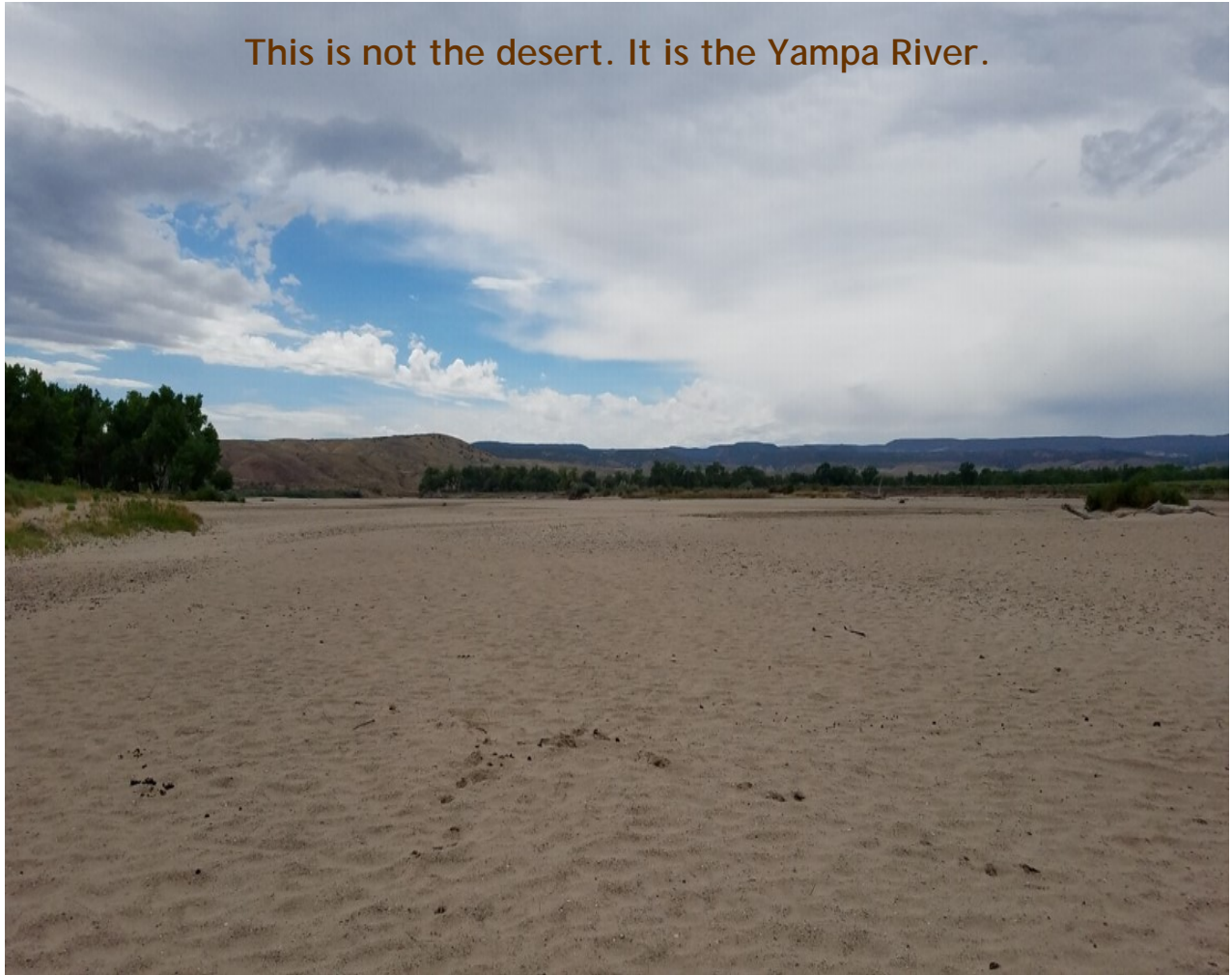


DIVISION 6

2018 ANNUAL SUMMARY

This is not the desert. It is the Yampa River.



Erin Light, P.E.
Division Engineer
June 7, 2019



COLORADO
Division of Water Resources
Department of Natural Resources

2018 ANNUAL SUMMARY

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Introduction

The following report summarizes the activities of the Division 6 office of the Colorado Division of Water Resources, presents an overview of the administration activities that took place and provides statistical data for 2018.

Basin Hydrology

Snowpack

Table 1 below shows the snow water equivalent for the period October 2017 through May 2018. These numbers show that the snowpack was below normal throughout the entire winter.

Table 1

End of Month Snow Water Equivalent as Percent of Median
Water Year 2018

Drainage	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Laramie/North Platte River	82	90	87	81	90	94	89	40
Yampa/White River	81	77	72	72	81	83	75	36

Streamflows

As a result of the below median snowpack, streamflows were below average at all of the below reported gages. Table 2 below shows the February 1st, March 1st and May 1st runoff forecasts developed by the NRCS in comparison to the actual runoff between April 1 and July 31 as measured at the selected USGS gaging stations.

Table 2

2018 Runoff Forecast in 1000's of Acre-Feet

Station Name	<u>1-Feb</u>		<u>1-Mar</u>		<u>1-May</u>		<u>Actual</u>	
	Runoff	% Avg	Runoff	% Avg	Runoff	% Avg	Runoff	% Avg
North Platte nr Northgate (Apr-Jul)	185	82	199	88	155	83	119	50
White River nr Meeker (Apr-Jul)	149	53	152	54	144	51	145	52
Little Snake River nr Lily (Apr-Jul)	205	59	210	61	165	48	129	38
Yampa River nr Maybell (Apr-Jul)	525	56	570	61	635	68	577	61



Provided in Table 3 below are the annual runoff values for the water year for these same stations as well as the minimum daily average flow recorded at each station.

Table 3

2018 Annual Discharge

Station Name	Historic Lowest (AF)	Total 2018 (AF)	Historic Average (AF)	% of Average
North Platte River near Northgate	66,240	192,120	311,378	62
White River near Meeker	198,600	270,690	445,167	61
Little Snake River at Lily	79,600	175,615	407,449	43
Yampa River near Maybell	345,100	727,613	1,119,977	65

Lowest Daily Mean

Station Name	Minimum on Record (cfs)	Minimum WY2018 (cfs)	Date of Occurrence
North Platte River near Northgate	15	37.6	Sept. 22, 2018
White River near Meeker	56.8	56.8	August 15, 2018
Little Snake River at Lily	0	0	July 19, 2018
Yampa River near Maybell	1.8	45.1*	Sept. 26, 2018

* Includes reservoir water in the river

Precipitation

Table 4 below shows the monthly precipitation data for the towns of Walden, Meeker and Steamboat Springs.

Table 4

**Monthly Precipitation Data for Selected Sites
Water Year 2018**

Site	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Walden (inches)	1.75	0.53	0.46	0.3	0.53	0.41	0.52	0.96	0.7	1.13	1.39	0.38	9.06
% Avg	178.6	58.2	73.0	54.5	84.1	51.9	44.1	67.6	53.8	79.6	117.8	27.5	73.2
Meeker (inches)	1.8	0.68	0.15	1.29	0.99	1.8	2.23	1.42	0.11	0.21	1.36	0.17	12.04
% Avg	97.3	46.6	13.6	148.3	97.1	138.5	144.8	97.3	9.0	18.4	101.5	9.6	84.2
Steamboat (inches)	2.76	1.84	0.17	1.47	1.41	1.29	2.82	1.47	0.24	1.06	2.32	0.89	16.85
% Avg	127.2	82.1	6.9	64.5	74.6	71.3	117.5	65.6	13.6	68.8	144.1	40.5	75.1

**Monthly Precipitation Data for Selected Sites
Calendar Year 2018**

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Walden (inches)	0.3	0.53	0.41	0.52	0.96	0.7	1.13	1.39	0.38	1.63	0.71	0.05	8.71
% Avg	54.5	84.1	51.9	44.1	67.6	53.8	79.6	117.8	27.5	166.3	78.0	7.9	70.4
Meeker (inches)	1.29	0.99	1.8	2.23	1.42	0.11	0.21	1.36	0.17	3.13	0.8	0.7	13.66
% Avg	148.3	97.1	138.5	144.8	97.3	9.0	18.4	101.5	9.6	169.2	54.8	63.6	85.0
Steamboat (inches)	1.47	1.41	1.29	2.82	1.47	0.24	1.06	2.32	0.89	3.1	3.12	1.15	19.36
% Avg	64.5	74.6	71.3	117.5	65.6	13.6	68.8	144.1	40.5	142.9	139.3	46.4	78.6

Water Administration

Water administration in Irrigation Year 2018 consisted of calls on the following systems:

North Platte River Basin

Michigan River
Illinois River

Yampa River Basin

Bear River
South Hunt Creek
Smith Creek of Deep Creek of the Elk River
Elk River itself
West Fish Creek of Trout Creek
Trout Creek itself
Oak Creek



Little Bear Creek of Fortification Creek
Little Cottonwood Creek of Fortification Creek
Fortification Creek itself
Morapos Creek
Little Snake River
Yampa River itself

Green River Basin

Talamantes Creek

White River Basin

Piceance Creek from the Metz and Reigan Ditch upstream to a dry up point below the Schutte Ditch

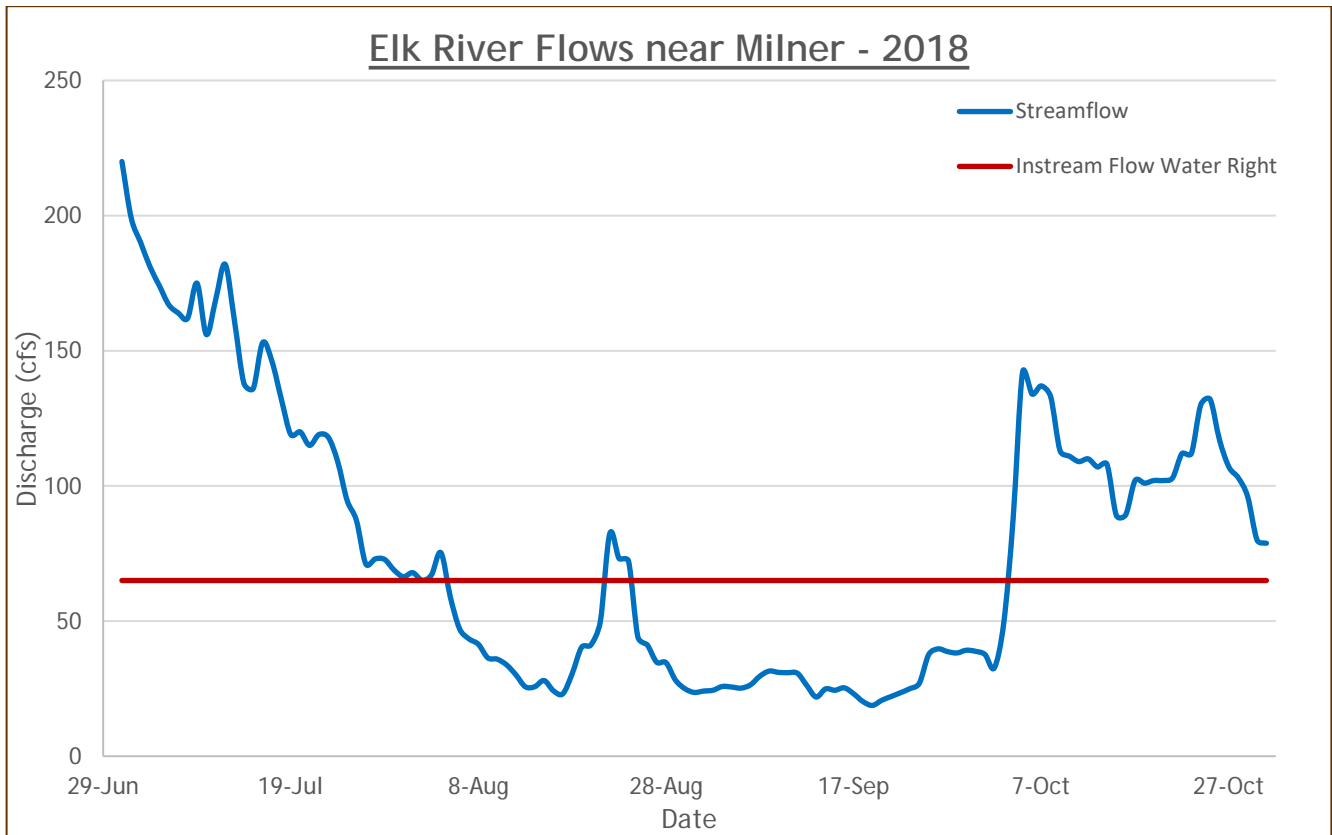
Piceance Creek from the Schutte Ditch upstream to the headwaters.

A complete list of the calls that occurred within Division 6 can be found on the Colorado Decision Support System (CDSS) website. Additionally, releases were made from Elkhead Creek Reservoir, Stagecoach Reservoir, Big Beaver Creek Reservoir, Yamcolo Reservoir, Stillwater Reservoir, Walden Reservoir, and Meadow Creek Reservoir that were protected and delivered by our office.

Elk River Administration

The Elk River was under administration between August 8 and September 4 when the Yampa River went under administration, and then again when the Yampa River went off call from September 26 through October 5. The Elk River instream flow water right, the calling water right on the river, is decreed in the amount of 65 cfs year round. The lowest daily mean flow, as measured at the Elk River near Milner gage station that occurred during the call was 23.1 cfs on August 17; however, the river dropped to 18.8 cfs on September 19, which was during the Yampa River call.

Shown in the following graph are the flows during the summer and fall at the Elk River near Milner gage station, which typically drop below 65 cfs.



The entire Elk River was designated as over-appropriated effective January 1, 2011. This action prompted the Upper Yampa Water Conservancy District to file in Water Court a request for approval of an augmentation plan. This application was filed with the Court in December 2015. A decree was entered in the case in August 2018. The plan is designed to provide a means for water users to divert water out of priority during administration on the Elk River, yet have their depletions replaced through the plan. When calls are honored on the Elk River itself, the replacement source of water will be from Steamboat Lake; whereas if a call is honored on the Yampa River below the Elk River, the replacement source will be Stagecoach Reservoir.

Elkhead Creek Reservoir

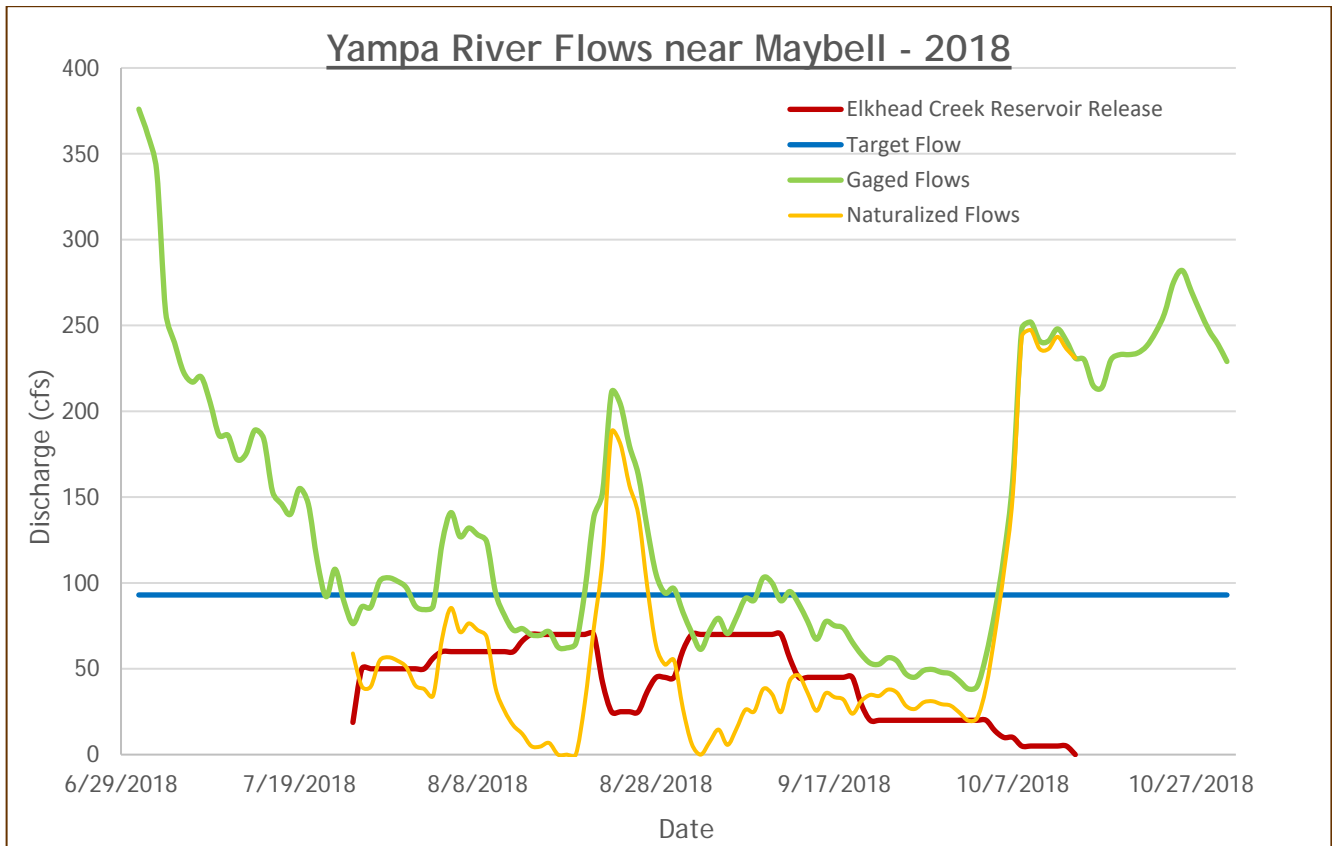
Releases were made from Elkhead Creek Reservoir between July 25 and October 13, 2018 for a total of 7,377 acre-feet. Releases were made for the purpose of in-river fish habitat and river flow maintenance and enhancement under the Upper Colorado River Endangered Fish Recovery Implementation Program (Recovery Program) (7,000 acre-feet), to meet demands at Craig Station Power Plant when its water right(s) went out of priority during the Yampa River call (341 acre-

feet), and to meet demands from Colowyo Coal Company (36 acre-feet) when its water rights went out of priority during the Yampa River call. Clearly, the majority of the water released was for the Recovery Program. The target flows established by the Recovery Program for the Yampa River as measured at the Yampa River near Maybell gage station from August 1 to October 31 are:

Dry Years	93 cfs
Average Years	134 cfs
Wet Years	Under evaluation

Generally speaking, “dry” corresponds to hydrologic conditions of 75% or greater exceedance, “average” corresponds to 75% to 25% exceedance, and “wet” corresponds to 25% or less exceedance. The Recovery Program sets the corresponding flow target in June after considering the conditions on the river, forecasted streamflow, and the volume of water stored in Elkhead Creek Reservoir. In 2018, the flow target was set at 93 cfs (Dry). Water released from Elkhead Creek Reservoir is protected by this office through the entire length of the critical habitat reach, which extends from the City of Craig downstream to the confluence of the Yampa River and Green River.

Shown in the following graph are the flows during the summer and fall on the Yampa River near Maybell in 2018. This graph shows that even with Elkhead Creek Reservoir water in the system dedicated to supporting the endangered fish, the flows dropped below the 93 cfs target. This graph also shows what the flows would have looked like had reservoir not been released.

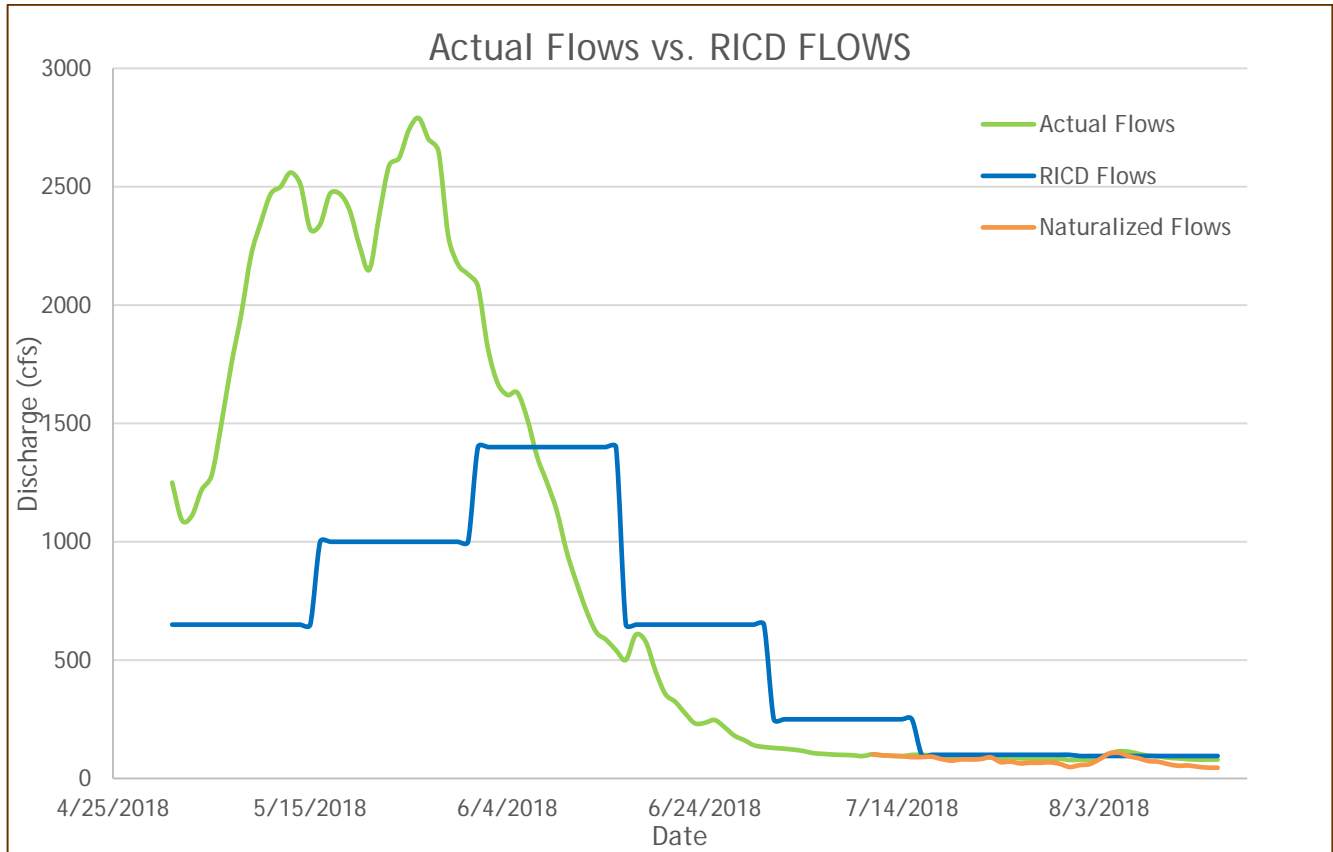


Yampa River RICD Flows

Though the Yampa River has never been subject to administration as a result of a call for water by the City of Steamboat Springs for their Recreational In-Channel Diversion (RICD) water right, this office tracks the flows through the diversions in the event a call for administration is requested. The decreed amounts for the RICD are: 400 cfs from April 15 to April 30, 650 cfs from May 1 to May 15, 1000 cfs from May 16 to May 31, 1400 cfs from June 1 to June 15, 650 cfs from June 16 to June 30, 250 cfs from July 1 to July 15, 100 cfs from July 16 to July 31 and 95 cfs from August 1 to August 15. The City of Steamboat Springs does not begin operation of the gage station that acts as their measurement for their water right (Yampa River below Soda Creek) until May 1 of each year, and as such, a call would not be honored prior to May 1 unless they begin operation of the gage station prior to this date.

The following graph shows the average daily flows for the period of May 1 through August 15, 2018 at the Yampa River below Soda Creek gage station in comparison to the decreed flows. The

average daily flow on the Yampa River below Soda Creek dropped below the decreed amounts on June 7 and remained below the decreed amount through August 15 (with the exception of two days in August). It should be noted, that from July 14 through the end of the RICD water right period (August 15) water was being released from Stagecoach Reservoir under a contract with the Colorado Water Trust who had sub-leased the water to the City of Steamboat Springs to assist with water temperatures at their wastewater discharge outfall.



Stagecoach Reservoir Releases

Releases were made from Stagecoach Reservoir under multiple different contracts starting on July 14 and running through October 4. The releases were made for the Colorado Water Trust as mention above, the City of Steamboat Springs, Tri-State Generation and Transmission and several small augmentation contracts.



Yampa River Administration

For the first time ever, the Yampa River went under administration in 2018. Why 2018? What it made it different from 2002 or 2012, other drought years, where administration did not occur? Compared to the rest of the State, the snowpack in the northwest part of Colorado was good. The peak snowpack in the Yampa and White Rivers combined was 90% of median. Table 5 below shows a comparison of the snowpack in 2002, 2012 and 2018 based on percent of median.

Table 5
Snowpack Comparison

<u>Year</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>
2002	80%	75%	73%	75%	40%
2012	64%	66%	79%	52%	22%
2018	72%	81%	83%	75%	36%

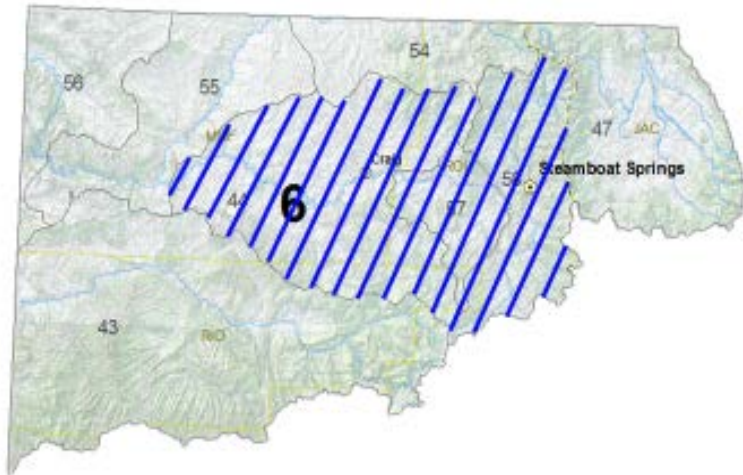
A driving factor in the first ever administration was the lack of precipitation during the summer months, and the above average temperatures did not help either. The tables above show how little precipitation we had and in the Craig and Maybell area, there were two months (June and September) where no precipitation at all was measured. Additionally, in 2002, there was no reservoir water released to the Yampa River for the Recovery Program. Without the reservoir water in the system that has to be protected by this office throughout the entire critical habitat reach, in order for our office to place a call, the water right holder has to install a water tight dam. This is not the case when there is reservoir water being protected; rather the water user must only divert all the natural flow in the river.

In 2018, water was released from Elkhead Creek Reservoir under the Recovery Program and that water had to be protected by this office. However, in late August and early September, it was discovered that the reservoir water was not being adequately protected at the lower end of the River in that when one of the most downstream ditches/pumps on the river turned on their pumps to divert water they dried up the river. The owner of the structures knew there was reservoir water in the system that needed to stay in the River and as such, the owner contacted the Division 6 Division of Water Resources office. After evaluating the situation, the division engineer ultimately decided to place a call on the River. The calling location were the pumps referenced

above known as the Lily Park Pumps and the calling priority ranged between August 1950 and January 1955. A list of all administrative calls can be found on the CDSS website.

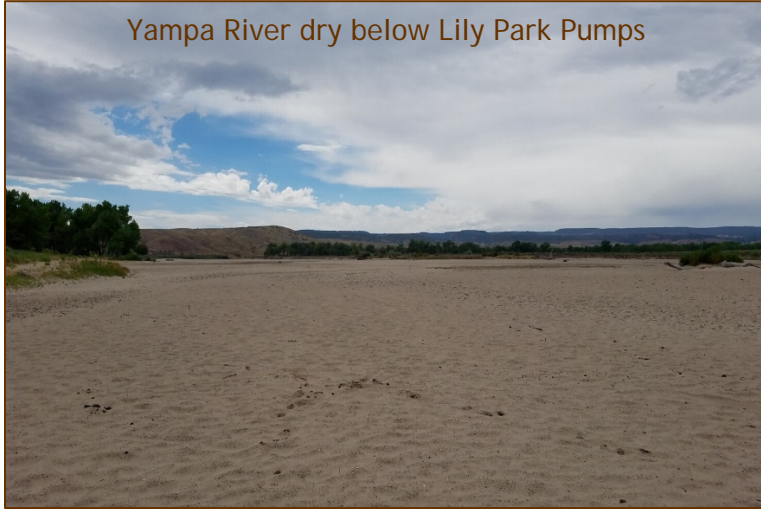
The call encompassed almost the entire Yampa River basin as shown below. Because it had been so dry, many small tributaries to the Yampa River were dry and there were no diversions to curtail. Where water could be curtailed, water rights senior to the calling priority and downstream of where water was curtailed were able to divert the additional water in the stream.

Area Affected by Call

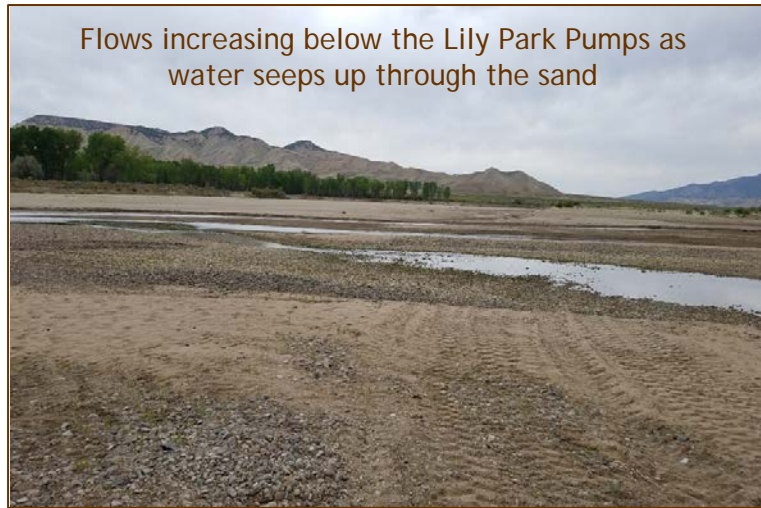


As shown in the pictures below, the river conditions on the Yampa River were critically low and had reservoir water not been released from Elkhead Creek Reservoir for the Recovery Program and water released from Stagecoach Reservoir that was not ultimately picked up by a user, the picture on the Yampa River would have been substantially worse.

Yampa River dry below Lily Park Pumps



Flows increasing below the Lily Park Pumps as water seeps up through the sand

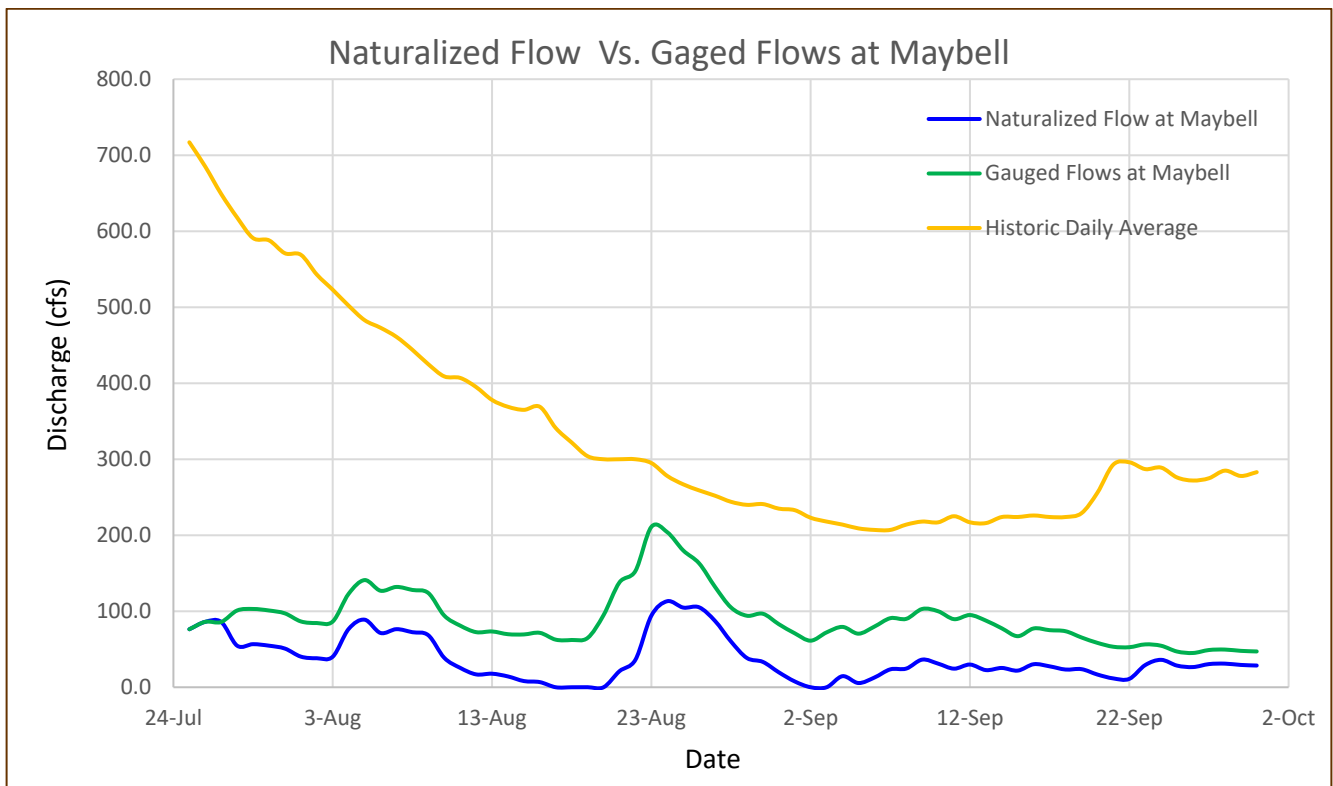


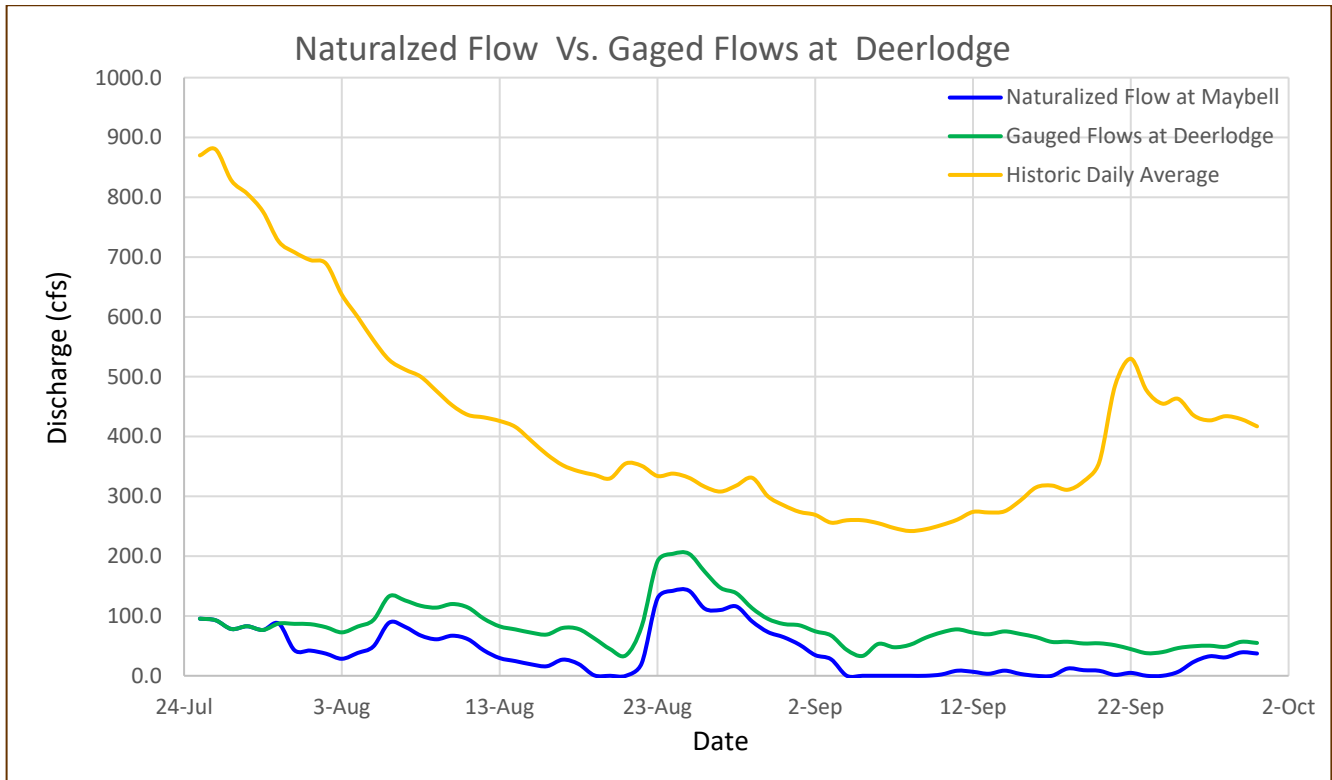
Flows increasing below the Lily Park Pumps as water seeps up through the sand





Below is a graph showing the natural flow in the river versus the gaged flow; the difference being the gaged flow reflects the reservoir water in the system. As one can see, had there not been reservoir water in the system, the Yampa River would have gone dry at both the Maybell and Deerlodge gages.





White River Administration

In 2012, the Colorado Water Conservation Board (CWCB) entered into a temporary loan agreement with the Colorado Parks and Wildlife, pursuant to section 37-83-105(2) C.R.S, to help maintain CWCB’s instream flow water right in Big Beaver Creek and the White River. The agreement allows for the release of water from Big Beaver Creek Reservoir (AKA Lake Avery) three times in ten years to support the flows in Big Beaver Creek and the White River. The first year of the load occurred in 2012 and the second occurred in 2018. In 2018, approximately 1,550 acre-feet were released from Lake Avery between July 27 and September 1 to support the instream flows. Like all other river system in the State of Colorado in 2018, the White River experienced extremely low flows and at one particular gage within White River instream flow reach (White River above Coal Creek near Meeker), the White River would have gone dry had it not been for the releases made from the reservoir.

Groundwater and Well Permitting

As report in the 2017 Annual Report, in the summer of 2017, the division engineer became concerned about how well permits had been issued in over-appropriated basins and specifically those basins recently designated over-appropriated in Routt County. After investigating the concerns, the division engineer in August 2017 requested that no well permits be issued in over-appropriated basins on lots less than 35 acres within Routt County until further notice. This cessation of the issuance of well permits in over-appropriated basins continued through February 1, 2018, when the State Engineer presented a solution to Routt County on how DWR would move forward with issuing well permits.

Effective July 1, 2006, the Yampa River and all of its tributaries upstream of what is referred to as the D-Hole of the City of Steamboat Springs' recreational in-channel diversion, was designated as over-appropriated. Additionally, effective January 1, 2011, the entire Elk River basin was designated as over-appropriated. The two designated areas are very large and cover nearly all of Water District 58 and a substantial portion of Routt County. It goes without saying that these designations effect how well permits are issued. With the Yampa River having gone under administration in 2018 and the Yampa River experiencing severe drought conditions in 2002 and 2012 in addition to the 2018 drought, the division engineer will be evaluating whether the entire Yampa River upstream of the Lily Park Pumps should be designated as over-appropriated.

In irrigation year 2018, 277 well permits were issued in Division 6.

Compacts and Inter-State Agreements

Following is a description of the interstate compacts and agreements administered by Division 6.

Upper Colorado River Compact

Under Article XIII (a) of the Upper Colorado River Compact, the State of Colorado will not cause the flow of the Yampa River at the Maybell gage to be depleted below an aggregate amount of 5,000,000 acre-feet for any period of ten consecutive years. The annual runoff for water year 2018 at this gage was 727,613 acre-feet and the ten-year (2009 to 2018) aggregate flow was 10,979,141 acre-feet; obviously well above that required under Article XIII (a).

The Little Snake River is administered jointly with the State of Wyoming during times of shortage pursuant to Article XI of the Upper Colorado River Compact. On three different occasions in 2018, we were asked to place a call on the Little Snake River for a water right lower in the River. On one occasion, an effort was made to get water down to the calling location with no success. On another occasion, we were successful in getting water down to the calling location but only because there had been some rain that wetted the very sand bed of the Little Snake River. This call was short lived however extending only from August 24 through September 5. On the third occasion, it was obvious any water curtailed would not make it to the calling location, thus no call was placed. On all three occasions, the flows in the Little Snake River were so low that administration into Wyoming was not necessary.

Releases were made from High Savory Reservoir, located in Wyoming, for use by both Colorado and Wyoming (primarily) water users.

Nebraska v. Wyoming, U.S. Supreme Court Decree

Under the "North Platte River Decree", Colorado is limited to a total of 145,000 acres of irrigation, no more than 17,000 acre-feet per year of storage for irrigation purposes and no more than 60,000 acre-feet of transmountain diversions in any period of ten consecutive years from the North Platte River drainage in Colorado. In water year 2018, a total of 104,771 acres were irrigated and 7,217 acre-feet was stored for irrigation purposes. Transmountain diversions out of the basin totaled 4640.5 acre-feet. The cumulative ten-year transmountain diversion out of the basin is 32,445 acre-feet. None of the limits established by the Decree were exceeded in 2018.

A Division 6 representative attended the North Platte Decree Committee meeting held in Scottsbluff, NE in April 2018 and in Torrington, WY in October 2018.

Pot Creek MOU

Pot Creek is a small tributary of the Green River; the headwaters of which are in Utah and enter the Green River in Colorado. Pot Creek water is apportioned among the users of Utah and Colorado under a Memorandum of Understanding (MOU) last updated and signed by the State Engineers of Utah and Colorado on March 1, 2005.

The Pot Creek system is comprised primarily of five reservoirs; three of which are located in Utah and two of which are located in Colorado. The three Utah reservoirs are Matt Warner, Calder and Crouse with Matt Warner being the highest, most upstream reservoir in the system, and Crouse the lowest. Matt Warner Reservoir is used primarily for recreation and is considered a gold water fishery. Crouse Reservoir on the other hand was abandoned, for the most part, many years ago and its low level outlet was filled with concrete. As such when water is released from Matt Warner or Calder Reservoirs for delivery to Colorado users, Crouse Reservoir must fill a large dead pool before water can be released from it.

At the end of the storage season (April 30, 2018), the senior water rights decreed to the two reservoirs located in Colorado (Dry Lake and Offield Reservoirs) had lost water over the winter however insufficient water was stored out of priority in the upstream reservoirs to justify a release of the water down to the Colorado water users. Because Pot Creek is so dry, it takes a substantial amount of water to get any down to Colorado, and none of the water stored out of priority would have made it to Colorado had it been released.

The State of Colorado owns and operates a gaging station located on Pot Creek just upstream of the state line. The records from this gage show that no water went past the state line in Irrigation Year 2018.

The 2018 Pot Creek Distribution System Water Users meeting held on March 6, 2019 in Vernal, Utah was attended by Division 6 representatives. Likewise, the 2017 Pot Creek Distribution System Water Users meeting held on February 21, 2018 in Vernal, Utah was attended by Division 6 representatives.

Division Highlights

Lysimeter Project

The Yampa-White Lysimeter Study (Study) was a five-year study that began with the installation and operation of a weather station in fall 2011 and installation and operation of the lysimeter plots in the spring of 2012. The funding for the study ended in early spring 2016; however, because it was believed that not enough high quality data was obtained during the study period, the Colorado

Climate Center and Division 6 Water Resources applied for and received additional grant money through the Roundtable process to allow five additional years of operation of the Study. The purpose of the Study is to provide a quantitative assessment of irrigated hay meadow consumptive use and its relationship to local weather conditions.

In 2018, the water commissioner visited the site on regular intervals between April and October. Measurements were taken twice on each day of each visit. The plots are weighed upon arrival (referred to as the dry weights) and then weighed again several hours after saturation (referred to as the wet weights).

Abandonment Process

In 2018, this office assisted staff in Denver with the development of an Internal Abandonment Process Guide. This guide is intended to be used not only in the 2020 abandonment process but also for all future abandonment processes. Preliminary 2020 abandonment lists have been completed, and in the summer of 2019, staff will begin their field investigations of water rights proposed for abandonment.

Important Court Cases

The State Engineer and Division 6 Engineer have filed very few statements of opposition in new cases or filed protests to cases. In 2013 and 2014, no statements of opposition were filed; in 2015, two statements of opposition were filed; in 2016, two statements of opposition were filed; in 2017, no statements of opposition were filed; and in 2018, one motion to intervene and statement of opposition was filed. No protests to any of the referee rulings were filed in 2018. Today, there are four cases still pending in which the State and Division Engineers are opposers; three of which the oppositions were filed in 2019 and in the third case the opposition was filed in 2006 in a Division 5 case when the White River cases were before the Division 5 Water Court. The case in which the motion to intervene was filed in 2018 has been resolved and a stipulation entered between the applicant and the Engineers. The Division Engineer filed 69 Reports of the Division Engineer in 2013, 79 in 2014, 90 in 2015, 89 in 2016, 72 in 2017 and 59 in Irrigation Year 2018.

Involvement in the Water User Community

The Division 6 staff continues to assist the public in preparing water court and well permit applications by providing water right and diversion record information, providing information on proper selection and installation of water measuring devices, and assisting dam owners with completing Notices of Intent to Construct Non-Jurisdictional Dams, Livestock Water Tank Permits and Emergency Action Plans. The Division 6 field office in Craig continues to be a vital aspect of our public relations.

Following is a list of meetings attended by Division 6 staff in 2018. This list is not intended to be all-inclusive, but rather provide an idea of the types of meetings attended.

- Spring North Platte Decree Committee meeting held in Scottsbluff, NE
- Fall North Platte Decree Committee meeting held in Torrington, WY
- Annual meeting of the Pot Creek Distribution System in Vernal, UT
- Board meetings held by the Upper Yampa Water Conservancy District
- Board meetings held by Yellow Jacket Water Conservancy District in Meeker, CO
- Bear River Irrigators annual meeting
- Stillwater Ditch Company annual meeting
- All roundtable meetings for the Yampa/White River and North Platte River
- Colorado Water Congress Annual Convention held in Denver, CO

Division 6 staff also made presentations at several water workshops and conferences in 2018.

Division 6 Organization Chart (06/07/2019)

