COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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June 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 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 +3.2 in the South Platte Basin to a low value of -0.4 in the San Juan/Dolores Basin. Water supply conditions improved statewide compared to last month, although this month represents the transition from winter SWSI component weights to summer SWSI component weights, which can result in substantial changes from the previous month. Streamflow in May exceeded the 50th percentile in all basins with the exception of the San Juan/Dolores.

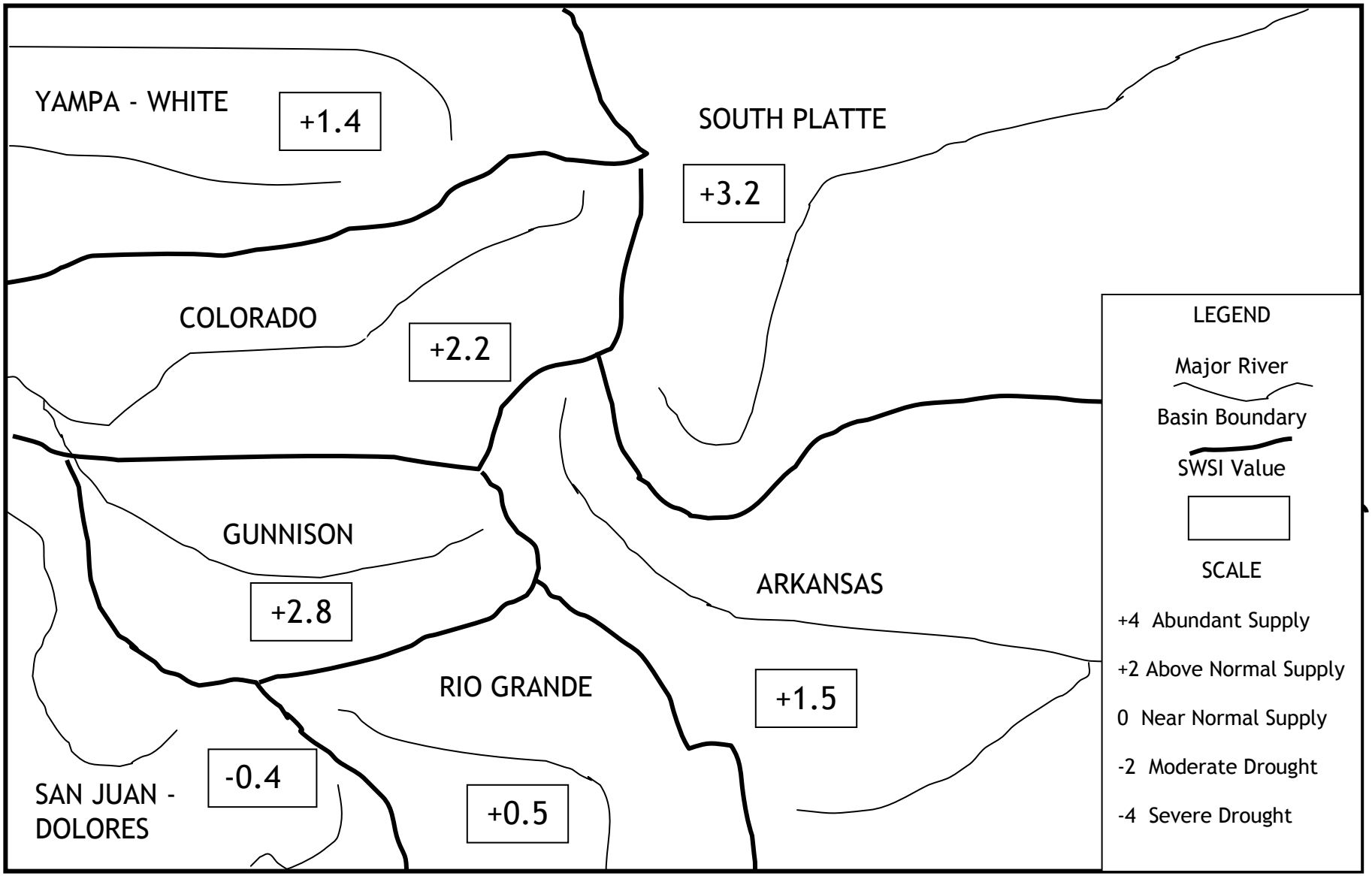
The following SWSI values were computed for each of the seven major basins for June 1, 2014. Additional information about SWSI calculations and the NRCS National Water and Climate Center SWSI by HUC are included on Page 10.

Basin	June 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	3.2	0.7	1.7
Arkansas	1.5	1.3	3.6
Rio Grande	0.5	1.2	2.8
Gunnison	2.8	2.0	4.6
Colorado	2.2	0.5	3.2
Yampa/White	1.4	1.5	2.9
San Juan/Dolores	-0.4	0.7	2.0

SWSI Scale

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

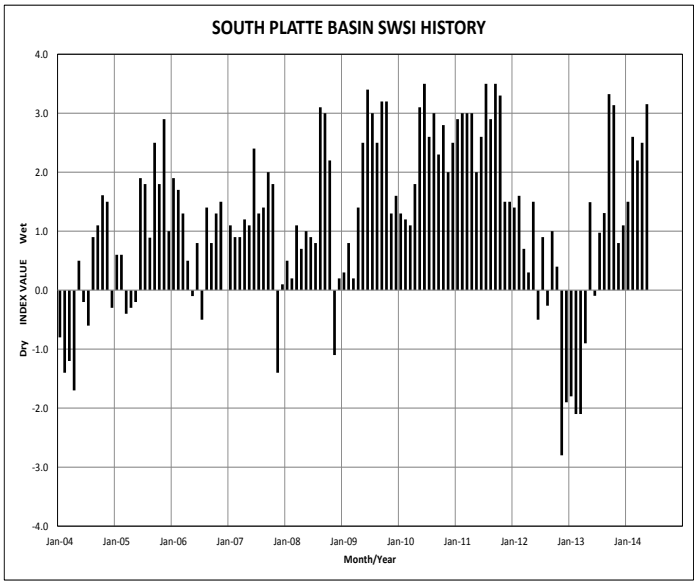
SURFACE WATER SUPPLY INDEX FOR COLORADO



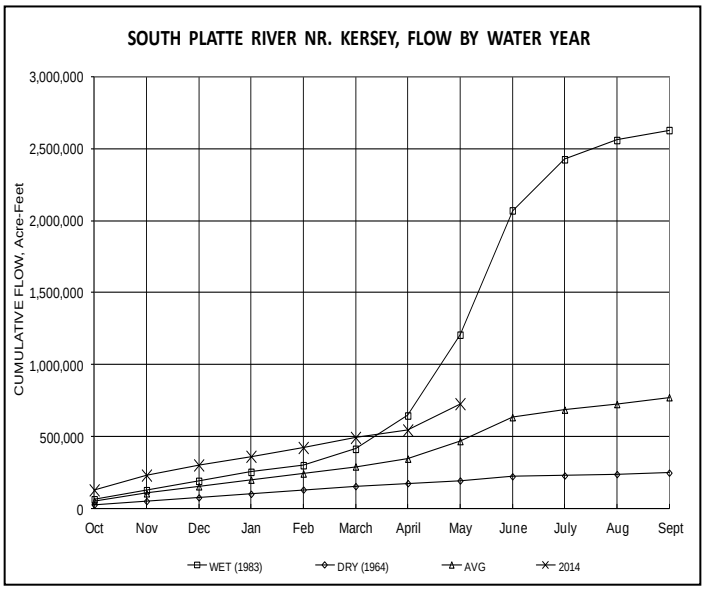
June 1, 2014

Basinwide Conditions Assessment

The SWSI value for the month was 3.2. For northeastern Colorado, May 2014 was generally a temperate and moist month, though in some areas it was just plain wet. Temperatures were generally within 2^0F of normal with more of the basin cooler than warmer. Precipitation was much more variable with virtually the entire basin above to way above normal (one area near Wiggins was 300% of normal.). Also, significant precipitation along the northern Front Range the last week and a half of May combined with snowmelt runoff to put the Cache la Poudre River between Ft. Collins and Greeley into minor flood stage the last few days of May.

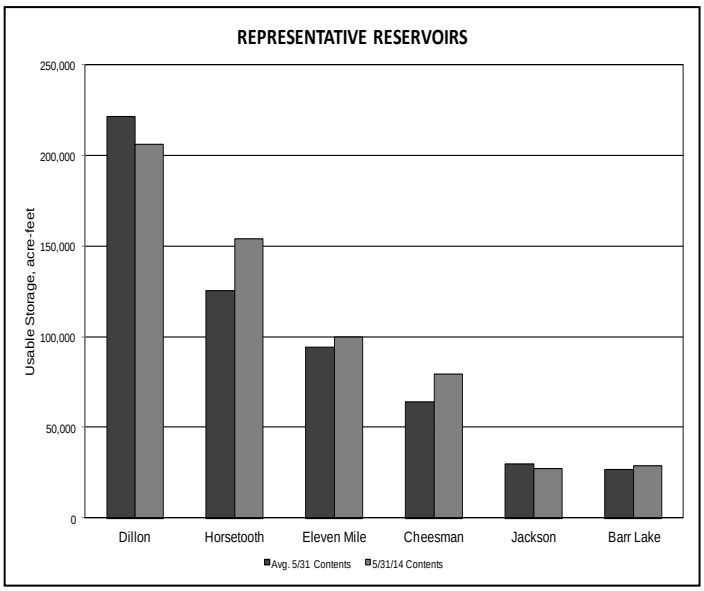


Stream flows returned to the above average trend seen since November 2013 after the dip in April to average at the Kersey index gage. However, flows remained well below average at the Julesburg index gage, indicating significant diversions between the two gages during the month. The Kersey gage monthly mean stream flow was 2,974 cfs as compared to the May historic mean of 1746 cfs (170% of the historic mean). The May Julesburg mean monthly flow was 643 cfs or 64% of the 1,003 cfs historic May mean.



As is often the case, much of the South Platte basin was under call for the first few weeks of May before the snowmelt runoff really got rolling. The mainstem above Sterling was under call from May 1 to May 12 while above metro Denver the call lasted until May 21st. Many of the major tributaries were also under call for the first three weeks of May.

Overall reservoir storage in the basin remained very good with readings at 94% of capacity at the end of May. This equates to 106% of the average end of May storage.



Basinwide Conditions Assessment

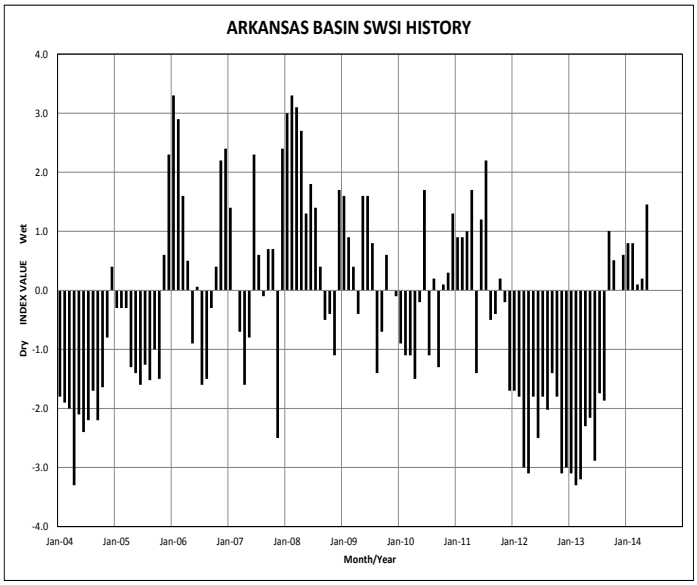
The SWSI value for the month was 1.5. Run-off flows through the Arkansas River at Canon City began to increase in the last half of May and particularly jumped up in the last few days of May reaching flows of over 4,000 cfs by the end of the month.

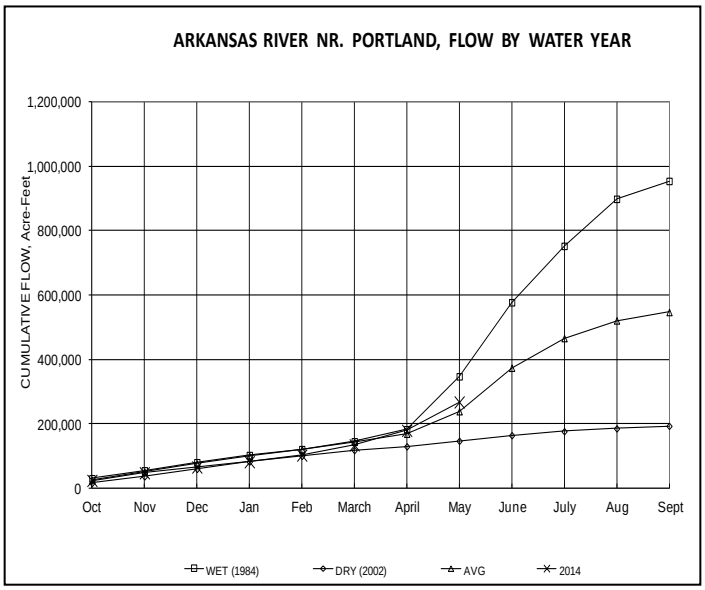
Outlook

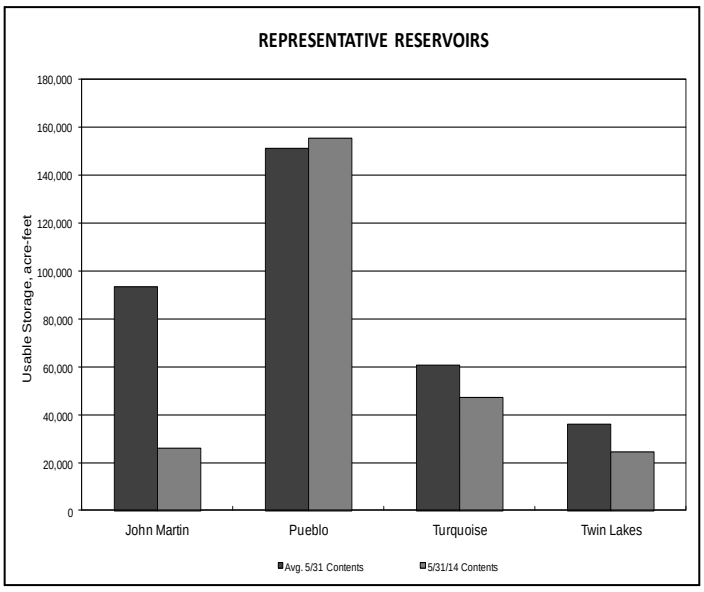
The river call for the first of the month was set at Catlin Canal 12/3/1884 upstream with slightly junior calls below where additional inflows increased the supply. Toward the end of the month the more junior Colorado Canal 6/8/1890 call was in place on the mainstem. Flows on Fountain Creek were higher in May and the call on Fountain Creek remained at the Arkansas River call for most of the month.

Administrative / Management Concerns

The combination of snowmelt runoff peaks and thunderstorm runoff (especially from burn areas) creates an opportunity for flooding in certain locations and presents some challenging water administration issues.







Basinwide Conditions Assessment

The SWSI value for the month was 0.5. Flow at the gaging station Rio Grande near Del Norte averaged 2,750 cfs (109% of normal). The Conejos River near Mogote had a mean flow of 830 cfs (88% of normal). Precipitation in Alamosa was 0.23 inches, 0.35 inches below normal. Temperatures ranged from 17 degrees to 82 degrees in Alamosa where the average monthly temperature was 50.6 degrees, 0.6 degrees below normal.

The weather turned warm and dry around mid-month with nighttime temperatures staying above the freezing mark. This melted snow out of the high country enough to produce above average streamflow throughout most of the basin. The junior water right holders got an unexpected shot of water that held on for about two weeks. High enough flow to even get Sanchez and Rio Grande Reservoirs into priority storage for a short time – a rarity for this part of the state. Normally, reservoirs in the upper Rio Grande basin only store during the non-irrigation season.

Peak streamflow occurred around May 28 for most area creeks and rivers, a time when farmers and ranchers could really benefit. This is a welcome change over the past several years where the peak streamflow seems to occur earlier in May and sometimes even in April. Overall, stream flow in the basin was near average during May. Flooding should not be a concern this season unless a major rainstorm occurs.

Outlook

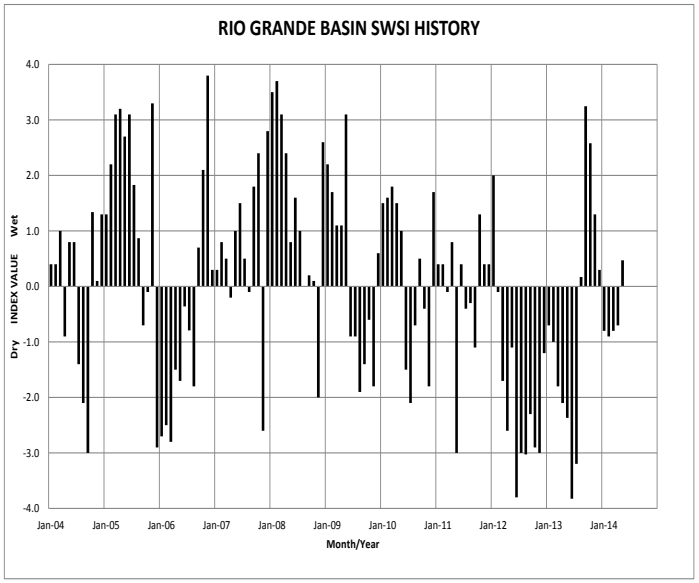
NRCS stream flow forecasts issued in early June were predicting a below-average runoff in most of the upper Rio Grande basin. The June 1st forecast ranges from a low of 31% of average runoff flow for the Rio San Antonio to a high of 100% for Saguache Creek. Most area streams are forecasted in the 60% to 80% of average range. A big drop in streamflow is expected during June. Without good rainfall, area streams should well below normal levels throughout the rest of the summer.

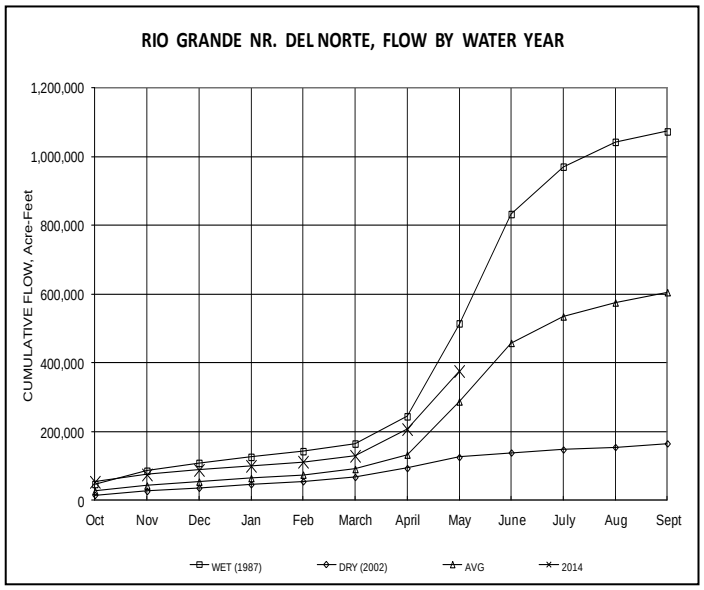
Administrative/Management Concerns

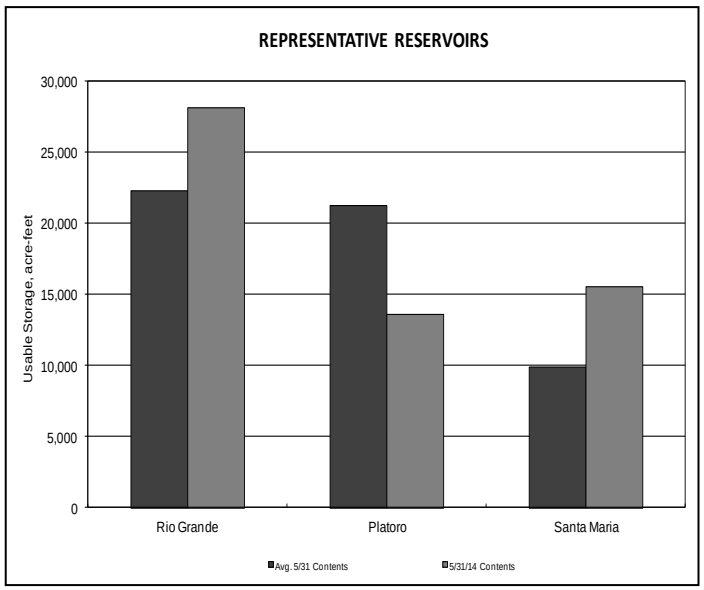
Some good news for the southwestern part of the State, where the National Weather Service is predicting above-normal precipitation for the May through July 90-day period. The San Luis Valley and the surrounding mountains should benefit from this deviation from the past several years.

Public Use Impacts

Normal farming and ranching operations were in full swing during May.







Basinwide Conditions Assessment

The SWSI value for the month was 2.8. In May the Gunnison basin received greater than average precipitation basin-wide, with the lower Uncompahgre and North Fork receiving by far the greatest amount above average with over 150% of the average for the month. Temperatures during May were well below average basin wide at 5-7 degrees below normal. The lower than average temperatures and additional snow in early and middle May helped the snowmelt generally follow the average curve in most areas. On June 1st, the snow water equivalent average for all Snotel sites in the basin was 154% of the median for the date. Many streams peaked in late May into early June with the North Fork peak occurring on June 1st.

Outlook

June, July, and August are now forecast to have a much greater than equal chance of having above average precipitation partly due to the forecasted developing El Nino in the Pacific.

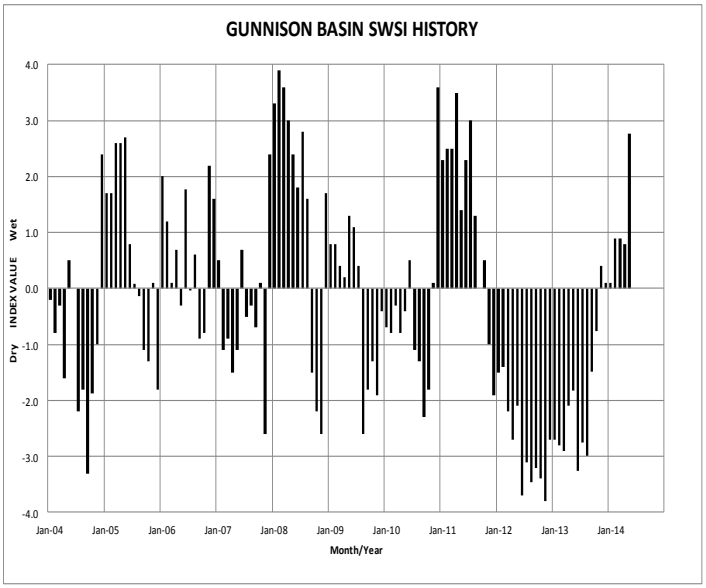
Administrative/Management Concerns

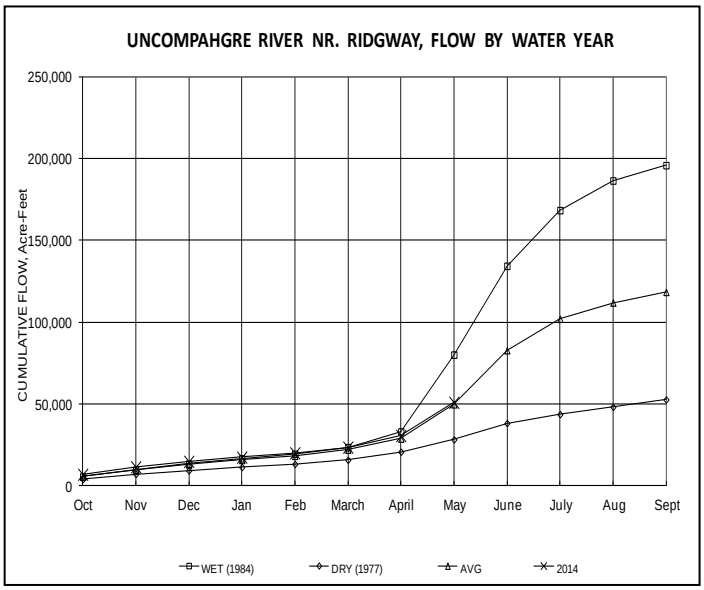
The June 1st forecast for April to July inflow into Blue Mesa Reservoir was 860,000 acre-feet (126% of average), with 490,000 acre-feet remaining to occur in June and July. The Bureau of Reclamation (USBR) began operations to meet the Record of Decision (ROD) flow targets for the endangered fish in the lower Gunnison in late May and early June. As described last month, the target flows at the Whitewater gage on the Gunnison are extremely high due to the runoff forecast above Blue Mesa and are prescribed at 8,070 cfs for 40 days, of which 10 days have a target of 14,350 cfs. In an attempt to hit those targets all three Aspinall Unit Reservoirs (Crystal, Morrow Point, and Blue Mesa) were spilling over 7,000 cfs, 2,200 cfs, and 2,200 cfs respectively on June 6th. On June 5th, the Division of Water Resources visited the Delta wastewater treatment plant when flows in Delta downstream of the Uncompahgre confluence were over 13,000 cfs. Delta was concerned about violating their discharge permit because further flow increases could cause the v-notch weirs in their settling basins to back up. By June 9th, however, it became apparent that we were on the descending limb of the hydrograph on the North Fork Gunnison and they would probably not hit the 14,350 cfs peak at Whitewater. As a result, the USBR reduced releases on June 9th and Morrow Point and Blue Mesa ceased spilling on June 11th. Blue Mesa Reservoir peaked at a storage content of 703,000 acre-feet and is now falling at around 4,000 acre-feet per day due to releases for the ROD that will continue through the end of June. The June 13th USBR 24 month study indicates that despite the ROD releases that they will just hit the elevation 7,490 feet icing target elevation (corresponds to 581,000 acre-feet of storage or 70% of active capacity) at Blue Mesa in December. The Black Canyon National Park reserve water right one-day peak flow of 6,427 cfs was easily met by releases for the ROD.

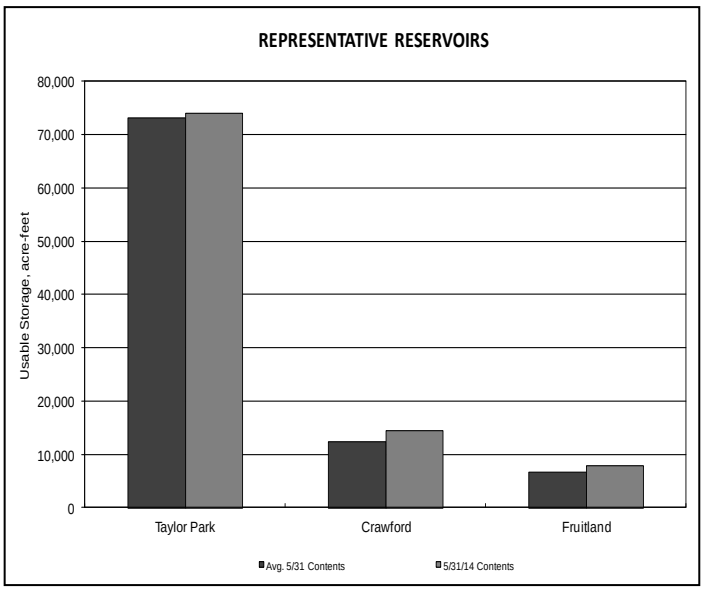
Ridgway Reservoir continued higher than normal releases throughout May due to the desire to put the new power turbines at the dam through their paces, which have a capacity of 560 cfs.

Pubic Use Impacts

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

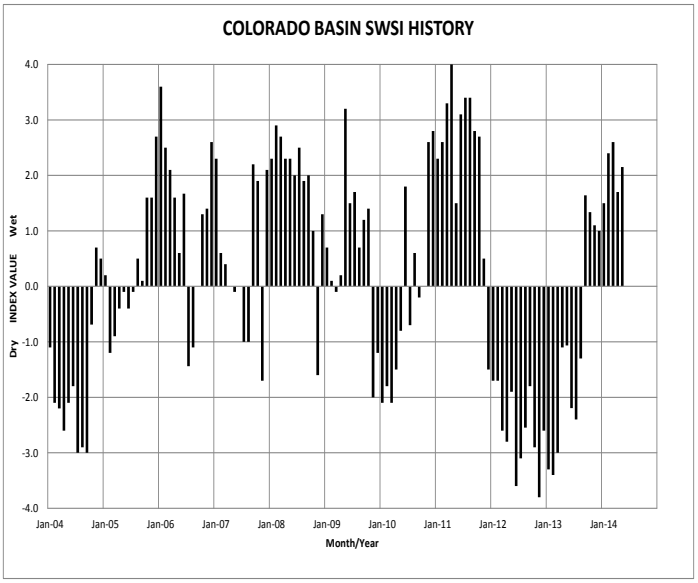






Basinwide Conditions Assessment

The SWSI value for the month was 2.2.

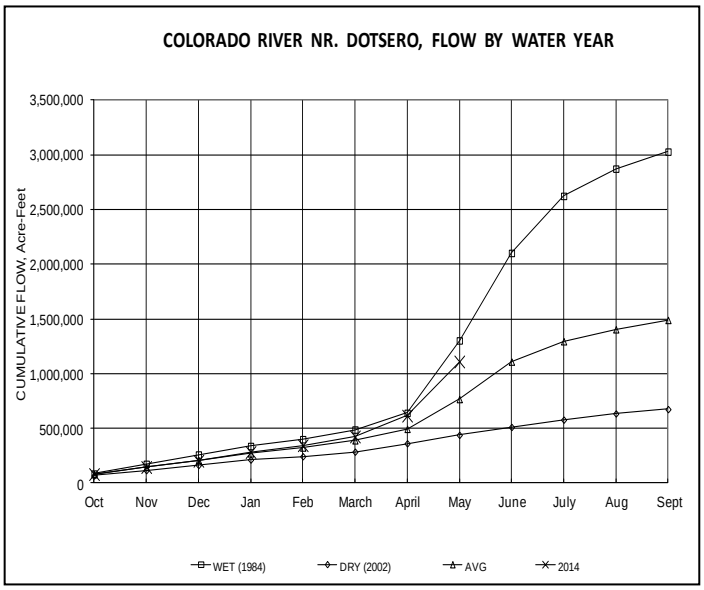


Outlook

Colorado River and all tributary flows will fall throughout June following peak runoff around June 2nd. Below average precipitation and temperatures are forecast for western Colorado through mid June. Reservoir releases in general, will gradually decrease throughout June as inflows fall.

Administrative/Management Concerns

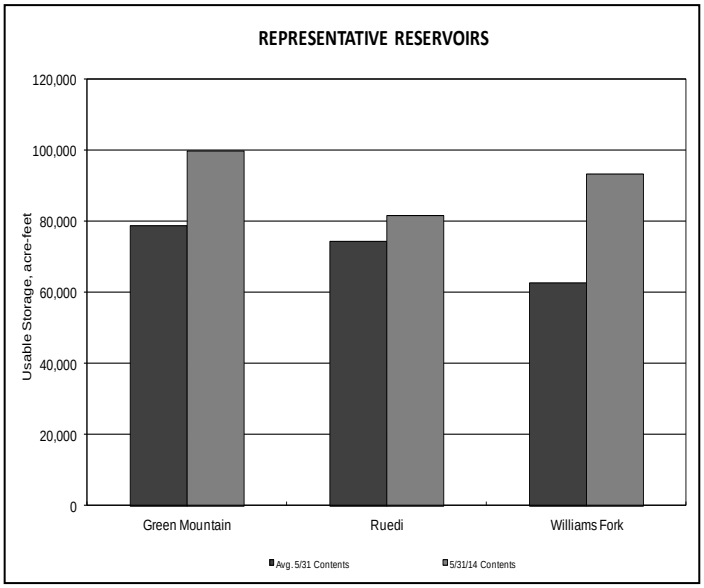
A main stem call on the Colorado River will not occur during the month of June. Grand Valley Irrigation diversions (Government Highline/Orchard Mesa Irrigation, Grand Valley Irrigation canals) continue at or near full capacity. Ruedi Reservoir releases, increased substantially through June 4th, will decrease but remain well above average. Green Mountain reservoir releases, which increase in early June to 1,800 cfs, will be gradually trimmed in late June. Willow Creek reservoir reached near capacity and bypassed inflows in early June. Wolford Mountain and Williams Fork Reservoir release rates have dropped following their highest levels on May 30th and June 4th respectively.



Public Use Impacts

Some of the additional Ruedi Reservoir water releases in early June helped accommodate endangered fish on the Colorado River near Grand Junction. Rifle Gap Reservoir has submitted a proposed a Lake Management Plan which includes provisions to assist with the Upper Colorado River Endangered Fish Recovery Program as well.

The Colorado River Roundtable has adopted a "high conservation standard" for both the Western Slope and Front Range as part of its Basin Implementation Plan. Although the basin plan emphasizes the belief that there is not sufficient water remaining in the Colorado Basin to develop Front Range needs, Front Range water planners believe additional diversion will likely be needed regardless of successful conservation efforts. Disagreement also exists regarding whether the state water plan should impact local land-use decisions.



Basinwide Conditions Assessment

The SWSI value for the month was 1.4. 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 131% 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 was 116%.

Snowpack for the Yampa and White River basins was at 139 % of median and the North Platte and Laramie River basins were at 176% of median as of June 1st, 2014. The snow water equivalent (SWE) as of June 1st was 197% of median for the North Platte and Laramie River basins and 154% of median for the Yampa River basin and White River basin.

NRCS predicts mostly above average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the June through September period are 200% of average for the North Platte River near Northgate, and for June through July, 133% of average for the Yampa River near Maybell, 116% of average for the Little Snake River near Lily, and 83% of average for the White River near Meeker

All Division 6 stream gages, with the exception of the Michigan River near Walden, are operational. Peak runoff flow occurred the last week of May at all stations.

Outlook

On June 1st Fish Creek Reservoir was at 85.7% of capacity. Yamcolo Reservoir was storing 8,100 AF at the end of May 2014. The capacity of Yamcolo Reservoir is 8,700 AF. On May 31st Elkhead Creek Reservoir was storing 23,347 AF. The capacity of Elkhead Creek Reservoir is 24,778 AF. On May 31st, 2014, Stagecoach Reservoir was storing 36,800 AF which is over 100% of capacity.

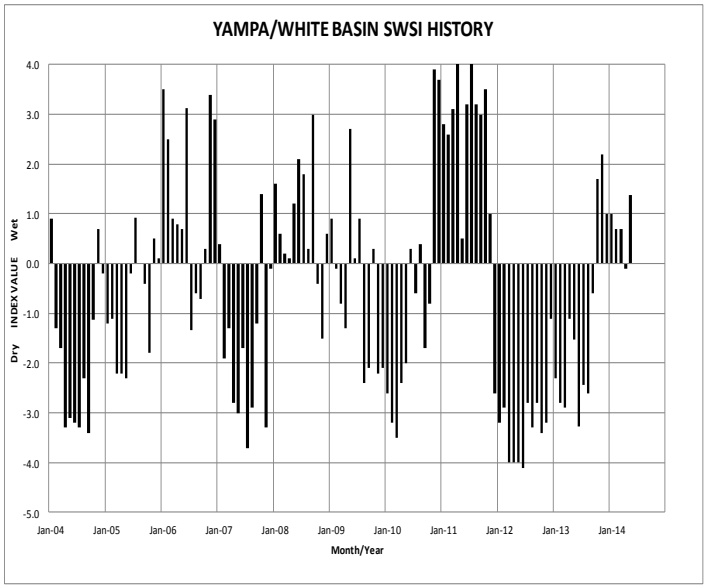
Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount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

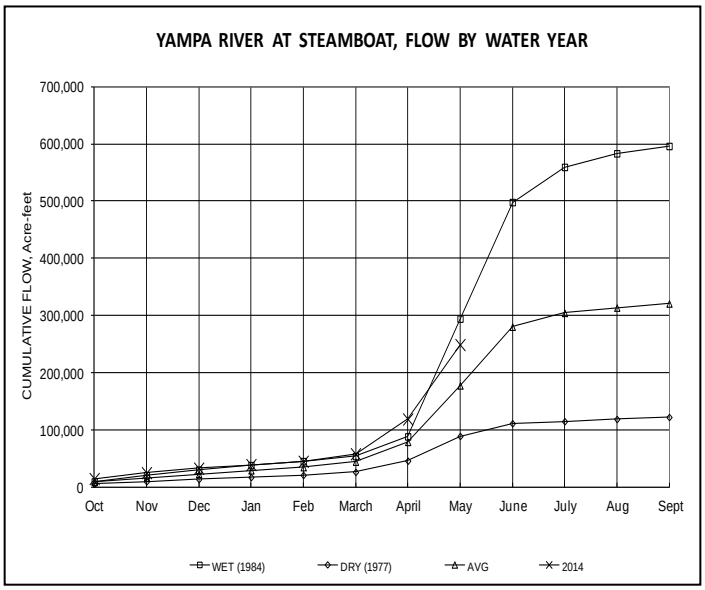
Public Use Impacts

The Yampa River through Steamboat Springs continues to run well above average for this time of year. Recreational enthusiasts are urged to use extreme caution in and around the river. Some areas of the core trail through Steamboat Springs is closed due to high water.

Stagecoach Reservoir is open for boating. Fishing from the shoreline at the inlet and coves has been reported as good. The tailwater is open for fishing but there may still be some construction in progress.

Steamboat Lake is open for boating and all campgrounds are open as well. Fishing has been reported as very positive all over the lake. The swim beach is expected to open the first week of June. All roads are open.





Basinwide Conditions Assessment

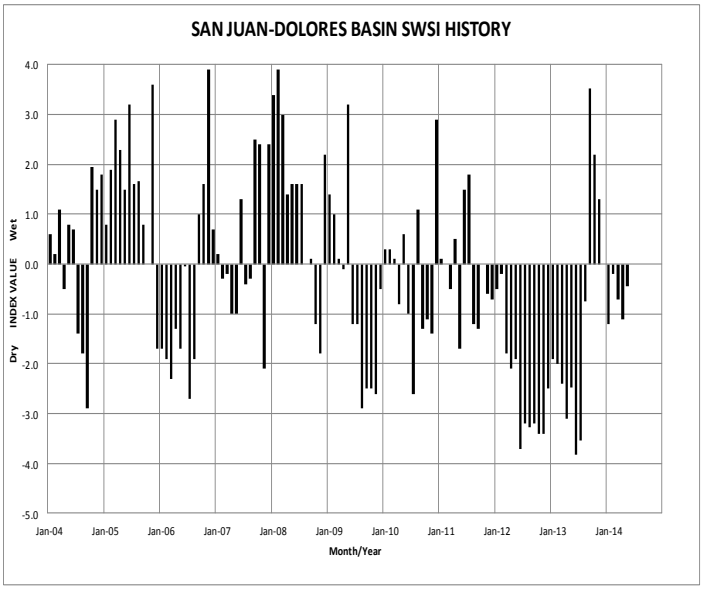
The SWSI value for the month was -0.4. Flow at the Animas River at Durango averaged 1,929 cfs (84% of average). The flow at the Dolores River at Dolores averaged 1,204 cfs (70% of average). The La Plata River at Hesperus averaged 63.5 cfs (38% of average).

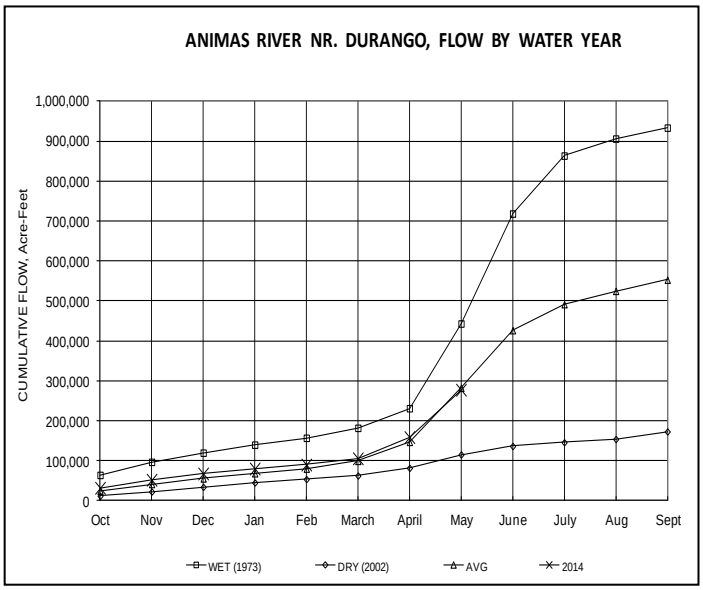
Precipitation in Durango was 0.93 inches for the month, 88% of the 30-year average of 1.05 inches. Precipitation to date in Durango, for the water year, is 8.21 inches, 66% of the 30-year average of 13.19 inches. The average high and low temperatures for the month of May in Durango were 71° and 37°. In comparison, the 30-year average high and low for the month is 62° and 38°.

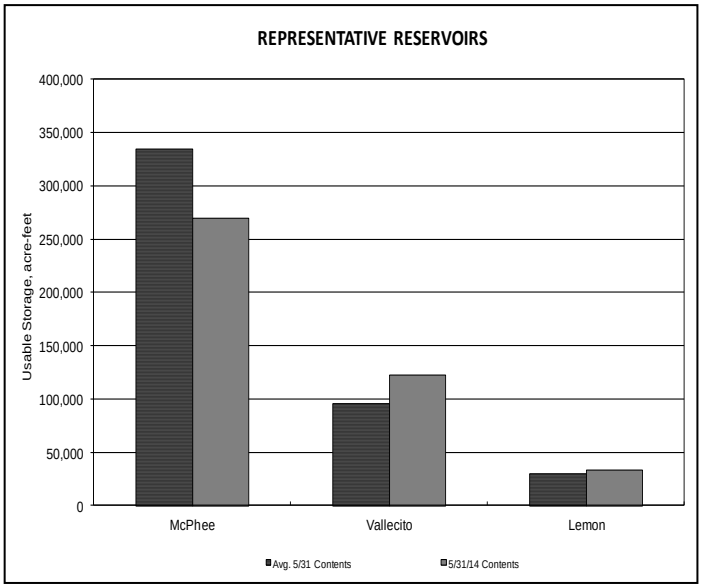
At the end of the month Vallecito Reservoir contained 122,454 acre-feet compared to its average content of 89,995 acre-feet (136% of average). McPhee Reservoir was up to 270,027 acre-feet compared to its average content of 339,969 (79% of average), while Lemon Reservoir was up to 33,330 acre-feet as compared to its average content of 30,260 acre-feet (110% of average).

Outlook

Precipitation (0.93 inches) was near average for May in Durango. There were 65 years out of 120 years of record where there was more precipitation than this year. The flows on the Animas River were below average this month. There were 69 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 73 out of 103 years of record where the total flow past the Dolores stream gauge was more than this year and 90 out of 97 years of record where the total flow past the La Plata River at Hesperus gauge was more than this year. The peak runoff from snow melt occurred on May 29 through 31 on most rivers within the basin this year.







ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - Jun-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.

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.