
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

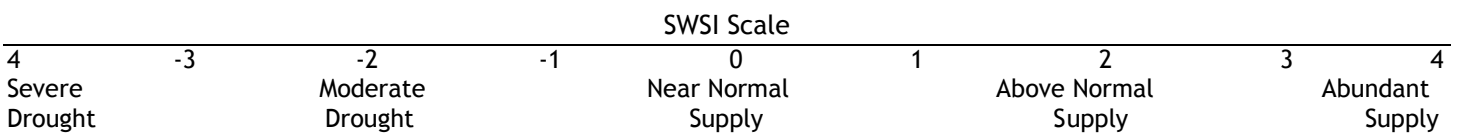
December 2014

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 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 of Water Resources Office in each stream basin.

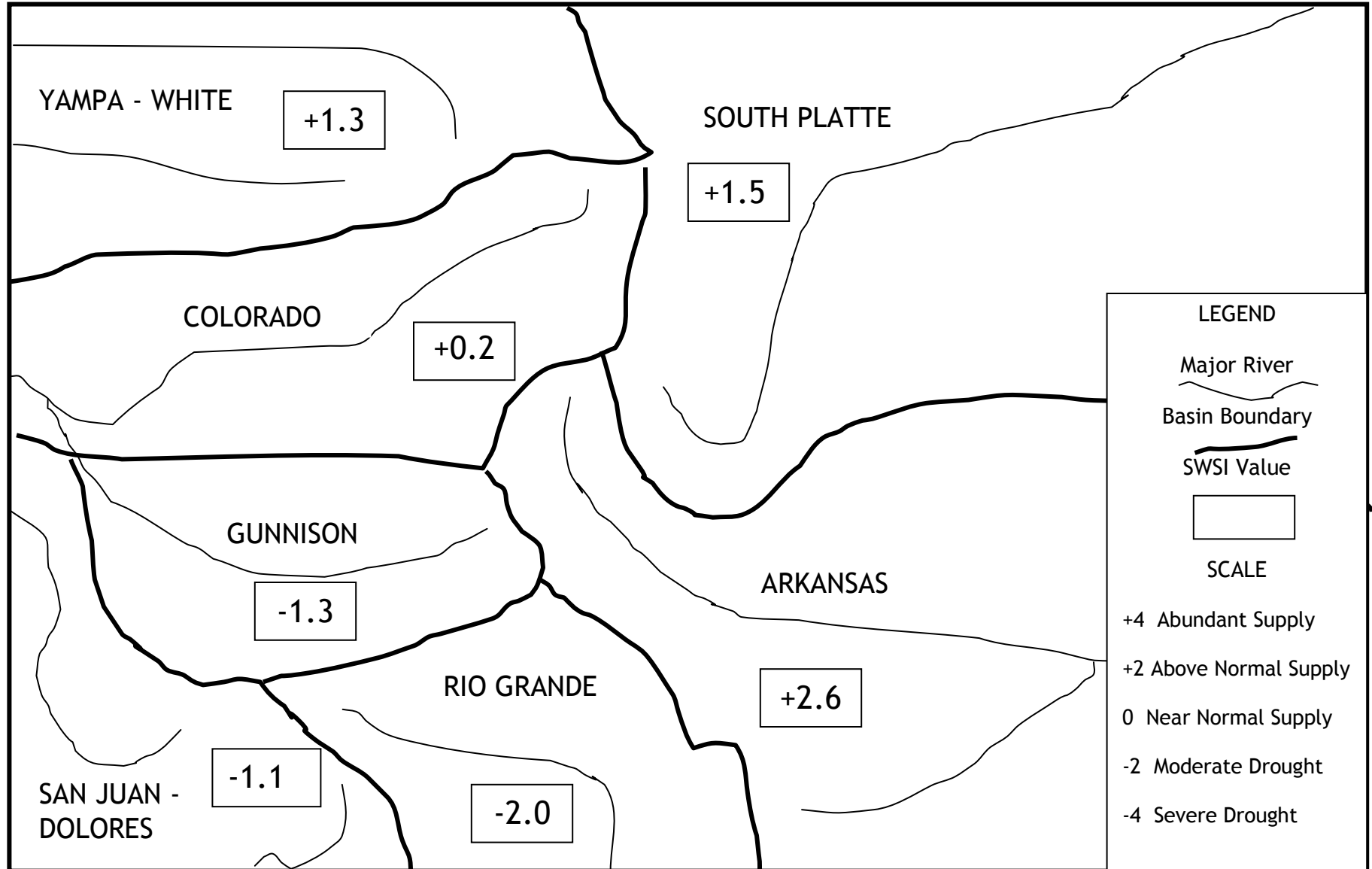
The statewide SWSI values for November (December 1) range from a high value of +2.6 in the Arkansas River Basin to a low of -2.0 in the Rio Grande Basin.

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

Basin	December 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	1.5	-2.2	0.7
Arkansas	2.6	1.5	2.6
Rio Grande	-2.0	-3.5	-3.3
Gunnison	-1.3	-2.1	-1.7
Colorado	0.2	-2.6	-0.9
Yampa/White	1.3	-2.4	-0.9
San Juan/Dolores	-1.1	-3.9	-2.4



SURFACE WATER SUPPLY INDEX FOR COLORADO



December 1, 2014

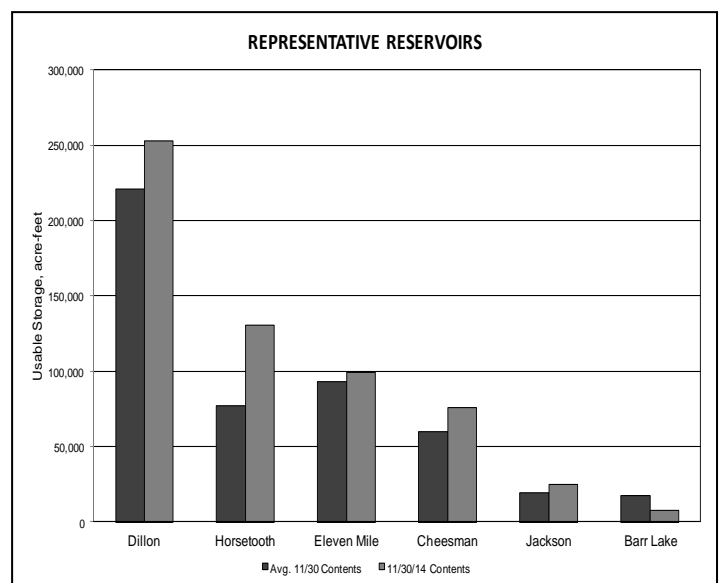
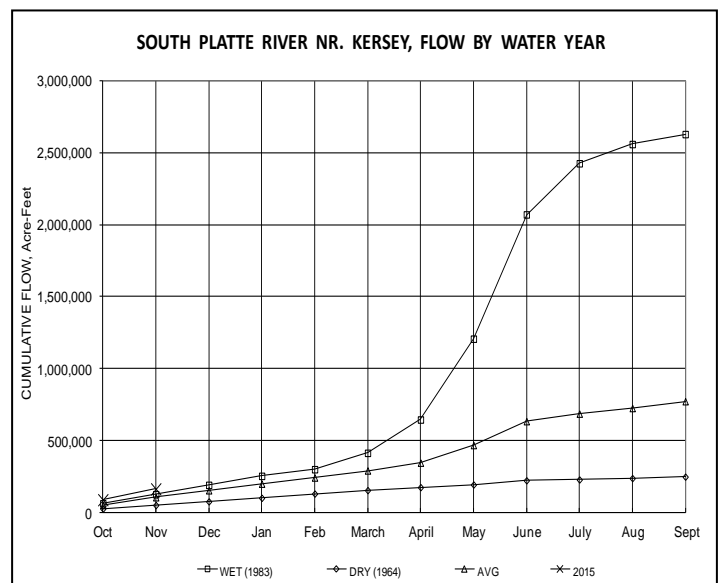
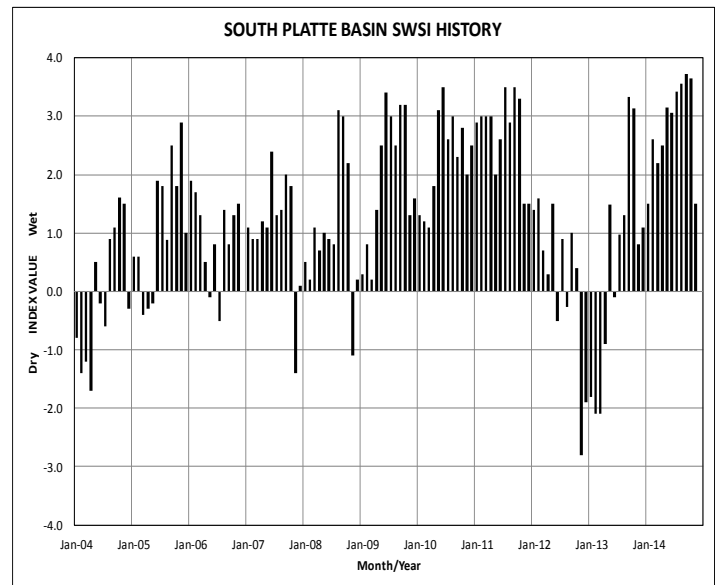
Basinwide Conditions Assessment

The SWSI value for the month was 1.5. November 2014 turned out to be a month of temperature and precipitation contrasts in northeast Colorado. The overall average temperature for the month was below normal, but that was heavily influenced by very cold temperatures (more like January than November) the second week of the month. Temperatures the other three weeks of the month were average to above average. Precipitation was also quite variable over the area. Generally, precipitation was significantly below normal over the extreme eastern and southern portions of northeast Colorado. However, precipitation was generally close to normal over the more western and northern areas.

November started out the 2015 Irrigation Year the same way October ended the 2014 Irrigation Year, with flows at the Kersey and Julesburg gages above the historic mean. November marks the 14th month out of the last 15 months that flow at the Kersey gage has been above average. (April 2014 was the lone exception when the flow was “only” at the historic mean instead of above it.) The Kersey monthly mean stream flow was 1270 cfs or 172% of the 740 cfs historic mean flow. The Julesburg gage flows have not been as consistently above the historic mean as Kersey. Nevertheless, the November flow at Julesburg was above the historic mean for the 6th month in a row. The monthly mean stream flow at Julesburg was 1440 cfs or 430% of the 335 cfs historic mean flow. The flow at Julesburg is noteworthy because it represents the very unusual situation of the mean monthly flow at Julesburg exceeding the mean monthly flow at Kersey.

The excellent flow conditions in the South Platte basin in November again resulted in free river conditions over virtually the entire basin for almost all of the month. The South Platte mainstem below Strontia Springs Reservoir continued with the free river that began on August 26 while the mainstem above Strontia Springs did experience a call from November 25 to December 1. There were calls for the entire month of November only on Ralston and South Boulder Creeks. These were the only calls within the basin for the month of November.

The excellent flow conditions and lack of calls just discussed did, as could be expected, translate into very good reservoir storage levels in the South Platte basin. A significant number of reservoirs started the 2015 Irrigation Year already at “winter fill”. This, coupled with the generally mild weather, made physical operation of many reservoirs much easier than usual for November and point to an excellent supply of reservoir water for the 2015 irrigation season. Overall storage at the end of November was at about 83% of capacity. This compares to an average storage of about 60% of capacity at the end of November.

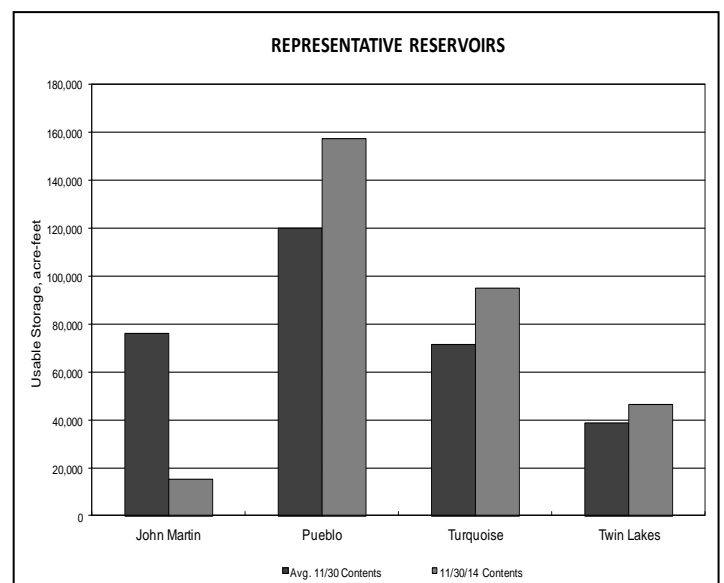
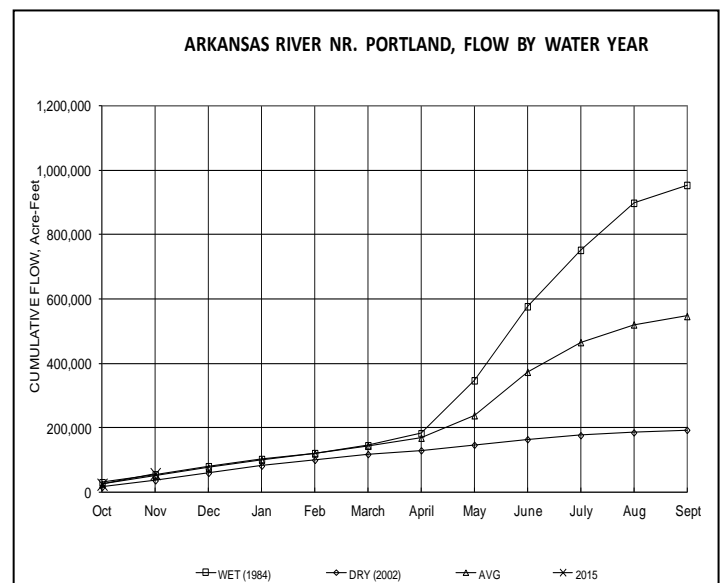
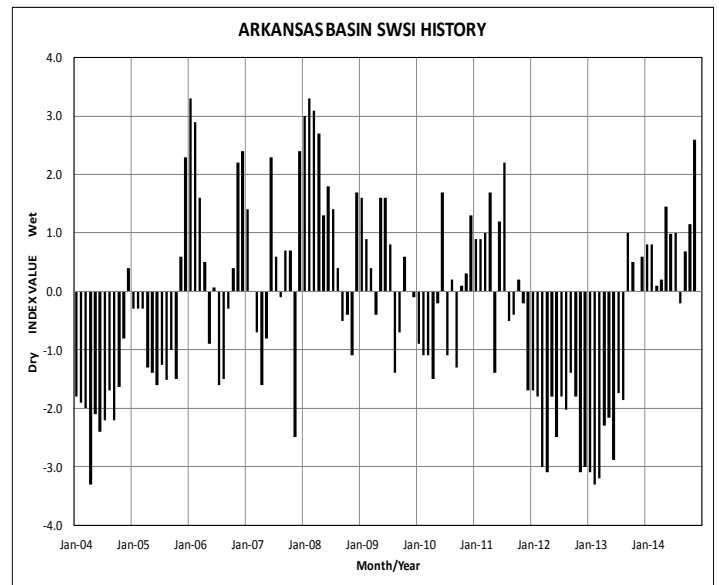


Basinwide Conditions Assessment

The SWSI value for the month was +2.6. Winter Compact storage began in John Martin Reservoir on November 1, 2014. The Pueblo Winter Water Program began operation on November 15, 2014 with storage taking place initially in Pueblo and John Martin Reservoirs and under the Colorado Canal system in Lake Meredith. Storage in John Martin Reservoir during November totaled approximately 3,706 acre-feet for Conservation Storage and 2,376 acre-feet for Winter Water participants. Storage overall under the Pueblo Winter Water Program in November totaled approximately 22,974 acre-feet in all storage locations. These storage levels are improvements from last year.

Administrative / Management Concerns

The State and Division Engineer held a public meeting on November 13, 2014 to discuss possible new rules in Division 2 for wells with new or expanded uses after 1985, the year Kansas brought a lawsuit against Kansas for post-Compact well development. The only option for new non-exempt well uses not temporary in nature has been via a plan for augmentation in Water Court. The new rules being contemplated would allow another option similar to the Rule 14 type plans done in the Arkansas River Basin that are annually approved by the State Engineer. A second public meeting will be held on January 22, 2015 in La Junta to determine whether to move forward with rule-making or not.



Basinwide Conditions Assessment

The SWSI value for the month was -2.0. The melting of the early snowfall has generally increased streamflow levels in the upper Rio Grande basin. Flow at the gaging station Rio Grande near Del Norte averaged 342 cfs (126% of normal). The Conejos River near Mogote had a mean flow of 79 cfs (88% of normal).

Precipitation during November in Alamosa was 0.34 inches, 0.08 inches below normal. A spotty snowstorm during mid-November blanketed most of the valley floor for a brief period. So far, snowpack accumulation in the higher elevations of the basin are well below normal and the poorest in the state.

Outlook

Weather conditions have been very pleasant with sunny days and mild temperatures this autumn. These conditions may persist for awhile, but National Weather Service forecasts are now suggesting above normal precipitation for Southern Colorado this winter due to a flow of moisture from the Baja. This weather pattern produces more snow for the San Luis Valley than the snowstorms coming in from the Pacific Northwest. There is much optimism that this pattern will result in the first heavy runoff in the upper Rio Grande basin since 2008.

Administrative/Management Concerns

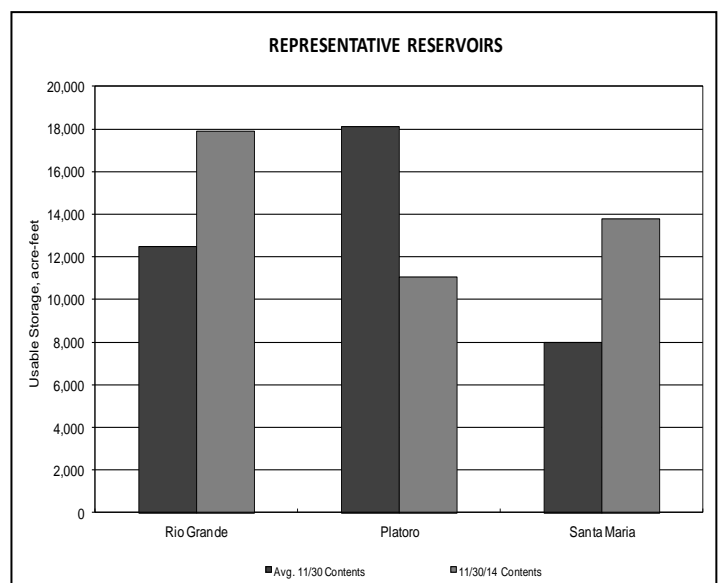
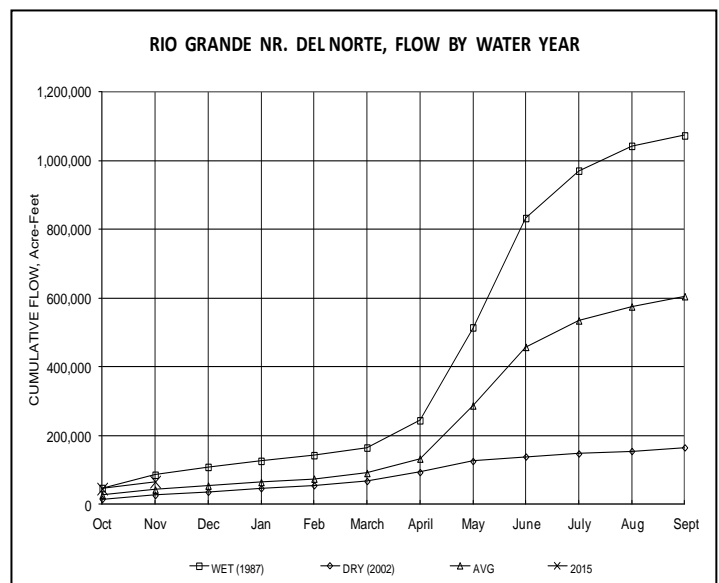
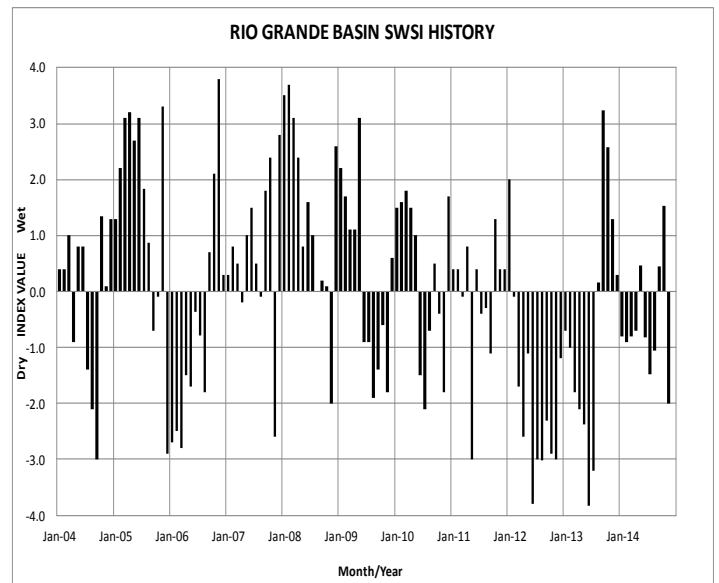
Colorado will slightly over-deliver on the amount required to meet the Rio Grande Compact delivery requirement to New Mexico and Texas during 2014. Individually, the Conejos basin is just about dead-on with their delivery requirement, while the Rio Grande is expected to over-deliver slightly more than 5000 acre-feet.

December 1st was the deadline for annual submittal of meter readings on irrigation wells in Water Division 3. Compliance has been generally good, with a few stragglers still working out data submittal issues with the staff.

The reservoir storage season typically begins November 1st each year. Current reservoir storage in the basin is in poor condition. Heavy demand during the previous irrigation season drew down most reservoirs to drought levels. These reservoirs must rely on capturing winter inflows as their junior rights are normally called-out during the irrigation season. With the exception of last year, winter inflows in recent years have been disappointing. Two reservoirs are currently undergoing significant dam modifications: Sanchez and Beaver. The dams at Rio Grande and Continental Reservoirs are slated for repair work in 2015.

Public Use Impacts

Mild weather conditions continued throughout November and well into December. The snowpack may be off to a slow start, but local residents don't miss the bitter cold associated with a snow-covered Valley floor.



Basinwide Conditions Assessment

The SWSI value for the month was -1.3. Precipitation in the Gunnison basin varied greatly during November with around 50% of average in lower areas, including the Uncompahgre and North Fork Gunnison River basins, but up to 150% in upper areas such as the Cochetopa Creek basin. As a result, snow water equivalent (SWE) values on December 1st varied greatly as well. Areas above Paonia Reservoir sit at 63% of the median while others, such as the basin above Taylor Park Reservoir, sit at 108% of the median for the date. The west end of the Grand Mesa and the Uncompahgre Plateau have fared the worst so far with only 37% of the median at Park Reservoir and 48% at Columbine Pass on the Plateau. These sites contain much less snow than the same time in 2014 when those sites contained 273% and 209% more SWE than this season. Thankfully for those areas, we still have the best accumulation months ahead of us.

Outlook

The National Weather Service outlook for December, January, and February puts the Gunnison basin in an area of equal chances for above or below average precipitation, but just north of areas expected to receive greater than average precipitation in New Mexico and Arizona.

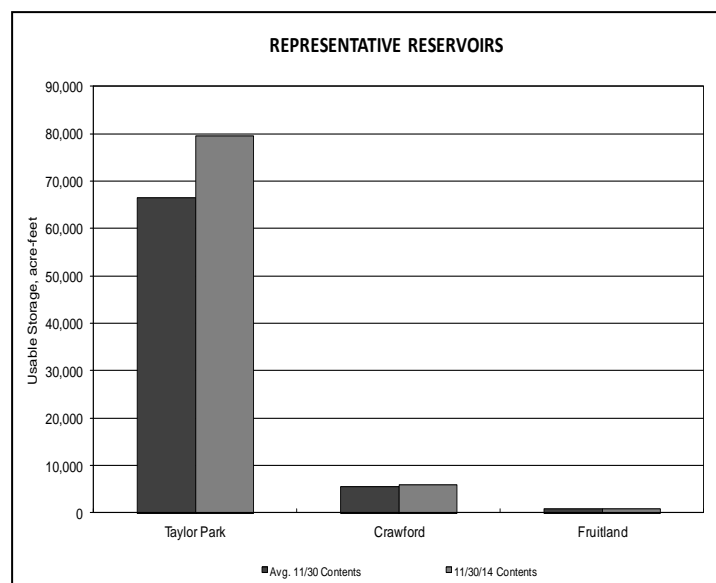
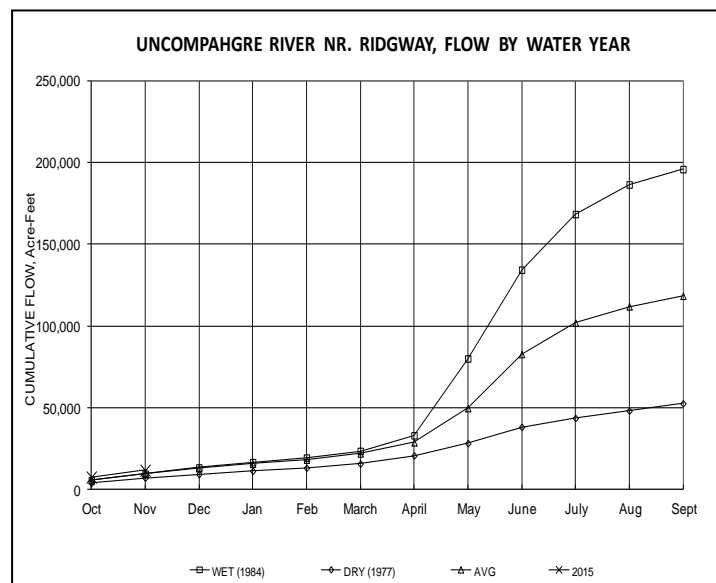
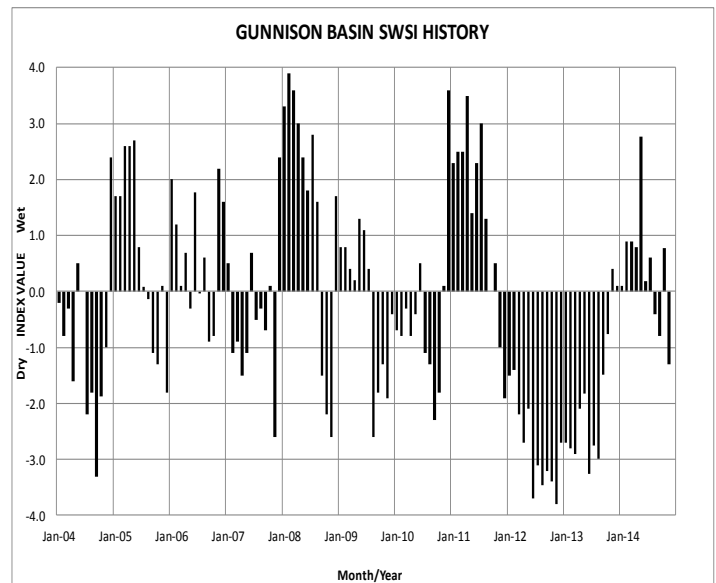
Administrative/Management Concerns

Regular Gunnison Tunnel diversions ended on October 31st and through the spring will only divert water one-day every few weeks to provide water to Project 7 for municipal needs in the Uncompahgre Valley. Taylor Park's second fill account already contains 7,177 acre-feet, which is 2,000 acre-feet more than at the same date last year. Blue Mesa Reservoir still remains above the December 31st icing target elevation of 7490 ft at 7491.89 ft. Consequently, releases from Crystal have been increased from 350 cfs on November 16th to 650 cfs on December 1st, in an attempt to reduce the water level by 2 feet. It appears, however, that the Bureau of Reclamation may increase releases further because the water level at Blue Mesa hasn't dropped as expected.

Thanks to late summer and fall rains, reservoir carryover in most areas is greater than we have seen since 2010. For instance, the over 90 reservoirs on the Grand Mesa in the Gunnison basin carried over 39% of their capacity into the 2015 water year. This is good news considering that currently the snowpack on the Grand Mesa is well below 50% of the 30-year average.

Public Use Impacts

Flows through Black Canyon National Park and the Gunnison Gorge are much greater than average due to the additional releases at Crystal Dam.



Basinwide Conditions Assessment

The SWSI value for the month was +0.2.

Outlook

Colorado, Roaring Fork and Eagle River flows should continue near of slightly above average throughout December with slightly above-average temperatures. As of December 1st, Upper Colorado River and Roaring Fork Basin snowpack was 107 and 95 percent of median snow water equivalent respectively. However, lack of precipitation in the first half of December, will likely decrease snowpack percentages by Jan 1st. Forecasts call for above average temperatures and average precipitation for western Colorado December 15-31.

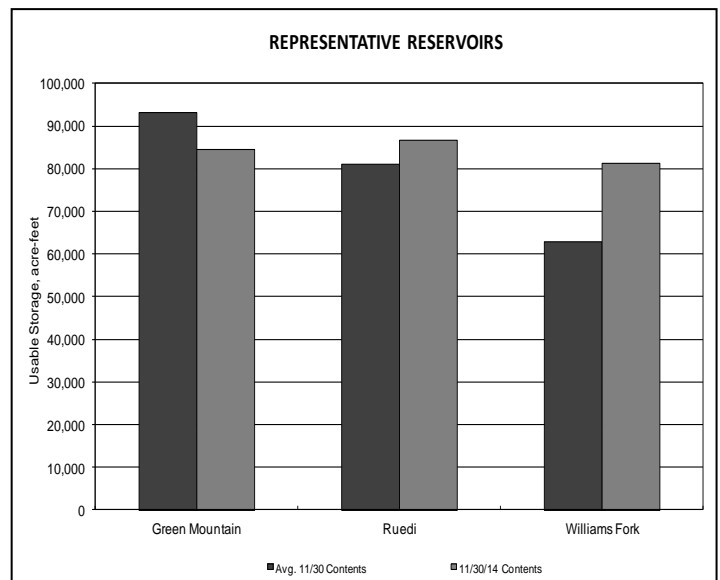
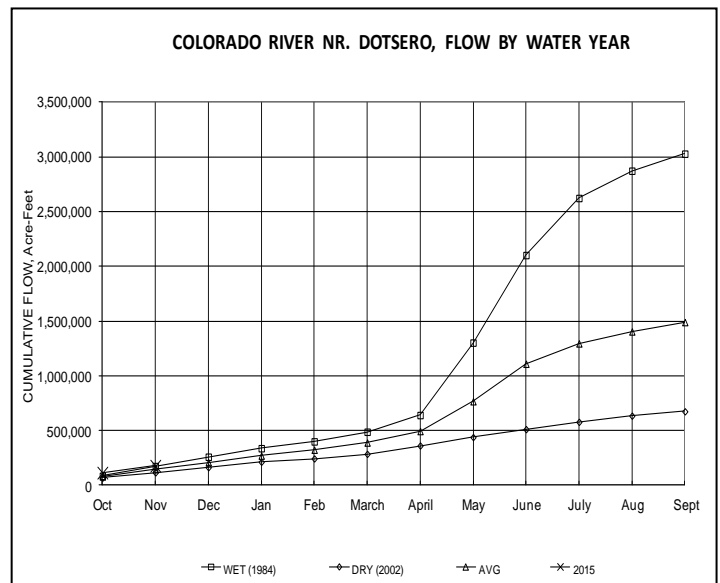
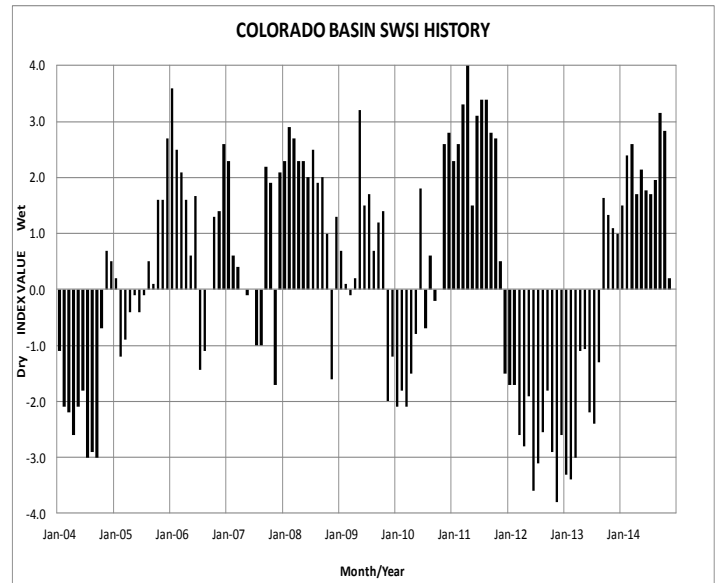
Administrative/Management Concerns

The 900 cfs Shoshone Outage Protocol requirement was again triggered in late November prompting a Green Mountain Reservoir release increase. The Shoshone Hydro Plant re-established operations in late November. Accordingly, the senior Shoshone power right call on the Colorado mainstem at Dotsero was placed on Dec. 1st; and will likely continue through December. Willow Creek Reservoir release, reduced in early December will likely remain unchanged throughout December. Ruedi Reservoir releases likewise will remain unchanged.

Public Use Impacts

The Ski industry is somewhat concerned regarding lack of snow in December. Warmer eastern Pacific sea temperatures (El Nino) may be influencing weather patterns causing reduced precipitation in northwest Colorado and the central mountains.

The City of Glenwood Springs is seeking water rights for three whitewater parks on the Colorado River along a 3.5 mile reach just east of Glenwood Springs. This section is rated a Class III during higher flows, but Class II during most of the summer. Engineering hired by Glenwood Springs Hot Springs Lodge & Pool is analyzing the potential for damage/injury to hot water sources by control structures associated with the proposed whitewater parks.



Basinwide Conditions Assessment

The SWSI value for the month was +1.3. November precipitation was 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 120% of average for the Yampa and White River Basins (98% of average for the water year to date) and 120% of average for the North Platte and Laramie River basins (105% of average for water year to date). The snow water equivalent for the Yampa and White River basins is at 105% of average and 95% of average for the North Platte and Laramie River basins.

Outlook

As of November 30th, Fish Creek Reservoir was storing 3,958 AF which is 95% of capacity. Yamcolo Reservoir was storing 5,800 AF at the end of November 2014. The capacity of Yamcolo Reservoir is 8,700 AF. On November 30th, Elkhead Creek Reservoir was 92% full and storing 22,665 AF. Stagecoach Reservoir was storing 34,100 AF at the end of November which is 102% full.

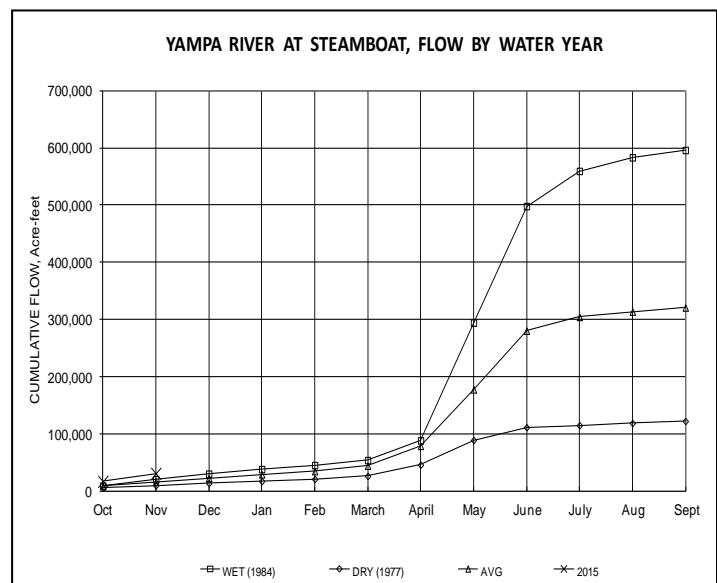
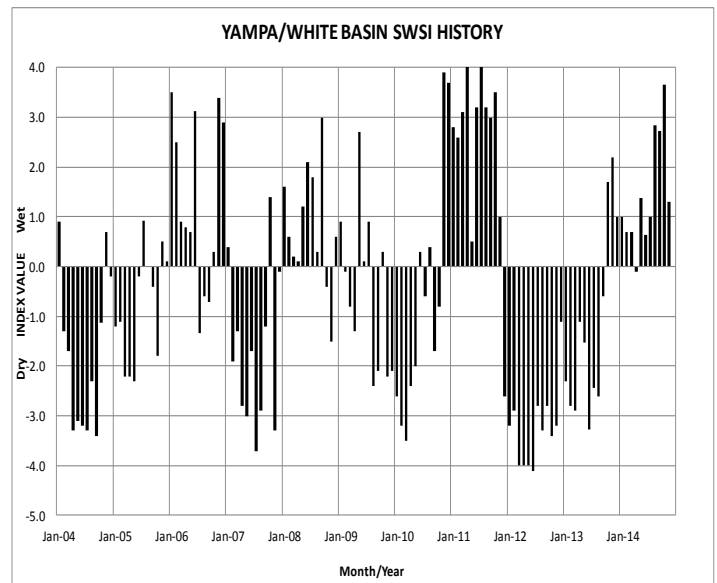
Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir is used for irrigation purposes, and Elkhead Creek Reservoir is used for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant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

Public Use Impacts

Steamboat Ski Resort opened on November 26th with good snow coverage due to 90 inches of snowfall since October 1st.

As of December 10th Steamboat Lake was not iced over yet and conditions were deemed unsafe at that time. Call ahead for updated conditions.

At Stagecoach State Park there is still plenty of open water and shore fishing has been good. Grooming of trails for skiing will occur once there is 18 inches of snow depth.

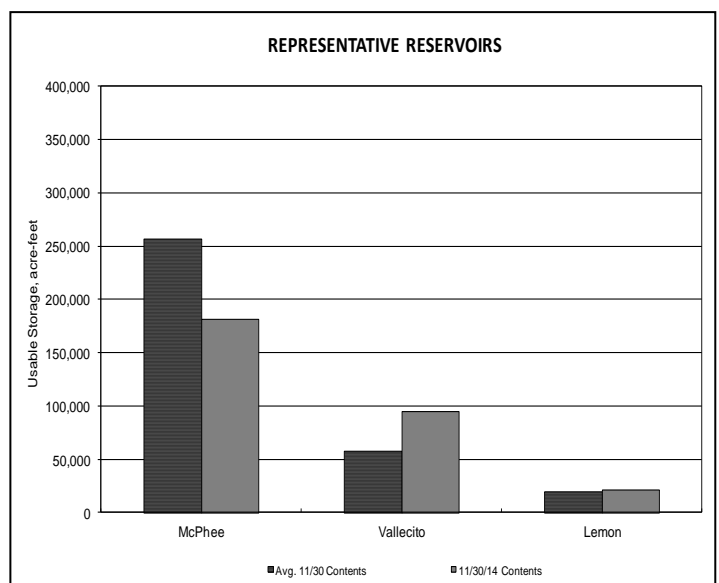
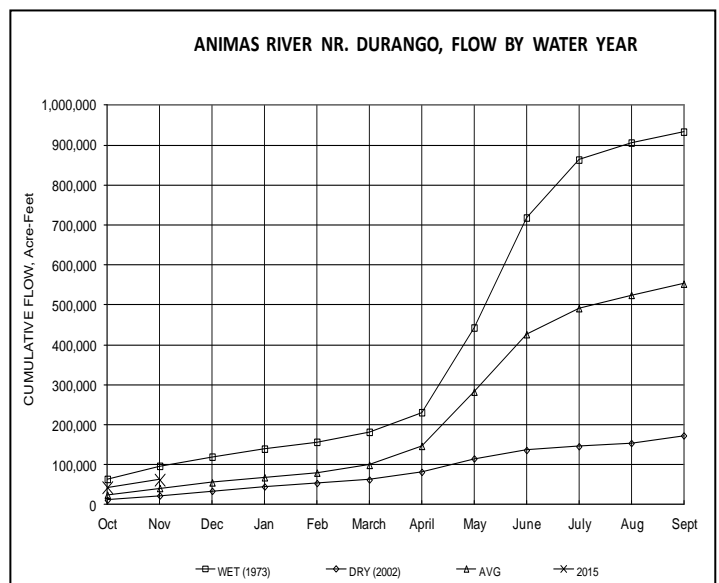
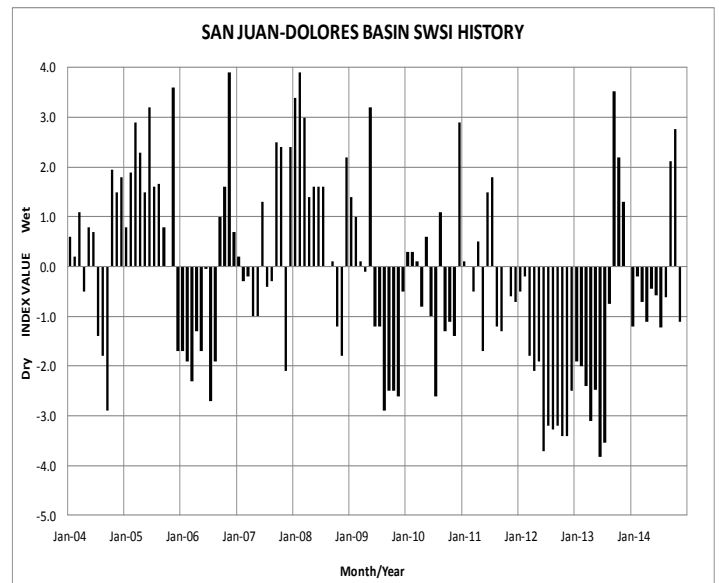


Basinwide Conditions Assessment

The SWSI value for the month was -1.1. Flow at the Animas River at Durango averaged 327 cfs (115% of average). The flow at the Dolores River at Dolores was estimated to average 108 cfs (130% of average). The La Plata River at Hesperus averaged 11.8 cfs (112% of average). Precipitation in Durango was 0.95 inches for the month, 55% of the 30-year average of 1.74 inches. Precipitation to date in Durango, for the water year, is 1.78 inches, 53% of the 30-year average of 3.33 inches. The average high and low temperatures for the month of November in Durango were 54° and 25°. In comparison, the 30-year average high and low for the month is 51° and 23°. At the end of the month Vallecito Reservoir contained 94,493 acre-feet compared to its average content of 53,024 acre-feet (178% of average). McPhee Reservoir was up to 181,645 acre-feet compared to its average content of 261,413 (69% of average), while Lemon Reservoir was up to 21,490 acre-feet as compared to its average content of 19,418 acre-feet (111% of average).

Outlook

Precipitation (0.95 inches) was below average for November in Durango. There were 70 years out of 120 years of record where there was more precipitation than this year. The flows in the rivers within the basin were above average. The Animas River was above average. There were only 31 out of 104 years of record where the total flow past the Durango stream gauge was more than this year. There were 31 out of 105 years of record where the total flow past the Dolores stream gauge was more than this year and 42 out of 98 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year.



ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - Dec-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.

Winter SWSI Component Weights

Basin	Reservoir Storage	Snowpack	Precipitation (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 December 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.

