).

In the Upper Colorado River Basin during Water Year 2017, the overall precipitation accumulated through September 30, 2017 was approximately 110% of average based upon the 35 years of data between the years of 1981 and 2006. Unregulated inflow to Lake Powell in Water Year 2017 was about 110% of the 30-year average, or 9.21 million acre-feet (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%	2006 – 73%	2012 – 45%
2001 - 59%	2007 – 68%	2013 – 47%
2002 - 25%	2008 – 102%	2014 – 96%
2003 -51%	2009 – 88%	2015 – 94%
2004 - 49%	2010 – 73%	2016 – 89%
2005 - 105%	2011 – 139%	2017 – 110%

Inflow has been above average in only 4 of the last 18 years, which is the lowest 18-year period since the closure of Glen Canyon Dam in 1963.

Runoff adjusted for change in storage in Colorado River Storage Project reservoirs for the Water Year ending September 30, 2017 was 114% of the long-term average at the San Juan River station near Bluff, Utah and 110% of the long-term average at the Colorado River Station near Cisco, Utah. The volumes of runoff at these stations were 1,431,789 acre-feet and 4,673,114 acre-feet, respectively. Runoff at the Green River station near Green River, Utah was 152% of the long-term average and totaled 5,089,142 acre-feet.

2. Summary of Reservoir Levels and Contents

As of September 30, 2017 total system storage (Upper and Lower Basins) was 66.2% of capacity. For the period October 1, 2016 through September 30, 2017, the change in reservoir storage, excluding bank storage and evaporation, at selected Upper Basin reservoirs was as follows:

- Fontenelle increased 34,475 acre-feet
- Flaming Gorge increased 283,912 acre-feet
- Taylor Park increased 6,317 acre-feet
- Blue Mesa increased 66,974 acre-feet
- Morrow Point increased 4,405 acre-feet
- Crystal decreased 8,451 acre-feet
- Navajo decreased 20,986 acre-feet
- Lake Powell increased 1,840,338 acre-feet

The virgin flow¹ of the Colorado River at Lee Ferry² for the 2017 Water Year was estimated to be 16.6 million acre-feet.³

Observed inflows to Lake Powell during Water Year 2017 were above average (110%); Lake Powell storage increased by 1,840.3 kaf and ended the Water Year at 60.37% of capacity, with 14.66 maf of storage at elevation 3,628.3 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 2017 was 9.0 maf.

Reservoir storage in Lake Mead increased during Water Year 2017 from 9,620,000 acre-feet to 10,181,580 acre-feet, which is 39.0% of capacity. The total Colorado River System experienced a gain in storage during Water Year 2017 of approximately 2,730,000 acre-feet and ended the year at 55.2% of capacity.

Table 1 on page 13 shows the statistical data for principal reservoirs in the Upper Colorado River Basin. Table 2 on page 14 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 15 through 22 for the 2017 Water Year.

3. Flows of Colorado River

Table 3 on pages 25 and 26 shows the estimated virgin flow of the Colorado River at Lee Ferry, Arizona for each Water Year from 1896 through 2017. Column (4) of the table shows the average virgin flow for any given year within the period computed through Water Year 2017. 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 121-year period, 1896 through 2017 is shown in column (7)

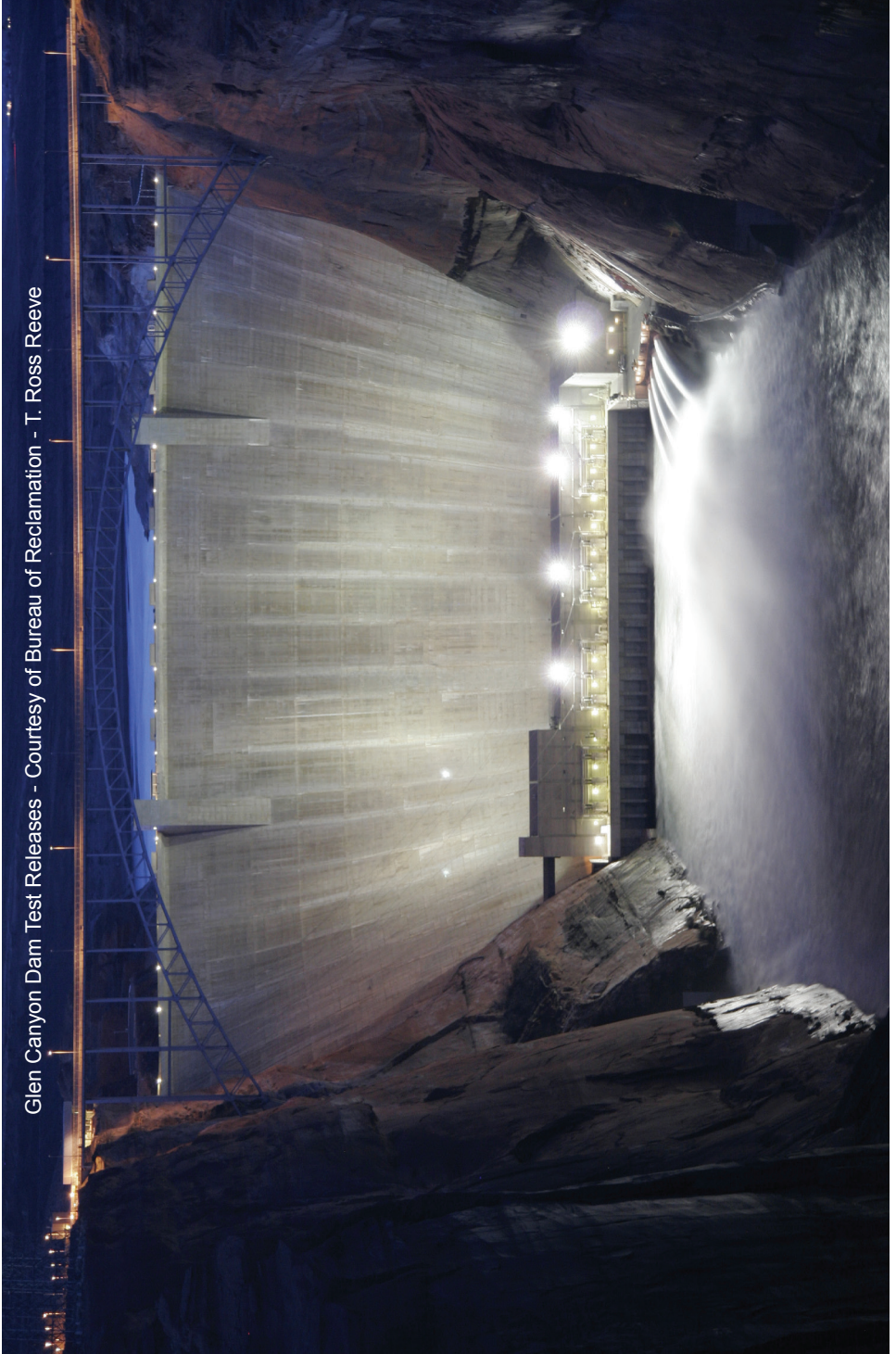
Article III (d) of the Colorado River Compact stipulates that “the States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in a continuing progressive series beginning with 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 27, shows the historic flow at Lee Ferry for the period 1954 through 2017. The historic flow for each progressive ten-year period from 1954 through 2017, 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, 2017 was 92,133,000 acre-feet. The graphs on pages 28 and 29 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 28 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 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 14.7 million acre-feet) shows the long-term average virgin flow from 1896 through 2017. Because the Colorado River Compact

¹ Virgin flow is the estimated flow of the stream if it were in its natural state and unaffected by human activities. .

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.



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

Table 1
**STATISTICAL DATA FOR PRINCIPAL RESERVOIRS 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	—	—	7,383	192	7,100	75	6,700	12	5,990 ⁴	673	3,480	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)

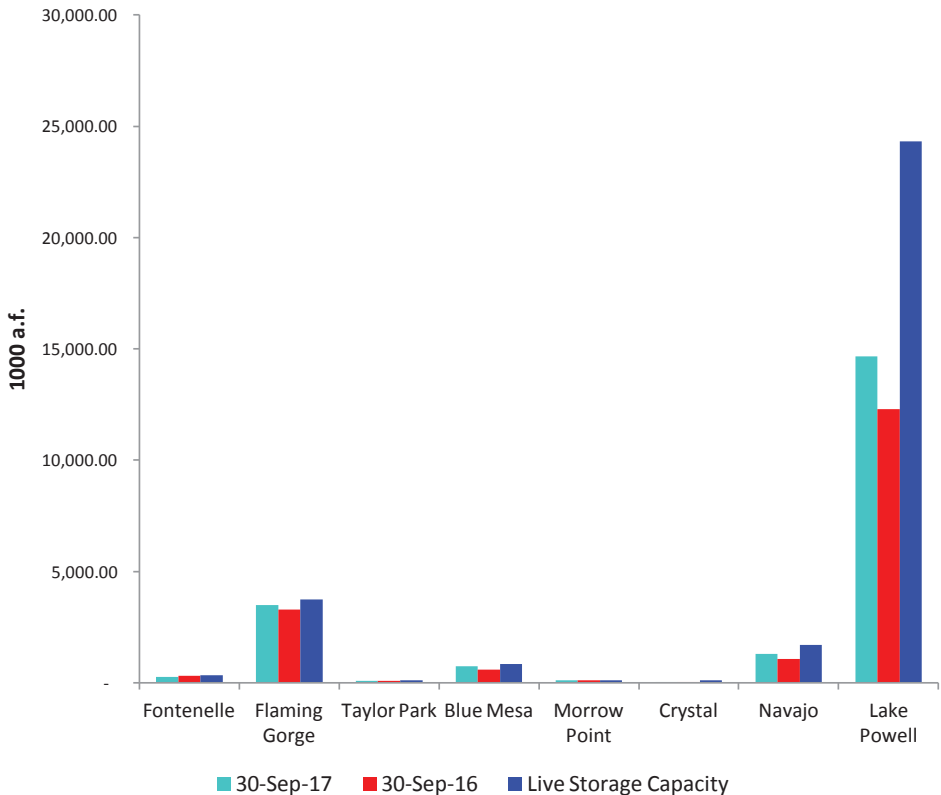
(Units: Elevation = feet; Capacity = 1,000 acre-feet)

	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

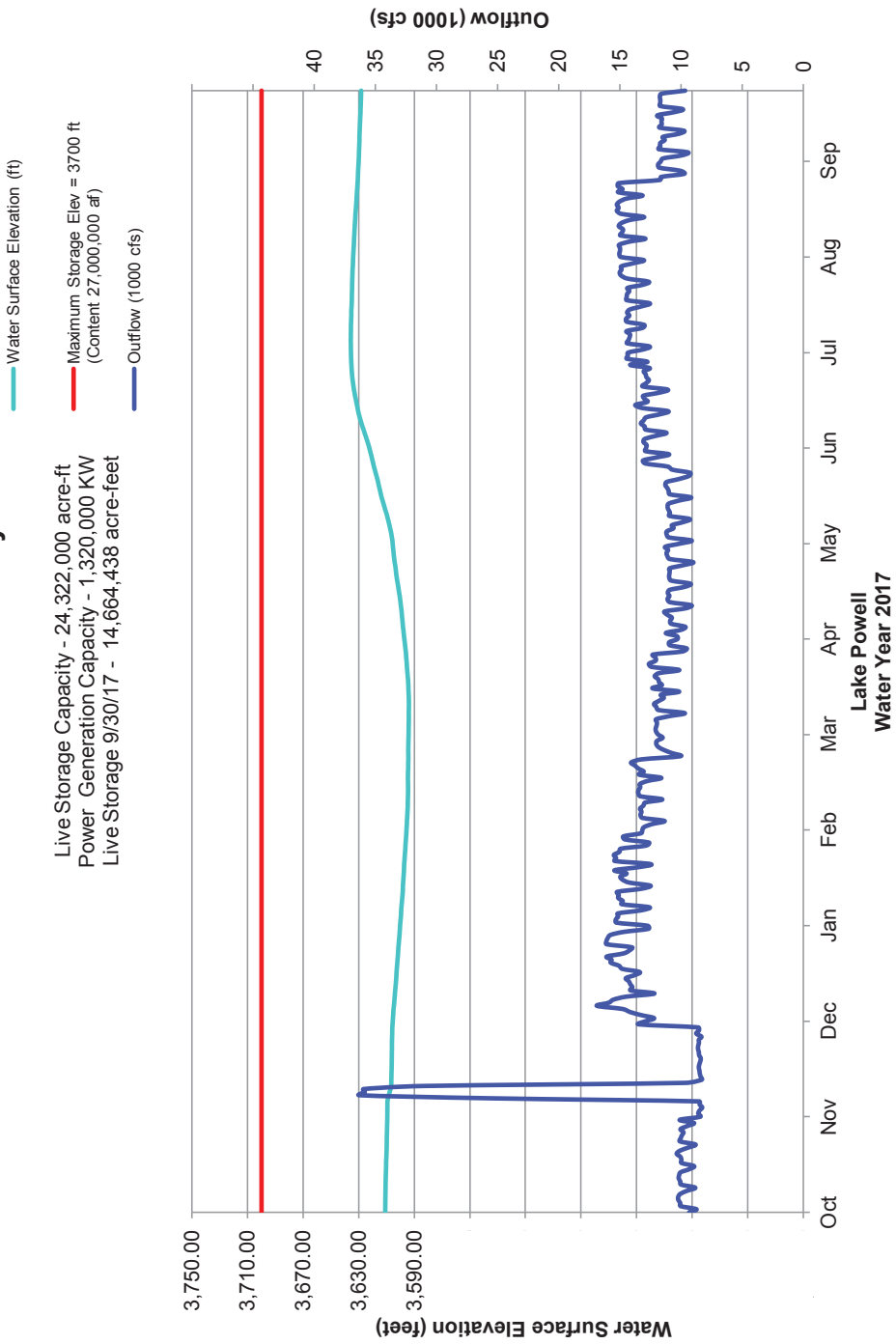
**Storage in Principle Reservoirs at the End of Water Year 2017
Upper Basin
Live Storage Contents**

Reservoir	Sept 30, 2017 (acre-feet)	Percent Live Capacity	Sept 30, 2016 (acre-feet)	Percent Live Capacity	Change in Contents (acre-feet)
Fontenelle	263075	76.3%	228,600	66.3%	34,475
Flaming Gorge	3491312	93.1%	3,207,400	85.6%	283,912
Taylor Park	77417	72.9%	71,100	66.9%	6,317
Blue Mesa	732274	88.3%	665,300	80.3%	66,974
Morrow Point	113505	97.0%	109,100	93.2%	4,405
Crystal	6748.63	38.5%	15,200	86.7%	(8,451)
Navajo	1288914	75.8%	1,309,900	77.0%	(20,986)
Lake Powell	14664438	60.3%	12,824,100	52.7%	1,840,338
Total	20,637,684	66.2%	18,430,700	59.1%	2,206,984



Lake Powell - Glen Canyon

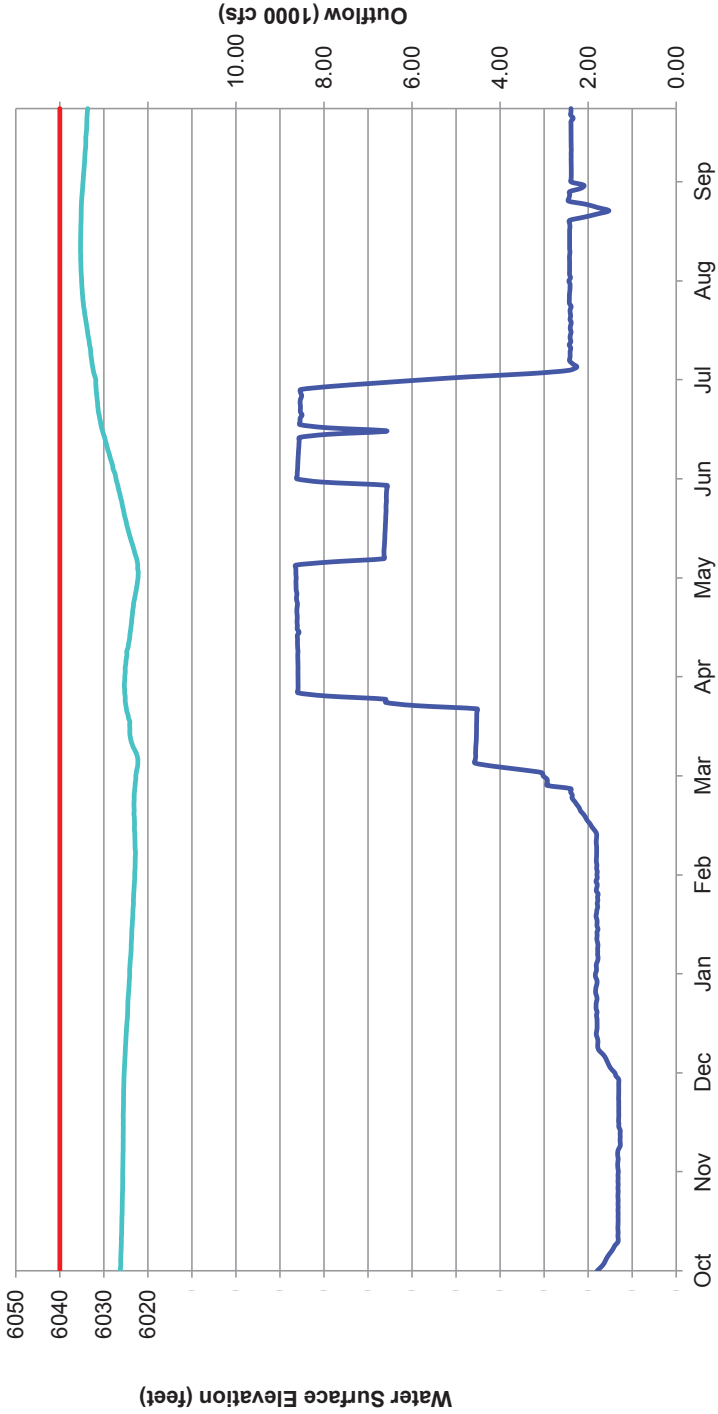
Live Storage Capacity - 24,322,000 acre-ft
 Power Generation Capacity - 1,320,000 KW
 Live Storage 9/30/17 - 14,664,438 acre-feet



Flaming Gorge

Live Storage Capacity - 3,749,000 acre-feet
 Power Generation Capacity - 151,500 KW
 Live Storage 9/30/17 - 3,491,312 acre-feet

— Water Surface Elevation (ft)
— Maximum Storage Elev = 6040 ft
 (Content = 3,789,000 af)
— Outflow (1000 cfs)

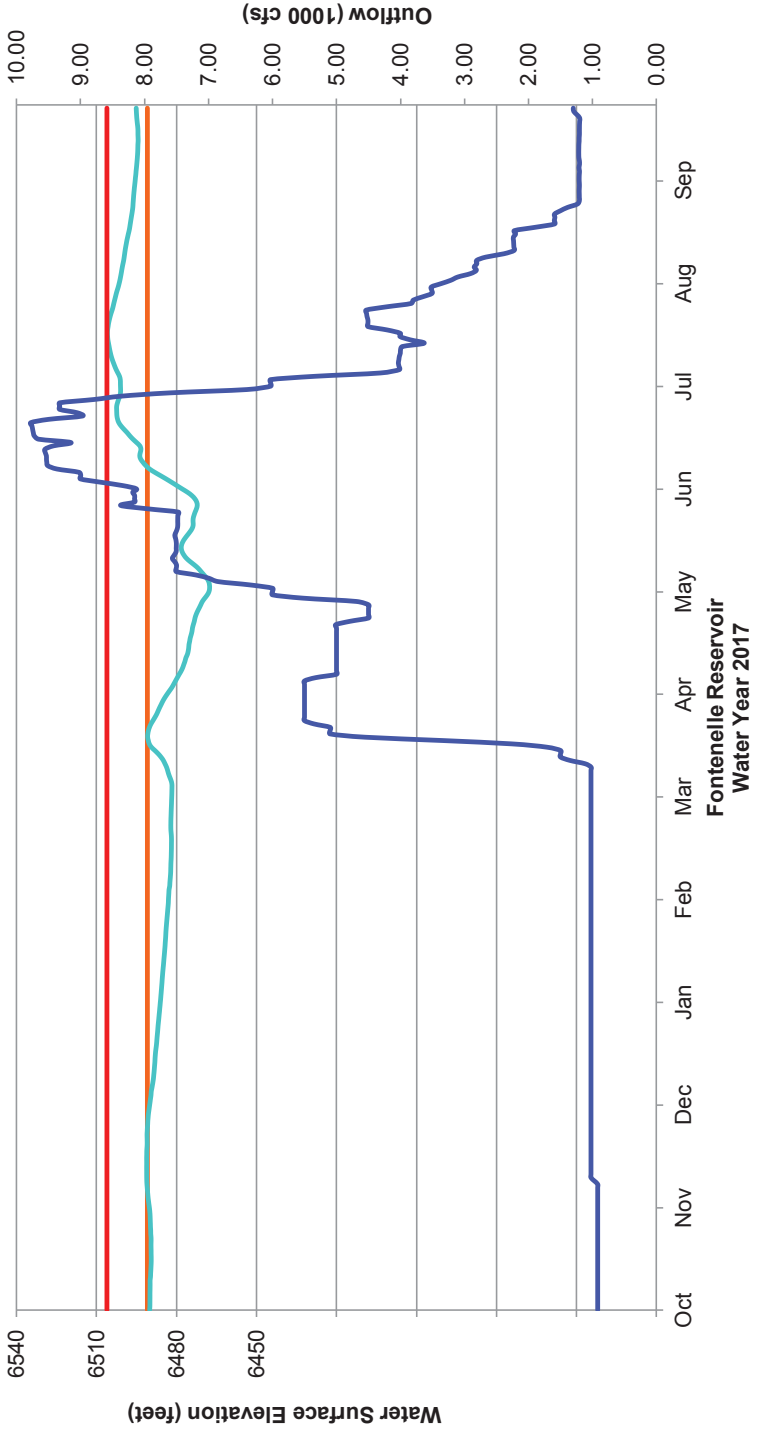


Flaming Gorge Reservoir
Water Year 2017

Fontenelle

Live Storage Capacity - 344,800 acre-feet
 Power Generation Capacity - 10,000 KW
 Live Storage 9/30/17 - 263,075 acre-feet

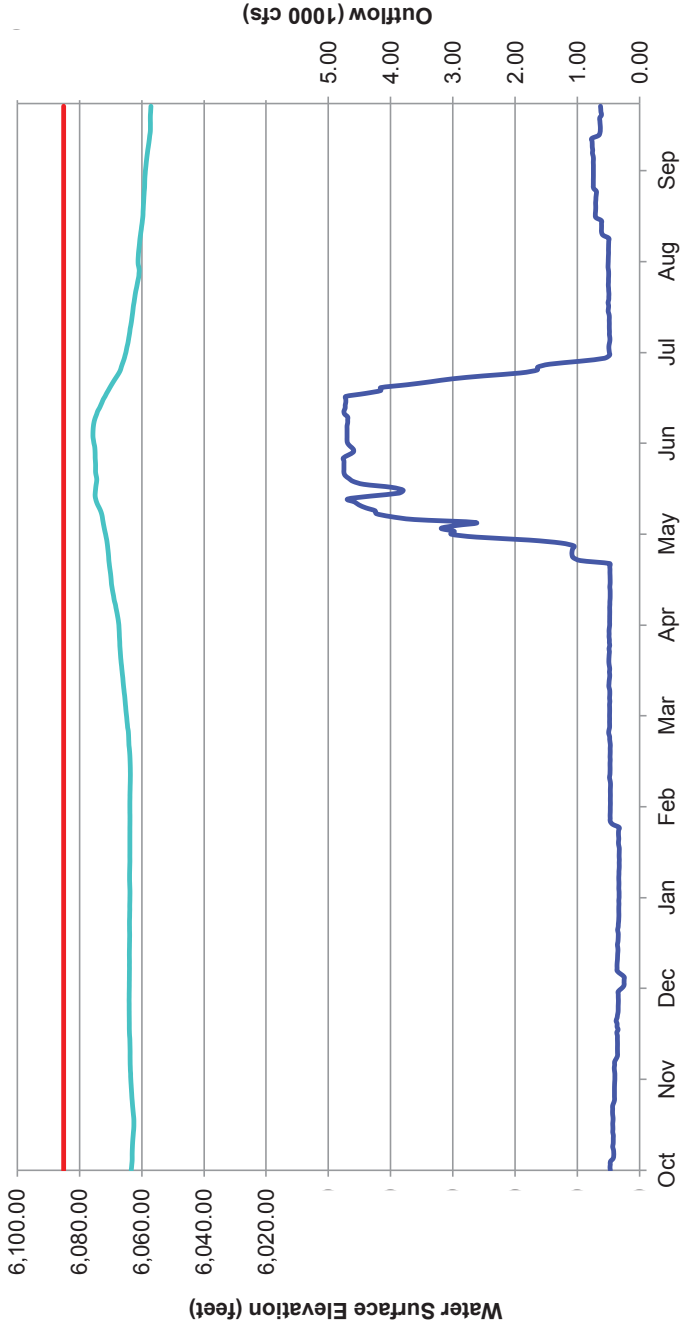
Rated Head Elev. = 6491 ft (Content = 234,000 af)
 Water Surface Elevation (ft)
 Maximum Storage Elev. = 6506 ft (Content = 345,000 af)
 Outflow (1000 cfs)



Navajo

Live Storage Capacity - 1,701,300 acre-feet
 Power Generation Capacity - 0 KW
 Live Storage 9/30/17 - 1,288,914 acre-feet

- Water Surface Elevation (ft)
- Maximum Storage Elev = 6085 ft (Content = 1,709,000 af)
- Outflow (1000 cfs)

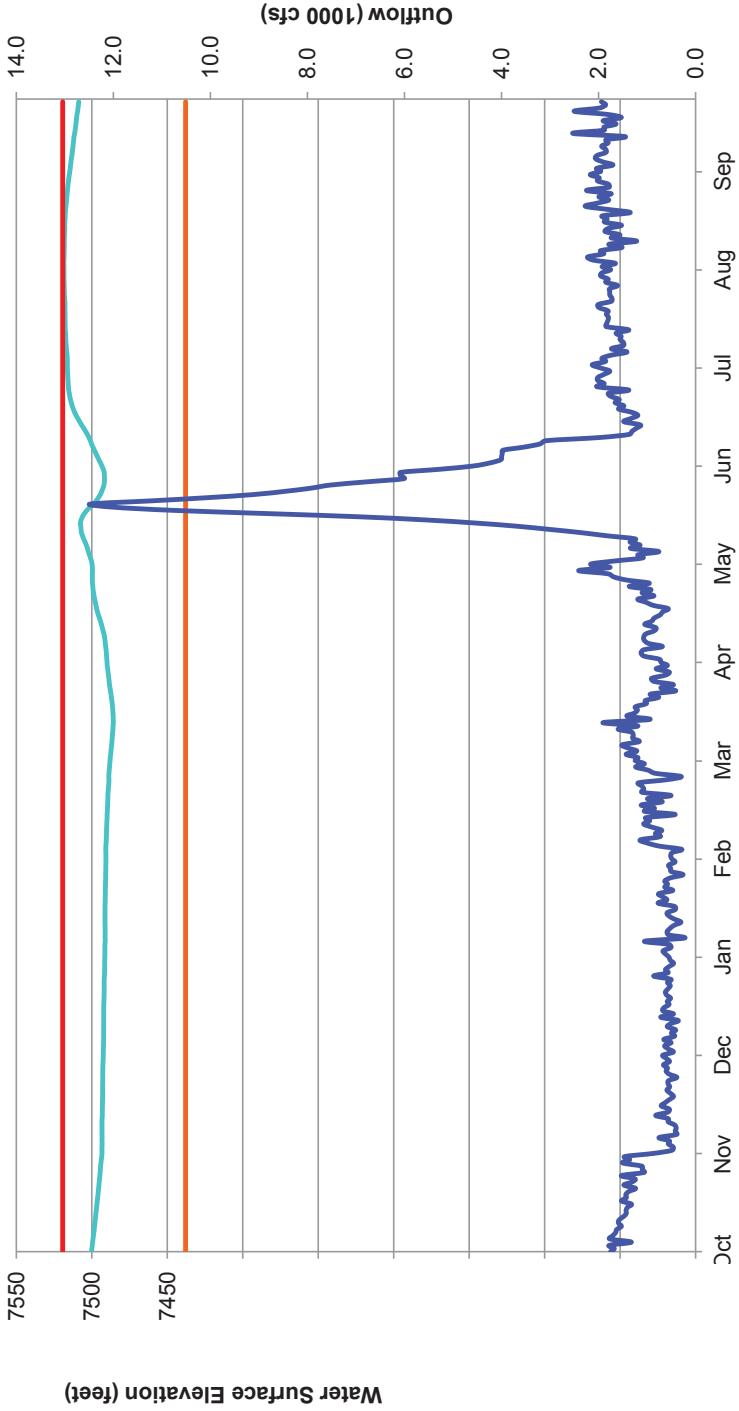


Navajo Reservoir
 Water Year 2017

Blue Mesa

Live Storage Capacity - 829,000 acre-feet
 Power Generation Capacity - 86,400 KW
 Live Storage 9/30/17 - 732,274 acre-feet

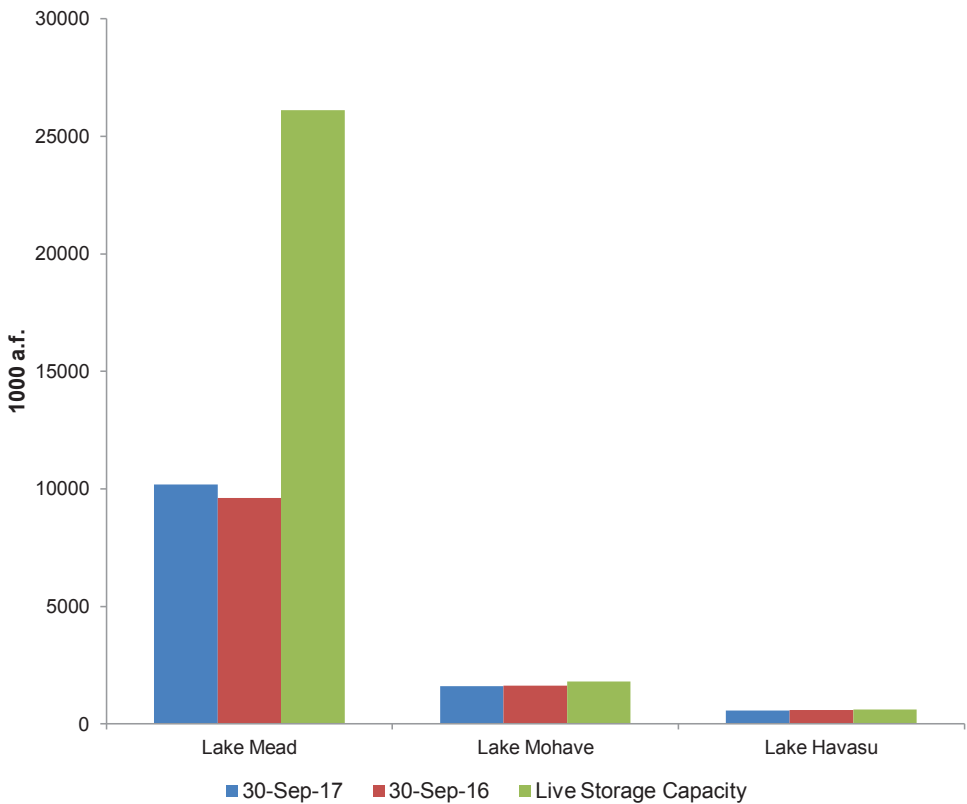
- Water Surface Elev (ft)
- Maximum Storage Elev = 7519.4 ft (Content = 940,700 af)
- Rated Head Elev = 7438 ft (Content = 360,627 af)
- Outflow (1000 cfs)



Blue Mesa Reservoir
Water Year 2017

**Storage in Principle Reservoirs – End of Water Year 2017
Lower Basin
Live Storage Contents**

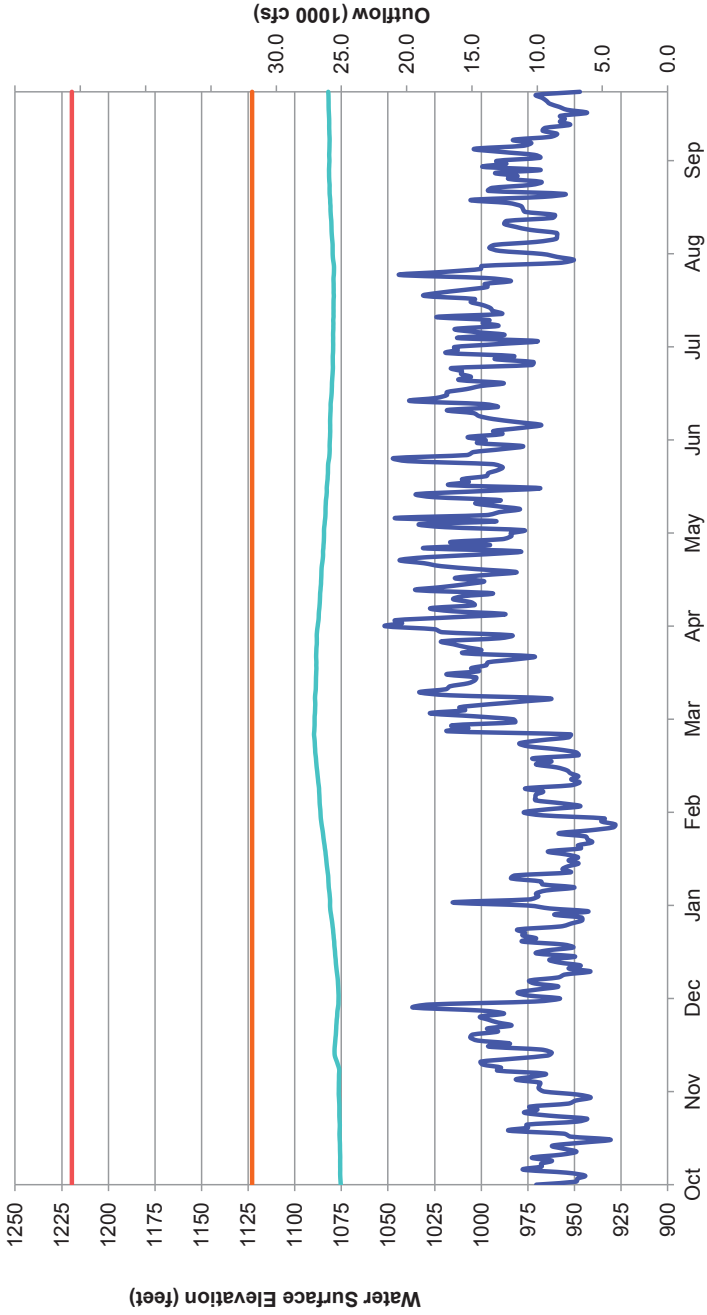
Reservoir	Sept 30, 2017 (acre-feet)	Percent Live Capacity	Sept 30, 2016 (acre-feet)	Percent Live Capacity	Change in Contents (acre-feet)
Lake Mead	10181560	39.0%	9,620,000	36.8%	561,560
Lake Mohave	1603215.5	88.7%	1,626,500	89.9%	(23,285)
Lake Havasu	564275.2	91.1%	579,400	93.6%	(15,125)
Total	12,349,051	43.3%	11,825,900	41.4%	523,151



Lake Mead - Hoover Dam

Live Storage Capacity - 26,120,000 acre feet
 Power Generation Capacity - 1,493,000 KW
 Live Storage 9/30/17 - 10,181,560 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)



Lake Mead
 Water Year 2017

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 29, 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 28 and 29.

- (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 Colorado River Compact of 1922, 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, 1896-2017, the estimated average annual virgin flow is 14.7 million acre-feet, and the average annual historic flow is 11.7 million acre-feet.
- (5) For the next longest period, 1906-2017, 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 1896-2017 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 1914-2017 periods is 14.5 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 1922-2017, which is the period of record since the signing of the Colorado River Compact, the average annual virgin flow is 14.1 million acre-feet, and the average annual historic flow is 10.7 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 (1964-2017) is 9.7 million acre-feet.

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 and 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 2011 reviewed the existing State-adopted and Environmental Protection Agency-approved numeric salinity criteria and found no reason to recommend changes for the three lower mainstem stations which are as follows:

The values are:

	<u>Salinity in (mg/l)</u>
Below Hoover Dam	723
Below Parker Dam	747
Imperial Dam	879

It then updated its plan of implementation. The Forum has now begun its 2014 Review process. For several years, the States, the Upper Colorado River Commission and the Forum have been working with Reclamation as it has updated its river model 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 Imperial Dam by 90-100/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 2011 Review recognized measures in place which control about 1.2 million tons of salt annually and need to control about 650,000 additional tons by the year 2030. The Salinity Control Program is not designed to offset short-term variances caused by short-term hydrologic variances from the norm.

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

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years to 2017	Year Ending Sept. 30	Estimated Virgin Flow	Average to 2017	Average Since 1896	Progressive 10-year Moving Average	Virgin Flow Minus 120-year Average
122	1896	10.1	14.7	10.1		-4.5
121	1897	18.0	14.7	14.1		3.4
120	1898	13.8	14.7	14.0		-0.8
119	1899	15.9	14.7	14.5		1.3
118	1900	13.2	14.7	14.2		-1.4
117	1901	13.6	14.7	14.1		-1.0
116	1902	9.4	14.7	13.4		-5.2
115	1903	14.8	14.7	13.6		0.2
114	1904	15.6	14.7	13.8		1.0
113	1905	16.0	14.7	14.0	14.0	1.4
112	1906	19.1	14.7	14.5	14.9	4.5
111	1907	23.4	14.7	15.2	15.5	8.8
110	1908	12.9	14.6	15.1	15.4	-1.7
109	1909	23.3	14.6	15.7	16.1	8.7
108	1910	14.2	14.5	15.6	16.2	-0.4
107	1911	16.0	14.5	15.6	16.5	1.4
106	1912	20.5	14.5	15.9	17.6	5.9
105	1913	14.5	14.5	15.8	17.6	-0.1
104	1914	21.2	14.5	16.1	18.1	6.6
103	1915	14.0	14.4	16.0	17.9	-0.6
102	1916	19.2	14.4	16.1	17.9	4.6
101	1917	24.0	14.4	16.5	18.0	9.4
100	1918	15.4	14.3	16.4	18.2	0.8
99	1919	12.5	14.2	16.3	17.2	-2.1
98	1920	22.0	14.3	16.5	17.9	7.4
97	1921	23.0	14.2	16.8	18.6	8.4
96	1922	18.3	14.1	16.8	18.4	3.7
95	1923	18.3	14.0	16.9	18.8	3.7
94	1924	14.2	14.0	16.8	18.1	-0.4
93	1925	13.0	14.0	16.6	18.0	-1.6
92	1926	15.9	14.0	16.6	17.7	1.3
91	1927	18.6	14.0	16.7	17.1	4.0
90	1928	17.3	13.9	16.7	17.3	2.7
89	1929	21.4	13.9	16.8	18.2	6.8
88	1930	14.9	13.8	16.8	17.5	0.3
87	1931	7.8	13.8	16.5	16.0	-6.8
86	1932	17.2	13.9	16.6	15.9	2.6
85	1933	11.4	13.8	16.4	15.2	-3.2
84	1934	5.6	13.9	16.1	14.3	-9.0
83	1935	11.6	14.0	16.0	14.2	-3.0
82	1936	13.8	14.0	16.0	14.0	-0.8
81	1937	13.7	14.0	15.9	13.5	-0.9
80	1938	17.5	14.0	16.0	13.5	2.9
79	1939	11.1	14.0	15.8	12.5	-3.5
78	1940	8.6	14.0	15.7	11.8	-6.0
77	1941	18.1	14.1	15.7	12.9	3.5
76	1942	19.1	14.0	15.8	13.1	4.5
75	1943	13.1	13.9	15.7	13.4	-1.5
74	1944	15.2	14.0	15.7	14.1	0.6
73	1945	13.4	13.9	15.7	14.4	0.6
72	1946	10.4	13.9	15.6	14.0	-1.2
71	1947	15.5	14.0	15.6	14.2	-4.2
70	1948	15.6	14.0	15.6	14.0	0.9
69	1949	16.4	13.9	15.6	14.5	1.8
68	1950	12.9	13.9	15.6	15.0	-1.7
67	1951	11.6	13.9	15.5	14.3	-3.0
66	1952	20.7	14.0	15.6	14.5	6.1
65	1953	10.6	13.9	15.5	14.2	-4.0
64	1954	7.7	13.9	15.4	13.5	-6.9
63	1955	9.2	14.0	15.3	13.1	-5.4
62	1956	10.7	14.1	15.2	13.1	-3.9
61	1957	20.1	14.1	15.3	13.6	5.5
60	1958	16.5	14.0	15.3	13.6	1.9
59	1959	8.6	14.0	15.2	12.9	-6.0
58	1960	11.3	14.1	15.1	12.7	-3.3
57	1961	8.5	14.1	15.0	12.4	-6.1

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

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years to 2011	Year Ending Sept. 30	Estimated Virgin Flow	Average to 2012	Average Since 1896	Progressive 10-year Moving Average	Virgin Flow Minus 114-year Average
56	1962	17.3	14.2	15.0	12.1	2.7
55	1963	8.4	14.2	15.0	11.8	-6.2
54	1964	10.2	14.3	14.9	12.1	-4.4
53	1965	18.9	14.4	14.9	13.1	4.3
52	1966	11.2	14.3	14.9	13.1	-3.4
51	1967	11.9	14.3	14.8	12.3	-2.7
50	1968	13.7	14.4	14.8	12.0	-0.9
49	1969	14.4	14.4	14.8	12.6	-0.2
48	1970	15.4	14.4	14.8	13.0	0.8
47	1971	15.1	14.4	14.8	13.7	0.5
46	1972	12.2	14.4	14.8	13.1	-2.4
45	1973	19.4	14.4	14.9	14.2	4.8
44	1974	13.3	14.3	14.8	14.6	-1.3
43	1975	16.6	14.3	14.9	14.3	2.0
42	1976	11.6	14.3	14.8	14.4	-3.0
41	1977	5.8	14.3	14.7	13.8	-8.8
40	1978	15.2	14.6	14.7	13.9	0.6
39	1979	17.9	14.5	14.8	14.3	3.3
38	1980	17.5	14.4	14.8	14.5	2.9
37	1981	8.2	14.4	14.7	13.8	-6.4
36	1982	16.2	14.5	14.7	14.2	1.6
35	1983	24.0	14.5	14.8	14.6	9.4
34	1984	24.5	14.2	14.9	15.8	9.9
33	1985	20.8	13.9	15.0	16.2	6.2
32	1986	21.9	13.7	15.1	17.2	7.3
31	1987	16.9	13.4	15.1	18.3	2.3
30	1988	11.5	13.3	15.1	17.9	-3.1
29	1989	9.4	13.4	15.0	17.1	-5.2
28	1990	8.6	13.5	14.9	16.2	-6.0
27	1991	12.3	13.7	14.9	16.6	-2.3
26	1992	11.0	13.7	14.9	16.1	-3.6
25	1993	18.5	13.8	14.9	15.5	3.9
24	1994	10.4	13.7	14.9	14.1	-4.2
23	1995	19.7	13.8	14.9	14.0	5.1
22	1996	13.8	13.5	14.9	13.2	-0.8
21	1997	21.0	13.5	15.0	13.6	6.4
20	1998	16.8	13.1	15.0	14.2	2.2
19	1999	16.1	12.9	15.0	14.8	1.5
18	2000	10.3	12.8	14.9	15.0	-4.3
17	2001	10.9	12.9	14.9	14.9	-3.7
16	2002	5.5	13.0	14.8	14.3	-9.1
15	2003	10.5	13.5	14.8	13.5	-4.1
14	2004	9.1	13.8	14.7	13.4	-5.5
13	2005	17.0	14.1	14.7	13.1	2.4
12	2006	13.1	13.9	14.7	13.0	-1.5
11	2007	12.5	13.9	14.7	12.2	-2.1
10	2008	16.4	14.1	14.7	12.1	1.8
9	2009	14.3	13.8	14.7	12.0	-0.3
8	2010	12.9	13.8	14.7	12.2	-1.7
7	2011	20.4	13.9	14.8	13.2	5.8
6	2012	8.1	12.8	14.7	13.4	-6.5
5	2013	9.1	13.8	14.6	13.3	-5.6
4	2014	14.8	14.9	14.7	13.9	0.1
3	2015	14.2	15.0	14.6	13.6	-0.4
2	2016	14.0	15.4	14.6	13.7	-0.6
1	2017	16.6	16.6	14.7	14.1	2.0
Maximum		24.5			18.8	9.8
Minimum		5.5			11.8	-9.2
Average		14.7			14.7	0.0

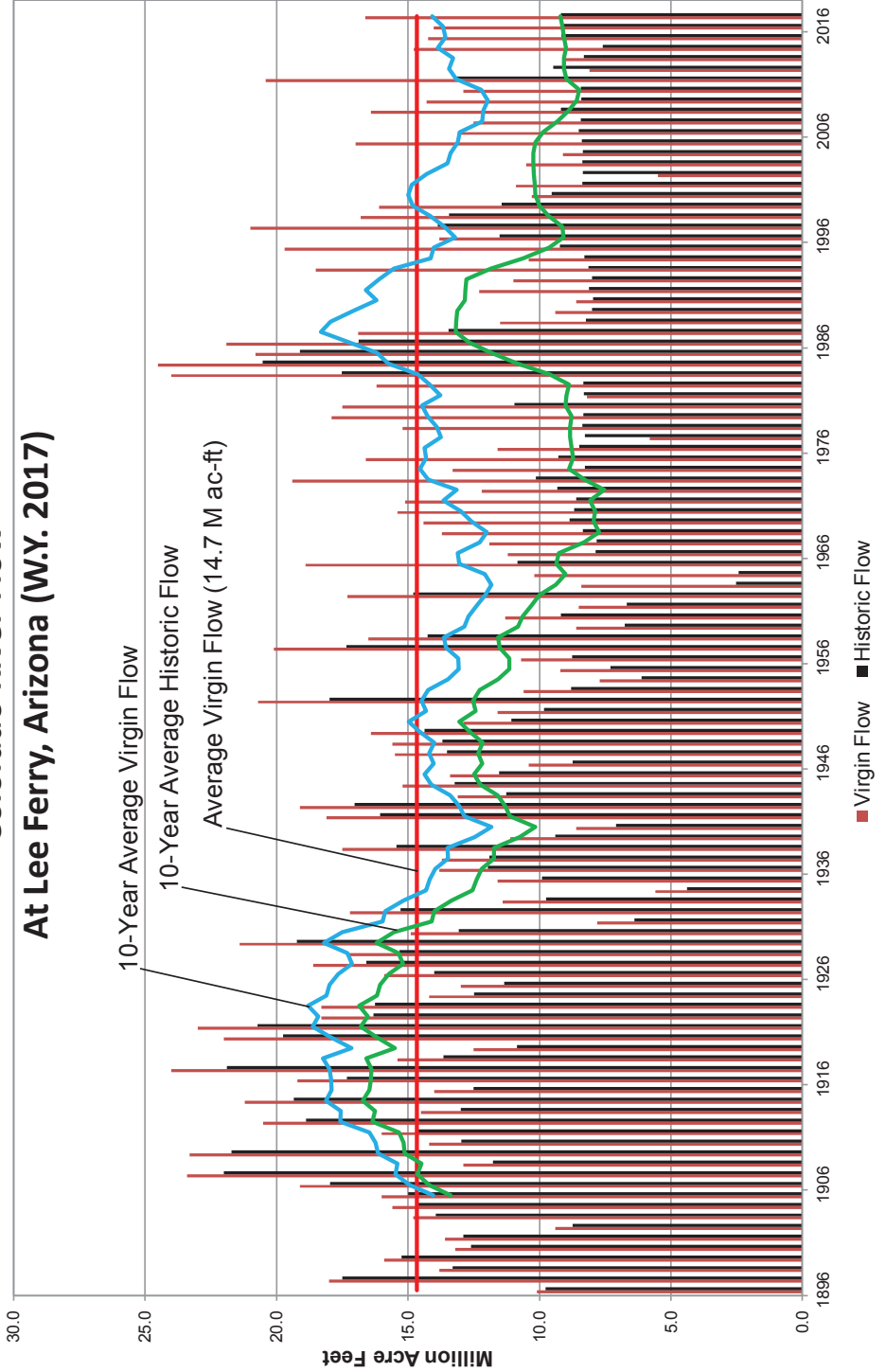
Table 4
HISTORIC FLOW AT LEE FERRY
1954-2017

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

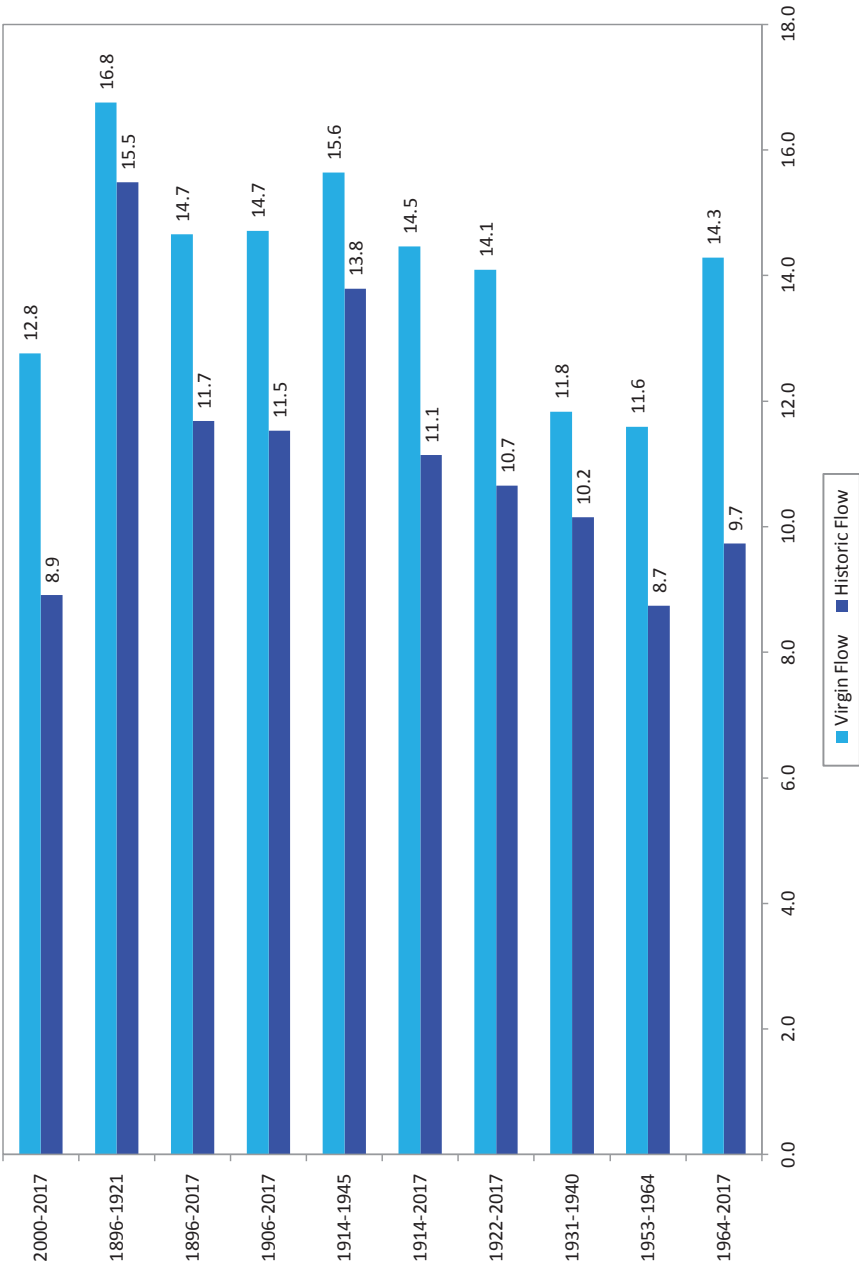
Storage in Flaming Gorge Reservoir began in 1962.
Storage in Glen Canyon Reservoir began in 1963.
Storage in Fontenelle Reservoir began in 1964.

Based upon provisional streamflow records subject to revision.*

Colorado River Flow At Lee Ferry, Arizona (W.Y. 2017)



Lee Ferry Average Annual Virgin Flow For Selected Periods



B. LEGAL

UCRC legal staff continues to inform the Commissioners, their advisers and other interested parties about developments in the courts, Congress and certain Federal agencies. In particular, during 2017, action of importance to the Upper Colorado River Basin States was taken in the following case:

Colorado River Ecosystem v. Colorado, 17CV02316, D. Colo. (2017) In a self reportedly “first complaint of its kind” the Deep Green Resistance, with support from others, filed a complaint for declaratory judgment as next of friends on behalf of the Colorado Ecosystem against the State of Colorado. Per the complaint, the ecosystem asked the court to declare that it is a person that has specific rights capable of being violated by actions potentially taken by the state and its agencies. The State of Colorado filed a Motion to Dismiss the Complaint on a number of procedural grounds. First, the complaint was barred by the State’s sovereign immunity under the Eleventh Amendment of the Constitution. Second, the complaint failed to prove constitutional standing under Article III of the U.S. Constitution. In particular, it alleged hypothetical future injuries that were neither fairly traceable to actions of the State of Colorado, nor redressable by a declaration that the ecosystem is a “person” capable of possessing rights. Third, the complaint failed to demonstrate jurisdiction under any other federal statute. Fourth, the complaint presented a non-justiciable issue of public policy. Whether the ecosystem should have the same rights as people, and who should be allowed to assert those rights in federal courts, are matters reserved to Congress by the Constitution. Finally, even if the complaint could establish the court’s jurisdiction in some form, it further failed to state a claim upon which relief could be granted because it failed to demonstrate statutory standing under any federal statute.

Plaintiff, through next friends, amended the complaint prior to the deadline for filing a response to the State’s Motion to Dismiss. The amended complaint did not cure the deficiencies of the original complaint, and the State of Colorado filed a second Motion to Dismiss restating the procedural grounds set forth in the first Motion to Dismiss. Concurrently, the State filed notice that it would proceed with a Motion for Sanctions against Plaintiff’s Counsel Under Rule 11, on grounds that plaintiff and/or plaintiff’s counsel should know that the claims asserted are frivolous and unsubstantiated by law. On December 3, 2017, after conferring with the counsel for the State of Colorado, counsel for the ecosystem filed a Motion to Voluntarily Withdraw the Amended Complaint with Prejudice. The court granted the Motion on December 4, 2017.

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.

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 485, 84th Congress, 70 Stat. 105), 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 CRSP Act of 1956 also authorized the construction of 11 participating projects. Additional participating projects have been authorized by subsequent Congressional legislation.

Key benefits of the CRSP include regulating the flow of the Colorado River, storing water for beneficial consumptive use, providing for reclamation of arid and semi-arid lands, providing flood control, providing recreation, and generating clean and renewable hydroelectric power. Benefits are also provided for fish and wildlife needs and other environmental considerations per the Colorado River Basin Project Act of 1968, National Environmental Policy Act of 1969, Endangered Species Act of 1973, and Grand Canyon Protection Act of 1992.

The CRSP storage units and authorized participating projects are described in this 69th report and earlier annual reports of the Upper Colorado River Commission. Progress on construction along with updates on 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, 2016, to September 30, 2017), fiscal year (October 1, 2016, to September 30, 2017), and calendar year (2017) are outlined below. 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. In addition to water storage for flood control and consumptive uses, Glen Canyon Dam was built as a hydroelectric power generation facility.

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 to 50 degrees F being released from Glen Canyon Dam. During protracted droughts, such as has occurred from 2000-2016, 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, the President signed into law the Reclamation Projects Authorization and Adjustment Act, Public Law (P.L.) 102-575. Responding to continued concerns over potential impacts of Glen Canyon Dam operations on downstream resources, Congress included the Grand Canyon Protection Act (GCPA) as Title 18 of this Act. Section 1802(a) of the GCPA requires the Secretary to operate Glen Canyon Dam:

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

The GCPA directs the Secretary to implement this section in a manner fully consistent with all existing laws that govern 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 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 Record of Decision on the Operation of Glen Canyon Dam Final Environmental Impact Statement (FEIS) to comply with consultation requirements of the Grand Canyon Protection Act of 1992. 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 also facilitate communication and cooperation within the AMP. The program is primarily funded by hydropower revenues. The AMWG makes recommendations to the Secretary of the Interior 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 comprise 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, Endangered Species Act, 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 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 National Environmental Policy Act 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 Record of Decision was signed by the Secretary of the Interior 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 of the Interior in December 2010, Reclamation and the National Park Service 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 National Park Service 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 Grand Canyon Protection Act 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 Grand Canyon Protection Act, Endangered Species Act, 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 Adaptive Management Program.

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% 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 4,567,486 visitors during calendar year 2017, an increase of 1,455,037 since 2016. The National Park Service 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 108,418 in calendar year 2017, an increase of 22,049 since 2016. The National Park Service 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 National Park Service. The Glen Canyon Natural History Association conducts public tours of the dam and reports that 732,197 people took the dam tour from January 1 through October 31, 2017. The remodeled visitor center was officially opened to visitors on April 4, 2017. The grand opening event celebrated the first full redesign and complete replacement of all of the visitor center's educational and informational displays since it was first opened in 1968.

e. Invasive Mussel Control

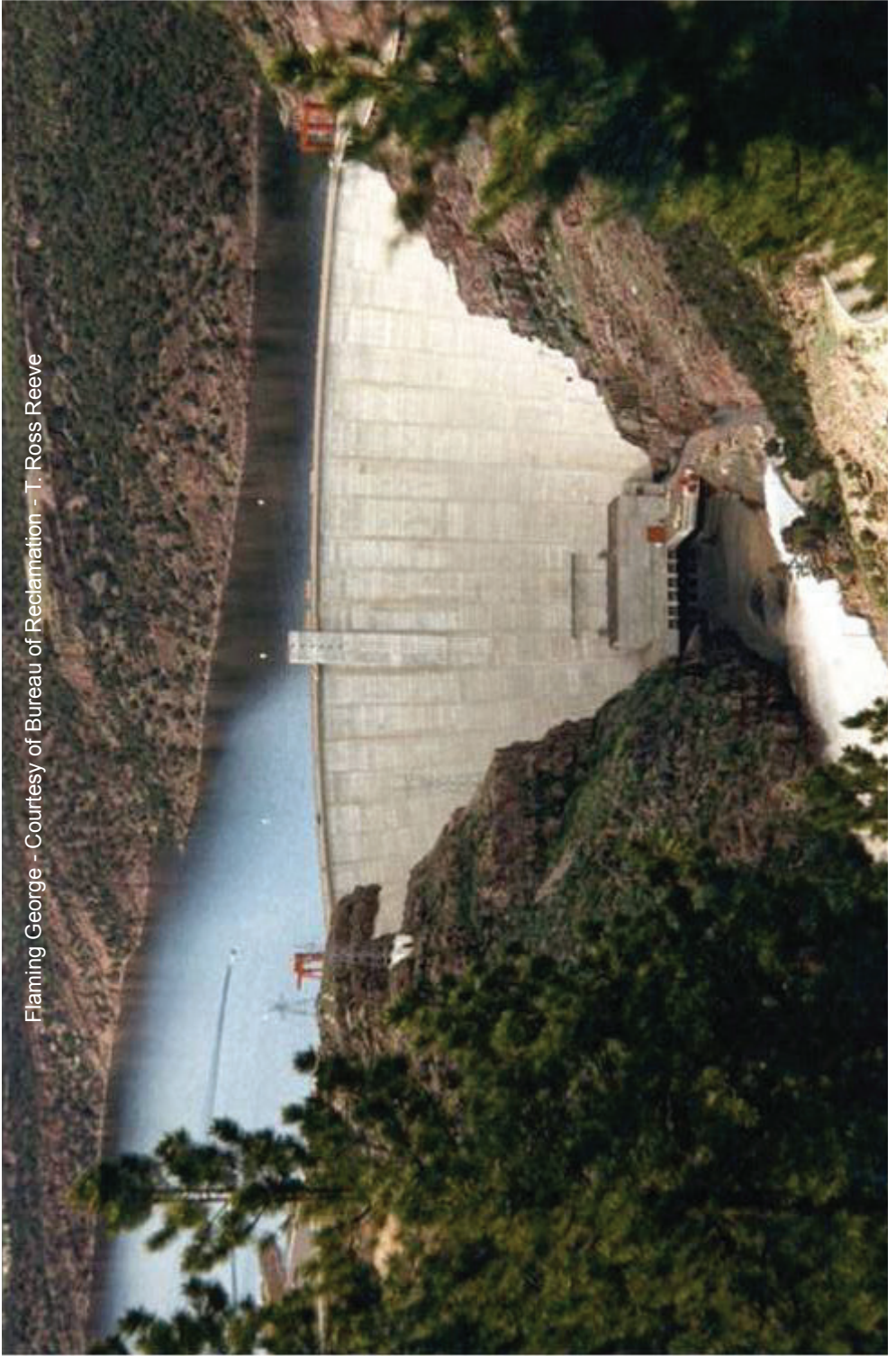
Quagga mussels were confirmed in Lake Powell in 2012 and are now found throughout the reservoir. As a result, Lake Powell is considered to be infested. Veligers (young mussels) are passing through the dam and small numbers of adult mussels have been found in the Glen Canyon stretch of the river below the dam.

In 2015, a substantial increase in the number of quagga mussels was observed. 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 2018.

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 generation at Flaming Gorge Powerplant. There are three generating units in the Flaming Gorge

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



Powerplant. Upgrading of the units in 1992 increased the plant's nameplate capacity from 108 megawatts to about 151 megawatts. Flaming Gorge Powerplant produces approximately 500,000,000 kilowatt-hours of energy annually 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 two miles northeast of the dam, was founded by the Secretary of the Interior 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 National Environmental Policy Act process for implementation of an operation at Flaming Gorge Dam that meets the flow recommendations. The Operation of Flaming Gorge Dam Final Environmental Impact Statement was published in November 2005 and a Record of Decision 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.

Because water year 2017 saw record volume runoff, operations were implemented for hydrologic conditions rather than endangered fish. The Upper Colorado Recovery Program implemented the Larval Trigger Study Plan in 2012, which involves timing spring peak flows to entrain larval razorback sucker in floodplain wetlands, but Reclamation was unable to assist endangered fish recovery during the wet hydrologic conditions in 2017. Reclamation is working with the Recovery Program to evaluate the flow and temperature recommendations for their effectiveness in recovery of endangered fish and a report is expected around the beginning of 2018.

c. Recreational Use

The interagency agreement between the Bureau of 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. Reclamation has a license agreement with the Intermountain Natural History Association to staff the center and is negotiating a Memorandum of Understanding with the U.S. Forest Service on various roles and responsibilities.

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 17,375 visitors who participated in the dam tour during fiscal year 2017.

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.

e. 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. The Bureau of Reclamation periodically performs plankton towing 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 2017.

3. Navajo Unit

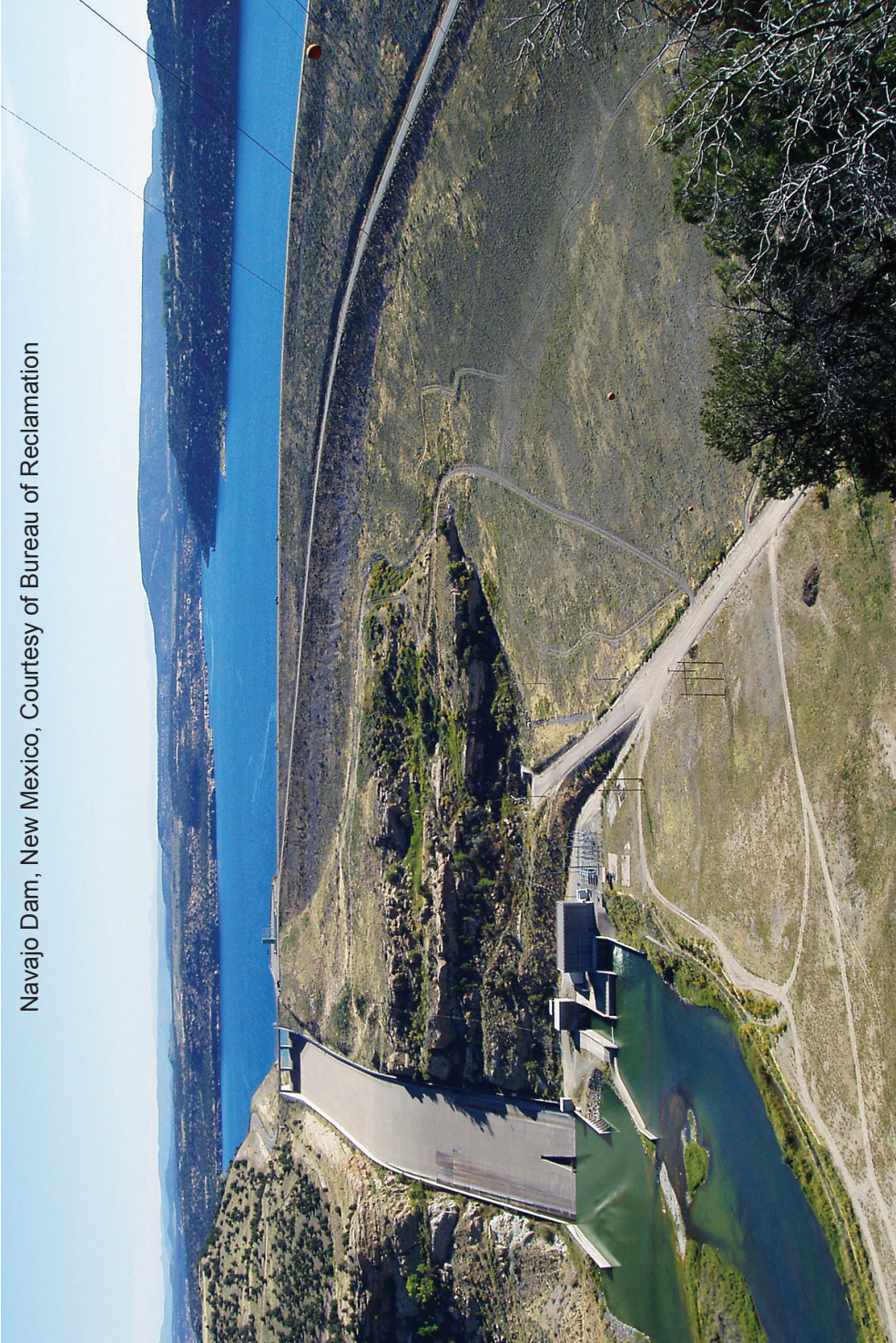
Navajo Dam was completed in 1963. The water stored behind Navajo Dam pursuant to the Colorado River Storage Project Act provides a water supply for the Navajo Indian Irrigation Project near Farmington, New Mexico, and the Hammond participating project. In addition, water for the Jicarilla Apache Nation 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 Final Environmental Impact Statement on April 20, 2006, and the Record of Decision 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 Endangered Species Act and other state and federal laws. Navajo Dam is operated in accordance with the 2006 Record of Decision.

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

Navajo Dam, New Mexico, Courtesy of Bureau of Reclamation



Parks). New Mexico State Parks will be returning a large portion of the lands around Navajo Reservoir back to Reclamation for management once the new statewide recreation lease agreement is signed (expected in February 2018). 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. They will, however, continue boating patrols for enforcement of boating laws outside their formal boundary.

Visitation for Navajo Reservoir was reported to be 331,993 on the Colorado side from July 1, 2016, through June 30, 2017, and 439,022 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 they manage 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 instituted a private sector contract in 2016 to assist the NMDGF with boat inspection and decontamination services at Navajo Reservoir. A total of 14,153 inspections and 59 decontaminations were performed in 2017. 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 2018.

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 Final Environmental Impact Statement 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 Endangered Species Act compliance for the Dallas Creek and Dolores projects. The Record of Decision was issued in May 2012.

a. Recreational Use

Recreation use for the Aspinall Unit is managed by the National Park Service as the Curecanti National Recreation Area. Visitation to the NRA for calendar year 2017 was reported to be

1,041,446. Visitation to the Black Canyon of the Gunnison located below Crystal Dam and adjacent to the Curecanti NRA was reported to be 307,143 for this same time period.

In 1965, the National Park Service entered into an agreement with the Bureau of 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 National Park Service, 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. The Bureau of 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.

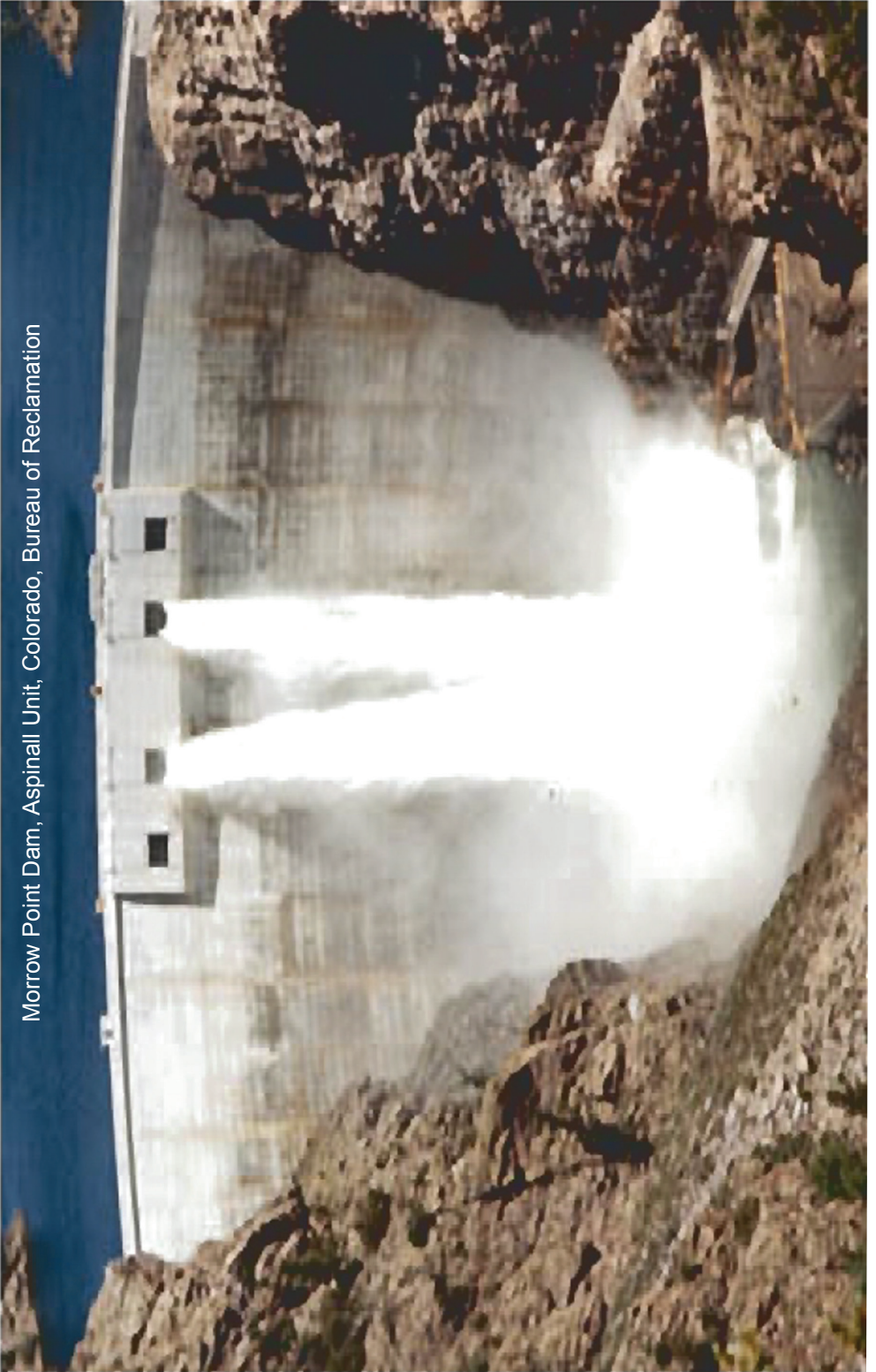
B. INVASIVE MUSSEL CONTROL

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 waterbodies.

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 of the Interior that kept boat ramps open full time in 2017 and will contribute towards keeping inspection stations open in 2018. In 2018, a bill is being proposed in the Colorado state legislature to allow for the collection of fees for boat inspections for ANS. If approved, Reclamation anticipates that additional funding will be available for inspections in 2019.

The State of Utah continues to monitor park waters and, in conjunction with the National Park Service, 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.

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



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 harvested 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 less 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 alter the ecosystem.

The cool, clear depths of Flaming Gorge Reservoir remain ideal for several species of trout, including cutthroat, rainbow, lake, and brown. Also present are kokanee salmon, smallmouth bass, and channel catfish. 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 and there is no limit on the number of fish 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 26-28, 2018. Approximately 201 teams numbering 653 anglers brought in 3,918 fish. The next event, the "Burbot Classic" was held February 3-4, 2018.

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. New Mexico Game and Fish released over 23,000 eight- to 11-inch trout into quality waters below Navajo Dam during January 2018.

The Aspinall Unit reservoirs are exclusively cold-water fisheries with six species of sports 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 Colorado Parks and Wildlife started a program to rebuild the population through increased stocking and continued removal of lake trout. The kokanee population is now estimated to be 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 per river mile; the highest concentration in the West. The seven 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 Colorado Parks and Wildlife.

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 four 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. To further combat invasive species, the National Park Service 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 2016 and 2017, generation at CRSP powerplants amounted to 5.36 and 5.56 billion kilowatt-hours, respectively. The major portion for those same years, 3.98 billion kilowatt-hours in each year, 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 2016 and 2017 and the percentage of change:

**Table 5
Gross Generation (Kilowatt-Hours)
and Percentage of Change for
Fiscal Years 2016 and 2017**

Powerplant	Fiscal Year 2016	Fiscal Year 2017	Percent Change
Glen Canyon	3,980,939,000	3,978,016,000	-0.1
Flaming Gorge	548,264,000	780,786,000	+42.4
Blue Mesa	265,185,320	288,015,750	+8.6
Morrow Point	336,031,000	313,550,200	-6.7
Crystal	153,848,400	139,329,000	-9.4
Fontenelle	56,688,000	32,383,000	-42.9
McPhee	4,914,633	5,340,059	+8.7
Towaoc	19,405,521	18,068,176	-6.9
Total	5,365,275,874	5,555,488,185	+3.5

E. AUTHORIZED PARTICIPATING PROJECTS

Twenty-two participating projects were *originally* authorized by Congress between 1956 and 1968. Eleven were authorized by the Colorado River Storage Project Act 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 Colorado River Storage Project Act of 1956 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 Colorado River Storage Project 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 the Bureau of 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 Colorado River Basin Project Act 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 Colorado River Storage Project Act of 1956 to include the following as a participating project:

23. Navajo-Gallup Water Supply, New Mexico.

Table 5 shows the 17 participating projects that have been completed or are in the process of completion:

Table 5
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.	Seedskafee	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 Colorado Parks and Wildlife under an agreement with Reclamation. There are numerous picnicking and campsites available including miles of trails around the reservoir and downstream of Ridgway Dam. 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 are in the process of designing a permanent boat inspection and decontamination area at the reservoir with construction expected to begin in the fall of 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 Colorado Parks and Wildlife 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, five 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, and Colorado Parks and Wildlife.

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 Colorado Parks and Wildlife under an agreement with Reclamation. The original recreation facilities were built in 1963 and CPW assumed

management in 1965. There are two campgrounds, a picnic area, and boat launching facilities. 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 Colorado Parks and Wildlife 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 Colorado Parks and Wildlife 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 on projected populations in the year 2040, the project would 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 2017, construction was substantially completed on Reach 12B and the Tohlakai Pumping Plant, and the contract for construction of Block 9-11 was awarded on the San Juan Lateral. On the Cutter Lateral, construction continued on Reaches 22A and 22B, as did final design work on the Cutter Water Treatment Plant. 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. Finally, in 2017, 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 2018, 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 2017 price level is \$1.135 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 the Bureau of 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, in major part due to objections from the Ute Indian Tribe. 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 Indian water rights settlement benefits, 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 of the Interior 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 Final Environmental Impact Statement on September 30, 2004, and on December 22, 2004, the Assistant Secretary for Water and Science signed the Record of Decision. Construction began in 2007; however, due to recent reductions in construction funding, the Utah Lake System is expected to be significantly delayed. Under the Utah Lake System, 33 miles of large diameter pipeline has been constructed with 26 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, Bureau of Reclamation, and Western Area Power Administration are implementing the Olmsted Hydroelectric Powerplant Replacement Project. This project will replace a 100-year-old facility, provide 13 megawatts of capacity, and protect CUP water rights. Construction is now underway with completion scheduled for the spring of 2018. 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 Colorado River Storage Project Act 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.

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



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 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. Public Law 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 Central Utah Project Completion Act.

(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 and continues. A corrective action study is underway. The Uintah Water Conservancy District continues to operate the reservoir under a reservoir elevation restriction. Corrective action is expected to be implemented in 2018 to reduce risk of failure associated with the sloughing incident.

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

Fontenelle Power Plant, Wyoming - Courtesy of Bureau of Reclamation



supply. Reclamation's Denver Technical Service Center is finalizing designs needed to raise the top of active conservation five feet. Final designs will incorporate a filter diaphragm around the outlet works, additional toe drains at the left abutment, cutoff wall in the dike, a rebuilt diversion in the dike, and replacement of drop structures in the feeder canal. National Environmental Policy Act 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 the Bureau of 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. In early 2017, Senator John Barrasso (R-WY) introduced a bill (S.B. 199) which would authorize Reclamation, in cooperation with the State of Wyoming, to expand the capacity of Fontenelle Reservoir. Under S.B. 199, the State of Wyoming would provide all funding for the project, which involves placing additional riprap on the upstream face of the dam. The bill is currently on the Senate's legislative calendar. In addition, language in a proposed amendment to the Water Infrastructure Improvements for the Nation Act of 2016 could potentially authorize the expansion of several existing reservoirs, including Fontenelle.

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 Bureau of Land Management on December 31, 2014. The Bureau of Land Management is reviewing the revocation request and performing field authorizations. All but 40 authorizations were field verified during the summer of 2016 and the agency expects to complete its review in the summer of 2018. If acceptable, the withdrawal will be relinquished and the lands returned to the public trust to be managed by the Bureau of Land Management.

Recreation facilities at Fontenelle Reservoir are managed by the Bureau of Land Management 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 Colorado River Basin Project Act 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 of the Interior 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, pipe laying operations on the NNMP were completed in July 2012; however, all NNMP features will not be complete until 2017.

The Bureau of Reclamation and the ALP OM&R Association, including project stakeholders, approved a recreation plan developed by the City of Durango (City). Subsequently, a Final Environmental Assessment and Finding of No Significant Impact was signed in December 2016 and a lease agreement with the City was signed in January 2017. A Cultural Resource Management Plan and programmatic agreement were completed in 2017 for compliance with the National Historic Preservation Act and were submitted to the State Historic Preservation Office in January 2018.

Recreation features for the initial recreation area are being completed to provide for public safety and protect land and water resources from damage due to uncontrolled use. Lands on the east side of the reservoir, lands 25 feet above the high water level around the reservoir, and recreation facilities that will be opened to the public are in the process of being annexed by the City so they can provide law enforcement. Reclamation anticipates that annexation will be finalized on March 21, 2018, and that the City will open the reservoir to non-motorized use from April 1 through May 14, 2018. Motorized use will also be allowed from May 15 through November 15, 2018.

In 2009, Reclamation conducted a mussel facility risk assessment at Ridges Basin Dam to determine future risk of infestation. Since then, boat inspections and decontamination facilities have been constructed. Once Lake Nighthorse is open to public boating, inspections will begin.

b. Pine River Extension Project

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

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 Public Law 89-72, as amended.

F. RECREATIONAL USE AT RESERVOIRS

Colorado River Storage Project 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 use at CRSP initial facilities totaled around \$7.2 million for calendar year 2017, demonstrating the high value placed on outdoor recreation opportunities in the Intermountain West. Recreation use at participating projects increased that number to about \$8.8 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, 2017, was at 80 percent of capacity. Storage reservoir volumes were as follows:

- West Slope
 - Lake Granby, 518,185 acre-feet;
 - Grand Lake, 831 acre-feet;
 - Shadow Mountain, 16,955 acre-feet;
 - Willow Creek, 6,173 acre-feet;
 - Green Mountain, 105,212 acre-feet;
- East Slope
 - Carter Lake, 67,244 acre-feet; and
 - Horsetooth, 83,214 acre-feet.

During water year 2017, transmountain diversions from the Colorado River Basin in Colorado by the Colorado-Big Thompson Project via the Adams Tunnel totaled 241,747 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, 2017, was at 83 percent of capacity, excluding Pueblo Reservoir flood storage. Storage reservoir volumes were as follows:

- West Slope
 - Ruedi Reservoir, 80,421 acre-feet;
- East Slope
 - Turquoise Lake, 115,852 acre-feet;
 - Combined Mt. Elbert Forebay and Twin Lakes Reservoir, 130,377 acre-feet; and
 - Pueblo Reservoir, 203,784 acre-feet.

During water year 2017, transmountain diversions from the Colorado River Basin in Colorado by the Fryingpan-Arkansas Project via the Charles H. Boustead Tunnel totaled 69,470 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 2017 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: West Wide Climate Risk Assessments (WWCRA), Basin Studies, Landscape Conservation Cooperatives (LCC), Water Marketing, Drought Response, Title XVI Water Reclamation and Reuse, Water Conservation Field Services (WCFS), and Cooperative Watershed Management (CWM).

The WWCRA, Basin Studies, and LCC activities represent a comprehensive approach to incorporating the best available science into planning activities for climate change adaptation planning. 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 \$375,997 was funded toward planning in the Upper Colorado River Basin for 2017.

I. RESERVOIR OPERATIONS

Each year the Bureau of 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 2018 AOP is summarized below.

For a detailed discussion of reservoir operations in 2017 and the range of probable projected 2018 operations for each of the four main storage units of the CRSP, please visit the following website to view the 2018 AOP in its entirety: <https://www.usbr.gov/uc/water/rsrvs/ops/aop/index.html>.

1. 2017 Hydrology Summary and Reservoir Status

Above average stream flows were observed throughout much of the Colorado River Basin during water year 2017. Unregulated inflow to Lake Powell in water year 2017 was 11.90 million acre-feet (maf), or 110 percent of the 30-year average which is 10.83 maf. Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 199, 130, and 59 percent of average, respectively. Of note, inflows during the spring of 2017 to Fontenelle and Flaming Gorge achieved historic levels prompting significant bypass releases at both reservoirs during the spring and summer months. Inflows to Navajo were much below average in 2017.

Precipitation in the Upper Colorado River Basin was above average during water year 2017. On September 30, 2017, the cumulative precipitation received within the Upper Colorado River Basin for water year 2017 was 104 percent of average.

Snowpack conditions trended well average across most of the Colorado River Basin throughout the snow accumulation season. The basin-wide snow water equivalent measured 122 percent of average on April 1, 2017. Total seasonal accumulation peaked at approximately 144 percent of average on March 12, 2017. On April 1, 2017, the snow water equivalents for the Green River, Upper Colorado River Headwaters, and San Juan River Basins were 155, 123, and 118 percent of average, respectively.

During the 2017 spring runoff period, inflows to Lake Powell peaked on June 13, 2017, at approximately 60,600 cubic feet per second. The April through July unregulated inflow volume for Lake Powell was 8.17 maf, which was 114 percent of average.

The Colorado River total system storage experienced a net increase of 2.733 maf in water year 2017. Reservoir storage in Lake Powell increased during water year 2017 by 1.84 maf. Reservoir storage in Lake Mead increased during water year 2017 by 0.562 maf. At the beginning of water year 2017 (October 1, 2016), Colorado River total system storage was 51 percent of capacity. As of September 30, 2017, the end of water year 2017, total system storage was 55 percent of capacity.

2. Drought Contingency Planning

The Upper and Lower Colorado River Basin states were tasked by the Secretary of the Interior in June 2013 to develop drought contingency plans. Since that time, states in the two basins have been working separately, but in coordination with Reclamation, to develop these plans. The Upper Basin Plan is aimed at reducing the risk of losing power generation at Glen Canyon Dam and 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.

The Upper Basin Plan includes three major components: (1) drought operations of initial unit CRSP reservoirs above Lake Powell designed to release water to Lake Powell when it is projected to reach critically low elevations; (2) voluntary demand management (e.g., reduction of diversion or consumptive use) and possible banking of conserved water in CRSP 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. Upper Basin states have presented their Drought Operations Plan to the Lower Basin states and received the Lower Basin's Drought Contingency Plan for review. Reclamation conducted modeling of the combined plans and found that joint implementation would benefit the basin. Upper and Lower Basin states are reviewing the plans.

3. System Conservation

The Colorado River Basin is experiencing its worst drought in recorded history. Based on natural flow on the Colorado River at Lees Ferry, Arizona, the period from 2000 to 2016 was the driest 17-year period in more than 100 years of record keeping. During this time, storage in Colorado River system reservoirs has declined from nearly full to about half of capacity. Entities that rely on Colorado River water are concerned with the ongoing drought and declining reservoir levels at Lake Powell and Lake Mead. In response, several programs are being implemented to help mitigate the impact of the ongoing drought.

An \$11 million funding agreement to establish a pilot program for the creation of Colorado River system water was executed in 2014 among Reclamation, the Central Arizona Water Conservation District (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 water conservation actions and reductions in water use beginning in 2015 and continuing through at least 2016.

The purpose of the pilot program is 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 is 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 third year into 2017.

Since the System Conservation Pilot Program was implemented, 45 projects were implemented in the Upper Basin, resulting in approximately 21,700 acre-feet of system water created, and 11 projects were implemented in the Lower Basin, resulting in approximately 107,000 acre-feet of system water created. Additional implementation agreements are anticipated to be executed in 2018.

A pilot following program agreement was executed in 2013 between 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 addition to the previously mentioned activities, Reclamation, CAWCD, MWD, SNWA, and the Lower Division States signed a Memorandum of Understanding on December 10, 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 Mead, Lake Powell, and other Colorado River system reservoirs for the benefit of the system. A report evaluating the effectiveness of the water conservation pilot projects is due to Congress in 2018, including a recommendation on whether activities undertaken by the pilot projects should be continued.

4. Projected Upper Basin Delivery for 2018

Taking into account the existing water storage conditions in the Upper Basin, the August 2017 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 2018. The August 2017 24-Month Study of the most probable inflow scenario projects the water year 2018 release from Glen Canyon Dam to be 9.00 maf. Given the hydrologic variability of the Colorado River System and based on actual 2018 water year operations, the projected water year release from Lake Powell in 2018 will likely be 9.0 maf under the most likely range of inflow scenarios forecasted for water year 2018. 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 2017 and Projected 2018 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 National Environmental Policy Act 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 Adaptive Management Work Group 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 River Endangered Fish Recovery Program, the San Juan River Basin Recovery Implementation Program, Section 7 consultations under the Endangered Species Act, 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 Colorado River Basin Project Act of 1968, National Environmental Policy Act of 1969, Endangered Species Act of 1973, and Grand Canyon Protection Act 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 River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation 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 the Bureau of Reclamation, National Park Service, 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 the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, 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 ladders, fish screens, 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 Endangered Species Act 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 Colorado River Storage Project hydropower revenues. As required by the authorizing legislation, the Secretary of the Interior 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 Programs received \$4,915,000 in appropriated funding for fiscal year 2017 and \$3,795,000 was requested for fiscal year 2018.

K. APPROPRIATIONS OF FUNDS BY THE UNITED STATES CONGRESS

The funds appropriated¹ for fiscal year 2017 for construction of the CRSP and participating projects and recreational and fish and wildlife activities totaled \$87,839,000. Recreational and fish and wildlife activities received a total of \$2,765,000.

¹ Approved by Congress minus rescissions.

In fiscal year 2017, Reclamation expended \$8,547,000 in appropriations in its Colorado River Basinwide Salinity Control Program. The Natural Resources Conservation Service expended \$14,299,000 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 authorizing Acts (P.L. 485, 84th Congress, CRSP Act, 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, Colorado River Basin Project Act).

**Table 7
Colorado River Storage Project
Fiscal Year 2017 Program**

Project	Budget Request	House Allowance	Senate Allowance	Appropriated
Construction Program				
CRSP Participating Projects				
Initial Units, CRSP	\$42,000	\$0	\$0	\$42,000
Navajo-Gallup Water Supply	<u>85,032,000</u>	<u>0</u>	<u>0</u>	<u>85,032,000</u>
TOTAL – Upper Colorado River Basin Fund	\$85,074,000	\$0	\$0	\$85,074,000
Recreation and Fish and Wildlife Facilities				
Recreational Facilities	\$100,000	\$0	\$0	\$100,000
Fish and Wildlife Facilities	<u>2,665,000</u>	<u>0</u>	<u>0</u>	<u>2,665,000</u>
TOTAL – CRSP Section 8	\$2,765,000	\$0	\$0	\$2,765,000
TOTAL – Construction and Section 8	\$87,839,000	\$0	\$0	\$87,839,000

Table 8
Appropriations Approved by Congress for the
Colorado River Storage Project and Participating Projects²

<u>Fiscal Year</u>	<u>Amount</u>
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

TOTAL..... \$4,055,755,000

Plus: Navajo Indian Irrigation Project appropriations621,662,321
(funds transferred to Reclamation only)

TOTAL APPROPRIATIONS \$4,677,417,321

Excluding non-reimbursable funds for fish and wildlife, recreation, etc.,
under Section 8 of Public Law 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, Bureau of Reclamation and Land Management, and the United States Department of Agriculture (USDA), Natural Resources Conservation Service (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.

The Bureau of 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 Bureau of Land Management's (BLM) salinity control program in the Colorado River Basin and the Natural Resources Conservation Service'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 2017, \$8.547 million of appropriations and \$3.663 million of Basin Funds were received into Reclamation's Basinwide Program for a total of \$12.210 million. This amount was expended through 9 of the 11 ongoing salinity control projects located in Colorado, New Mexico, and Utah selected in FOAs. It is estimated that the facilities installed with the \$12.210 million will control over 9,150 tons of salt loading each year.

As of September 30, 2017, Reclamation calculates the appropriation ceiling to be \$644,146,000; total expenditures are \$487,864,000; and the remaining ceiling balance is \$156,282,000.

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 HDPE, PVC, and gravity flow pipe. The cooperative agreement was executed in April 2016 and construction will begin in July 2017. The project is expected to be completed in the spring of 2019.

b. 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 2018. The project is expected to be completed in 2019.

c. 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 will begin in 2018. It is expected to be completed in the spring of 2019.

d. 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 three to four inches of shotcrete cover. A cooperative agreement was executed in August 2016 and construction will begin in January 2018. The project is expected to be completed in 2020.

e. 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 three to four 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 December 2018.

f. 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 will begin in 2018. The project is expected to be completed in the spring of 2020.

g. 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 two 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 will begin in 2018. The project is expected to be completed in the spring of 2019.

h. Paradox Valley Unit

The Paradox Valley Unit, operating since 1996, continues to intercept and dispose of 100,000+ tons of salt annually. Reclamation continues to have meetings and discussions on the Alternatives Study with the Bureau of Land Management, Environmental Protection Agency, Colorado Department of Public Health and Environment, and other stakeholders. A Record of Decision on the Alternatives Study and Environmental Impact Statement is expected in 2020.

i. 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 of 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 will be complete in 2018.

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 is scheduled to begin in the fall of 2017 and be completed in the fall of 2019.

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 2020 and be completed in 2021.

B. BASIN STATES SALINITY CONTROL PROGRAM

Public Law 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 of the Interior through Reclamation. Funds expended through the BSP come from Basin Funds.

In 2017, Reclamation expended \$6.7 million through the BSP. While some of the funds were provided to state agencies and Natural Resources Conservation Service 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 decided to fund and manage two projects from the 2015 FOA.

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 is scheduled to begin in the winter of 2017-2018. The project budget is \$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 will consist of buried PVC pipe and it is expected to be completed in 2017.

b. 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. Clipper Zanni Project

Most of the construction on the Clipper Zanni Project was completed in 2016. Remaining construction and habitat replacement was completed in March 2017 and the project was functional for the 2017 irrigation season.

b. Grand Valley Wildlife Project

The Colorado Water Conservation Board contracted with Colorado Parks and Wildlife in 2013 to fund approximately 491 acres of wildlife improvements along the Colorado River in the Grand Valley. Additional weed management work was accomplished in 2017 to complete the Grand Valley wildlife habitat replacement obligation. A similar project was approved for state wildlife land in close proximity to the main project.

c. Lower Gunnison Basin Salinity Program Coordinator

The Lower Gunnison Basin Salinity Program Coordinator continues to be an important resource for off-farm irrigation system improvement projects. The coordinator has been assisting interested ditch companies secure funding for planning and implementing delivery system piping projects as well as informing water users of NRCS salinity funding and Lower Gunnison Basin Regional Conservation Partnership Program funding available for on-farm improvements. In addition, the coordinator provided grant application assistance to BSP and Basinwide Salinity Program participants, conservation districts, and other ditch companies in order to complete financing for salinity control related projects. The coordinator costs \$70,000 per year (salary, benefits, and operational costs) and secured over \$3,300,000 in additional state grant funding to support salinity program projects. The Colorado River Basin Salinity Control Forum authorized the coordinator to help other salinity areas prepare for FOA processes. The coordinator has assisted two ditch companies in the Mancos River salinity area.

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 fall of 2017, Sheep Creek Irrigation Company intends to complete this project.

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 is awaiting National

Environmental Policy Act clearance to begin construction. A construction start is expected in late fall of 2017. Because Steinaker Dam will be drained, 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. The value of the coordinator position has been demonstrated by successful efforts to obtain four 2015 FOA projects. These projects were competitive because of the coordinator's efforts to confederate historically opposing companies into accepting unified systems that improve each company, as well as the significant cost share match being provided by local funding sources to buy down the cost per ton of salt control. Improvements with the Ute Tribe have also been made. It is anticipated that the tribe will submit future FOA applications. UDAF feels that using BSP funds for this position has greatly benefited the salinity control program in the Uintah Basin area. 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 six 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. Currently, the project has secured the services of an engineer and has entered the design phase of the project. The project is anticipated to be designed, permits secured, necessary reviews conducted, and ready for a fall 2018 construction season.

C. BUREAU OF LAND MANAGEMENT SALINITY CONTROL PROGRAM

The 2017 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 Bureau of Land Management field offices with support for salinity control projects and reporting. A total of 15 different projects received funding as shown in Table 9:

Table 9
Bureau of Land Management Salinity Control Projects
for 2017

#	State	Funding	Description
1.	AZ	175,000	Arizona Strip Field Office Salinity Control Structures
2.	CO	50,000	Evaluate Oil and Gas Development Impact on Mancos Shale
3.	CO	45,000	Piceance Basin Salinity Groundwater Monitoring
4.	NM	185,000	San Juan River Watershed Salinity Reduction and Vegetation Management
5.	NM	10,000	San Juan River Watershed Integrated Salinity Reduction
6.	NOC	75,000	Salinity Risk Mapping for Mancos Shale Sub-Basins
7.	NOC	160,000	Develop RHEM/APEX Watershed Model Tool to Estimate Salt Loading in the Upper Colorado River Basin
8.	NOC	80,000	Evaluating Effectiveness of Re-vegetating Saline Soils on Salt Loading to Streams in the Colorado River Basin
9.	UT	180,000	Grand Staircase Escalante National Monument Salinity Control
10.	UT	95,000	Kanab Field Office Salinity Control
11.	UT	75,000	Monument Wash Grazing Allotment Fencing Pasture
12.	UT	290,000	Salinity Transport and Movement Across a Highly Eroded Site in the Colorado River Basin: Implementation, Monitoring, and Model Calibration
13.	WY	10,000	Cottonwood Creek Headcut Repair
14.	WY	40,000	Muddy Creek Watershed Stabilization
15.	WY	30,000	Savery Creek Stabilization
TOTAL:		\$1,500,000	

1. Arizona

a. Arizona Strip Field Office Salinity Control Structures

Across the Arizona Strip Field Office, there are hundreds of erosion control structures that have been built to slow down stormwater runoff, reduce salinity, and prevent valuable soil loss, which would eventually end up in the Colorado River system. This project helped to address needed maintenance on numerous structures. Salt control is about 312 tons per year.

2. Colorado

a. Mancos Shale Oil and Gas Monitoring

The U.S. Geological Survey, in cooperation with the BLM, will study the distribution, storage, and release of sediment, salinity, and selenium in areas of Mancos shale under two different land uses.

b. Piceance Basin Salinity Groundwater Monitoring

The U.S. Geological Survey, in cooperation with the Bureau of Land Management, continued groundwater monitoring efforts that began in 2008 in areas of energy development within the Piceance Basin (Uinta and Green River formations).

3. New Mexico

a. San Juan River Watershed Salinity Reduction and Vegetation Management

The focus is on noxious weed removal that threatens native riparian habitat, cutting trees, and addressing the lack of understory plant growth leading to loss of top soils due to rain/snowmelt events that lead to the deposition of surface sediments in the stream. Sediment fences are being erected and the Youth Conservation Corps is involved in restoring native vegetation to reduce soil erosion and salinity.

b. San Juan River Watershed Integrated Salinity Reduction

Funding for this project has been allocated to purchase materials used for sediment capture fences. Two major structures in Largo Canyon and La Manga Canyon are planned to have maintenance and upgrades.

4. National Operations Center (NOC)

a. Salinity Risk Mapping for Mancos Shale Sub-Basins

The BLM has been collaborating with the USDA's Agricultural Research Service to develop watershed and water quality models needed to quantify and report upon the effectiveness of management activities in retaining sediment and salt. Additional work is proposed to refine the existing models to develop salinity risk maps for hydrographic sub-basins with outcroppings of the Mancos shale formation.

b. Develop RHEM/APEX Watershed Model Tool to Estimate Salt Loading in the Upper Colorado River Basin

This project will improve the watershed and water-quality models under development by using information derived from remote sensing systems. Landscape-level ecological monitoring efforts and other previous field surveys in conjunction with geospatial layers of soil and slope will improve distribution of model parameters so that salinity loading can be assessed under natural conditions.

c. Evaluating Effectiveness of Re-vegetating Saline Soils on Salt Loading to Streams in the Colorado River Basin

Efforts to restore degraded ecological systems in many areas of the Colorado River Basin are challenging due to extreme conditions such as drought frequency, saline soils, and sodic soil properties. The proposed project will help improve current restoration success rates by recommending guidelines for optimizing selection of plant species that are most tolerant and adapted to the saline/sodic soils and extreme climatic conditions.

5. Utah

a. Grand Staircase Escalante National Monument Salinity Control

Fifteen salinity control structures were cleaned and repaired on the Grand Staircase Escalante National Monument. A total of 114,010 cubic yards of sediment was removed from these structures and used to repair and maintain the dams.

b. Kanab Field Office Salinity Control

There are numerous erosion control structures that have been constructed and in need of maintenance. This project addresses those issues and meets resource goals and objectives by maintaining soil resources on site. The existing structures have been maintained and repaired.

c. Monument Wash Grazing Allotment Fencing Pasture

This project entails construction of almost seven miles of range fence. This fencing would create an additional pasture in the allotment to alleviate livestock use on the allotment all season long. With an additional pasture, the grazing regime would incorporate a rest-rotation component. This would reduce the time livestock are on the moderately saline soils and allow for periods of rest each year.

d. Salinity Transport and Movement Across a Highly Eroded Site in the Colorado River Basin: Implementation, Monitoring, and Model Calibration

This project is a collaboration with the USDA's Agricultural Research Service and NRCS, Desert Ranch Institute, and the University of Nevada at Reno to use the Vallerani plow, which mimics the natural process of vegetation driven spatial heterogeneity.

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. Savery Creek Stabilization

This project implemented natural channel design techniques on the target reaches that would reduce in-channel erosion, sedimentation, and salinity loadings. Restoration efforts restored stability to the system as well as 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 Natural

Resources Conservation Service. In fiscal year 2017, \$11.8 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 2017, no new contracts were developed in this unit.

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 70,000 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 2017, 56 new contracts were developed on 2,004 acres for planned salt control of about 4,711 tons. The project is about 66 percent complete and controls approximately 126,000 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 six new salinity control contracts to control 14 tons on 17 acres in 2017. 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. Twenty new contracts were developed in 2017 to control 391 tons of salt annually.

e. Silt Area Project

The Silt Project, authorized in 2006, is Colorado's newest project. Through 2017, 2,512 tons of annual salt control have been implemented, or about 63 percent of the project goal.

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, working closely with Reclamation, provides technical and financial assistance to Native American farmers who plan to improve irrigation delivery and application. Off-farm delivery infrastructure is currently being improved with the assistance of a salinity control grant from Reclamation. When the off-farm construction is completed in 2017-2018, NRCS anticipates an increase in requests for its assistance to improve on-farm irrigation systems.

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 2017, about 20 percent of the salt control goal has been realized. One new contract was implemented in 2017 to control 21 tons annually on 13 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 2016, 46 percent of the salt control goal has been reached. In 2017, two new contracts were developed that will control 35 tons annually on 16 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 2017, only 284 acres have been converted. Salinity control will likely increase dramatically in the next few years. Reclamation is currently assisting to implement piping local ditches and canals that facilitate use of sprinkler systems and NRCS has seen a significant increase in interest for on-farm projects.

d. Price-San Rafael Rivers Salinity Control Unit

Reclamation and the NRCS issued a joint environmental impact statement for the Price-San Rafael Rivers Salinity Control Unit in December 1993. The Record of Decision 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. The remaining Cottonwood Creek Irrigation Company service area should be completed by 2018. In 2017, 28 new contracts were developed on 1,173 acres. At the end of 2017, NRCS assisted with implementation of more than 88,000 tons of salt control.

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 2017, 48 new contracts were developed on 1,803 acres. 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 was one new contract in 2017 to install 1,430 feet of pipeline that will control about 57 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 2017, seven contracts have been developed on 253 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 Environmental Quality Incentives Program 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 2017, the Colorado NRCS developed no new EQIP contracts in Tier II areas.

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Upper Colorado River Commission

APPENDIX A

Annual Financial Report

**For the Year Ended
June 30, 2017**

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Upper Colorado River Commission

Annual Financial Report

With Auditors' Report Thereon

Year Ended June 30, 2017

Upper Colorado River Commission

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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, 2017, 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 CPAs | American Institute of CPAs

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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, 2017, 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 Information

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. The schedule of expenditures of federal awards is presented for purposes of additional analysis as required by *Title 2 U.S. Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*, and is also not a required part of the basic 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 30, 2017

Upper Colorado River Commission

Management's Discussion and Analysis

June 30, 2017

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 its liabilities by \$887,056, an increase of \$639,916 over the prior year. This increase is due to the current expenditure of a grant monies received from the federal government for the System Conservation Pilot Program in the previous year.

The Commission has established a reserved cash account with the Utah PTIF fund. This account is used to hold cash to pay the accrued unpaid leave upon the separation or retirement of employees.

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.

Upper Colorado River Commission

Management's Discussion and Analysis

June 30, 2017

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	
	2017	2016
Cash & investments	\$ 879,107	1,610,973
Capital assets (net)	37,332	38,508
Total assets	916,439	1,649,481
Current liabilities	8,648	84,968
Non-current liabilities	20,735	37,541
Total liabilities	29,383	122,509
Net position:		
Invested in capital assets	37,332	33,856
Restricted -SCPP	307,551	1,071,034
Unrestricted	542,173	422,082
Total net position	\$ 887,056	1,526,972

During the year ended June 30, 2017 the biggest change in net position came about because of the program for the System Conservation Pilot Program and the expenditure of the federal grant received last year to fund the project.

Upper Colorado River Commission

Management's Discussion and Analysis

June 30, 2017

A condensed version of the Statement of Activities follows:

Governmental Activities For the year ended June 30

	2017	2016
Revenues		
Program Revenues		
Charges for Services	\$ 587	450
Assessments	494,701	443,317
Grants and Contributions	761,866	2,083,492
General Revenues		
Interest	6,354	3,663
Total Revenues	1,263,508	2,530,922
Expenses		
Administration	1,903,424	1,413,472
Change in net position	(639,916)	1,117,450
Beginning net position	1,526,972	409,522
Ending net position	\$ 887,056	1,526,972

The expenditure of the federal grant monies created a decrease in the net position.

Capital Assets

At June 30, 2017 the Commission had \$37,332 invested in capital assets, consisting primarily of a building and furniture & equipment. The change in capital assets during the year consisted of continued depreciation expense.

Capital Assets at Year-end

	2017	2016
Land	\$ 24,159	24,159
Building	85,055	79,827
Improvements	2,207	2,207
Furniture & equipment	82,846	80,721
Subtotal	194,267	186,914
Less: Accumulated Depreciation	(156,935)	(153,058)
Capital assets, net	\$ 37,332	33,856

Upper Colorado River Commission

Management's Discussion and Analysis

June 30, 2017

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, 2017

	Governmental Activities
<u>Assets</u>	
Cash & cash equivalents	
Operations	\$ 510,104
Unpaid leave	61,452
Restricted cash	
SCPP	307,551
Capital assets	
Land	24,159
Building	85,055
Improvements other than building	2,207
Furniture & equipment	82,846
Less: accumulated depreciation	(156,935)
Total Assets	916,439
 <u>Liabilities</u>	
Accounts payable	5,015
Retirement payable	2,141
Compensated absences	1,492
Total current liabilities	8,648
Noncurrent liabilities:	
Accrued compensated absences	20,735
Total noncurrent liabilities	20,735
Total Liabilities	29,383
 <u>Net Position</u>	
Invested in capital assets	37,332
Restricted - SCPP	307,551
Unrestricted	542,173
Total Net Position	\$ 887,056

See accompanying notes to the basic financial statements

Upper Colorado River Commission
Statement of Activities
For the Year ended June 30, 2017

	<u>Expenses</u>	<u>Program Revenues</u>		<u>Net Revenue and Changes in Net Position</u>
		<u>Charges for services</u>	<u>Operating grants and contributions</u>	<u>Total</u>
Governmental activities:				
General administration	\$ 378,075	587	494,701	117,213
SCPP	<u>1,525,349</u>	<u>-</u>	<u>761,866</u>	<u>(763,483)</u>
Total governmental activities	<u>1,903,424</u>	<u>587</u>	<u>1,256,567</u>	<u>(646,270)</u>
General revenues:				
Interest				<u>6,354</u>
Total general revenues				<u>6,354</u>
Change in Net Position				(639,916)
Net Position - Beginning of Year				<u>1,526,972</u>
Net Position - End of Year				<u>\$ 887,056</u>

See accompanying notes to the basic financial statements

Upper Colorado River Commission

Balance Sheet

Governmental Funds

June 30, 2017

	General Fund	SCPP Fund	Total
<u>Assets</u>			
Petty cash	\$ 25	-	\$ 25
Cash in bank	40,165	-	40,165
Utah public treasurers' investment pool			-
Operations	469,914	-	469,914
Unpaid leave	61,452	-	61,452
	571,556	-	571,556
Restricted cash			
Cash in bank - SCPP	-	307,551	307,551
Total Assets	571,556	307,551	879,107
<u>Liabilities</u>			
Accounts payable	5,015	-	5,015
Accrued liabilities	2,141	-	2,141
Accrued benefits	1,492	-	1,492
Total Liabilities	8,648	-	8,648
<u>Fund Balance</u>			
Restricted - SCPP	-	307,551	307,551
Assigned to:			
Unpaid leave	61,452	-	61,452
Unassigned	501,456	-	501,456
Total Fund Balance	562,908	307,551	870,459
Total Liabilities and Fund Balance	\$ 571,556	307,551	\$ 879,107

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	\$ 870,459
Capital assets used in governmental activities are not financial resources and, therefore, are not reported in the funds	37,332
Compensated absences are not due and payable in the current period and, therefore, are not reported in the funds	(20,735)
Net position of governmental activities (page 9)	\$ 887,056

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, 2017

	<u>General Fund</u>	<u>SCPP Fund</u>	<u>Total</u>
<u>Revenues</u>			
Assessments	\$ 494,701	-	494,701
Grants	-	300,000	300,000
Supporters	-	461,866	461,866
Interest	6,354	-	6,354
Waternews subscriptions & refunds	587	-	587
Total Revenues	<u>501,642</u>	<u>761,866</u>	<u>1,263,508</u>
<u>Expenditures</u>			
Personal services	321,437	-	321,437
Travel	25,613	-	25,613
Current operating	40,696	103,498	144,194
Capital outlay	4,459	-	4,459
Contingencies	1,500	-	1,500
Conservation payments	-	1,421,851	1,421,851
Total Expenditures	<u>393,705</u>	<u>1,525,349</u>	<u>1,919,054</u>
Excess of revenues over expenditures	107,937	(763,483)	(655,546)
Fund Balance - beginning of year	<u>454,971</u>	<u>1,071,034</u>	<u>1,526,005</u>
Fund Balance - end of year	<u>\$ 562,908</u>	<u>307,551</u>	<u>870,459</u>

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

Net change in fund balance (as reported above)	(655,546)
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.	3,476
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.	<u>12,154</u>
Change in net position of governmental activities (page 10)	<u>(639,916)</u>

See accompanying notes to the basic financial statements

Upper Colorado River Commission
Statement of Revenues, Expenditures, and Changes in Fund Balance
Budget and Actual - General Fund
For the Year Ended June 30, 2017

	Original & Final Budget	Actual	Variance w/Final Budget
<u>Revenues</u>			
Assessments	\$ 494,702	494,701	(1)
Interest	-	6,354	6,354
Waternews subscriptions & refunds	400	587	187
Total Revenues	<u>495,102</u>	<u>501,642</u>	<u>6,540</u>
<u>Expenditures</u>			
Personal services	400,102	321,437	78,665
Travel	37,000	25,613	11,387
Current operating	47,500	40,696	6,804
Capital outlay	5,500	4,459	1,041
Contingencies	5,000	1,500	3,500
Total Expenditures	<u>495,102</u>	<u>393,705</u>	<u>101,397</u>
Excess of revenues over expenditures	-	107,937	107,937
Fund Balance - beginning of year	<u>454,971</u>	<u>454,971</u>	<u>-</u>
Fund Balance - end of year	<u>\$ 454,971</u>	<u>562,908</u>	<u>107,937</u>

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, 2017

	Original & Final Budget	Actual	Variance w/Final Budget
<u>Revenues</u>			
Grants	\$ -	300,000	300,000
Supporters	-	461,866	461,866
Total Revenues	-	761,866	761,866
<u>Expenditures</u>			
Consultants	-	103,498	(103,498)
Conservation payments	-	1,421,851	(1,421,851)
Total Expenditures	-	1,525,349	(1,525,349)
Excess of revenues over expenditures	-	(763,483)	(763,483)
Fund Balance - beginning of year	1,071,034	1,071,034	-
Fund Balance - end of year	<u>\$ 1,071,034</u>	<u>307,551</u>	<u>(763,483)</u>

See accompanying notes to the basic financial statements

Upper Colorado River Commission

Notes to Financial Statements

For the Year Ended June 30, 2017

Note 1 - Summary of Significant Accounting Policies

A. Reporting entity

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

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

B. Basis of Presentation - Government-wide financial statements

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

C. Basis of Presentation - Fund financial statements

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

D. Measurement focus and basis of accounting

Government wide financial statements

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

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

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

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2017

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."

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2017

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.

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.

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2017

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, 2017, \$250,000 of the bank deposits are insured, the remaining \$109,867 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		
	Level 1	Level 2	Level 3
Investments by fair value level			
Utah Public Treasurers' Investment Fund	\$ -	531,366	-
Total investments measure at fair value	\$ -	531,366	-

- Utah Public Treasurers' Investment Fund: application of the June 30, 2017 fair value factor, as calculated by the Utah State Treasurer, to the Entity's average daily balance in the Fund.

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2017

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, 2017, the Commission's investments had the following maturities:

Investment Type	Investment Maturities (in years)		
	Less than 1	1-5	6 or more
Utah Public Treasurers' Investment Fund	\$ 531,366	-	-
Total investments measure at fair value	<u>\$ 531,366</u>	<u>-</u>	<u>-</u>

Credit risk

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

Investment Type	Quality Ratings		
	AA	A	Unrated
Utah Public Treasurers' Investment Fund	-	-	531,366
Total investments measure at fair value	<u>-</u>	<u>-</u>	<u>531,366</u>

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, 2017, are as follows:

Cash on deposit	\$ 40,190
Utah State Treasurer's Investment Pool	531,366
Restricted cash - SCPP	<u>307,551</u>
Total	<u>\$ 879,107</u>

Upper Colorado River Commission
Notes to Financial Statements - Continued
For the Year Ended June 30, 2017

Capital Assets

Capital asset activity for the year ended June 30, 2017, is as follows:

	Balance at June 30, 2016	Additions	Disposals	Balance at June 30, 2017
Capital assets not being depreciated:				
Land	\$ 24,159	-	-	24,159
Total capital assets not being depreciated	<u>24,159</u>	<u>-</u>	<u>-</u>	<u>24,159</u>
Capital assets being depreciated:				
Building	79,827	5,228	-	85,055
Improvements	2,207	-	-	2,207
Furniture & Equipment	80,721	2,125	-	82,846
Total capital assets being depreciated	<u>162,755</u>	<u>7,353</u>	<u>-</u>	<u>170,108</u>
Less accumulated depreciation for:				
Building	74,108	1,694	-	75,802
Improvements	2,207	-	-	2,207
Furniture & Equipment	76,743	2,183	-	78,926
Total accumulated depreciation	<u>153,058</u>	<u>3,877</u>	<u>-</u>	<u>156,935</u>
Total capital assets, being depreciated, net	<u>9,697</u>	<u>3,476</u>	<u>-</u>	<u>13,173</u>
Capital assets, net	<u>\$ 33,856</u>	<u>3,476</u>	<u>-</u>	<u>37,332</u>

Depreciation expense of \$3,877 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, 2017 was \$22,156, 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 30, 2017 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
Supplemental Schedule of Cash Receipts and Disbursements
For the Year Ended June 30, 2017

Cash at June 30, 2016		\$ 539,939
Cash Receipts:		
Assessments	426,376	
Interest	6,355	
Refunds	362	
Waternews Subscriptions	225	
		433,318
Cash Disbursements:		
Personal Services	321,437	
Travel	33,371	
Current Operating	40,934	
Capital Outlay	4,459	
Contingency	1,500	
		401,701
Cash at June 30, 2017		\$ <u><u>571,556</u></u>

Upper Colorado River Commission
Detail of Personal Services and Current Operating
Expenditures - Budget to Actual (Accrual Basis)
For the Year Ended June 30, 2017

	<u>Budget</u>	<u>Actual</u>	Variance w/Final <u>Budget</u>
Summary of Personal Services with Budget Comparisons			
Executive director	\$ 112,429	116,876	(4,447)
Administrative secretary	35,711	36,425	(714)
General counsel	91,926	93,264	(1,338)
Consulting services	45,000	-	45,000
Social security	21,808	18,485	3,323
Pension fund contributions	28,957	22,156	6,801
Employee medical insurance	64,271	34,231	30,040
	<u>\$ 400,102</u>	<u>321,437</u>	<u>78,665</u>

**Summary of Current Operating
Expenditures with Budget Total Comparison**

Audit and accounting	\$ 5,200	4,800	400
Building repair & maintenance	4,700	7,263	(2,563)
Insurance	3,500	3,109	391
Janitorial	1,500	1,480	20
Library	8,200	8,795	(595)
Meetings, including reporter	2,800	217	2,583
Memberships and registrations	3,400	233	3,167
Office supplies and postage	3,500	3,482	18
Printing	4,300	3,377	923
Telephone	4,900	4,233	667
Utilities	5,500	3,707	1,793
	<u>\$ 47,500</u>	<u>40,696</u>	<u>6,804</u>

Other Reports

Ulrich & Associates, PC
Certified Public Accountants

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

The Commissioners of the
Upper Colorado River Commission

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards issued by the Comptroller General of the United States, the financial statements of the governmental activities of the Upper Colorado River Commission, as of and for the year ended June 30, 2017, which comprise Upper Colorado River Commission's basic financial statements and have issued our report thereon dated November 30, 2017.

Internal Control Over Financial Reporting

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

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

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

Members of Utah Association of CPAs | American Institute of CPAs

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

Compliance and Other Matters

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

Purpose of this Report

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

Ulrich & Associates, P.C.

Ogden, Utah
November 30, 2017

INDEPENDENT AUDITORS' REPORT ON COMPLIANCE FOR EACH MAJOR PROGRAM AND ON INTERNAL CONTROL OVER COMPLIANCE REQUIRED BY UNIFORM GUIDANCE

The Commissioners of the
Upper Colorado River Commission

Report on Compliance for Each Major Federal Program

We have audited the Upper Colorado River Commission's compliance with the types of compliance requirements described in the OMB Compliance Supplement that could have a direct and material effect on each of the Upper Colorado River Commission's major federal programs for the year ended June 30, 2017. The Upper Colorado River Commission's major federal programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations, and the terms and conditions of its federal awards applicable to its federal programs.

Auditor's Responsibility

Our responsibility is to express an opinion on compliance for each of the Upper Colorado River Commission's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance). Those standards and Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the Upper Colorado River Commission's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the Upper Colorado River Commission's compliance with those requirements.

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Opinion on Each Major Federal Program

In our opinion, the Upper Colorado River Commission, complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2017.

Report on Internal Control Over Compliance

Management of the Upper Colorado River Commission is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit, we considered the Upper Colorado River Commission's, internal control over compliance with the types of requirements that could have a direct and material effect on a major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing our opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the Upper Colorado River Commission's internal control over compliance.

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

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and would not necessarily identify all deficiencies in internal control that might be significant deficiencies or material weaknesses. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Ulrich & Associates, P.C.

Ogden, Utah
November 30, 2017

Upper Colorado River Commission
Schedule of Expenditures of Federal Awards
For the Year Ended June 30, 2017

<u>Federal Grantor/Pass-Through Grantor/Program</u>	<u>Federal CFDA Number</u>	<u>Pass-through Entity Identifying Number</u>	<u>Grant Expend- itures</u>	<u>Expenditures to Sub recipients</u>
U.S. Department of the Interior Bureau of Reclamation Develop UCRC Pilot Projects	15.517	R15AP00206	\$ 1,063,486	n/a
Total U.S. Department of the Interior			<u>1,063,486</u>	<u>n/a</u>
			<u>\$ 1,063,486</u>	<u>n/a</u>
		Total federal expenditures	<u>\$ 1,063,486</u>	<u>n/a</u>

Upper Colorado River Commission
Notes to Schedule of Expenditures of Federal Awards
For the Year Ended June 30, 2017

Note A - Basis of Presentation

The accompanying schedule of expenditures of federal awards (the Schedule) includes the federal award activity of the Upper Colorado River Commission under programs of the federal government for the year ended June 30, 2017. The information in this Schedule is presented in accordance with the requirements of Title 2 U.S. Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance). Because the Schedule presents only a selected portion of the operations of the Upper Colorado River Commission, it is not intended to and does not present the net position, or statement of activities of the Upper Colorado River Commission.

Expenditures reported on the Schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in the Uniform Guidance, wherein certain types of expenditures are not allowable or are limited as to reimbursement.

The Upper Colorado River Commission has elected to use the 10 percent de minimis indirect cost rate as allowed under the Uniform Guidance.

Upper Colorado River Commission
Schedule of Findings and Questioned Costs
For the Year Ended June 30, 2017

Summary of Auditors' Results

Financial Statements:

Type of auditor's report issued:		Unmodified
Internal control over financial reporting:		
-Material weaknesses identified	_____ Yes	_____ <u>x</u> No
-Significant deficiencies identified that are not considered to be Material weaknesses?	_____ Yes	_____ <u>x</u> No

Federal Awards:

Internal control over major programs:		
-Material weaknesses identified	_____ Yes	_____ <u>x</u> No
-Significant deficiencies identified that are not considered to be Material weaknesses?	_____ Yes	_____ <u>x</u> No

Type of auditor's report issued on compliance for major programs:	Unmodified
---	------------

Any audit findings disclosed that are required to be reported in accordance with section <i>Title 2 U.S. Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards</i> .	_____ Yes	_____ <u>x</u> No
--	-----------	-------------------

Identification of major programs:

<u>CFDA Number</u>	<u>Name of Federal Program</u>
15.517	Fish and Wildlife Coordination Act

The dollar threshold for distinguishing Types A and B programs was \$750,000.

Auditee qualified as low-risk auditee	_____ Yes	_____ <u>x</u> No
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Findings - Financial Statement Audit

None

Findings and Questioned Costs - Major Federal Award Programs Audit

None

Upper Colorado
River Commission

APPENDIX B

BUDGET

Fiscal Year Ending June 30, 2018

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**APPROVED BUDGET FY 2018 Budget
UPPER COLORADO RIVER COMMISSION
Fiscal Year ending June 30, 2018
Held at Jackson Lake Lodge, Moran, Wyoming**

**As Approved
6/6/2017**

Personnel Costs inc. pension, SS & health	403,587.00
staff salaries, benefits and pension	
Travel	38,000.00
Current Expense	48,350.00
Janitor	1,800.00
Capital Expense	5,500.00
Contingency	5,000.00
TOTAL	502,237.00

2019 State Assessments

	<u>Percents</u>		
Colorado	51.75%		256,008.00
New Mexico	11.25%		55,654.00
Utah	23%		113,781.00
Wyoming	14%		69,258.00
Total			494,701.00

Note: Budget will be reviewed and adjusted as needed prior to July 1, 2017

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Upper Colorado
River Commission

APPENDIX C

RESOLUTIONS

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RESOLUTION

of the

UPPER COLORADO RIVER COMMISSION

Honoring Dallin W. Jensen

WHEREAS, Dallin W. Jensen has served as an Alternate Upper Colorado River Commissioner for Utah since 1993;

WHEREAS, Dallin W. Jensen's professional involvement with Colorado River issues dates to the early 1960's; and

WHEREAS, Dallin W. Jensen served as an Assistant Utah Attorney General from 1963 to 1988, including serving as Utah's Solicitor General from 1983 to 1988; and

WHEREAS, during his tenure as an Assistant Attorney General Dallin W. Jensen was the State's lead legal advisor on Colorado River matters and counselled Utah's Interstate Water Commissioner; and

WHEREAS, after Dallin W. Jensen left employment with the State of Utah and entered private law practice his involvement with Colorado River matters continued for many years; and

WHEREAS, Dallin W. Jensen is one of the most knowledgeable and well respected water attorneys in Utah; and

WHEREAS, Dallin W. Jensen has volunteered a significant amount of personal and professional time to assist Utah and other western states to resolve interstate water issues; and

WHEREAS, Dallin W. Jensen has honorably and tirelessly represented the State of Utah in matters coming before the Commission, which representation has generated the respect of the Commission, its advisors and staff; and

WHEREAS, as a result of his careful study of issues, keen intellect, wit, wisdom and unique perspective and personality, Dallin W. Jensen has been a respected and trusted Commission Advisor and Alternate Commissioner; and

WHEREAS, Dallin W. Jensen has recently retired from his position as Alternate Upper Colorado River Commissioner for Utah.

NOW, THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission, at its Meeting held in Midway, Utah, on June 2, 2016, does hereby express the gratitude and appreciation of the Commission, its staff, and others for the untiring service and wise legal counsel rendered by Dallin W. Jensen in addressing many legal, policy and political water resource problems that have confronted the Commission during his tenure as an Alternate Upper Colorado River Commissioner; and

BE IT FURTHER RESOLVED that the Upper Colorado River Commission, its advisors, and staff sincerely wish Dallin W. Jensen, his wife, Barbara, and their family, the very best of health, happiness and prosperity in all of their future endeavors; and

BE IT FURTHER RESOLVED that the Executive Director of the Upper Colorado River Commission is directed to transmit copies of this Resolution to Dallin W. Jensen and to the Governor of the State of Utah.

CERTIFICATE

I, DON A. OSTLER, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above Resolution was unanimously adopted by the Upper Colorado River Commission at its Meeting held in Midway, Utah on June 2, 2016.

WITNESS my hand this 2nd day of June, 2016.


DON A. Ostler
Executive Director and Secretary

PROPOSED MODIFICATION OF THE
COMMISSION POLICY ON HEALTH INSURANCE

June 6, 2017, Jackson Lake, Wyoming

The Commission has experienced a rapid increase in health care costs in recent years and, with changes in staff, has a need to reconsider how it participates in family coverage in order to be competitive in recruitment. The present coverage is through the State of Utah, Public Employees Health Program which we were fortunately grand fathered into many years ago. The present Commission policy is that the UCRC will provide opportunity for health, dental and vision coverage generally similar to the State of Utah coverage. The UCRC participates in 93% of the cost and the employee shares 7% for single coverage. For spouse and family coverage the current policy is for the UCRC to participate in the amount calculated for single coverage plus one half of the cost increase in going to spouse or family coverage. This was resulting in an employee cost for family coverage of over \$1400 per month. For the past several decades, the Commission employees have chosen single coverage. We have found that this policy does not always allow us to compete for the best employees in recruitment.

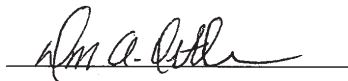
Proposed Policy:

In an effort to control costs and to also become competitive and comparable in general benefits provided, it is proposed that the Commission health insurance policy be modified to provide UCRC participation in health costs at 85% and employee participation at 15% for single, spouse and family coverage. This cost share is consistent with what is provided in Wyoming and Colorado and quite similar to New Mexico, although their participation changes with income. It is less than the coverage provided in Utah which is 90% employer and 10% employee cost share. This change should keep the Commission competitive with the States and the change in participation rate will result in a savings to the Commission of about \$10,000 per year compared to extending our current rate of participation for singles to spouse and family coverage.

CERTIFICATE

I, DON A. OSTLER, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the Upper Colorado River Commission, at its Meeting held on June 6, 2017 at Jackson Lake Lodge in Moran, Wyoming unanimously approved the above health insurance policy change.

WITNESS my hand this 6th day of June, 2017.



DON A. OSTLER

Executive Director and Secretary

**RESOLUTION OF THE
UPPER COLORADO RIVER COMMISSION
HONORING JANE BIRD**

WHEREAS, Jane Bird was employed by the Upper Colorado River Commission in Salt Lake City, Utah from November 20, 1981; and through February 2017; and

WHEREAS, Jane Bird served as the Deputy Executive Director and General Counsel during her tenure with the Commission; and

WHEREAS, Jane Bird maintained a high degree of integrity and professionalism in all her dealings on behalf of the Commission; and

WHEREAS, during her tenure with Commission Jane Bird became a recognized and well-respected expert on the Law of the Colorado River, providing wise and helpful advice and assistance to members of the Commission and others; and

WHEREAS, Jane also advised the Commission on other matters such as conflict of interest statutes, Bureau of Land Management authority under the Federal Land Policy and Management Act, designation of critical habitat for endangered species, Indian Water Rights, underground storage of water, curtailment of use of water and many others; and

WHEREAS, Jane was also influential in negotiating the Memorandum of Agreement for use of the Upper Colorado River Basin fund, filing of amicus briefs for the Grand Canyon Trust and three Forks law suits, helping to establish and implement the financial portions of the System Conservation Pilot Program and overseeing the Commission Pension Plans; and

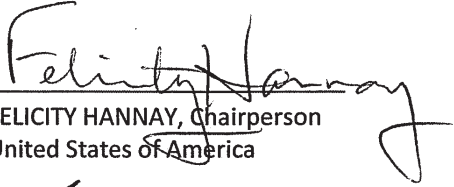
WHEREAS Jane has honorably represented herself and the commission in all matters assigned to her and has interacted with others in a pleasant and professional manner; and


WHEREAS, Jane retired from the Commission after more than 35 years of service;


NOW, THEREFORE BE IT RESOLVED that the Upper Colorado River Commission, at its meeting held at Jackson Lake Lodge in Wyoming on June 6, 2017, does hereby express


the deep gratitude and appreciation of the Commission, its advisors and staff and friends for the service and wise legal counsel Jane Bird has rendered during her tenure with the Commission; and;

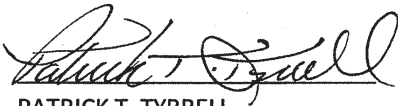
BE IT FURTHER RESOLVED that the Executive Director of the Upper Colorado River Commission is directed to transmit a copy of this resolution to Jane Bird.


FELICITY HANNAY, Chairperson
United States of America


ERIC L. MILLIS
State of Utah


TOM BLAINE
State New Mexico

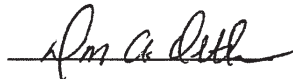

JAMES EKLUND
State of Colorado


PATRICK T. TYRRELL
State of Wyoming

CERTIFICATE

I, DON A. OSTLER, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above resolution was unanimously adopted by the Upper Colorado River Commission at its meeting held at Jackson Lake Lodge in Wyoming on June 6, 2017.

Witness my hand this 6th day of June 2017.



Don A. Ostler

Executive Director and Secretary

RESOLUTION OF THE UPPER COLORADO RIVER COMMISSION

**June 6, 2017
Jackson Lake Lodge, Wyoming**

2016 Upper Basin Depletion Demand Schedules

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

WHEREAS, the Commission resolved in its June 5, 2006 meeting in Jackson, Wyoming, following review of a draft hydrologic determination for the Navajo-Gallup Water Supply Project in New Mexico, that it would not object to a determination by the Secretary of the Interior that at least 5.76 million acre-feet of water is available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project; and

WHEREAS, the Secretary of the Interior issued a hydrologic determination on May 23, 2007 concluding that there is at least 5.76 million acre-feet per year of Colorado River water available for use in the Upper Basin on average, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project; and

WHEREAS, the Commission is regularly evaluating the reasonable supply of Colorado River water with respect to Compact apportionments and potential shortages; and

WHEREAS, these depletion schedules are best estimates of potential water use based on positive economic conditions and favorable hydrology and climate. As such, they are not predictions of what future water use will necessarily be, but projections for planning purposes to be used for modeling only; and

WHEREAS, the Commission continues to evaluate and improve existing consumptive use estimation and measurement procedures; and

WHEREAS, the Bureau of Reclamation uses Upper Division States' estimates of depletions in its modeling of Colorado River system operations; and

WHEREAS, the Upper Division States recognize the use of these revised depletion estimates for planning and River operations purposes, but also recognize that these estimates may be changed in the future based upon new assumptions or information; and

WHEREAS, the Upper Division States and the Commission have attempted to make reasonable

estimates of future depletions by not incorporating the highest projections or the lowest projections, but utilizing existing uses, future uses that will occur in systems already built but not yet at capacity and projected additional future uses for which specific plans exist; and

WHEREAS, these revised estimates of depletions do not constitute an interpretation of, nor shall anyone construe them as interpreting or in any manner limiting or constraining, Upper Colorado River Basin Compact apportionments.

NOW THEREFORE, BE IT RESOLVED that the Upper Colorado River Commission requests that the attached December 2016 projected estimates of Upper Basin depletions be used for planning purposes and water supply studies within the Colorado River Basin.

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

CERTIFICATE

I, Don A. Ostler, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above resolution was adopted by the Upper Colorado River Commission at its regular meeting on June 6, 2017 in Jackson Lake Lodge, Wyoming.

WITNESS my hand this 28th day of June, 2017.



Don Ostler, P.E.

Executive Director and Secretary
Upper Colorado River Commission

**Upper Colorado River Division States
Current and Future Depletion Demand Schedule^{1,2}
Total Upper Colorado River Division States**

December 31, 2016
(Units: 1,000 acre-feet)

ITEM	Current/Historic	YEAR						
		2020	2030	2040	2050	2060	2070	
Agriculture-Irrigation & Stock	2,968	3,036	3,051	3,073	3,078	3,080	3,082	
Potential Agriculture-Irrigation & Stock		0	5	5	10	10	0	
Municipal/Industrial	124	149	168	183	200	209	217	
Potential Municipal/Industrial		3	6	14	18	21	16	
Self-Served Industrial	12	12	12	12	12	12	12	
Potential Self-Served Industrial		0	0	0	0	0	0	
Energy	152	157	167	178	193	198	203	
Potential Energy		5	10	10	15	10	0	
Minerals	53	57	65	73	81	94	103	
Potential Minerals		2	8	17	26	31	33	
Export	1,019	1,050	1,123	1,179	1,258	1,310	1,423	
Potential Export		50	75	100	125	100	0	
Ute Indian Settlement*	0	25	65	112	146	146	146	
Potential Reservoir Evaporation (in-state)	208	208	208	208	208	208	208	
Potential Reservoir Evaporation		0	0	0	0	0	0	
TOTAL Forecasted Depletions	4,536	4,753	4,963	5,165	5,368	5,428	5,442	
Shared CRSP Evap (0.520maf)	520	520	520	520	520	520	520	
TOTAL	5,056	5,273	5,483	5,685	5,888	5,948	5,962	

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

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

Note 3: The Ute Indian Settlement is part of Utah's depletion.

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

Upper Colorado River Division States
Current and Future Depletion Demand Schedule^{1,2}
New Mexico
 December 31, 2016
 (Units: 1,000 acre-feet)

ITEM	Current/Historic	YEAR									
		2020	2030	2040	2050	2060	2070				
Agriculture-Irrigation & Stock	323	341	361	381	381	381	381				
Potential Agriculture-Irrigation & Stock		0	0	0	0	0	0				
Municipal/Industrial	16	23	32	41	47	54	55				
Potential Municipal/Industrial		0	0	0	0	0	0				
Self-Served Industrial	1	1	1	1	1	1	1				
Potential Self-Served Industrial		0	0	0	0	0	0				
Energy	54	54	54	54	54	54	54				
Potential Energy		0	0	0	0	0	0				
Minerals	2	2	2	2	2	2	2				
Potential Minerals		0	0	0	0	0	0				
Export	105	105	116	120	120	120	120				
Potential Export		0	0	0	0	0	0				
Reservoir Evaporation (in-state)	29	29	29	29	29	29	29				
Potential Reservoir Evaporation		0	0	0	0	0	0				
TOTAL Forecasted Depletions	530	555	595	628	634	641	642				

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

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

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

December 31, 2016
(Units: 1,000 acre-feet)

ITEM	Current/Historic	YEAR						
		2020	2030	2040	2050	2060	2070	
Agriculture-Irrigation & Stock	601	650	643	643	645	645	645	
Potential Agriculture-Irrigation & Stock		0	0	0	0	0	0	
Municipal/Industrial	32	46	49	52	56	56	56	
Potential Municipal/Industrial		0	0	0	0	0	0	
Self-Served Industrial	0	0	0	0	0	0	0	
Potential Self-Served Industrial		0	0	0	0	0	0	
Energy³	40	42	45	51	61	61	61	
Potential Energy		0	0	0	0	0	0	
Minerals	0	0	0	0	0	0	0	
Potential Minerals		0	0	0	0	0	0	
Export	170	191	216	241	267	267	267	
Potential Export		0	0	0	0	0	0	
Ute Indian Settlement	0	25	65	112	146	146	146	
Potential Ute Indian Settlement		0	0	0	0	0	0	
Reservoir Evaporation (In-state)	23	23	23	23	23	23	23	
Potential Reservoir Evaporation		0	0	0	0	0	0	
TOTAL Forecasted Depletions	865	975	1,039	1,121	1,197	1,197	1,197	

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

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

Note 3: Energy and Minerals are combined for this value as Utah does not separate Minerals from Energy.

**Upper Colorado River Division States
Current and Future Depletion Demand Schedule^{1,2}
Wyoming³
December 31, 2016
(Units: 1,000 acre-feet)**

ITEM	Current/Historic	YEAR					
		2020	2030	2040	2050	2060	2070
Agriculture-Irrigation & Stock	444	445	447	449	451	453	455
Potential Agriculture-Irrigation & Stock		0	0	0	0	0	0
Municipal/Industrial	16	20	23	25	27	29	31
Potential Municipal/Industrial		3	6	9	13	16	16
Self-Served Industrial	0	0	0	0	0	0	0
Potential Self-Served Industrial		0	0	0	0	0	0
Energy	28	28	28	28	28	28	28
Potential Energy		0	0	0	0	0	0
Minerals	19	20	23	26	29	32	35
Potential Minerals		2	8	14	21	27	33
Export	13	14	16	19	21	23	23
Potential Export		0	0	0	0	0	0
Reservoir Evaporation (In-state)	27	27	27	27	27	27	27
Potential Reservoir Evaporation		0	0	0	0	0	0
TOTAL Forecasted Depletions	546	558	578	597	616	635	648

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

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

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

**RESOLUTION OF THE
UPPER COLORADO RIVER COMMISSION
REGARDING PENSION PLAN TRUSTEES**

WHEREAS, the Upper Colorado River Commission (Commission) maintains a 401(k) Profit Sharing Plan (Pension Plan) to provide its employees retirement benefits;

WHEREAS, Jane Bird and Dennis Strong are currently Trustees of the Pension Plan;

WHEREAS, Jane Bird retired as Deputy Executive Director and General Counsel of the Commission on February 28, 2017;

WHEREAS, Dennis Strong retired as Director of the Utah Division of Water Resources and Upper Colorado River Commissioner for Utah on October 31, 2013;

WHEREAS, Amy Haas succeeded Ms. Bird as Deputy Executive Director and General Counsel of the Commission on June 1, 2017;

WHEREAS, Eric Millis succeeded Mr. Strong as Director of the Utah Division of Water Resources and Upper Colorado River Commissioner for Utah on November 1, 2013; and,

WHEREAS, as a result of Ms. Bird's and Mr. Strong's retirements, Ms. Haas and Mr. Millis seek to replace Ms. Bird and Mr. Strong as Trustees of the Pension Plan.

NOW, THEREFORE, BE IT RESOLVED that Amy Haas and Eric Millis hereby replace Jane Bird and Dennis Strong as Trustees of the Pension Plan;

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

CERTIFICATE

I, Don A. Ostler, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the above resolution was unanimously adopted by the Upper Colorado River Commission at its telephonic Special Meeting on August 25, 2017.

WITNESS my hand this 25th day of August, 2017.



DON A. OSTLER
Executive Director and Secretary

Upper Colorado
River Commission

APPENDIX D

**TRANSMOUNTAIN
DIVERSIONS**

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**TRANSMOUNTAIN DIVERSIONS FROM
COLORADO RIVER BASIN IN COLORADO
2008 - 2017**

TO PLATTE RIVER BASIN

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	10YEAR AVERAGE
Grand River Ditch	22,098	19,385	14,033	17,080	9,832	17,692	15,490	12,641	14,070	15,915	16,823
Eureka Ditch	0	0	0	0	0	0	0	0	0	0	0
Alva B. Adams Tunnel	287,330	243,307	225,799	247,800	292,314	237,200	203,300	113,014	242,900	241,335	235,704
Berthoud Pass Ditch	702	727	534	841	403	558	600	366	738	805	629
Moffat Water Tunnel	76,912	44,455	31,034	51,780	43,749	57,781	18,500	26,828	26,450	43,231	47,941
Boreas Pass Ditch	171	209	181	237	4	103	181	113	119	116	156
Vidler Tunnel	1,059	1,285	954	400	441	291	670	668	380	403	712
Harold D. Roberts Tunnel	76,912	57,286	54,280	79,310	115,972	84,842	13,550	8,870	37,470	92,227	64,382
Straight Creek Tunnel	286	267	218	347	183	225	322	291	265	256	271

TO ARKANSAS RIVER BASIN

Hoosier Pass Tunnel	10,965	10,230	10,345	3,137	4,586	9,295	9,370	6,493	7,820	12,605	8,282
Columbine Ditch	87	78	352	230	673	1,350	2,408	1,348	926	1,860	1,030
Ewing Ditch	1,440	1,200	919	1,492	257	769	1,553	711	466	1,080	1,034
Wurtz Ditch	1,280	2,920	1,690	3,246	803	1,639	3,398	499	1206	2,340	2,076
Homestake Tunnel	26,820	50,510	9,010	32,231	43,350	19,495	17,771	4,185	2,143	22,600	25,674
Twin Lakes Tunnel	64,540	58,740	46,810	66,326	23,250	37,782	62,747	17,650	17,814	31,570	48,699
Charles H. Boustead Tunnel	90,790	83,840	56,660	99,804	13,960	47,019	81,010	70,731	31,366	70,080	66,137
Busk-Ivanhoe Tunnel	4,880	3,320	3,250	4,039	2,990	4,128	5,852	2,554	2,400	2,920	4,015
Larkspur Ditch	461	375	234	310	48	64	305	517	177	503	293

TO RIO GRANDE BASIN

Tarbell Ditch	511	744	578	185	424	920	0	0	0	479	549
Tabor Ditch	827	506	591	347	361	1,020	1,387	1,020	1,020	1,020	816
Treasure Pass Ditch	262	183	262	213	180	245	303	319	319	458	204
Don La Font Ditches No. 1 & 2	154	22	296	184	309	229	309	347	347	371	199
Williams Creek-Squaw Pass Ditch	257	303	395	337	296	384	517	318	318	448	364
Pine River-Weminuche Pass Ditch	352	274	307	244	255	448	934	639	639	593	440
Weminuche Pass Ditch	847	653	229	219	718	1,270	2,918	2,020	2,020	1,440	889

TOTAL

	670,445	581,344	458,988	611,266	554,545	523,046	441,543	273,849	391,373	544,655	527,320
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**TRANSMOUNTAIN DIVERSIONS FROM
COLORADO RIVER BASIN
IN COLORADO TO RIO GRANDE BASIN IN
NEW MEXICO**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	10 Year AVERAGE
San Juan-Chama Diversions	145,946	106,382	132,458	92,826	51,775	40,953	61,963	94,048	94,310	163,168	91,693

**TRANSMOUNTAIN DIVERSIONS FROM
COLORADO RIVER BASIN IN UTAH
2008 - 2017**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	10 YEAR AVERAGE
TO GREAT BASIN											
Broadbent Supply Ditch (Wyoming)	2,044	1,455	994	367	377	507	830	1,000	1,061	1,240	987
Fairview Tunnel	2,630	1,429	1,300	2,032	2,175	1,881	2,078	1,332	2,241	2,550	1,965
Ephraim Tunnel	3,000	4,221	7,120	1,522	2,145	1,742	2,678	3,412	1,621	2,450	2,991
Spring City Tunnel	2,755	2,800	2,850	4,908	3,421	4,023	4,344	4,171	3,736	4,656	3,766
Central Utah Project, Bonneville Unit*	38,834	37,229	33,233	39,780	27,817	36,437	43,815	44,345	41,982	29,410	37,288
Hobble Creek Ditch	0	0	0	0	0	0	0	0	0	0	0
Strawberry-Willow Creek Ditch	0	0	0	0	0	0	0	0	0	0	0
Strawberry Water Users Association*	86,297	45,971	65,740	38,418	71,817	69,600	60,723	63,264	63,499	55,549	62,088
Duchesne Tunnel	26,607	29,492	27,128	10,581	20,712	24,144	42,769	29,638	35,577	37,561	28,421
TOTAL	162,167	122,597	138,365	97,607	128,463	138,334	157,238	147,163	149,717	133,417	134,694

**TRANSMOUNTAIN DIVERSIONS FROM
GREAT BASIN
IN UTAH TO COLORADO RIVER BASIN IN
UTAH**

	2008 - 2017	2016	2017
Tropic and East Fork Canal	5,319	4,258	5,329
		4,667	4,667
		5,100	5,100
		5,640	5,640
		3,115	3,115
		4,444	4,444
		9,648	9,648
		4,916	4,916
		4,723	4,723

**TRANSMOUNTAIN DIVERSIONS FROM
COLORADO RIVER**

**BASIN TO NORTH PLATTE BASIN IN
WYOMING**

2008 - 2017	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	10 YEAR AVERAGE
City of Cheyenne	18,519	10,063	11,608	5,262	5,754	12,784	8,063	5,945	7,553	6,503	10,694

**TRANSMOUNTAIN DIVERSIONS FROM
COLORADO RIVER BASIN**

2008 - 2017	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	10 YEAR AVERAGE
TOTAL	994,857	819,228	739,190	805,395	738,537	712,577	668,791	519,660	636,405	845,927	748,057

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