

COLORADO

WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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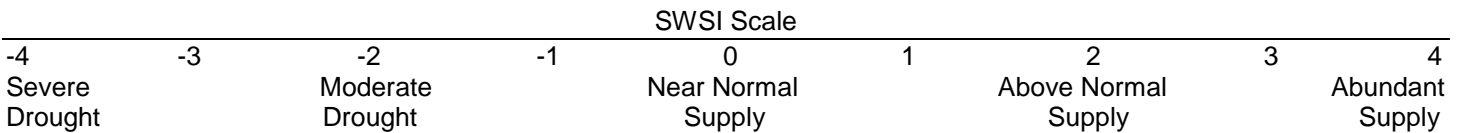
May 2013

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 snowpack, reservoir storage, 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.

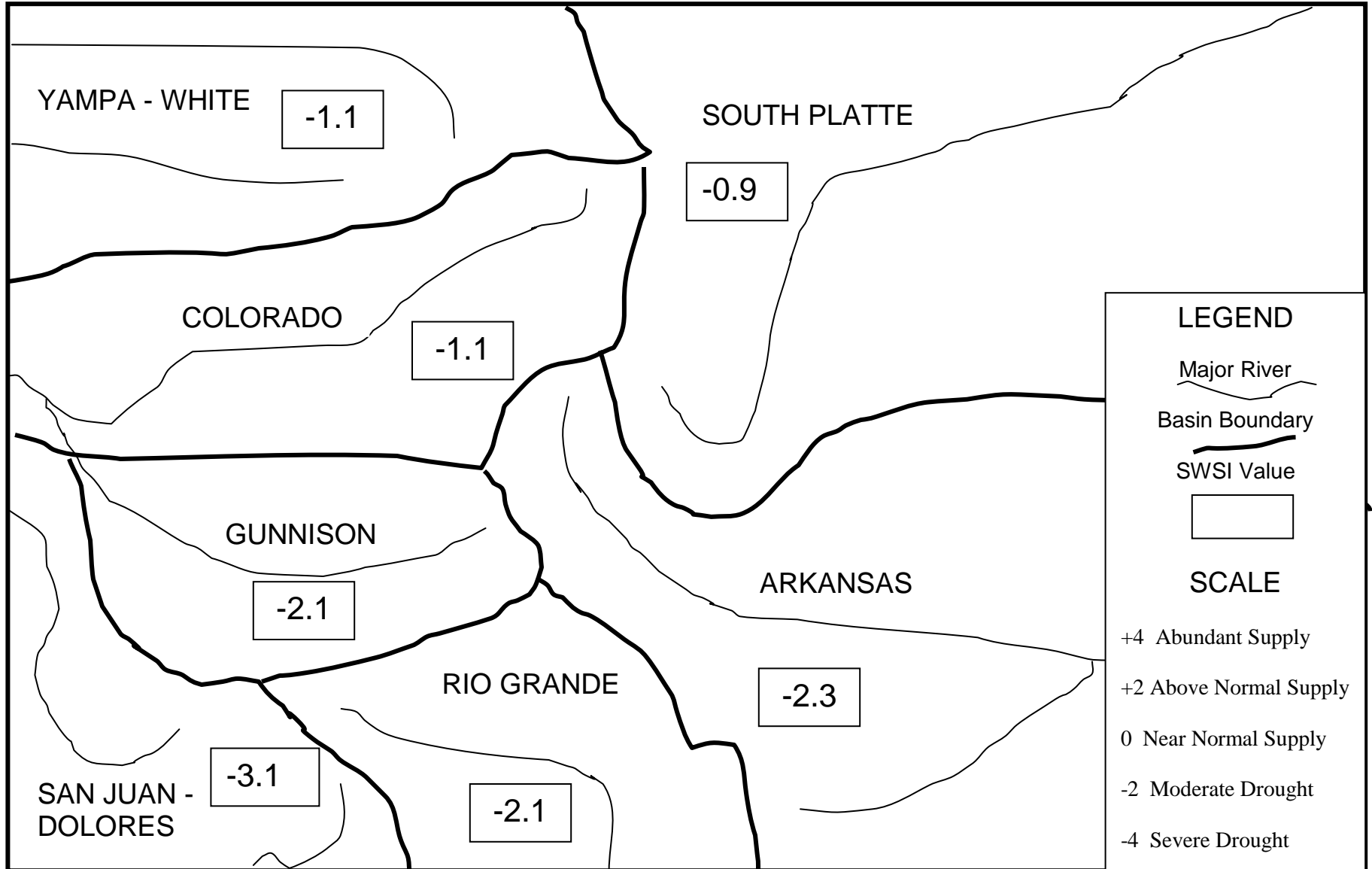
The statewide SWSI values for April (May 1) range from a high value of -0.9 in the South Platte Basin to a low value of -3.1 in the San Juan/Dolores Basin. Drought conditions continue to be widespread throughout the state, although conditions in the north have improved over previous months. The southern half of the state continues to have low surface water availability. Even with substantial snowfall in Northern Colorado in April, all of the snowpack and water year-to-date precipitation levels are below normal for May 1.

The following SWSI values were computed for each of the seven major basins for May 1, 2013. 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	-0.9	1.2	-1.2
Arkansas	-2.3	0.9	0.8
Rio Grande	-2.1	-0.3	0.5
Gunnison	-2.1	0.8	0.6
Colorado	-1.1	1.9	1.7
Yampa/White	-1.1	1.8	2.9
San Juan/Dolores	-3.1	-0.7	-1.0



SURFACE WATER SUPPLY INDEX FOR COLORADO



May 1, 2013

Basinwide Conditions Assessment

April continued and even increased the cool and wet conditions than began in late February in the South Platte basin. This provided a “double bonus” by not only reducing or eliminating direct flow irrigation demand at lower elevations and allowing storage to continue, but also by increasing the South Platte snow pack to 91% of average snow water equivalent by April 29. This late surge in moisture will not negate the effects of the lack of snow earlier in the season, but it will provide a much better (though probably short duration) runoff than previously expected.

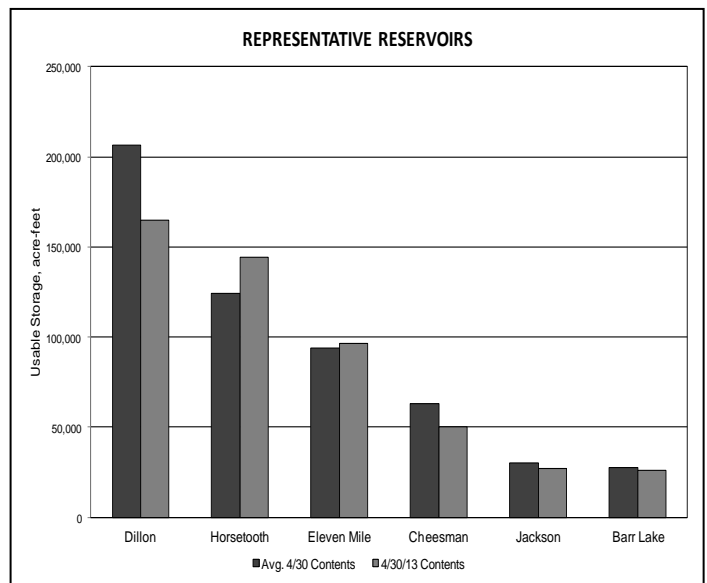
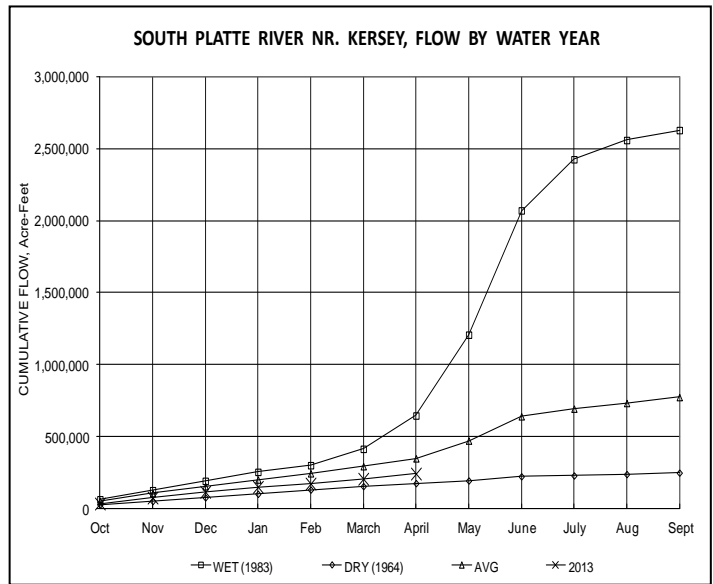
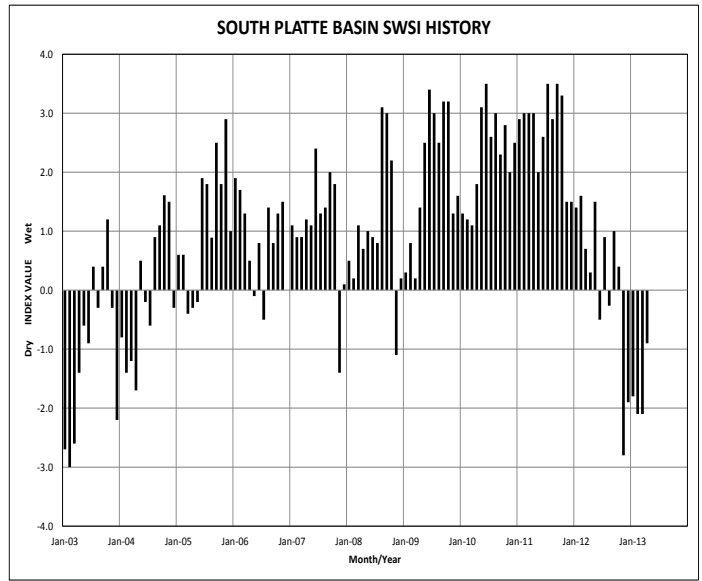
Stream flows at both the Kersey and Julesburg index gages remained below average for April. The Kersey gage monthly mean stream flow was 612 cfs or 72% of the historic mean of 846 cfs. The April 2003 mean flow was 584 cfs. The April Julesburg gage monthly mean stream flow value was 146 cfs or 28% of the historic mean of 523 cfs. The April 2003 mean flow was 113 cfs.

Overall reservoir storage in the basin was at 87% of the end of April average. This compares with an end of April 2003 reading of 64% of average and an end of April 2002 reading of 81% of average. However, all of the large reservoirs east of Kersey were basically full by the end of April. This is a huge turn-around from what was expected at the end of March.

As is typical in April, the mainstem and tributary river calls bounced between direct flow and storage rights. However, even with the improved conditions discussed above, the lower than average stream flows did result in several much more senior than normal direct flow calls. Also of significance, the South Platte Compact call (either directly or as a bypass) was on for the first 8 days and last 4 days of April. Thus, even though the average flow for April was above the required 120 cfs at the state line, the compact call was on for over 1/3 of the month. This does not bode well for the 2013 irrigation season.

Outlook

The increased precipitation also significantly improved drought conditions. As of April 30, most of the South Platte basin was categorized in moderate (D1) or severe (D2) status with only the far northeastern border region still in extreme drought (D3) conditions. While this may not sound like much of an improvement, on March 26 the entire basin was in the severe (D2) or extreme (D3) drought categories. However, the drought ratings do show that the eastern portion of the basin received significantly less precipitation than the Front Range in April.



Basinwide Conditions Assessment

The SWSI value for the month was -2.3. Snowpack accounts for the majority of the SWSI in the Arkansas Basin and was very low with a nonexceedance probability (PN) of 18. Water year cumulative precipitation, the other major component of the Arkansas Basin's winter SWSI, was also low (PN of 20).

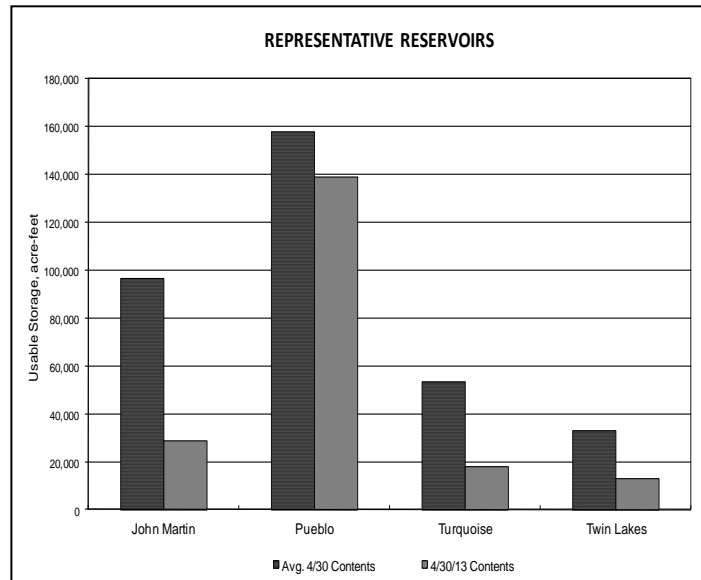
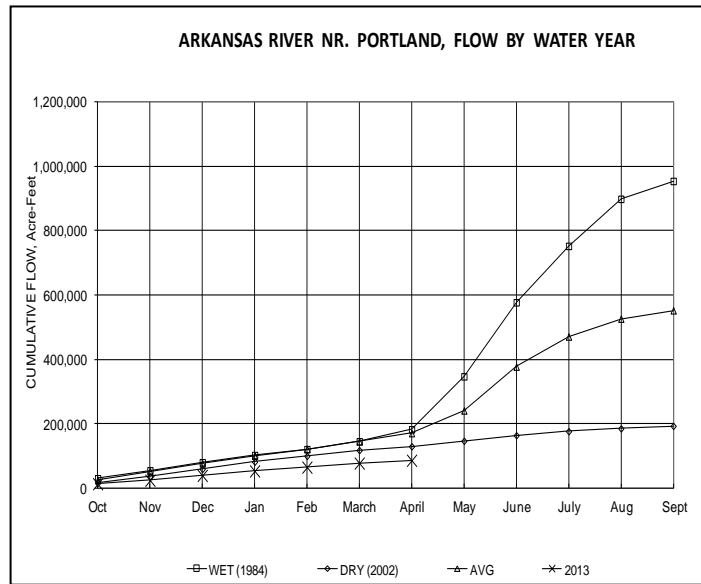
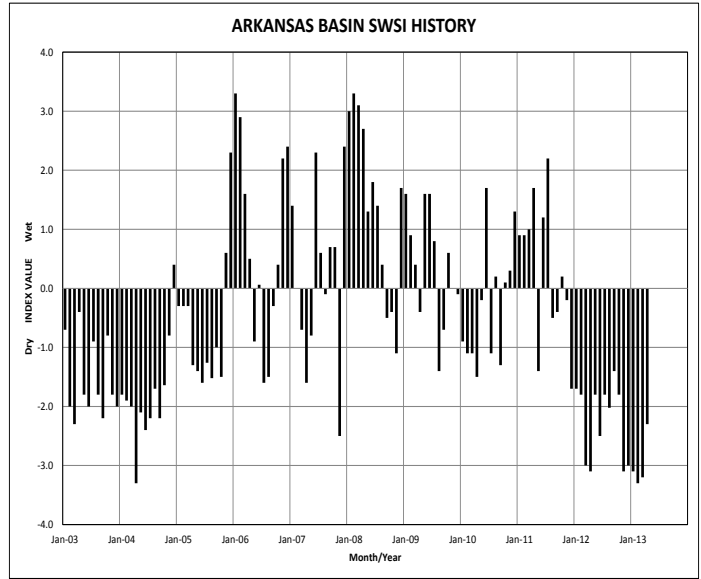
Outlook

Water District 67 ditches below John Martin Reservoir did not call for water prior to April 7, 2013; consequently the distribution of conservation storage into accounts per the 1980 Operating Agreement for John Martin Reservoir began on April 7, 2013. Total storage from November 1, 2012 through April 10, 2013 distributed into accounts in John Martin Reservoir a net of about 7,094 acre-feet. The 2012-13 storage was only about a third of the 2011-12 storage in John Martin Reservoir.

No significant snowmelt runoff occurred during April and river calls remained very senior. Mainstem river calls have held steady at the Bessemer Ditch 3-31-1882 water right from Pueblo Reservoir upstream and the Fort Lyon Canal 4-15-1884 water right from Pueblo Reservoir down to John Martin Reservoir.

Administrative / Management Concerns

There were a number of the well replacement plans approved temporarily until June 1st that will have to provide updated projections on pumping, depletions and replacements for final approval of those plans after June 1st. Approved well pumping was exceptionally low due to poor prospects for replacement supplies.



Basinwide Conditions Assessment

The SWSI value for the month was -2.1. Flow at the gaging station Rio Grande near Del Norte averaged 439 cfs (66% of average). The Conejos River near Mogote had a mean flow of 126 cfs (39% of normal). Flow to the state line was only 27% of normal as upstream diversions for irrigation needs began and only very minimal Compact delivery requirements are necessary for 2013.

What a change from April a year ago when warm temperatures forced an early melt! The April 2012 runoff was 217% of average for the Rio Grande and 161% of average for the Conejos, generally cool temperatures and severe lack of lower elevation snowpack resulted in very low streamflow throughout the basin during April, 2013. Perhaps the water will come later, at a time when the crop needs are higher.

Alamosa received precipitation totaling 0.32 inches during April, 0.27 inches below normal. This marks the fourth consecutive month of below average precipitation.

Outlook

NRCS forecasts are now predicting April through September runoff to be only 45% of average on the Rio Grande near Del Norte and the Conejos near Mogote. Other drainages of particular concern are the Alamosa River (44%), Saguache Creek (50%), and the Rio San Antonio near Antonito (14%) with the lowest forecast in the region. Runoff on the eastern side of the basin from the Sangre de Cristo Range creeks will be very poor, 40% of normal or less. Based on these forecasts, water users in the basin who are reliant on stream flow for irrigation and stock watering needs should expect extremely limited availability.

Administrative/Management Concerns

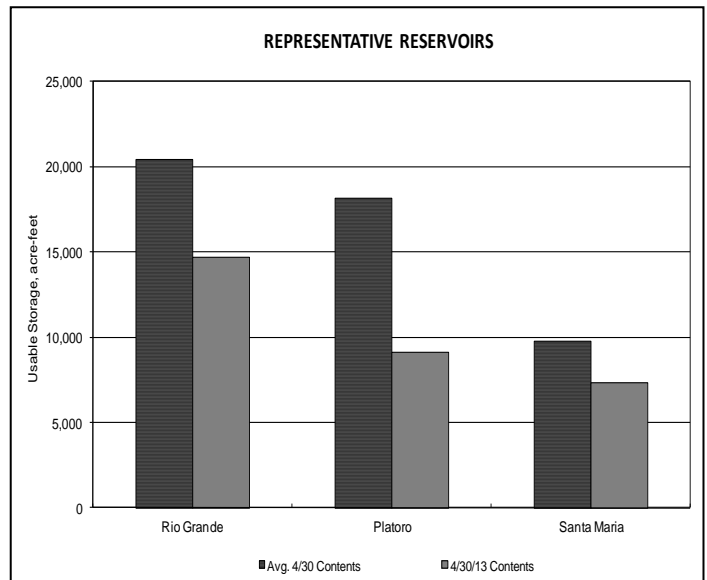
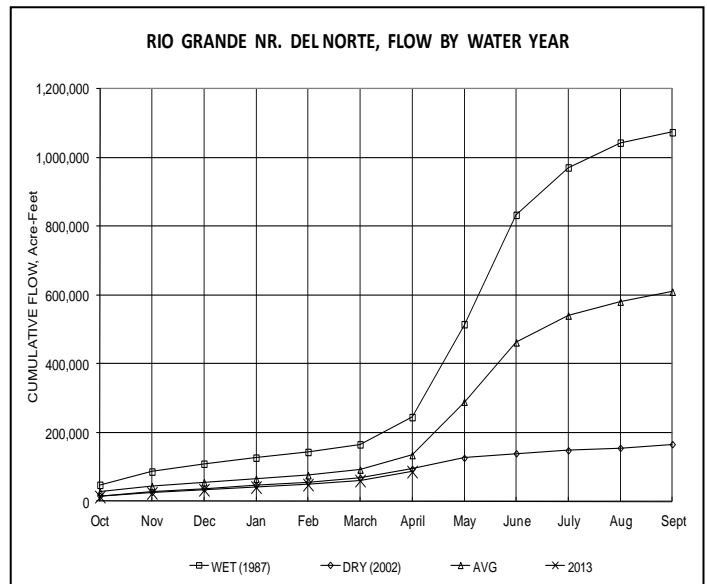
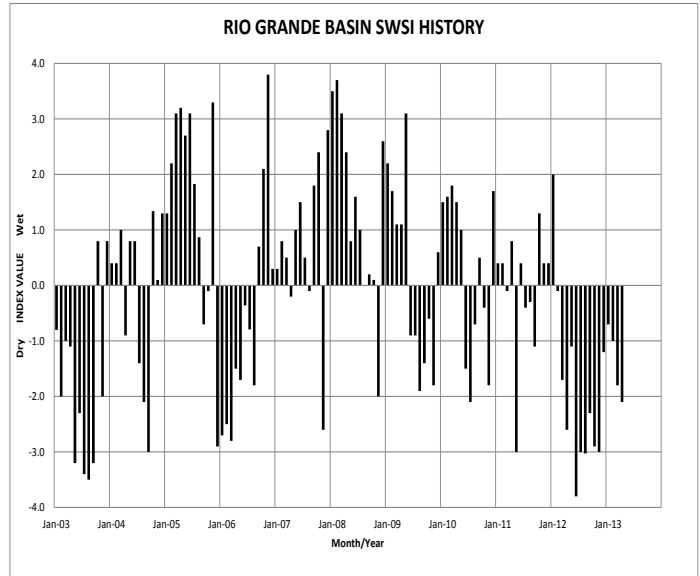
Water rights were curtailed only slightly during April on the Rio Grande. It appears that no curtailment will be necessary for the Conejos this year to make necessary delivery to the downstream states under the Rio Grande Compact.

With only the most senior water rights able to divert throughout the summer, massive pumping from the valley's aquifers will again be necessary to meet irrigated crop demand. Available reservoir storage is minimal.

On May 1, 2013, the State Engineer approved the second 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 commenced on that day. 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

Public Use Impacts

Reservoir storage is already very low in this basin and will be depleted even further this summer. 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 was -2.1. Finally, in April things improved in the Gunnison basin. In fact, the month of April brought over 150% of average precipitation to the East and Taylor River drainages. As a result, snowpack conditions in the basin above Taylor Park Reservoir reached 83% of the average peak on April 21st, which is a marked improvement from the 67% of the average we saw at the end of March. The Gunnison basin as a whole improved as well, with the basin reaching 80% of average peak in April. Southern areas improved as well, but to a much smaller degree. The Uncompahgre above Ridgway, for example, only reached 73% of average peak as the storm track favored northern and central Colorado. Another positive is that colder than average temperatures kept the snowpack from beginning to melt early, especially in the north. For example, the Snotel sites above Paonia Reservoir typically have peak snow water equivalent on April 4th, but this year they peaked on April 21st. Southern areas fared worse in this aspect as well, with significant dust on snow in late April causing a rapid snowpack decline in the San Juan Mountains.

Outlook

May 1st Colorado Basin River Forecast Center (CBRFC) streamflow forecasts for Gunnison basin streams have improved from April 1st, going from a range of the mid-40 and 50% of median to the upper 50% and 60% of median. An interesting change from last month is the flip in conditions from north to south as most of the winter it appeared that southern areas were going to have better conditions, but on May 1st, areas such as the Taylor above Almont sit at a forecast of 71% of average while Lake Fork Gunnison is at 48%. As storms and cooler weather have prevailed for the first part of May it appears that the May 15th streamflow forecasts could improve further.

Administrative/Management Concerns

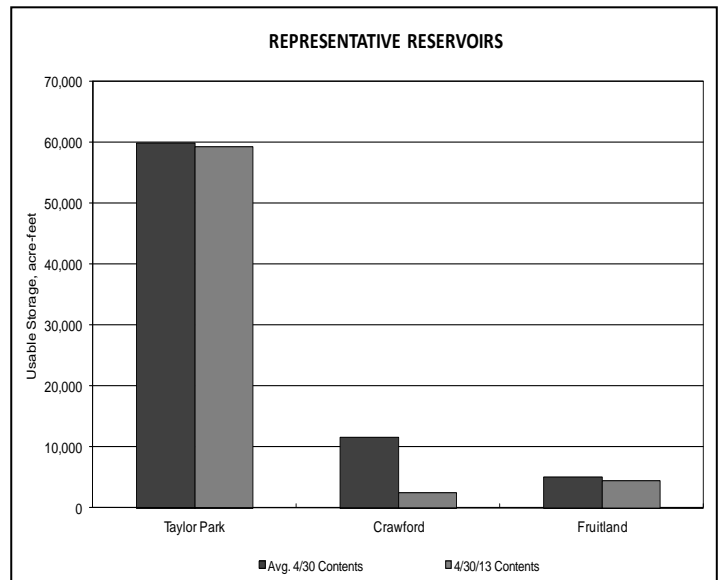
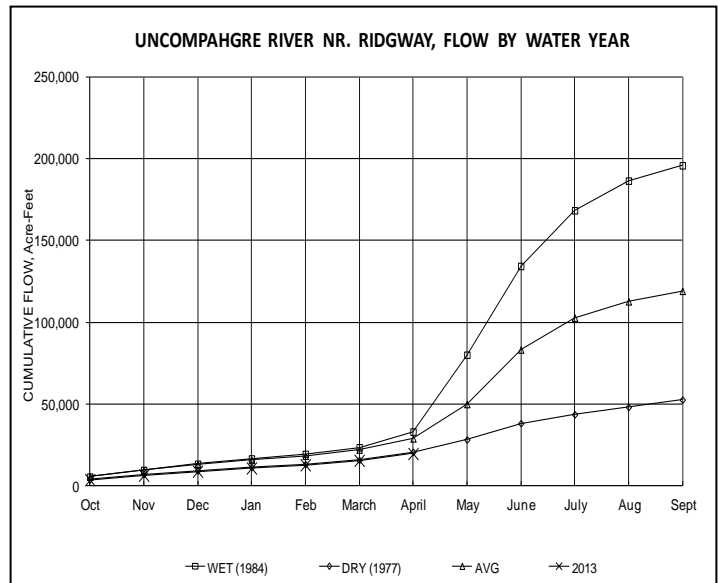
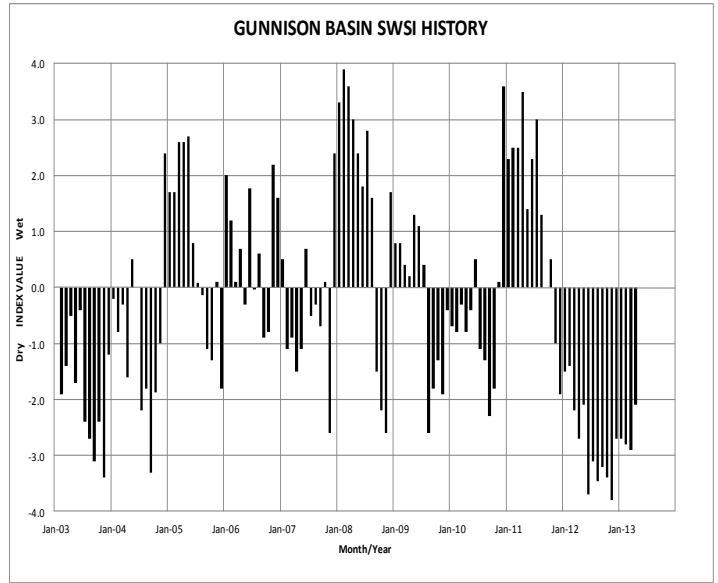
As previously mentioned, cool weather delayed the beginning of runoff by up to two weeks, which made a big difference because the fields were ready to use the water unlike in 2012.

As stated last month, the Upper Gunnison River Water Conservancy District (UGRWCD) purchased 4,500 acre-feet of water from the Aspinall Unit to be used by the Uncompahgre Valley Water Users (UVWUA) at the Gunnison Tunnel. Pursuant to the agreement, the UVWUA, placed a limited call on the Gunnison River that will be administered when inflow into the Aspinall Unit does not cover Gunnison Tunnel diversions. This limited call would call down to Silver Jack Reservoir (1960 adjudication), preventing it from storing. No contract water was used in April because the Tunnel was only short for three days prior to the beginning of runoff and the two parties agreed to postpone the use of it until the River is actually administered by DWR.

The April-July inflow forecast for Blue Mesa Reservoir was increased slightly to 335,000 acre-feet (50% of average) on May 1st. Even with the improved forecast, Blue Mesa is projected to be approximately 20,000 acre-feet lower at the end of 2013 than it was last year. On the bright side, however, it may not be at historically low levels.

Pubic Use Impacts

Many rafting companies in the upper Gunnison basin in late March were planning on having no season at all due to the dire forecasted streamflows. With the improved streamflow forecast on many streams they will be hiring seasonal employees for the rafting season. Taylor Reservoir releases should reach 250 cfs in mid-June, which the local users group indicated was enough to provide a rafting season on that River in particular.



Basinwide Conditions Assessment

The SWSI value for the month was -1.1. Snowpack, which results in the majority of the SWSI in this basin had a PN of 34, up from last month's PN of 12. The SWSI for the Colorado River Basin improved 1.9 compared to last month, the largest improvement in the state.

Outlook

Below average temperatures throughout April have suppressed flows at most gages on the Colorado and Roaring Fork Rivers. Flows are running significantly below average in early May, but will increase as the rate of snowmelt run-off accelerates. Significant precipitation throughout April improved snowpack conditions. Although late season percentages can be somewhat misleading, Upper Colorado River and Roaring Fork Basin snowpack reported 97 and 99 percent of average snow water equivalent respectively as of April 19th. The western Colorado forecast again calls for below average chance of precipitation through the month of May.

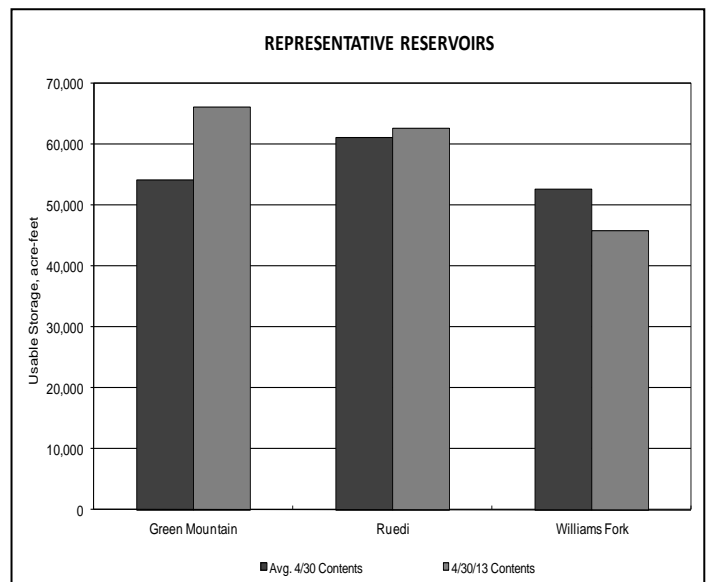
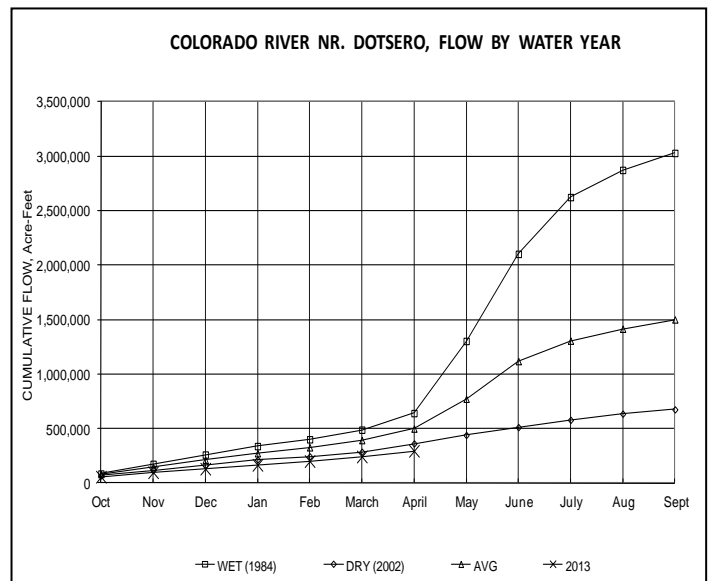
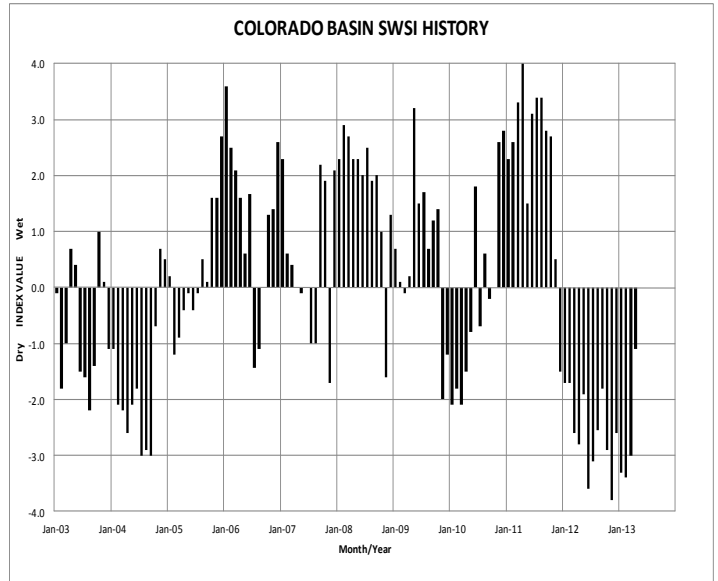
Administrative/Management Concerns

A call was placed by the Grand Valley Irrigators in mid-April for a short 2-day period. Ruedi, Green Mountain, Williams Fork and Wolford Mountain Reservoir releases were increased/decreased accordingly. Ruedi Reservoir releases increased to 110 cfs in accordance with the minimum flow requirement for the May 1 through Oct 30 period.

Public Use Impacts

Heavy precipitation throughout April delayed the start of irrigation, with only the most senior irrigation rights coming into priority as of May 1st.

The Colorado River has, once again, been identified as the foremost endangered river by the national conservation group American Rivers; claiming existing management plans are inadequate. The report sites the Colorado River Basin Water Supply and Demand study, which claims an annual gap of 3.2 to 8 million acre-feet between water use and supply by the year 2060. The Colorado River District has called on American Rivers to participate in developing interim and long term solutions to the potential for reduced Colorado River flows in the future.



Basinwide Conditions Assessment

The SWSI value for the month was -1.1, a substantial improvement of 1.8 compared to last month. April precipitation was well above average 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 146% 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 April jumped to 90%, the highest in the state.

Snowpack for the Yampa, North Platte and White River basins increased significantly to 97% of average as of May 1, 2013. The snow water equivalent (SWE) as of April 30 was 93% of average for the Laramie and North Platte River basins and 92% of average for the Yampa River basin and White River basin.

NRCS predicts below average spring and summer streamflows in the Yampa, White, and North Platte River basins. However, the forecast has improved slightly since last month. The latest runoff forecasts from the NRCS for the May through July period are 83% of average for the North Platte River near Northgate, 68% of average for the Yampa River near Maybell, 55% of average for the Little Snake River near Lily, and 62% of average for the White River near Meeker.

All Division 6 stream gages are now open.

Outlook

As of April 30th, Fish Creek Reservoir was storing approximately 1,362 AF, 33% of capacity. Yamcolo Reservoir was storing 5,178 AF, 54% of capacity. Elkhead Creek Reservoir was storing 20,045 AF, 81% of capacity. Stagecoach Reservoir was storing 33,700 AF, 93% of capacity.

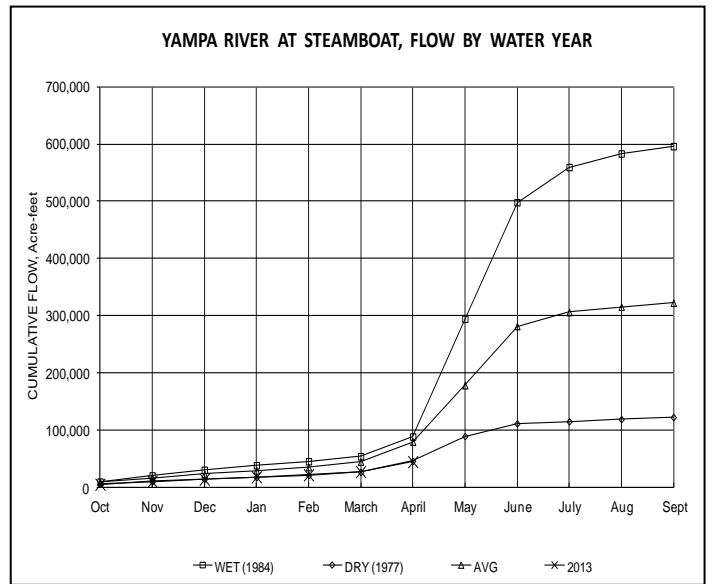
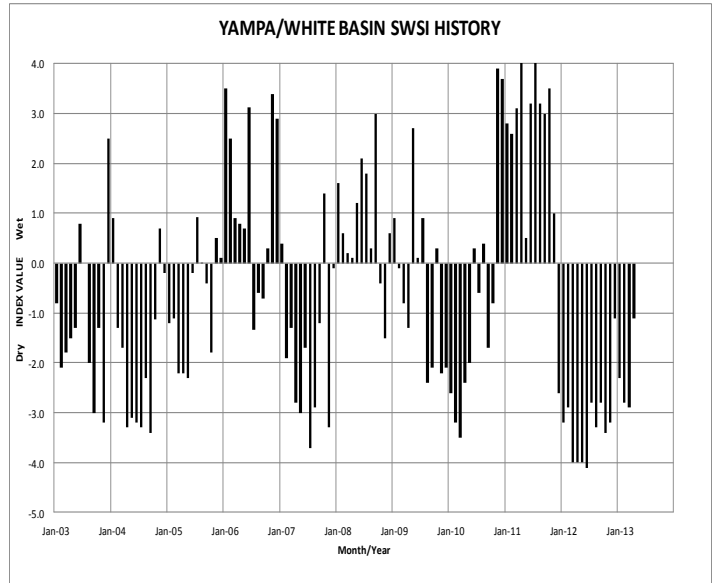
Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount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

Public Use Impacts

Water sports enthusiasts are beginning to enjoy the higher flows on area rivers and streams. Flows are increasing daily and caution should be exercised.

Stagecoach Reservoir opened for boating on May 1. The marina boat ramp is open daily, and the Morrison/South boat ramp is scheduled to open Memorial weekend. Fishing is reported as great in the tailwaters and plenty of good sized trout have been caught from shoreline

Steamboat Lake is still iced over but as soon as ice is clear, the lake will open for boating. Ice fishing is not recommended at this point. Variable spring snow conditions exist in the park and so skiing and snowshoeing are still possible for a short period of time.

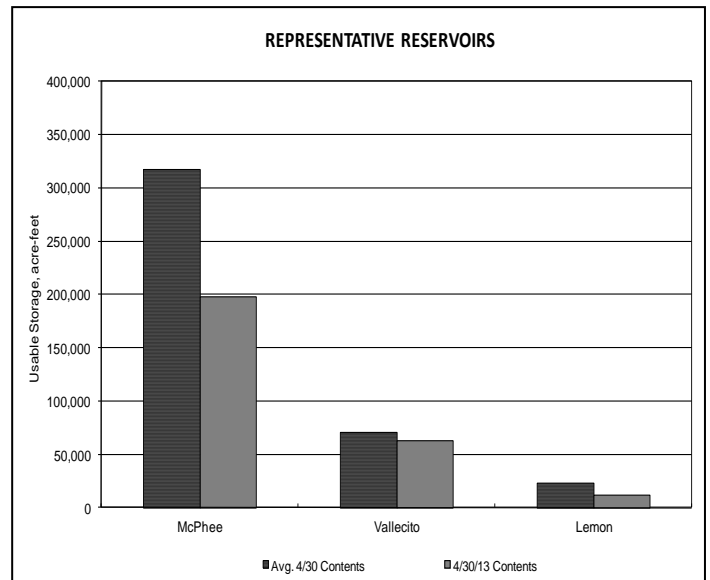
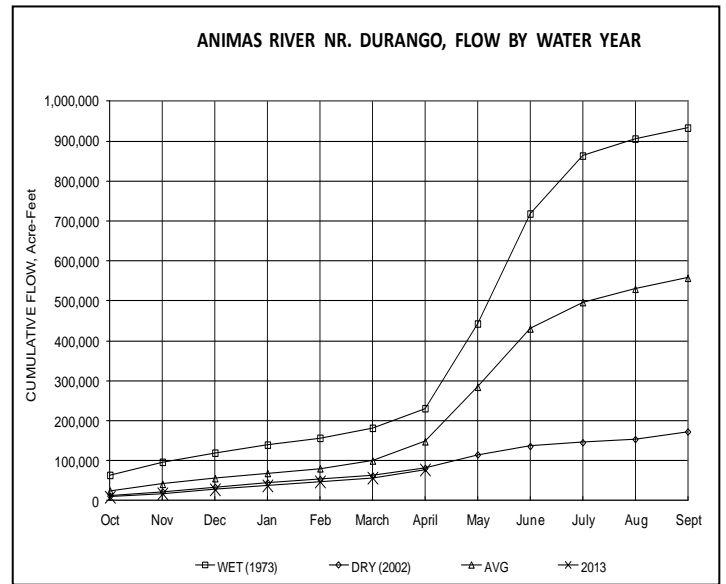
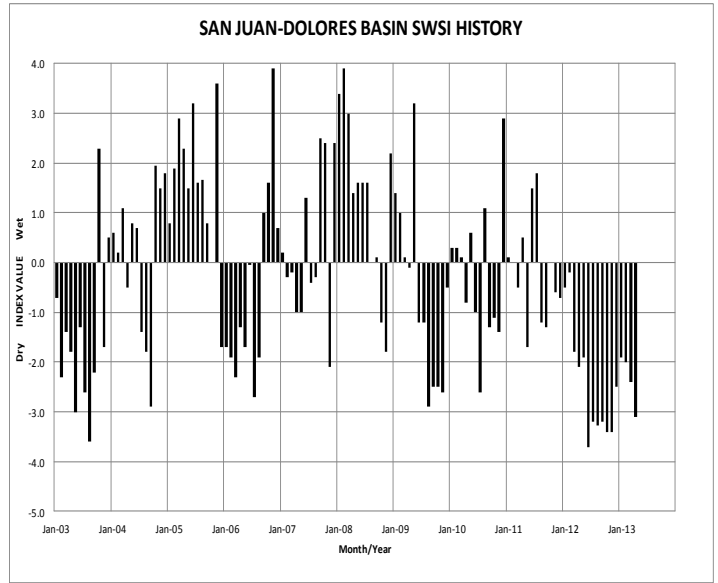


Basinwide Conditions Assessment

The SWSI value for the month was -3.1, a larger decrease in water availability of any basin when compared to last month. Flow at the Animas River at Durango averaged 334 cfs (40% of average). The flow at the Dolores River at Dolores averaged 253 cfs (34% of average). The La Plata River at Hesperus averaged 31.4 cfs (39% of average). Precipitation in Durango was 0.57 inches for the month, 39% of the 30-year average of 1.48 inches. Precipitation to date in Durango, for the water year, is 5.98 inches, 54% of the 30-year average of 11.36 inches.

The average high and low temperatures for the month of April in Durango were 60° and 27°. In comparison, the 30-year average high and low for the month is 63° and 31°. At the end of the month Vallecito Reservoir contained 62,710 acre-feet compared to its average content of 64,434 acre-feet (97% of average). McPhee Reservoir was up to 197,923 acre-feet compared to its average content of 317,148 (62% of average), while Lemon Reservoir was up to 11,480 acre-feet as compared to its average content of 23,034 acre-feet (50% of average).

Precipitation (0.57-inches) was well below average for April in Durango. This April, there was only one day where measurable precipitation was recorded. There are 89 years out of 119 years of record where there was more precipitation than this year. The flows on the Animas River were below average this April. There were 96 out of 102 years of record where the total flow past the Durango stream gauge was more than this year. The other basins within the division did not fare much better. To some extent the low river flows were the result of lower than average temperatures which has not allowed the high elevation snow to melt. The NRCS is reporting snow-water-equivalent of 47% of average at the end of the month which was much lower than the 74% of average reported at the end of March. This compares to the snow-water-equivalent in April 2012, which was 34% of average.



ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - May-13

The SWSI for each basin is based on probability of nonexceedance (PN) curves for each of three components: reservoir storage, snowpack, and water year 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	Water Year Cumulative Precipitation
South Platte	0.55	0.27	0.18
Arkansas	0.15	0.51	0.34
Rio Grande	0.05	0.63	0.32
Gunnison	0.10	0.54	0.36
Colorado	0.15	0.51	0.34
Yampa/White	None	0.60	0.40
San Juan/Dolores/Animas	0.10	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 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.

