

# 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)

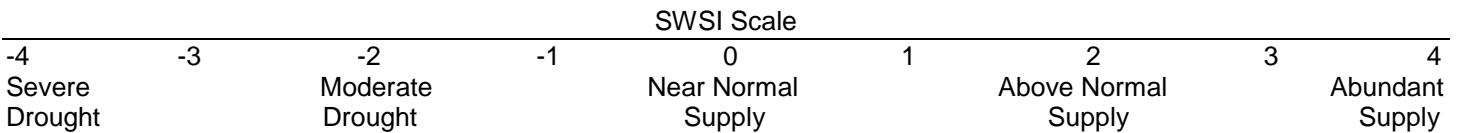
May 2014

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 reservoir storage, snowpack, and precipitation for the winter period of November through April (December 1 through May 1). During the winter period, snowpack 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 Office in each stream basin.

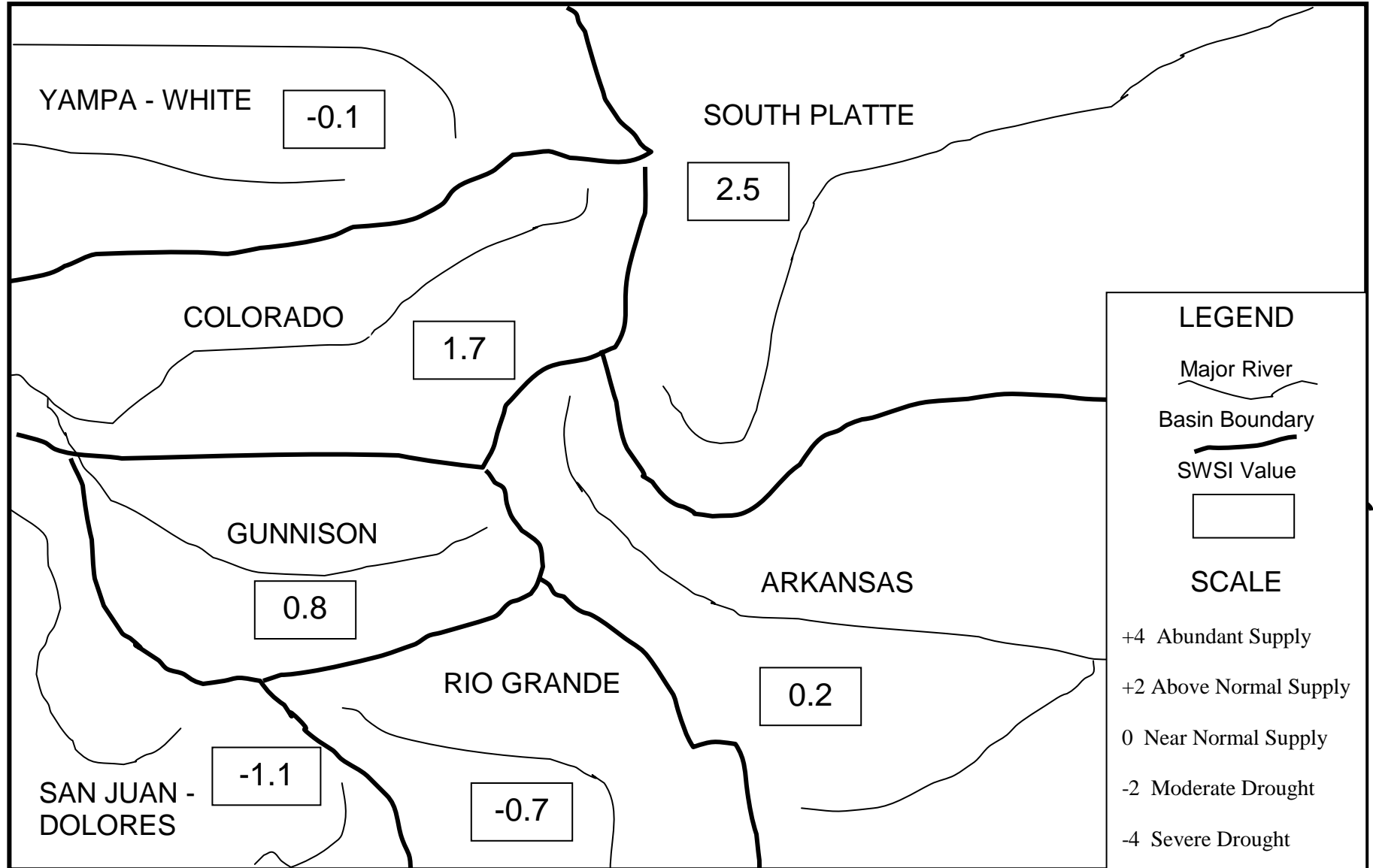
The statewide SWSI values for April (May 1) range from a minimum of -1.1 in the San Juan / Dolores basin to a maximum of 2.5 in the South Platte River basin. The water supply outlook suggests abundant supply is available in the South Platte River & Colorado River basins. The SWSI values this year are a considerable improvement for each basin in the state compared to last year. Nevertheless, the Rio Grande Basin and the San Juan / Dolores Basin both continue to exhibit less than average water supply conditions.

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

Basin	May 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	2.5	0.3	3.4
Arkansas	0.2	0.1	2.5
Rio Grande	-0.7	0.1	1.4
Gunnison	0.8	-0.1	2.9
Colorado	1.7	-0.9	2.8
Yampa/White	-0.1	-0.8	1.0
San Juan/Dolores	-1.1	-0.4	2.0



# SURFACE WATER SUPPLY INDEX FOR COLORADO



May 1, 2014

Basinwide Conditions Assessment

The SWSI value in this basin is 2.5. April 2014 was a month of both more of the same and change in northeast Colorado.

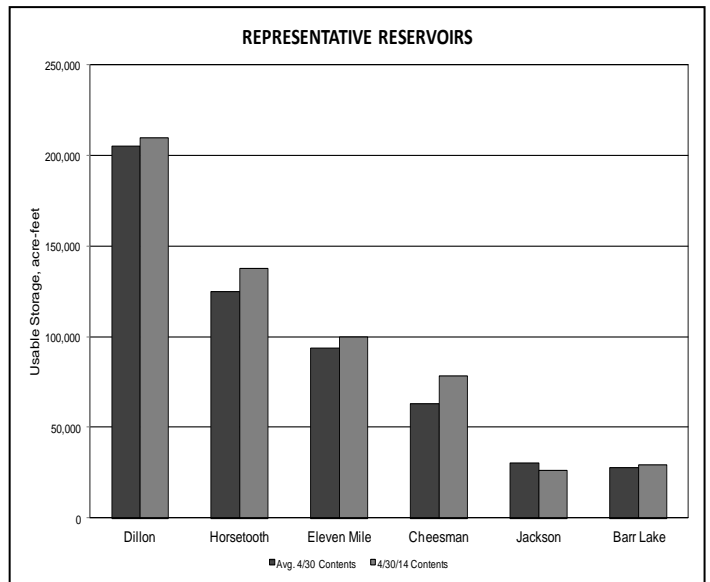
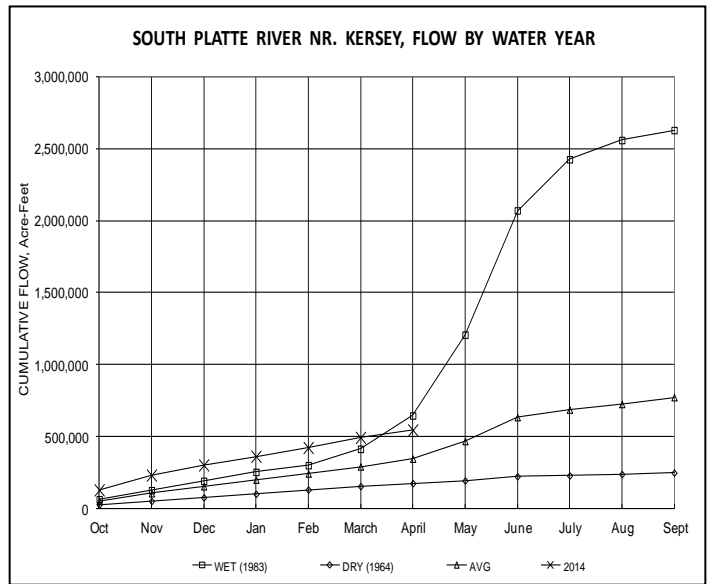
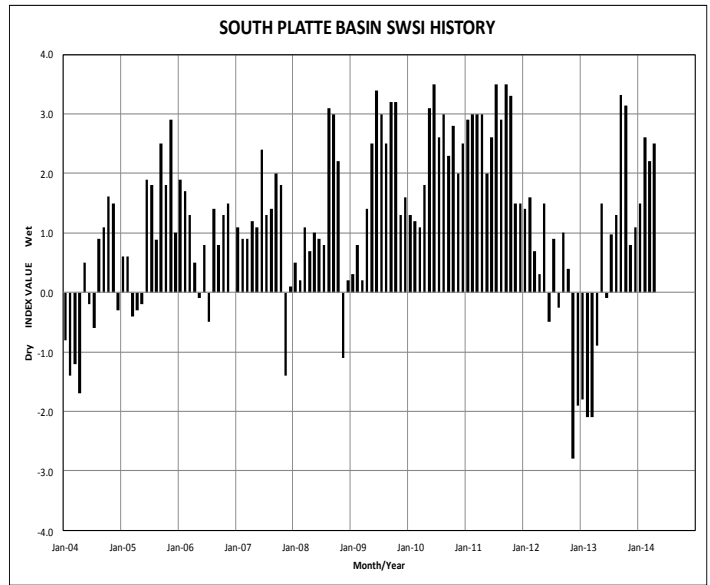
Temperatures throughout the area were generally slightly warmer than normal while precipitation, especially along the northern Front Range, was below to well below normal. However, the snowpack remained a bright spot in the precipitation picture.

What appears to be the peak snowpack for the season was reached on April 20 (6 days ahead of normal) and also contained 131% of the normal peak snow water equivalent. With any luck, the mountains will experience moderate temperatures in May and June and this large snowpack will melt out to provide a good water supply without causing major flooding.

Stream flows at the Kersey and Julesburg index gages both revealed a downward trend from the above average flows generally seen since November 2013 to slightly to well below average in April. This reflects the generally warm and dry conditions in April. The monthly mean stream flow at the Kersey gage declined from approximately 174% of the historic mean during November through March to approximately 100% of the April historic mean. The April flow was 845 cfs as compared to the April historic mean of 846 cfs. The Julesburg gage has been much closer to the historic mean since November than Kersey at approximately 125% of the historic mean flow. The April mean flow declined sharply to 206 cfs or 39% of the 523 cfs historic mean for the Julesburg gage.

The entire South Platte basin was under free river conditions from April 4<sup>th</sup> to the 21<sup>st</sup>. Then, even when the mainstem calls started on April 22<sup>nd</sup>, the calls were more junior than typical for late April. All the tributaries with the exception of one small tributary of Plum Creek were only impacted by the mainstem calls (no internal calls) from April 22<sup>nd</sup> through the end of the month.

Overall reservoir storage in the basin remained very good with readings at 90% of capacity at the end of April. This equates to 104% of the average end of April storage.



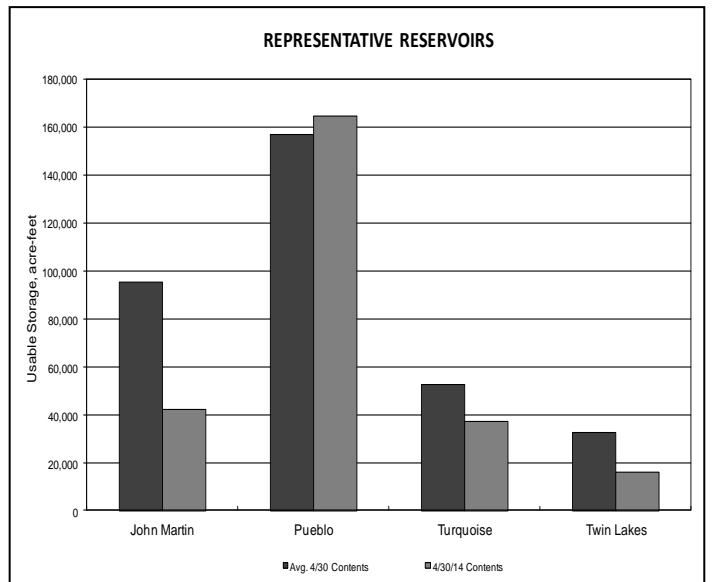
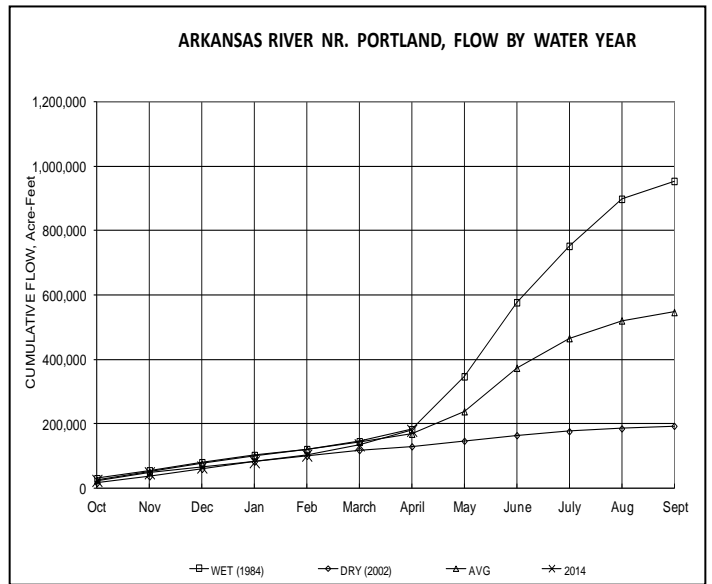
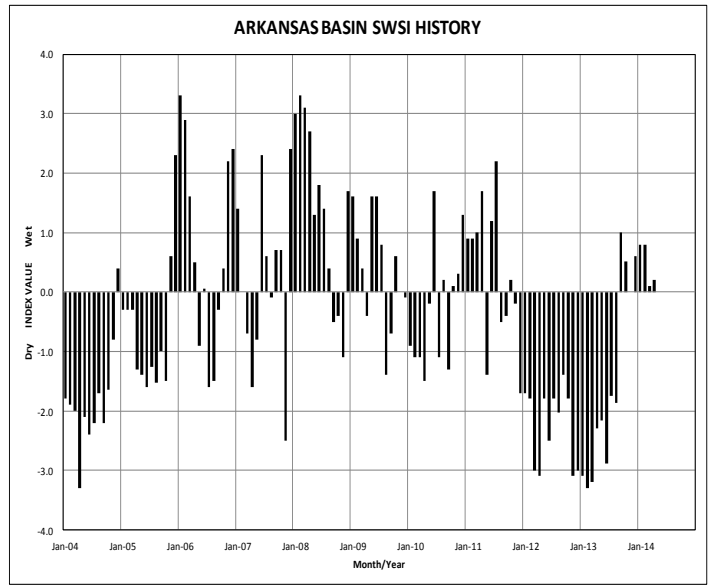
Basinwide Conditions Assessment

The SWSI value for the month is 0.2. Water District 67 ditches below John Martin Reservoir did not call for water prior to April 7, 2014; consequently the distribution of conservation storage into accounts per the 1980 Operating Agreement for John Martin Reservoir began on April 7, 2014. Total storage from November 1, 2013 through April 12, 2014 distributed into accounts in John Martin Reservoir was approximately a net of 11,082 acre-feet.

Mainstem river calls at the beginning of the month were Catlin Canal 12-3-1884 water right from Pueblo Reservoir down to John Martin Reservoir and ended the month at the Rocky Ford Highline 3-11-1886.

Administrative / Management Concerns

Well replacement plans were approved for operation from April 1, 2014 through March 31, 2015 with much better pumping allocations than in 2013. Pueblo Board of Water Works offered a modest amount of fully consumable water for lease via a sealed bid process and leased all offered water at rates higher than in previous bids.



Basinwide Conditions Assessment

The SWSI value for the month is -0.7. Flow at the gaging station Rio Grande near Del Norte averaged 1305 cfs (185% of normal). The Conejos River near Mogote had a mean flow of 355 cfs (126% of normal). Flow to the state line was only 36% of normal as upstream diversions for irrigation began.

Warm temperatures at mid-month produced an early melt throughout the upper Rio Grande basin. In some instances, such as the San Antonio River at the southern end of the Valley, the maximum daily flow for 2014 almost assuredly occurred during April 22 - 24. A major concern in this basin is that April flows ran out snowpack at a time when the crop needs were minimal.

Alamosa received precipitation totaling 1.06 inches during April, 0.47 inches above normal. Temperatures in the San Luis Valley were above normal for the third month in a row.

Outlook

NRCS forecasts are now predicting April through September runoff to be only 74% of average on the Rio Grande near Del Norte and 60% for the Conejos near Mogote. Other drainages of particular concern are the Alamosa River (59%), Saguache Creek (100%), and the eastern side of the basin where runoff from Sangre de Cristo Range Creeks will be extremely poor at less than 50% of normal. Based on these forecasts, water users in the basin, with the exception of the Saguache Creek drainage, who are reliant on stream flow for irrigation and stock watering needs should expect limited availability during the 2014 season.

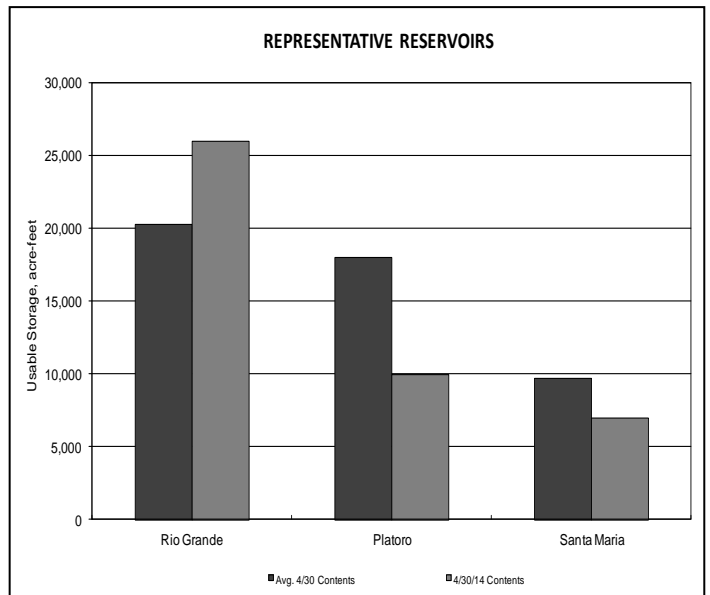
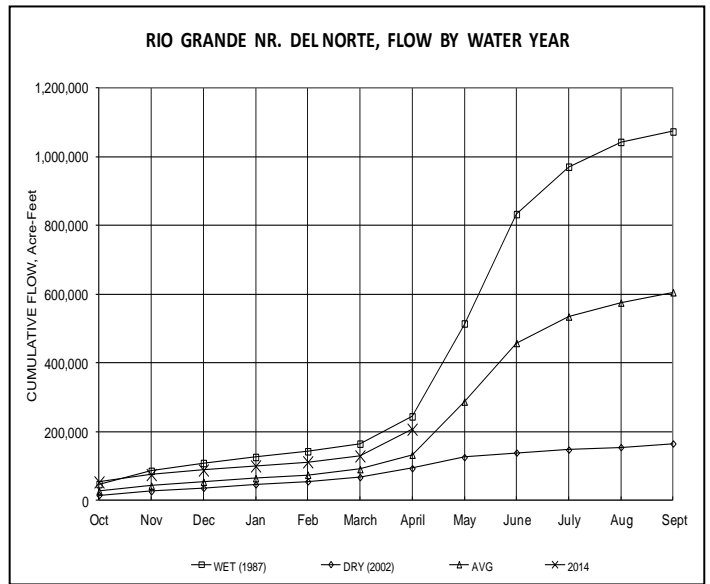
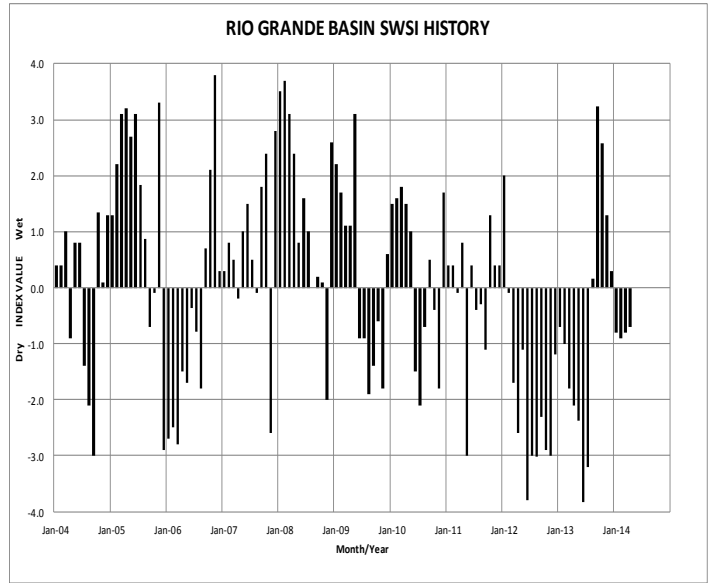
Administrative/Management Concerns

Water rights were curtailed slightly during April on the Rio Grande and the Conejos River. It appears that little or no curtailment will be necessary on these drainages to make water available for Rio Grande Compact deliveries in 2014.

The State Engineer approved the third annual Annual Replacement Plan (ARP) of the Rio Grande Water Conservation District's Special Improvement Subdistrict No. 1. Replacement of injurious pumping depletions from irrigation well use in that subdistrict continues for the third year. This is the first of several proposed subdistricts aimed at assuring compliance with the expected State Engineer's Rules for Groundwater use in Water Division No. 3. More information on this process can be obtained through the DWR website at [www.water.state.co.us](http://www.water.state.co.us).

Public Use Impacts

Beaver Creek Reservoir was drained during April to accommodate dam repairs that are expected to keep the reservoir empty throughout 2014. This eliminates one of the most popular fishing reservoirs in the Division. Other reservoir storage in the basin is already very low and will be depleted even further when releases for supplemental irrigation water are needed. The expected poor stream flow will adversely affect the farming, ranching, and recreational industries in the basin.



Basinwide Conditions Assessment

The SWSI value for the month is 0.8. Although the Gunnison basin received less than average precipitation during April, the seasons snowpack peaked above average in most areas, with the basins above Blue Mesa, Taylor Park, Ridgway and Paonia Reservoirs containing 122%, 128%, 102%, and 100% of the 30-year median peak snow water equivalent (SWE). The fact that the upper Gunnison tributaries received significantly more snow than the North Fork Gunnison or Uncompahgre basins may have a big impact on storage remaining at the end of 2014 as you will read below.

Outlook

The 30-day forecasts continue to include equal chances of below or above average precipitation, but the 90 day forecasts now predict above average precipitation in the Gunnison basin due to a forecasted developing El Nino.

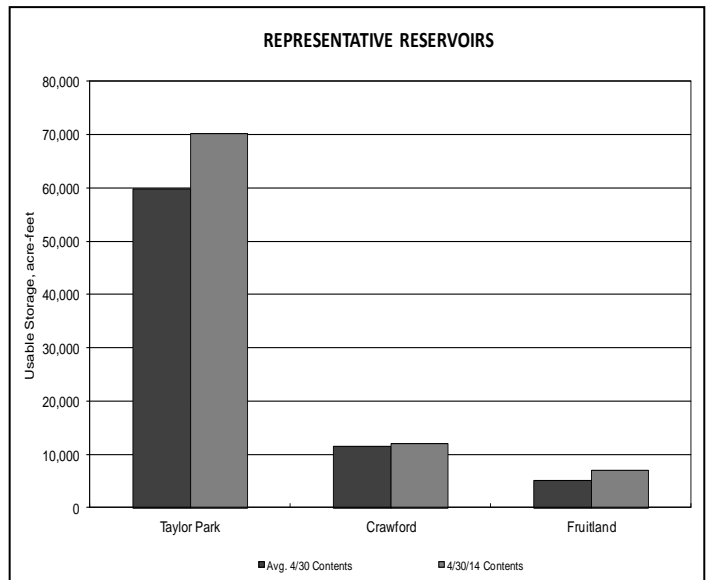
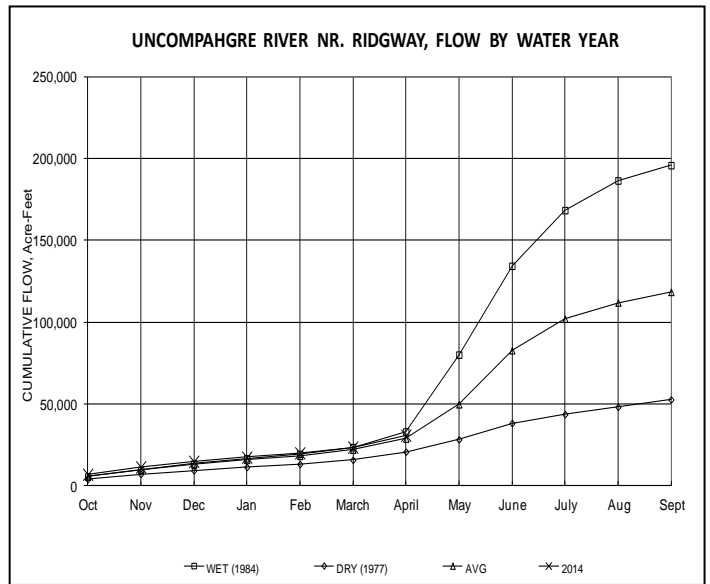
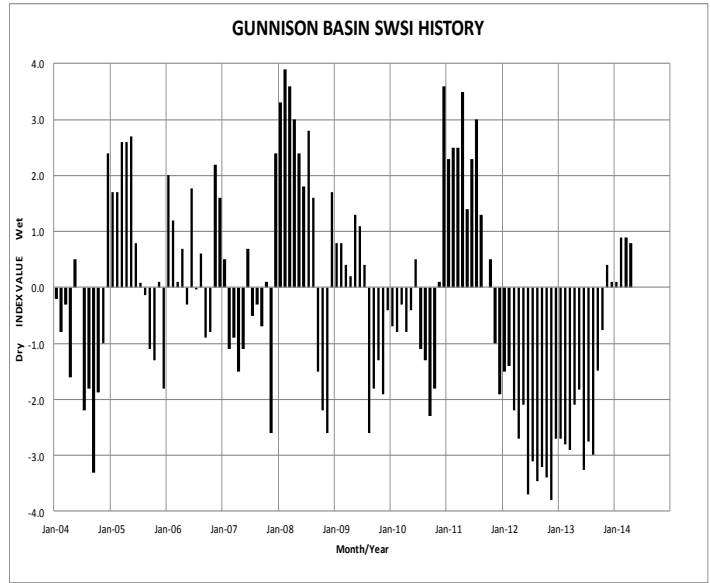
Administrative/Management Concerns

As of May 13th, Blue Mesa Reservoir contained over 560,000 acre-feet and is rising between 4,000 and 8,000 acre-feet per day. The May 1st forecast for April to July inflow into Blue Mesa Reservoir was 850,000 acre-feet (126% of average). Due to the federal reserve water right, this will require a one-day peak flow in the Black Canyon of 6,427 cfs. In addition, the Bureau of Reclamation (BOR) plans to operate to meet the Record of Decision (ROD) flow targets for the endangered fish in the lower Gunnison. Those flow targets at the Whitewater gage on the Gunnison are extremely high due to the runoff forecast above Blue Mesa and are prescribed at 8,070 cfs for 40 days, of which 10 days have a target of 14,350 cfs. This will require significant releases from the Aspinall Unit because the targets are determined by runoff forecasts into Blue Mesa, which are high, but do not account for conditions in the other tributaries, such as the North Fork Gunnison and Uncompahgre Rivers where the forecast is average or less. In a year where all tributaries contain high runoff, the flows released from Crystal Dam would receive more of a boost by timing with the peaks on the tributaries, but the peak this year on those tributaries will be less help due to average snowpack. Consequently, it appears that instead of Blue Mesa reaching 802,000 acre-feet of storage (97% active capacity) as shown in the April 24-month study produced by the BOR, that it could reach a maximum of only 650,000 acre-feet (78% active capacity). This amounts to approximately 150,000 acre-feet that could otherwise have been stored high in the basin after two drought years, but instead will be used to boost flows in the lower Gunnison. Also, in their attempt to meet these flows, the BOR may need to spill all three Aspinall Unit dams.

The Uncompahgre Valley Water Users Association (UVWUA) opened the Gunnison Tunnel on March 31st, but still have not diverted their typical 1,150 cfs flow because some of their system needs are being met by 500 cfs releases made from Ridgway Reservoir to exercise the new power generating turbines that went online this spring.

Public Use Impacts

The long duration of high flows in the Black Canyon and Gunnison Gorge will have a significant negative impact on recreational boating and fishing conditions during June and early July, which will be detrimental to the guides since it is the most popular time to be on the river.



Basinwide Conditions Assessment

The SWSI value for the month is 1.7.

Outlook

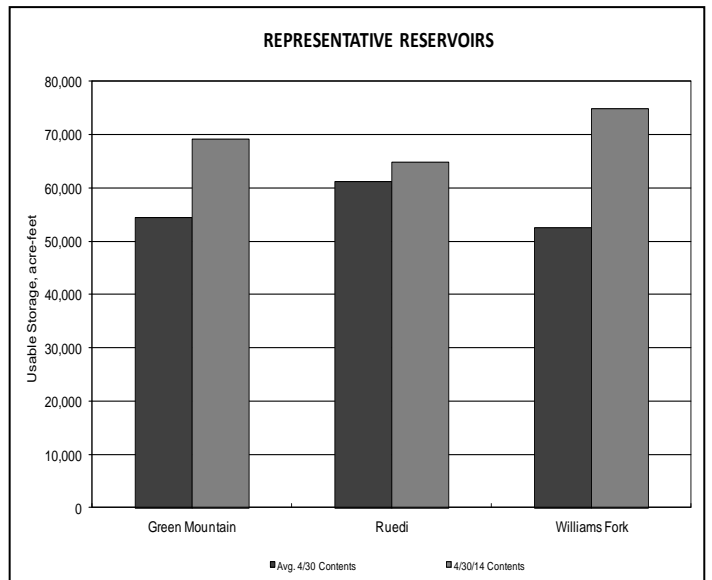
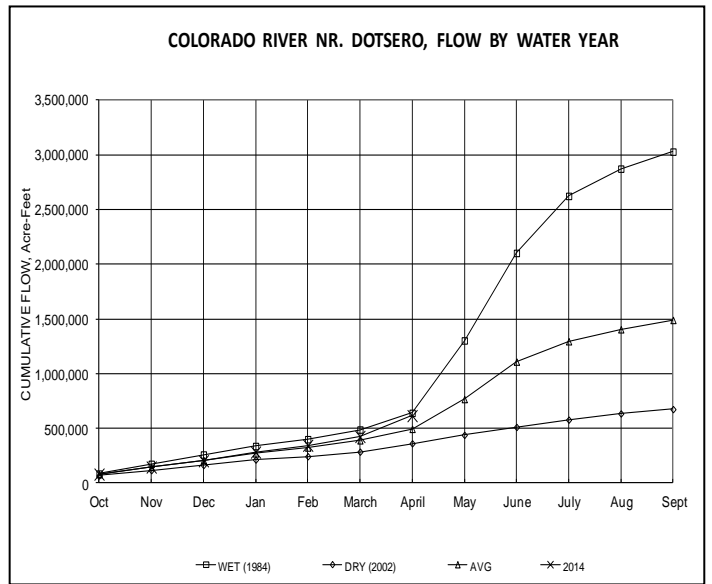
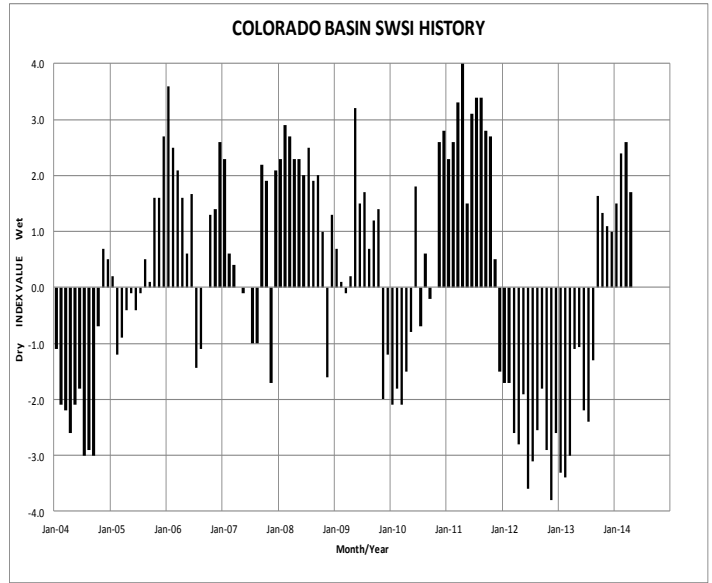
Colorado River and all tributary flows have varied significantly in early May with large average daily temperature variations and increased reservoir releases. Flows should increase generally as snowmelt runoff continues, although periods of cooler temperatures and intermittent precipitation forecast through May could slow or reverse the increasing trend. Average precipitation and below average temperatures are forecast for western Colorado through the month of May. Ruedi reservoir releases increased in mid-march will continue through April to continue additional storage. As of May 1st, Upper Colorado River and Roaring Fork Basin snowpack increased to 143 and 152 percent of median snow water equivalent respectively.

Administrative/Management Concerns

A main stem call on the Colorado River will not occur during the month of May. Grand Valley Irrigation diversions (Government Highline/Orchard Mesa Irrigation, Grand Valley Irrigation canals) have reached full capacity. Following an increase in late April, Ruedi Reservoir releases have been decreased to 214 cfs. Green Mountain reservoir releases have increase significantly to 1250 cfs. Williams Fork and Wolford Mountain Reservoir continue significantly above average release rates of about 340 cfs to open storage space for above average runoff.

Public Use Impacts

The city of Aspen has approved an agreement with the Colorado Water Trust to limit diversions from their rights in the Wheeler Ditch for irrigation and stormwater system base flow, to boost Roaring Fork River flows during late summer low-flow periods. Under the agreement, Aspen will bypass 1 cfs (up to 3 cfs maximum) for every 1 cfs the river falls below the minimum 32 cfs identified to protect the river's environment.



Basinwide Conditions Assessment

The SWSI value for the month is -0.1. April precipitation was the lowest so far this water year 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 just 72% of average for the combined 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 April was 114%.

Snowpack for the Yampa and White River basins was at 121 % of average and the North Platte and Laramie River basins were at 126% of average as of April 1st, 2014. The snow water equivalent (SWE) as of April 1st was 136% of average for the North Platte and Laramie River basins and 121% of average for the Yampa River basin and White River basin.

NRCS predicts mostly above average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the May through July period are 139% of average for the North Platte River near Northgate, 130% of average for the Yampa River near Maybell, 119% of average for the Little Snake River near Lily, and 82% of average for the White River near Meeker

All Division 6 stream gages are operational although some are experiencing difficulties related to cold temperatures and ice.

Outlook

On April 30th Fish Creek Reservoir was storing 2,888 AF which is 69% of capacity. Yamcolo Reservoir was storing 6,200 AF at the end of April 2014. The capacity of Yamcolo Reservoir is 8,700 AF. On April 30th Elkhead Creek Reservoir was storing 21,982 AF. The capacity of Elkhead Creek Reservoir is 24,778 AF. On April 30th, 2014, Stagecoach Reservoir was storing 33,500 AF which is over 100% of capacity.

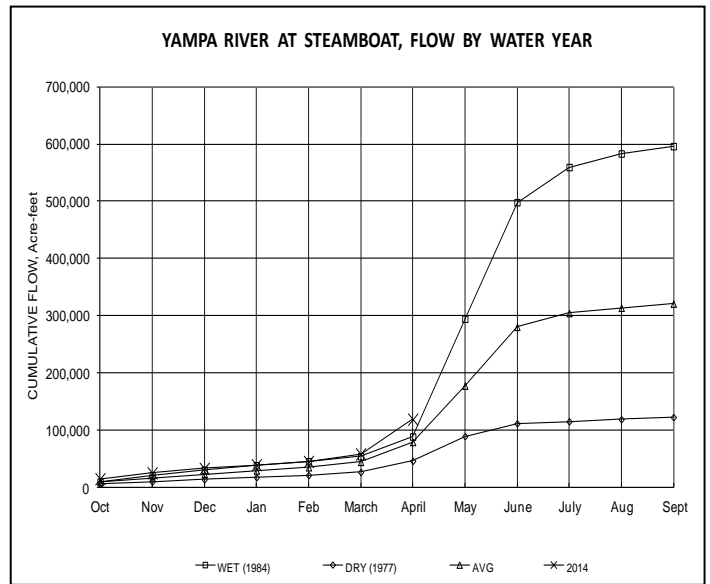
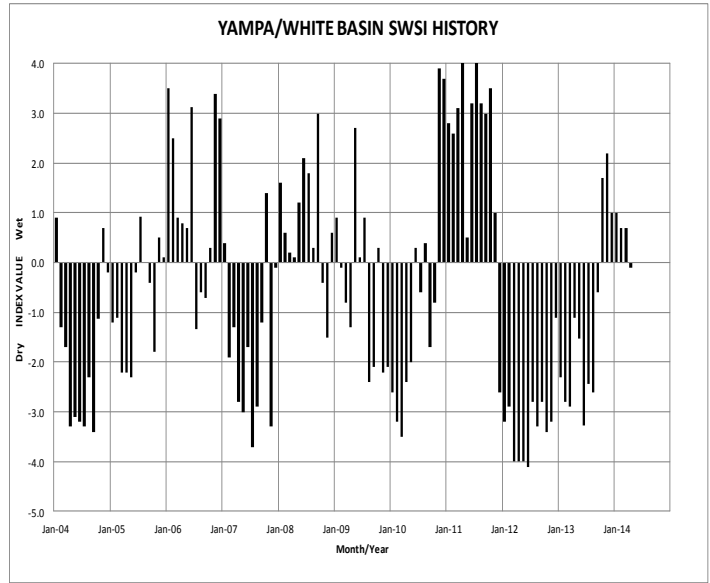
Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount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

Public Use Impacts

The Yampa River through Steamboat Springs is running well above average for this time of year. Recreational enthusiasts are urged to use extreme caution in and around the river.

Stagecoach Reservoir is ice free and open for boating. Fishing from the shoreline at the inlet and coves has picked up with recent reports of success. The tailwater is open for fishing but there may still be some construction in progress. County Road 18 to the tailwater is open for vehicles.

Steamboat Lake remains frozen and so boating season will be delayed this year. Anglers walking in to the coves and creeks have had good success fishing. Edges are opening up for bank fishing as well. The road to the Marina and Marina parking lot is plowed and open. All other park roads are closed and will remain closed until drying out.



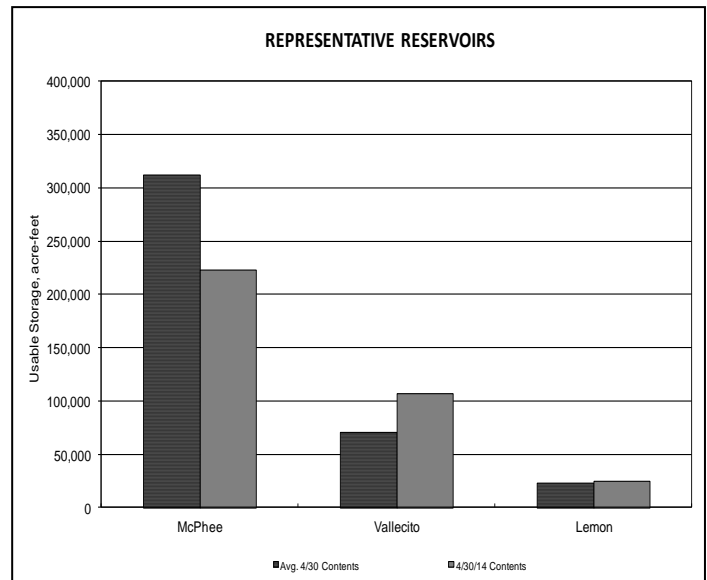
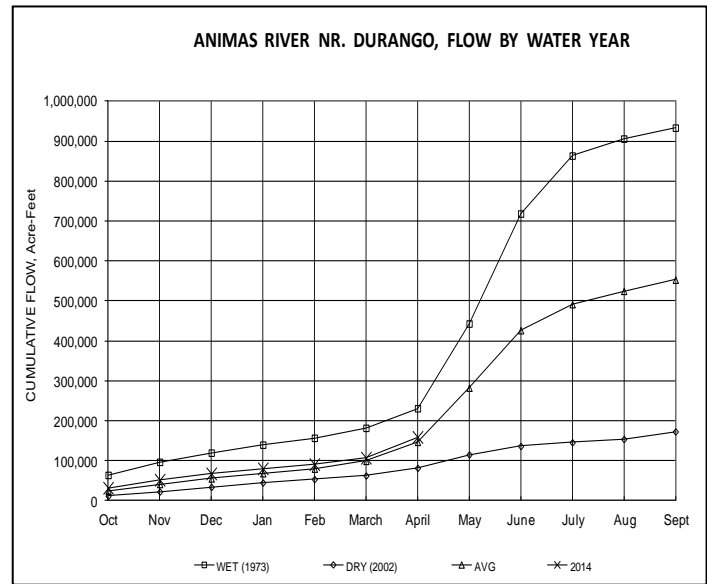
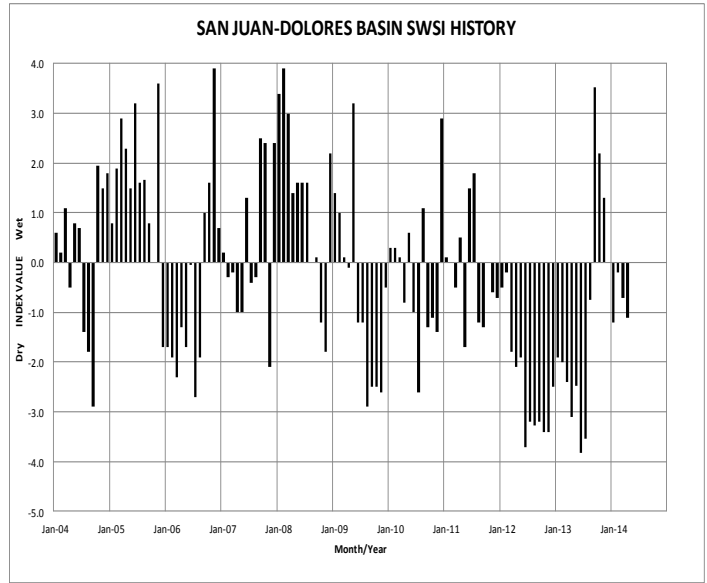


Basinwide Conditions Assessment

The SWSI value for the month is -1.1. Flow at the Animas River at Durango averaged 896 cfs (106% of average). The flow at the Dolores River at Dolores averaged 663 cfs (89% of average). The La Plata River at Hesperus averaged 61.2 cfs (76% of average). Precipitation in Durango was 0.59 inches for the month, 40% of the 30-year average of 1.46 inches. Precipitation to date in Durango, for the water year, is 7.28 inches, 64% of the 30-year average of 11.32 inches. The average high and low temperatures for the month of April in Durango were 63o and 31o. In comparison, the 30-year average high and low for the month is 63o and 31o. At the end of the month Vallecito Reservoir contained 106,659 acre-feet compared to its average content of 65,149 acre-feet (164% of average). McPhee Reservoir was up to 224,100 acre-feet compared to its average content of 313,738 (71% of average), while Lemon Reservoir was up to 25,030 acre-feet as compared to its average content of 22,885 acre-feet (109% of average).

Outlook

Precipitation (0.59 inches) was below average for April in Durango. There were 88 years out of 120 years of record where there was more precipitation than this year. The flows on the Animas River were near average this month. There were 41 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 52 out of 103 years of record where the total flow past the Dolores stream gauge was more than this year and 63 out of 97 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year. The end of month content in Vallecito Reservoir recorded its second highest stage ever when compared to the same period. On April 30, the NRCS SNOTEL sites reported an average snow-water equivalent within the basin at 69%. Last month the snow-water-equivalent was 86%.



**ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - May-14**

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

**Winter SWSI Component Weights**

Basin	Reservoir Storage	Snowpack	Precipitation (Water Year Cumulative)
South Platte	0.55	0.27	0.18
Arkansas	0.15	0.51	0.34
Rio Grande	0.05	0.63	0.32
Gunnison	0.1	0.54	0.36
Colorado	0.15	0.51	0.34
Yampa/White	None	0.6	0.4
San Juan/Dolores/Animas	0.1	0.54	0.36

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 May 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 observed streamflow. The scale of -4 to +4 is the same as shown on Page 1.

