# Water Availability Task Force Meeting

**September 22, 2011**

**August (Sept. 1) SWSI Report**

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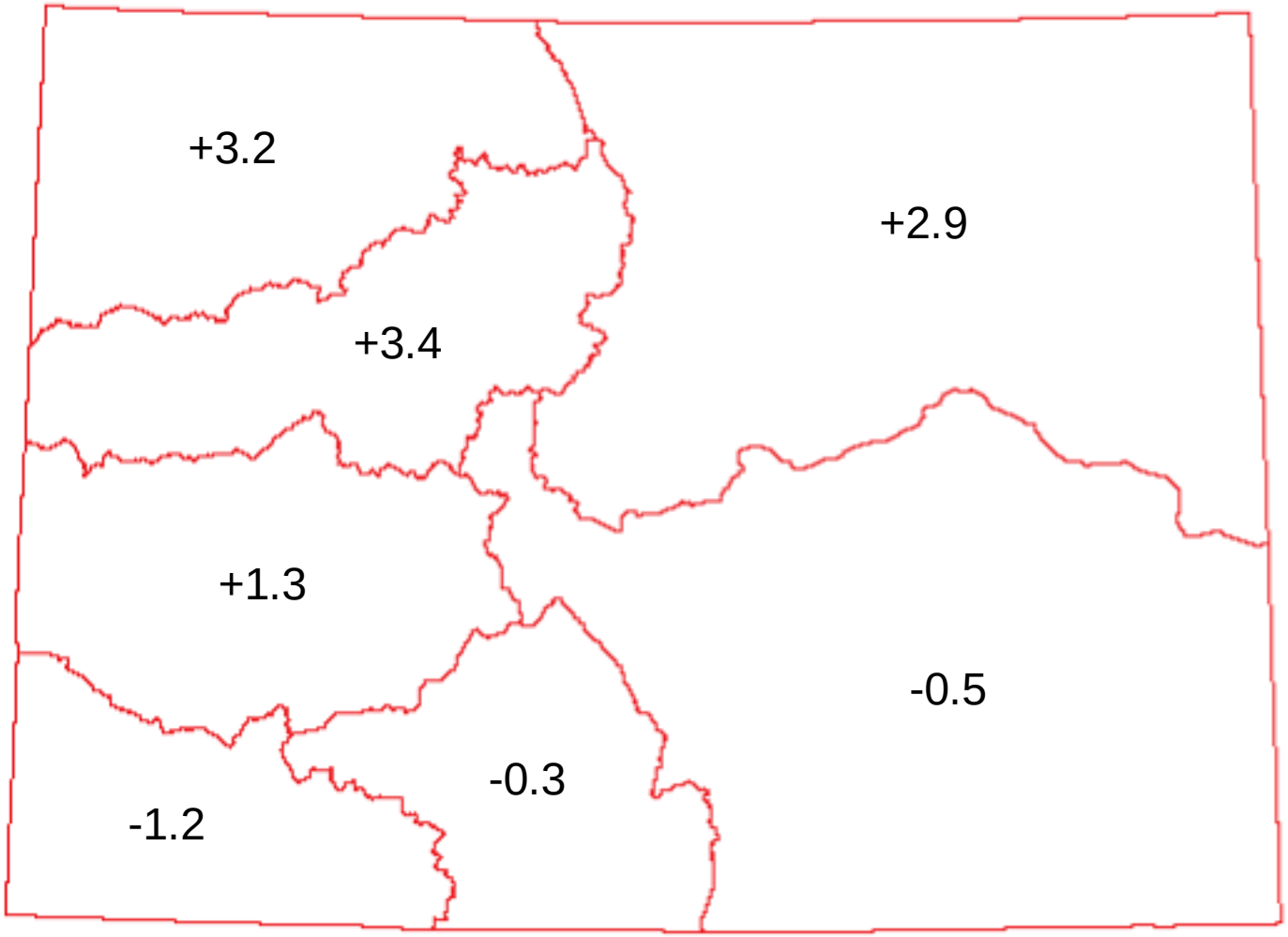
**Colorado Division of Water Resources**

# Summer SWSI

- For the summer period of May – October (June 1 – November 1) the SWSI value is calculated based on Reservoir Storage ($P_{RS}$), Stream Flow ($P_{SF}$), and Precipitation ($P_{PCP}$).

- The primary component in calculating the summer SWSI value is Stream Flow for all basins except the South Platte, where Reservoir Storage is the primary component.

# Surface Water Supply Index for Colorado




September 1, 2011

# Division 1 – South Platte Basin

$$\mathrm{SWSI} = \frac{(0.25 \times \mathrm{PN_{SF}}) + (0.10 \times \mathrm{PN_{PCP}}) + (0.65 \times \mathrm{PN_{RS}}) - 50}{12}$$

- The SWSI value for the month was +2.9, down 0.6 from last month's value.
  - Reservoir storage was 118% of normal
  - Flow at South Platte near Kersey was below average, but streamflow at the state line (Julesburg) was above average
  - Basinwide precipitation was below average
- Conditions returned closer to normal after a very good July.
- August tended to be hot and dry along the Front Range, with above-average precipitation and stream flow on the eastern plains.

# Division 2 – Arkansas Basin

$$\text{SWSI} = \frac{(0.55 \times \text{PN}_{\text{SF}}) + (0.10 \times \text{PN}_{\text{PCP}}) + (0.35 \times \text{PN}_{\text{RS}}) - 50}{12}$$

- The SWSI value for the month was -0.5, down 2.7 from last month's value.
  - Reservoir storage was 98% of normal
  - Flow at Arkansas River near Portland was below average
  - Precipitation was slightly below average
- Storage in John Martin Reservoir dropped to just under 9,600 feet (capacity of 346,000 acre-feet).
- Streamflows dropped significantly during the month, causing some major ditches to stop running.

# Division 3 – Rio Grande Basin

$$\text{SWSI} = \frac{(0.90 \times \text{PN}_{\text{SF}}) + (0.05 \times \text{PN}_{\text{PCP}}) + (0.05 \times \text{PN}_{\text{RS}}) - 50}{12}$$

- The SWSI value for the month was -0.4, down 0.8 from last month's value.
  - Reservoir storage was 92% of normal
  - Flow at Rio Grande – Del Norte was well below average
  - Precipitation was slightly below average
- August was warmer than usual, but frequent rainfall eased some of the parched conditions in the basin.
  - Rain is greening up grazing lands, but hindering crop harvest.
- Division 3 is the proud host of the CWOA Conference and SEO Forum in South Fork next Thursday and Friday. Registration has been extended through Friday, September 23rd. Contact the Division 3 office for more information.

# Division 4 – Gunnison Basin

$$\text{SWSI} = \frac{(0.60 \times \text{PN}_{\text{SF}}) + (0.10 \times \text{PN}_{\text{PCP}}) + (0.30 \times \text{PN}_{\text{RS}}) - 50}{12}$$

- The SWSI value for the month was +1.3, down 1.7 from last month's value.
  - Reservoir storage was 102% of normal
  - Flow at Uncompahgre near Ridgeway was near average
  - Precipitation was slightly below average
- Increased temperatures and below average precipitation increased irrigation demand and reservoir releases as irrigation season winds down.
- Many calls came on at the beginning of August, but this was later than usual.
- Reduced reliance on storage this year will start the basin out in good shape for water year 2012.

# Division 5 – Colorado Basin

$$\mathrm{SWSI} = \frac{(0.70 \times \mathrm{PN_{SF}}) + (0.05 \times \mathrm{PN_{PCP}}) + (0.25 \times \mathrm{PN_{RS}}) - 50}{12}$$

- The SWSI value for the month was +3.4, no change from last month's value.
  - Reservoir storage 111% of normal
  - Flow at Colorado River near Dotsero was significantly above average
  - Precipitation was well below average
- Basinwide streamflows have continued to be close to 1½ times average.
- Conditions look excellent through the end of the water year.

# Division 6 – Yampa/White Basin

$$\mathrm{SWSI} = \frac{(0.90 \times \mathrm{PN_{SF}}) + (0.10 \times \mathrm{PN_{PCP}}) - 50}{12}$$

- The SWSI value for the month was +3.2, down 0.9 from last month's value.
  - Flow at Yampa – Steamboat Springs was more than 2 times average
  - Precipitation was significantly below average
    - $P_N$ = 4.75
    - Precipitation is such a minor component, it did not have a major impact on the SWSI value

# Division 7 – San Juan/Dolores Basin

$$\mathrm{SWSI} = \frac{(0.85 \times \mathrm{PN_{SF}}) + (0.05 \times \mathrm{PN_{PCP}}) + (0.10 \times \mathrm{PN_{RS}}) - 50}{12}$$

- The SWSI value for the month was -1.2, down 3.0 from last month's value.
  - Reservoir storage was 109% of normal
  - Flow at Animas River at Durango was below average
  - Precipitation was well below average
- To date, conditions in Durango have been warmer and drier than average.
- Streamflow at the Dolores River near Dolores was near average only due to releases from Groundhog Reservoir.

# Questions?

# COLORADO
# WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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September 2011

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

The statewide SWSI values for August (September 1) range from a high value of +3.4 in the Colorado Basin to a low value of -1.2 in the San Juan/Dolores Basin. One of the basins (Rio Grande) experienced a gain from the previous month's value, five of the basins (South Platte, Arkansas, Gunnison, Yampa/White, and San Juan/Dolores) experienced a loss from the previous month's value, and one (Colorado) experienced no change. This August tended to be warmer and drier than average for the majority of the state, causing most SWSI values to decline.

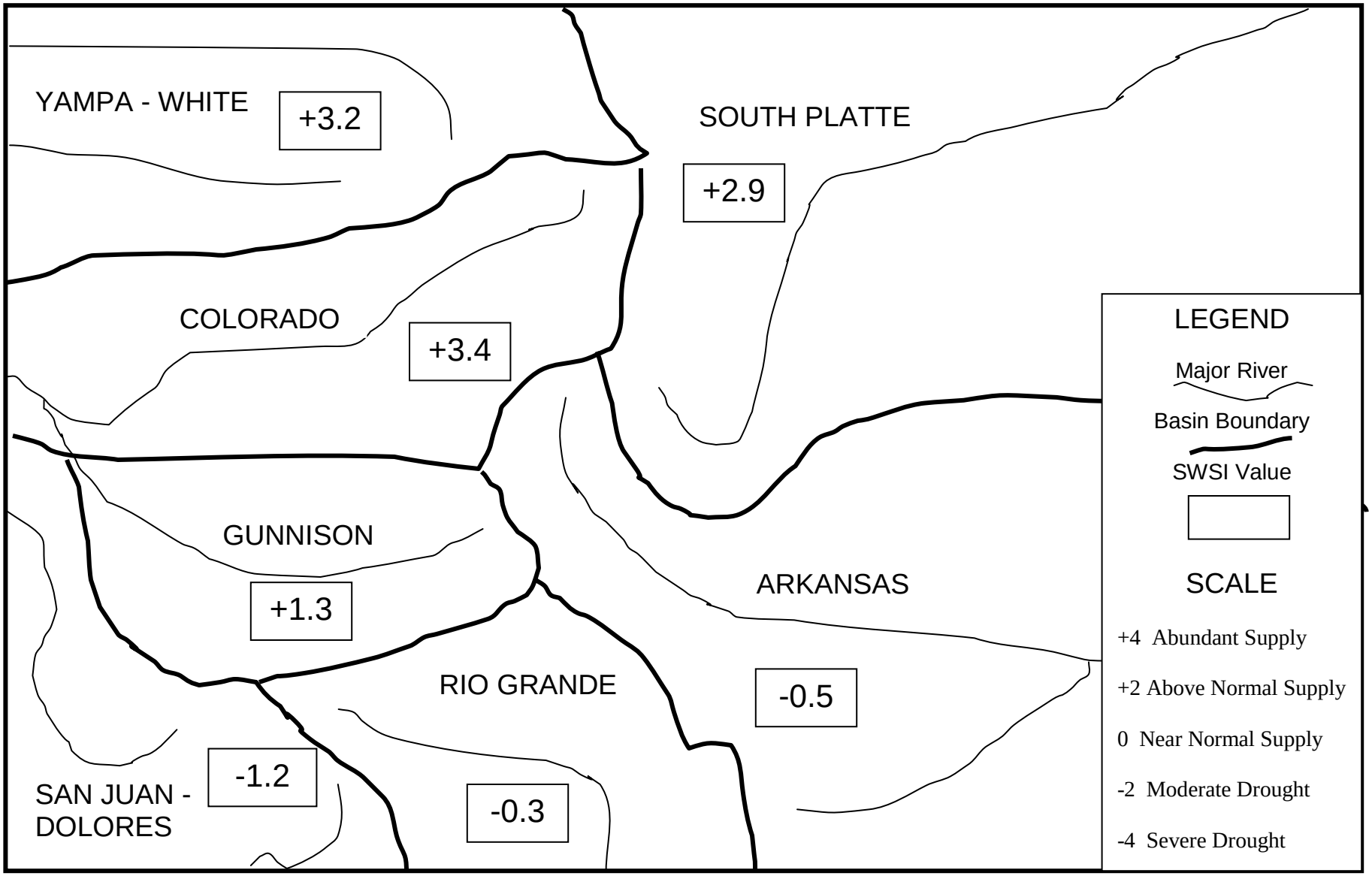
The following SWSI values were computed for each of the seven major basins for September 1, 2011, and reflect the conditions during the month of August.

| Basin | September 1, 2011 SWSI Value | Change From Previous Month | Change From Previous Year |
|---|---|---|---|
| South Platte | +2.9 | - 0.6 | - 0.1 |
| Arkansas | - 0.5 | - 2.7 | - 0.7 |
| Rio Grande | - 0.3 | +0.1 | +0.4 |
| Gunnison | +1.3 | - 1.7 | +2.6 |
| Colorado | +3.4 | 0.0 | +2.8 |
| Yampa/White | +3.2 | - 0.9 | +2.8 |
| San Juan/Dolores | - 1.2 | - 3.0 | - 2.3 |

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




**September 1, 2011**

Basinwide Conditions Assessment

The SWSI value for the month was +2.9. Reservoir storage in Dillon, Horsetooth, Eleven Mile, Cheesman, Jackson, and Barr Lake, the major component in this basin in computing the SWSI value, was 118% of normal as of the end of August. Cumulative storage in the major plains reservoirs (Julesburg, North Sterling, and Prewitt) is at 55% of capacity. Cumulative storage in the major upper-basin reservoirs (Cheesman, Eleven Mile, Spinney, and Antero) is at 96% of capacity. Flow at the gaging station South Platte River near Kersey was 432 cfs, as compared to the long-term average of 508 cfs (109 years of record). Flow at the Colorado/Nebraska state line averaged 284 cfs, as compared to the long-term average of 195 cfs (108 years of record).

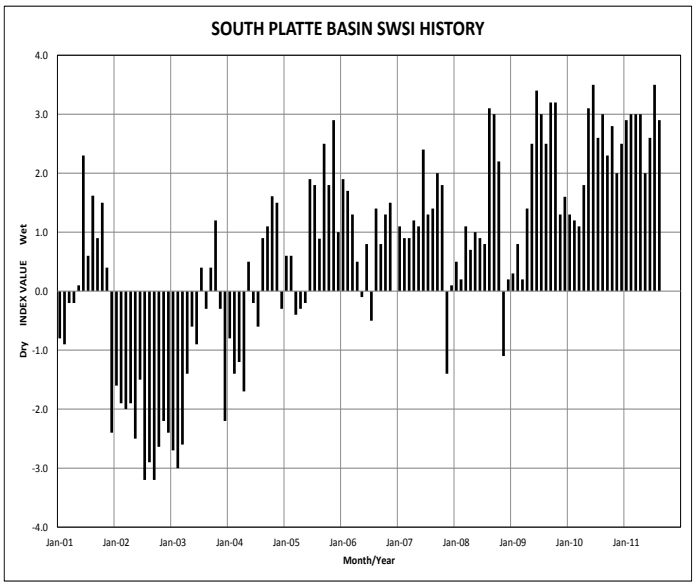
Outlook

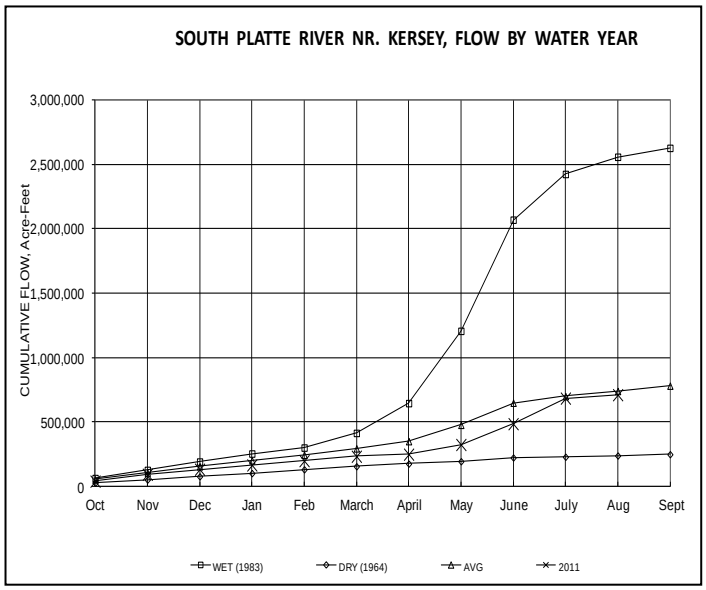
After an excellent July, August slowly returned to only slightly above normal water supply conditions for most of the South Platte basin. The calls on the tributaries and mainstem above the South Platte – St. Vrain confluence worked their way from very junior to about average over the course of the month. The call on the mainstem between the South Platte – St. Vrain confluence and Sterling went from free river to only moderately more junior than normal by the end of the month, while the mainstem below Sterling remained free the entire month.

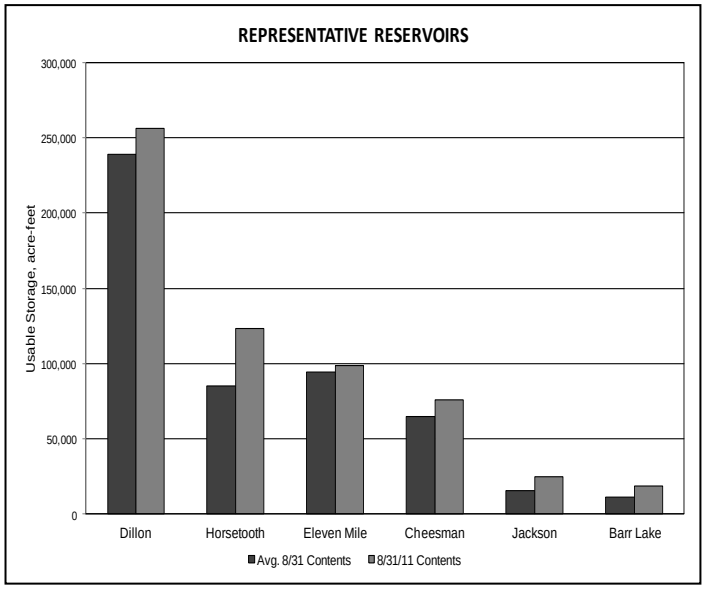
The river call conditions just discussed also reflect the weather pattern that developed over the basin in August. While Denver set a new record as the hottest August ever, precipitation in Sterling was about 170% of average.

The August mean daily flows at the Kersey and Julesburg gages also reflected the marked difference in the basin. The flow at Kersey was only 85% of average (432 cfs vs. 508 cfs) but the flow at Julesburg was 158% of average (284 cfs vs. 180 cfs). However, the basin wide end of August reservoir storage continued to be very good at 121% of average.

The September and October – November outlooks for the South Platte basin appear to be mixed. The September outlook is for equal chances of above or below average temperature and precipitation. The October and November outlooks are for equal chances of above or below average precipitation, but temperatures are forecast to be well above normal for both months.



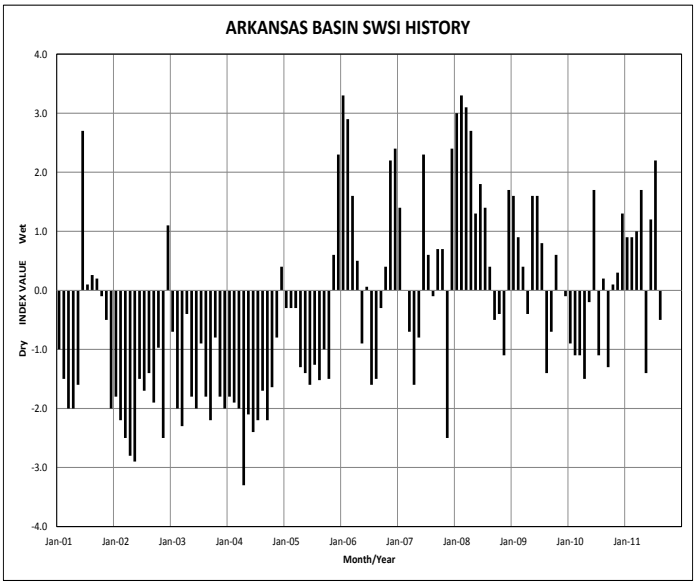



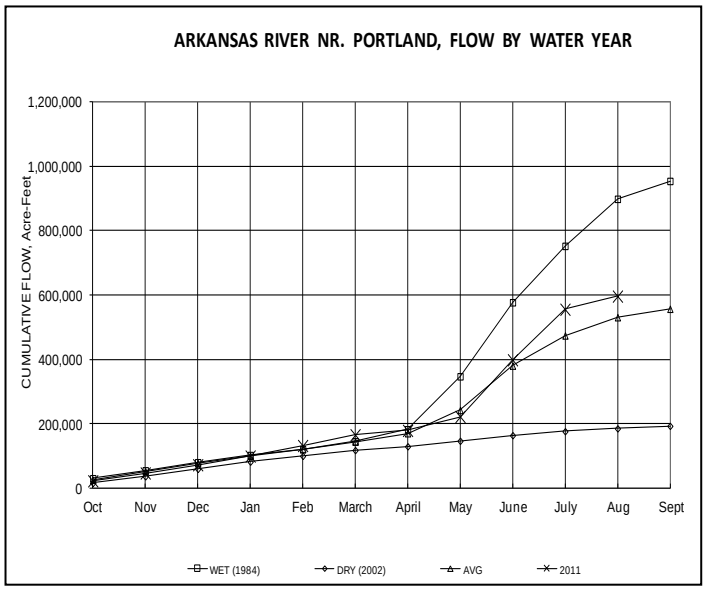
Basinwide Conditions Assessment

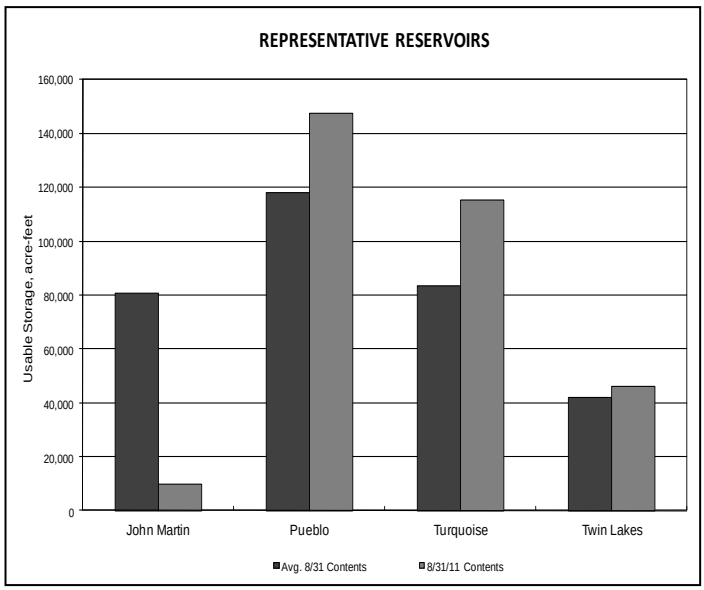
The SWSI value for the month was -0.5. Flow at the gaging station Arkansas River near Portland was 664 cfs, as compared to the long-term average of 923 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 98% of normal as of the end of August.

Outlook

River calls during August ranged from a senior call of 12/3/1884 Catlin to 3/1/1887 Fort Lyon II depending on location above and below John Martin Reservoir and date. River flows dropped low enough by the end of the month to cause some major ditches (Amity Canal for example) to have to shut off entirely due to being out-of-priority and having no remaining reservoir water. John Martin Reservoir levels fell to just under 9,600 acre-feet at the end of August. This is an extremely low level for John Martin Reservoir which holds up to 346,000 acre-feet of storage, not including the flood control space. The Permanent Fishery Pool in John Martin Reservoir comprised approximately 5,800 acre-feet of the remaining storage and Colorado State Parks and Colorado Division of Wildlife were working on a plan to deliver additional water to the permanent pool in September.



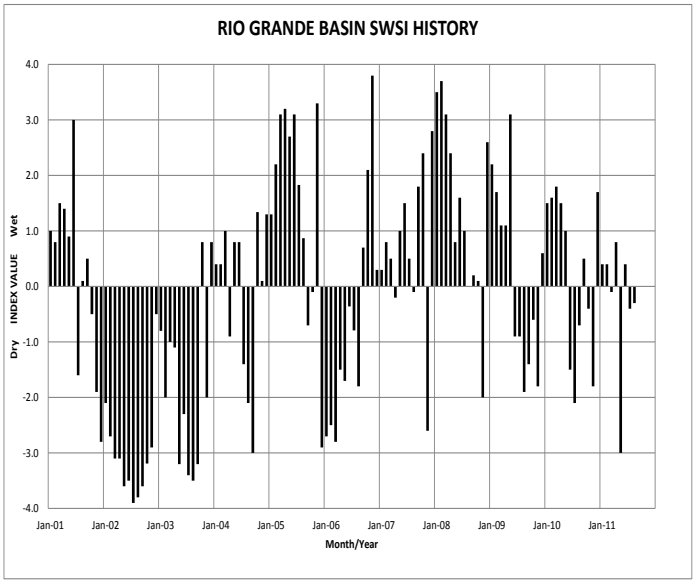



Basinwide Conditions Assessment

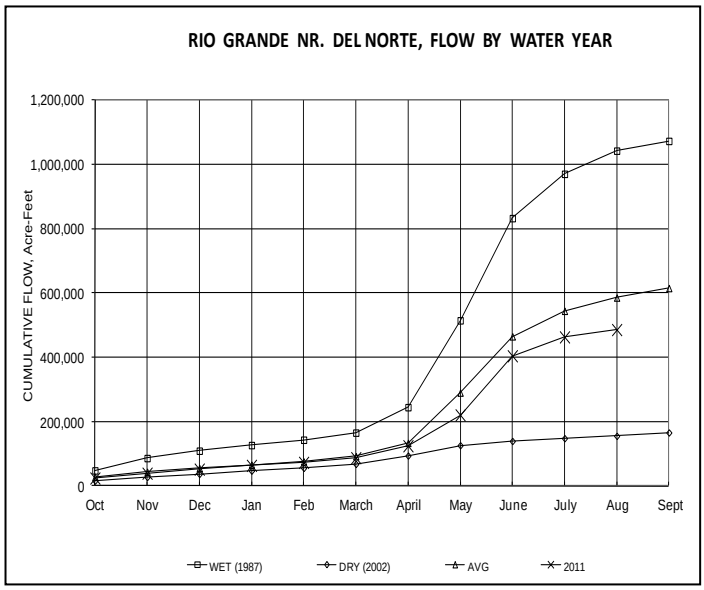
The SWSI value for the month was -0.3. Flow at the gaging station Rio Grande near Del Norte averaged 370 cfs (46% of normal). The Conejos River near Mogote had a mean flow of 182 cfs (89% of normal). Streamflow in the upper Rio Grande basin was generally below average during August. Rainfall on the mountains and plains helped streamflow some, but the majority of the rain soaked into the dry landscape. The Conejos River had near-average flow due in part to storage releases from Platoro Reservoir for irrigation demand. With the exception of the Conejos system, runoff throughout the basin has been poor since July 1 and nearly as bad as conditions in the late summer of 2002.

Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 92% of normal as of the end of August. Reservoir storage in the basin has been severely depleted to help meet irrigation demand.




Outlook

August was much warmer than normal, but the frequent rainfall eased some of the parched conditions. However, the recently-released National Weather Service 90-day precipitation and temperature outlooks call for dry and warm conditions through the end of the year for this region.



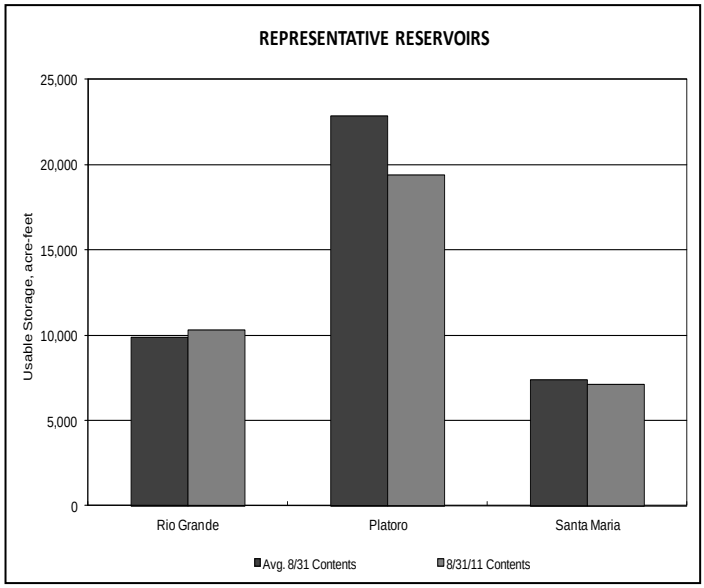

Administrative/Management Concerns

The Division 3 office is very proud to host the annual State Engineer's Forum on Friday, September 30, 2011 in South Fork at the Biggins Restaurant. The theme of the forum is "Colorado Water - How Can Our State Agencies Cooperate?" The keynote speaker is Mike King, DNR Director. Registration is open to the public. Contact the Division office at (719) 589-6683 for more details.

Case No. 07CW52, the management plan of the RGWCD Subdistrict No. 1, the Closed Basin area, was conditionally approved by Water Judge O. John Kuenhold on May 27, 2010. That decision was appealed to the Supreme Court. Oral arguments are set for September 28, 2011.

Public Use Impacts

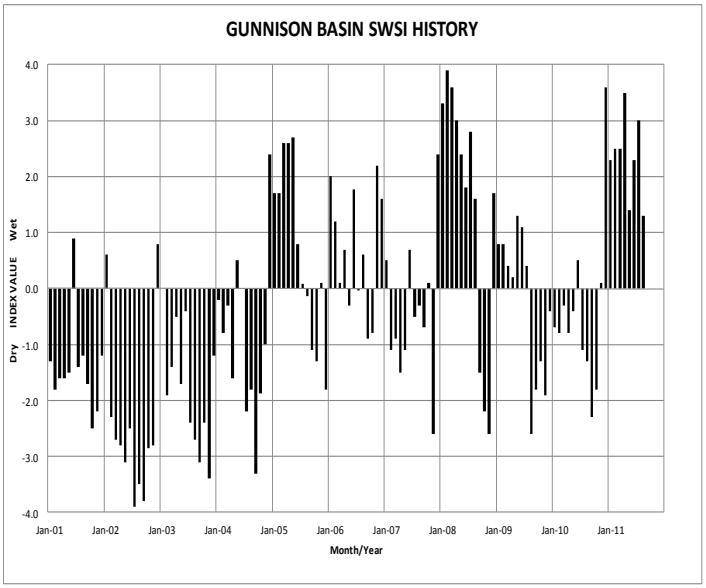
The heat and wind of May, June and July had a very negative impact on soil moisture conditions and growth of native plants and crops. The rain that has finally arrived is greening up the rangeland, but hampering the ability of the farmers and ranchers to harvest their crops.



Basinwide Conditions Assessment

The SWSI value for the month was +1.3. Flow at the gaging station Uncompahgre River near Ridgeway was 179 cfs, as compared to the long-term average of 164 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 102% of normal as of the end of August.

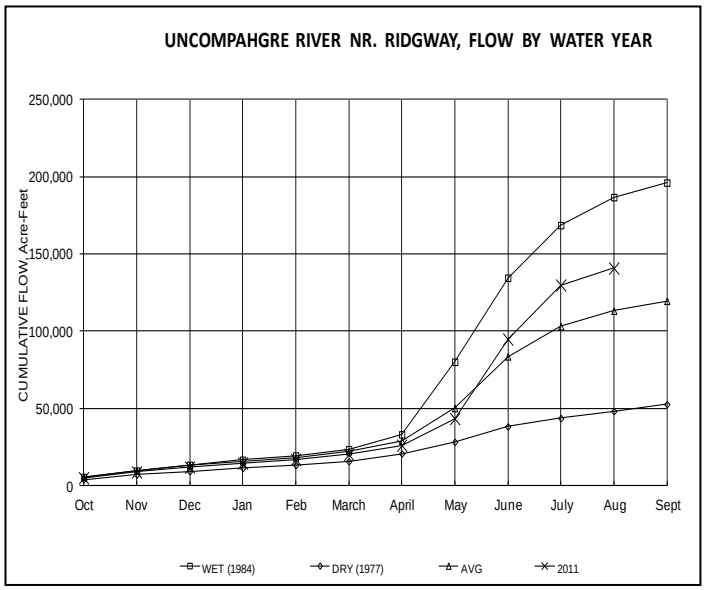
Things dried out and heated up in the Gunnison basin during August with below average precipitation and above average temperatures basin-wide. Precipitation in the upper Gunnison and San Miguel basins ranged from 50 to 70 percent of average while temperatures were approximately three degrees above average. Seasonal precipitation and reservoir storage still remain above average for the first of September. Stream flows in many streams dropped rapidly in the first week of August with the drier weather, and remained near their averages throughout the month. The drier weather was actually welcomed in many higher elevation areas where they hay during mid and late August.




Outlook

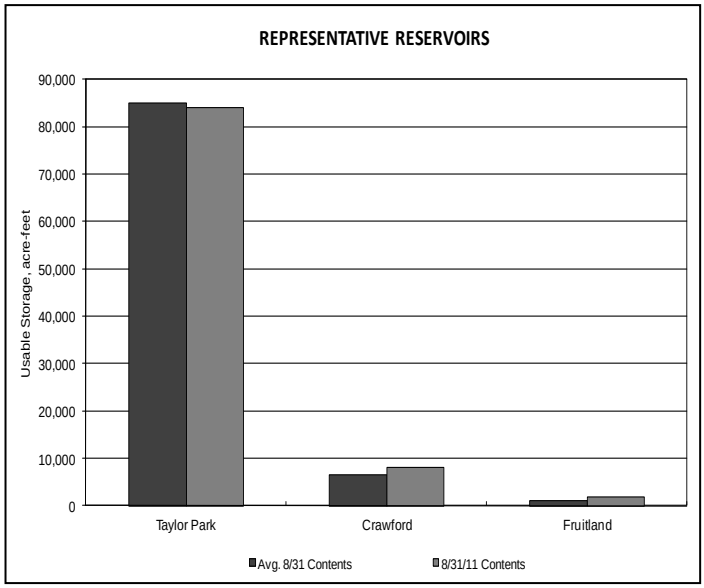
Above average August temperatures definitely increased irrigation demand and reservoir releases, but much later than typical. This produced lower than average reliance on storage throughout the season and will leave the basin with above average storage to begin the 2012 water year.

The National Climate Center currently forecasts La Niña conditions in the Pacific again this winter, which leaves the forecast for the Gunnison basin uncertain as those conditions are not highly correlated with above or below average precipitation in central Colorado. As a result, forecasts predict above average temperatures and average precipitation through December. Water users are hoping that like last year, the La Niña conditions will result in well above average snowpack in 2012.




Administrative/Management Concerns

Many calls came on in August, but as mentioned previously this is later than usual. That said, many calls were placed with the drastic weather change in early August and much of the North Fork of the Gunnison, Surface Creek, San Miguel, and some tributaries in the Crested Butte area were on call by the end of the month. No administrative concerns yet since the irrigation season is winding down with adequate reservoir storage, and snowpack forecasts have not been prepared.



Basinwide Conditions Assessment

The SWSI value for the month was +3.4. Flow at the gaging station Colorado River near Dotsero was 3,056 cfs, as compared to the long-term average of 1,766 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 111% of normal as of the end of August.

Outlook

Basin wide river flows have continued to run 140-150 percent above average throughout the end of August and early September, with short periods even higher due to heavy precipitation. Flows will likely continue at significantly above average due to increased likelihood of substantial precipitation through mid-September.

Administrative/Management Concerns

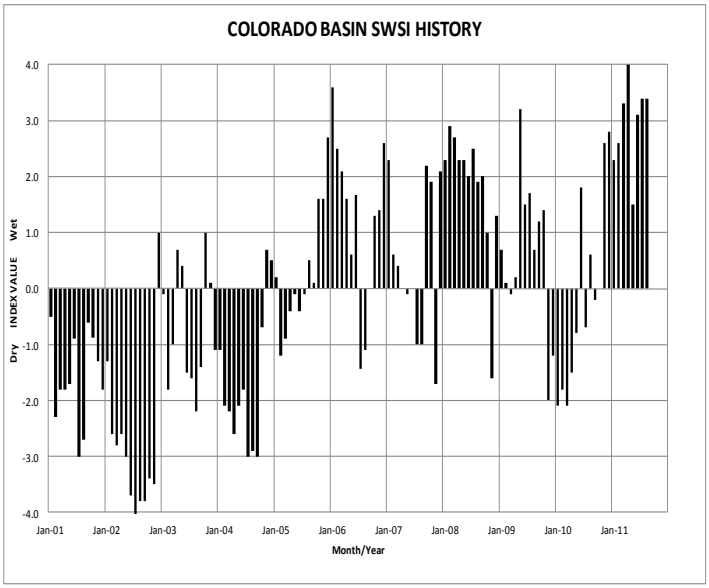
Green Mountain Reservoir releases have remained relatively constant in early September with minor increases to help maintain the endangered fish target flows in the 15-mile reach of the Colorado River below Palisade. Ruedi Reservoir releases have increased significantly from 135 to 300 cfs. There is no call from grand valley irrigators.

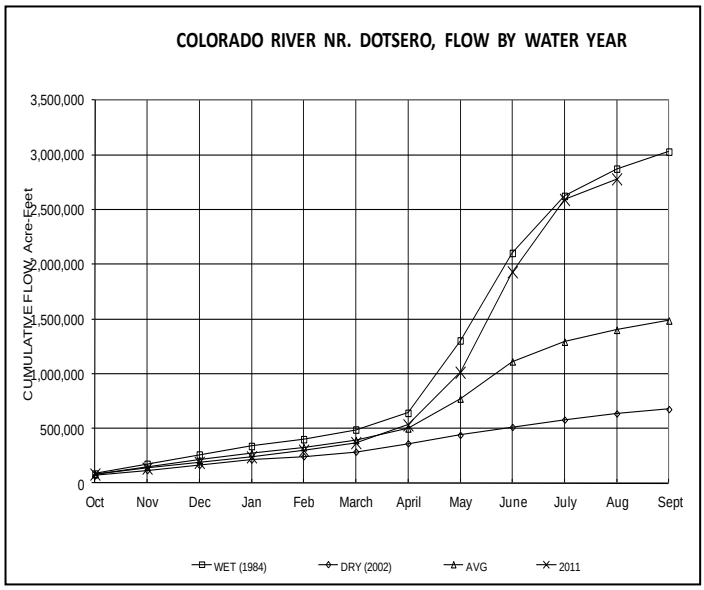
Inflow to Lake Powell for the month of August was 0.86 maf (140 percent of average). This was less than the projected inflow of 1.00 maf. Equalization operations between Lake Powell and Lake Mead, which began in April, were originally scheduled to end September 30th. However, this process will likely continue into October due to significantly high spring and summer inflow to Lake Powell. Additionally, a steady release rate of 15,500 cfs is now being made to continue through October 31 for a steady flow experiment, after which releases will be increased to approximately 22,600 cfs.

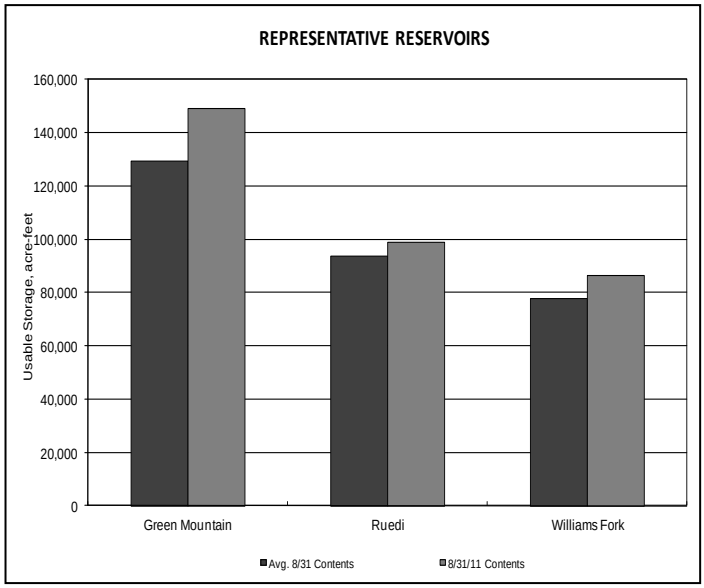
Public Use Impacts

Fishing and rafting activity on the Colorado and Roaring Fork Rivers slowed somewhat in August, with kayaking volume significantly less.

It is interesting to note that overall reservoir storage in the Colorado River Basin has increased from 50.2 percent of capacity in September 2004 to 65.4 percent of capacity as of September 7, 2011, a 10 maf increase.

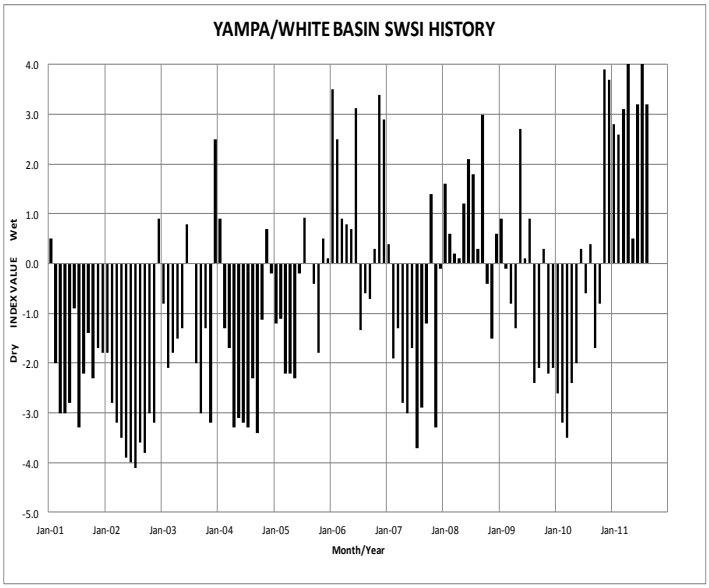


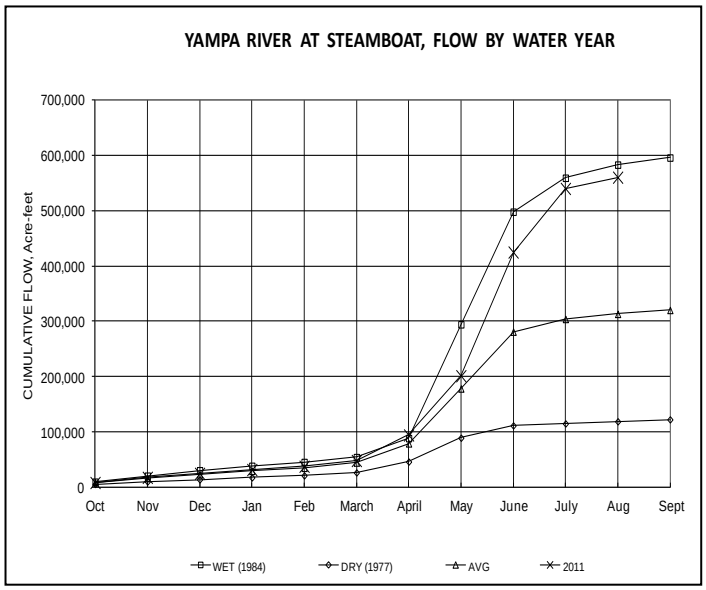



Basinwide Conditions Assessment

The SWSI value for the month was +3.2. Flow at the gaging station Yampa River at Steamboat was 331 cfs, as compared to the long-term average of 150 cfs.



Basinwide Conditions Assessment

The SWSI value for the month was -1.2. Flow at the Animas River at Durango averaged 412 cfs (71% of average). The flow at the Dolores River at Dolores averaged 242 cfs (98% of average). The La Plata River at Hesperus averaged 7.3 cfs (32% of average).

Storage in McPhee, Vallecito, and Lemon reservoirs totaled 109% of normal as of the end of August. At the end of the month Vallecito Reservoir contained 80,810 acre-feet compared to its average content of 70,137 acre-feet (115% of average). McPhee Reservoir was up to 321,240 acre-feet compared to its average content of 278,774 (115% of average), while Lemon Reservoir was up to 14,604 acre-feet as compared to its average content of 22,159 acre-feet (66% of average).

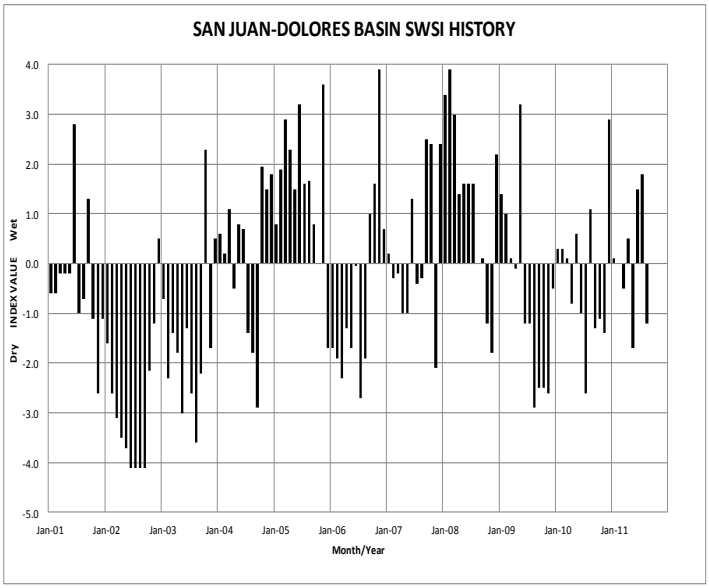
Precipitation in Durango was 1.57 inches for the month, 58% of the 30-year average of 2.72 inches. Precipitation to date in Durango, for the water year, is 15.15 inches, 86% of the 30-year average of 17.59 inches. The average high and low temperatures for the month of August in Durango were 85° and 56°. In comparison, the 30-year average high and low for the month is 84° and 52°.

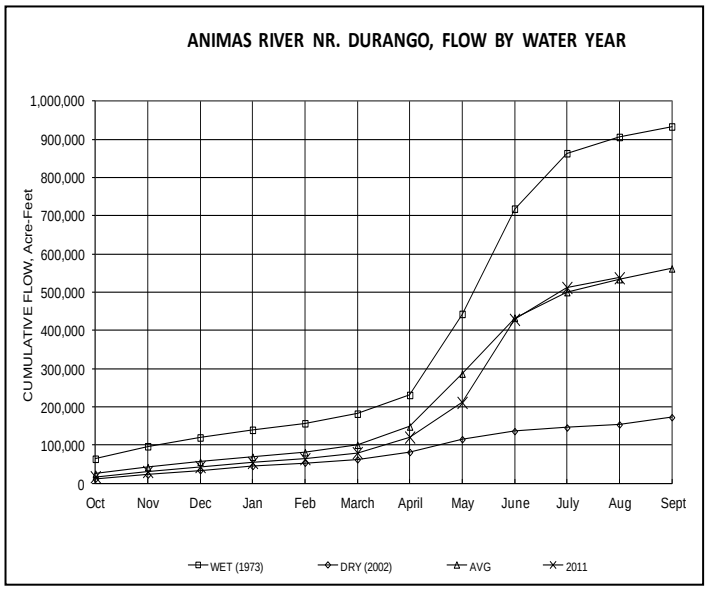
Outlook

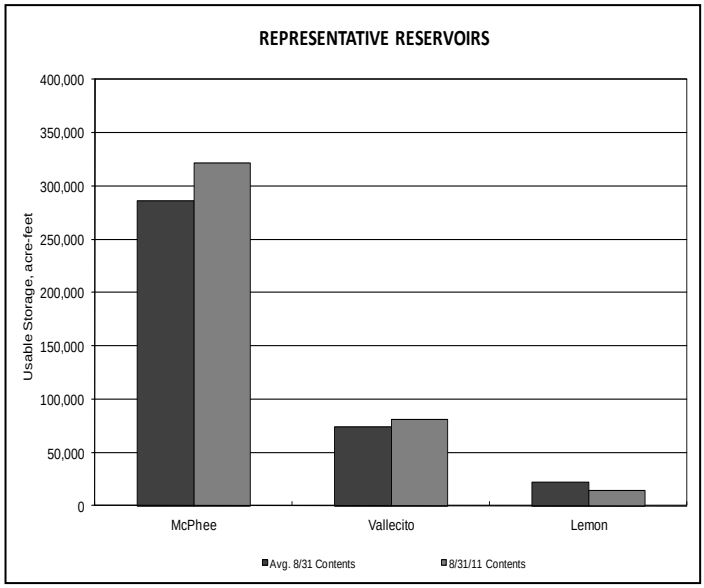
Precipitation (1.57-inches) was well below average for August in Durango. There are 78 years out of 117 years of record where there was more precipitation than this year. The monsoon rains have been isolated with most of the precipitation occurring in the mountains north and east of Durango. The flow on the Dolores River at Dolores was near its average for this time of year but only because releases from Groundhog Reservoir kept the flows higher. There are 90 years out of 95 years of record where there was more at Hesperus than this year.

Administrative/Management Concerns

The LaPlata River compact call started on April 7, 2011 and will remain on call for the rest of the season.



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