

Colorado Division of Water Resources

2017 Annual Report

Water Division 5



Roaring Fork River, Grottos Cascades

“Water is the driving force of all nature”

Leonardo de Vinci

Colorado River Basin

Alan C Martellaro
Division Engineer

Surface Water Supply

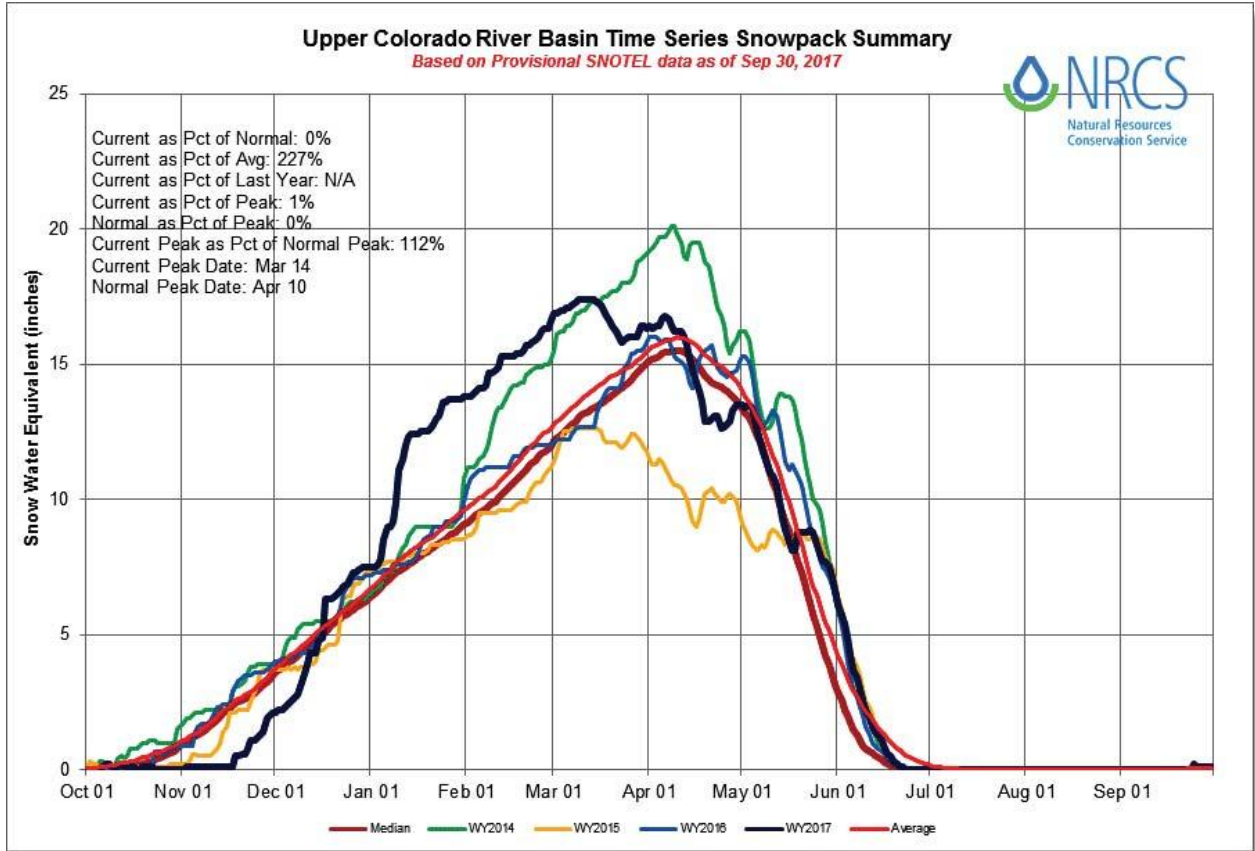
“The optimist sees the glass half full. The pessimist sees the glass half empty. I see a glass that’s twice as big as it needs to be.” ---George Carlin.

The 2017 Irrigation Year began with near average stream flows, and near average reservoir carryover storage. Storage in the basin’s major reservoirs began the water year at 105% of average on September 30, 2016. The water year ended at 107% of average storage on September 30, 2017. The table below depicts a comparative end-of-water year storage for Division Five’s largest reservoirs.

Storage Comparison of Major Reservoirs						
	30-Sep 2012	30-Sep 2013	30-Sep 2014	28-Sep 2015	30-Sep 2016	30-Sep 2017
Dillon Reservoir	198,924	245,855	247,209	251,680	249,814	245197
Granby Reservoir	333,593	371,008	522,187	500,314	487,231	518992
Green Mtn Res	76,719	107,058	115,215	112,410	107,507	106317
Ruedi Reservoir	66,071	86,080	87,909	81,779	77,901	80421
Williams Fork Res	48,379	73,041	88,275	88,530	81,544	75384
Wolford Mtn Res	31,711	44,523	65,992	44,931	53,363	56872
Total	755397	927565	1126787	1079644	1057360	1083183

In spite of a very dry fall the relatively wet December resulted in spring runoff projections near average by the end of 2016. January continued the wet trend as runoff forecasts improved to well above average. However, an average February followed by a dry March and April left snowmelt forecasts at the beginning of runoff and the storage season for many reservoirs near average. Runoff began with storage at 113% of average on May 1, 2017, compared to 115% last year. The progression of snowpack can be seen graphically in the Time Series Snowpack Summary graph below.

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The progression of the runoff forecasts for the Colorado River near Dotsero and the Colorado River near Cameo are depicted in the table below.

Colorado River nr Dotsero, and nr Cameo

2017 forecast (most probable undepleted runoff), April-July in KAF

	March 1 st		April 1 st		May 1 st		June 1 st		Average Undepleted
	Flow	% avg	Flow	% avg	Flow	% avg	Flow	% avg	
Dotsero	1760	126%	1550	111%	1480	106%	1540	110%	1400
Cameo	3060	130%	2560	109%	2380	101%	2420	103%	2350

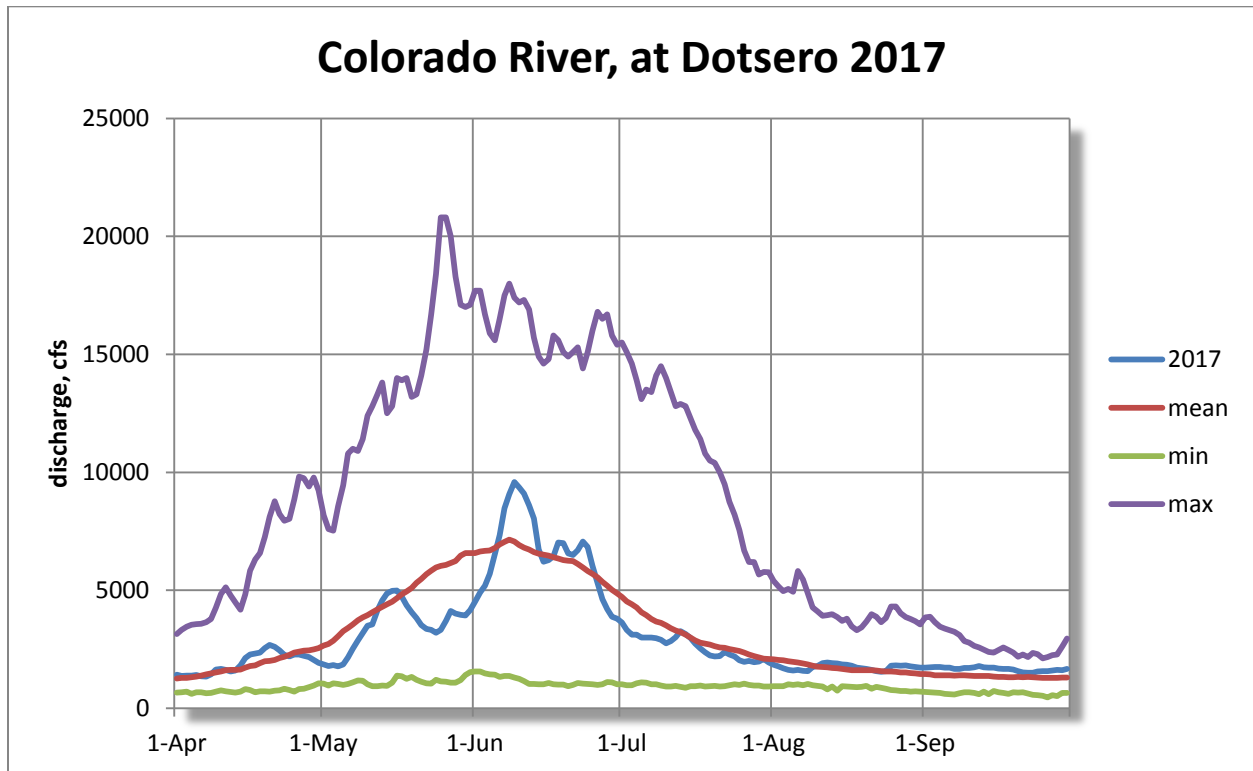
With summer temperatures above average, and precipitation below average, the slightly above average runoff forecasted as late as June 1st resulted in actual runoff below average for the mainstem and most of the sub-basins of the Colorado River. See the table below for a comparison of actual runoff with the June 1st forecast. Note that the forecast above is of undepleted flow while the table below is actual gaged flow.

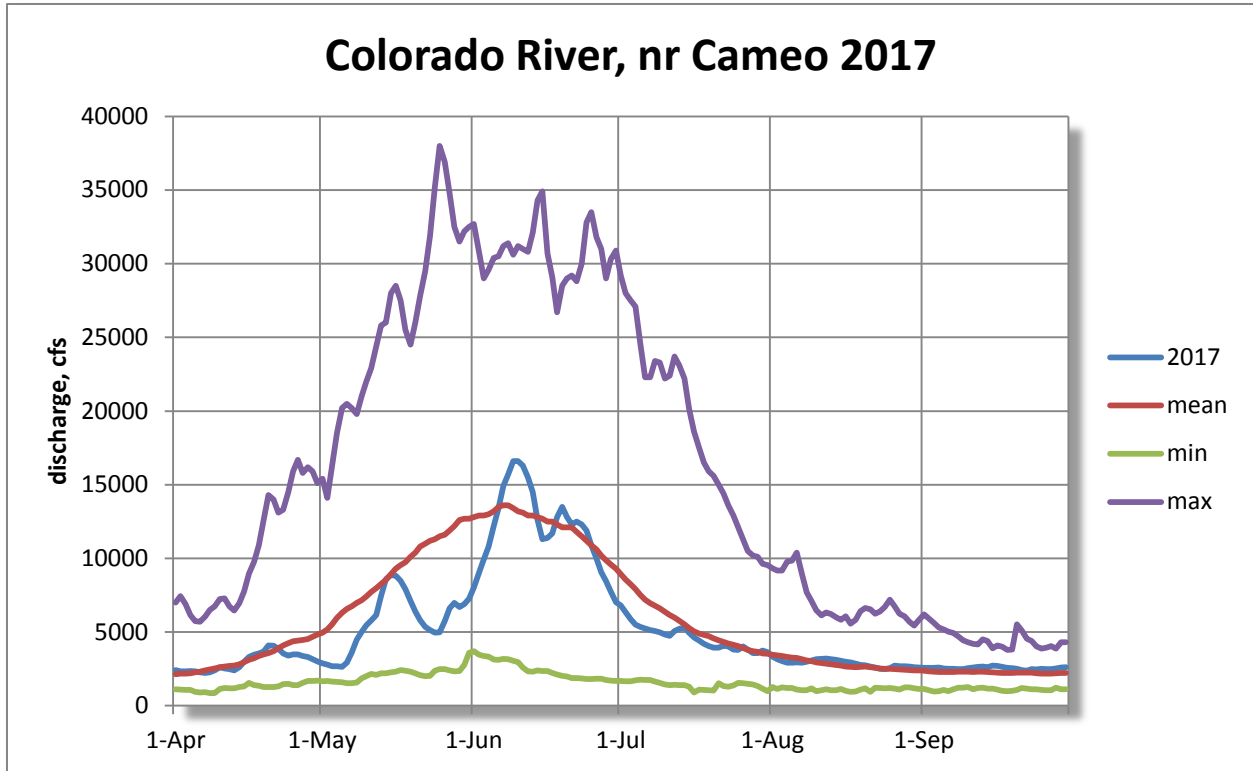
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Colorado River near Dotsero, and Colorado River near Cameo
2017 Gaged (depleted) flows, KAF

	April-July			April-September		
	Flow, KAF	%of avg	Historic avg	Flow, KAF	%of avg	Historic avg
Dotsero	881	91%	965	1,087	95%	1,150
Cameo	1,531	84%	1,817	1,860	88%	2,125

The following hydrographs of daily average flows for the Colorado River near Dotsero, and the Colorado River near Cameo depict the slightly below average gaged flow for 2017. Note that both gages reported an above average peak that was the result of CROS efforts to augment the peak for endangered fish in the 15 mile reach discussed later in the report. After snowmelt runoff, Colorado River flows hovered around historical averages through the end of the irrigation season mainly due to reservoir releases to satisfy senior calling rights and for endangered fish habitat. The irrigation season ended the 2017 water year with gaged flow for the Colorado River near Cameo 91% of average, ranking 54th out of 84 years of record. The Colorado River near Dotsero was 97% of average, ranking 36th out of 76 years of record.





By decree the Green Mountain Reservoir start of fill is declared between April 1 and May 15 of each year. Generally, only the driest of years have an April start of fill, and the wetter the year the later start of fill is declared. For 2017 the start of fill was declared on May 15 with 76,680 acre-feet in storage. However, the low storage occurred on March 22, 2017 with 63,550 acre-feet. Storage between March 22nd and May 15th start of fill was done under the prior year’s refill right. The reservoir attained a paper fill on June 27, 2017 with an owed-to-account by Denver Water and Colorado Springs Utilities of 7,463 acre-feet. The owed to account was eliminated using the provision in the Green Mountain Reservoir Fill Protocol allowing storage under a 1955 priority after a paper fill of its senior 1935 storage right. On July 6, 2017, the USBR declared they had reached a “desired fill” at 153,083 acre-feet just below maximum physical storage, which was also the maximum storage for the year. Thus all pools within the reservoir were full including, the Colorado-Big Thompson Project replacement pool and the West Slope Power Pool that includes the Historic Users Pool, the Silt Project Pool, and the contract pool.

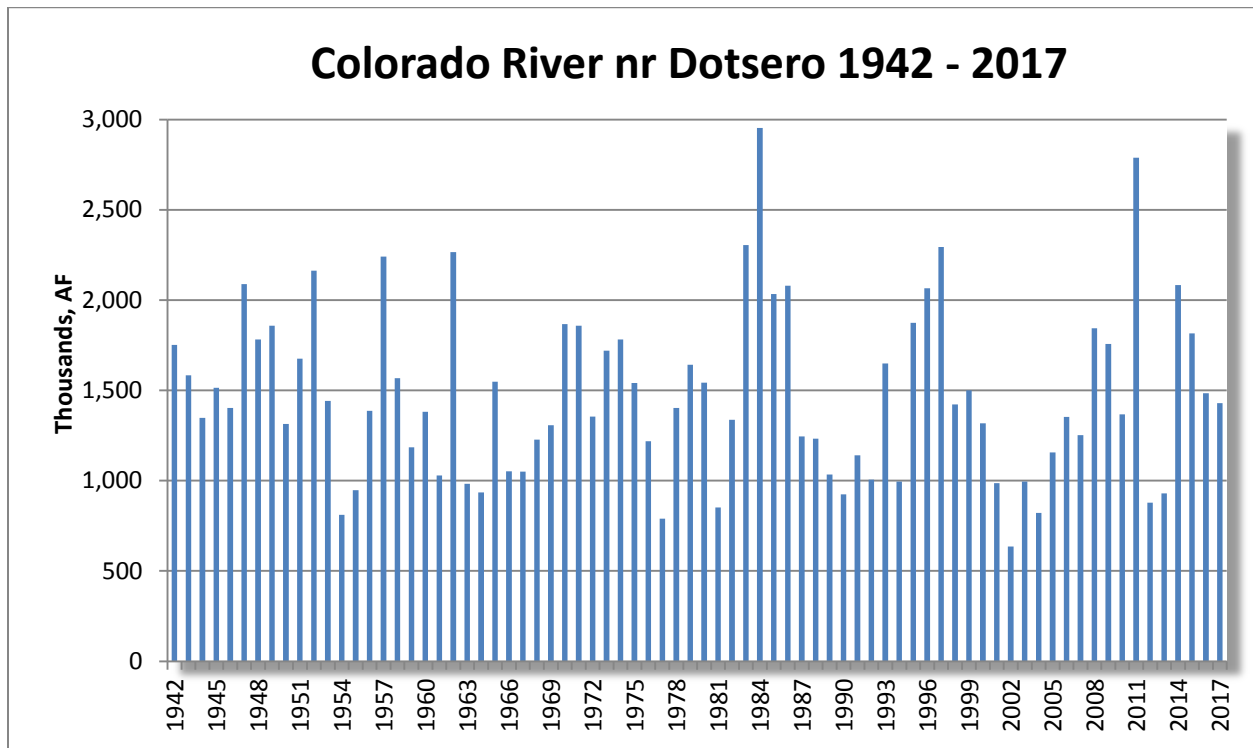
Ruedi Reservoir maximum storage occurred on July 20, 2017 with 102,083 acre-feet at 0.29 feet below spill, slightly above the desired maximum fill at 0.4 feet below spill. Physical fill at spillway crest is 102,369 acre-feet. In 2017 Wolford Mountain Reservoir operated without a dam safety storage restriction for the second year and physically filled on May 14, 2016 at 66,000 acre-feet and reached a maximum content on May 27th at 67,312 acre-feet. Williams Fork Reservoir filled to its decreed capacity on June 18th at 93,637 acre-feet and reached a maximum content on June 26th at 96,822 acre-feet. Dillon Reservoir filled to its decreed capacity on June 15, 2017, at 252,678 acre-feet and reached a

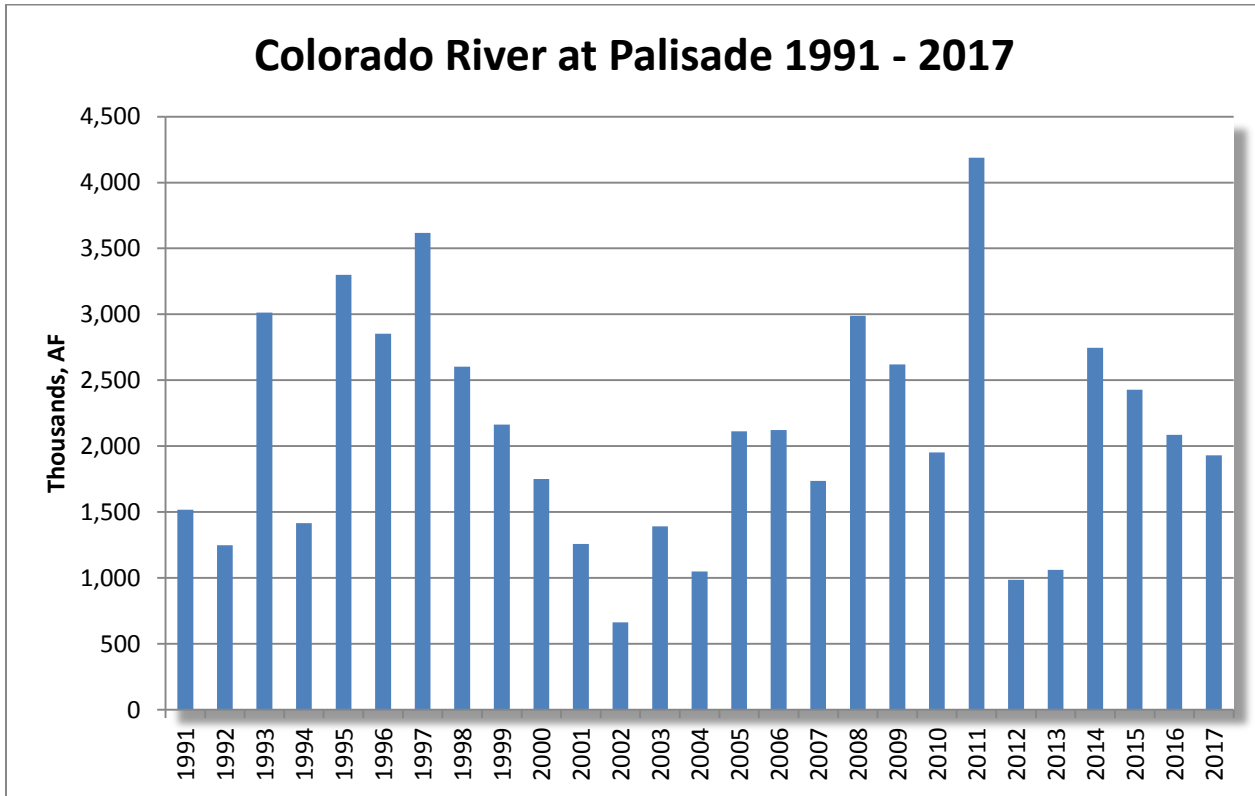
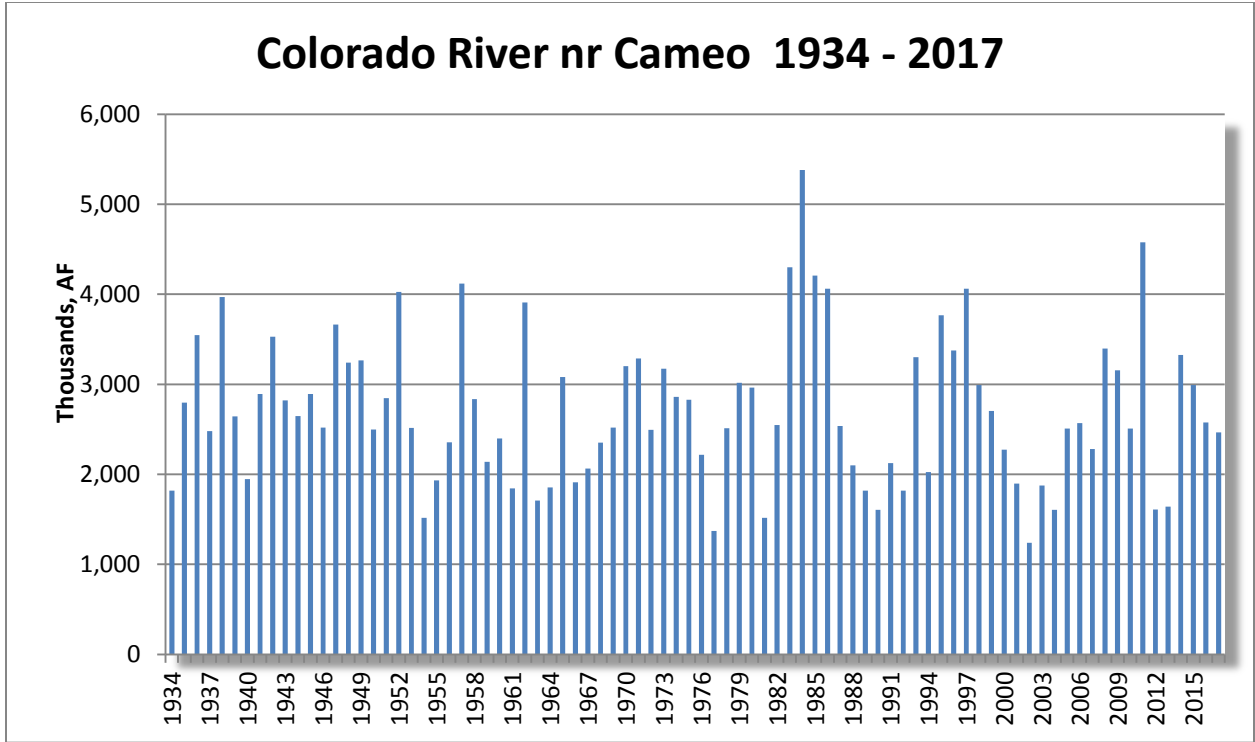
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maximum content on July 12th of 260,091 acre-feet. At Granby Reservoir the spillway gates were operated from June 14th through July 3rd to prevent an uncontrolled spill. The reservoir reached maximum storage on July 2nd at 536,500 acre-feet, below the capacity of 543,758 acre-feet. Total spill for 2017 was 15,807 acre-feet. Vega and Rifle Gap Reservoirs, facilities to two separate irrigation projects in Water Division 5, each filled in 2017. Homestake Reservoir filled on June 22, 2017 at 42,859 acre-feet, and remained near full until mid-October when releases to Homestake Tunnel began.

In summary, the 2017 Division 5 over-all runoff was below to slightly below average with sub-basins above Kremmling faring better than below Glenwood Springs. Water supplies throughout the basin were supported by full reservoirs at the end of the snowmelt runoff.

Below are Colorado River near Dotsero, Colorado River near Cameo, and Colorado River below Grand Valley Canal at Palisade gaged flow histograms for comparison of the 2017 irrigation year with previous years of record.





Surface Water Administration

The Shoshone Power Plant operated without any major outages. A call by the power plant was maintained throughout the winter of 2016-17. The plant was taken off line for 13 days for maintenance on March 21st, and was back on line for one day, when higher flows exceeded the rights of the power plant on April 3rd. The call remained off until August 21, 2017. The call was taken off the river when the power plant was not operational from September 5th through October 7th. The total call days by the Shoshone Power Plant during the 2017 irrigation year was 180 days. The lower river experienced another good summer when the Cameo call was not implemented in 2017 until August 31st. On September 6, 2017 paragraph 3(a)(1) of the stipulation in Case No. 91CW247 was exercised. This is the second time and second consecutive year this provision of the "Orchard Mesa Check Case" has been used. The check case limits the call to the 1950 cfs of the irrigation rights in the Government Highline Canal and the Grand Valley Irrigation Company Canal combined (1310cfs + 640cfs). However, pursuant to paragraph 3(a)(1) of 91CW247, whenever irrigation demand is less than 1310 cfs in the Government Highline Canal the power right can be exercised to maintain 1310 cfs. This provision was exercised for 15 days. The Cameo call continued through September 28, 2017, when a free river was declared for the remainder of the irrigation season. The Cameo call was exercised only 28 days in 2017. As a result Green Mountain Reservoir storage replacement releases for the Historic User's Pool were only 12,841 acre-feet, providing a significant surplus for the endangered fish recovery program.

2017 was the fourth year the fill of Green Mountain Reservoir was administered pursuant to the Green Mountain Reservoir Fill Protocol. The Protocol Agreement requires the a decree finding the Protocol consistent with the Blue River Decrees. The Protocol continues to operate without a decree. Ultimately, final decrees in the pending water court application in state water court, and pending motion for a Federal Court finding that the Protocol is necessary to ensure to protocol can be administered. There was no activity associated with the litigation of these decrees in 2017. A critical principle of the protocol is a "Fill Plan" prepared by the USBR, allowing the Green Mountain Power Plant to operate where storable inflow delivered to the power plant does not account against a paper fill of the reservoir. Under all scenarios of the 2017 Fill Plan, Green Mountain inflows were allocated to power in excess of need to complete a fill of the reservoir. With inflows allocated to power, Denver Water and Colorado Springs Utilities diverted pursuant to their rights to power interference under the Blue River Decrees, further those diversions do not account against Green Mountain Reservoir's fill. Of note this year, from June 4th through June 21st the rate of the cities depletions plus actual deliveries to power exceeded the 1726 cfs power right. Pursuant to paragraph II.B.1.e.i. of the protocol flows that exceed 1726 cfs count against the 1935 Green Mountain Reservoir storage right. During this period a total of 7,463 acre-feet paper filled the reservoir.

The majority of Division 5's surface water administration will always be on the many tributaries with more senior calling rights than the mainstem. The calls administered for these tributaries can be found in the Division's call chronology in CDSS. The total number of call changes on Division 5 tributaries for 2017 was 341. Calls for junior rights upstream of more senior calls, often deemed a "call within a call" or in the CDSS terminology

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“upstream junior calls” are generally for exchanges and non-consumptive rights such as instream flows. The total of upstream junior calls was 10.

There were only 4 administrative orders issued in 2017. Only 1 order was to repair a headgate and measuring device, while 3 were for wells not in compliance with a well permit. Regarding augmentation plan administration, 14 deficiency letters were issued in 2017 for lack of measuring devices, inadequate replacement source, expired contracts, and accounting. A deficiency letter is sent to municipal providers and to augmentation plan operators after no progress is made through less formal communication, and precedes a written order and curtailment.

A total of 13 administrative exchanges were approved pursuant to CRS §37-83-104 in Division 5 for the 2017 Irrigation Year. They include the annually approved exchanges for Winter Park snowmaking, Byers Peak snowmaking, storage of Goose Pasture Tarn and Clinton Reservoir water in Dillon to make room for high snowmelt runoff where such storage is exchanged back up after runoff, and Grand County Road and Bridge. A variety of one time approvals for construction or pending water court cases were also approved.

SUMMARY OF COLORADO RIVER MAIN STEM CALLS
2017 IRRIGATION YEAR

STATUS OF CALL AT THE SHOSHONE POWER PLANT
(As determined using the Colorado River near Dotsero gage)

DATE ON	THRU	NO. DAYS CALL ON/OFF	CALLING RIGHT	DECREED AMT.	SWING PRIORITY	SWING PRIORITY ADMIN. NO.	COMMENTS
11-01-16	03-20-17	140	Shoshone Power Plant	1,250 cfs	----	20427.18999	
03-21-17	04-02-17	13	Free River	---	---	---	
04-03-17	04-03-17	1	Shoshone Power Plant	158 cfs	Blue River Div Project	35238.00000	
04-04-17	08-21-17	140	Free River	---	---	---	
08-22-17	08-25-17	4	Shoshone Power Plant	158 cfs	---	33023.28989	
08-26-17	08-29-17	4	Shoshone Power Plant	1,250 cfs	CBT Project	31258.00000	
08-30-17	08-31-17	2	Shoshone Power Plant	1,250 cfs	---	20427.18999	
09-01-17	09-05-17	5	GVIC	119 cfs	---	30895.23491	Shoshone Power Plant not Operational
09-06-17	09-14-17	9	Grand Valley Proj. Power Plant	400 cfs	---	30895.21241	Shoshone Power Plant not Operational
09-15-17	10-07-17	23	Shoshone Power Plant	1,250 cfs	---	20427.18999	
10-08-17	10-17-17	10	Shoshone Power Plant	1,250 cfs	CBT Project	31258.00000	
10-18-17	10-31-17	14	Shoshone Power Plant	1,250 cfs	----	20427.18999	

STATUS OF CALL IN THE GRAND VALLEY
(As determined using the Colorado River near Cameo gage)

DATE ON	THRU	NO. DAYS CALL ON/OFF	CALLING RIGHT	DECREED AMT.	SWING PRIORITY	SWING PRIORITY ADMIN. NO.	COMMENTS
11-01-16	08-30-17	303	Free River	---	---	---	
08-31-17	09-05-17	6	GVIC	119 cfs	---	30895.23491	
09-06-17	09-20-17	15	Grand Valley Proj. Power Plant	400 cfs	----	30895.21241	Pursuant to 3.a.1 of Check Case Stip.
09-21-17	09-27-17	7	GVIC	119 cfs	---	30895.23491	
09-28-17	10-31-17	34	Free River	---	---	---	

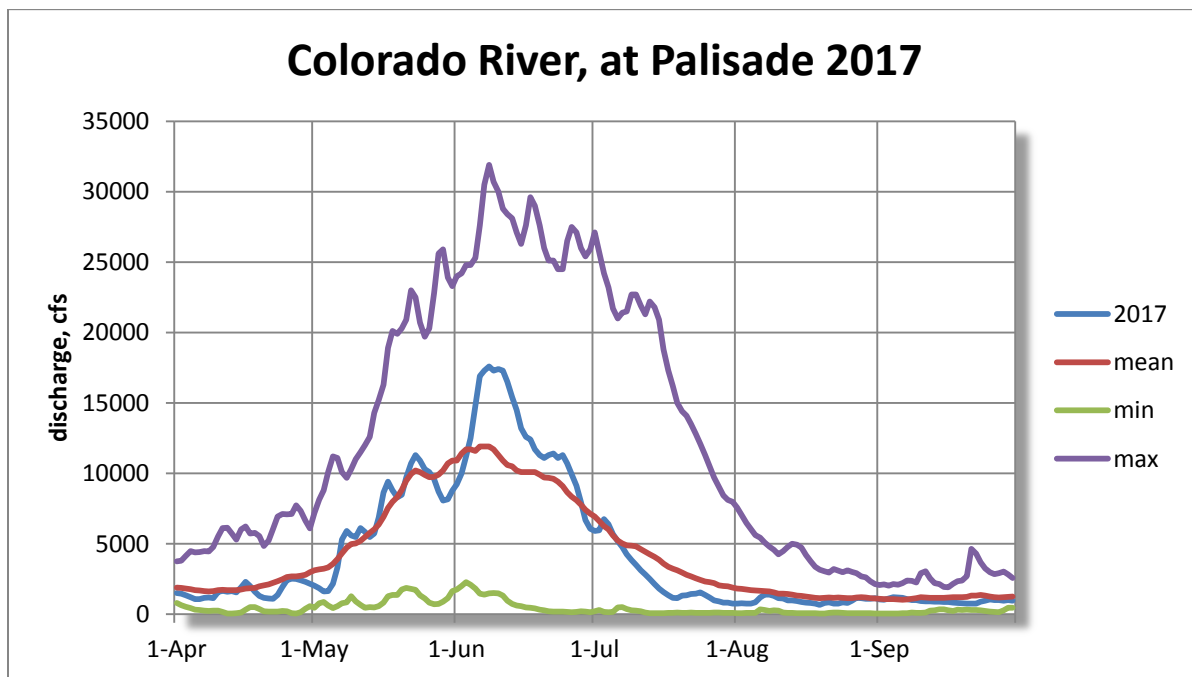
SWING PRIORITY = MOST JUNIOR WATER RIGHT, EITHER TOTALLY OR PARTIALLY IN PRIORITY, U/S OF THE CALLING STRUCTURE

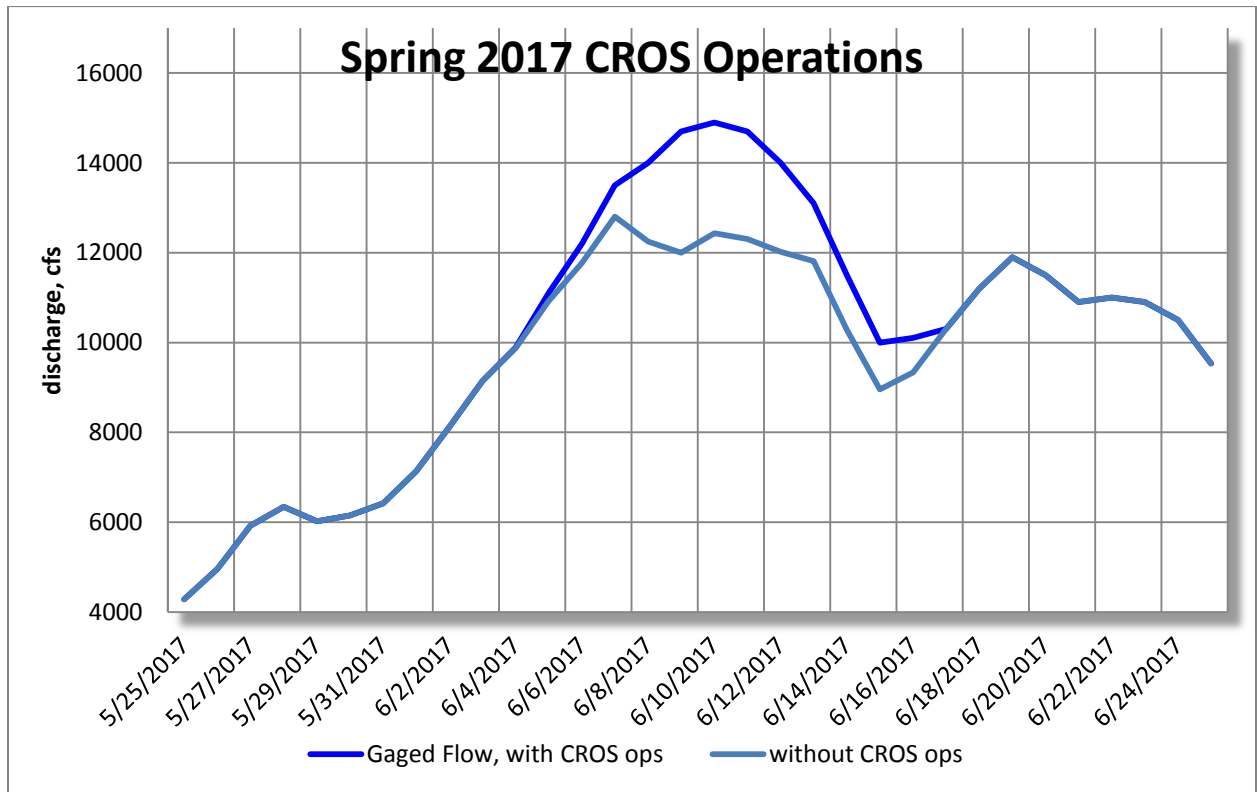
Endangered Fish Recovery Program

The Coordinated Reservoir Operations (CROS) program was established in 1995 as part of the Upper Colorado River Endangered Fish Recovery Program. Its purpose is to enhance spring peak flows for a 10 day period in the 15 mile section of the Colorado River immediately

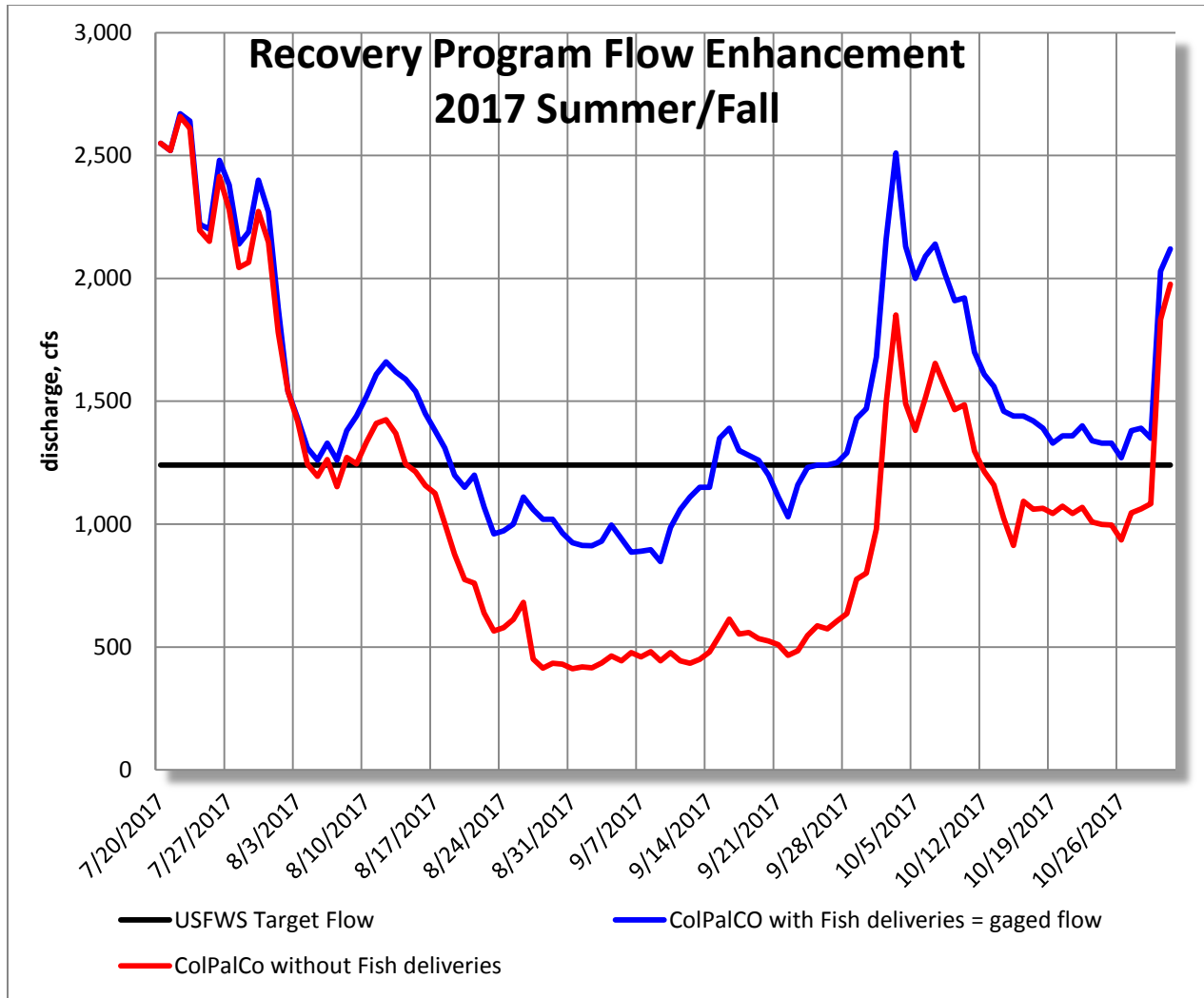
upstream of the Gunnison River. The “15 mile Reach” is critical to the survival of four endangered fish species: the Humpback Chub, Razorback Sucker, Bonytail and the Colorado Pikeminnow. In years with sufficient snowpack, surplus inflows to the reservoirs can be passed on downstream to benefit these fish without impacting reservoir yield. Preparation for CROS generally begins in March, to assure the “April Hole” of 2013 was not repeated, when flows measured at the Colorado River near Palisade gage dropped as low as 55cfs. Recently, the USFWS would like an absolute minimum flow of 500cfs. No action was necessary in 2017 to avert an “April Hole.” Meetings become weekly as peak snowmelt runoff approaches. The goal is to time the bypass of storable inflows, release of storage, or other divertible flows at participating reservoirs and operators to enhance the peak at the Colorado River near Cameo gage, such the enhancement will result in flows that exceed 12,900 cfs, the minimum deemed to benefit the habitat, and flows that will not exceed 25,000 cfs, which is bank full in the Palisade-Grand Junction area. The decision to trigger CROS operations is made after managers of participating reservoirs are confident that bypasses at their individual reservoirs could be made prior to filling without impacting the yield of their storage rights, and the group determines CROS operations will fall within the acceptable range.

CROS operations did occur in 2017 for the third consecutive year. Bypassed inflows began on June 1, 2017 and continued through June 14, 2017. Accounting for the various delivery times the flows in the critical reach were enhanced from June 4th through June 16th. Accounting for transit losses the maximum peak enhancement was on June 9th at 2,700 cfs. The actual peak at the Colorado River at Palisade gage did occur during this enhancement on June 10th at 14,900 cfs, which included 2,465 cfs of CROS operations. Total deliveries (bypasses less transit losses) for 2017 were 33,560 acre-feet. The following graphs depict the flows for the Colorado River at Palisade as compared to historic, and the impact of 2017 CROS operations on the peak flow.





As with last year, the USFWS set the Endangered Fish Recovery Program target flow for the Colorado River at Palisade gage at 1,240 cfs set on July 1st for the entire summer base flow augmentation period. This is the target the USFWS uses for average flow conditions. Once the target was set for 2017 it remained unchanged for the season. Though flows were well above the target, Palisade Pipeline bypasses were accounted to flow augmentation beginning on July 1st. The initial reservoir release was made from Granby Reservoir on August 1st. All pools for the recovery program were filled in 2017, making 26,824 acre-feet available for the program. On August 16th a surplus was declared in Green Mountain Reservoir’s HUP making any portion of the 66,000 acre-foot pool not needed for its beneficiaries available for the program. Additionally, the Ute Water Conservancy District leased to the Colorado Water Conservation Board up to 12,000 acre-feet of its Ruedi Reservoir storage for use by the recovery program. By October 31, 2016 surplus releases from the HUP totaled 44,201 acre-feet. A total of 71,032 acre-feet was released from Green Mountain, Ruedi, Wolford Mountain, Williams Fork, and Granby Reservoirs. The total augmentation water delivered to the 15 mile reach, accounting for transit losses and 11,905 acre-feet of bypasses by the Palisade Pipeline, were 81,823 acre-feet. The 2017 augmentation of flow in the 15 mile reach is depicted in the flowing graph.



Water Court

There was one Supreme Court Cases involving Division 5 water rights. Case No. 2017SA220 *Sam Allen v. State of Colorado*. The case involved ownership of Big Creek Reservoir Company shares, and whether the water court had subject matter jurisdiction over ownership. The court found it was not a water matter, and that decision was appealed to the Supreme Court. DWR’s primary interest is the scope of the Water Courts jurisdiction, ensuring the court does not get bogged down in other matters.

General water court activities in Division 5 followed our plan to assume the role as a technical advisor to the court, and a less litigious participant. Division 5 staff did appear for trial at the Judges request. However, in a break with the previous three years, two statements of opposition were filed in 2017. One statement of opposition was filed, because applicant requested an SOP, believing it more efficient to resolve a unique case. In the other, after DWR stipulated with applicant, the case proceeded to trial and the Division Engineer testified to support the stipulation. Two motions to intervene were filed in 2017, where the applicant asked the Judge to allow work with DWR on settlement prior to granting the motion. In both cases we worked out a settlement and did not become a formal party. No protests to Referee Rulings were necessary.

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For 2017 there were 291 Water Court Applications, a significant increase over the 169 filed in 2016. Of the 2017 applications, 1 application was withdrawn, 1 was amended prior to consultation, 1 application was re-referred and had Written Recommendations to the Water Judge, and 2 SOP's were filed, leaving 286 that had Summary of Consultations. All were filed as required by the rules of the court within 30 days of the consultation meeting with the referee, or 45 days where findings of fact for groundwater applications are required. In our continued effort to help expedite court cases nearly all consultations are filed within 7 days of the consultation meeting. No extensions of time were requested for filing consultations in 2017.

Groundwater

In 2017 "Well Tools" were replaced with a new system for processing and tracking well permit applications, and then issuing well permits, and archiving the entire file in Laser Fiche.

Well Permitting activity generally increased over last year. Division 5 groundwater permit applications for exempt and non-exempt wells are reviewed and approved by staff in both the Division 5 office and DWR staff in the Denver office. Well permitting activity during 2017 included 631 well permit applications, 158 monitoring/observation hole notifications and wells. These are both increases from 2016, which had 561 well permit applications and 217 monitoring/observation hole notifications. Total permits issued for both exempt and nonexempt new and replacement wells in 2017 also increased with 619 permits issued compared to 512 permits issued during 2016. There was 1 geothermal permit application and permit issued in 2017. Drilling activity in 2017 saw 295 drillers logs received, an increase over 2016 where 233 wells were constructed.

Colorado River Cooperative Agreement

Major negotiation of the Colorado River Cooperative Agreement (CRCA) concluded in 2013 with the signing of the Green Mountain Reservoir Protocol and Protocol Agreement, leaving full implementation conditioned on resolution of several agreements and water rights applications, and a federal court decree. The completed pieces to the CRCA include: the main CRCA agreement signed in 2011; the Green Mountain Fill Protocol and Green Mountain Protocol Agreement signed in 2013; a water court decree in Case No. 10CW298 by Grand County for RCID's on the Colorado River; a water court decree in Case No. 11CW152 by Denver Water, Grand County and the CWCB for a right of substitution using Fraser River diversions and Gross Reservoir in Water Division 1; Denver's "reverse exchange" decreed in Case No. 11CW21 allowing Dillon storage to be exchanged to Moffatt and Williams Fork; and Shoshone Outage Protocol Agreement signed June 2016. Among the remaining items is resolution of Case No. 06CW255. The case is a claim for reasonable diligence for the storage right in Dillon Reservoir, and pursuant to the CRCA includes claims for the express purpose of implementing the CRCA allowing Dillon Reservoir to be used for West Slope purposes, allowing storage in any east slope reservoir in Denver's system, and can be used anywhere in the Denver Metro Area as that area is defined in the CRCA. An order by the court on January 18, 2018 accepting modifications to a proposed decree noted no further settlement meetings are scheduled. A final decree is expected. Another outstanding issue is the litigation of filings in Federal and State Courts under the Blue River Decrees; where again in 2017 no progress was made. The state application was

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filed in 13CW3077 and remains open pending resolution of the motion to reopen the Blue River Decrees in Federal Court. The final piece to the CRCA puzzle will be the construction of the enlargement of Gross Reservoir. In 2016 the EPA issued its Biological Opinion finding compliance with Section 7, and also USFS agreements were signed. In 2017, the US Army Corps of Engineers issued its Record of Decision and 404 permit. In 2018, an approved amendment to Denver's FERC license is expected. Final dam design will begin in 2019. Construction is expected to be completed by 2025.

The 2017 Annual Report is respectfully submitted for the Staff of Water Division 5, by

A handwritten signature in black ink, appearing to read "Alan C. Martellaro". The signature is fluid and cursive, with a large initial "A" and "M".

Alan C Martellaro, Division Engineer
April 11, 2018