

# DIVISION 6

# 2015 ANNUAL SUMMARY



Erin Light, P.E.  
Division Engineer  
May 1, 2016



**COLORADO**  
Division of Water Resources  
Department of Natural Resources

# 2015 ANNUAL SUMMARY

## Table of Contents

Introduction .....	1
Basin Hydrology .....	1
Snow Pack .....	1
Stream Flows.....	1
Precipitation .....	3
Water Administration .....	4
Ground Water and Well Permitting.....	11
Compacts and Inter-State Agreements .....	11
Upper Colorado River Compact .....	11
Nebraska v. Wyoming.....	11
Pot Creek MOU.....	11
Division Highlights.....	13
Lysimeter Project .....	13
Abandonment Process .....	15
Important Court Cases.....	16
Involvement in Water User Community.....	16
Organizational Chart.....	17

## Introduction

The following report summarizes the activities of the Division 6 office of the Colorado Division of Water Resources in 2015, presents an overview of the administration activities that took place during both the calendar and irrigation year 2015 and provides statistical data for both the water and irrigation year 2015.

## Basin Hydrology

### Snow Pack

Table 1 below shows the snow water equivalent for the period October 2014 through May 2015. As one can see, the snow water equivalent was, for the most part, below the median.

**TABLE 1**

**End of Month Snow Water Equivalent as Percent of Median  
Water Year 2015**

Drainage	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Laramie/North Platte River	35	101	105	80	87	78	68	107
Yampa/White River	19	108	108	79	79	68	54	96

As shown in Table 2 below, the below average snowpack resulted in below average stream flows despite the above average precipitation (shown in Table 4 below) in May and July.

### Stream Flows

As a result of the below average snowpack, streamflows were also below average. Table 2, below, shows the January 1<sup>st</sup>, March 1<sup>st</sup> and May 1<sup>st</sup> runoff forecasts developed by the NRCS in comparison to the actual runoff between April 1 and July 31 as measured at the selected USGS gauging stations.

**TABLE 2**

**2015 Runoff Forecast in 1000's of Acre-Feet**

Station Name	1-Jan		1-Mar		1-May		Actual	
	Runoff	% Avg						
North Platte nr Northgate (Apr-Jul)	210	93	158	70	70	37	202	86
White River nr Meeker (Apr-Jul)	275	98	215	77	154	55	244	89
Little Snake River nr Lily (Apr-Jul)	275	80	193	56	112	32	192	56
Yampa River nr Maybell (Apr-Jul)	950	102	715	76	480	51	651	70

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

**Table 3**

**2015 Annual Runoff**

Station Name	Historic Lowest (AF)	Total 2015 (AF)	Historic Average (AF)	% of Average
North Platte River near Northgate	66,240	313,485	312,000	100
White River near Meeker	198,600	466,889	447,900	104
Little Snake River at Lily	79,600	283,642	410,100	69
Yampa River near Maybell	345,100	1,008,450	1,124,300	90

**Lowest Daily Mean**

Station Name	Minimum on Record (cfs)	Minimum WY2015 (cfs)	Date of Occurrence
North Platte River near Northgate	15	87.0	Sept. 12, 2015
White River below Boise Creek	53	121.0	Aug. 26, 2015
Little Snake River at Lily	0.0	0.07	Aug. 26, 2015
Yampa River near Maybell	1.8	99.0	Aug. 25, 2015

**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 2015**

Site	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Walden (inches)	1.47	0.45	1.01	0.07	0.61	0.77	0.68	2.59	0.97	2.41	1.03	1.03	13.09
% Avg	165	54	171	11	100	94	64	172	92	188	98	85	113
Meeker (inches)	---	1.56	1.55	0.79	0.68	0.95	2.32	---	1.10	1.67	0.8	0.8	
% Avg	---	142	172	99	91	70	166	---	110	128	64	67	
Steamboat (inches)	2.35	2.22	2.01	0.34	2.04	0.94	1.72	6.45	1.30	2.29	2.96	1.59	26.21
% Avg	122	94	85	13	95	46	74	279	91	157	203	92	108

**Monthly Precipitation Data for Selected Sites  
Calendar Year 2015**

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Walden (inches)	0.07	0.61	0.77	0.68	2.59	0.97	2.41	1.03	1.03	1.54	1.01	1.24	13.95
% Avg	11	100	94	64	172	92	188	98	85	173	122	210	121
Meeker (inches)	0.79	0.68	0.95	2.32	---	1.10	1.67	0.8	0.8	1.19	1.85	2.12	
% Avg	99	91	70	166	---	110	128	64	67	72	168	236	
Steamboat (inches)	0.34	2.04	0.94	1.72	6.45	1.30	2.29	2.96	1.59	1.97	2.10	3.81	27.51
% Avg	13	95	46	74	279	91	157	203	92	103	89	161	114

As shown, precipitation was well above average for the months of May and July for each town and was above average in August as well in Steamboat. Likewise, the yearly totals were above average. None-the-less, streamflow totals were either at or below average for the four gauges evaluated.

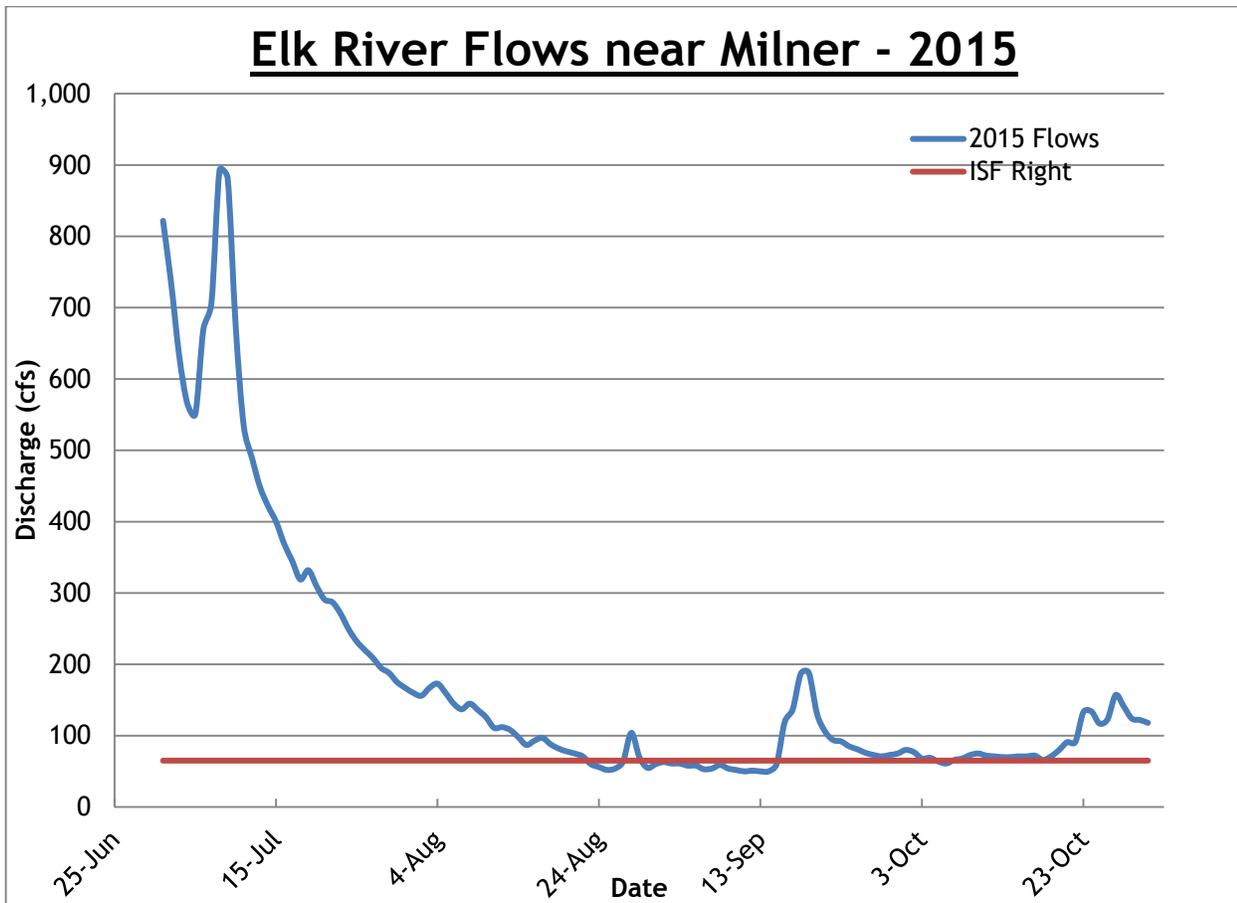
### **Water Administration**

Water administration in water year 2015 in Division 6 was limited, for the most part, to the typical calls. In the North Platte River basin only Government Creek went under administration. In the Yampa River basin, administration occurred on Bear River, South Hunt Creek, Middle Hunt Creek, Smith Creek of Deep Creek of the Elk River, Elk River itself, West Fish Creek of Trout Creek, Little Bear Creek, and Fortification Creek. In the Little Snake River drainage of the Yampa River, Willow Creek went under administration. In the Green River basin, administration was limited to Pot Creek and Talamantes Creek. Finally, in the White River basin, administration was limited to only the upper reaches of Piceance Creek. A complete list of the calls that occurred within Division 6 can be found on the CDSS website. Additionally, releases were made from Elkhead Creek Reservoir in 2015 that were protected by our office and are further described below.

### **Elk River Administration**

The Elk River was under administration between September 2 and September 17; a very short time period. The Elk River instream flow water right, the calling water right, is decreed in the amount of 65 cfs year round. The lowest daily mean flow that occurred in the months of July, August and September was 50 cfs on September 11 as measured at the Elk River near Milner gauge.

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



As a recap from the 2013 Annual Report, in February 2013 this office sent out notices to every water right owner within the Elk River basin requesting assurance that their diversion structures complied with CRS §37-84-112. This notice gave the owners until June 30, 2013 to come into compliance. Field investigations were then performed in July 2013 to determine which structures were still not in compliance. There were nearly 100 structures not equipped with suitable and proper headgates and/or measuring devices. This was better than the nearly 150 structures found to not be in compliance in 2012.

Subsequently, in September 2013, 75 orders were issued to the water right owners of these 100 structures not in compliance. These orders required that no diversion of water occur starting in the spring of 2014 until suitable and proper headgates and measuring devices had been installed. To date, all but 27 of the structures are now in compliance and there are 2 outstanding cease and desist orders. Division 6 continues to work with the owners in trying to bring their structure(s) into compliance.

Throughout this entire process of trying to get diversion structures equipped with adequate headgates and measuring devices, the Upper Yampa Water Conservancy District (UYWCD) offered \$500 grants to people that applied for and then installed headgates and measuring devices (\$500 per device) on their structures. Additionally, in December 2015, the UYWCD applied for an Umbrella Augmentation Plan. 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, and thus affecting diversions of water on the Elk River, the replacement source will be either Stagecoach Reservoir or Yamcolo Reservoir.

### Elkhead Creek Reservoir

Releases were made from Elkhead Creek Reservoir between August 15, 2015 and October 15, 2015 for a total of 5,000 acre-feet. This release was 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). Releases are made from Elkhead Creek Reservoir in an effort to maintain a target flow of 134 cfs at the Yampa River near Maybell gauge station. 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.

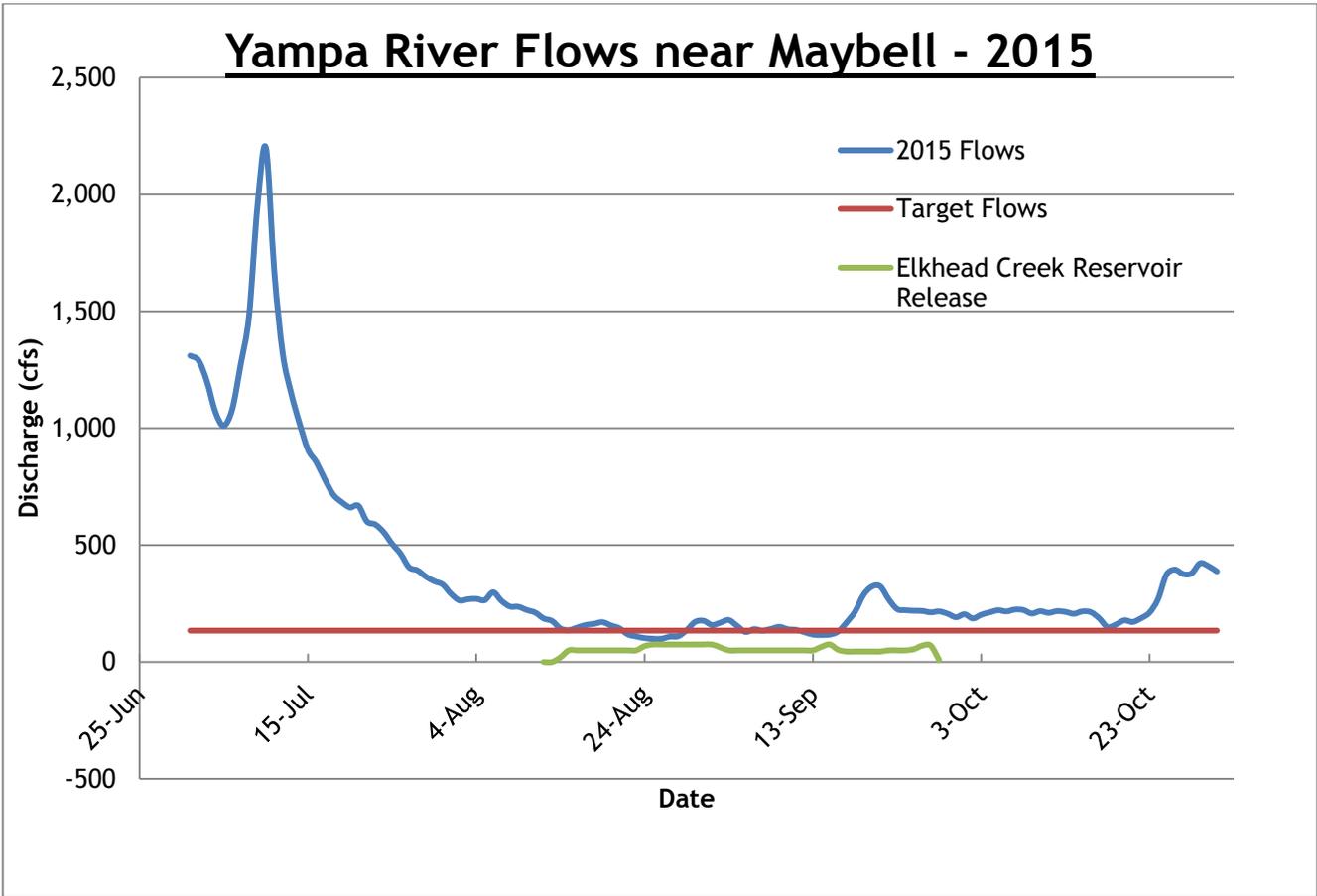
One problem we have had with protecting releases that was particularly difficult this year involves the Maybell Canal. The Maybell Canal is a relatively large diversion that typically diverts between 50 and 60 cfs during times when reservoir water is being released. The headgate of the canal is located upstream of the Yampa River near Maybell gauging station yet its tailwater release back to the River is downstream of the gauge station. The operators of the Maybell Canal typically open their headgate at the beginning of the irrigation season in the spring and don't adjust it again until they choose to turn off the ditch in the fall. As a result, they can often be diverting water in excess of their need especially when people on the ditch are haying or are simply done using water for the season prior to the ditch being turned off. Any water not being used of course runs out the tail end of the ditch. This water is water returning to the critical habitat reach below the measuring point used to determine releases from Elkhead Creek Reservoir. At one point this year during the release, it was estimated that the tailwater returns were as much as 18 cfs. The diversion at the headgate at the time was 54 cfs - a wasting of 33% of the water diverted. The releases from Elkhead Creek Reservoir ranged between 50 and 75 cfs. Had this 18 cfs been left in the River and not diverted, these releases may have been reduced to between 32 and 47 cfs for a savings of

almost 36 AF per day. This office continues to work with the Maybell Canal Irrigation District to assure minimization of their waste of water throughout the year, not just during the time of reservoir releases.



**Tailwater off of Maybell Canal**

Shown in the following graph are the flows during the summer and fall on the Yampa River near Maybell, which typically drop below the 134 cfs target flow, along with the Elkhead Creek Reservoir releases.

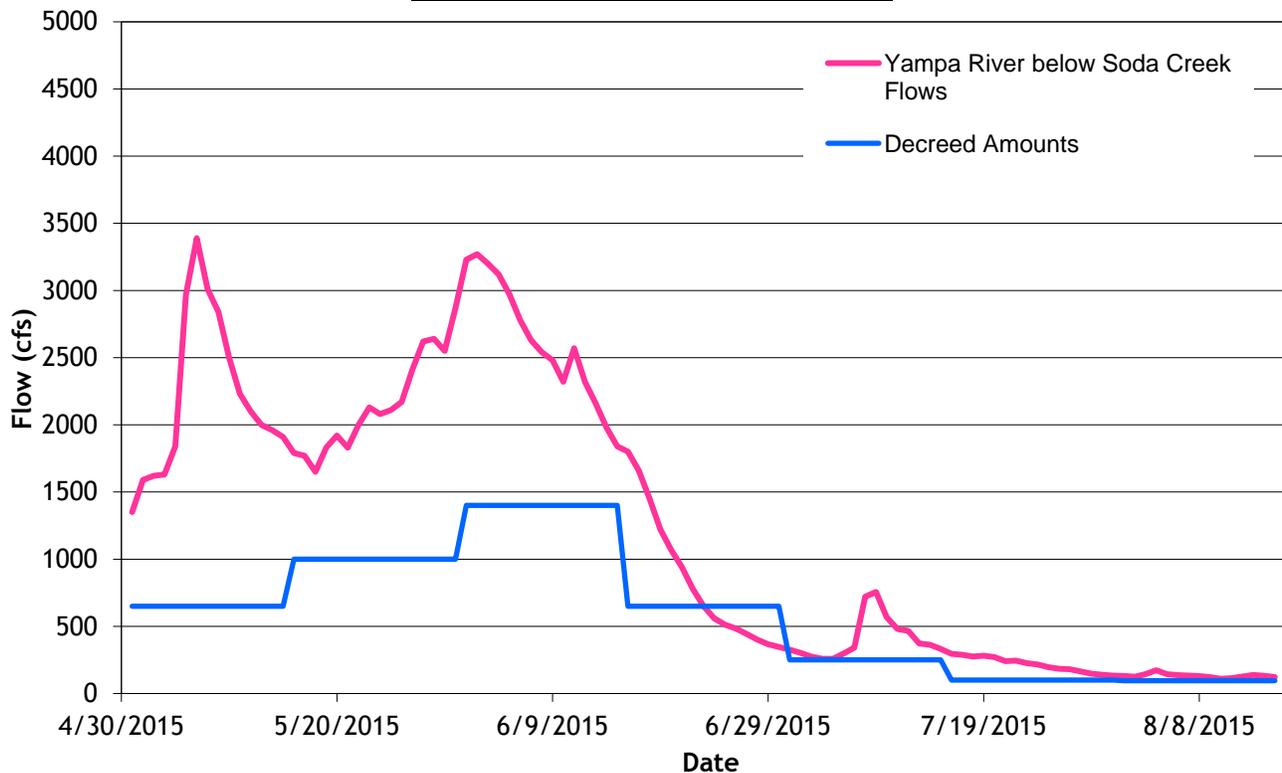


**Yampa River RICD Flows**

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 the potential for a call were to arise. 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 gauge station (Yampa River below Soda Creek) that acts as their measurement for their water right 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 gauge station prior to this date.

The following graph shows the average daily flows at the Yampa River below Soda Creek gauge station in comparison to the decreed flows. The flows on the Yampa River below Soda Creek dropped below the decreed amounts between June 24 and June 30 in 2015.

## Actual Flows vs. RICD Flows



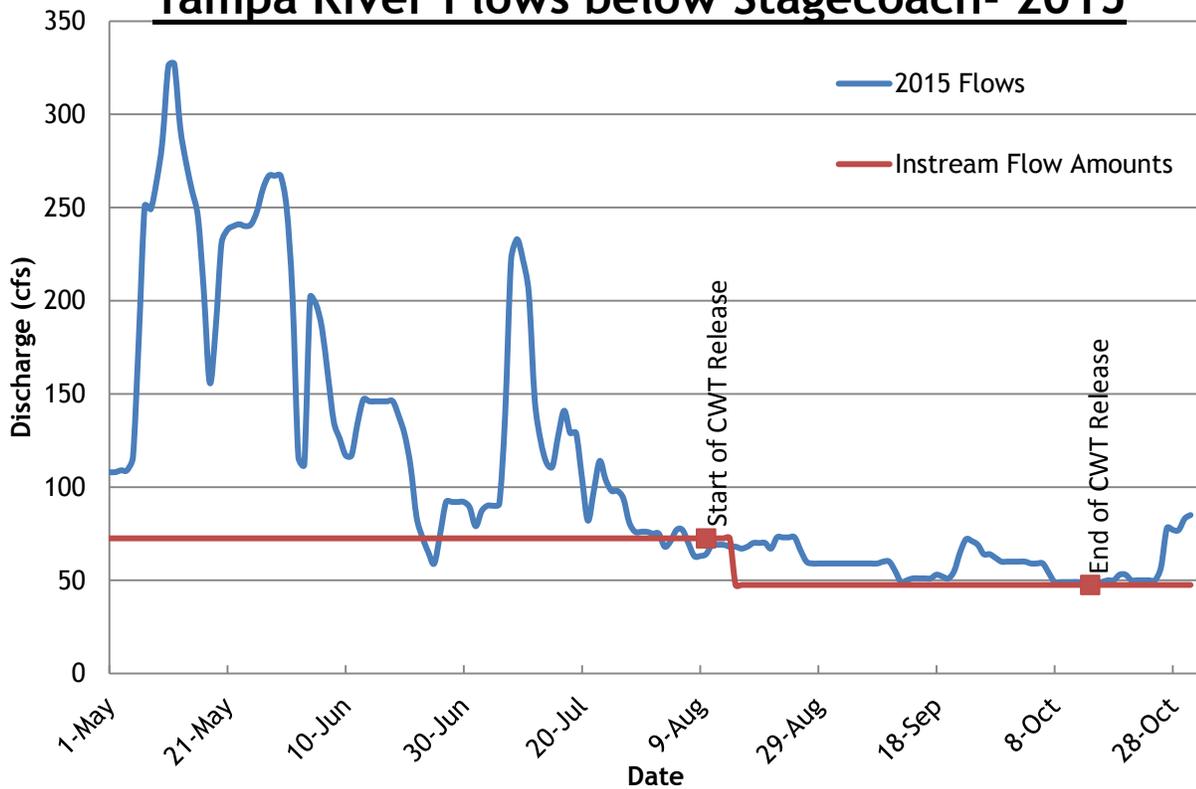
### Stagecoach Reservoir Releases

In the summers of 2012 and 2013, UYWCD, the owner and operator of Stagecoach Reservoir, and the Colorado Water Trust (CWT) entered into contracts for 4,000 acre-feet of water to be delivered to the Colorado Water Conservation Board's (CWCB) instream flow reach located downstream of Stagecoach Reservoir. In 2014, no contract was entered into between the UYWCD and CWT since the flows in the Yampa River appeared as though they would stay above the decreed instream flow amounts. However, in 2015, the two entities again entered into a contract for water to be released from Stagecoach Reservoir but in the amount of 1,185 acre-feet.

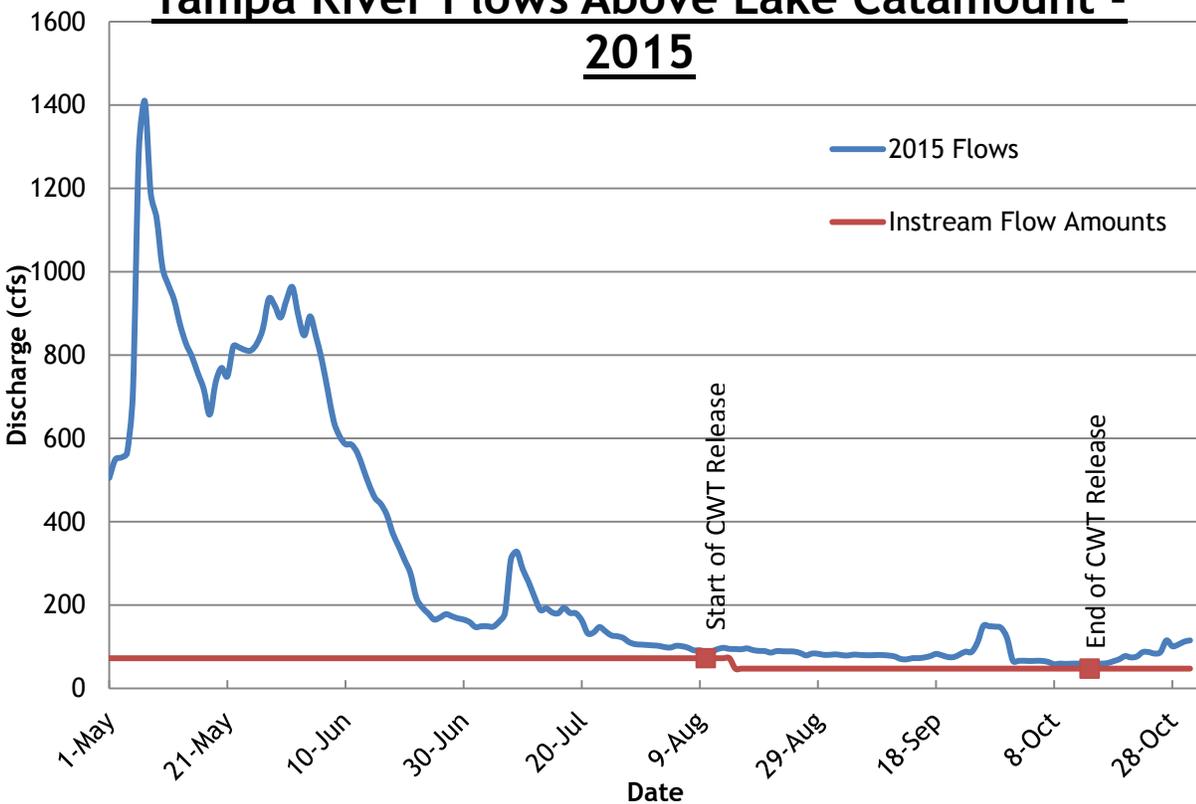
The instream flow water right is decreed in the amount of 72.5 cfs from April 1 through August 14 and 47.5 from August 15 through October 31. The instream flow reach extends from the confluence of Morrison Creek and the Yampa River downstream to the inlet of Lake Catamount.

A gauge station is operated by the USGS below Stagecoach Reservoir and gauge stations located on Morrison Creek and on the Yampa River above Lake Catamount are operated by Division 6 Water Resources. Shown in the following graphs are the flows during the summer and fall on the Yampa River below Stagecoach Reservoir and on the Yampa River above Lake Catamount.

## Yampa River Flows below Stagecoach- 2015



## Yampa River Flows Above Lake Catamount - 2015



## **Groundwater and Well Permitting**

There were no unusual groundwater administrative or well permitting issues in 2015.

## **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 gauge 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 2015 at this gauge was 1,008,450 acre-feet and the ten year (2005 to 2014) aggregate flow was 11,536,250 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. There were no calls made in water year 2015 on the Little Snake River. However 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 drainage of Colorado. In water year 2015, a total of 112,944 acres were irrigated and 12,454 acre-feet were stored for irrigation purposes. Transmountain diversions out of the basin totaled 1,368 acre-feet. The ten-year total transmountain diversions out of the basin are 37,419 acre-feet. None of the limits established by the Supreme Court Decree were exceeded in 2015.

A Division 6 representative attended the North Platte Decree Committee meetings held in Scottsbluff, NE in April 2015 and Torrington, WY in October 2015.

### **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. No water was stored out of priority in the reservoirs located in Utah on Pot Creek throughout the winter months, November 1 through April 30. However during the period May 19 through May 29 the flows into Matt Warner Reservoir, the most upstream reservoir located in Utah, exceeded 4.0 cfs and the amount of water stored during this time period was 410 acre-feet.

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 highest in the system and Crouse the lowest. Matt Warner and Calder Reservoirs are used primarily for recreation and are considered good water fisheries. Crouse Reservoir however 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 to its lowest point where water either is released or spills.

The most senior water right in the Pot Creek system is a 4.0 cfs right that is decreed to fill any of the three Utah reservoirs, though is typically used to fill Matt Warner Reservoir. When inflows to Matt Warner Reservoir exceed 4.0 cfs and there is a request from a Colorado water user to receive water, any amount above 4.0 cfs must be released unless the Colorado water rights are being or have been satisfied. In the May 19 to May 29 time period referenced above, it was determined that the amount of water stored above the 4.0 cfs water right totaled 410 acre-feet, as stated above, and that the amount owed to Colorado users totaled 352 acre-feet and was to be released to Colorado as called for by the users.

The delivery of the 352 acre-feet began on June 1 and continued until June 25. However between the extremely high transit losses within the system and the water level of Crouse Reservoir being 60 acre-feet down from spilling, none of the 352 acre-feet released from Matt Warner Reservoir ever made it to the State line, let alone down to the Colorado water users.

The Utah Division of Water Rights, Utah Division of Wildlife Resources and the Division 6 Water Resources are working together to determine the best course of action to deal with Crouse Reservoir and its lack of a low level outlet. Ultimately however, it will be the responsibility of the Utah Division of Wildlife Resources to fix the outlet since they are the owners of the reservoir.

The 2014 Pot Creek Distribution System Water Users meeting held on March 4, 2015 in Vernal, UT was attended by Division 6 representatives. Likewise, the 2015 Pot Creek Distribution System Water Users meeting held on February 25, 2016 in Vernal, UT was attended by Division 6 representatives. Both the 2014 and 2015 Annual Water Distribution Reports of the Pot Creek Distribution System can be found in Laserfiche.

## **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 the final installation and start of 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 Round Table 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. The Study site consists of four lysimeter plots, collectively referred to as Andy's Garden in honor of Andy Schaffner who started the lysimeter project in Division 6. Two of the plots were seeded in 2012 with an ET grass reference crop (Orchard Grass) and the other two had sod from the surrounding irrigated meadow planted in them.

In 2015 the site was visited by one of two water commissioners on regular intervals starting on April 20 and continuing into October. Measurements were taken twice on each day of a visit. The plots are weighed upon arrival (refer to as the dry weights) and then weighed again several hours after saturation (referred to as the wet weights). There is no consistency on the timing between the first and second weighing however ample time is given to assure that all excess water applied to the plots has drained out of them.

Under the operating guidelines for the Division 6 Lysimeters, the goal is to maintain the individual lysimeter surfaces and the ground surrounding the weather station with green active growing vegetation, the vegetation of which is to mimic that of the larger nearby irrigated hay field of Carpenter Ranch. For the lysimeters to represent and yield an accurate measurement of ET of the surrounding irrigated hay fields, it is important that the grass/vegetation in the lysimeter plot area

be the same height, density and moisture as the surrounding larger grass hay field area. As you can see in the picture below showing the plots in 2015, the plots and surrounding area have become more fully vegetated and there is now nearly complete coverage of grasses, creating more of the idealistic field study conditions.

Following are pictures of the lysimeter site in 2012, 2013, 2014 and 2015.



**Lysimeter Site 2012**



**Lysimeter Site 2013**



**Lysimeter Site 2014**



**Lysimeter Site 2015**

### **Abandonment Process**

The Revised Abandonment List filed with the water court on December 21, 2011 included a total of 201 water rights either in whole or in part. Twenty-nine protests to the inclusion of 40 water rights included on the list were filed with the court, each of which was assigned a separate case number. On August 1, 2014, the Judge signed the final Abandonment Order and Decree, which did not include any of the protested water rights. The final protest of the 29 originally filed was resolved

and an order issued by the Water Court on August 27, 2015. Only one of the 29 protests ended up going to trial. The Attorney General's Office is now in the process of preparing a final Abandonment Order and Decree that includes all the protested water rights.

### **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 recently. In 2013 and 2014, no statements of opposition were filed and in 2015, two statements of opposition were filed. In 2013, there were two protests to referee rulings filed and no protests filed in 2014 or 2015. The two cases for which a protest to the referee ruling was filed in 2013 have both been resolved. The two cases for which a statement of opposition was filed in 2015 are still pending. The Division Engineer filed 69 Reports of the Division Engineer in 2013, 79 in 2014, and 90 in 2015.

### **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, by providing information on proper selection and installation of water measuring devices, and by providing assistance to 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 2015. This list is not meant 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 meeting held by Yellow Jacket Water Conservancy District
- Michigan River Water Conservancy District annual meeting
- Walden Reservoir Company annual meeting
- Bear River Irrigators annual meeting
- Stillwater Ditch Company annual meeting
- All roundtable meetings for the Yampa/White River and North Platte River

Division 6 staff also made presentations at several water workshops in 2015 and early part of 2016.

## Division 6 Organization Chart

