
COLORADO

WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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July 2002

The dismal July 1, 2002 SWSI values continue to convey the drought conditions that grip the entire state. The SWSI values for the Colorado, Yampa/White, and San Juan/Dolores River basins have essentially bottomed out at -4.1 (the lowest possible value that could be computed is -4.17). Conditions in the Arkansas River basin are worse than the SWSI value indicates, as that value is believed to be inappropriately elevated due to a statistical problem associated with the reservoir storage component of its make-up.

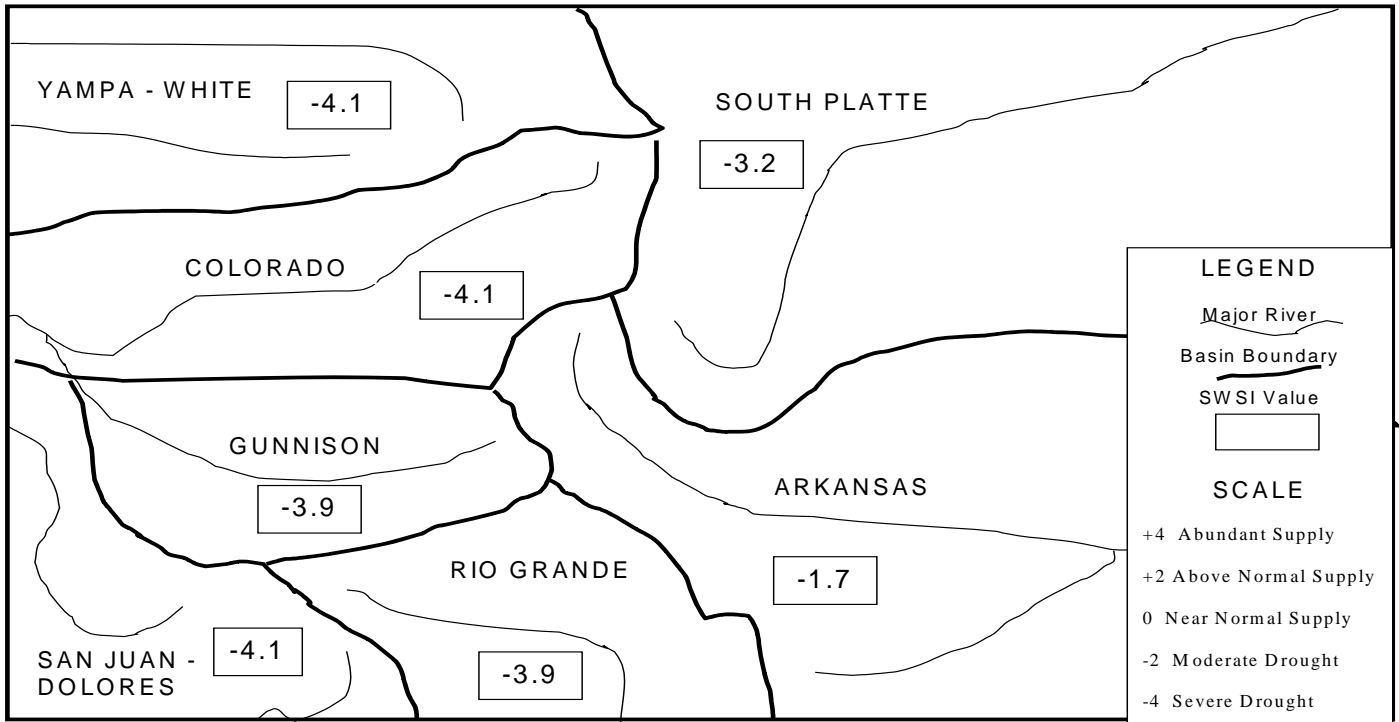
Record low stream flows are occurring around the state. Only the most very senior of water rights are able divert from the rivers. Storage supplies in many irrigation reservoirs are expected to be gone the end of the irrigation season, unless the users make a difficult decision to hold the water over to next year. Precipitation during June was well below normal across the state. Some areas received rain showers, but others received no precipitation at all during the month. Lack of precipitation and reduced deep percolation from the reduction of irrigation diversions are adversely affecting wells through a lowering of ground water levels. A lack of required replacement water to make up for steam depletions is affecting the legal ability of some wells to pump. Many, if not most, Water Districts and municipalities are restricting water use, and water conservation is the name of the game.

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 following SWSI values were computed for each of the seven major basins for July 1, 2001, and reflect the conditions during the month of June.

<u>Basin</u>	<u>July 1, 2002 SWSI Value</u>	<u>Change From Previous Month</u>	<u>Change From Previous Year</u>
South Platte	-3.2	-1.7	-3.8
Arkansas	-1.7	-0.2	-1.8
Rio Grande	-3.9	-0.4	-2.3
Gunnison	-3.9	-1.4	-2.5
Colorado	-4.1	-0.4	-1.1
Yampa/White	-4.1	-0.1	-0.8
San Juan/Dolores	-4.1	0.0	-3.1

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, 2002

Basinwide Conditions Assessment

The SWSI value of -3.2 indicates that for June the basin water supplies were well below normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 64% of normal as of the end of June. Cumulative storage in the major plains reservoirs: Julesberg, North Sterling, and Prewitt, is at 61% of capacity. Cumulative storage in the major upper-basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero is at 73% of capacity. Flow at the gaging station South Platte River near Kersey was 139 cfs, as compared to the long-term average of 3,267 cfs. Flow at the Colorado/Nebraska state line averaged 46 cfs.

Dry conditions continued in June. As expected, there was very little snow melt runoff in contrast to most years when peak flows occur in June. As a result, the flow of the South Platte River at the Kersey gage, a gage that provides an overall view of flow conditions in the basin, returned to near record lows during the later 20 days of the month.

Outlook

Because of the heavy use of reservoirs, there is a high level of concern that there will not be adequate ditch and reservoir supplies for some farmers to finish their crops. Users under many systems have already had shortfalls that will effect the crop production this year. Some farmers anticipating the water short situation modified what they planted this spring.

Certainly, the plains reservoirs east of Kersey on the South Platte will all be empty or very near empty within the next 60 days unless weather conditions change radically. Similarly, irrigation reservoirs on the tributaries will be very low by the end of the summer.

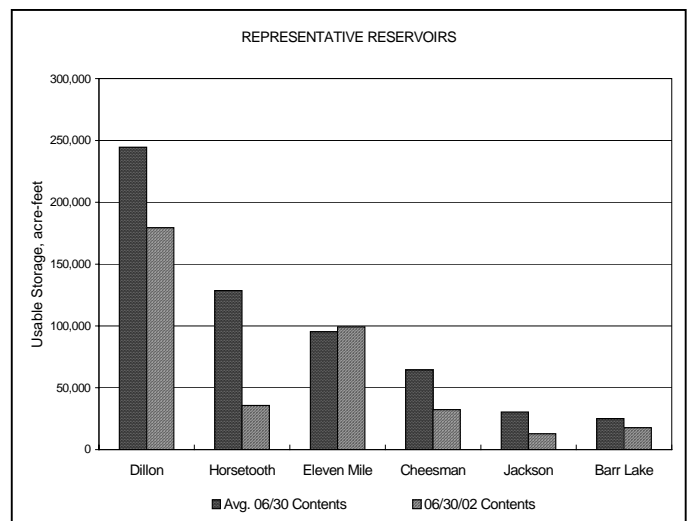
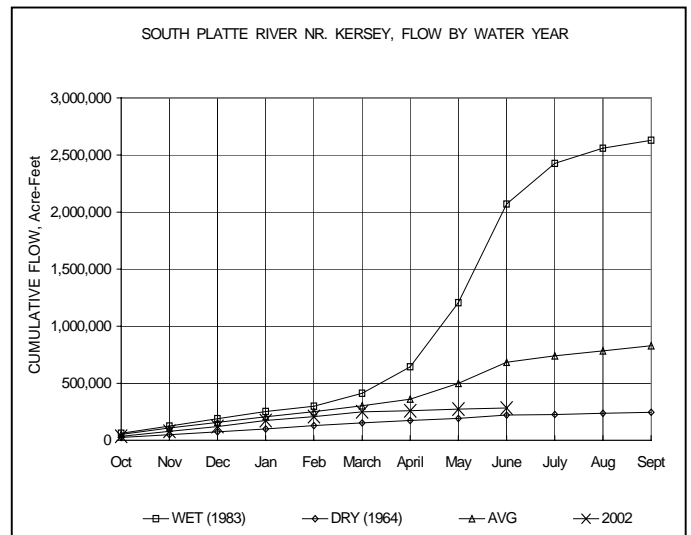
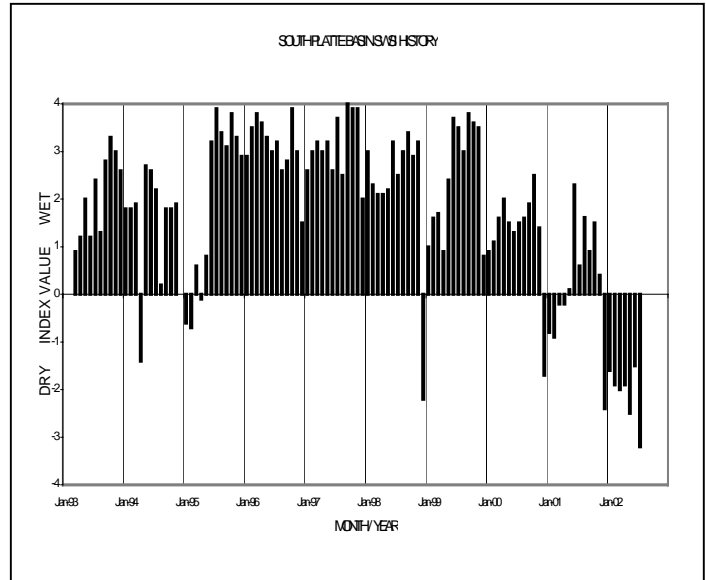
There also continues to be concern that there may not be adequate augmentation water to allow wells to pump through out the remainder of the summer.

Administrative/Management Concerns

The calls in June reached extremely senior levels in June because of the low flow conditions and record breaking high temperatures. The senior call of Bijou ditch bypass to Weldon Valley ditch with a priority of 4-26-1882 is the most senior call on the South Platte downstream of Kersey in over 20 years. Because of the shortfall in stream flow, users were heavily dependent on wells and reservoir supplies to meet demands.

Public Use Impacts

Cities continued to implement various levels of emergency drought plan depending on their individual situation. At this point, nearly all cities have implemented or plan to implement some level of restrictions based on the conditions.



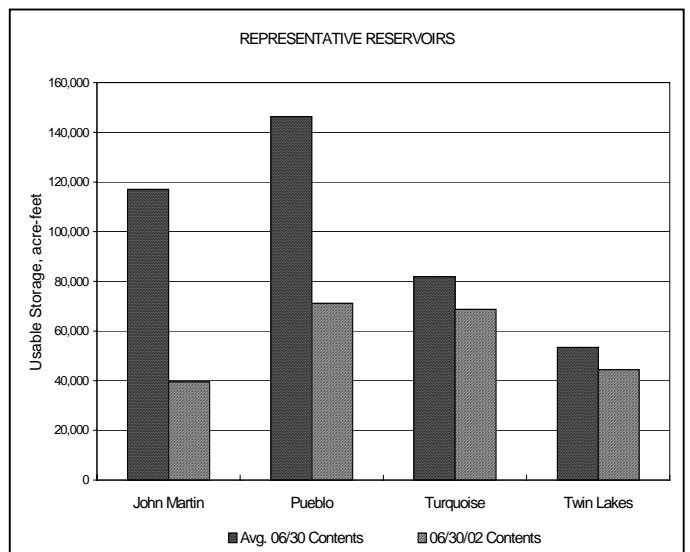
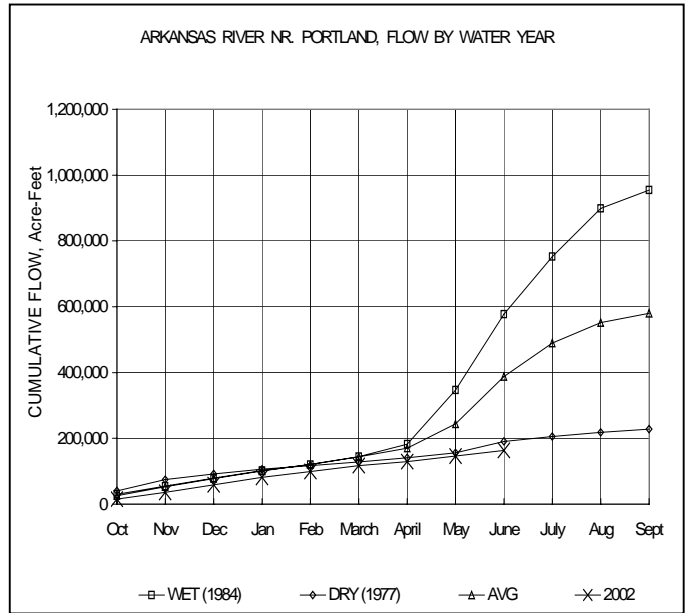
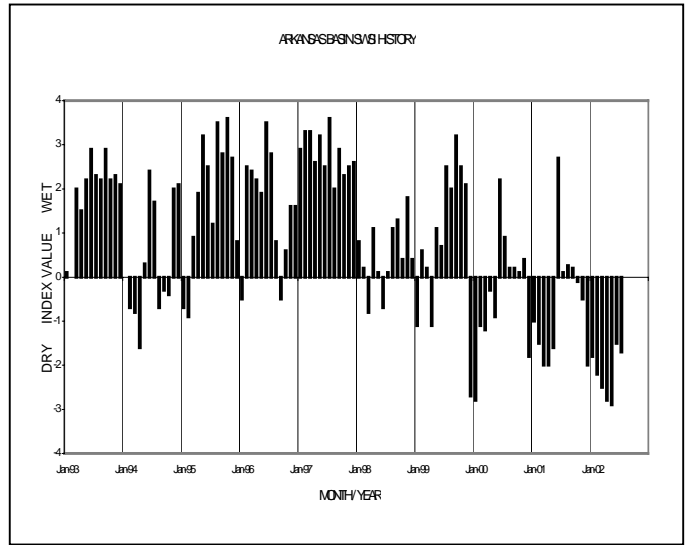
Basinwide Conditions Assessment

The SWSI value of -1.7 indicates that for June the basin water supplies were below normal. Note: the SWSI value of -3.8 that was given in last month's report was in error, the correct June 1, 2002 value is -1.5. Flow at the gaging station Arkansas River near Portland was 292 cfs, as compared to the long-term average of 2,441 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 56% of normal as of the end of June.

Reservoir storage levels continued to drop during June. Since the end of the Winter Water Storage period on March 15, Pueblo Reservoir has dropped 45,000 acre-feet to 40% of capacity, John Martin Reservoir has dropped 52,000 acre-feet to 12% of capacity, and Trinidad Reservoir has dropped by 5,000 acre-feet to 19% of capacity.

Administrative/Management Concerns

The main stem Arkansas River call has remained very senior. The dry weather conditions have increased transit losses and travel times.



Basinwide Conditions Assessment

The SWSI value of -3.5 indicates that for June the basin water supplies were severely below normal. Flow at the gaging station Rio Grande near Del Norte was 222 cfs, as compared to the long-term average of 2,461 cfs (7% of normal). The flow of 32,212 acre-feet at that station for the whole month of June is only 32% of the previous record low June volume set in 1977. The Conejos River near Mogote had a mean flow of 147 cfs (11% of normal). All streams in the upper Rio Grande basin are at or near record low flow levels. Several gauging station rating tables have been extended below any previous runoff period measurements. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 52% of normal as of the end of June.

Precipitation in Alamosa was a mere 0.02 inches, 0.57 inches above normal. This marked the 4th consecutive month of well below average precipitation on the valley floor. Normal precipitation in Alamosa since the beginning of the water year (October 1) would be 5.2 inches. Actual accumulation in that period this year was only 1.5 inches. Soil moisture conditions in non-irrigated areas are poor.

Outlook

Generous amounts of rainfall will be needed in the near future to neutralize the damage done to crop and rangeland by the drought conditions. However, long term weather forecasts don't predict any extraordinary precipitation for the next several months.

Administrative/Management Concerns

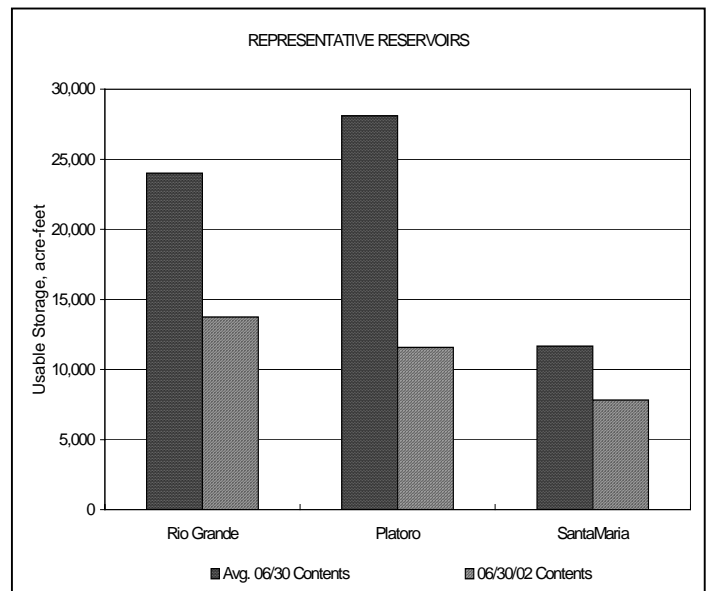
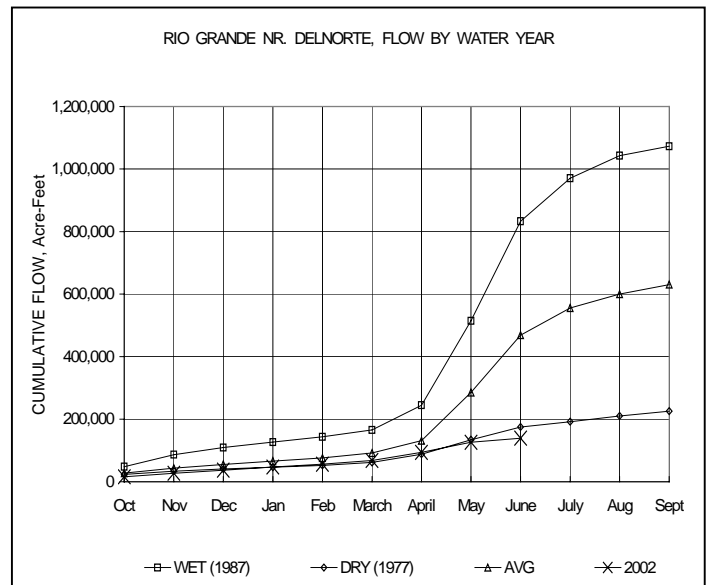
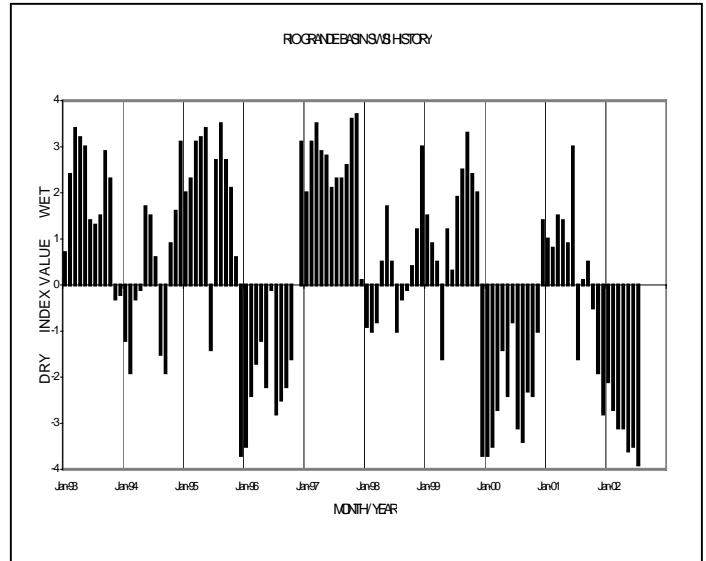
The long term affects of this year's pumping on the basin's aquifers are unknown. However, it is expected to take several years for recovery.

At the close of the month, only single digit priorities were diverting water from the Conejos, Los Pinos, Alamosa, La Jara, Pinos, and Saguache Creek drainages. In smaller basins such as San Francisco Creek near Del Norte or those in the Sangre de Cristo mountains, only priorities no. 1 were served. The mainstem of the Rio Grande dropped all the way to no. 83, the most senior calling priority since at least the 1930's

Public Use Impacts

Domestic wells are failing at an alarming rate. Over 200 domestic well replacement permits have been issued this spring. Dozens of irrigation wells have already been replaced and hundreds more are surging or producing at a fraction of their permitted amount.

The hot and dry conditions in the mountains exploded on June 19 when the "Million" fire near South Fork started. In all, about 9,000 acres were burned before the fire was contained.



Basinwide Conditions Assessment

The SWSI value of -3.9 indicates that for June the basin water supplies were severely below normal. Flow at the gaging station Uncompahgre River near Ridgway was 138 cfs, as compared to the long-term average of 577 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 59% of normal as of the end of June.

Once again the basin-wide precipitation was well below normal. Locations reporting no measurable precipitation for June included Grand Junction, Montrose, Ridgway, Bedrock and Cimarron. Grand Junction reported the fourth driest January – June period in 110 years of record. The first half of this year brought a total of only 1.33 inches of precipitation to Doyleville, located 25 miles east of Gunnison.

Outlook

The water supply outlook worsened during June in the Gunnison and San Miguel Basins. The predominant weather pattern remained warm, windy and dry. Record high temperatures were recorded in Grand Junction on both the 7th and the 30th.

Administrative/Management Concerns

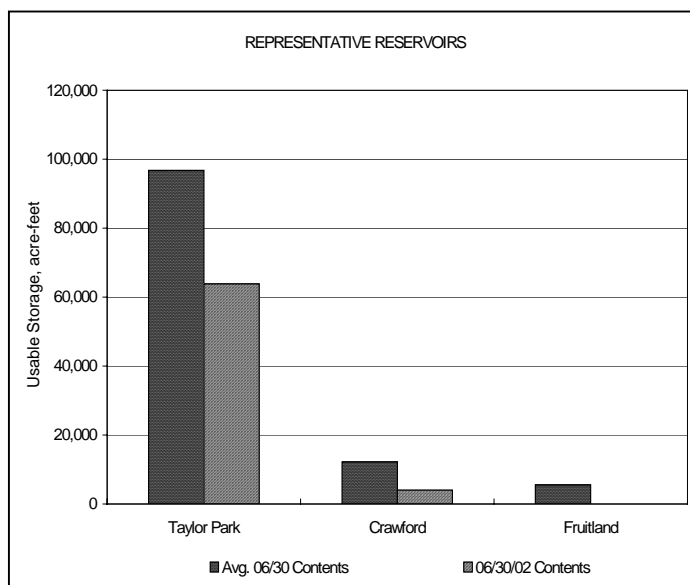
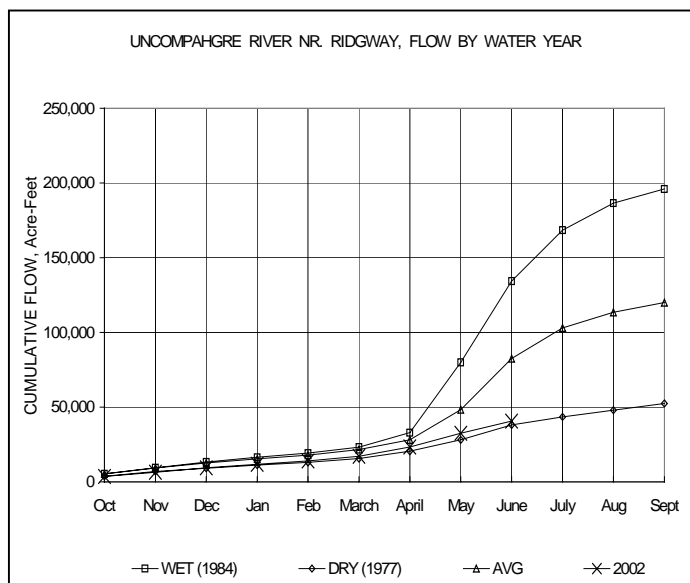
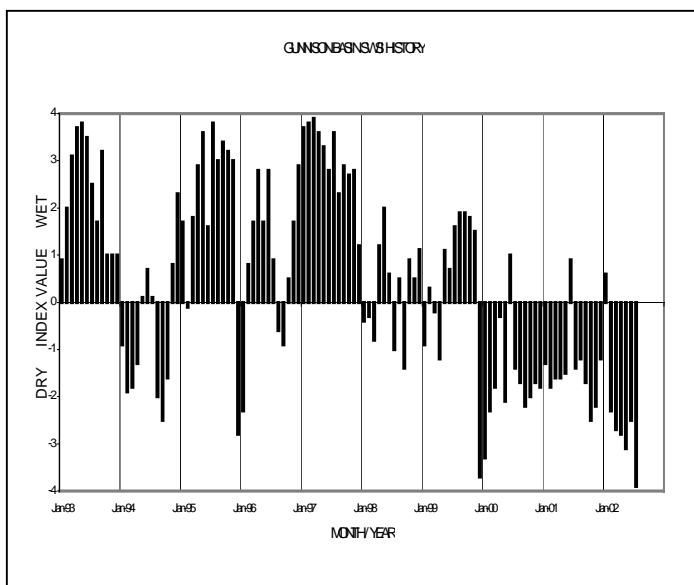
The river call for the Gunnison Tunnel continued. This was the first time in nearly 50 years that available inflows were less than the demand at the Tunnel. A Redlands Power Canal call was avoided through an innovative contract where the Canal owners reduced their demand in exchange for reimbursement of lost power revenues. Parties to this contract included the Redlands Power Authority, Colorado River Water Conservation District, U.S. Bureau of Reclamation, and U.S. Fish and Wildlife Service.

Shortages occurred in the San Miguel drainage, with river calls being issued some two months earlier than usual. Several augmentation plans were activated to allow subdivisions to continue their use of water. The Towns of Nucla and Naturita undertook severe conservation measures to assure themselves of adequate late summer water supplies.

Public Use Impacts

The only bright spot for the rafting industry was the increased releases from Crystal Dam in June. This was being done to meet the target flows stated in the above referenced Redlands contract. As a result, flows through the Black Canyon increased from 320 cfs at the end of May to 680 cfs by June's end. Other than this reach of the Gunnison from the Black Canyon to Grand Junction, the local rafting industry has been severely impacted.

The local ranchers continued to feel the effects of the drought. Several have reported that their irrigated pastures are producing only ten percent of the normal hay crop. Only those ranchers with very senior water rights on large streams were able to get some semblance of a normal crop. Senior water rights on smaller tributaries often had no water available.



Basinwide Conditions Assessment

The SWSI value of -4.1 indicates that for June the basin water supplies were severely below normal. Flow at the gaging station Colorado River near Dotsero was 1,216 cfs, as compared to the long-term average of 5,928 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 67% of normal as of the end of June.

Outlook

Several rain storms at the end of June and early July have provided some relief in localized areas, even raising tributary river flows noticeably for a few days. Much more moisture is needed to reduce the strain on limited supplies for irrigation, fisheries, etc. However, extended forecasts are not very encouraging for the Colorado River basin. In addition, there are serious concerns that if significant rain falls over fire burn areas it will cause flash flooding and debris flows.

Administrative/Management Concerns

The Shoshone power plant mainstem call came on June 13 and should remain on for the rest of the year. The Camio mainstem call came on June 24 and should remain on until the end of the irrigation season in October.

The Historic Users Pool in Green Mountain Reservoir achieved a paper fill early in July, contrary to predictions. However, the Contract Pool will not fill, affecting many water users who depend on this water for replacement releases (e.g. augmentation plans). There are efforts underway to satisfy these contracts with water that may be available in Ruedi Reservoir.

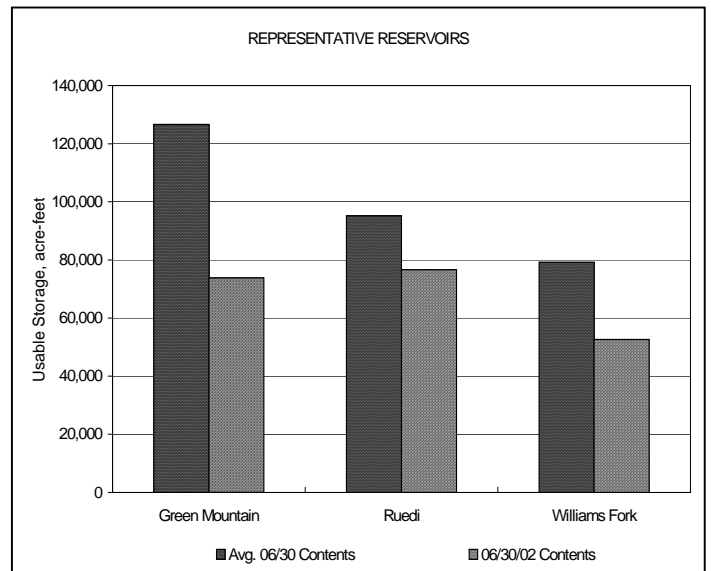
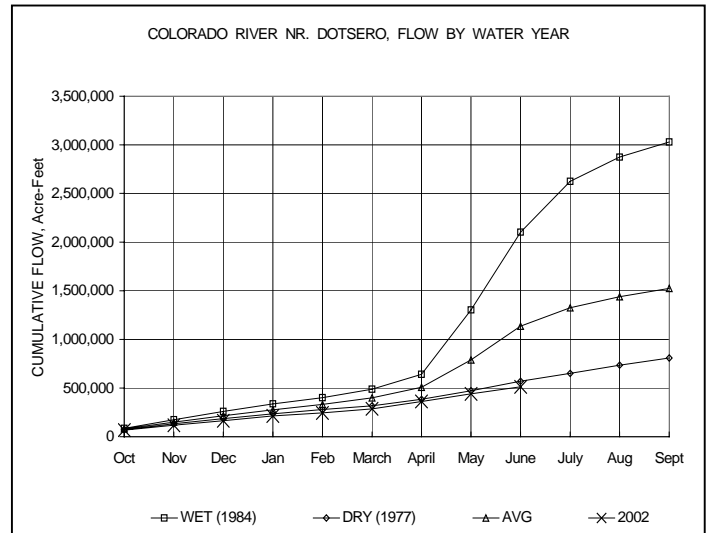
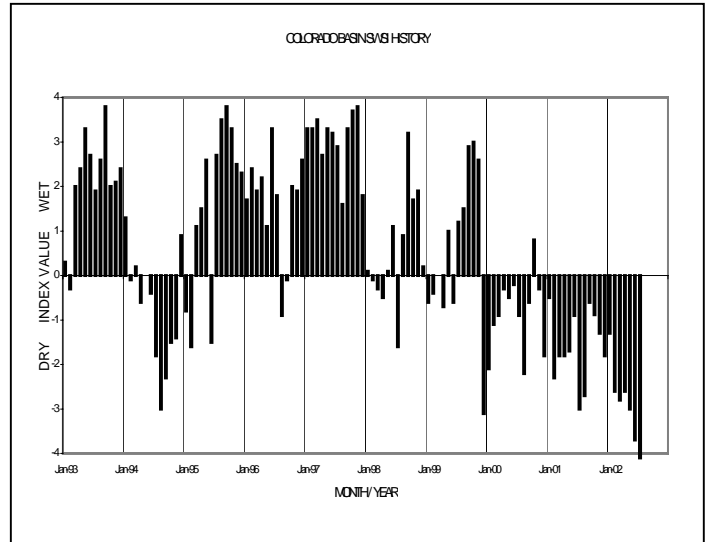
Most small tributaries have water available only for the most senior rights, and administration of augmentation plans and exchanges has intensified basin wide.

Public Use Impacts

Crowded boating during peak periods has been reported at the Shoshone to Glenwood run because it is one of the few white water sections with boatable flows in the basin.

Low flows and high water temperatures in several tributary rivers have fishery managers considering fishing closures over some reaches.

Wells continue to dry up as water tables drop along with surface water levels, prompting the need to drill replacement wells. Several campground wells have dried up adjacent to reservoirs which are at low storage levels.



Basinwide Conditions Assessment

The SWSI value of -4.1 indicates that for June the basin water supplies were severely below normal. Flow at the gaging station Yampa River at Steamboat was 303 cfs, as compared to the long-term average of 1,822 cfs.

Precipitation for June was only 19% of average for the basin as measured at the Snotel sites. This continues the string of months of below normal precipitation. Many areas at lower elevations received considerably less rainfall than indicated by the basin-wide average.

Stream flows are extremely low, with many gages consistently recording record low reading. With the exception of the mainstem of the White and Yampa Rivers, all of the Division is under heavy administration. While no official call for administration has occurred on the White and Yampa River, both are critically short of water. Irrigation reservoirs have been releasing water since late May.

Many reservoirs will release their irrigation storage by the middle of July.

Outlook

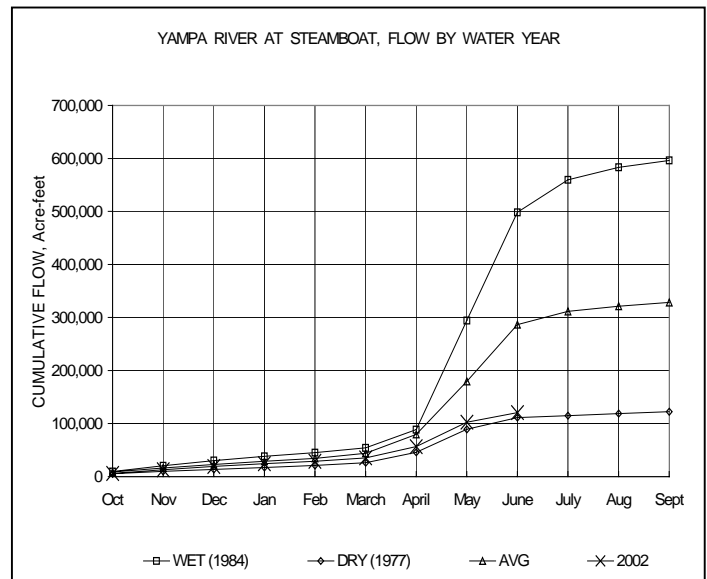
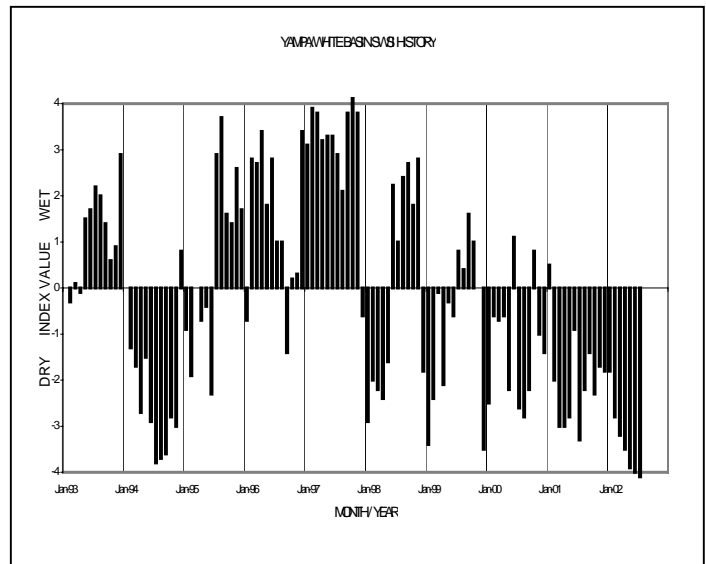
The summer rainfall pattern has yet to develop for the Division. Stream flows are expected to stabilize at below normal base flows. As reservoir releases end, return flows from irrigation will decrease, resulting in a further reduction in stream flows. Precipitation events are the only hope for the rest of the summer for increases in flow.

Administrative/Management Concerns

Administration has been exceedingly heavy this spring. Many tributaries are under administration for the first time since 1977. River flows are at near record lows, with many tributaries no longer contributing to the flow of the mainstems. While the situation has stabilized on the tributaries, a call for administration on the White and Yampa River would cause serious management problems. Water users on the White River have voluntarily reduced diversions to keep a call off the river, which allows upstream junior water rights to continue to divert.

Public Use Impacts

The low flows have severely curtailed recreation on the rivers. Steamboat Springs has called for a voluntary cessation of all water activities on the river through town. The Division of Wildlife has requested anglers to refrain from fishing in many areas due to elevated water temperatures and reduced oxygen contents. Rafting and kayaking on the rivers was essentially over by the second week in June. Many municipalities have implemented voluntary water restrictions, with some considering mandatory programs.



Basinwide Conditions Assessment

The SWSI value of -4.1 indicates that for June the basin water supplies were severely below normal. Flow at the gaging station Animas River near Durango was 354 cfs, as compared to the long-term average of 2,590 cfs. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 41% of normal as of the end of June.

The drought continues to dig deeper at the water supply for the area. River flows declined steeply dropping well below typical base flows, even to record low levels. Average flows ranged from 5% to 12% of normal for June. The previous lowest recorded daily flow for the Animas River in Durango was 233 cfs on July 1, 1934. This year, the Animas River dropped to 161 cfs.

The San Juan River was reduced to extremely low flows throughout and the Piedra River added about 9 cfs to the 15 from the San Juan as water entered Navajo Reservoir. Navajo releases of 850 cfs for the endangered species program made the River at the Four Corners look impressively high.

Reservoir levels were also at record lows for June. At the end of the month Lemon Reservoir was shut down with about 10% capacity left. Vallecito carried about 18,000 acre feet out of a 125,000 acre-feet capacity. However all the non-Indian irrigation ditches had been shut down by early July. Montezuma Valley Irrigation continued in some areas but was shut down to most of the system by mid June. The Dolores River reduced to less than 15 cfs, which was about the same flow as the downstream fishery release. Groundhog Reservoir releases will augment the flows in July while they last. Jackson Gulch Reservoir shut down and delivered water only to the municipal and domestic while the top two priorities shared the remaining river water on the Mancos River.

Precipitation in Durango during June was 0.08 inches, bringing the total for 2002 water year to 4.4 inches. Most of that amount came in November 2001.

Outlook

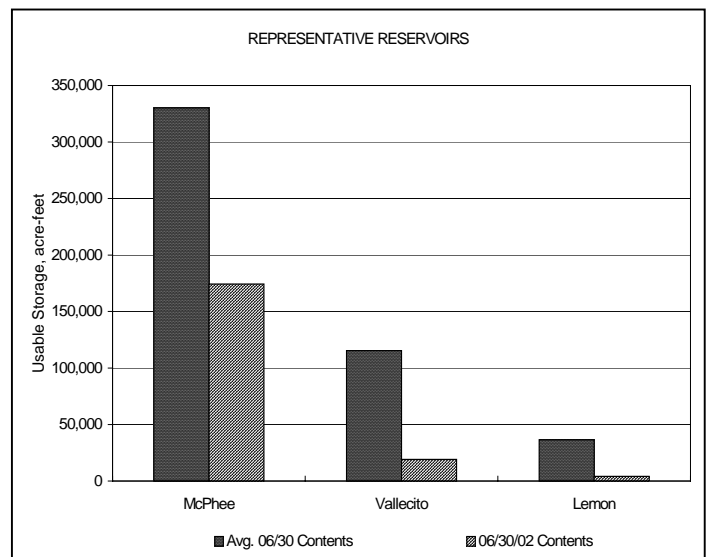
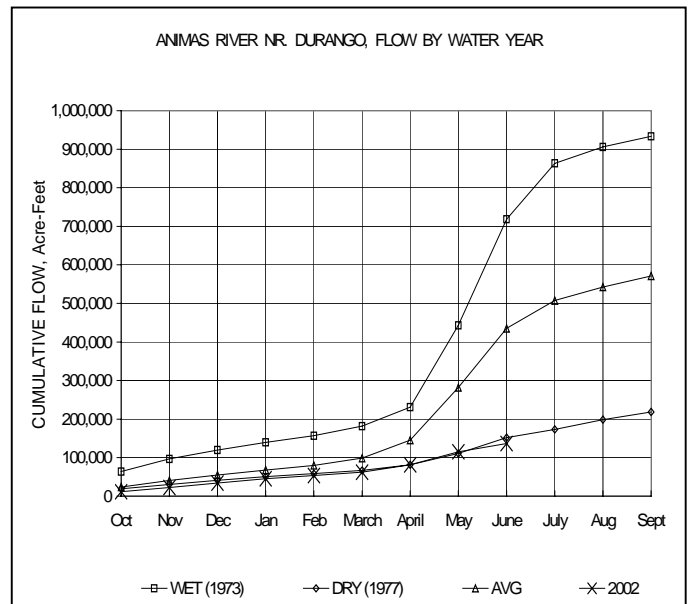
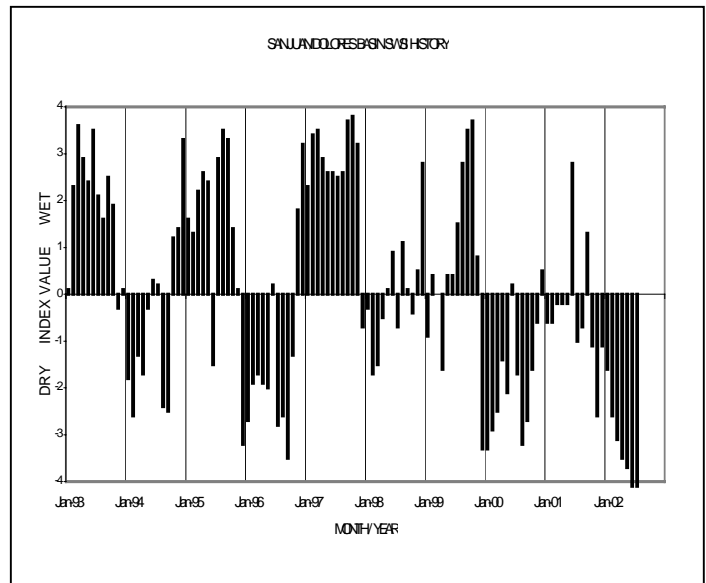
The outlook is not promising unless thunderstorm activity begins to bring in the relief needed. Soil moisture and reservoir storage will absorb much of any excess. Local officials are concerned about the water quality and sediment load when or if the rains begin.

Administrative/Management Concerns

River calls were seen at several new locations. Futile calls were being applied to the La Plata River, Junction Creek, Lightner Creek and Elbert Creek.

Public Use Impacts

Major forest fires caused depletions of water in some areas and left large sections of the Forest closed or restricted. The narrow gauge train temporarily suspended operations to prevent any spark caused fires. Rafting recreation was fairly popular early in the month but changed to kayaking and tubing on the local rivers. Fishing was reported to be good in several areas, especially the lowered reservoirs.



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