COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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June 2015

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

The statewide SWSI values for May (June 1) range from a high value of +3.9 in the South Platte River Basin to a low of -1.9 in the Rio Grande basin. SWSI levels improved in each basin compared to last month, in large part due to above normal precipitation in each basin. Reservoir storage is above the 75th percentile statewide (although reservoir storage is not considered in the Yampa/White Basin). Streamflow was below normal levels in the Rio Grande, Colorado, and San Juan/Dolores River Basins.

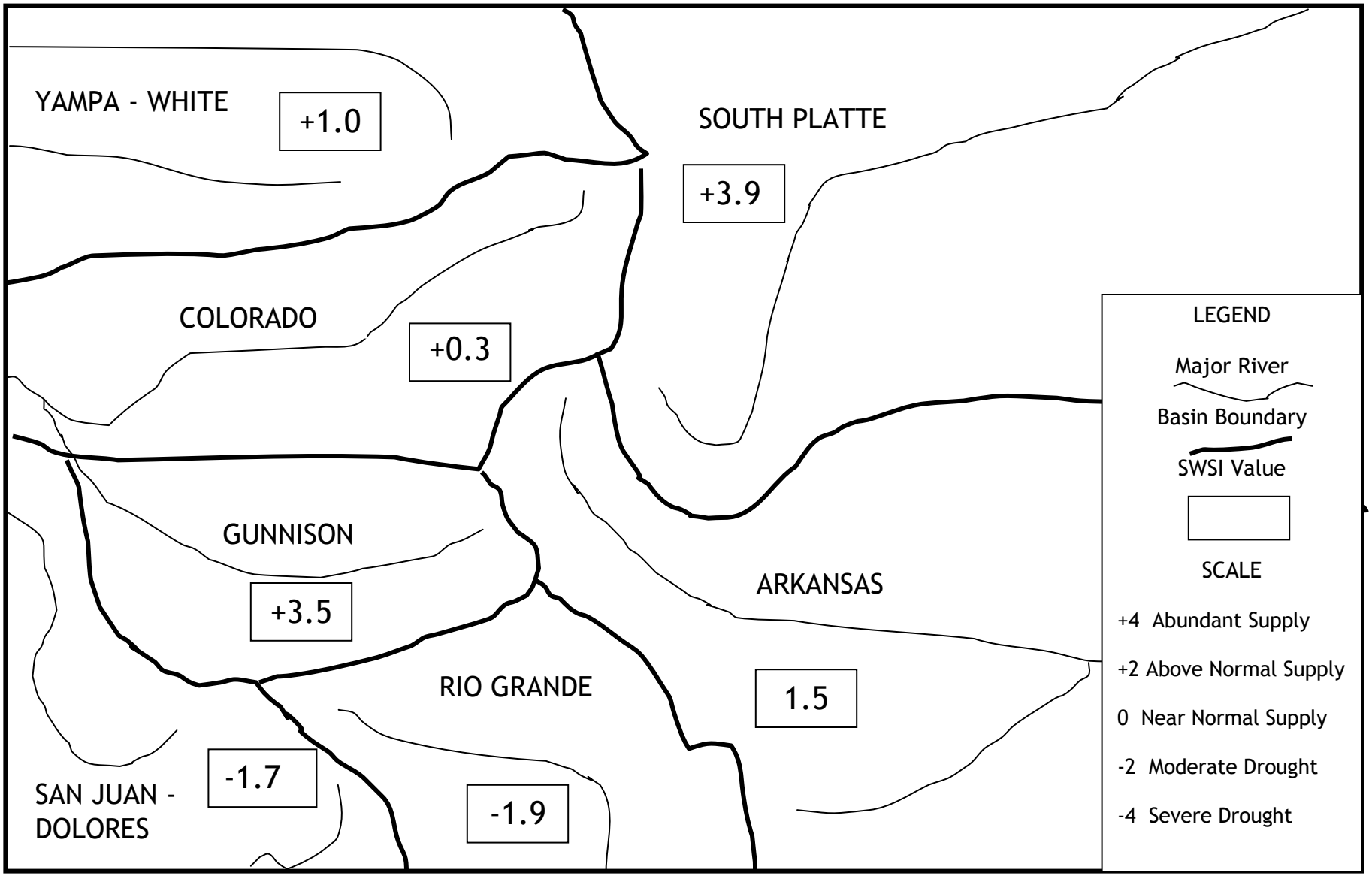
The following SWSI values were computed for each of the seven major basins for June 1, 2015. Additional information about SWSI calculations and the NRCS National Water and Climate Center SWSI by HUC are included on Page 10.

Basin	June 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	3.9	1.5	0.8
Arkansas	1.5	2.1	0.1
Rio Grande	-1.9	0.9	-2.4
Gunnison	3.5	6.3	0.8
Colorado	0.3	1.6	-1.8
Yampa/White	1.0	4.4	-0.4
San Juan/Dolores	-1.7	0.6	-1.2

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



June 1, 2015

Basinwide Conditions Assessment

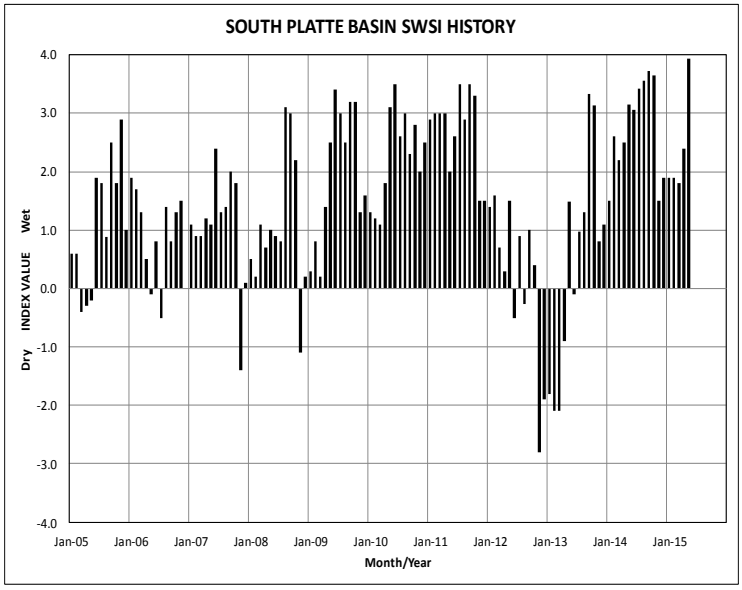
The SWSI value for the month was 3.9. May continued the wet and cool trend that began the last 2 weeks in April. In fact, May 2015 turned out to be the wettest May on record for both Colorado and the entire contiguous United States! Precipitation over the South Platte Basin varied from lows of near normal along the continental divide to 300% above normal in Morgan and eastern Adams, Arapahoe, and Weld counties. Temperatures averaged 3 to 5 degrees Fahrenheit below normal over the basin.

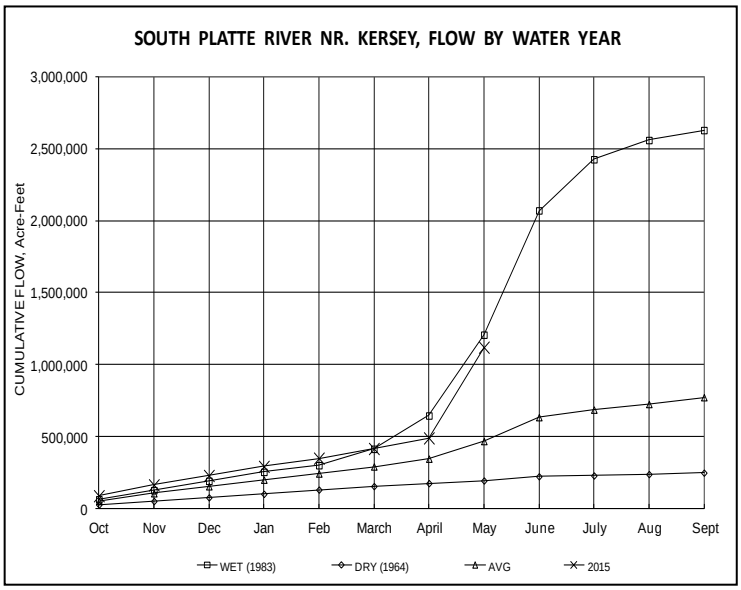
The South Platte basin snow water equivalent (SWE) according to the SNOWTEL network went against the norm in May by both increasing and decreasing, instead of the steady decline normally seen in May. In fact, SWE increase to the point that a new peak was recorded on May 24 at 101% of the normal peak (The previous peak was on April 28 at 98% of the normal peak.). The approximately 15 inches of water in the snowpack in late May should mean later than normal peak snowmelt runoff dates (typically in very late May to mid-June) at the river canyon mouths.

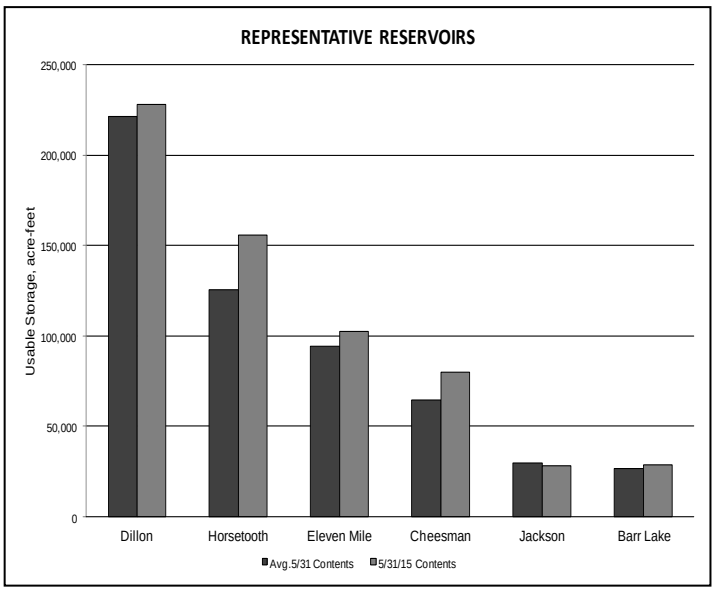
Flows at the key index gages located near Kersey and Julesburg were almost unbelievably large in May, due to the overall wet conditions discussed above. Flows at the Kersey gage averaged 10,260 cfs. This is approximately 594% of the historic mean flow of 1,728 cfs. Julesburg flows averaged 9,660 cfs or approximately 972% the historic mean flow of 994 cfs.

As could be expected with the wet conditions, there were very few calls within the South Platte basin in May. The only streams within the basin that were not under free river conditions for the entire month of May were Boulder and South Boulder Creeks. The upper portion of Boulder Creek was under a very junior call until May 6 while the upper portion of South Boulder Creek was under a junior call until May 26.

Reservoir storage in the South Platte basin was extremely good during May. The average end of May storage is approximately 84% of capacity, but actual storage was approximately 95% of capacity on May 31, 2015.







Basinwide Conditions Assessment

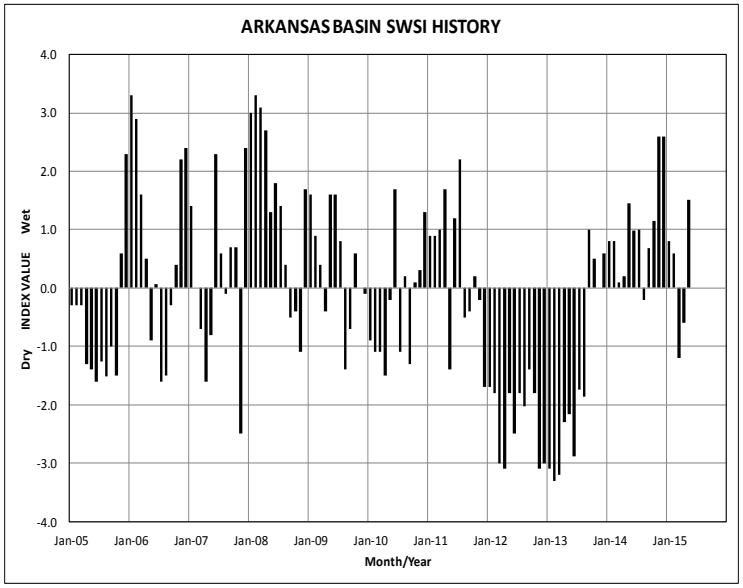
The SWSI value for the month was 1.5. May was exceptionally wet and fairly cool in the Arkansas River Basin. Records were set in several locations including the City of Pueblo where the precipitation in May set a new record. Flood damage occurred in some locations, especially along Fountain Creek, however mitigation efforts downstream were fairly successful at limiting damage in the lower valley. Some of the canals experienced some damage due to the high flows and irrigation demand dropped significantly as farmers found it difficult to even get into the fields for planting some of the later crops.

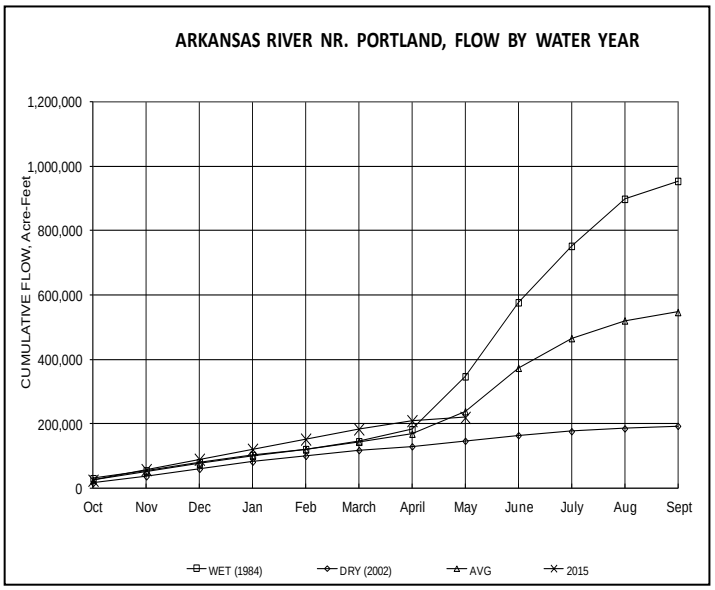
In contrast to the limited damage, benefits were tremendous for the Arkansas where storage levels in reservoirs rose dramatically. John Martin Reservoir, for example, began the month of May short of 50,000 acre-feet of storage following the winter storage season and had been as low as approximately 6,000 acre-feet in the fall of 2014. John Martin Reservoir contained 168,400 acre-feet at the end of May and continues to fill during the snowmelt runoff period.

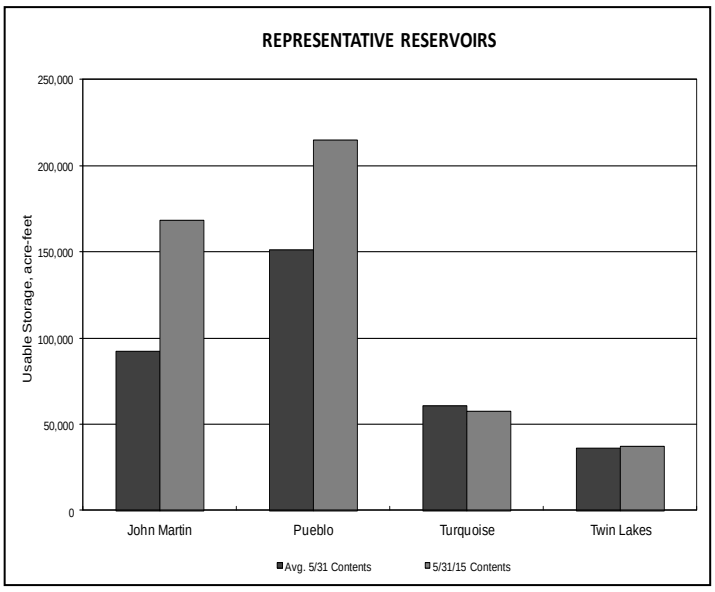
The Amity Canal stored as much as they could of their Great Plains Reservoir right in John Martin Reservoir (limited to 50,000 acre-feet) and began to store in the Great Plains Reservoirs for the first time since 1999 in late May.

Administrative / Management Concerns

The late increases to snowpack on the western slope will allow increased imports of water through the Fryingpan-Arkansas transmountain diversion system; representing good news for farmers and municipalities for water supply. The improved import scenario, coupled with dramatically improved native storage, causes some concerns that accounts in Pueblo Reservoir held in the excess capacity (If & When accounts) may spill in June. This has caused many entities to scramble to find alternatives and points to the importance of the needs identified in the Arkansas Basin Implementation Plan and the State Water Plan for evaluation of improved storage options.







Basinwide Conditions Assessment

The SWSI value for the month was -1.9. Flow at the gaging station Rio Grande near Del Norte averaged 1952 cfs (77% of normal). The Conejos River near Mogote had a mean flow of 531 cfs (56% of normal). Streamflow in the upper Rio Grande basin was generally well below normal during May as cool temperatures and frequent rain and snow events throughout the month slowed the runoff. Some streams kicked into gear on May 19 when a significant rain/snowstorm hit the mountains and the valley floor. When daily temperatures finally rose into the 70's at the end of the month, another increase in runoff was seen.

Reservoir storage and soil moisture conditions have improved vastly in the past 30 days.

The Valley floor received above average precipitation and below average temperatures during May, the first cooler than normal month in almost a year.

Outlook

Despite the early runoff and loss of most of the snowpack in the basin during April, the significant May precipitation forced the Natural Resources Conservation Service to increase their April through September runoff forecasts as of June 1st for most streams in the upper Rio Grande Basin. Most streams in the area are forecast in the 60 to 80% of normal range for the April through September period. However, due to the May snowstorms, streamflow is expected to be above average for streams north of US Highway 160 and below average for those drainages south of US Highway 160.

National Weather Service outlooks for the next 90 days call for warmer and wetter conditions in the upper Rio Grande basin.

Administrative/Management Concerns

The 2015 runoff has been extremely difficult to predict. Low elevation streams will experience below average runoff this year and most already peaked in April. But the surprising amount of May precipitation has led to a new problem – bankfull streamflow in many streams within the basin. During the early part of June, minor flooding occurred in parts of Saguache County. Saguache Creek and the Sangre de Cristo Mountain streams will boom with runoff in late May and June, leading to concerns about moderate flood damage. Flood watches have not been a part of this basin's concerns since 2008.

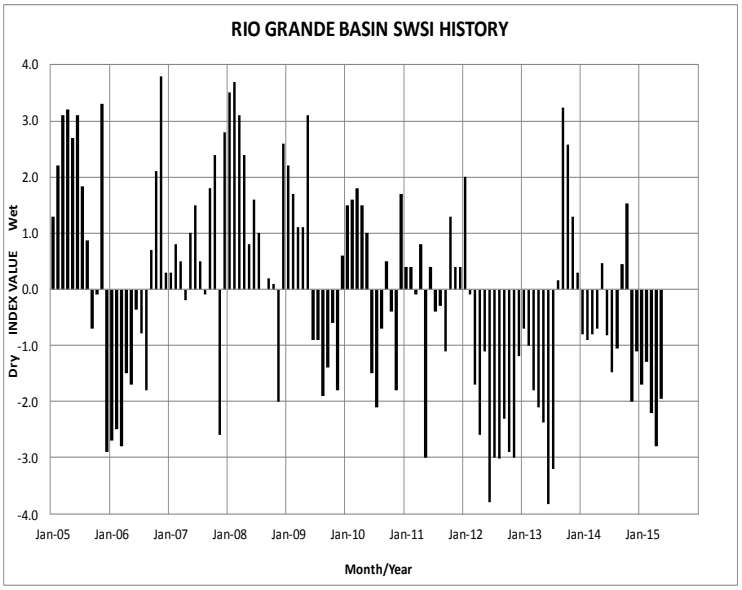
Some good news – junior priority ditches throughout the basin have been able to divert water far beyond any early season expectations.

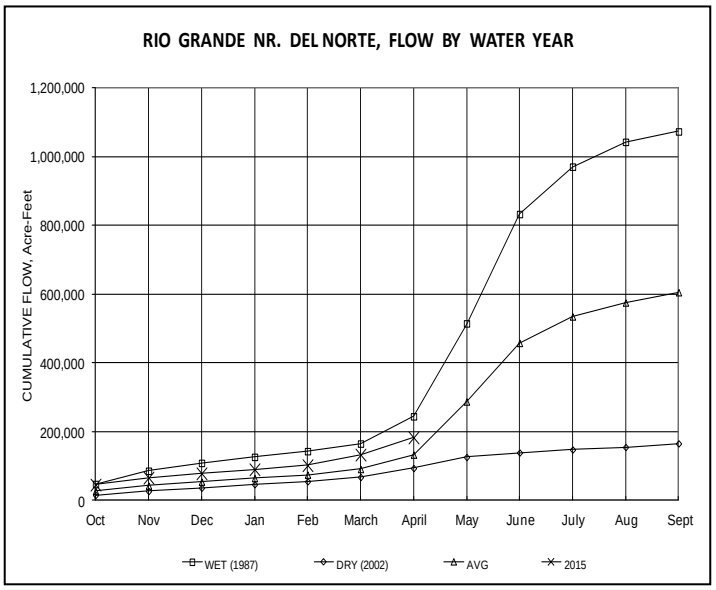
Public Use Impact

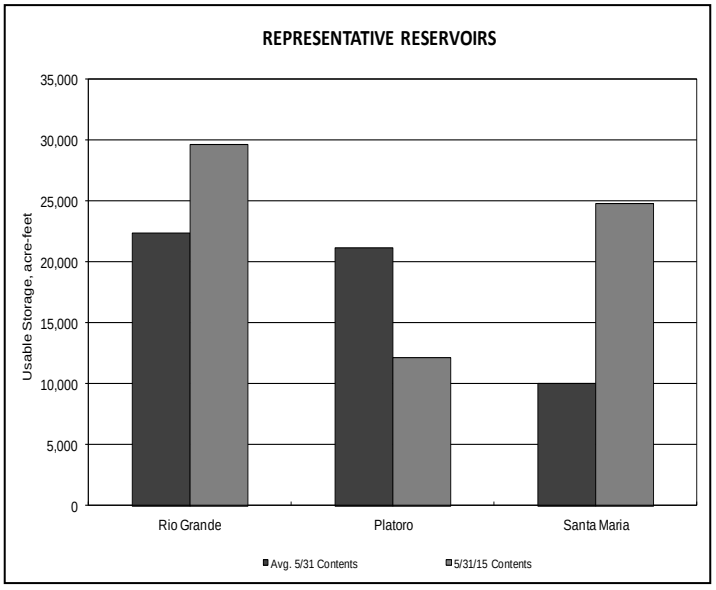
The cool May weather was a hindrance to farmers and ranchers with pasture, alfalfa, grass and vegetables. Their crops are about two weeks behind normal growth. The vegetable farmers had some difficulty getting their fields planted.

As the month came to a close, reservoirs such as Rio Grande, Sanchez, Santa Maria, Smith, Mountain Home, and Platoro were seeing storage gains, a welcome change to the trend over the past few years. Currently, both Continental and Beaver Reservoirs are drained for repair work.

The Towns of Crestone and Saguache have had minor flooding issues. Many county roads are in danger where high streamflow can wash out a culvert.







Basinwide Conditions Assessment

The SWSI value for the month was 3.5. As with most of Colorado, extremely wet conditions prevailed in the Gunnison basin during May and the first part of June. Precipitation basin wide was amazingly over 230% of average during May. In most locations this turned out to be the second wettest May on record. June has continued the wet trend with ample precipitation caused by the remnants of a few tropical systems from the eastern Pacific. The North Fork of the Gunnison, which had the worst snowpack conditions this year, seemed to receive the most precipitation with Paonia receiving 4.04 inches in May compared to an average of 0.99 inches! This rainfall satisfied irrigators basin-wide and reduced the demand on all systems, which has allowed more of the runoff to be stored in reservoirs. Additional snow and temperatures 5-7 degrees below normal helped prevent snowmelt at the higher elevations from occurring until late May and early June.

Outlook

April to July runoff forecasts from the Colorado Basin River Forecast Center (CBRFC) saw phenomenal increases in May. While the runoff forecast for most basins remains below average, forecast points such as Surface Creek in Cedaredge went from 30% of average to 62% between the May 1st and June 1st predictions. Forecasts are expected to again increase on June 15th due to the additional rainfall experienced during the first two weeks.

Administrative/Management Concerns

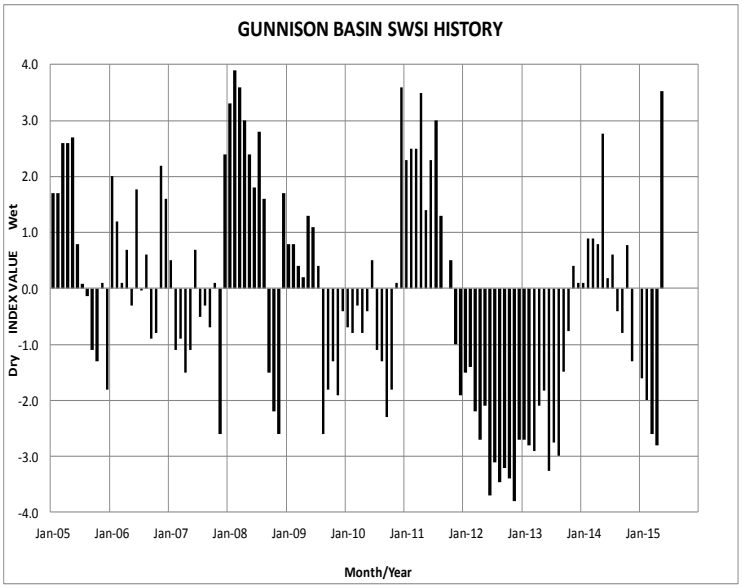
The potential administrative concerns have diminished significantly in the last month. Although snowpack didn't reach median levels in many locations it appears that we will have superb storage, even in locations, like the Grand Mesa, where two months ago it seemed that calls would prevent many reservoirs from filling and now most reservoirs will fill and spill on the Grand Mesa.

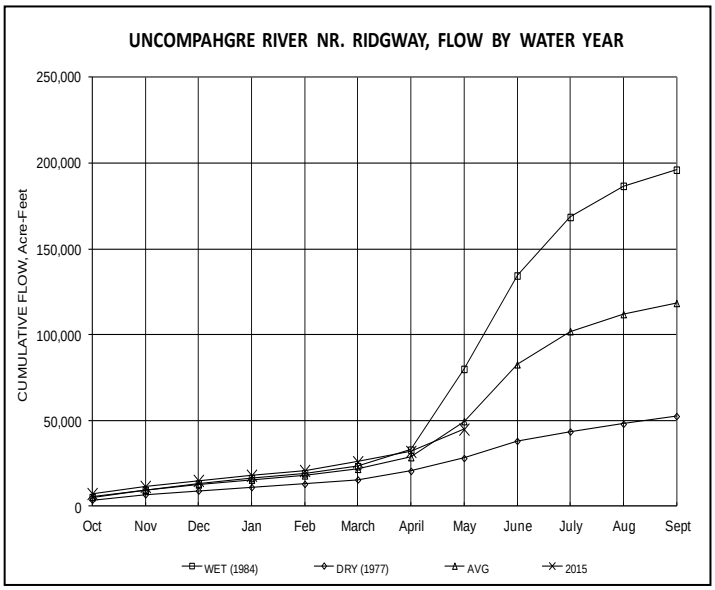
The April to July inflow forecast for Blue Mesa Reservoir increased by 130,000 acre-feet to 570,000 acre-feet on June 1st. Targets for both the Black Canyon water right and ROD for Aspinall re-operations are determined by the May 1st forecast, and as discussed in the previous month's narrative, were completed in early May. Blue Mesa Reservoir will definitely fill as a result of the additional runoff. In fact, at Blue Mesa and Taylor Park they are significantly increasing releases from June 8th to June 15th to prevent both reservoirs from spilling. Resulting flows in the Black Canyon will exceed those produced to satisfy the Black Canyon reserved water right in May.

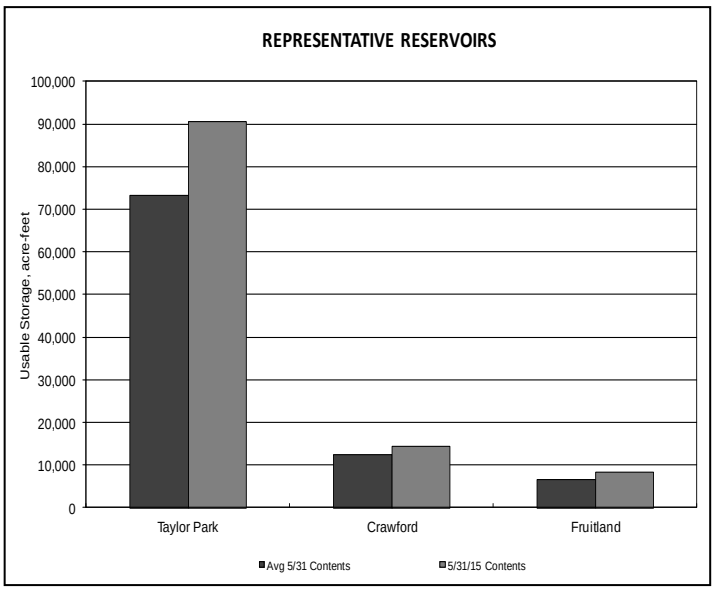
Pubic Use Impacts

Although the precipitation and cool temperatures in May and June were welcome by most irrigators it prevented Olathe sweet corn from being planted on-time and has stunted its growth so far. As a result, the corn may not show up on stands or store shelves until later than usual.

Flows in the Gunnison Gorge will be much higher than anticipated at the time of the last report due to releases from the Aspinall Unit during early June that are intended to prevent a spill at Blue Mesa. Consequently, although the peak flow operations have ceased it appears that instead of 350 cfs in the Black Canyon and Gunnison Gorge during the middle of June there will be closer to 3,000 cfs, which could cause issues for some fishing interests in those locations.





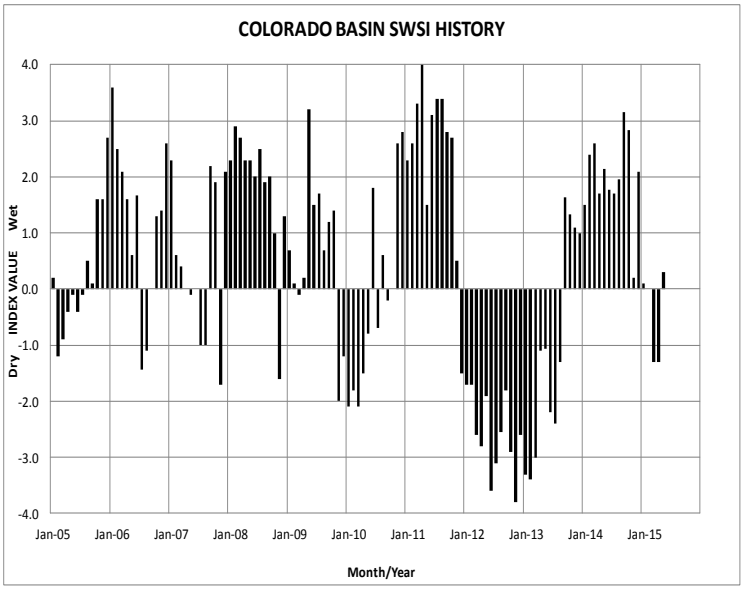


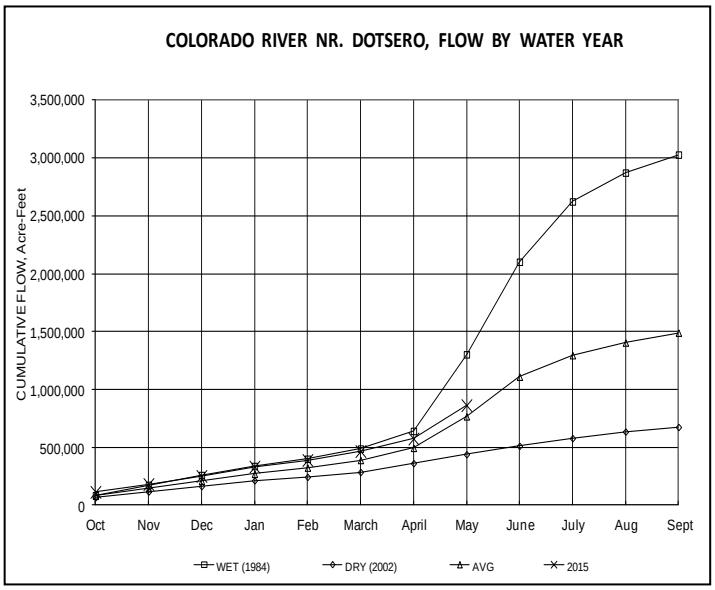
Basinwide Conditions Assessment
The SWSI value for the month was 0.3.

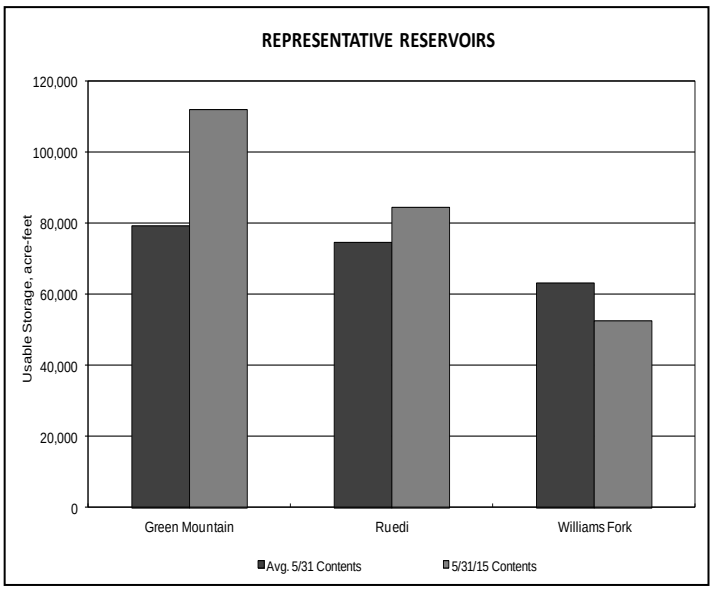
Outlook
Colorado River flows are running above average likely due to the higher precipitation and higher temperatures. Roaring Fork and Eagle River flows likely to remain consistent at above average to average throughout June. Upper Colorado River Headwaters snowpack is currently above median, as are all Colorado River Basin sites above Lake Powell. Temperatures are forecast to be around average for June with the precipitation tapering off.

Administrative/Management Concerns
There is currently no call on the Colorado River. Grand Valley Irrigation diversions (Government Highline/Orchard Mesa Irrigation, Grand Valley Irrigation canals) continue at or near full capacity. Wolford, Ruedi and Green Mountain all participated in the Coordinated Reservoir (CROS) Program and increased outflows in early June to enhance peak flow in the fifteen mile reach for endangered fish. Subsequent to operations, natural peaks exceeded the peaks created by the CROS.

Public Use Impacts
The near record rainfall this spring has protected and added to the low winter snowpack. It has also enhanced the rafting season duration, decreased fire danger, increased rock falls and increased mosquitoes. The increase in mosquitoes could increase the risk of the West Nile Virus. There was also minor flooding above the Aspen area with threats of flooding on the Roaring Fork.





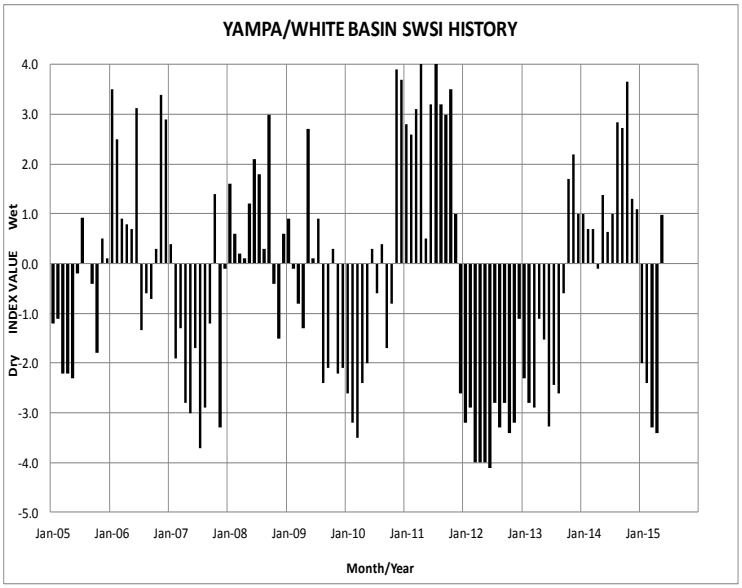


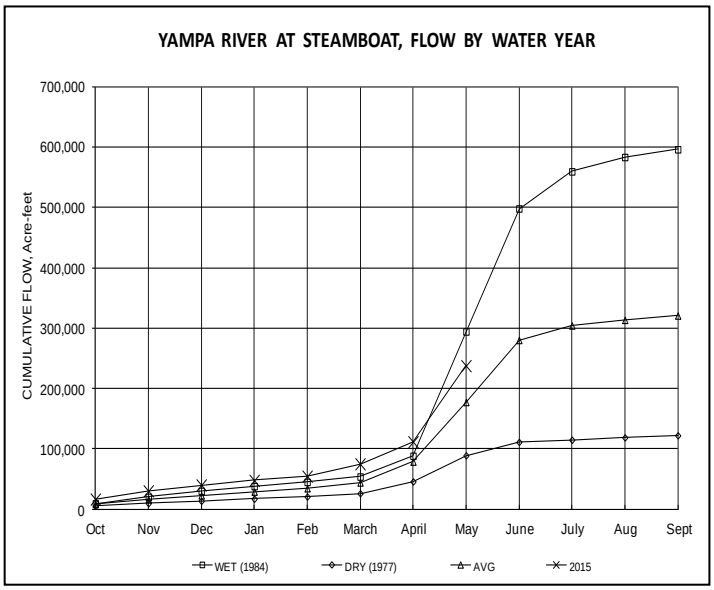
Basinwide Conditions Assessment

The SWSI value for the month was 1.0. May 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 192% 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 May increased to 91%.

Snowpack for the Yampa, White, and North Platte and Laramie River basins was above normal at 107% of average. The snow water equivalent (SWE) as of June 1st was 104% of average for the North Platte and Laramie River basins and 92% of average for the Yampa River basin and White River basin.

NRCS predicts well below average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the June through July period are 67% of average for the North Platte River near Northgate, 59% of average for the Yampa River near Maybell, 47% of average for the Little Snake River near Lily, and 69% of average for the White River near Meeker.





Outlook

As of May 31st Fish Creek Reservoir was storing approximately 3,671 AF, 88.1% of capacity. The capacity of Fish Creek Reservoir is 4,167 AF. Yamcolo Reservoir was storing 8,800 AF at the end of May 2015. The capacity of Yamcolo Reservoir is 8,700 AF. On May 31st Elkhead Creek Reservoir was storing 24,062AF. The capacity of Elkhead Creek Reservoir is 24,778 AF. On May 31st, 2015; Stagecoach Reservoir was storing 36,000 AF which is 108% 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

At Stagecoach State Park anglers are reporting that trout fishing has picked up from shore as well as just off shore. Wolly Buggers, Rapalas with orange and black jigs, as well as pink and green Powerbait are working well for trout. Pike are biting off shore and in the coves using tube jigs. County Road 18 to the tail water is open as of April 1st. The Stagecoach Marina Store will be open on Memorial Day Weekend and is currently taking boat reservations.

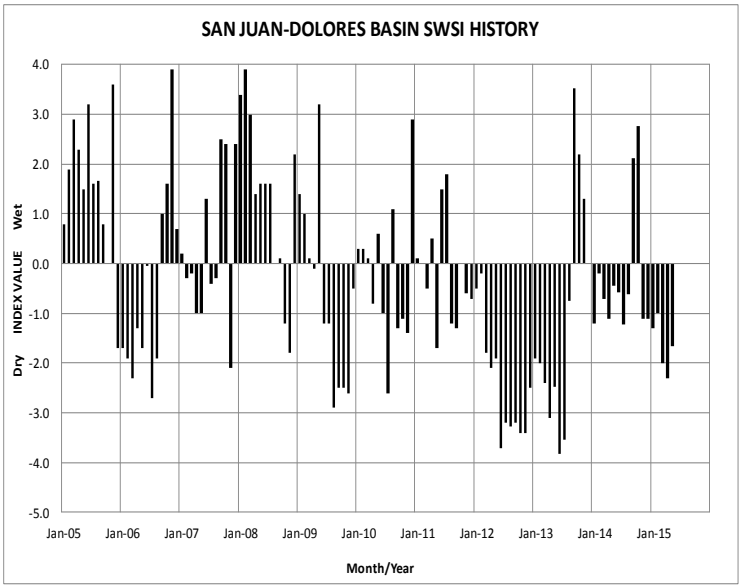
At Steamboat Lake State Park, the road into the Marina and the Placer boat ramp are open for the season. Meadow Point, Rainbow Ridge and Sage Flats roads are now open.

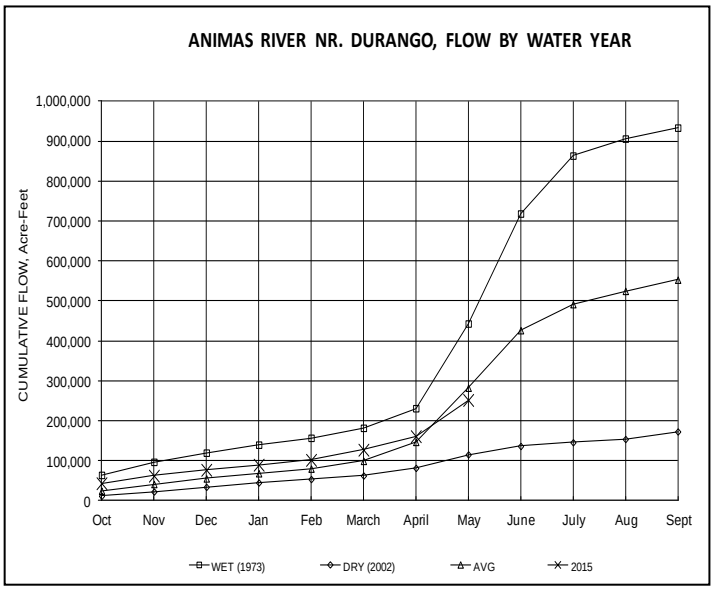
Basinwide Conditions Assessment

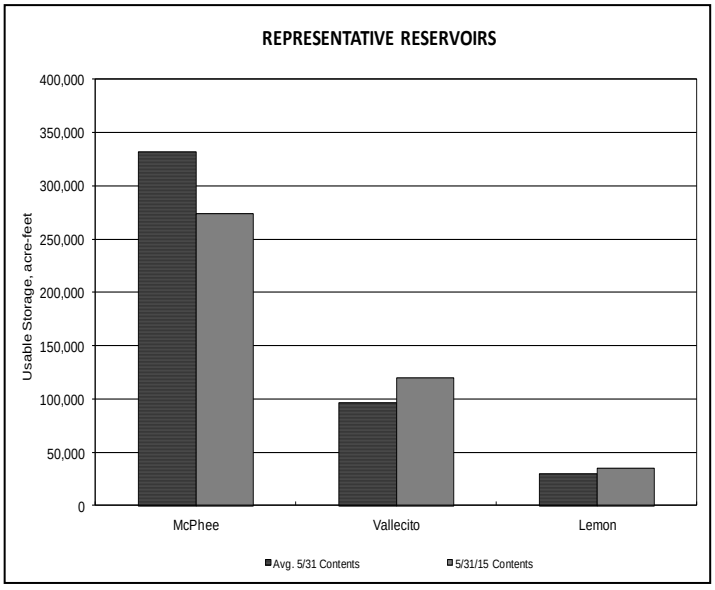
The SWSI value for the month was -1.7. Flow at the Animas River at Durango averaged 1,476 cfs (64% of average). The flow at the Dolores River at Dolores averaged 1,131 cfs (66% of average). The La Plata River at Hesperus averaged 61.6 cfs (38% of average). Precipitation in Durango was 3.88 inches for the month, 364% of the 30-year average of 1.07 inches. Precipitation was the highest amount recorded in May, in Durango, out of 121 years of record. Precipitation to date in Durango, for the water year, is 14.47 inches, 101% of the 30-year average of 12.47 inches. End of last month precipitation to date, for the water year was 76% of average. The average high and low temperatures for the month of May in Durango were 66o and 38o. In comparison, the 30-year average high and low for the month is 72o and 38o. At the end of the month Vallecito Reservoir contained 120,038 acre-feet compared to its average content of 90,446 acre-feet (133% of average). McPhee Reservoir was up to 274,092 acre-feet compared to its average content of 337,557 (81% of average), while Lemon Reservoir was up to 34,780 acre-feet as compared to its average content of 30,323 acre-feet (115% of average).

Outlook

Precipitation (3.88 inches) was well average for May in Durango. There were 0 years out of 121 years of record where there was more precipitation than this year. The flows in the rivers within the basin remained below average. There were 89 out of 105 years of record where the total flow past the Animas River at Durango stream gauge was more than this year. There were 79 out of 104 years of record where the total flow past the Dolores stream gauge was more than this year and 92 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 - Jun-15

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

Summer SWSI Component Weights

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

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

SWSI BY HUC FROM NRCS NATIONAL WATER & CLIMATE CENTER

Included below is the SWSI generated by the NRCS National Water and Climate Center, based on data as of June 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.