COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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March 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 February (March 1) range from a minimum of -0.9 in the Rio Grande basin to a maximum of 2.6 in the South Platte River Basin. The water supply outlook also includes abundant supply in the Colorado River basin. The SWSI values this year are a considerable improvement for each basin in the state compared to last year, with the exception of the Rio Grande basin.

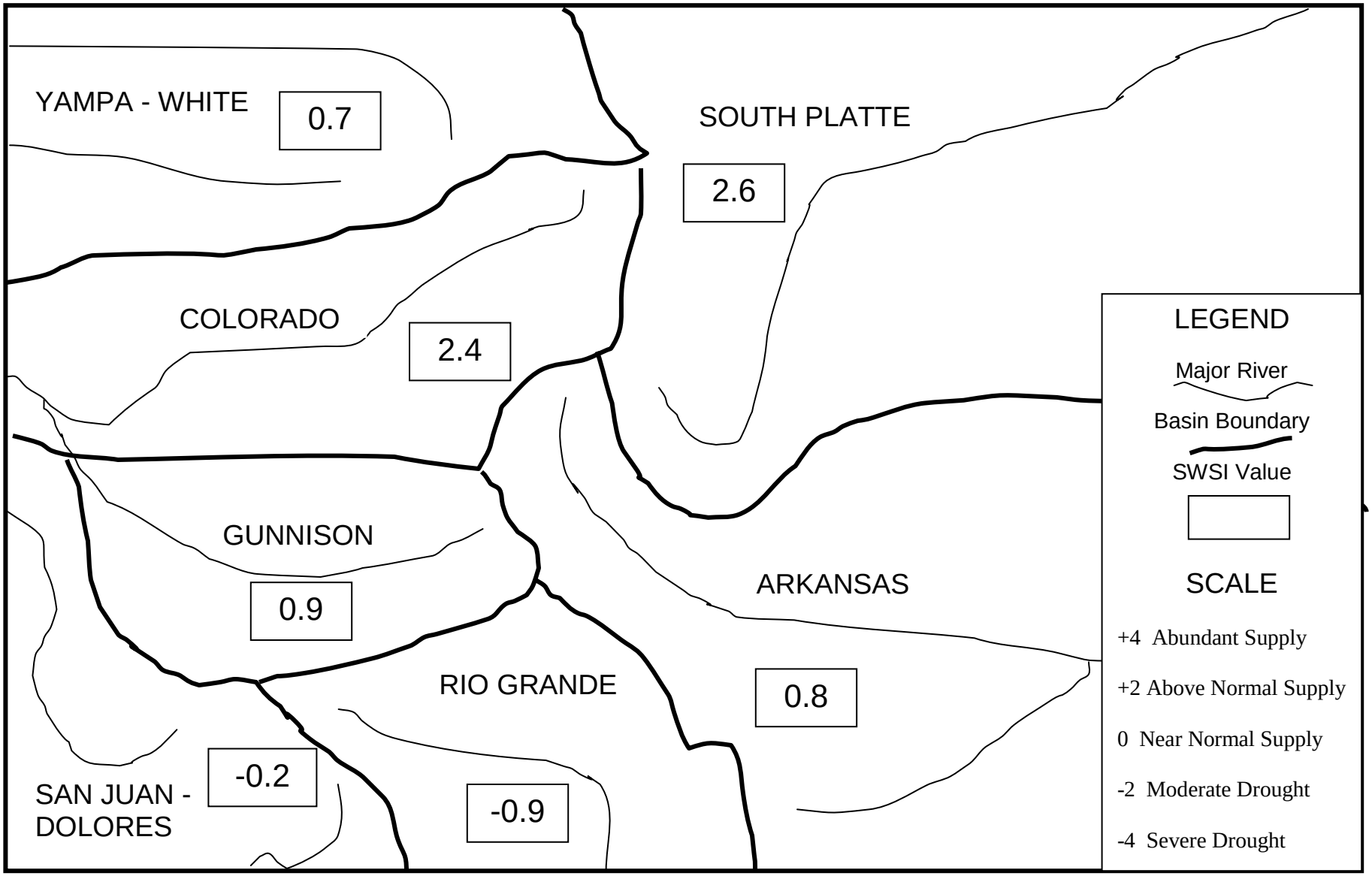
The following SWSI values were computed for each of the seven major basins for March 1, 2014. Additional information about SWSI calculations and the NRCS National Water and Climate Center SWSI by HUC are included on Page 10. The NRCS SWSI indicates that South Platte River and Colorado River basin water supply conditions are not as strong as suggested in the table below.

Basin	March 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	2.6	1.1	4.7
Arkansas	0.8	0.0	4.1
Rio Grande	-0.9	-0.1	0.1
Gunnison	0.9	0.8	1.1
Colorado	2.4	0.9	5.8
Yampa/White	0.7	-0.3	3.5
San Juan/Dolores	-0.2	1.0	1.8

SWSI Scale

-4	-3	-2	-1	0	1	2	3	4
Severe Drought		Moderate Drought		Near Normal Supply		Above Normal Supply		Abundant Supply

SURFACE WATER SUPPLY INDEX FOR COLORADO



March 1, 2014

Basinwide Conditions Assessment

The SWSI value in this basin is 2.6. Overall, February 2014 was a cold month in northeast Colorado. The mountains were only slightly cooler (2 to 4^0 F) than normal, but things grew steadily colder moving lower in elevation and further northeast to the point that the far northeast corner of Colorado was over 10^0 F colder than normal.

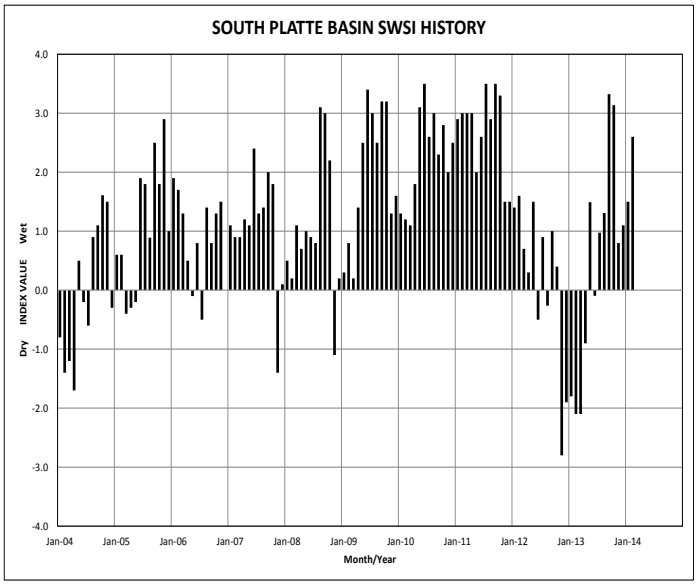
February precipitation was much less uniform than temperature. The higher mountain elevations and far eastern to northeastern parts of Division 1 experienced above to well above average precipitation. The middle and lower elevations out to about Morgan County received, however, below to well below average precipitation.

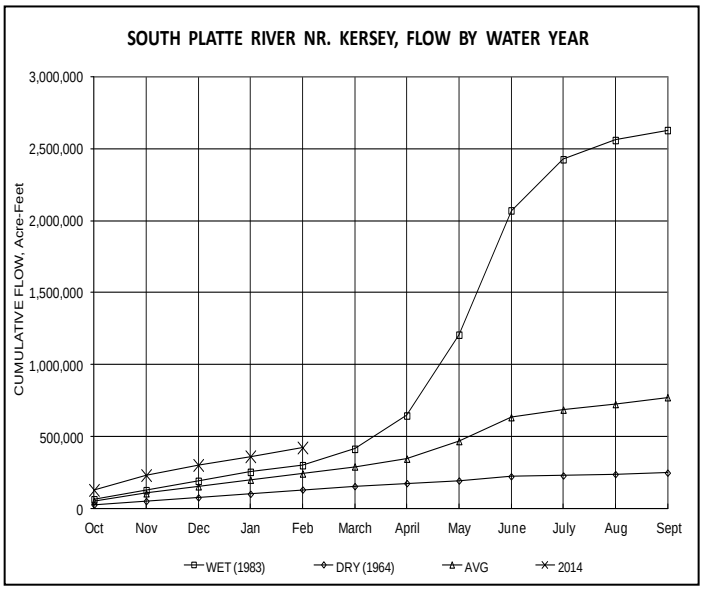
The South Platte basin snow water equivalent was 144% of average on March 3, 2014. This compares with a snow water equivalent was 137% of average on March 3, 2011, the last "big" snow year in Division 1.

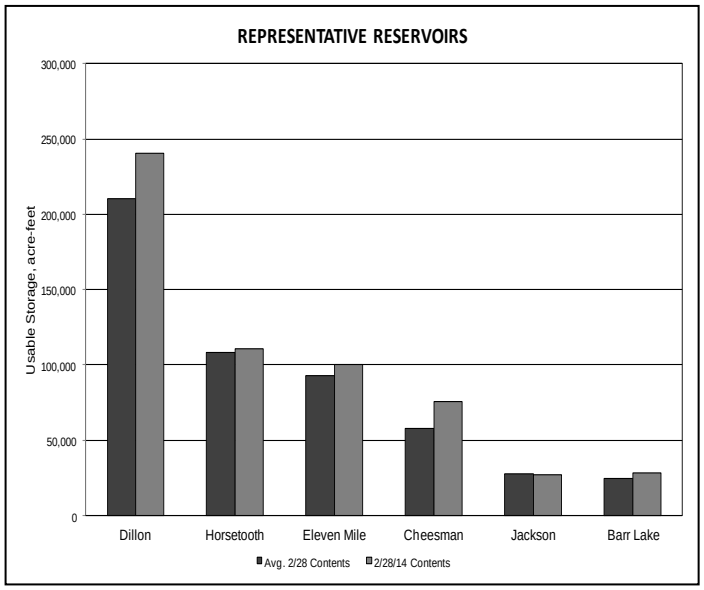
The February stream flows at the Kersey and Julesburg index gages continued to be above the long term averages. The Kersey gage monthly mean stream flow was 994 cfs as compared to the historic January mean flow of 674 cfs. The February monthly mean stream flow at the Julesburg gage was 866 cfs as compared to the historic February mean flow of 582 cfs.

As could be expected with the above average stream flows in February, the calls on the South Platte were minimal. From February 3 through 12 and 17 through 27 there a mainstem call from a 1910 reservoir with a diversion point on the north end of the metro Denver area. There was also a call on Boulder Creek from February 12 through 14 and 21 through 25 from a 1973 minimum stream flow right. The rest of the basin was under free river for the entire month.

Reservoir storage in the basin at the end of February remained good at 105% of average. Though some reservoirs were below (and above) the end of February average, overall storage was at 83% of capacity. The average end of February storage is 79% of capacity. The end of February 2013 storage was 65% of capacity.





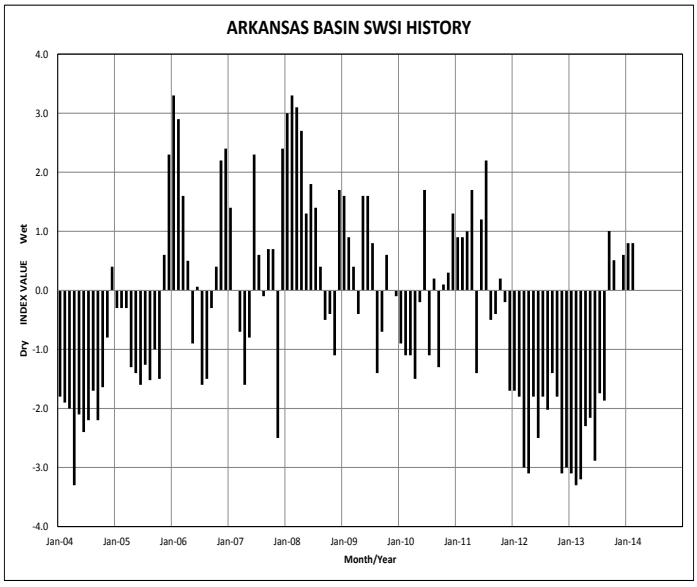


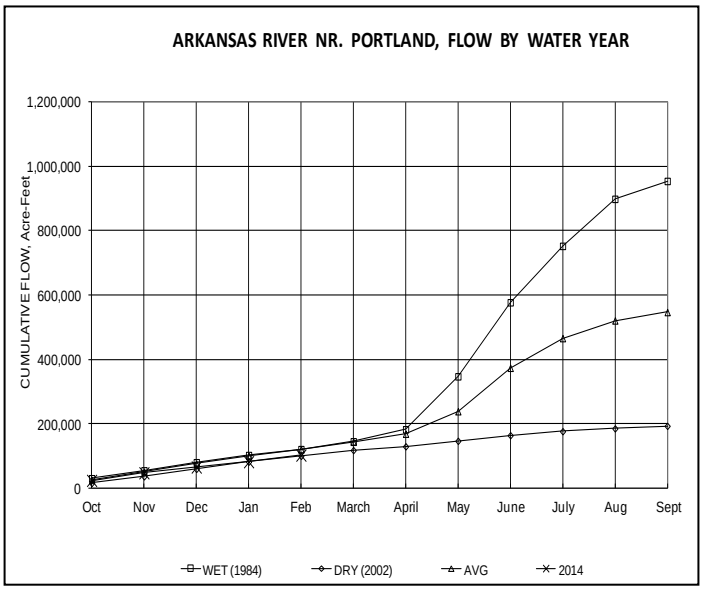
Basinwide Conditions Assessment

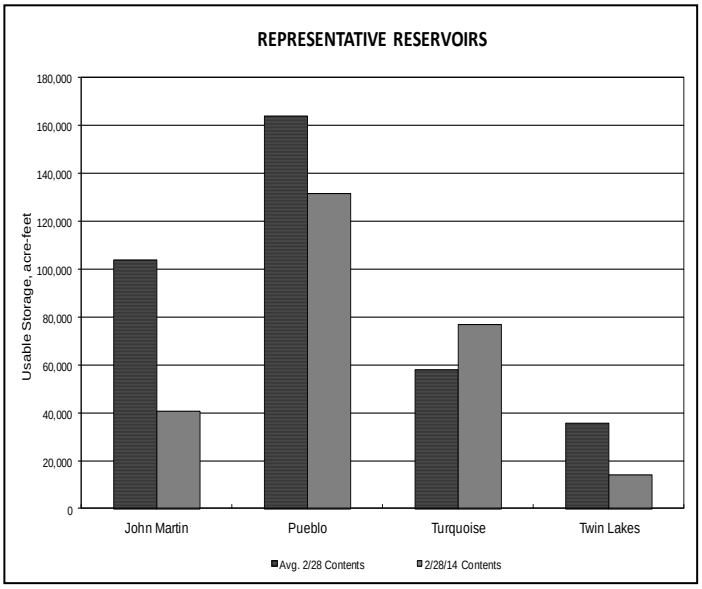
The SWSI value for the month is 0.8. Reservoir storage in the Pueblo Winter Water Program totaled 91,975 acre-feet as of the end of February. This storage amount is higher than last year's storage to date (172% of last year) and represents 95% of the past five-year average. Conservation storage in John Martin Reservoir has accumulated 7,144 acre-feet representing a significant increase from last year.

Administrative / Management Concerns

Cautious optimism exists about the potential for average diversions for 2014, but ditch owners and well owners are hoping for continued improvements on snowpack to instill confidence for farming decisions for this year.







Basinwide Conditions Assessment

The SWSI value for the month is -0.9. Flow at the gaging station Rio Grande near Del Norte averaged 216 cfs (120% of normal). The Conejos River near Mogote had a mean flow of 44 cfs (81% of normal). Flow to the state line was 101% of normal.

Temperatures were five degrees above normal in the San Luis Valley during February. Alamosa received only 0.05 inches of precipitation during the month, 0.21 inches below normal.

Outlook

When compared to long-term averages, snowpack conditions remained below average throughout the upper Rio Grande basin with the exception of the northern and some of the upper Rio Grande snow monitoring stations. The remainder of the basin was below average snowpack levels as February came to a close. A significant snowstorm hit the upper Rio Grande basin March 1 – 3. Some concern remains that the normal amount of mid and low-elevation snowpack does not exist.

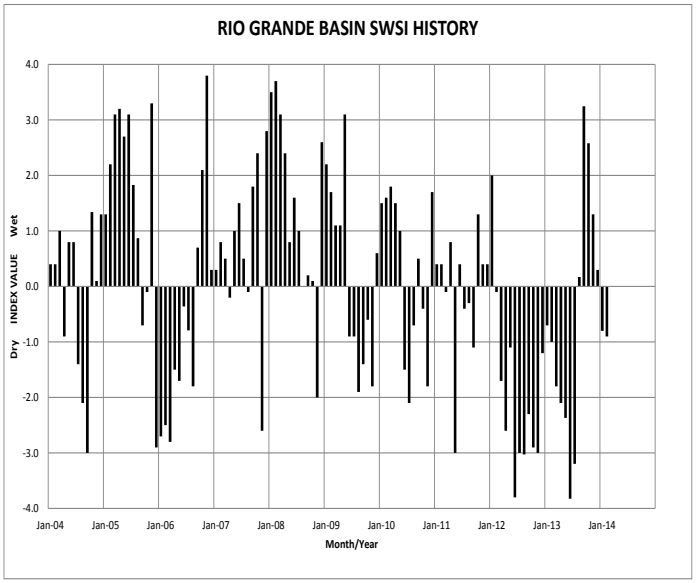
National Weather Service forecasts predict warmer conditions for the basin through May, 2014. However, with the two snowiest months of March and April yet to come, there's still hope the snowpack can approach average levels.

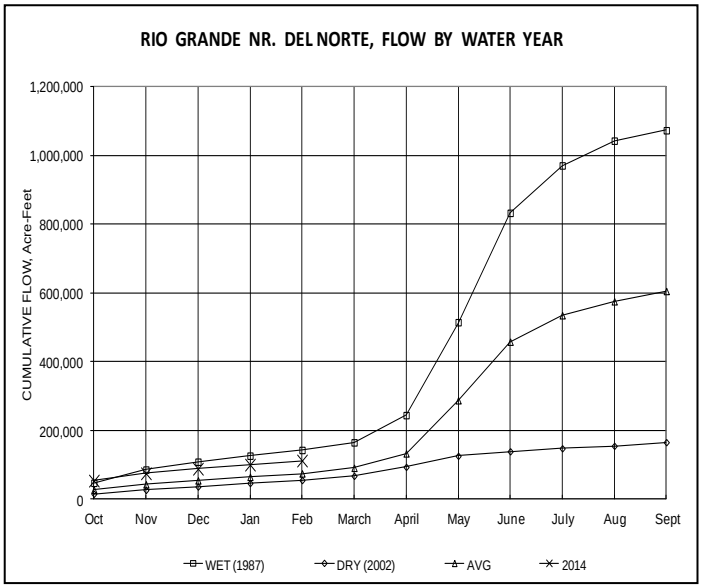
Recent NRCS stream flow forecasts are calling for below average conditions in the entire upper Rio Grande basin this year with the exception of Saguache Creek where the forecast is for 116% of normal runoff. The expected April through September runoff is 84 percent of normal for the Rio Grande near Del Norte and 74% for the Conejos River near Mogote. The very poor snowpack on the southern Sangre de Cristo range where runoff forecasts predict only 40 to 70% of normal runoff is alarming.

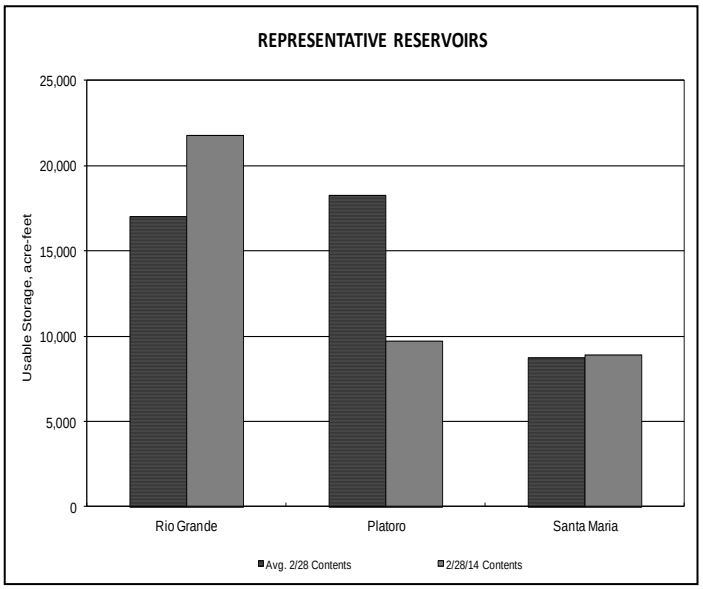
Carryover storage in the basin reservoirs is marginally better than recent years, but cannot counteract the effects of low runoff for most water users and activities dependent on higher flows.

Administrative/Management Concerns

The Division Engineer expects early calls for irrigation water again this year. The presumptive irrigation season with Division 3 is April 1 through November 1, but can be adjusted year to year based on several climatic factors.

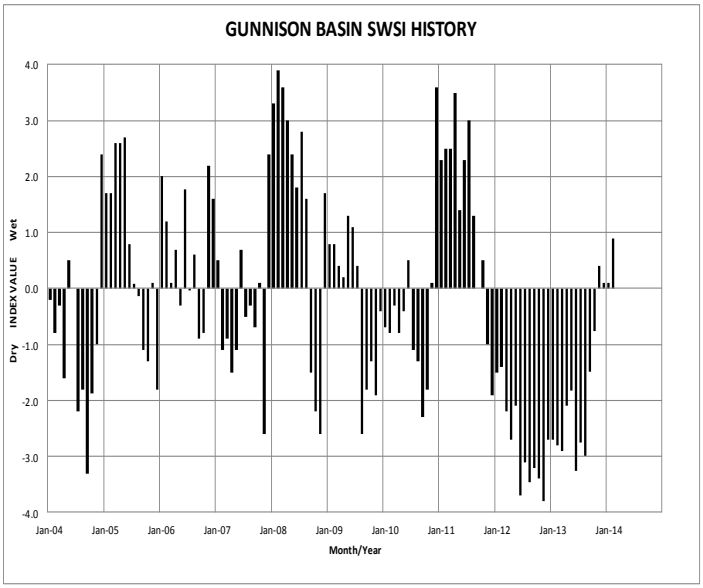






Basinwide Conditions Assessment

The SWSI value for the month is 0.9. Precipitation in the Gunnison basin was significantly above average in the basin during February. In fact, most areas above Blue Mesa Reservoir received more than 150% of average precipitation during the month, with lower and western areas receiving less at 110-130% of average. As a result, the East River and Cochetopa Creek drainages sit at 127% of the median for the date and 109% of the seasonal peak. West areas, such as the Uncompahgre and North Fork Gunnison basins are closer to their medians at 108% and 105% respectively. All Snotel sites contain more snow water equivalent than last year, from 130-143% of 2013 values for the same date.



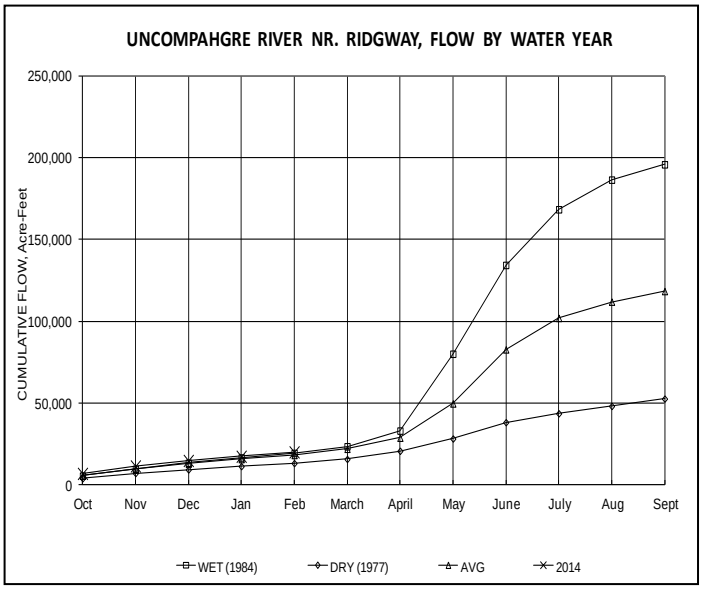
Outlook

The 30-day and 90-day forecasts continue to include equal chances of below or above average precipitation in the Gunnison basin with a slightly higher probability of above average temperatures.

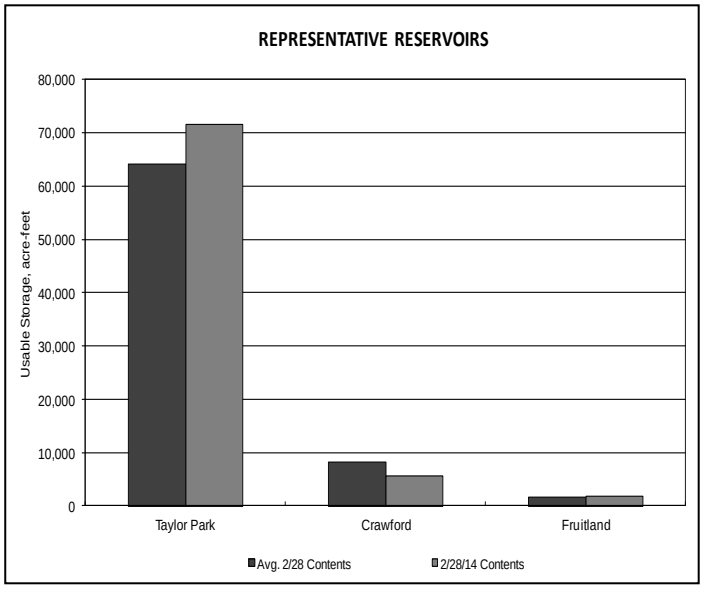
Administrative/Management Concerns

Taylor Park Reservoir continues to fill and contains over 19,000 acre-feet of second fill on March 1st. Last year, Taylor Park had not completed it's 1st fill and the Reservoir inflow was barely enough to keep the Reservoir level steady.

Blue Mesa currently contains 402,000 acre-feet and is 12 feet higher than a year ago. The latest 24 month study from the USBR predicts April to July inflow into Blue Mesa Reservoir at 850,000 acre-feet (126% of average), which would require a Black Canyon one-day peak flow of 6,427 cfs. USBR projections show that Blue Mesa will fill to within 3 feet of its active conservation pool. In addition, the peak runoff at Whitewater due to releases from Crystal dam and North Fork Gunnison flows are forecast to reach 14,350 cfs for 10 days.



The Uncompahgre Valley Water Users Association (UVWUA) currently plans to rely more heavily on Ridgway Reservoir releases during the early season due to the amount of storage in the Reservoir exceeding the average and the need to test the new hydropower turbines at the dam. This will allow the UVWUA to complete some maintenance activities in the Gunnison Tunnel and turn it on after April 1st, which is a week or so later than average.

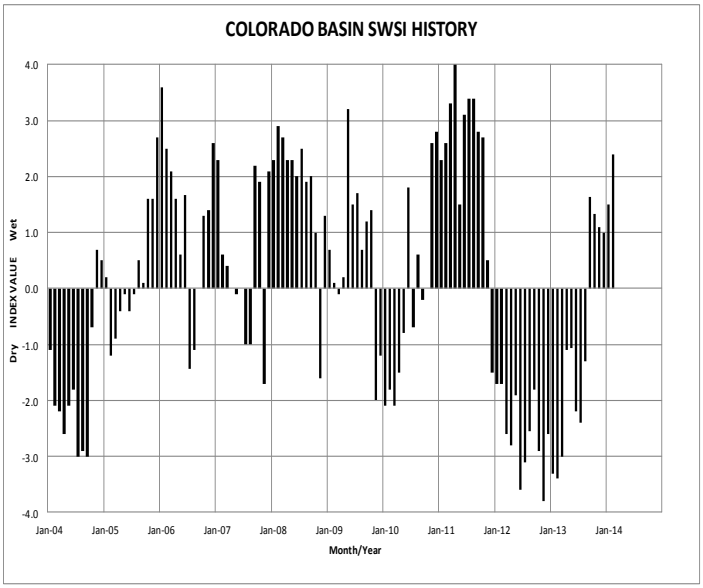


Public Use Impacts

Flows in the Gunnison Gorge and Black Canyon will fluctuate more than usual during March due to maintenance and testing of the power generators at Blue Mesa Dam. The first week of March will bring flows at 800 cfs, which will then be reduced back to 350 cfs on March 17th for an estimated 10 day period.

Basinwide Conditions Assessment

The SWSI value for the month is 2.4.

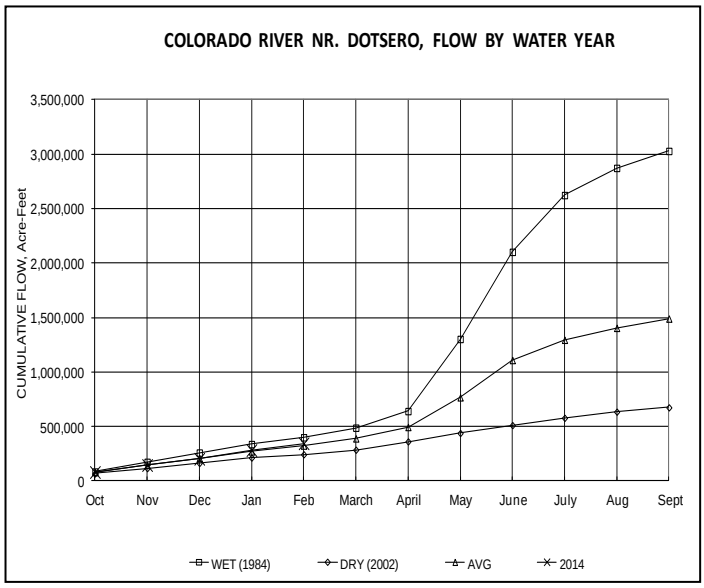


Outlook

The combination of warmer average daily temperatures, intermittent precipitation, and increased reservoir releases will continue to boost Colorado River and Roaring Fork river flows above average through March. Ruedi reservoir releases will increase further to create additional storage, boosting lower Fryingpan River flows to nearly 220 cfs. As of March 1st, Upper Colorado River and Roaring Fork Basin snowpack increased to 138 and122 percent of median snow water equivalent respectively. Average temperature and slightly above average precipitation are forcast for western Colorado through the month of March.

Administrative/Management Concerns

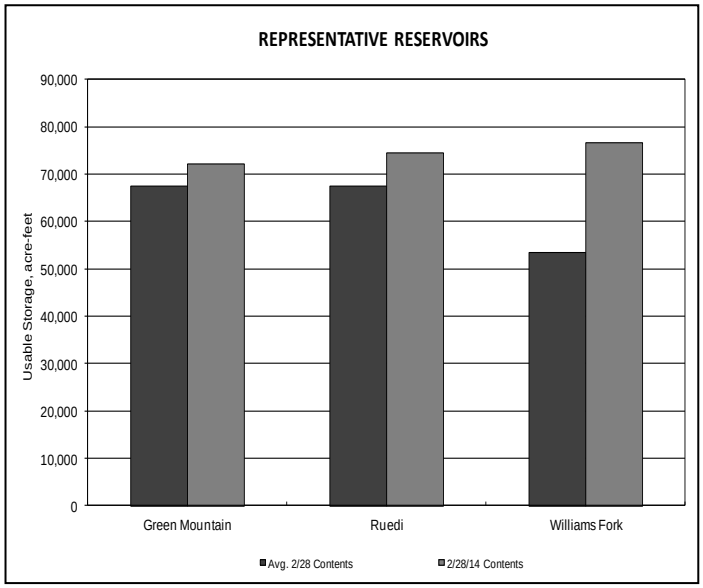
Above-average storage and basin snow pack have prompted two additional Ruedi Reservoir release rate increases boosting outflow to 218 cfs. Green Mountain reservoir releases continue to increase significantly to pass through increased Dillon Reservoir releases from well above average Blue River Basin snowpack. The Government Highline and Orchard Mesa canals will temporarily halt diversion to prepare for irrigation season. Colorado-Big Thompson diversions through Adams Tunnel will continue at nearly 25 percent above-average.



Public Use Impacts

The ski season continues with 22 of 25 ski areas and 96 percent of trails open in Colorado.

Despite considerably above average snow pack and 100 percent reservoir fill predictions, efforts persist to develop a Colorado Water Plan. The Colorado Basin Roundtable is working with western slope consultants to develop a “Basin Implementation Plan”. Many factors are under consideration including lack of reservoir storage in headwater communities, new reservoir regulatory and permitting requirements, population growth, conservation, and forest health.



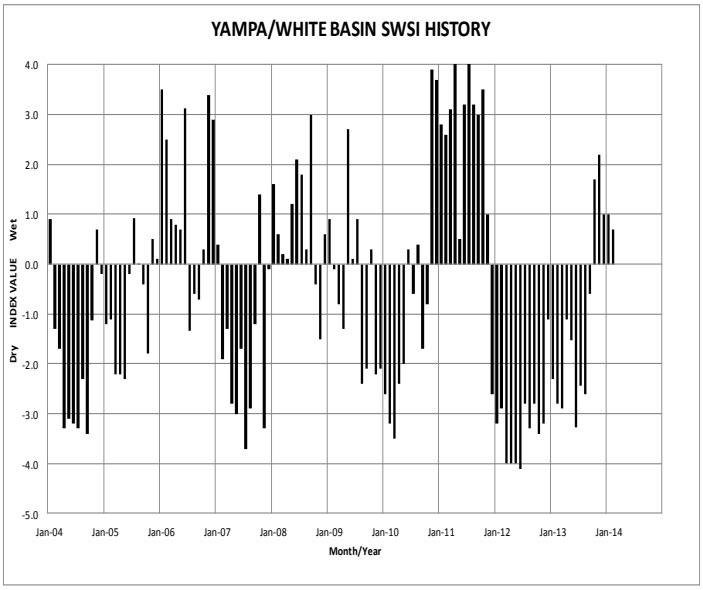
Basinwide Conditions Assessment

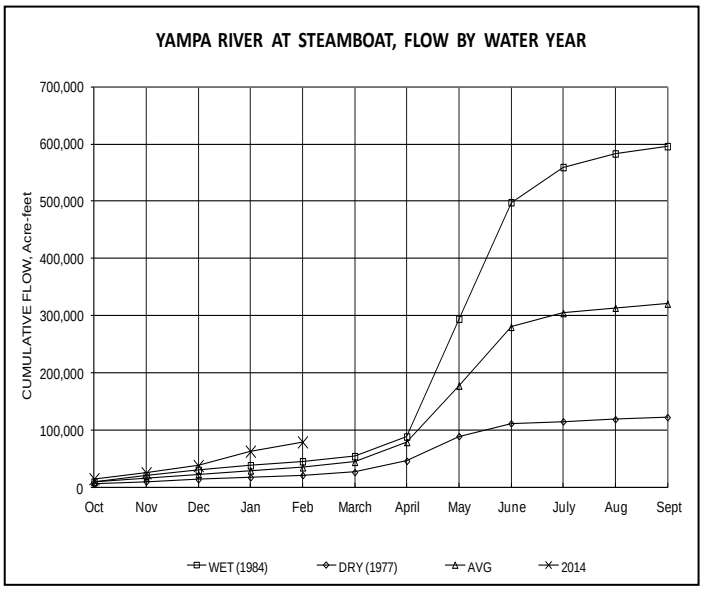
The SWSI value for the month is 0.7. February precipitation was well above average in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at 155% of average for the combined Yampa, White, and North Platte River basins. Total precipitation for the water year as a percent of average to date in the combined basins at the end of February increased to 122%.

Snowpack for the Yampa and White River basins was at 121 % of average and the North Platte and Laramie River basins were at 137% of average as of March 1st, 2014. The snow water equivalent (SWE) as of March 15th was 137% of average for the North Platte and Laramie River basins and 125% of average for the Yampa River basin and White River basin.

NRCS predicts above average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the April through July period are 122% of average for the North Platte River near Northgate, 133% of average for the Yampa River near Maybell, 122% of average for the Little Snake River near Lily, and 89% of average for the White River near Meeker

All Division 6 stream gages except the Yampa River, Williams Fork, and White River gages are either closed for the winter season or currently ice/snow-affected. Seasonal gages will be opened late March to mid-April as conditions permit.





Outlook

As of February 28th Fish Creek Reservoir was storing approximately 3,335 AF, 80% of capacity. The capacity of Fish Creek Reservoir is 4,167 AF. Yamcolo Reservoir was storing 4,900 AF at the end of February 2014. The capacity of Yamcolo Reservoir is 8,700 AF. On February 28th Elkhead Creek Reservoir was storing 18,801 AF. The capacity of Elkhead Creek Reservoir is 24,778 AF. On February 28th, 2014, Stagecoach Reservoir was storing 31,600 AF which is 96% 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

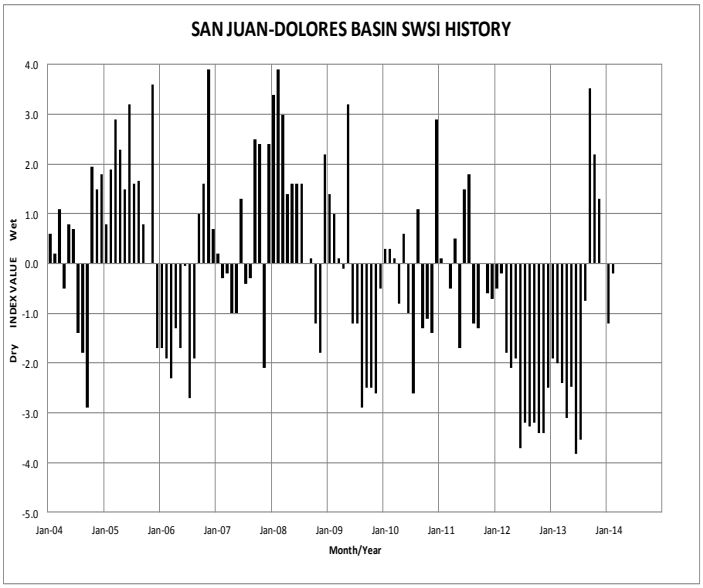
As of March 17, 2014 Steamboat Ski Resort had received 308 inches of snow and had a 72 inch base. With recent warmer temperatures at the lower elevations, conditions improve as the day progresses.

All local Nordic centers continue to have good snow coverage and are maintaining cross country trails.

Snow and ice on the Yampa River has mostly cleared including the stream banks beginning below Stagecoach reservoir.

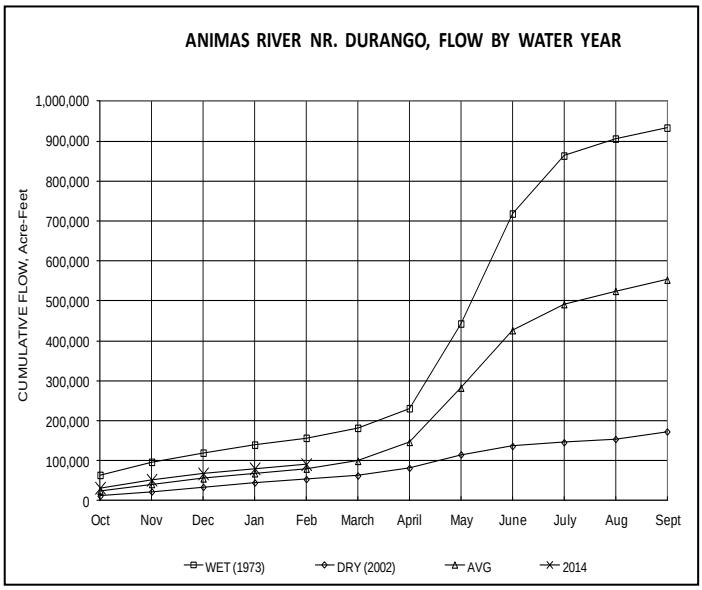
Basinwide Conditions Assessment

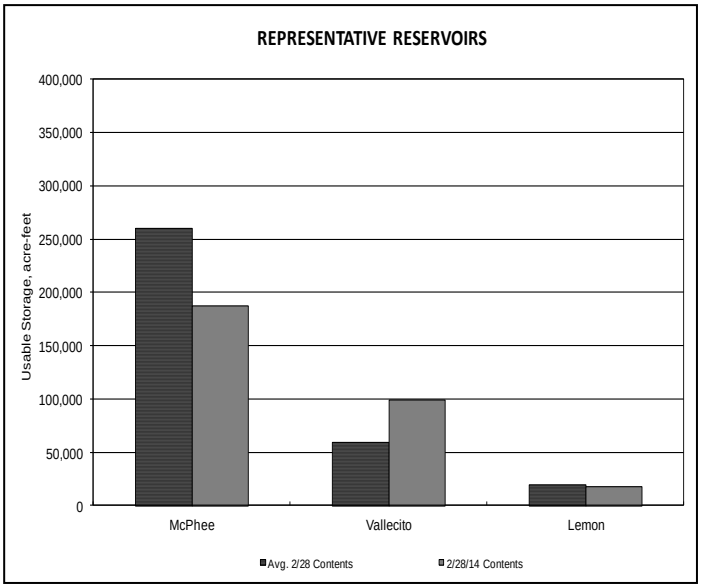
The SWSI value for the month is -0.2. Flow at the Animas River at Durango averaged 169 cfs (82% of average). The flow at the Dolores River at Dolores averaged 45 cfs (81% of average). The La Plata River at Hesperus averaged 7.1 cfs (97% of average). Precipitation in Durango was 0.73 inches for the month, 46% of the 30-year average of 1.60 inches. Precipitation to date in Durango, for the water year, is 5.61 inches, 67% of the 30-year average of 8.32 inches. The average high and low temperatures for the month of February in Durango were 51o and 23o. In comparison, the 30-year average high and low for the month is 45o and 18o. At the end of the month Vallecito Reservoir contained 98,791 acre-feet compared to its average content of 55,131 acre-feet (179% of average). McPhee Reservoir was up to 187,641 acre-feet compared to its average content of 265,969 (71% of average), while Lemon Reservoir was up to 17,530 acre-feet as compared to its average content of 19,871 acre-feet (88% of average).



Outlook

Precipitation (0.73 inches) was well below average for February 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 fell below average this month. There were 63 out of 104 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 54 out of 103 years of record where the total flow past the Dolores stream gauge was more than this year and 34 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 is the highest ever when compared to the same period. On February 28, the NRCS SNOTEL sites reported an average snow-water equivalent within the basin at 88%. Last month the snow-water-equivalent was 76%.





ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - Mar-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 March 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.