Water Availability Task Force Meeting

July 19, 2010

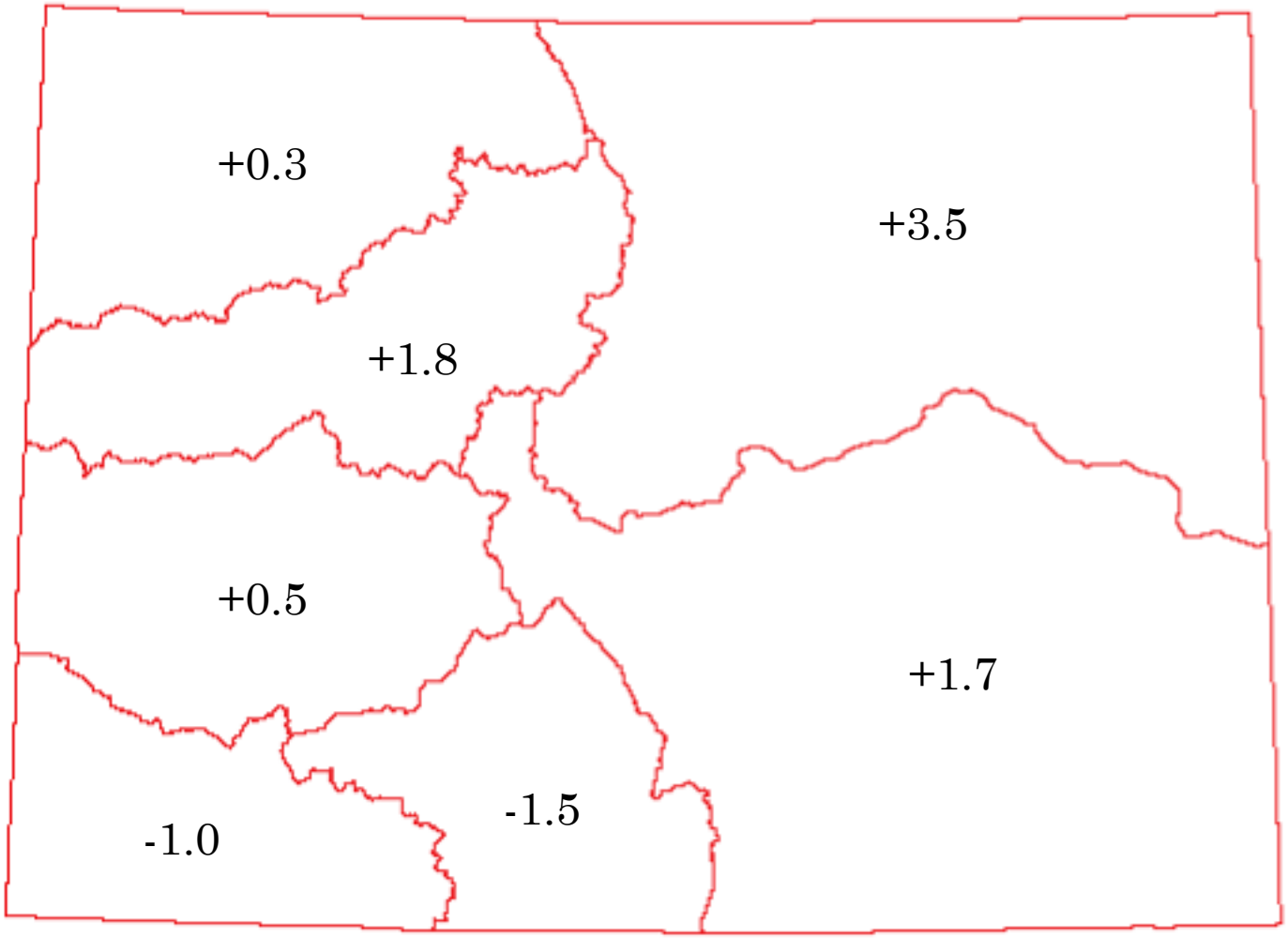
June (July 1) SWSI Report

Sarah Reinsel, P.E.

Colorado Division of Water Resources

COLORADO DIVISION OF WATER RESOURCES
DEPARTMENT OF NATURAL RESOURCES

Surface Water Supply Index for Colorado



June 1, 2010

Division 1 – South Platte Basin

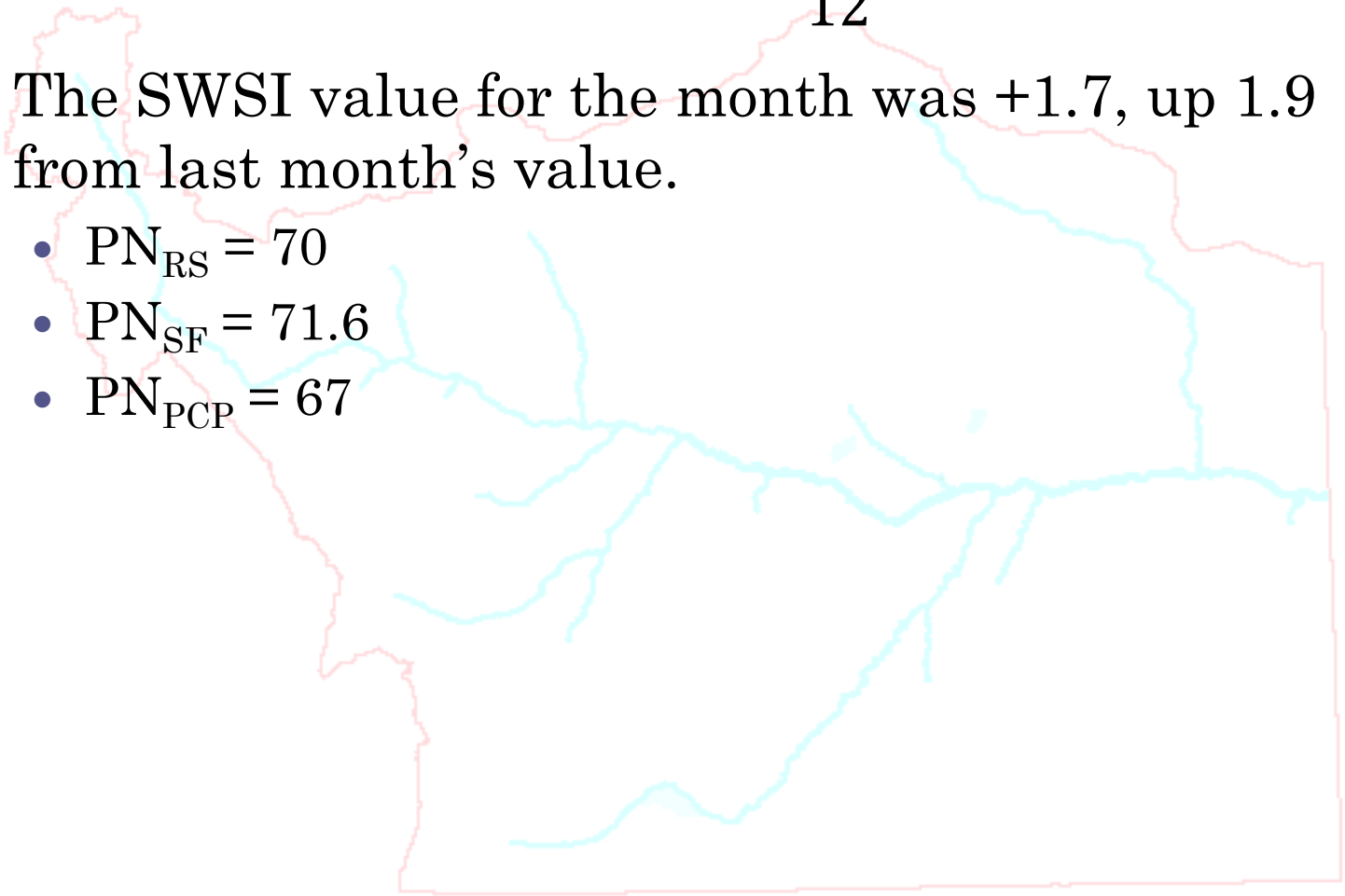
$$\text{SWSI} = \frac{(0.65 \times \text{PN}_{\text{RS}}) + (0.25 \times \text{PN}_{\text{SF}}) + (0.10 \times \text{PN}_{\text{PCP}}) - 50}{12}$$

- The SWSI value for the month was +3.5, up 0.4 from last month's value.
  - $\text{PN}_{\text{RS}} = 95.3$
  - $\text{PN}_{\text{SF}} = 88.8$
  - $\text{PN}_{\text{PCP}} = 78$
- Water supply conditions continue to be very positive

Division 2 – Arkansas Basin

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

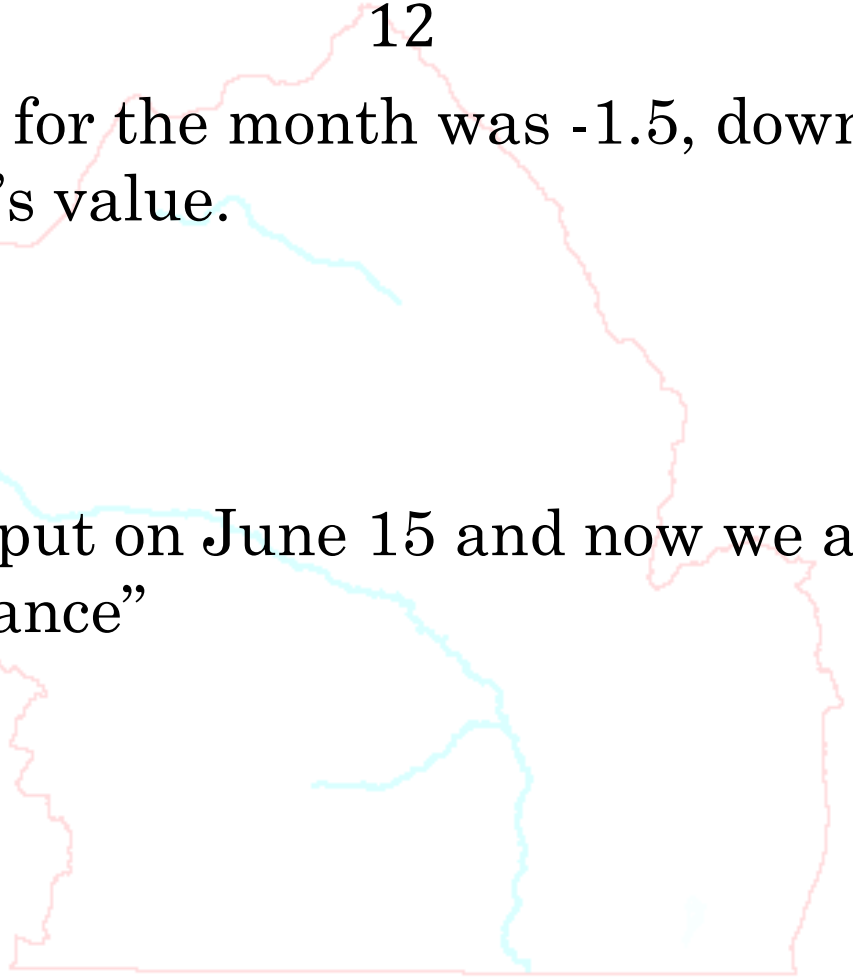
- The SWSI value for the month was +1.7, up 1.9 from last month's value.
  - $\text{PN}_{\text{RS}} = 70$
  - $\text{PN}_{\text{SF}} = 71.6$
  - $\text{PN}_{\text{PCP}} = 67$



Division 3 – Rio Grande Basin

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

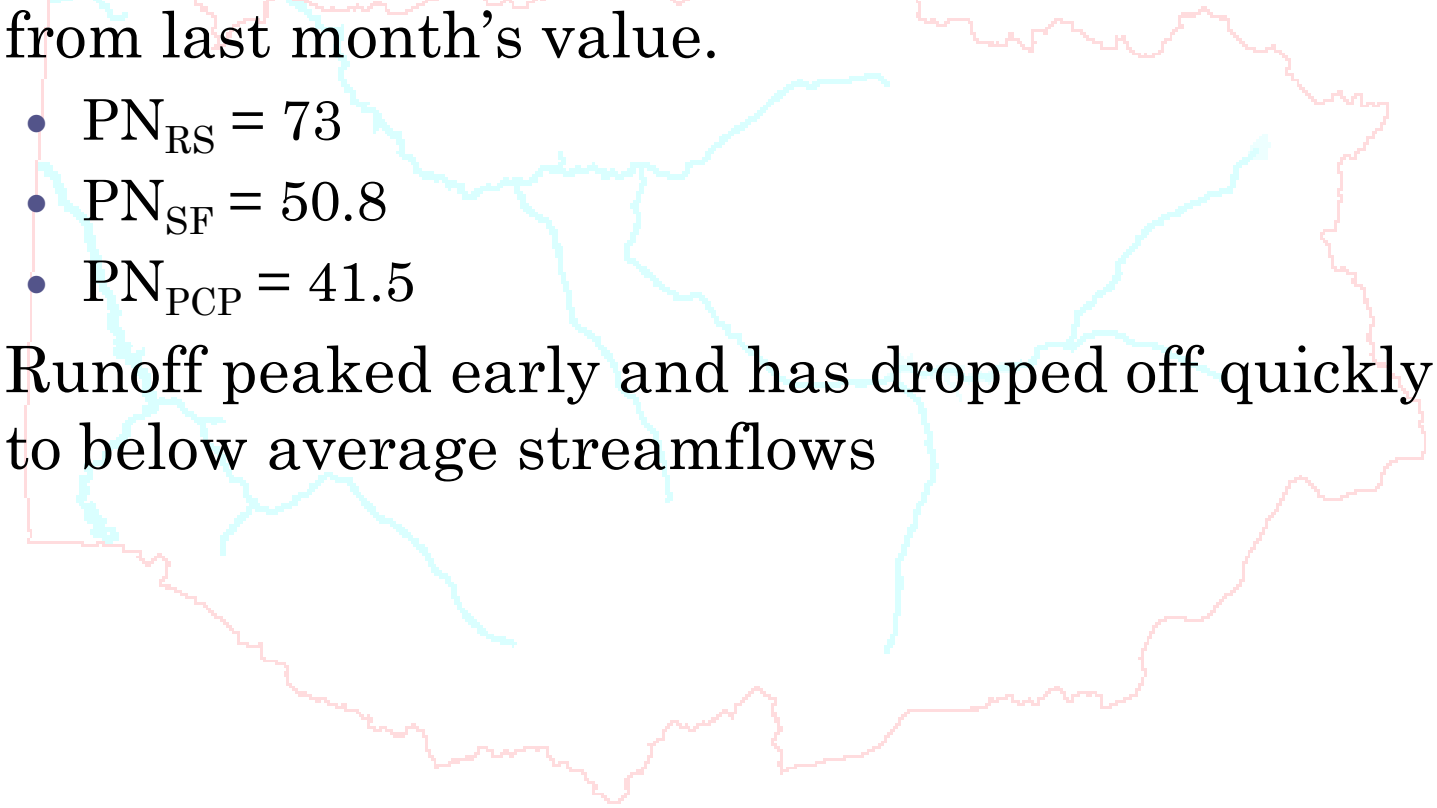
- The SWSI value for the month was -1.5, down 2.5 from last month's value.
  - $\text{PN}_{\text{RS}} = 77$
  - $\text{PN}_{\text{SF}} = 29$
  - $\text{PN}_{\text{PCP}} = 34$
- "Runoff went kaput on June 15 and now we are doing the rain dance"



Division 4 – Gunnison Basin

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

- The SWSI value for the month was +0.5, up 0.9 from last month's value.
  - PN_{RS} = 73
  - PN_{SF} = 50.8
  - PN_{PCP} = 41.5
- Runoff peaked early and has dropped off quickly to below average streamflows



Division 5 – Colorado Basin

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

- The SWSI value for the month was +1.8, up 2.6 from last month's value.
  - $\text{PN}_{\text{RS}} = 91$
  - $\text{PN}_{\text{SF}} = 66.2$
  - $\text{PN}_{\text{PCP}} = 51$
- Grand Valley Irrigators currently have sufficient water to satisfy their needs, but calls remain a possibility later this summer

Division 6 – Yampa/White Basin

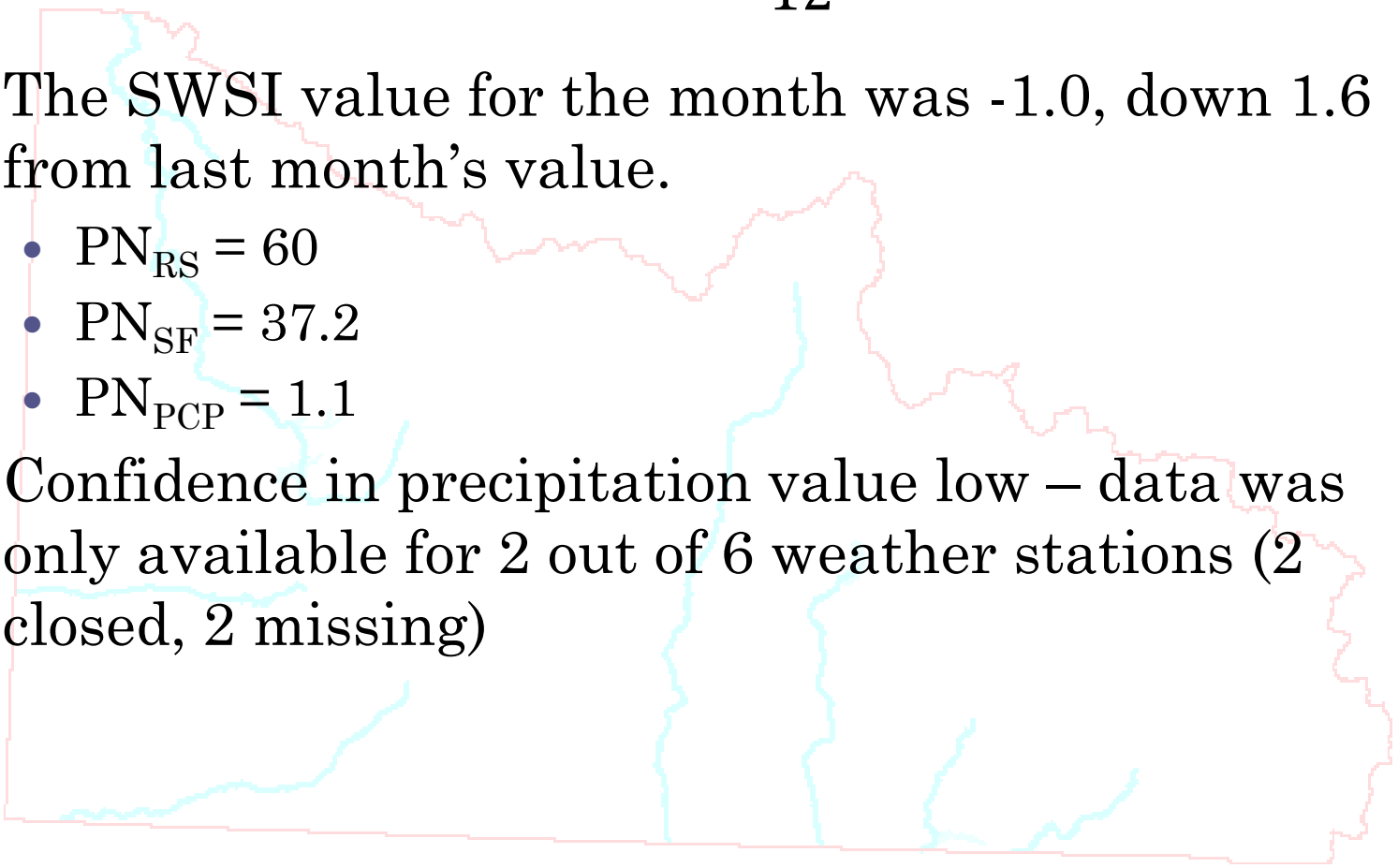
$$SWSI = \frac{(0.90 \times PN_{SF}) + (0.10 \times PN_{PCP}) - 50}{12}$$

- The SWSI value for the month was +0.3, up 2.3 from last month's value.
  - PN_{RS} not used
  - PN_{SF} = 51.5
  - PN_{PCP} = 77
  - Stream flows are near average in the Yampa and North Platte basins, and below average in the White basin

Division 7 – San Juan/Dolores Basin

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

- The SWSI value for the month was -1.0, down 1.6 from last month's value.
  - $\text{PN}_{\text{RS}} = 60$
  - $\text{PN}_{\text{SF}} = 37.2$
  - $\text{PN}_{\text{PCP}} = 1.1$
- Confidence in precipitation value low – data was only available for 2 out of 6 weather stations (2 closed, 2 missing)



Questions?

COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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July 2010

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 (May through October). 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 +3.5 in the South Platte Basin to a low value of -1.5 in the Rio Grande Basin. Five of the basins (South Platte, Arkansas, Gunnison, Colorado, and Yampa/White) experienced a gain from the previous month's value and two of the basins (Rio Grande and San Juan/Dolores) experienced a loss from the previous month's value.

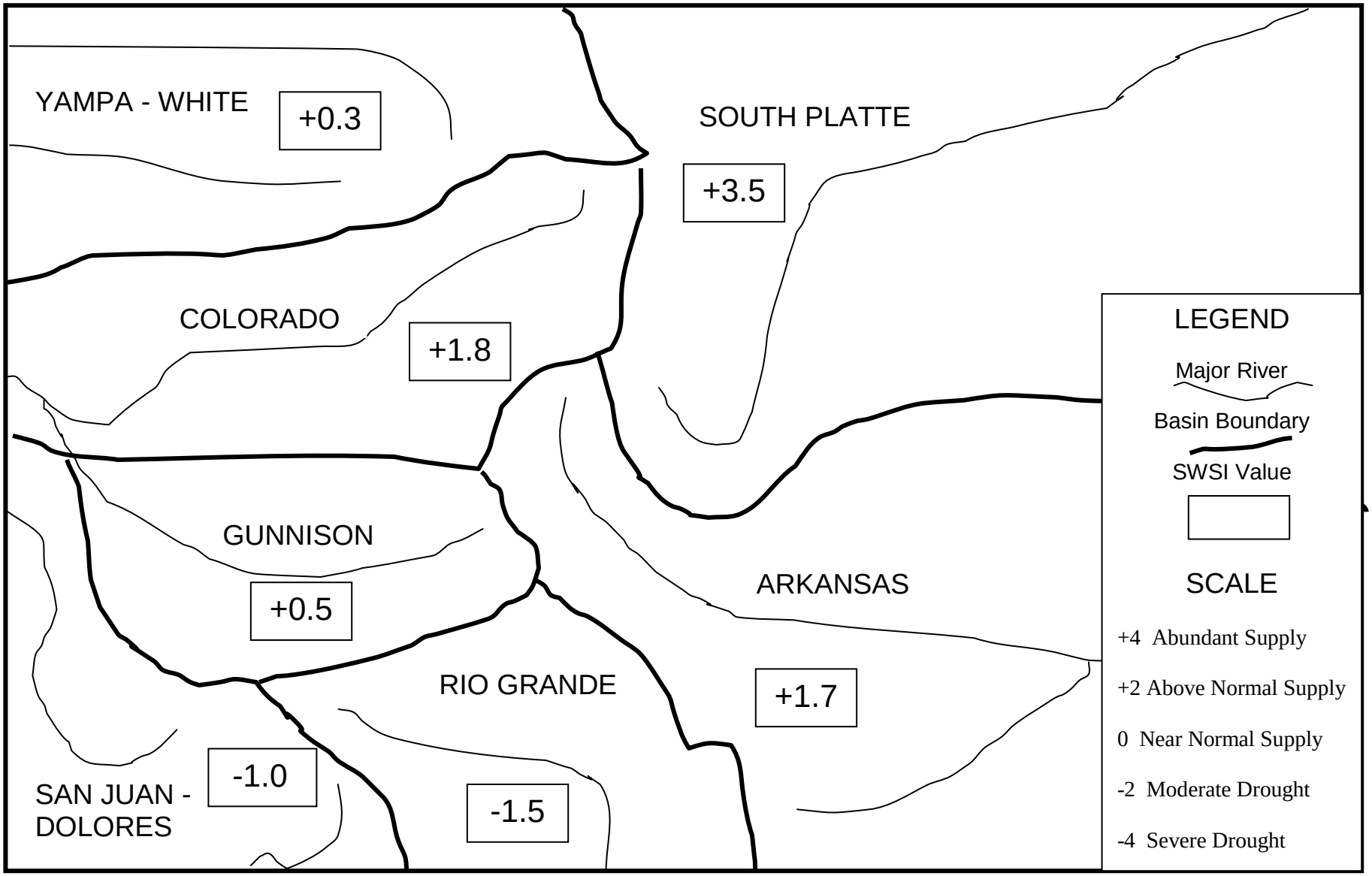
The following SWSI values were computed for each of the seven major basins for July 1, 2010, and reflect the conditions during the month of June.

Basin	July 1, 2010 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	+3.5	+0.4	+0.1
Arkansas	+1.7	+1.9	+0.1
Rio Grande	- 1.5	- 2.5	- 0.6
Gunnison	+0.5	+0.9	- 0.6
Colorado	+1.8	+2.6	+0.3
Yampa/White	+0.3	+2.3	+0.2
San Juan/Dolores	- 1.0	- 1.6	+0.2

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, 2010

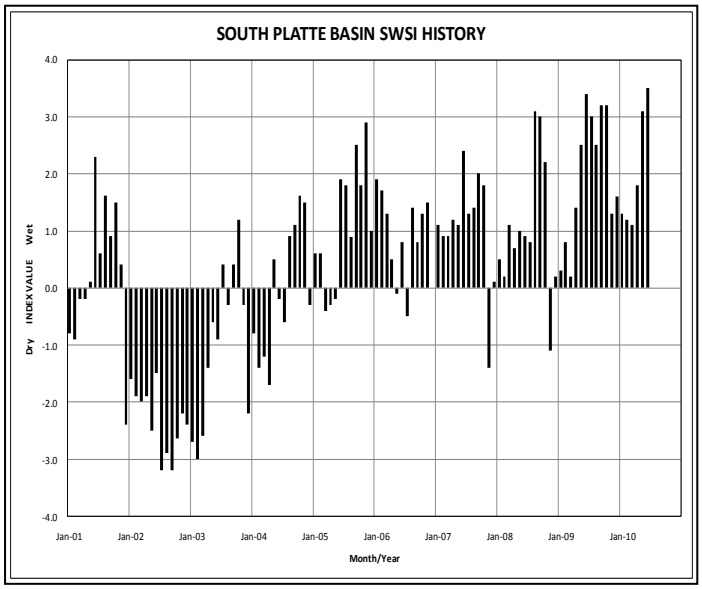
Basinwide Conditions Assessment

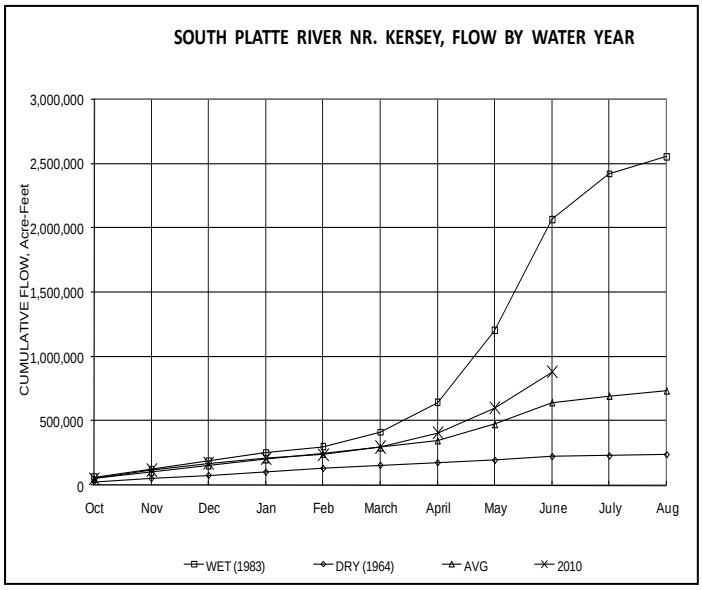
The SWSI value for the month was +3.5. Reservoir storage in Dillon, Horsetooth, Eleven Mile, Cheesman, Jackson, and Barr Lake, the major component in this basin in computing the SWSI value, was 110% of normal as of the end of June. Cumulative storage in the major plains reservoirs (Julesburg, North Sterling, and Prewitt) is at 94% of capacity. Cumulative storage in the major upper-basin reservoirs (Cheesman, Eleven Mile, Spinney, and Antero) is at 100% of capacity. Flow at the gaging station South Platte River near Kersey was 4727 cfs, as compared to the long-term average of 2323 cfs. Flow at the Colorado/Nebraska state line averaged 4124 cfs.

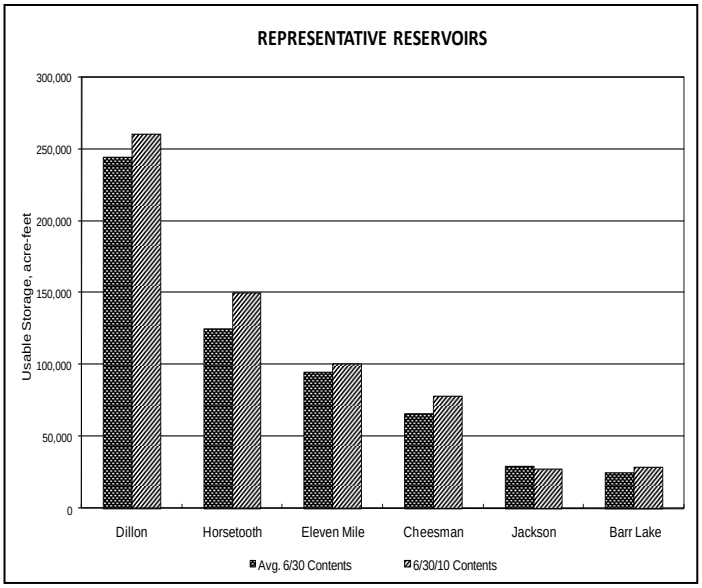
Outlook

Water supply conditions on the South Platte continued to be very positive in June. As expected, the considerable late May snowfall melted quickly. This, combined with a significant area wide precipitation event from June 11 through 13, created significant high water in many areas, including flooding issues on the Big Thompson and Cache la Poudre Rivers as well as the South Platte River below Kersey. Storage conditions also remained extremely positive with major reservoirs on the main stem and tributaries full or near full.

The calls on the main stem and tributaries of the South Platte started June as slightly more junior than normal, but were growing more senior quickly with the more rapid than normal snowmelt. However, the June 11 – 13 precipitation event moved everything to free river for about 10 days before the warm and dry conditions in the last half of June slid everything back to a fairly normal senior call scenario by the end of the month.

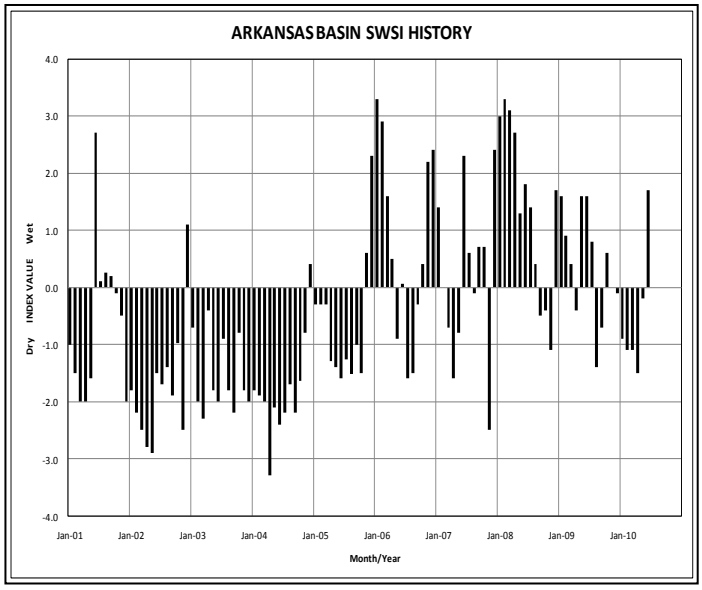


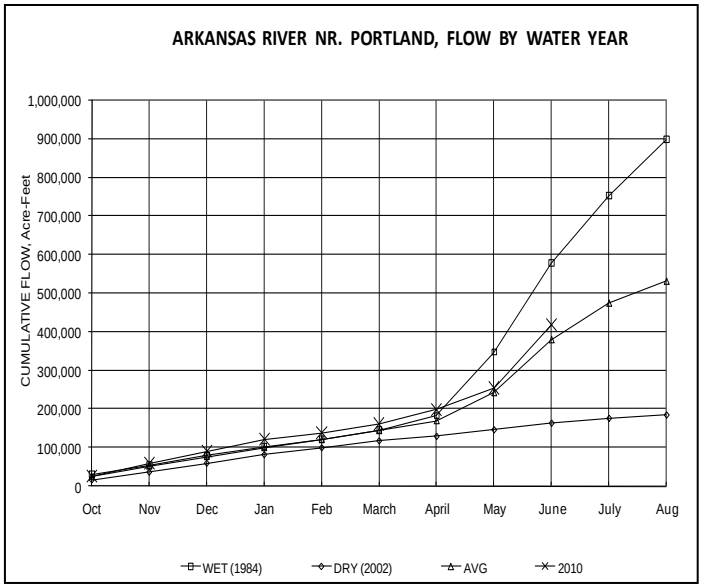


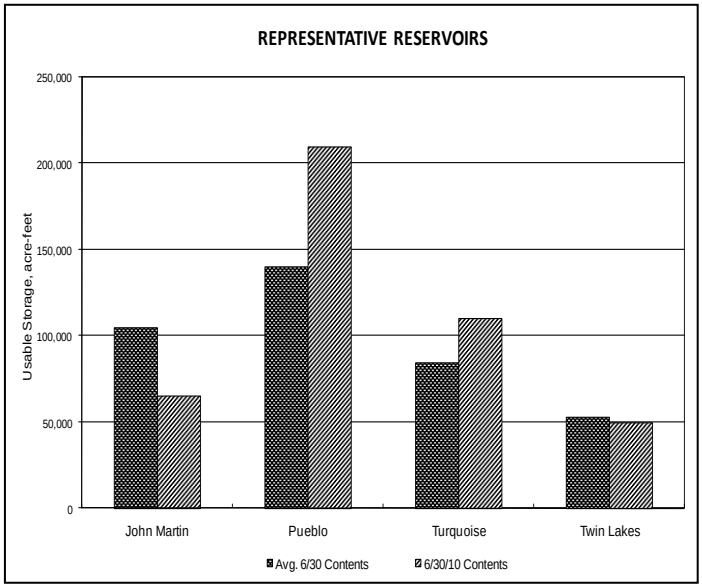


Basinwide Conditions Assessment

The SWSI value for the month was +1.7. Flow at the gaging station Arkansas River near Portland was 2762 cfs, as compared to the long-term average of 2310 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 114% of normal as of the end of June.





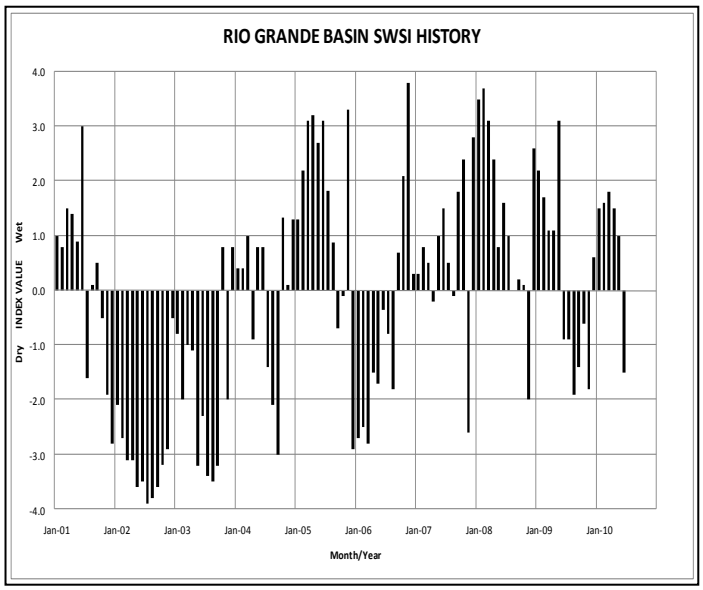


Basinwide Conditions Assessment

The SWSI value for the month was -1.5. Flow at the gaging station Rio Grande near Del Norte averaged 2054 cfs (67% of normal). The Conejos River near Mogote had a mean flow of 843 cfs (65% of normal). These below-normal flows were an indication of conditions throughout the basin. Many area streams have already dropped to 'base-flow' conditions where only the senior-most water rights are able to divert. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 105% of normal as of the end of June.

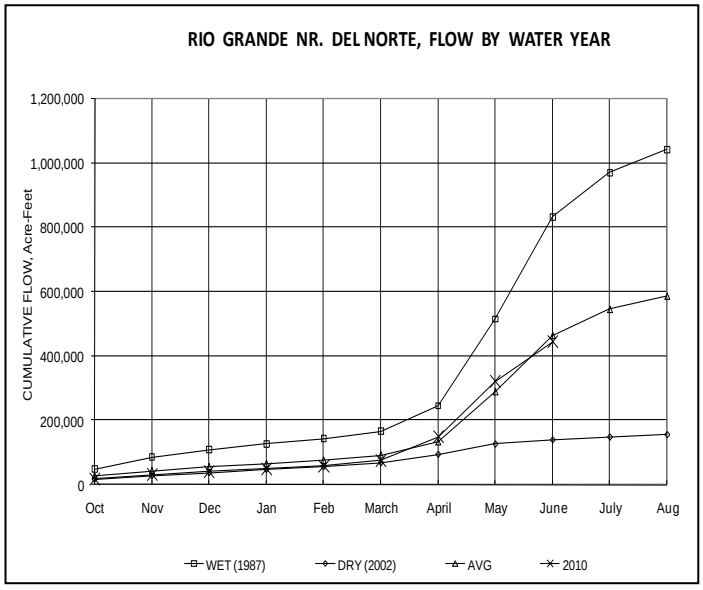
Precipitation in Alamosa was only 0.11 inches and most of that occurred in one event on June 5. Temperatures ranged from a high of 94 degrees to a low of 32 degrees during June.

Dry, windy conditions in the basin persisted throughout the month. These volatile conditions erupted in early June with a fire caused by lightning at the Great Sand Dunes National Park. In all, over 5000 acres were consumed before the fire was fully contained in early July.



Outlook

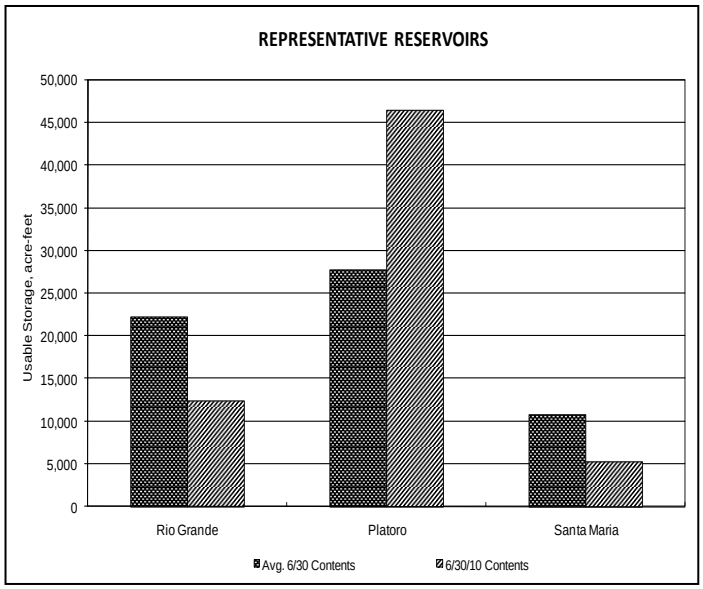
Some areas of the San Luis Valley did receive small amounts of precipitation during June. However, generous amounts of rainfall will be needed in the near future to neutralize the damage done to cropland and rangeland by the drought-like conditions.



Administrative/Management Concerns

As the natural flow dropped in area streams, some ditches relied on reservoir releases to offset the dry conditions. However, by the end of the month, reservoir releases to ditches on the Rio Grande had ceased. Other drainages such as the Conejos River, Culebra Creek, and Trinchera Creek still have some reservoir storage available, but drainages such as Saguache Creek, LaGarita and Carnero Creeks, and the northern Sangre de Cristo range creeks have no upstream reservoirs

Well use for irrigation was very high. Officials are concerned that the large amount of water pumped could reverse the early trend this year toward recharging the depleted aquifers.



Public Use Impacts

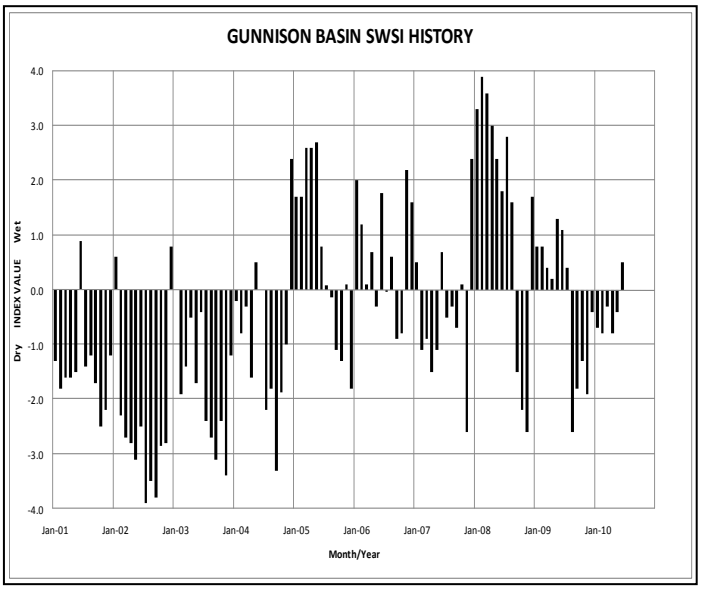
Weather conditions in June had a local economic impact through reduced crop development and yield. The consistent wind of this late spring became irritating to most San Luis Valley inhabitants. Soil moisture conditions in non-irrigated areas are poor and stream flow throughout the basin was well below average.

Basinwide Conditions Assessment

The SWSI value for the month was +0.5. Flow at the gaging station Uncompahgre River near Ridgway was 630 cfs, as compared to the long-term average of 561 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 103% of normal as of the end of May.

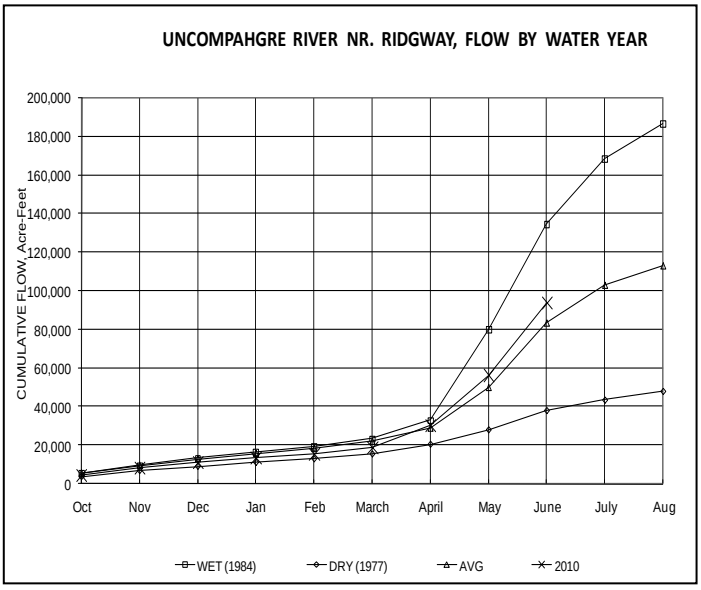
Peak snowmelt flows occurred on most streams in the Gunnison basin on or within a few days of June 7th. The peak stream flows registered higher than average on many streams due to how rapidly the snowmelt occurred. As expected, stream flows dropped off quickly and by June 15th most streams were below the median value for that date. Through the rest of June stream flows were consistently slightly above or below the 20th percentile flow for their respective dates.

June is typically the driest month of the year in the Gunnison and San Miguel basins and this year was drier than normal. Precipitation in the basins was varied with lower elevations in the Uncompahgre Valley receiving close to normal precipitation, but most areas, including higher elevations, receiving between 50 and 80 percent of average according to the Colorado Basin River Forecast Center (CBRFC). For example, basin areas above Blue Mesa Reservoir received 75 percent of average precipitation during June.



Outlook

Runoff volume forecasts from the CBRFC have been reduced to between 66 and 80 percent of average due to the reduced precipitation and runoff that may have been partly caused by the excessive winds experienced basin-wide during May and June. The Climate Prediction Center of the National Weather Service is predicting above average temperatures and equal chances of average precipitation for the Gunnison and San Miguel basins during the rest of the summer (next 30- and 90-day periods).

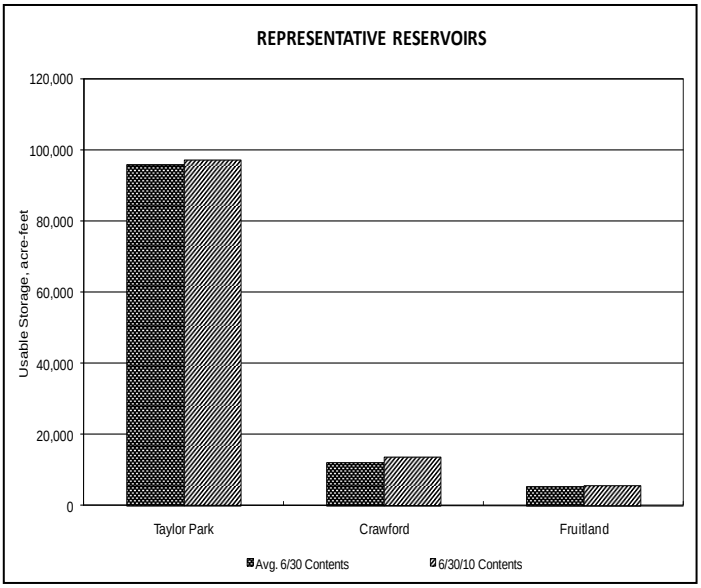


Administrative/Management Concerns

Most streams in the North Fork of the Gunnison basin were on call by the end of June, with some other streams in the Gunnison basin going on call earlier than normal. Areas relying on storage should not have a problem in 2010 since most reservoirs filled during spring runoff.

Due to the lower than average precipitation in May and June, inflow to Blue Mesa Reservoir will be significantly below the previous prediction. Currently, inflow to Blue Mesa Reservoir is forecast at 72 percent of average, or 520,000 acre-feet. Blue Mesa fell short of filling by a greater than expected margin of 10 feet; at a storage volume of 722,000 acre-feet because of the lower than expected inflow during June (70 percent of average).

One situation that will be monitored closely during the next couple of months is the flow in the Gunnison River below the Redlands Diversion in Grand Junction as this could affect operations in the entire Gunnison basin. As of July 14th, stream flow downstream of the diversion was hovering around 400 cfs. If the flow below the diversion drops below 300 cfs it could trigger the Redlands Diversion to reduce their diversions by 100 cfs to 750 cfs through an agreement reached when the fish screen was constructed.



Public Use Impacts

Stream flows in the Gunnison Gorge should remain near 650 cfs; however, they could be modified by the Bureau of Reclamation based on changing inflow. It appears that many streams in the Gunnison and San Miguel basins will contain lower than normal stream flow during the summer, except during rain events.

Basinwide Conditions Assessment

The SWSI value for the month was +1.8. Flow at the gaging station Colorado River near Dotsero was 8035 cfs, as compared to the long-term average of 5659 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 115% of normal as of the end of June.

Outlook

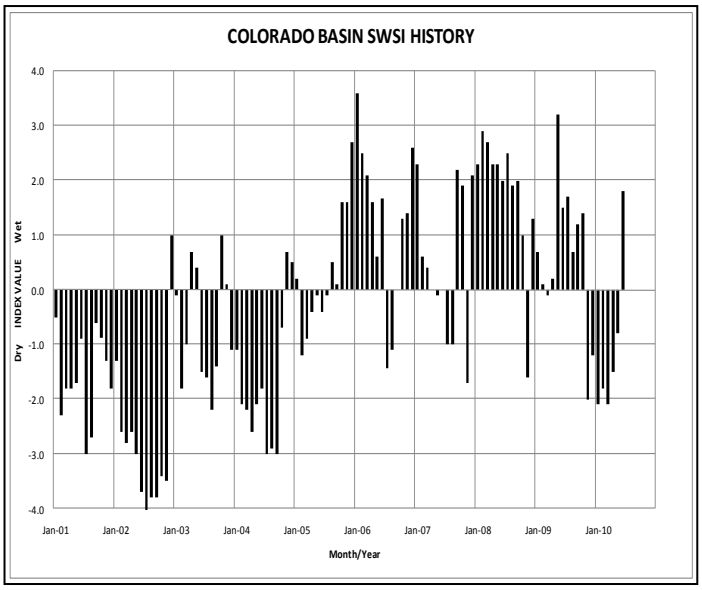
Colorado River flow will continue to decline from its June 8 peak with below average flows through the month of July. The Roaring Fork River will follow a similar trend from its peak on June 10 exhibiting below average flows in July. Granby Reservoir attained a complete fill this year, with diversions through Adams Tunnel being increased significantly to avoid a spill. The early spilling of Dillon Reservoir combined with the sharp run-off increase in early June resulted in a rapid complete fill of Green Mountain Reservoir by mid-June. Continued intermittent spilling of Dillon Reservoir is likely depending on diversions through Roberts Tunnel. Ruedi Reservoir attained complete fill with releases increasing sharply in early June, and stepping down to average where they will remain throughout July.

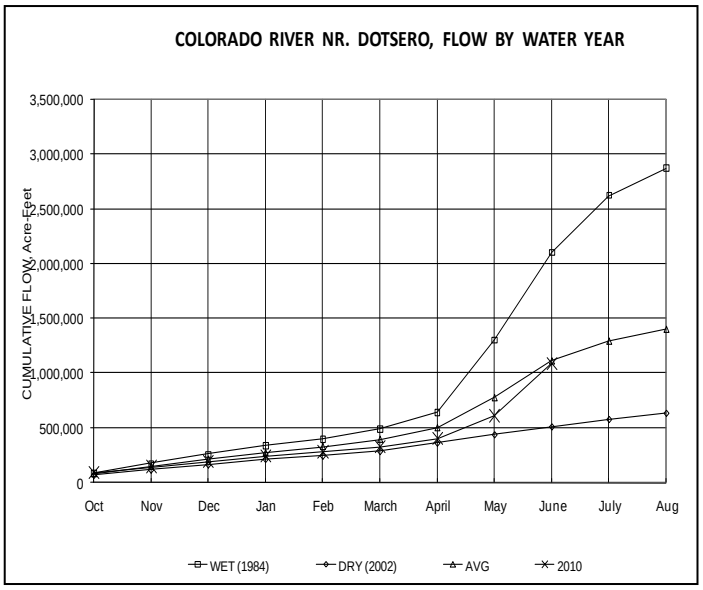
Administrative/Management Concerns

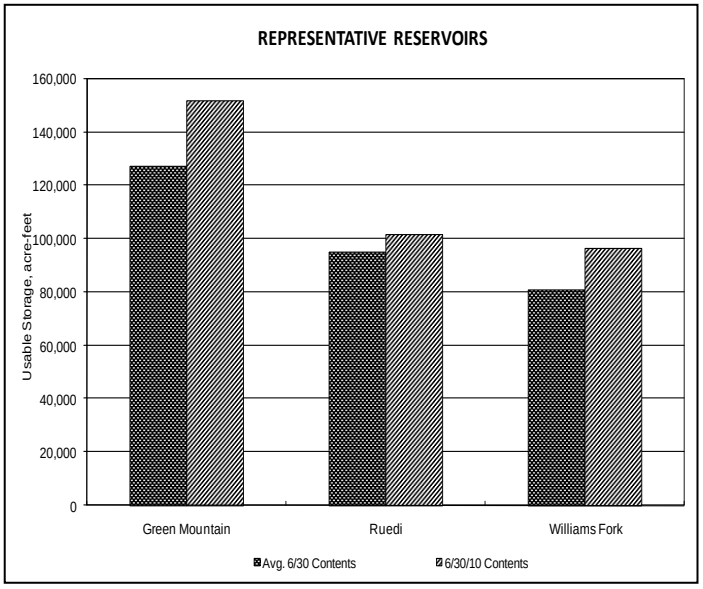
Shoshone Power Plant turbine operations remain sporadic, with both turbines removed from service for maintenance in early June. Grand Valley Irrigators currently have sufficient water to satisfy their needs; however, calls from both Grand Valley Irrigators and Shoshone Power Plant remain a possibility later this summer depending on the summer monsoon rains which typically begin in August and continue through mid-September.

Public Use Impacts

The rapid rise and peak flow of the Roaring Fork and Colorado rivers in early June was unexpected, and essentially stopped rafting and kayaking activities for a period of 2-3 weeks. The exception was the Glenwood Whitewater Park which drew a large number of paddlers and surfers. Angling on the lower Fryingpan River was similarly impacted due to high release rates from Ruedi Reservoir between June 7th and June 24th.





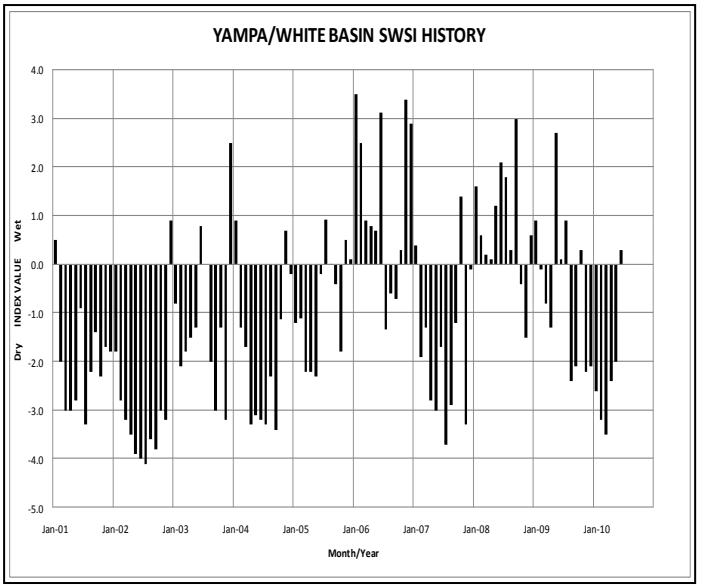


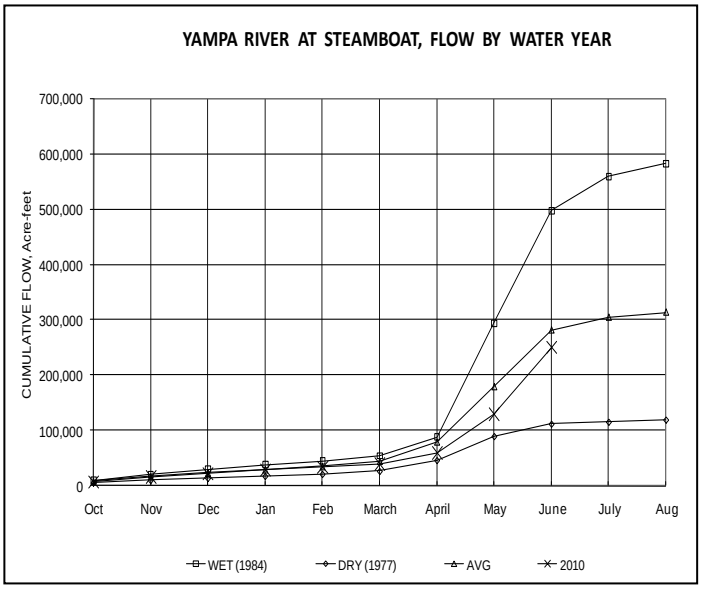
Basinwide Conditions Assessment

The SWSI value for the month was +0.3. Flow at the gaging station Yampa River at Steamboat was 2023 cfs, as compared to the long-term average of 1722 cfs.

June precipitation was near 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 approximately 105% of average for the Yampa/White River basin and 109% of average for the North Platte River basin. Precipitation for the combined Yampa, White, and North Platte River basins is up to 95% of average for the water year to-date. The remaining snowpack at the NRCS SNOTEL sites was mostly melted by the end of the month.

Temperatures were average for the month of June. On the Yampa River, given what seemed to be a sudden peak runoff, it was expected that the flows in the rivers would drop off quickly and fall below average. However this was not the case. The peak flow occurred on or around June 8. Since the peak the flows have remained at or near average. The pattern that was expected but didn't occur on the Yampa River did however occur on White River. The peak flow occurred on or around June 7 and then dropped rapidly to below average. On the North Platte River, the peak occurred on June 14 at a flow well above average. Flows dropped off rapidly but remained at or near average.





Outlook

Fish Creek Reservoir filled early in June and by month's end remained full. Yamcolo Reservoir continued to spill throughout the month. Elkhead Creek Reservoir spilled throughout the month. 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 purposes.

Administrative/Management Concerns

Streamflows are looking very good in the Yampa and North Platte basins as they hover near average. Though streamflows on the White River basin are below average there are currently no streams under administration in this basin including Piceance Creek. Currently there are no streams under administration in the North Platte River either but there are several streams under administration in the Yampa River (and Green River) basin(s).

Public Use Impacts

Summer is a huge time for tubing on the Yampa River. Anglers are also seen on the Yampa River but in fewer numbers through the town of Steamboat due to the large number of tubers.

Basinwide Conditions Assessment

The SWSI value for the month was -1.0. Flows at the Animas River at Durango averaged 1,918 cfs (69% of average). The flow at the Dolores River at Dolores averaged 857 cfs (65% of average). The La Plata River at Hesperus averaged 69 cfs (55% of average).

June is the driest month in Division 7 and this year was no exception. Precipitation in Durango was 0.19 inches for the month, 26% of the 30-year average of 0.72 inches. Precipitation to date in Durango, for the water year, is 14.15 inches. The average high and low temperatures for the month of June in Durango were 82° and 48°. In comparison, the 30-year average high and low for the month is 82° and 46°.

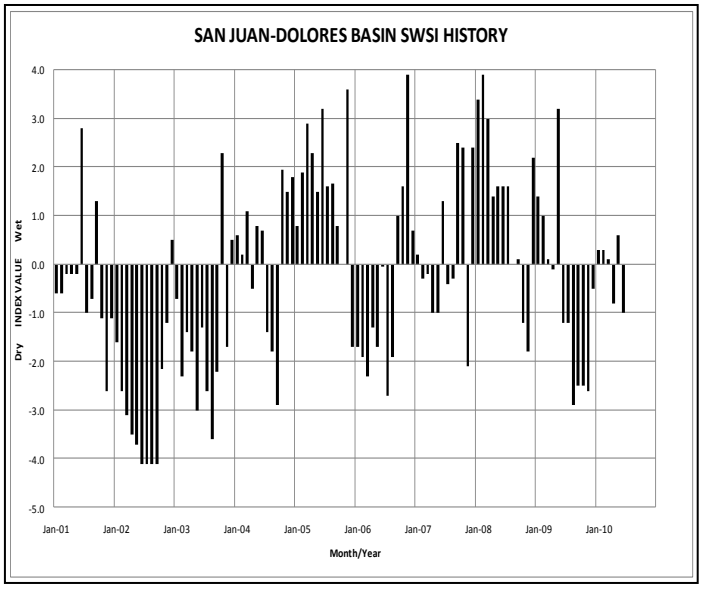
At the end of the month Vallecito Reservoir contained 116,360 acre-feet compared to its average content of 103,916 acre-feet (112% of average). McPhee Reservoir was up to 367,632 acre-feet compared to its average content of 325,906 (113% of average), while Lemon Reservoir was up to 28,650 acre-feet as compared to its average content of 33,375 acre-feet (86% of average).

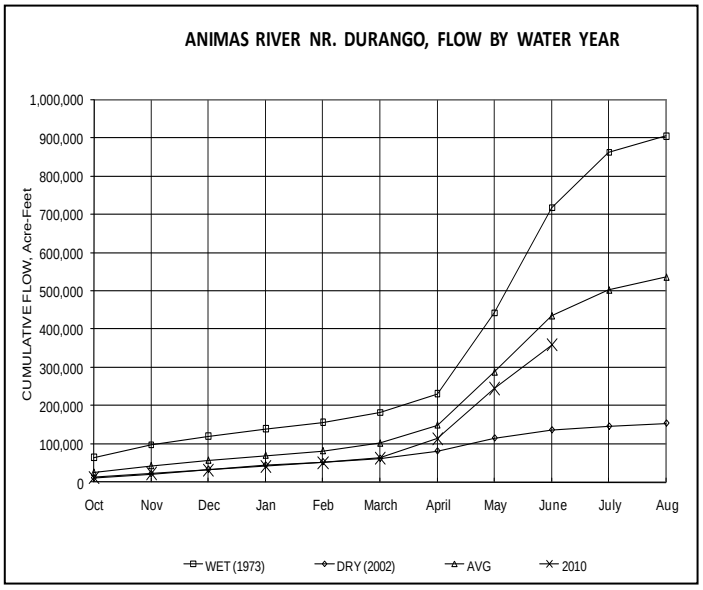
Outlook

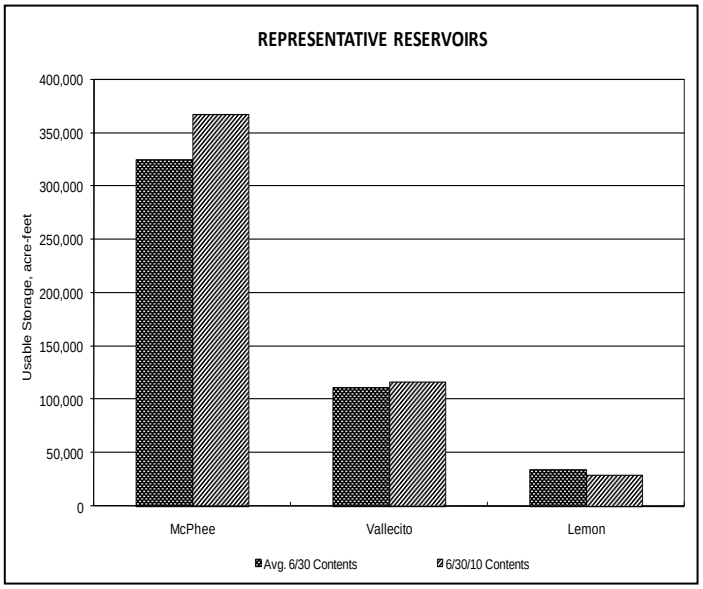
June is typically the driest month in Division 7 and this year was no exception. The warm, dry weather has persisted and stream flows fell below their average historical average. Dry stretches have begun to appear on the LaPlata River.

Administrative/Management Concerns

The La Plata River compact between Colorado and New Mexico remained on call for the entire month. The compact requires that half the flow at the upper index gages (Hesperus and above) must be delivered across the Stateline the following day. With the low flows on the LaPlata River, a futile call is expected to occur soon.







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