Water Availability Task Force Meeting

July 14, 2011

June (July 1) SWSI Report

Sarah Brucker, P.E.

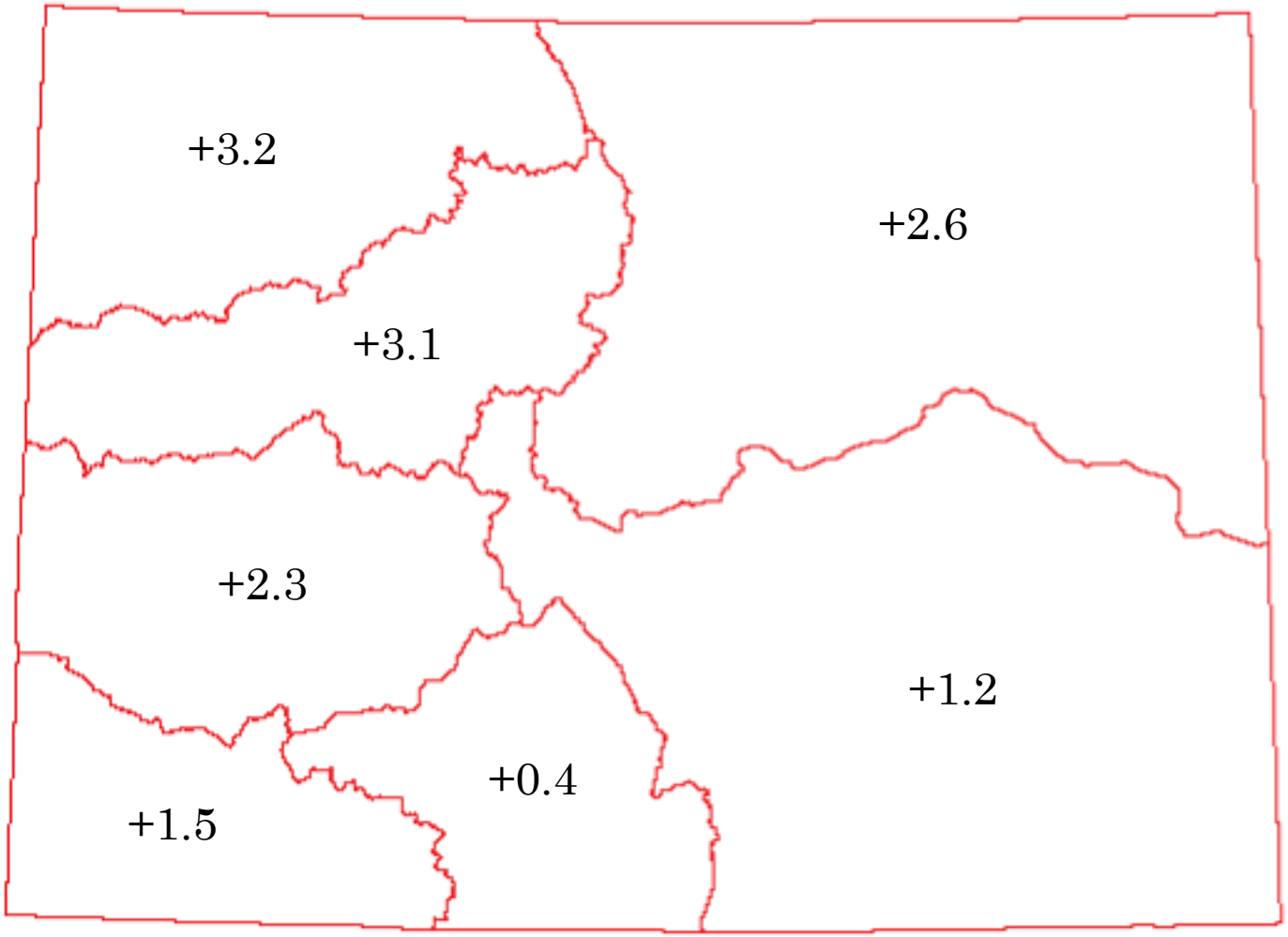
Colorado Division of Water Resources

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



July 1, 2011

Division 1 – South Platte Basin

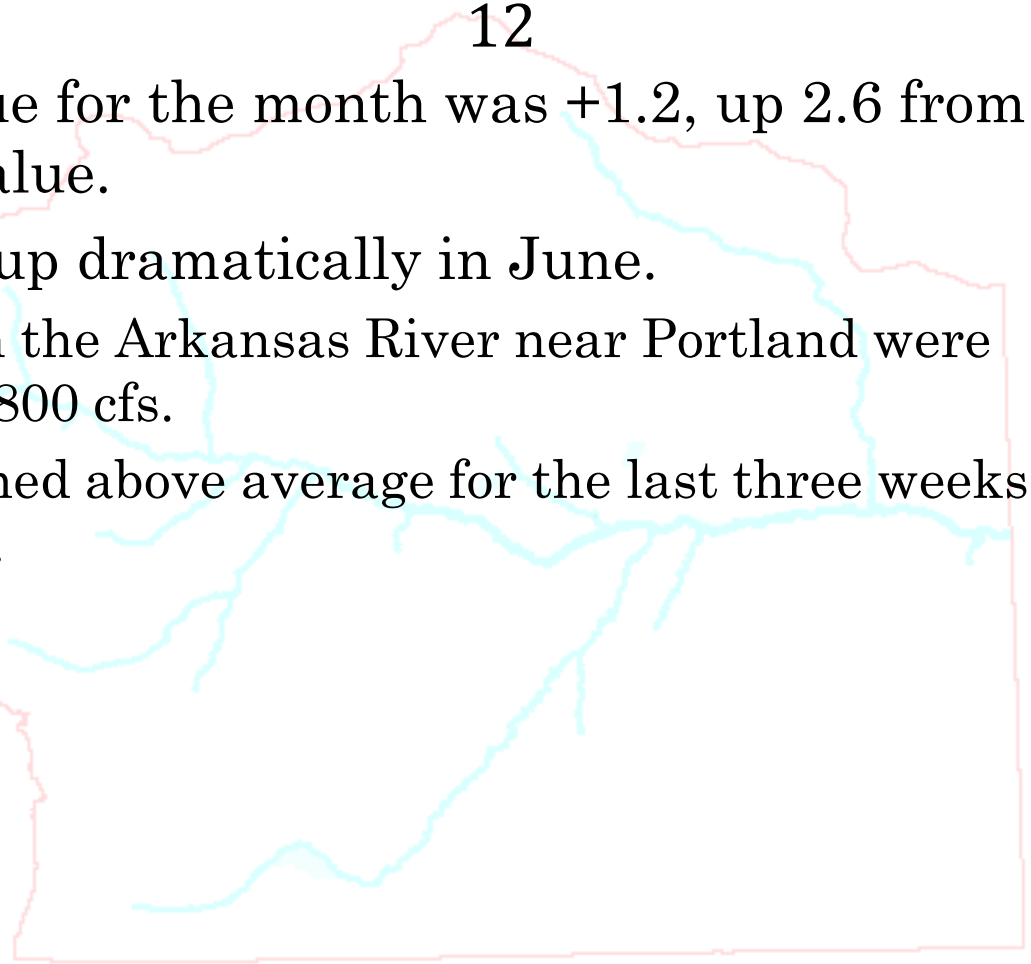
$$SWSI = \frac{(0.25 \times PN_{SF}) + (0.10 \times PN_{PCP}) + (0.65 \times PN_{RS}) - 50}{12}$$

- The SWSI value for the month was +2.6, up 0.6 from last month's value.
- Basin continues to exhibit a split personality:
  - Mainstem and most major tributaries below metro Denver were under free river conditions the entire month.
  - Mainstem and major tributaries south of Clear Creek (I-70) were under a call the entire month.
- Some minor flooding in low-lying areas adjacent to the Cache la Poudre early in the month.
- Outlook for July appears to be very good.

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 +1.2, up 2.6 from last month's value.
- Runoff picked up dramatically in June.
  - Peak flows in the Arkansas River near Portland were just under 3,800 cfs.
  - Flows remained above average for the last three weeks of the month.



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, up 3.4 from last month's value.
- Streamflow in the basin was near average, but anticipated to have below normal flow for the rest of the irrigation season due to lack of snowpack.
- Very little precipitation during June – only a trace amount recorded in Alamosa for the month.
- Limited ability to graze livestock on Federal lands, and feed crops are in very short supply, resulting in many livestock owners reducing herd size.

Division 4 – Gunnison Basin

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

- The SWSI value for the month was +2.3, up 0.9 from last month's value.
- Cooler weather resulted in slow runoff, preventing serious flooding.
- Prolonged high runoff will continue well into July for many streams.
- Most basin reservoirs will fill this year, with many spilling or close to spilling already.
- Water year 2011 looks good for the Gunnison basin.

Division 5 – Colorado Basin

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

- The SWSI value for the month was +3.1, up 1.6 from last month's value.
- Flow in the Colorado River near Dotsero was 15,510 cfs, 272% of the long-term average.
- Flooding along the Lower Fryingpan and Roaring Ford Rivers has been minor.
- Initial spill at Lake Granby occurred in early July; a second smaller spill is anticipated.

Division 6 – Yampa/White Basin

$$\text{SWSI} = \frac{(0.90 \times \text{PN}_{\text{SF}}) + (0.10 \times \text{PN}_{\text{PCP}}) - 50}{12}$$

- The SWSI value for the month was +3.2, up 2.7 from last month's value.
- Streamflows are well above average and predicted to stay above average for the summer.
- Localized flooding has occurred in all Division 6 river basins during June and predicted to continue for several weeks in July.
- Precipitation was well below average for the month, but remains above average (138%) for the year.

Division 7 – San Juan/Dolores Basin

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

- The SWSI value for the month was +1.5, up 3.2 from last month's value.
- Precipitation was well below average for the month, with only 0.02 inches measured in Durango.
- Streamflows were slightly above average for the major rivers in the basin.
- Most reservoirs were full by the end of the month.
- Nighthorse Reservoir filled for the first time on June 30th.

Questions?

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

July 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 June (July 1) range from a high value of +3.2 in the Colorado Basin to a low value of +0.4 in the Rio Grande Basin. All seven of the basins (South Platte, Arkansas, Rio Grande, Gunnison, Colorado, Yampa/White, and San Juan/Dolores) experienced a gain from the previous month's value. This is likely the result of snowmelt runoff (finally) hitting the streams and filling the reservoirs.

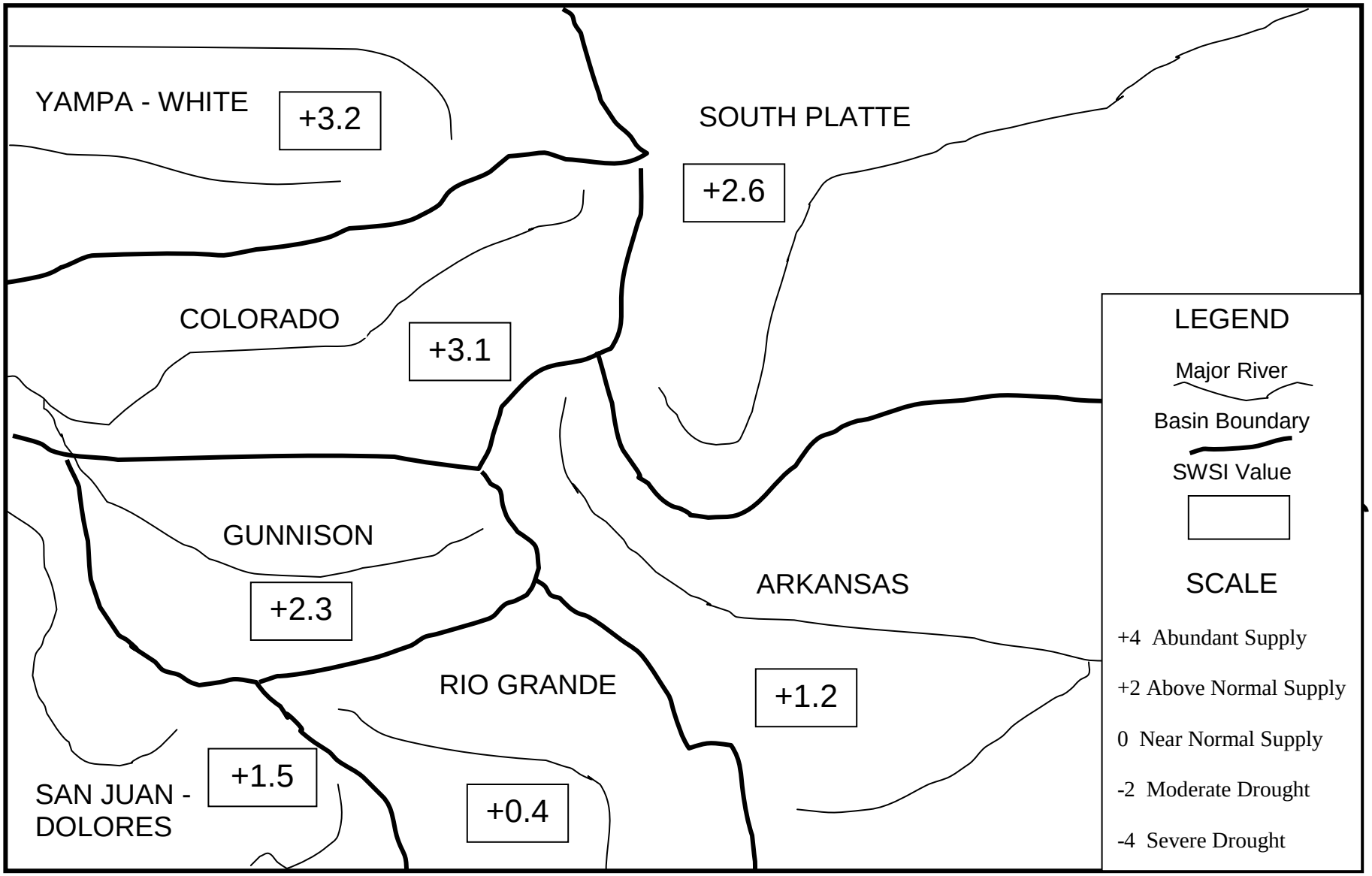
The following SWSI values were computed for each of the seven major basins for July 1, 2011, and reflect the conditions during the month of June.

Basin	July 1, 2011 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	+2.6	+0.6	- 0.9
Arkansas	+1.2	+2.6	- 0.5
Rio Grande	+0.4	+3.4	+1.9
Gunnison	+2.3	+0.9	+1.8
Colorado	+3.1	+1.6	+1.3
Yampa/White	+3.2	+2.7	+2.9
San Juan/Dolores	+1.5	+3.2	+2.5

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



July 1, 2011

Basinwide Conditions Assessment

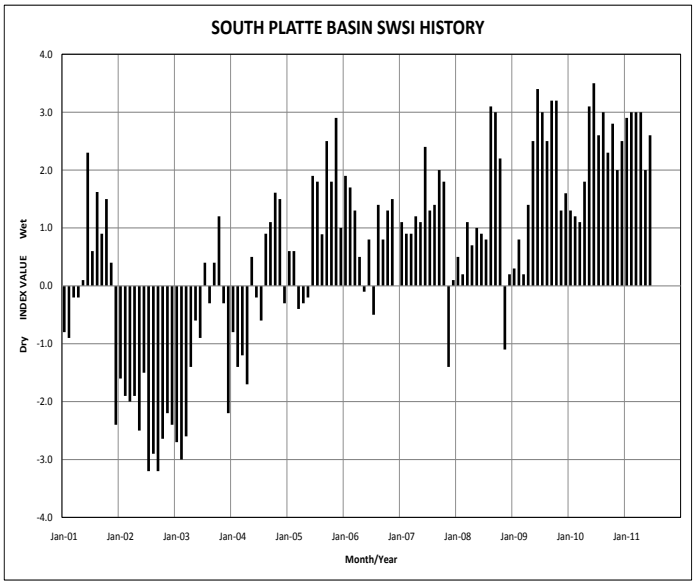
The SWSI value for the month was +2.6. Reservoir storage in Dillon, Horsetooth, Eleven Mile, Cheesman, Jackson, and Barr Lake, the major component in this basin in computing the SWSI value, was 105% of normal as of the end of June. Cumulative storage in the major plains reservoirs (Julesburg, North Sterling, and Prewitt) is at 98% of capacity. Cumulative storage in the major upper-basin reservoirs (Cheesman, Eleven Mile, Spinney, and Antero) is at 98% of capacity. Flow at the gaging station South Platte River near Kersey was 2,717 cfs, as compared to the long-term average of 2,344 cfs. Flow at the Colorado/Nebraska state line averaged 1,141 cfs, as compared to the long-term average of 1,455 cfs.

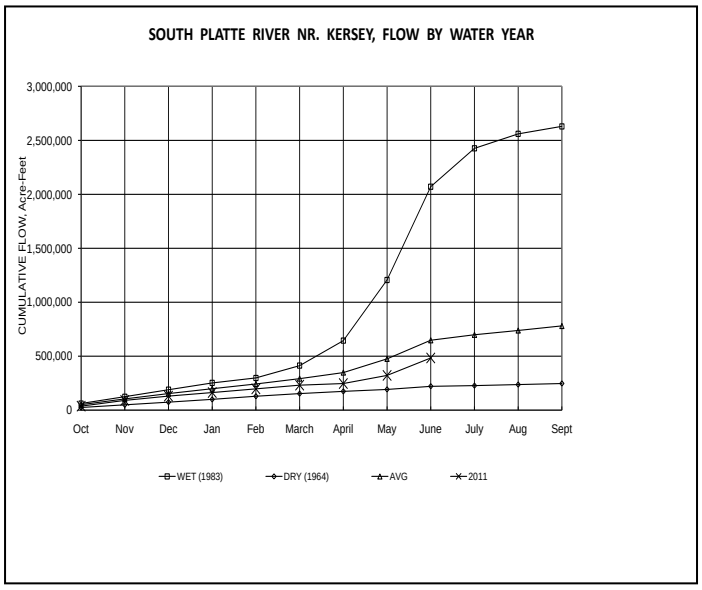
Outlook

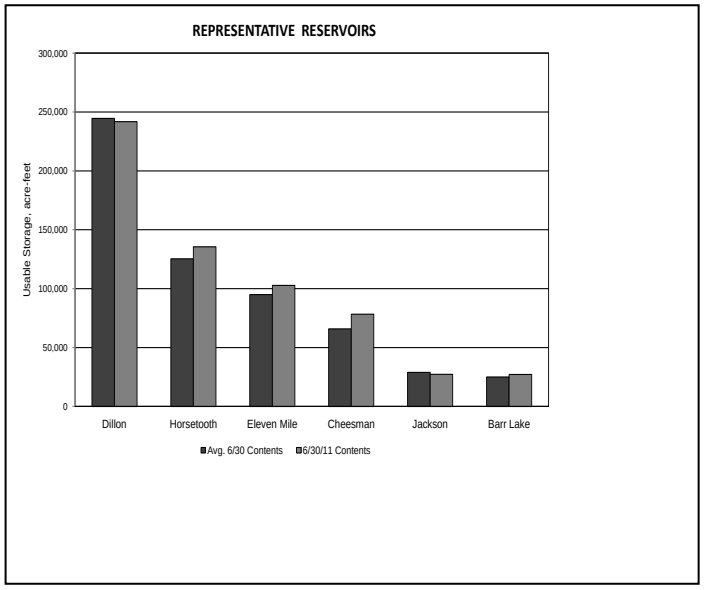
The South Platte basin continued to have a split personality in June with I-70 as the general dividing line. The mainstem below metro Denver (north of I-70) was under free river conditions for the entire month. Most of the major tributaries in this area were also under free river or relatively junior calls. However, south of I-70 (really south of Clear Creek) the mainstem and the major tributaries were under a call the entire month, though the South Park snowpack was finally starting to show-up as stream flow late in June.

The flooding concerns raised by the significantly above average snowpack never really materialized, though there was some low area flooding adjacent to the Cache la Poudre in early June. The snowmelt has been unusually long (it was not yet done on June 30) and for the most part melted out in an almost perfect pattern for many water users. Flows generally rose to significantly above average early in the month and remained there the entire month, but the peak flows were never really near the record highs some folks feared. This allowed an ample supply for water diverters as well as the high flows in the foothills that rafters and kayakers crave.

The outlook for July appears to be very good. The snowmelt runoff should continue well into July and if a normal monsoon pattern develops, stream flows could be such that the flows remain near or above normal. This, in turn, could keep the call pattern near or junior to the normal pattern, allowing an adequate water supply with lower than normal draft on reservoirs. This scenario is bolstered by the July through October forecast for a high probability of near normal temperatures and for precipitation to trend from near normal in July to above normal by October.







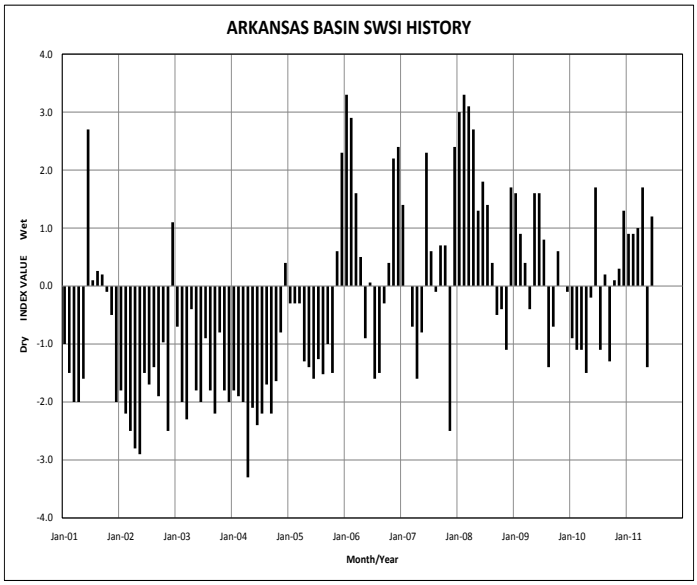
Basinwide Conditions Assessment

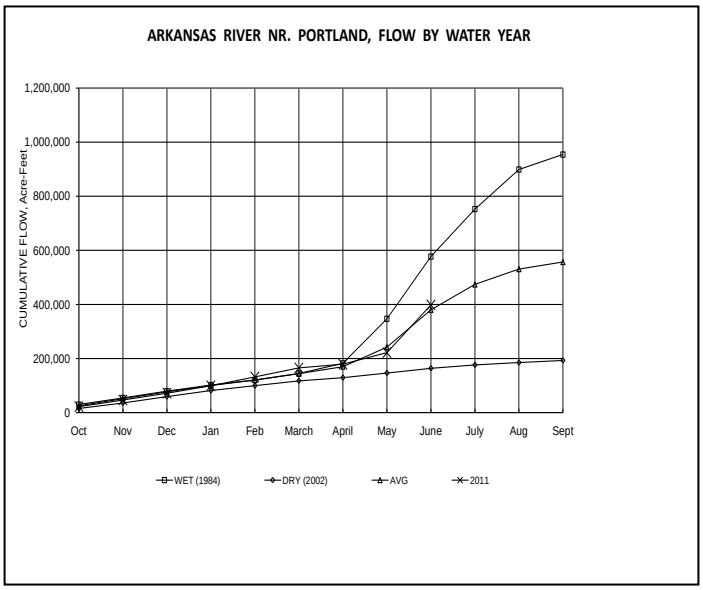
The SWSI value for the month was +1.2. Flow at the gaging station Arkansas River near Portland was 2,964 cfs, as compared to the long-term average of 2,320 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 93% of normal as of the end of June.

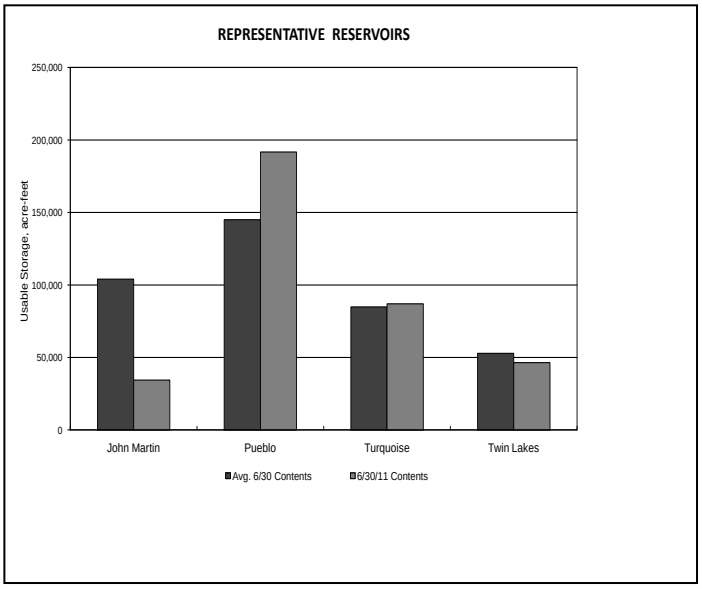
Outlook

Runoff during June picked up dramatically after a very sluggish start in May. Peak flows through the Arkansas River at Portland gage were just below 3,800 cfs, but were surprisingly sustained at high levels above the long term average for the last three weeks of the month. The Arkansas River call was at the Lamar Canal 11/4/1886 right to begin the month and fell to the Lamar Canal 6/16/1890.

The Southeastern Colorado Water Conservancy District allocated approximately 75,000 acre-feet of Fryingpan Arkansas Project water, with 15,765 acre-feet allocated for municipal use and 59,237 acre-feet allocated for agricultural use. SECWCD allocated in 80% and 20% increments in order to ensure that the final allocation could be met by actual yields that are expected to approach 100,000 acre-feet due to record snow pack on the Western Slope.







Basinwide Conditions Assessment

The SWSI value for the month was +0.4. Flow at the gaging station Rio Grande near Del Norte averaged 3,089 cfs during June 2011 (101% of average). Flow at the gaging station Conejos near Mogote averaged 1,292 cfs during June 2011 (99% of average). Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 81% of normal as of the end of June.

Paltry precipitation during June continued the 4-month trend of dry conditions in the San Luis Valley and surrounding mountains. In Alamosa, only a trace of precipitation was reported for the entire month. The snowpack at the NRCS SNOTEL sites was completely melted out by the 25th of June, but many sites had gone dry by the end of May. There was very little low and mid-elevation snowpack this spring. Temperatures were above average for the month of June.

The mainstem flow of the Rio Grande, Conejos, Los Pinos, and Alamosa Rivers was surprisingly close to average. A sudden warming trend just prior to the Memorial Day weekend increased flow in most streams in the basin, but these systems held near-average flows for the entire month of June. Most small tributaries have poor streamflow and drainages such as LaGarita and Carnero Creeks, the Sangre de Cristo Range creeks, and La Jara Creek are already down to baseflow conditions.

Without substantial precipitation, all streams in the basin will have below normal flow for the rest of the irrigation season. Reliance on groundwater has increased in those areas with irrigation wells. The aquifers were already in poor condition. Heavy use this summer will further deplete those reserves.

Outlook

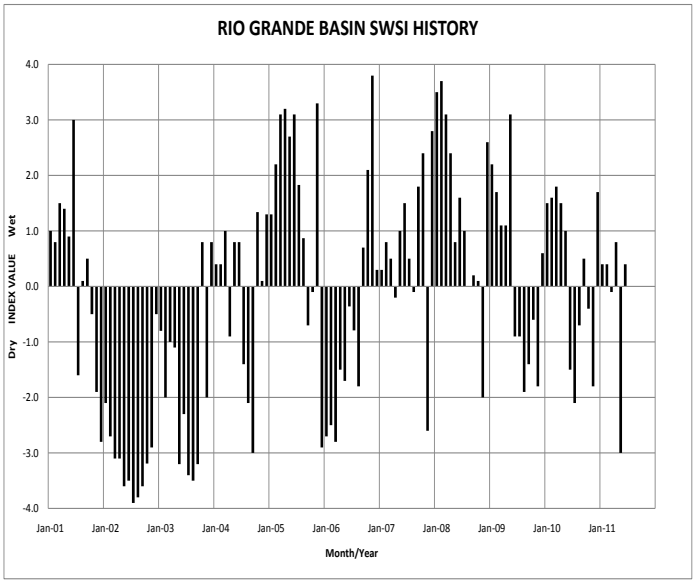
Long-range precipitation forecasts by the National Weather Service call for the possibility of an above normal precipitation pattern to move into the area in September. Until then, conditions should remain very dry with fire bans in effect to help prevent the outbreak of fires. Reservoirs not already drawn down to low levels should have poor storage conditions in the near future.

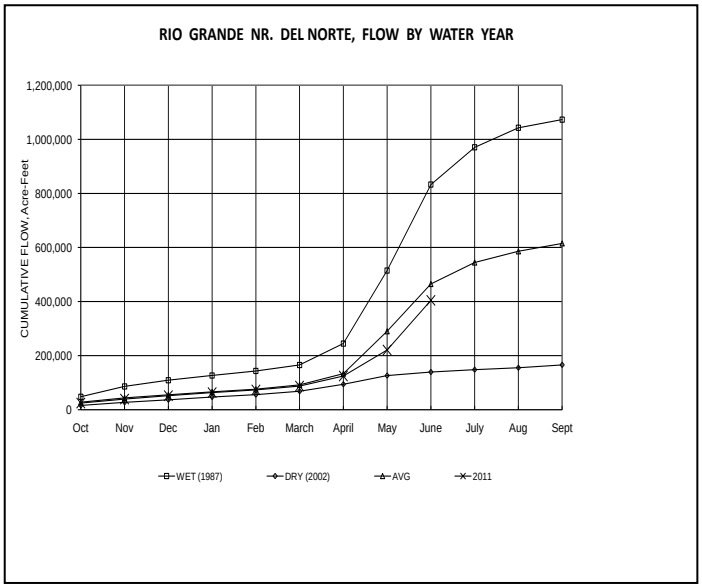
Administrative/Management Concerns

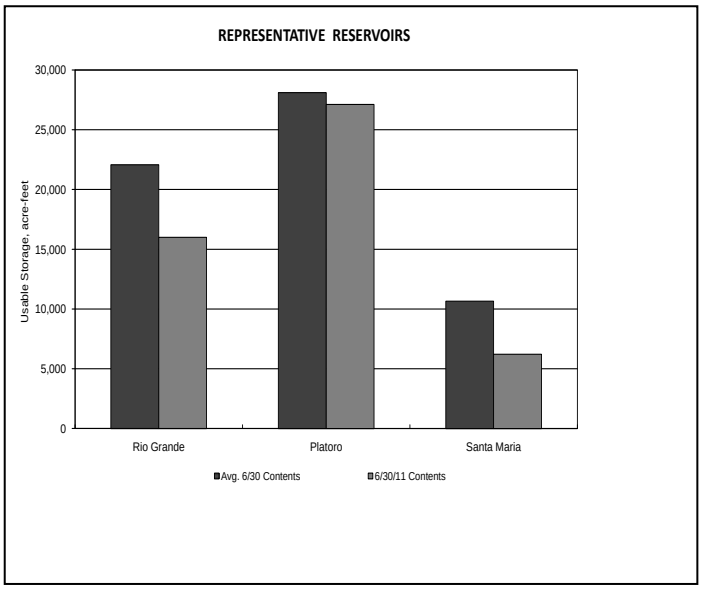
Administrators were braced for a poor runoff this year. However, due to the unexpected near-average streamflow at the Rio Grande and Conejos River index gaging stations, the amount of native flow curtailed to meet the Rio Grande Compact delivery obligation to New Mexico and Texas has been increased. This further depletes the water available for diversion by senior and middling water rights on those drainages. The Water Commissioners are in drought mode, wherein they check proper and legal diversion of water on a frequent basis.

Public Use Impacts

The difficult weather conditions have rendered the foothills and mountains very dry and limited the ability to graze livestock on federal lands. Feed crops such as alfalfa and grass are in very short supply. Many local livestock owners have had to reduce their herd size due to lack of available feed.



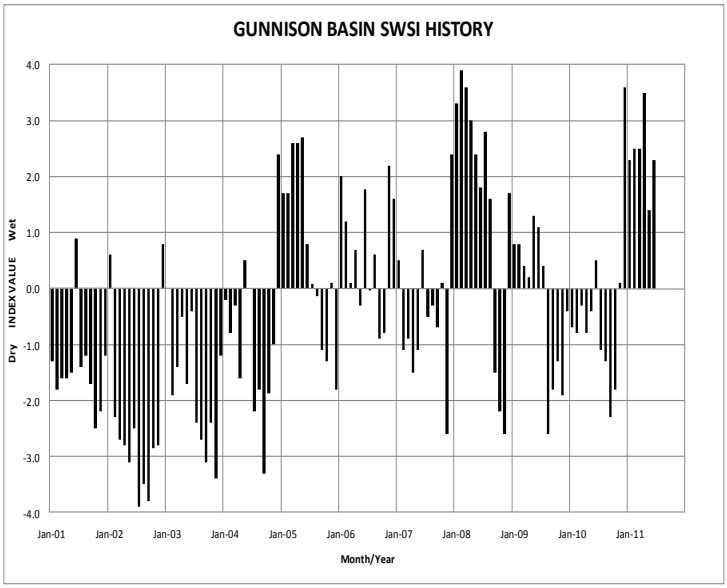




Basinwide Conditions Assessment

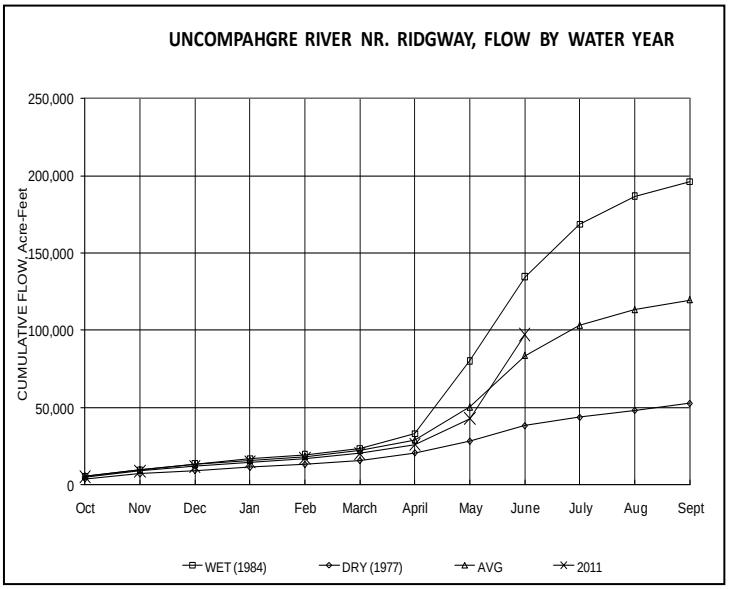
The SWSI value for the month was +2.3. Flow at the gaging station Uncompahgre River near Ridgeway was 915 cfs, as compared to the long-term average of 563 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 107% of normal as of the end of June.

June dried out in the Gunnison basin with less than 50% of average precipitation in most areas, but did not warm up much with temperatures generally average to slightly below average. Cooler weather during the month resulted in a slow runoff, which prevented serious flooding problems for most streams in the basin and allowed water users to rely on natural streamflow for a longer period.



Outlook

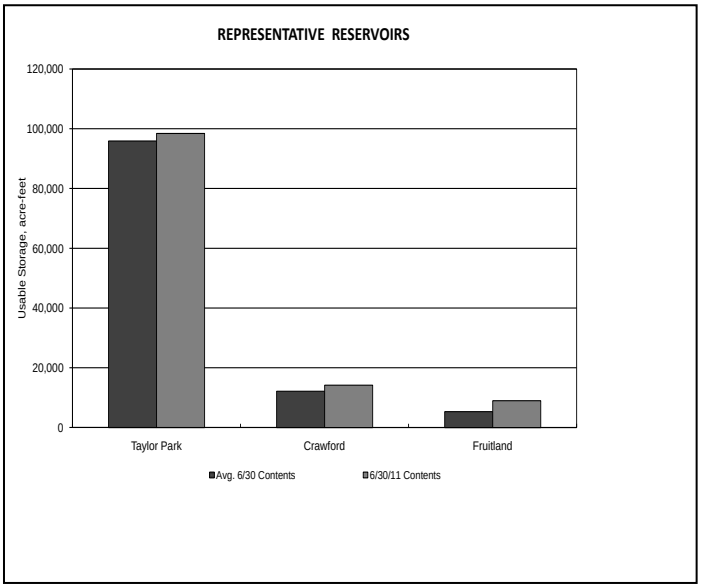
Gunnison basin runoff predictions for April to July remain at 125% of the 30 year average. Water year 2011 is shaping up to be a good water year throughout the Gunnison basin, with prolonged the runoff and an early start to the monsoon season. In fact, during the few days prior to the submittal of this report (July 11th), areas in the Uncompahgre basin such as Delta received over an inch of rain. The National Climate Center currently forecasts average to slightly above average temperatures and average precipitation from mid-June through mid-September period.



Administrative/Management Concerns

Very few administrative concerns were experienced in June with most streams that go on call early such as Kannah Creek and some North Fork Gunnison River tributaries remaining under free river conditions for most of the month.

It appears that most basin reservoirs will fill this year given ample runoff and reduced reliance on storage during the early season due to the heavy and prolonged runoff. Despite the concern of some water users that reservoir operators dropped levels too drastically in preparation for the heavy runoff, many reservoirs, such as Ridgway, Taylor Park, and Paonia spilled or were close to spilling on July 1st.



Public Use Impacts

The 2011 rafting/boating season has started off well and appears that it will last much longer than normal with prolonged high runoff on many streams that could continue well into July.

Basinwide Conditions Assessment

The SWSI value for the month was +3.1. Flow at the gaging station Colorado River near Dotsero was 15,510 cfs, as compared to the long-term average of 5,706 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 111% of normal as of the end of June.

Outlook

Basin wide river flows will continue to be significantly above average in July as run-off continues. Roaring Fork and Colorado River flows at Glenwood Springs will run 3 to 3-1/2 times their average flows throughout July aided by well above average contributing lower Fryingpan, Eagle, and Crystal River Flows.

Administrative/Management Concerns

Heavy administration has been required at Willow Creek Reservoir which had a tabulated inflow of 87,000 acre feet as of June 17th. Forecast total inflow for April 1 – July 31 is 110,000 acre feet – 216% of average. High release rates have kept the reservoir elevation lower to accommodate runoff peaks. The reservoir elevation will be raised in mid July to allow surface debris generated from high run-off to be removed.

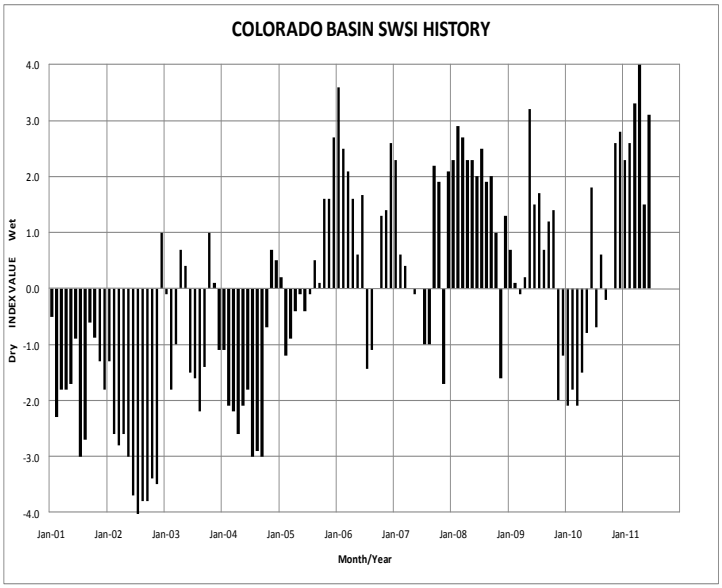
The initial spill at Lake Granby occurred in early July. A second spill is expected, but involving less water and a shorter duration. Contrary to previous reports, Adams Tunnel diversions have continued throughout June and into early July.

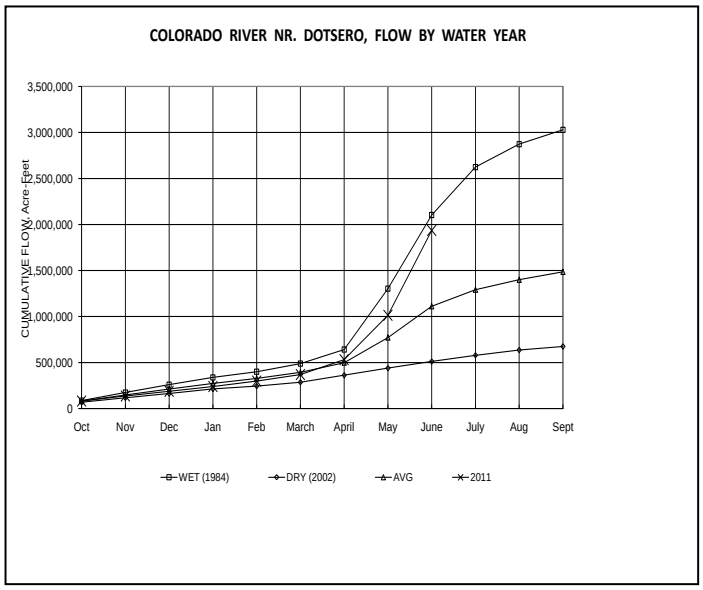
Green Mountain Reservoir releases have been increased by an additional 2000 cfs in late June/early July. Ruedi Reservoir releases were increased to approximately 900 cfs which held the reservoir below spill elevation.

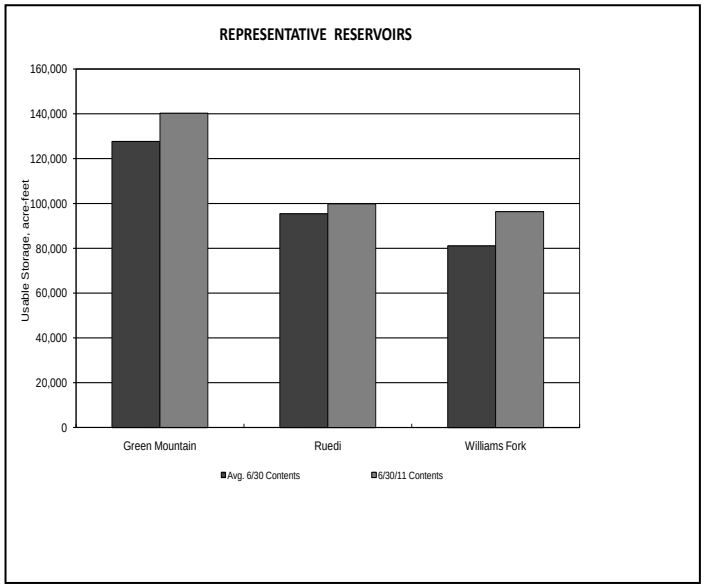
Public Use Impacts

The probability for record Colorado River flows has been significantly reduced. Reservoir management and below average temperatures in early June contained runoff levels to prevent record Colorado River flows this year. Flooding along the lower Fryingpan and Roaring Ford Rivers has been minor.

Inflow to Lake Powell for the month of June was 5.4 maf (175% of average). This was lower than the projected inflow of 6.1 maf. The projected July inflow has been increased from 3.3 to 3.5 maf (226% of average). The reservoir elevation has increased dramatically (46 ft. as of July 10th), despite release rates of 24,500-28,000 cfs.







Basinwide Conditions Assessment

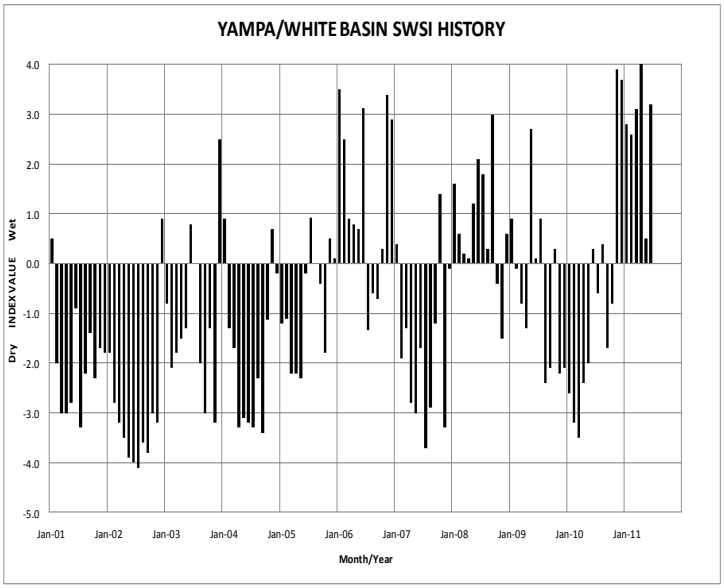
The SWSI value for the month was +3.2. Flow at the gaging station Yampa River at Steamboat was 3,778 cfs, as compared to the long-term average of 1,729 cfs.

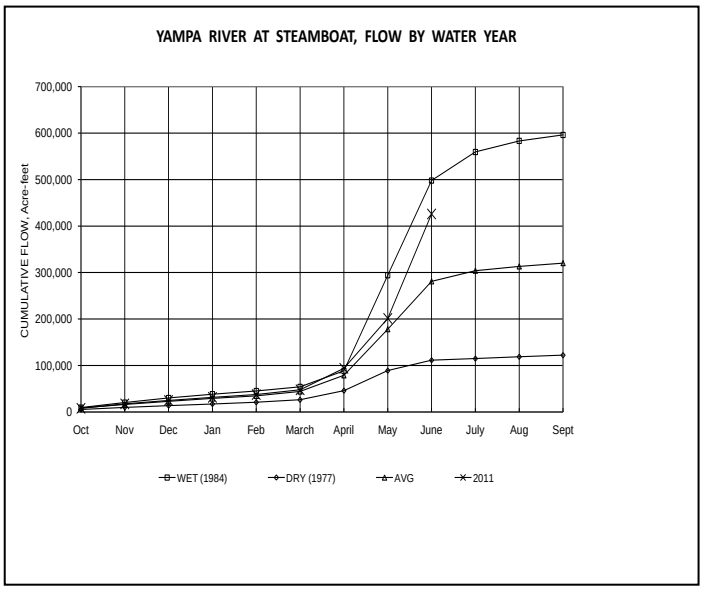
June precipitation was below average in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at 81% of average for the Yampa, White, and North Platte River basins. Total precipitation for the water year as a percent of average to date in the combined basins at the end of June is 138%.

The snow water equivalent (SWE) for the water year to date on June 30, 2011 was at 828% of average for the Laramie and North Platte River basins and 283% of average for the Yampa and White River basins.

As of July 1, 2011, NRCS predicts well above average summer streamflows in the Yampa, White, and North Platte River basins. Localized flooding has occurred in all Division 6 river basins during June and with heavy rain in early July potential flood conditions are predicted to continue for several weeks.

Bridge flow measurements were conducted at all of the Division 6 stream gages during June as flow continued to be well above average.





Outlook

As of June 30th Fish Creek Reservoir was storing 3,197 AF, 76.7% of capacity. The capacity of Fish Creek Reservoir is 4,167 AF. Water stored in Yamcolo Reservoir increased during June to 10,009 AF and the reservoir was spilling. On June 30th Elkhead Creek Reservoir was storing 19,550 AF and stopped spilling during June. At the end of June, Stagecoach Reservoir remained 100% full and continued to spill.

Public Use Impacts

Fishing at Stagecoach reservoir has slowed a bit. Shoreline anglers are cautioned to be aware of shoreline instability due to the high water levels. Tailwater fishing at Stagecoach is reported as good.

Basinwide Conditions Assessment

The SWSI value for the month was +1.5. Flow at the Animas River at Durango averaged 3,653 cfs (131% of average). The flow at the Dolores River at Dolores averaged 1,569 cfs (119% of average). The La Plata River at Hesperus averaged 151 cfs (119% of average). At the end of the month Vallecito Reservoir contained 125,500 acre-feet compared to its average content of 103,916 acre-feet (121% of average). McPhee Reservoir was up to 381,627 acre-feet compared to its average content of 325,906 (117% of average), while Lemon Reservoir was up to 34,670 acre-feet as compared to its average content of 33,375 acre-feet (104% of average).

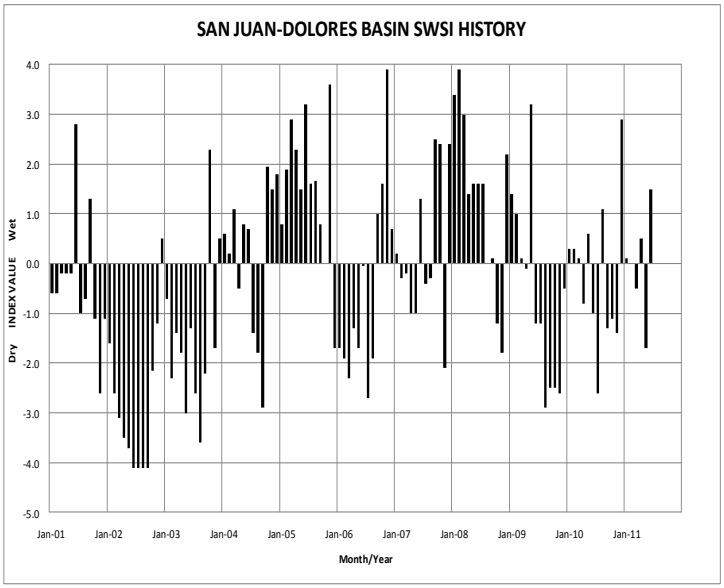
Precipitation in Durango was 0.02 inches for the month, 3% of the 30-year average of 0.72 inches. Precipitation to date in Durango, for the water year, is 10.41 inches, 78% of the 30-year average of 13.30 inches. The average high and low temperatures for the month of June in Durango were 84° and 42°. In comparison, the 30-year average high and low for the month is 82° and 46°.

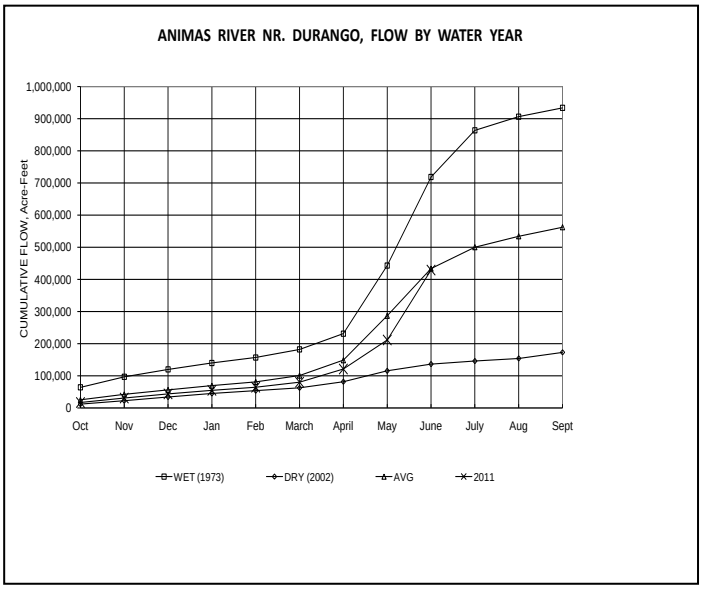
Outlook

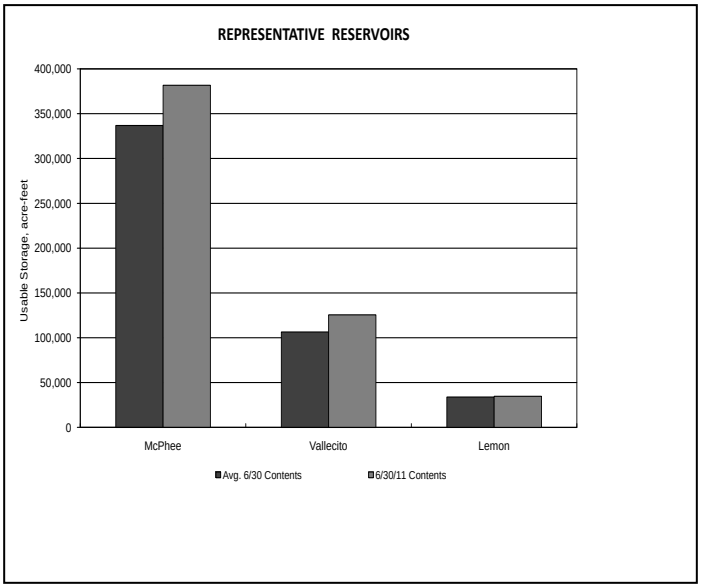
Precipitation (at 0.02-inches) was well below average for June in Durango. There are 110 years out of 117 years of record where there was more precipitation than this year. Most reservoirs (Vallecito, McPhee, Narraguinnep, Groundhog, and Jackson) were full by the end of the month with the exception of Lemon Reservoir. Lemon filled to 87% capacity.

Administrative/Management Concerns

Normal temperatures kept base flow in the rivers near average within the basin. Most rivers within the basin peaked on June 7. Nighthorse Reservoir filled for the first time on June 30. The LaPlata River compact call started on April 7, 2011 and will remain on call for the rest of the season.







OFFICE OF THE STATE ENGINEER
COLORADO DIVISION OF WATER RESOURCES
DEPARTMENT OF NATURAL RESOURCES
1313 SHERMAN STREET ROOM 818
DENVER CO 80203