COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER; COLORADO DIVISION OF WATER RESOURCES
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April, 1999

The item of note during March was the low snowpack across the entire state. Reports from many of the basins indicate that there is little or no lower elevation snowpack. At the end of March, the Natural Resources Conservation Service reported that statewide snowpack averaged 65% of normal. Low precipitation during the month caused this figure to drop from 85% of normal at the beginning of the month. The southern mountains had the lowest accumulation, with the San Juan/Dolores basin at 43% of normal and the Rio Grande basin at 53% of normal. The Yampa/White basin had the highest percent, at 79%. The percentage of normal snowpack figure dropped in all basins during March, causing a drop in the SWSI value in all basins. Computation of the SWSI value in the Yampa/White basin is not supported by a reservoir storage component, which results in it having the lowest value.

Reservoir storage is the brightest item with most all reservoirs storing above normal amounts. Most streams are currently flowing at near normal rates, but due to the low snowpack are expected to drop to well below normal as the runoff period commences. A number of basin administrators report earlier than normal calls for diversions of river water due to some dry conditions and attempts by junior water right holders to get what water they can before senior rights preempt them. Those water users with reservoir storage will likely be planning their best strategy to use that water, while users who rely on direct diversions will be assessing what their options will be with reduced river flows.

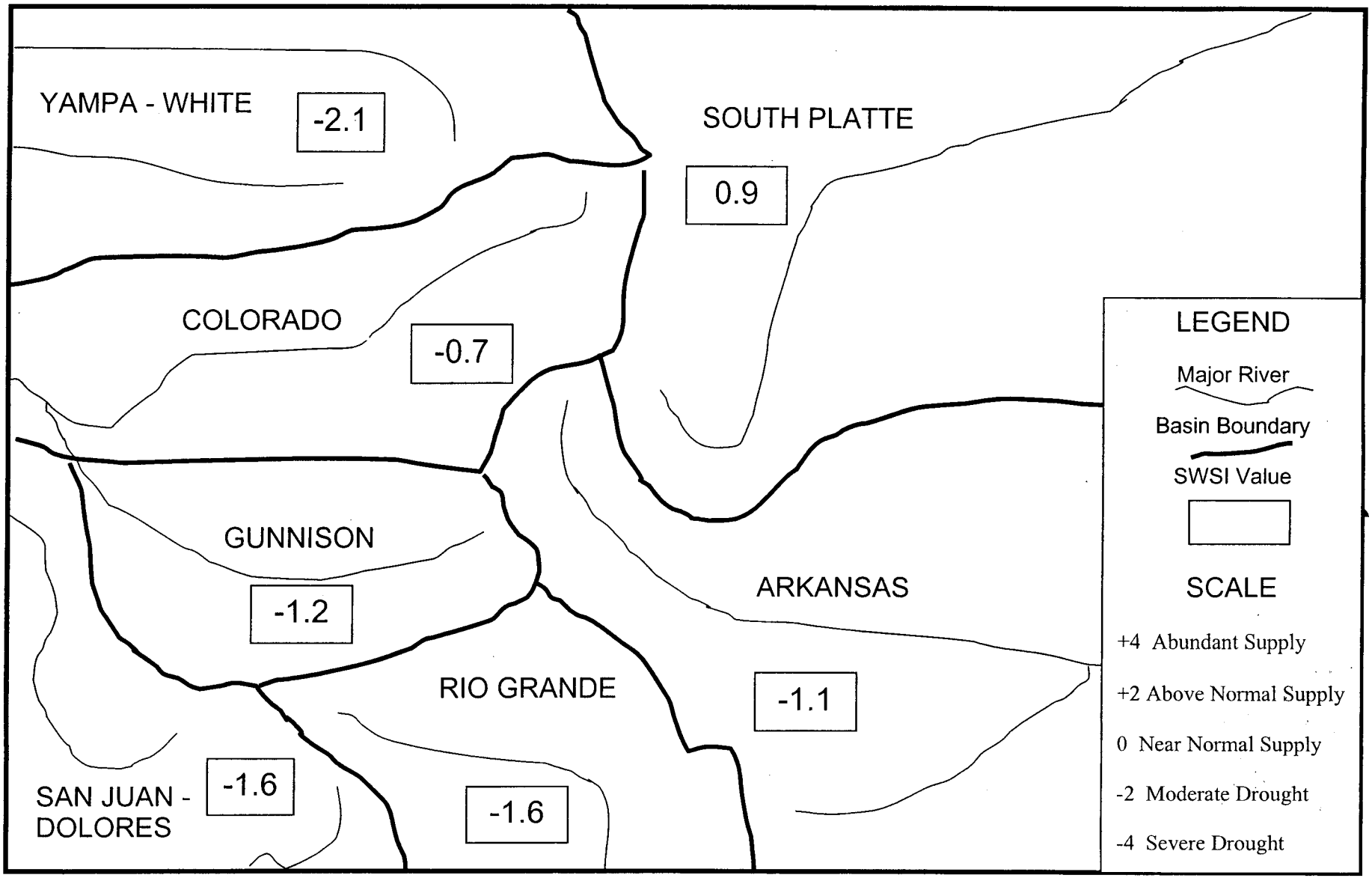
The Surface Water Supply Index (SWSI) developed by this office and the U.S.D.A. Natural Resources Conservation Service is used as an indicator of mountain based water supply conditions in the major river basins of the state. It is based on snowpack, reservoir storage, and precipitation for the winter period (November through April). During the winter period, snowpack 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 April 1, 1999, and reflect conditions during the month of March.

Basin	April 1, 1999 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	0.9	-1.3	-1.7
Arkansas	-1.1	-1.3	-2.2
Rio Grande	-1.6	-2.1	-2.1
Gunnison	-1.2	-1.0	-2.4
Colorado	-0.7	-0.7	-0.2
Yampa/White	-2.1	-2.2	+0.3
San Juan/Dolores	-1.6	-1.6	-1.1

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



APRIL 1, 1999

Basinwide Conditions Assessment:

The SWSI value of 0.9 indicates that for March the basin water supplies were near normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 97% of normal as of the end of March. Storage in the major plains reservoirs: Julesburg, North Sterling, and Prewitt, increased by 2,480 acre-feet during March and is at 92% of capacity. Storage in the major upper-basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero, increased by 4,371 acre-feet and is at 81% of capacity. The Natural Resources Conservation Service reports that April 1 snowpack is 70% of normal. The mean daily flow of the South Platte River at the Kersey gage was 582 cfs, as compared to the long term average of 948 cfs. Flow at the Colorado/Nebraska state line averaged 523 cfs.

The snowpack conditions remained below average in March. This is especially disconcerting as March represents the month when basin administrators expect to get the most precipitation. The basin is very short of snow in the southern mountains. In addition, at the lower elevations there was little precipitation and above seasonal temperatures. Thus, the water supply situation declined dramatically during the month.

Outlook

While reservoir storage is still fairly good due to the good conditions the past couple of years, water users and administrators have begun to be very concerned with the lack of precipitation in the basin.

Diversions during the month continued primarily for municipal purposes, storage, and recharge. A junior call was placed in District 1 in response to the dry conditions to help the reservoirs on the plains. This is a dramatic departure from previous years where there was no concern about filling the reservoirs before runoff began. While it appears that the plains reservoirs will fill this year, the filling probably will not occur until runoff, and there is some possibility that they will not fill at all.

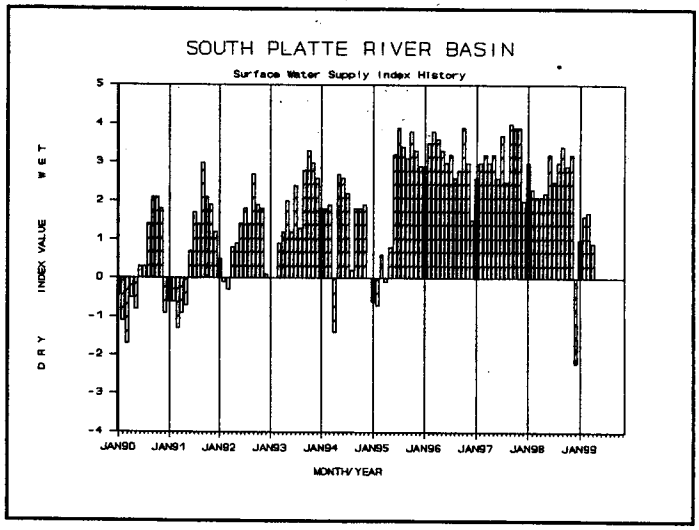
In addition to the call to fill the reservoirs, by the end of the month there was a direct flow call in District 2 for irrigation. This event was unusual for this time of the year and reflects the dry, warm conditions. Without significant precipitation in April, basin administrators expect all calls to be earlier and more senior than typical, and dramatically more so than the last few years.

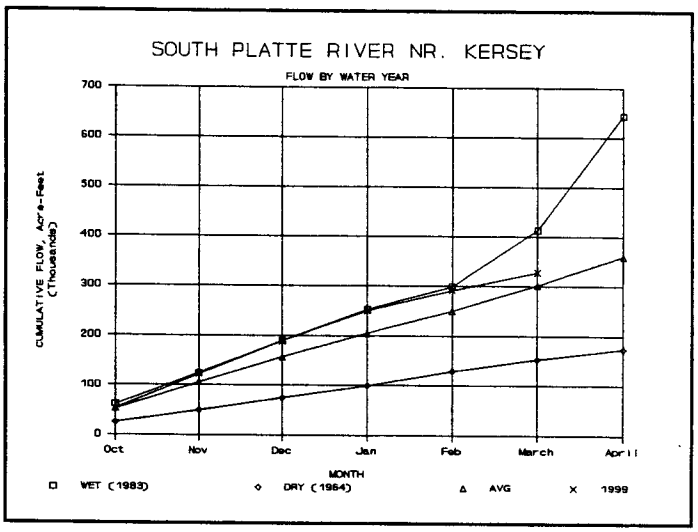
Administrative/Management Concerns

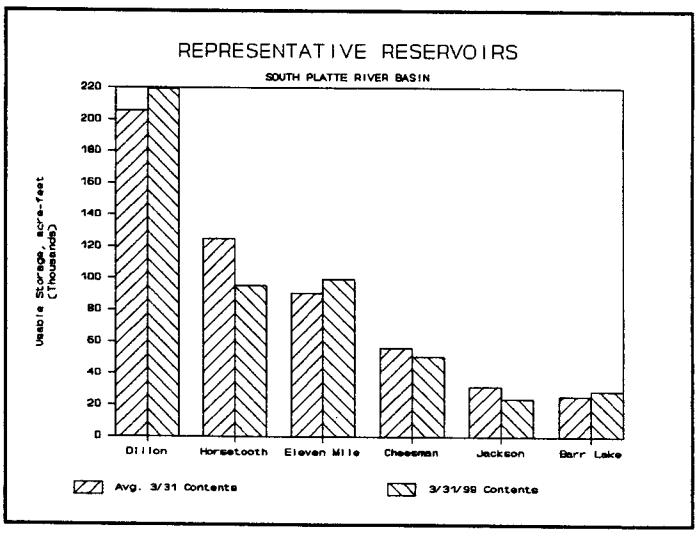
See above.

Public Use Impacts

None.







Basinwide Conditions Assessment:

The SWSI value of -1.1 indicates that for March the basin water supplies were slightly below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 61% of normal. Flow at the gaging station Arkansas River near Portland averaged 366 cfs, as compared to the long term average of 356 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 167% of normal as of the end of March.

Outlook

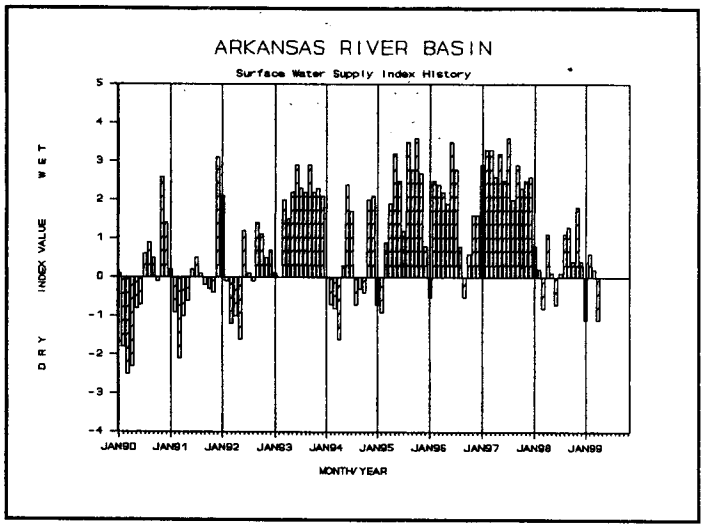
None.

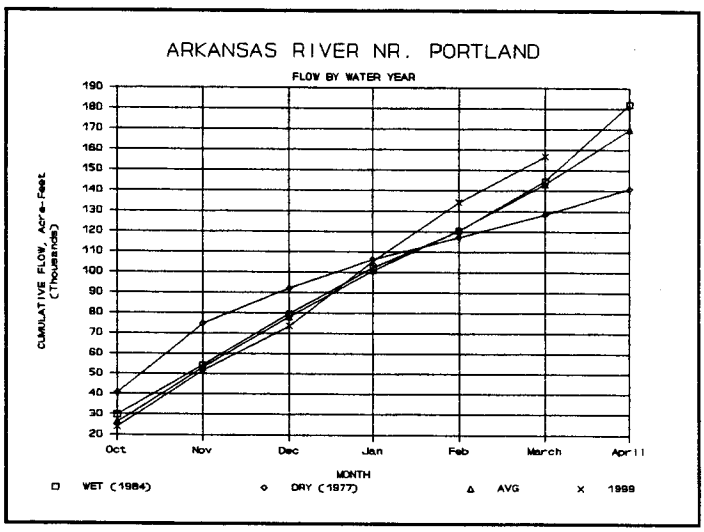
Administrative/Management Concerns

None.

Public Use Impacts

None.

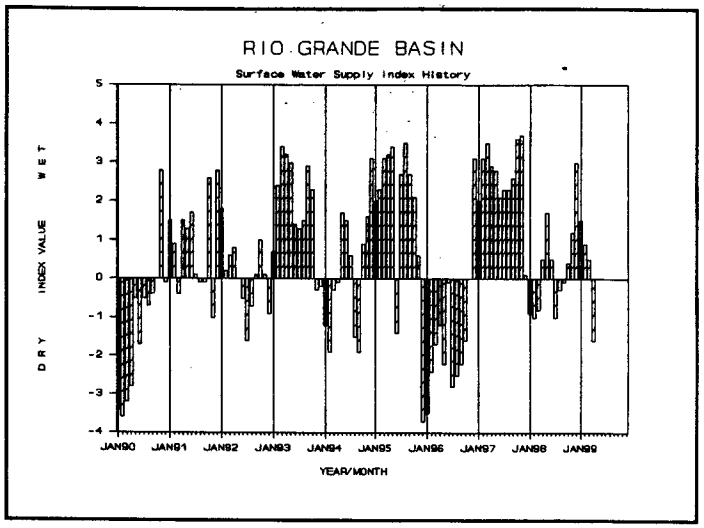




Basinwide Conditions Assessment:

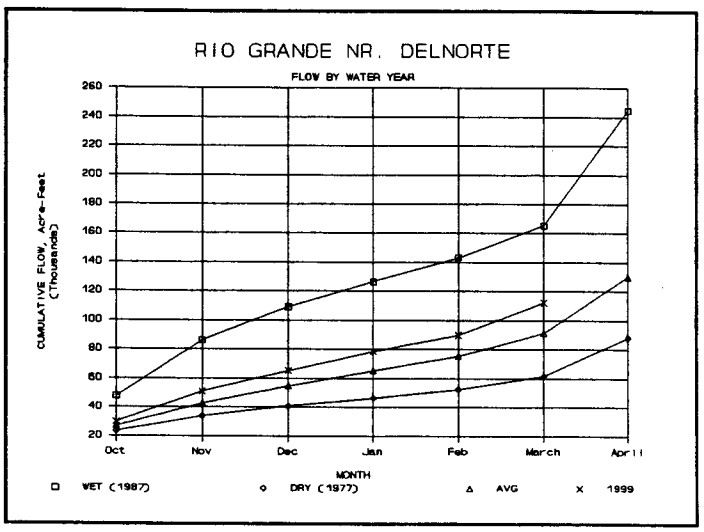
The SWSI value of -1.6 indicates that for March the basin water supplies were below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 53% of normal. Flow at the gaging station Rio Grande near Del Norte averaged 365 cfs, as compared to the long term average of 250 cfs. The Conejos River near Mogote had a mean flow of 98 cfs (124% of normal). Flow to the stateline was 79% of normal. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 114% of normal as of the end of March.

Weather conditions in the San Luis Valley were once again warmer and drier than normal. In Alamosa precipitation was only 0.22 inches, and average monthly temperature was 37.3° (5.0° above normal).



Outlook

Just as everyone was planning for a very low runoff year, a significant snow storm in early April dumped several feet of snow over much of the higher elevations. This timely event slowed the quick melt the basin was experiencing and added valuable snowpack. However, current NRCS forecasts still predict runoff to be only 74% of average on the Rio Grande Near Del Norte, and 67% of average on the Conejos Near Mogote.



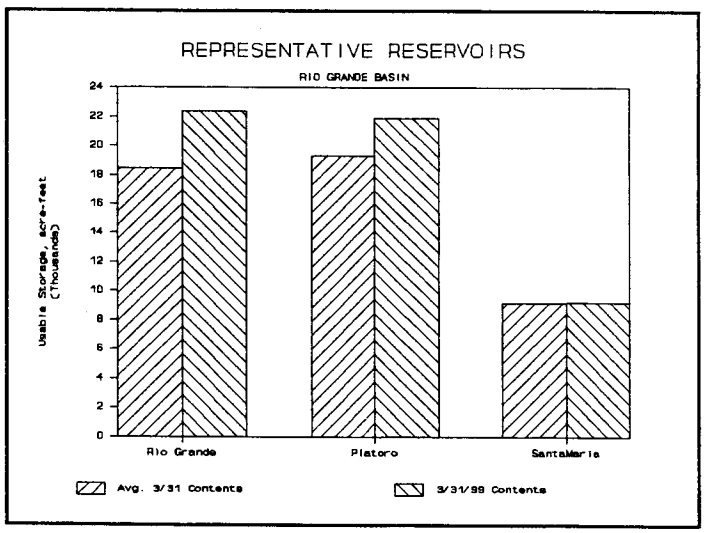
Administrative/Management Concerns

Rio Grande Compact accounting for 1998 was approved at the compact meeting held in Santa Fe in late March. Colorado over delivered 8,900 acre-feet to the state line last year. As of January 1, 1999, Colorado has an accrued credit of 11,500 acre-feet in Elephant Butte Reservoir.

Based on the current forecast, there will likely be little or no curtailment of water rights on the Rio Grande or Conejos River this irrigation season.

Public Use Impacts

High winds at the end of March created harsh dust storms that plagued the valley for several days. Due to the dry conditions, diversions for irrigation from the basin's streams began very early this year. By the end of the month, senior downstream ditches had called out the storage rights of all upper basin reservoirs.



Basinwide Conditions Assessment:

The SWSI value of -1.2 indicates that for March the basin water supplies were slightly below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 64% of normal. Flow at the gaging station Uncompahgre River near Ridgway averaged 62.7 cfs, as compared to the long term average of 60.7 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 100% of normal as of the end of March.

Outlook

Conditions appear grim to basin administrators. There does not appear to be any snow below the 10,000 feet elevation level.

Administrative/Management Concerns

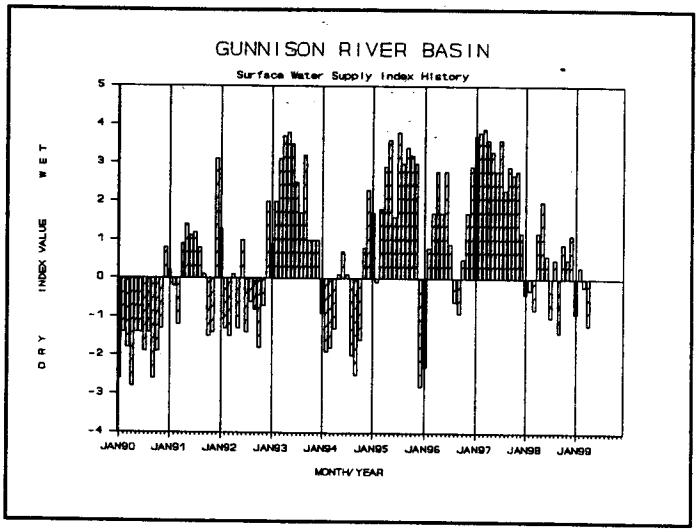
This year may be tough for administering water considering the low snowpack.

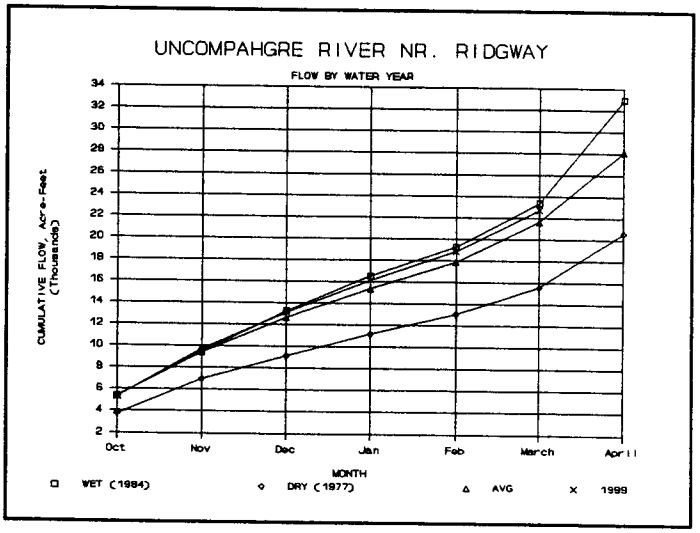
Frank Kugel has been appointed as the new Assistant Division Engineer for Division 4. He will be starting at his new post on May 1, 1999.

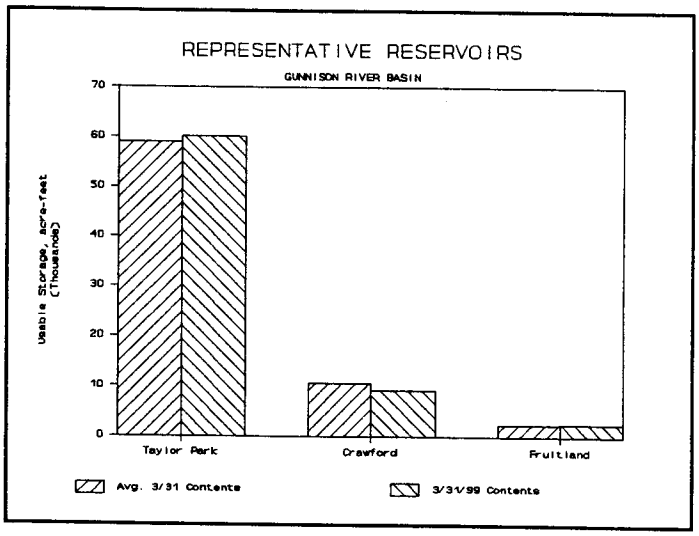
Public Use Impacts

Crested Butte ski area is thinning out on many runs. The resort states that the free skiing in the first part of April is going to need some more snow to be any good. Many rock runs will most likely be shut down due to safety reasons.

The low snowpack should not affect Telluride to any great extent. They typically shut down the second week of April. Last year they closed with a 100 inch base, this year it will be closer to 30 inches with the same closing date. It does not behoove them to remain open as the do not have the "skier days" to warrant continued operation.







Basinwide Conditions Assessment:

The SWSI value of -0.7 indicates that for March the basin water supplies were slightly below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 75% of normal. Flow at the gaging station Colorado River near Dotsero averaged 964 cfs, as compared to the long term average of 1,088 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 123% of normal as of the end of March.

Outlook

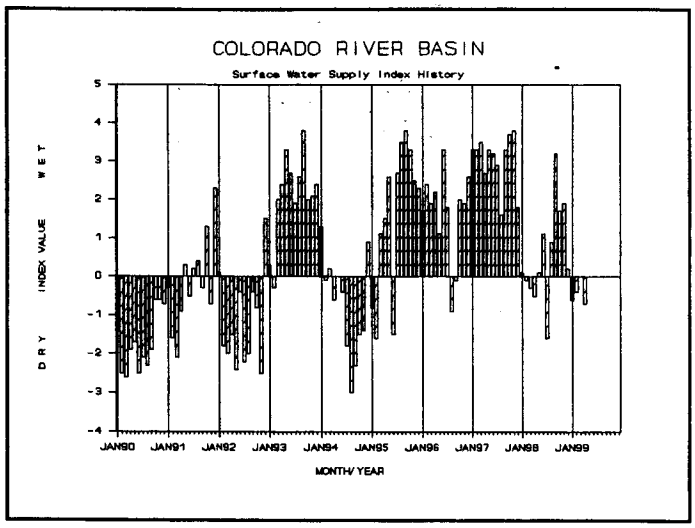
None.

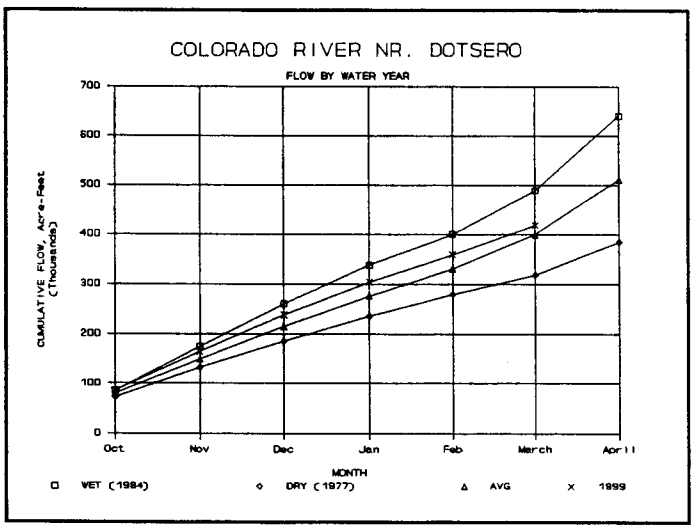
Administrative/Management Concerns

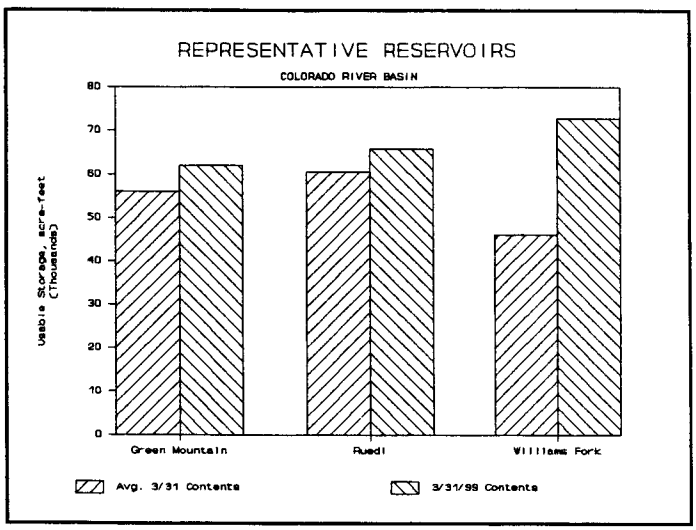
None.

Public Use Impacts

None.



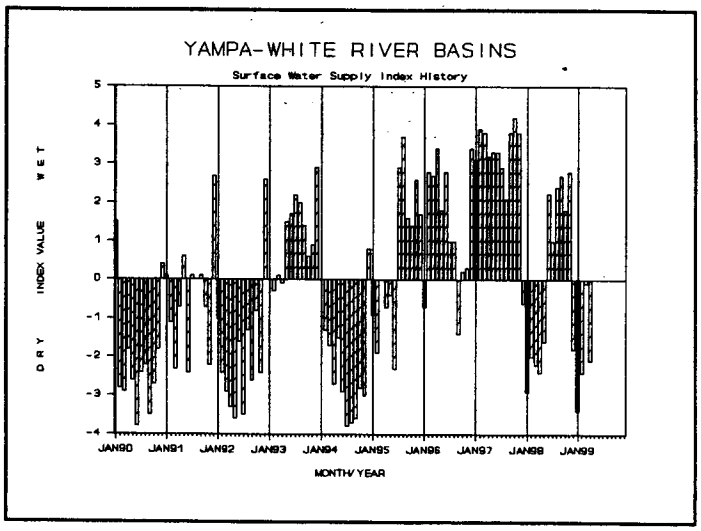




Basinwide Conditions Assessment:

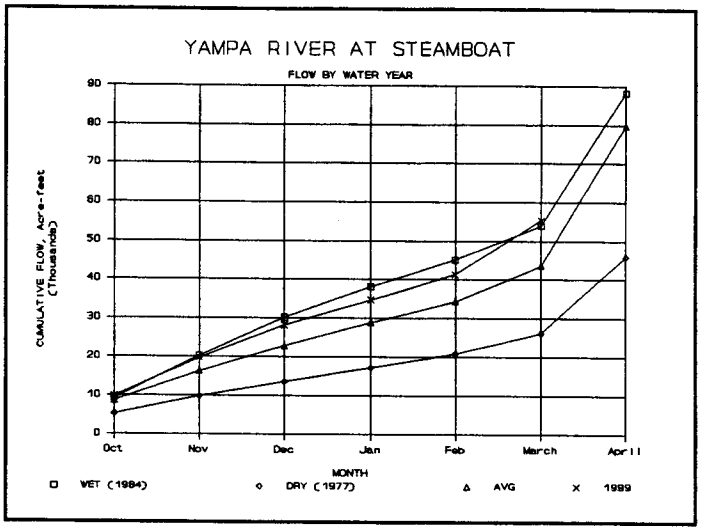
The SWSI value of -2.1 indicates that for March the basin water supplies were below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 79% of normal. Flow at the gaging station Yampa River at Steamboat averaged 228 cfs, as compared to the long term average of 145 cfs.

March was an extremely dry month throughout the Yampa River basin. The Steamboat Springs weather observer reports a total of 0.60 inches of precipitation for the month of March, 29% of average. In Hayden, March precipitation was 0.44 inches, 34% of average. Temperatures remained well above normal for this time of year. Below average snowfall coupled with the above average temperatures resulted in a noticeable decline in snowpack basin wide. Much of the low and mid-level snowpack has melted. The high elevation snow has begun to melt with corresponding increases in stream flows.



Outlook

Stream flows are expected to be above average for this time of year. Snow melt appears to be occurring earlier than normal due to the mild spring temperatures. Weather patterns that prevailed in March appear to be shifting slightly, hopefully resulting in increased precipitation.



Administrative/Management Concerns

Snowpack totals have declined and are now below normal levels. Runoff forecasts at the end of March predict the April through June runoff to be 83% of average for the North Platte, and about 70% of average for the Yampa and White Rivers. Reservoir storage in the basin is good and will help supplement river flows should the forecasts prove to be accurate.

Public Use Impacts

Most streams and rivers are open at the lower elevations. Stream flows have steadily increased during March. Many reservoirs still have ice cover, but extreme caution should be used as the ice is melting and is very dangerous.

Basinwide Conditions Assessment:

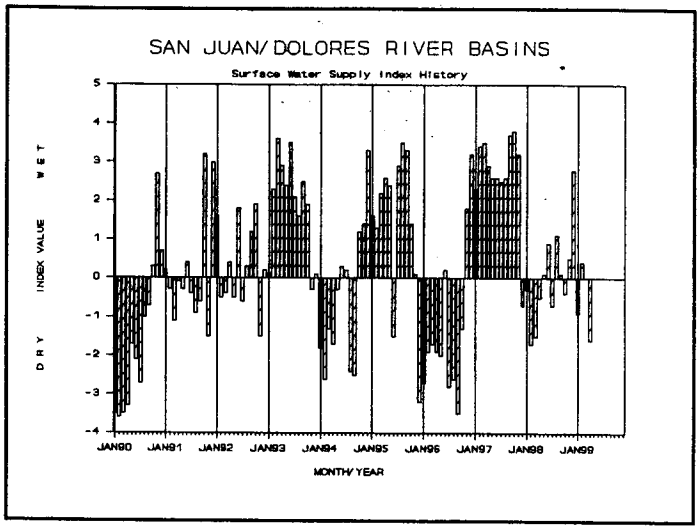
The SWSI value of -1.6 indicates that for March the basin water supplies were below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 43% of normal. Flow at the gaging station Animas River near Durango averaged 308 cfs, as compared to the long term average of 292 cfs. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 107% of normal as of the end of March.

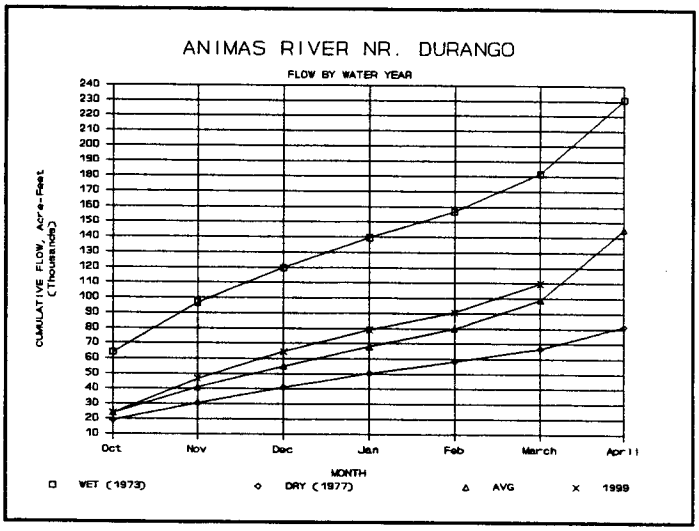
Since early March, much change has occurred in the water supply. With temperatures running 5° to 7° above normal, and gusty winds, the ground dried up. Many exposed snow fields were blown or melted clear. Normally, the highest snowpack develops at the end of March. However, with the warm temperatures and poor precipitation, the snowpack reduced from 74% of normal at the beginning of this March to 43% at the end. Higher elevation snow courses still had respectable amounts of snow, but some areas were depleted. In the La Plata Mountains, water content dropped below 3 inches by month's end, which is 15%-17% of normal and is the second worst year on record (the worst being 1977).

There was some rise in stream flow later in the month on the Dolores, Animas, and La Plata Rivers. River flows were above normal, but this increase did not nearly match the reduction in snowpack.

On April 2 a long needed break occurred in the four month dry spell. Three days of snow put an additional 60-80 inches of snow in the higher elevations and brought snow or rain to may lower areas. Over 2 inches of moisture greatly improved the outlook for at least the early runoff period, and will benefit farmers and others who have water needs.

Reservoir storage remained above normal in many locations, although Lemon Reservoir was not yet at 50% of capacity.





Outlook

With low snowpack, much of the summer's water supply will depend on receiving regular precipitation.

Administrative/Management Concerns

The La Plata River was on call early and New Mexico requested compact deliveries starting March 16, 1999.

Public Use Impacts

Some ski areas remained open after the early April storm. Wolf Creek ski area has closed, but reported an excellent year because of the early season business.