

# COLORADO

## WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES  
 ROOM 818, 1313 SHERMAN ST., DENVER, CO 80203  
 303-866-3581; [www.water.state.co.us](http://www.water.state.co.us)

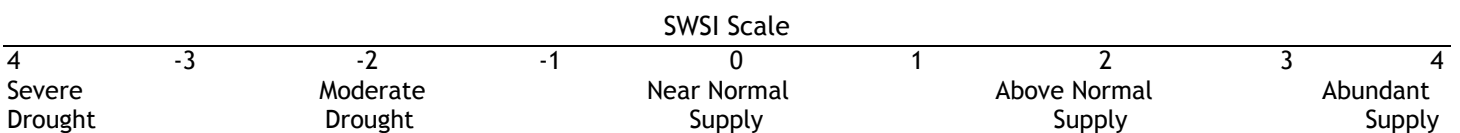
September 2014

The Surface Water Supply Index (SWSI) developed by this office and the U.S.D.A. Natural Resources Conservation Service (NRCS) is used as an indicator of mountain-based water supply conditions in the major river basins of the state. It is based on streamflow, reservoir storage, and precipitation for the summer period of May through October (June 1 through November 1). During the summer period, streamflow is the primary component in all basins except the South Platte basin, where reservoir storage is given the most weight. The enclosed narratives are provided by the Division of Water Resources Office in each stream basin.

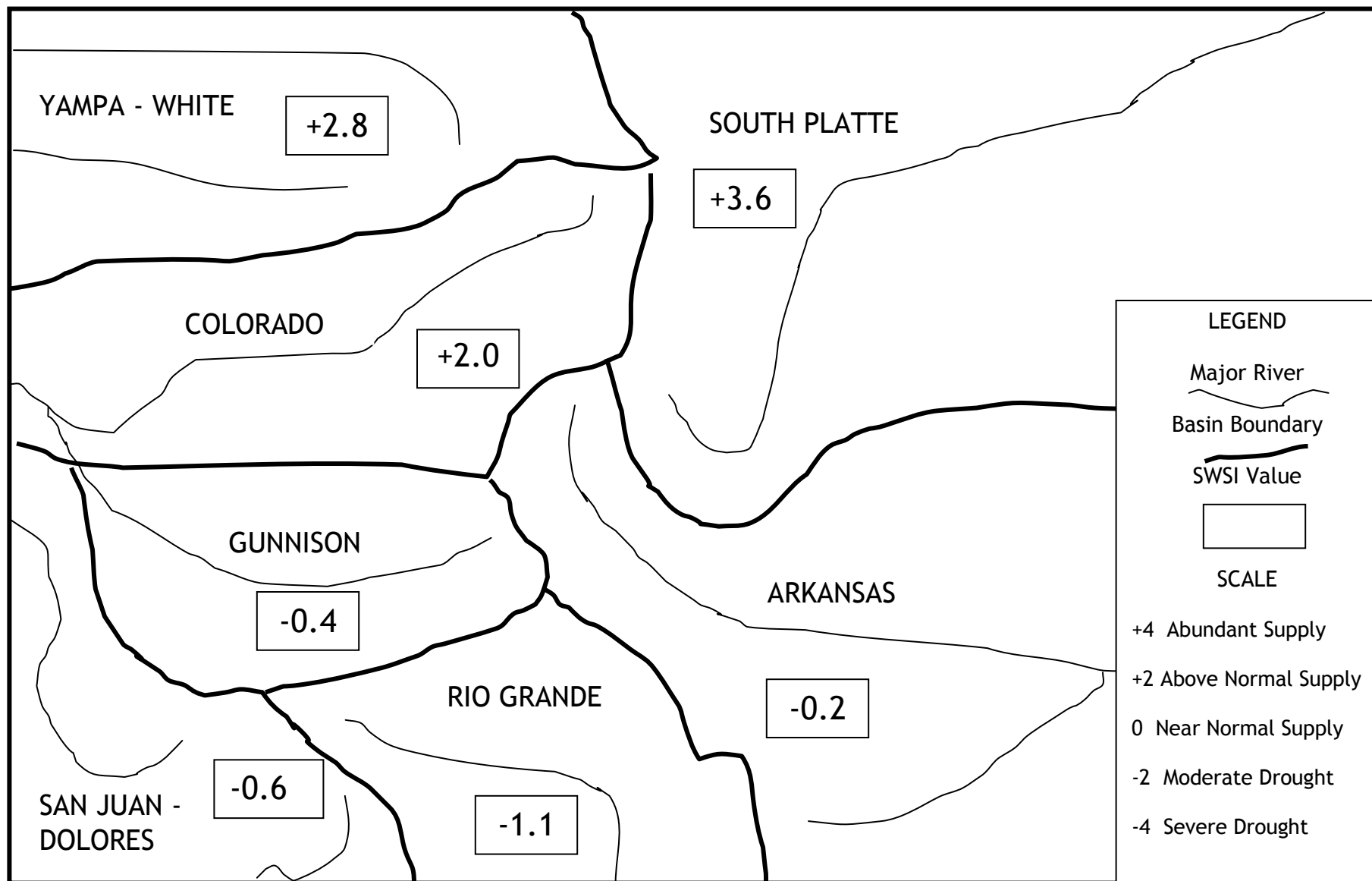
The statewide SWSI values for August (September 1) range from a high value of +3.6 in the South Platte Basin to a low value of -1.1 in the Rio Grande Basin. Streamflow and reservoir storage were above the 90<sup>th</sup> percentile in the South Platte Basin. There was a substantial improvement in water supply conditions in the Yampa / White Basin due to heavy precipitation and high streamflow. Streamflows were below normal in the Arkansas, Rio Grande, Gunnison, and San Juan / Dolores Basins. With the exception of the Rio Grande Basin, drought conditions are improved compared to this time in 2013.

The following SWSI values were computed for each of the seven major basins for September 1, 2014. Additional information about SWSI calculations and the NRCS National Water and Climate Center SWSI by HUC are included on Page 10.

Basin	September 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	3.6	0.1	2.2
Arkansas	-0.2	-1.2	1.7
Rio Grande	-1.1	0.4	-1.2
Gunnison	-0.4	-1.0	2.6
Colorado	2.0	0.3	3.3
Yampa/White	2.8	1.9	5.5
San Juan/Dolores	-0.6	0.6	0.1



# SURFACE WATER SUPPLY INDEX FOR COLORADO



September 1, 2014

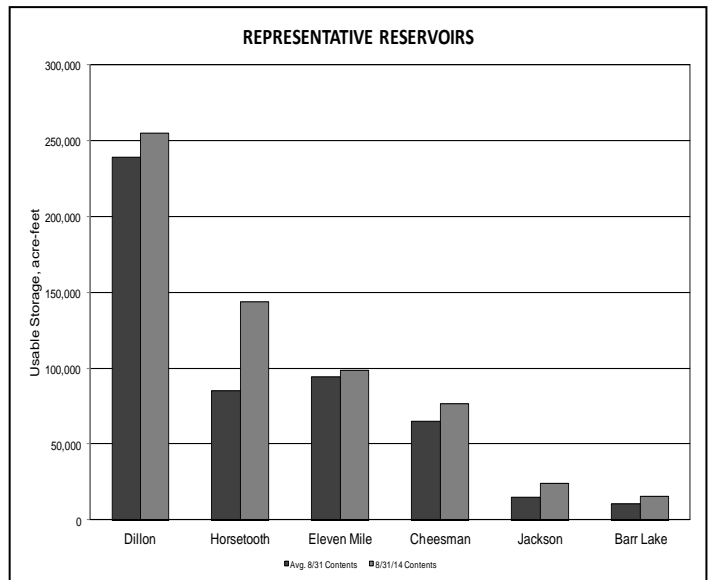
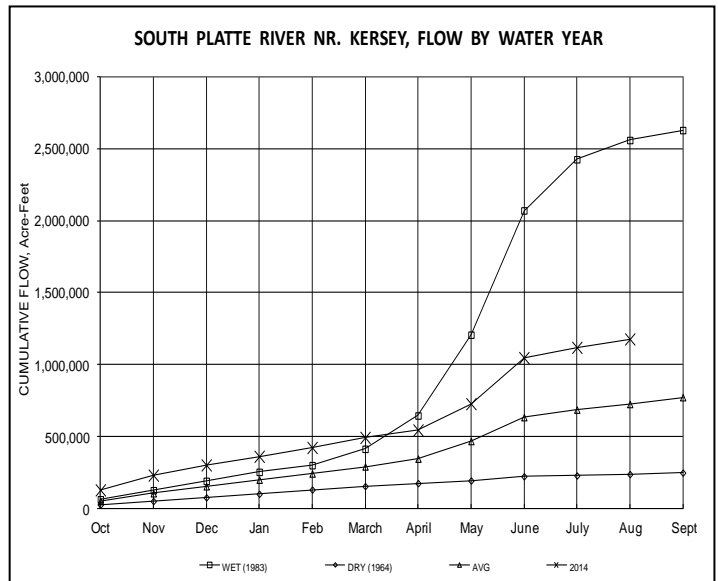
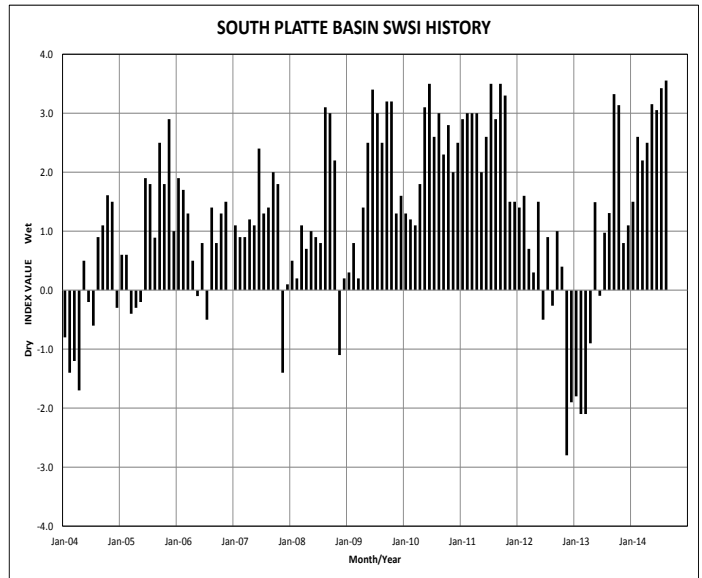
Basinwide Conditions Assessment

The SWSI value for the month was 3.6. The generally cooler and wetter than normal conditions that have marked the 2014 irrigation season in northeastern Colorado changed only slightly in August. With the exception of the Republican River basin, temperatures were uniformly below average in August. Precipitation was much less uniform than temperature with the Republican River basin and the lower end of the South Platte receiving above or well above average precipitation. The Front Range was more variable, but was generally near average as a whole.

August stream flow at the Kersey index gage continued the well above historic mean trend seen in 11 of the past 12 months (April was almost exactly at the historic mean). The Kersey gage monthly mean stream flow was 949 cfs as compared to the August historic mean of 509 cfs (186 % of the historic mean). Stream flow at the Julesburg index gage, unlike Kersey, has not been consistently above the historic mean. However, it was well above the historic August monthly mean with a flow of 684 cfs or 380 % of the historic mean flow of 180 cfs. As wonderful as these high flows were, they do not tell the whole story. Much of the very large flow in August happened early in the month as the result of a large late July rain event and flows at both gages were near to only slightly above the historic mean for much of the month.

Calls on the South Platte River mainstem were much few and more junior than what is typical in August. Typically the entire mainstem will be under call for the entire month by water rights with pre-1900 priority dates. This year the upper end of the South Platte was under call for a total of 19 days, the lower end for only 11 days, and there were only 3 days of call by pre-1900 priority water rights. The general story of fewer and more junior calls than typical was much the same on most of the major tributaries to the South Platte - though to a lesser extent than on the mainstem.

Water stored in reservoirs was used extensively for the last half to two-thirds of August. Despite this extensive use, storage continued to be well above average at the end of the month. End of August overall storage was 81% of total capacity or 131% of the long term end of August average. (The long term average end of August storage is about 62% of capacity.)

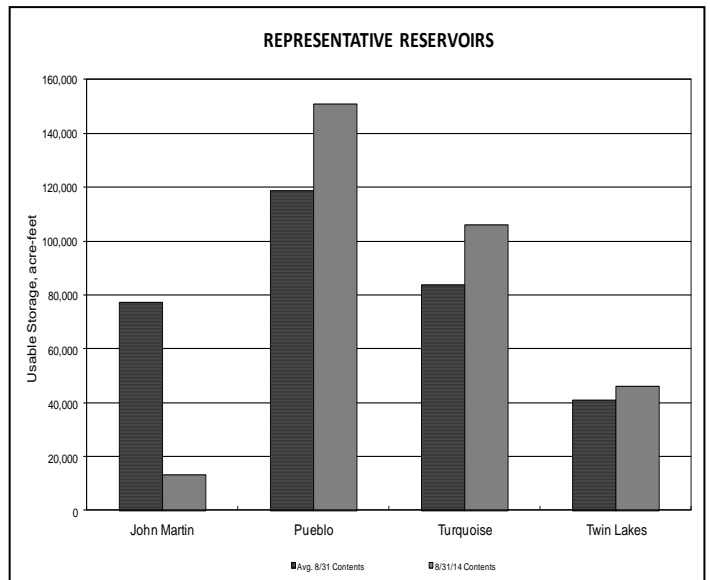
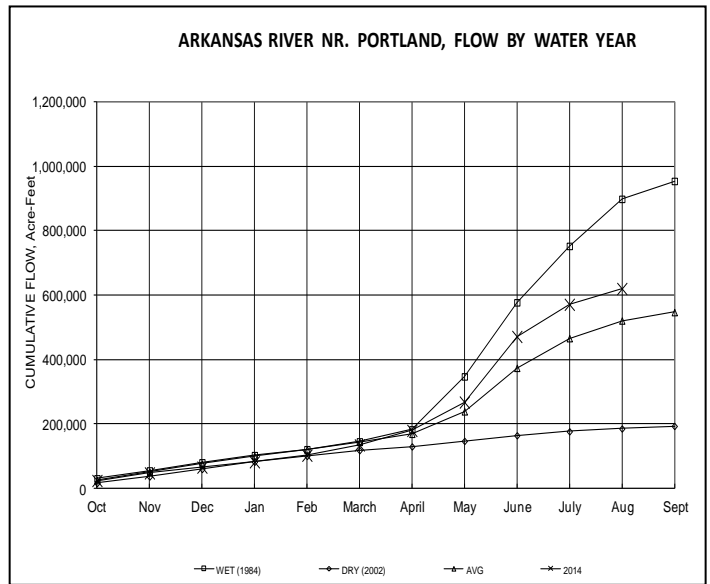
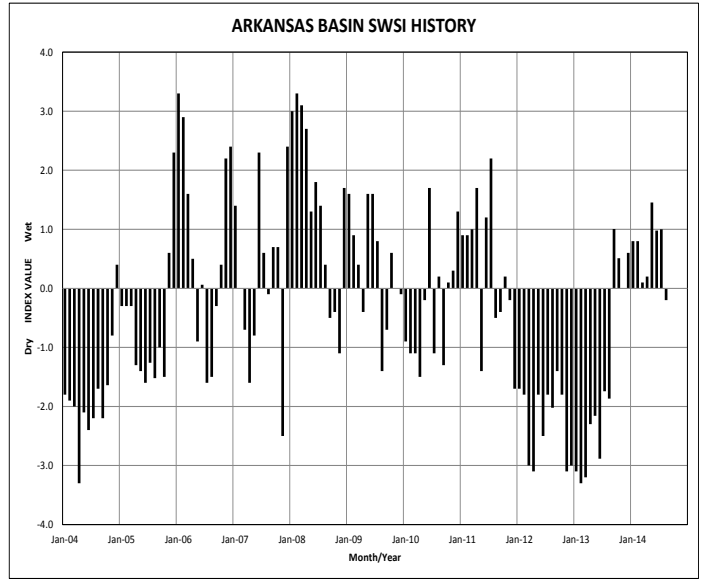


Basinwide Conditions Assessment

The SWSI value for the month was -0.2. River calls during August began the month with Amity Canal's Great Plains Storage right 8/1/1896 in John Martin Reservoir as the calling right and ended with Amity Canal's senior direct flow right of 2/21/1887 as the river call.

Administrative / Management Concerns

Kansas concluded a release of their account water from John Martin Reservoir, which began in late June, in early August. The total release over the five week period was over 22,500 acre-feet and left John Martin Reservoir at approximately 25,000 acre-feet of remaining storage. Colorado Parks and Wildlife had some concerns that levels at John Martin Reservoir might get low enough to impact the fishing and recreation resource.



**Basinwide Conditions Assessment**

The SWSI value for the month was -1.1. Flow at the gaging station Rio Grande near Del Norte averaged 503 cfs (76% of normal). The Conejos River near Mogote had a mean flow of 171 cfs (80% of normal, buoyed heavily by direct flow storage releases from Platoro Reservoir). Stream flow in the northern areas of the upper Rio Grande Basin was near normal during August while the southern and eastern drainages of the Valley had only poor to fair runoff.

August precipitation in Alamosa was only 0.53 inches, 0.74 inches below normal, and came mostly in one rainstorm on August 22. Basinwide, the expectations for a wet August were not met. Some drainages within the upper Rio Grande basin received abundant rain in late July that helped sustain streamflow near average levels during August. LaGrita, Carnero, Saguache, had enough rain to receive average August runoffs. So did Ute Creek near Fort Garland; but that was the result of carryover from a flooding event on July 28. Most streams flowed 2/3 to 3/4 of normal during August. The southern drainages (Alamosa River, Conejos River and tributaries) are in the poorest condition now.

The mean temperature at Alamosa for the month of August was 61.7 degrees, which is an average of 1.0 degree below normal.

**Outlook**

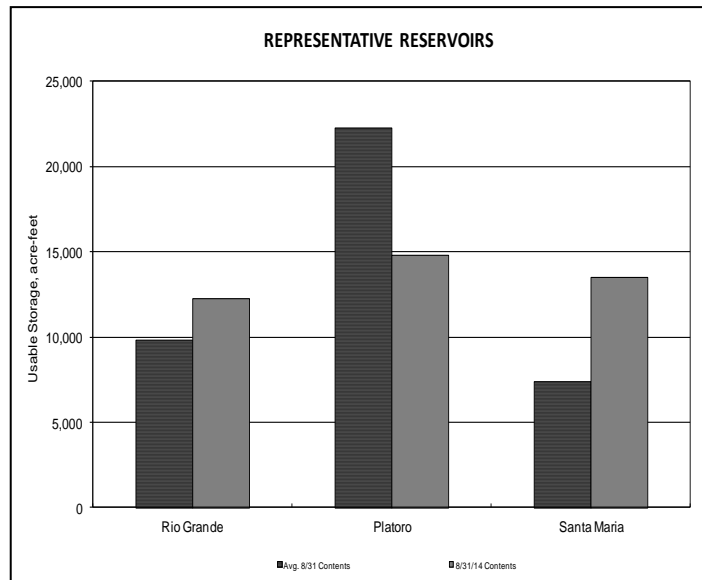
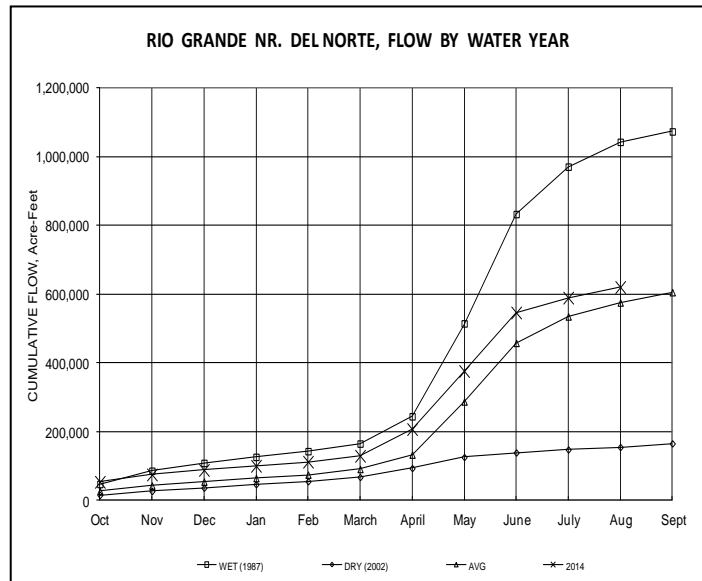
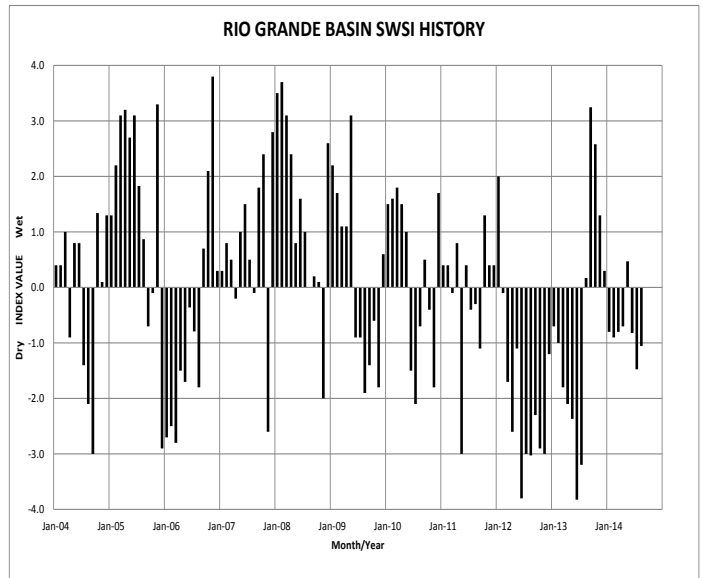
The National Weather Service has issued a 90-day outlook that continues to predict above average precipitation for southern Colorado, Arizona, New Mexico, and Texas during September-October-November, 2014.

**Administrative/Management Concerns**

Despite the recent decline in streamflow, both the Rio Grande and Conejos Rivers produced much more water than was expected earlier in the year. The current estimate for the Rio Grande is an April-September total flow of 514,000 acre-feet, which is very close to the long term average. But the Conejos system annual total will be only about 70% of the historic average. Curtailment of native streamflow continues on both rivers, about 20% for the Rio Grande and 40% for the Conejos system. These percentages of available native flow are routed downstream past the ditches to the state line.

**Public Use Impacts**

The recent sunny and relatively dry weather has benefited those farmers and ranchers with native grass and alfalfa crops and the barley and potato crop harvest has gone very smoothly. Yields should be good, but prices have dropped some. As the year progresses, recreational opportunities may be hampered by low water levels in both reservoirs and streams in the basin.



Basinwide Conditions Assessment

The SWSI value for the month was -0.4. All drainages, except Tomichi Creek, within the Gunnison basin received above average precipitation in August. Lower areas received over 150% of the average while upper areas of the Uncompahgre and East Rivers received between 100 to 129% of the 30-year average. Temperatures throughout the Basin were below average by up to five degrees during the month. As a result, streamflows throughout the basin fluctuated between slightly below averages to much greater than average following storm events.

Outlook

During the 90 day period that includes September, October, and November the Gunnison basin is forecast to receive much greater than equal chance of above average precipitation.

Administrative/Management Concerns

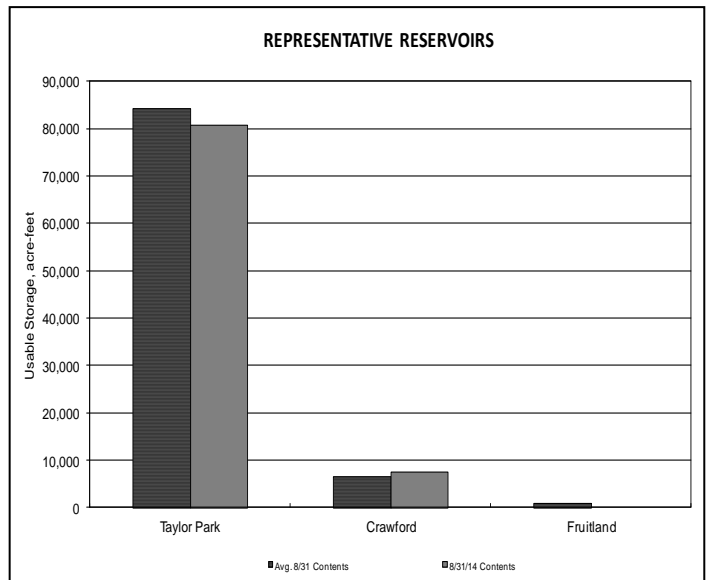
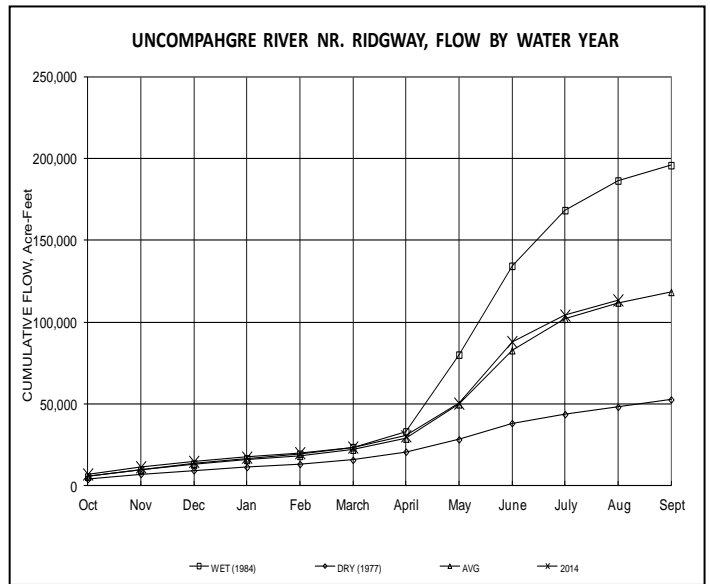
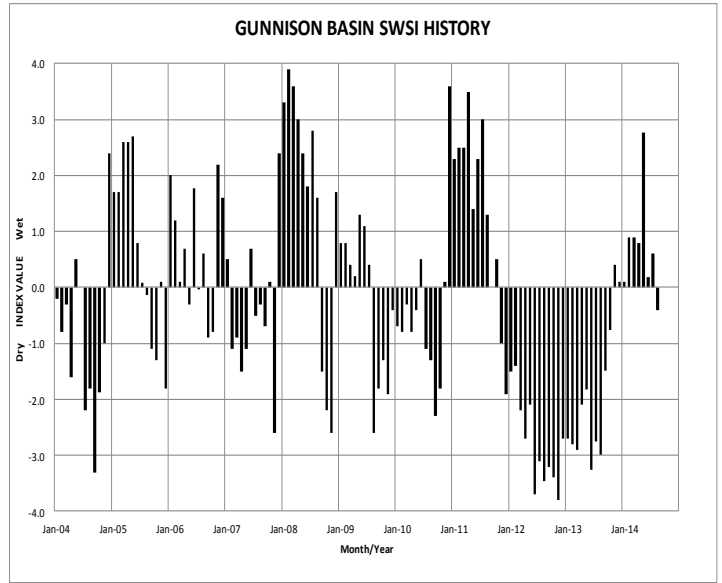
Currently there are fewer calls on Gunnison basin streams than not only the past two years, but fewer than are placed in a typical year. The rain events, which came at fairly regular intervals, reduced the demand for irrigation water basin wide and the lower temperatures and cloud cover reduced evapotranspiration which seemed to generally keep streamflows higher as well. The Uncompahgre River, East River and Tomichi Creek have still not had any calls and since haying in those areas is already under way it is almost certain they will escape 2014 without a call.

Gunnison Tunnel demand did not exceed inflows to the Aspinall Unit until August 17th, which is amazing considering that during the epic snow years of 2008 and 2011 that occurred only three days later, on August 20th. As a result, only 5,000 acre-feet of Taylor Park Reservoir second fill has been used to fill Gunnison Tunnel demand and there should be a full amount of first fill to roll over into 2015. Blue Mesa Reservoir elevations decreased to 628,000 acre-feet on September 1st and it appears that it will come close to hitting the December 31st target elevation of 7480 feet that is intended to prevent damage upstream of the Reservoir due to ice buildup.

Reports from water users around the Basin continue to revolve around the fact that the combination of timely rainfall this year and more moderate temperatures have made this a year that they would like to repeat.

Pubic Use Impacts

As the rainfall has come in intervals it has continued to allow most basin hay farmers to put up high hay yields with less moisture problems. The USBR continued to reduce Crystal Reservoir releases due to a lower base flow target at Whitewater in the Aspinall reoperations Record of Decision, combined with the runoff from storm events that helped boost flows above the target. This produced flows in the Gunnison Gorge of 590 cfs at the end of August, which are ideal for floating and fishing the River and reports have been good regarding the fishing conditions during August.



Basinwide Conditions Assessment

The SWSI value for the month was 2.0.

Outlook

Colorado River flows will remain above average throughout September, but could increase significantly following precipitation events. Significantly above average precipitation in late August/early September has reduced senior water rights demand on most tributaries. Above average precipitation and temperatures are forecast for western Colorado through September.

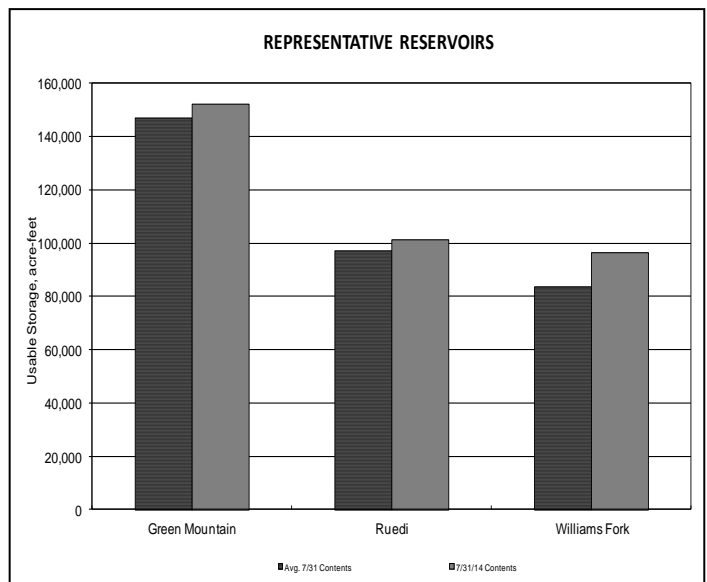
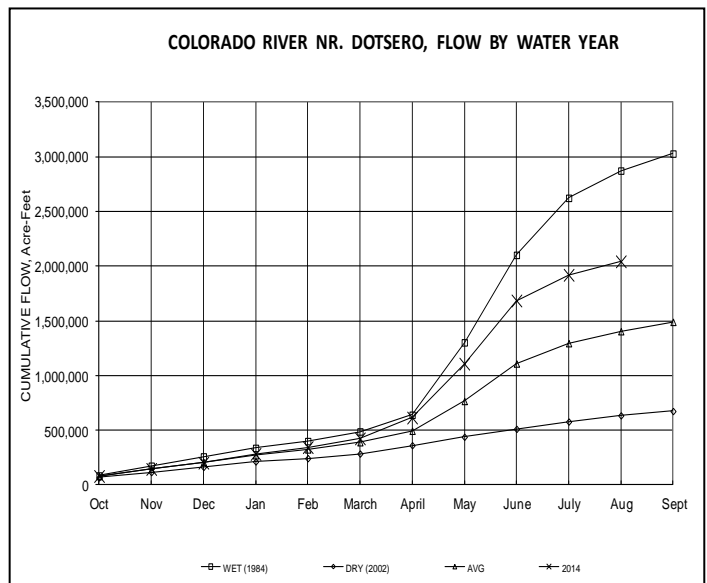
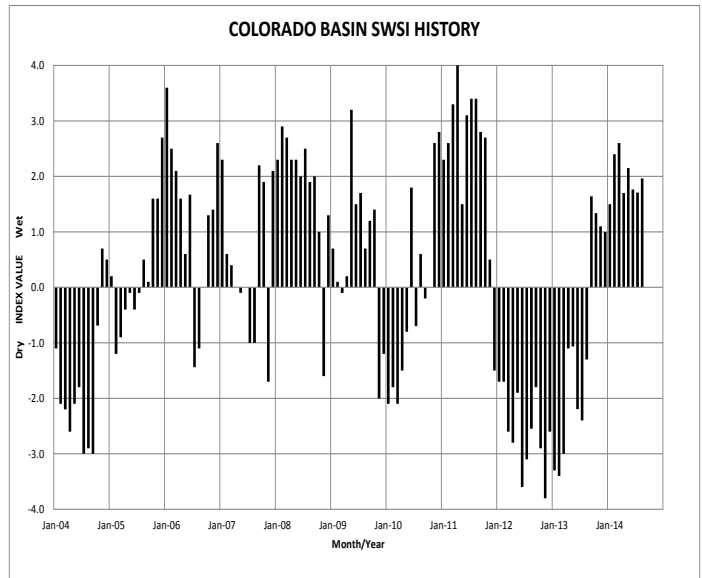
Administrative/Management Concerns

There will be no main stem call on the Colorado River at Cameo during the month of September; however, the junior Shoshone Hydro Power call at Dotsero will like remain in effect. Green Mountain Reservoir HUP surplus releases will continue in September to boost declining flow in the 15-mile reach. Ruedi, Williams Fork, and Willow Creek Reservoir releases will increase to begin lowering reservoirs to appropriate levels going into winter. The Fryingpan-Arkansas collection system continued diversions until August 24, six weeks longer than last year.

Public Use Impacts

Crystal Valley residents are seeking a Wild and Scenic designation for the upper reach of the Crystal River. Support from the Colorado River District is unlikely due to the overlay of federal authority associated with the designation, and limitation on the development of future water projects.

Recreational, agricultural, and urban interests continued efforts to voice their concerns regarding the Colorado Water Plan draft at a water board meeting in Glenwood Springs earlier this month. Recreational interest continues to stress the importance of maintaining in-stream flows. The majority of the state's future growth however will occur on the Front Range, which will require expanded trans-mountain diversions from previously accrued water rights on the West Slope.



Basinwide Conditions Assessment

The SWSI value for the month was 2.8. August precipitation was extraordinarily high in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at 236% of average for the Yampa, White, and North Platte River basins. Total precipitation for the water year as a percent of average to date in the combined basins at the end of August was 116%.

Flow in the major rivers and streams of the Yampa, White, and North Platte River basins was also above average during August with several gaging stations showing the highest flow on record for numerous days.

Outlook

As of August 31st, Fish Creek Reservoir was storing 3,498 AF which is 84% of capacity. Yamcolo Reservoir was storing 8,037 AF at the end of August 2014. The capacity of Yamcolo Reservoir is 9,580 AF. On August 31st, Elkhead Creek Reservoir was 91% full and storing 22,665 AF. On August 31st, 2014, Stagecoach Reservoir was 99% full and storing 36,019 AF.

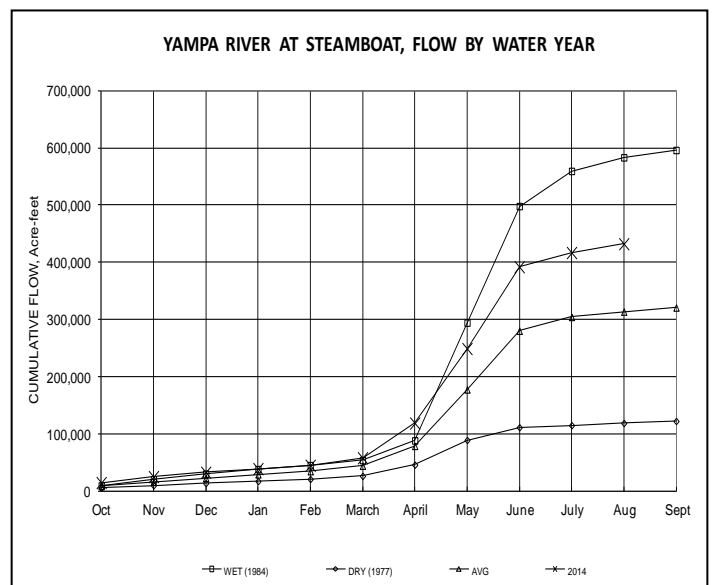
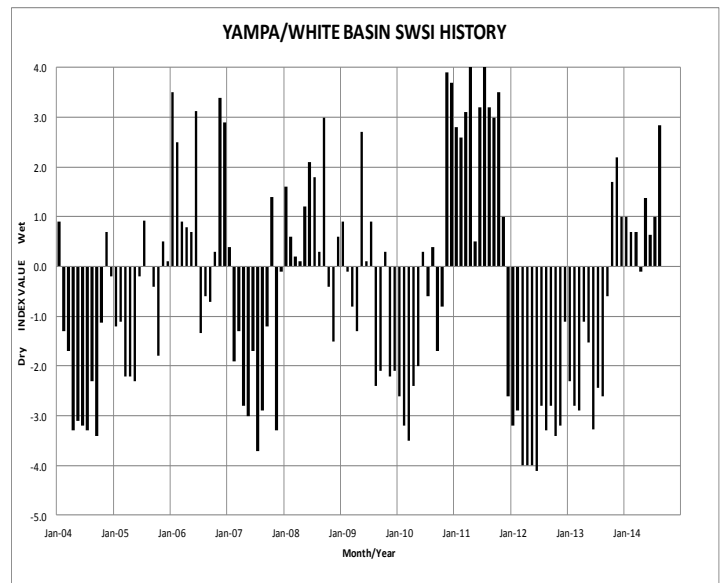
Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount of stored water is allocated for municipal, industrial, irrigation and augmentation uses.

Administrative / Management Concerns

Currently Division 6 has only four active calls on as the high amount of precipitation provided many areas with enough water to satisfy all water users.

Public Use Impacts

Again due to the high precipitation, water recreation on streams and rivers has been excellent with high public use. Steamboat Lake water level is slightly higher than normal with the reservoir remaining very close to full the entire summer. The swim beach is closed. At Stagecoach State Park boating will be open through October 31st. The South Boat Ramp is closed for the season. Tailwater fishing is open and algae on the lake has cleared up to improve fishing conditions. The swim beach is closed for the year.



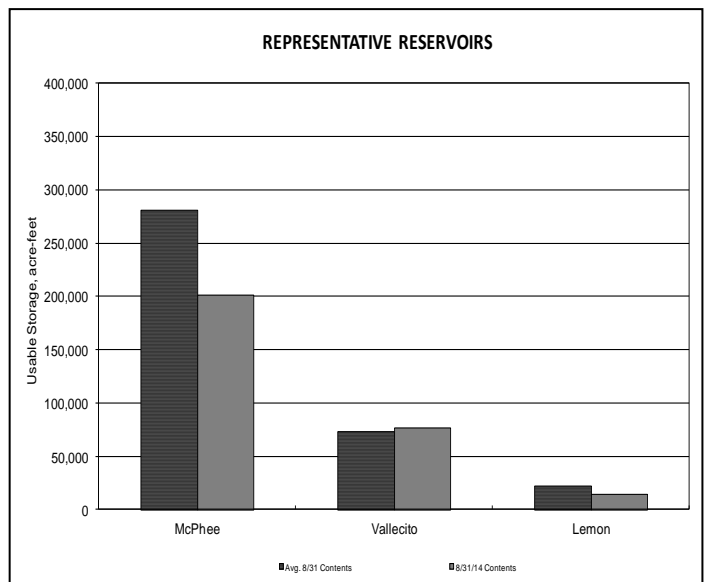
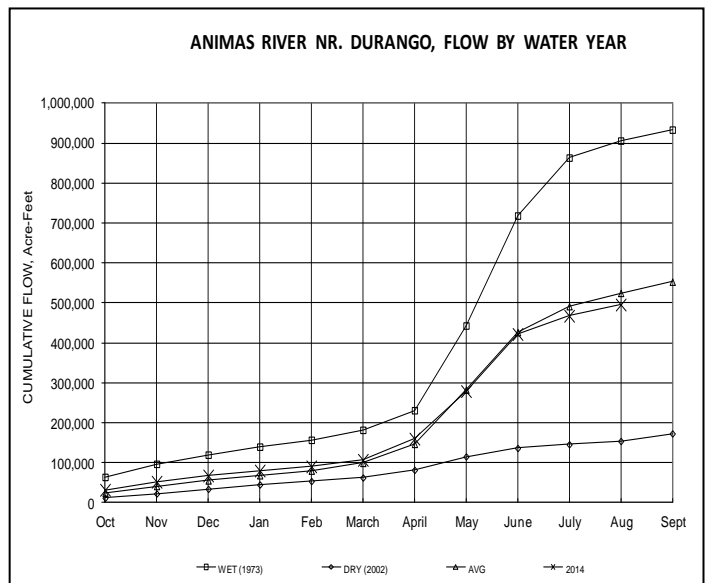
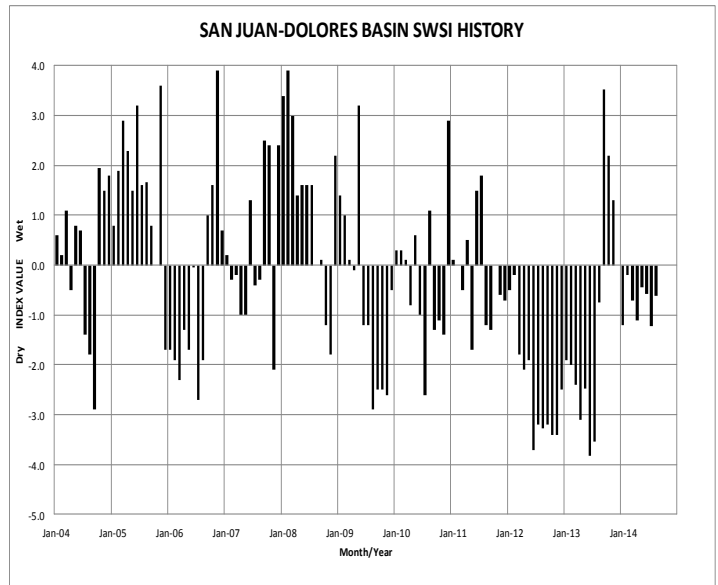


Basinwide Conditions Assessment

The SWSI value for the month was -0.6. Flow at the Animas River at Durango averaged 457 cfs (80% of average). The flow at the Dolores River at Dolores averaged 132 cfs (54% of average). The La Plata River at Hesperus averaged 14.5 cfs (64% of average). Precipitation in Durango was 2.58 inches for the month, 98% of the 30-year average of 2.64 inches. Precipitation to date in Durango, for the water year, is 12.34 inches, 71% of the 30-year average of 17.49 inches. The average high and low temperatures for the month of August in Durango were 83o and 50o. In comparison, the 30-year average high and low for the month is 84o and 52o. At the end of the month Vallecito Reservoir contained 76,539 acre-feet compared to its average content of 69,915 acre-feet (109% of average). McPhee Reservoir was up to 201,612 acre-feet compared to its average content of 286,801 (70% of average), while Lemon Reservoir was up to 14,340 acre-feet as compared to its average content of 21,478 acre-feet (67% of average).

Outlook

Precipitation (2.58 inches) was average for August in Durango. There were 48 years out of 120 years of record where there was more precipitation than this year. The flows on the Animas River were below average this month. There were 61 out of 103 years of record where the total flow past the Durango stream gauge was more than this year. The other basins within the division fared about the same. There were 84 out of 104 years of record where the total flow past the Dolores stream gauge was more than this year and 60 out of 98 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year. Volume in Lemon Reservoir is below average but contains 14,340 acre-feet as compared to 6,060 acre-feet for the same time last year.



### ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - Sep-14

The SWSI for each basin is based on probability of nonexceedance (PN) curves for each of three components: reservoir storage, streamflow, and precipitation for the month. The weighting, or importance, for each component in the SWSI calculation varies by basin as shown below.

**Summer SWSI Component Weights**

Basin	Reservoir Storage	Streamflow	Precipitation (this month only)
South Platte	0.65	0.25	0.1
Arkansas	0.35	0.55	0.1
Rio Grande	0.05	0.9	0.05
Gunnison	0.3	0.6	0.1
Colorado	0.25	0.7	0.05
Yampa/White	0	0.9	0.1
San Juan/Dolores/Animas	0.1	0.85	0.05

The PN curves were developed in the 1980s and are generally based on a period of record of 1950-1979. As reservoir storage (and streamflow for the summer SWSI) is affected by human action, the reservoir storage PN curves may not reflect current practices for reservoir operation. DWR and NRCS are currently considering options for modifying the SWSI to address this and other concerns about its computation.

#### SWSI BY HUC FROM NRCS NATIONAL WATER & CLIMATE CENTER

Included below is the SWSI generated by the NRCS National Water and Climate Center, based on data as of September 1. The SWSI below is a predictive indicator of surface water availability for the spring and summer water use seasons. It is calculated by combining reservoir storage with forecasts of spring and summer streamflow, based on current snowpack and other hydrologic variables. The scale of -4 to +4 is the same as shown on Page 1.

