
COLORADO

WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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December 1999

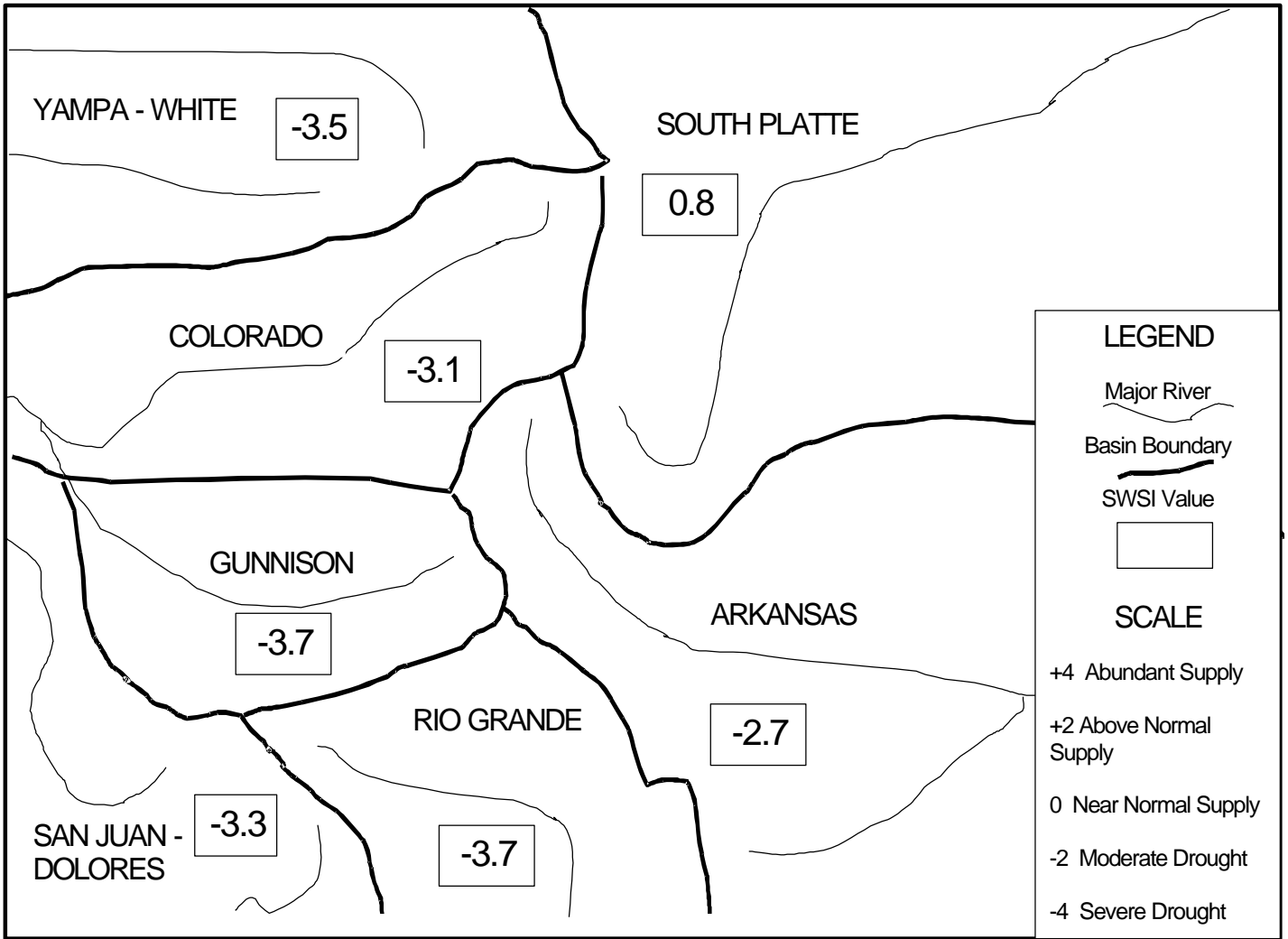
December 1 marks a shift in Surface Water Supply Index calculation from the summer stream flow component to the winter snowpack component. Significant drops in the SWSI values are attributable to this shift and low early snowpack, with major water basin snowpack values ranging from 12-47% of normal, and the statewide average snowpack at 29% of normal. December 1 snowpack values are the earliest readings of the winter, and contain only a fraction of the snowpack that will accumulate over the winter. They are likely not indicative of the winter season's snowpack contributions to next year's water supply, as significant changes are anticipated before next spring. Both stream flow and reservoir storage remain adequate statewide.

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 December 1, 1999, and reflect the conditions during the month of November.

| <u>Basin</u> | <u>December 1, 1999 SWSI Value</u> | <u>Change From Previous Month</u> | <u>Change From Previous Year</u> |
|------------------|--|---------------------------------------|--------------------------------------|
| South Platte | 0.8 | -2.7 | +3.0 |
| Arkansas | -2.7 | -4.8 | -3.1 |
| Rio Grande | -3.7 | -5.7 | -6.7 |
| Gunnison | -3.7 | -5.2 | -4.8 |
| Colorado | -3.1 | -5.7 | -3.3 |
| Yampa/White | -3.5 | -3.5 | -1.7 |
| San Juan/Dolores | -3.3 | -4.1 | -6.1 |

| 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



DECEMBER 1, 1999

Basinwide Conditions Assessment

The SWSI value of 0.8 indicates that for November the basin water supplies were near normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 110% of normal as of the end of November. Storage in the major plains reservoirs: Julesburg, North Sterling, and Prewitt, increased overall by 22,805 acre-feet during November and are at 84% of capacity. Storage in the major upper basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero, decreased by 6,220 acre-feet overall during November, yet are at 90% of capacity. The Natural Resources Conservation Service reports that December 1 snowpack is 47% of normal. Flow at the gaging station South Platte River at Kersey was 1,199 cfs, as compared to the long-term average of 894 cfs. Flow at the Colorado/Nebraska state line averaged 735 cfs.

Flow on the South Platte and tributaries to the South Platte continued above average because of the overall wet conditions during the past year. Reservoir levels are excellent for this time of year.

Outlook

While some reservoirs have not yet reached their winter storage level, administrators expect they will achieve these levels this season.

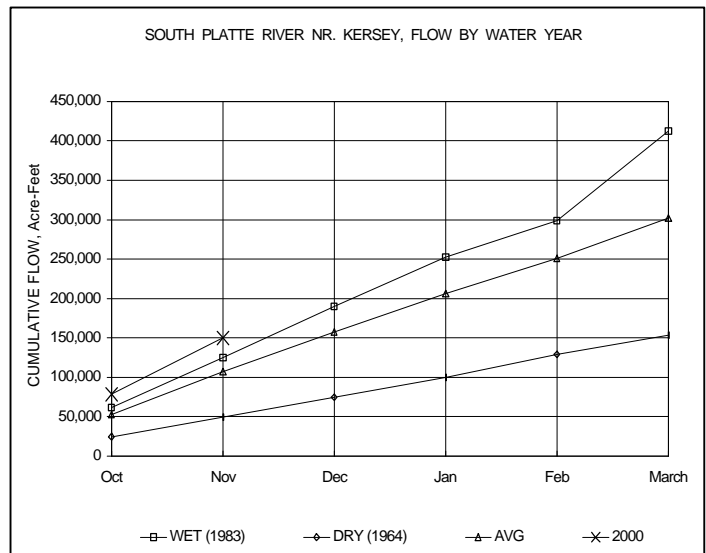
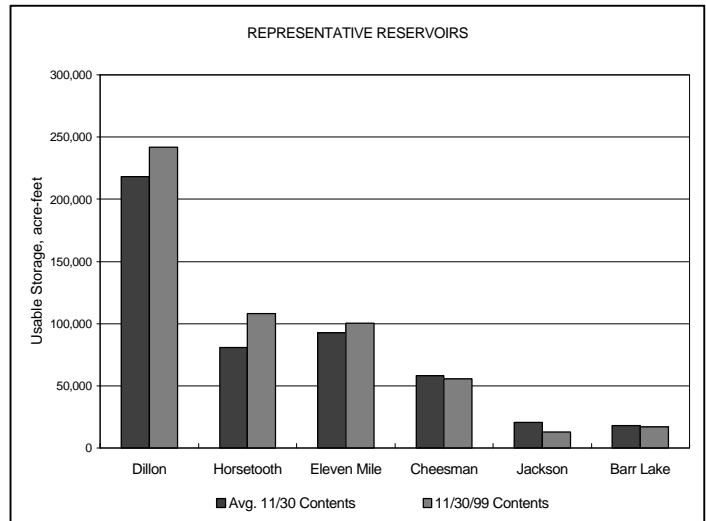
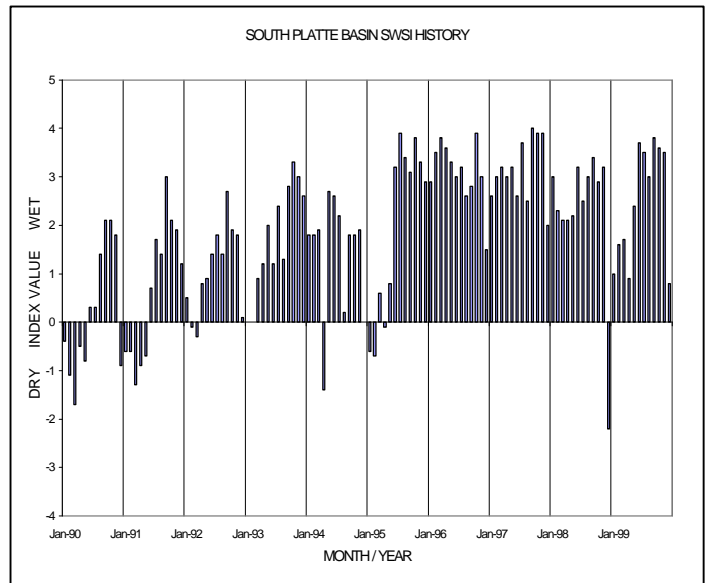
Administrative/Management Concerns

There were no calls on the South Platte mainstem during November, except for Denver. This provides another indication that the basin's water supply situation is good.

Early snowpack is below average throughout the basin, like it was last year. This early low snowpack is not a great concern at this time. As is always the case, the overall adequacy of next year's supply will depend upon late winter and early spring snows, when this basin generally receives the majority of its precipitation. Last year, the snowpack remained significantly below average throughout the winter, until spring precipitation yielded a water year far above average.

Public Use Impacts

None.



Basinwide Conditions Assessment

The SWSI value of -2.7 indicates that for November the basin water supplies were below normal. The Natural Resources Conservation Service reports that December 1 snowpack is 29% of normal. Flow at the gaging station Arkansas River near Portland was 434 cfs, as compared to the long-term average of 441 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 222% of normal as of the end of November.

Current reservoir storage levels remain high. Irrigation continued in November throughout the Arkansas Valley, with demand satisfied by direct flow.

Outlook

There continues to be a potential for free river conditions during the winter months. The Army Corps of Engineers, Albuquerque District, projects that, under current river conditions, John Martin Reservoir will enter the flood pool on January 10, 2000.

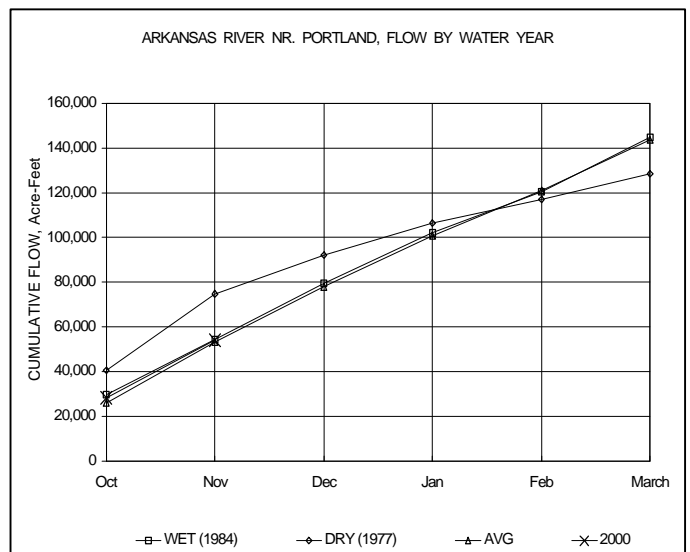
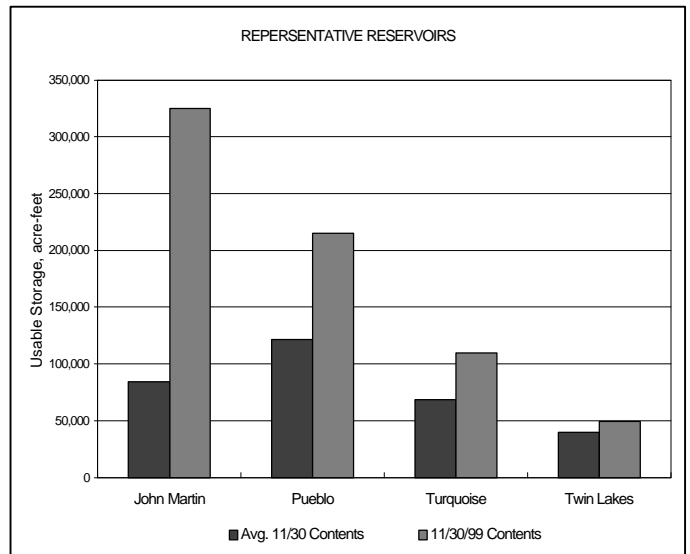
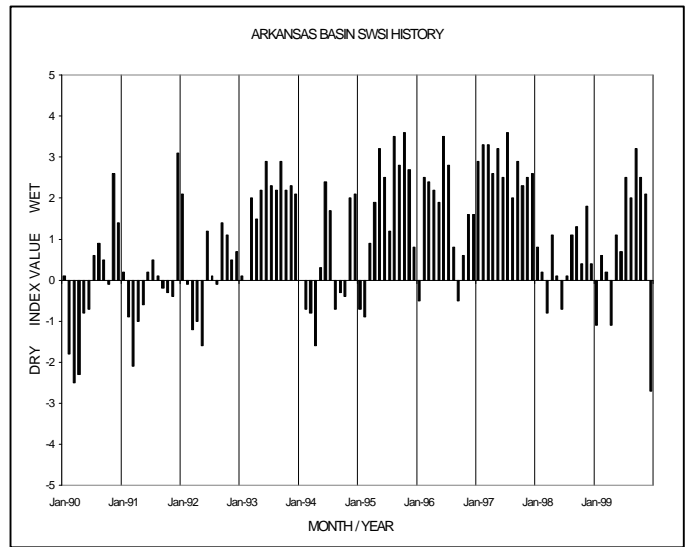
Administrative/Management Concerns

The Winter Water Storage Program began on November 15th. The river call will stay at March 1, 1910, through March 14, 2000, pursuant to the Program's court decree. The first two weeks of the four-month program shows a storage total of 33,109 acre feet, which is slightly less than last year's total of 33,780 acre feet for the same time period. Most participating entities elected to direct-flow divert for irrigation or for off-channel storage. Confirmed program storage amounts in Pueblo Reservoir totaled only 4,600 acre feet.

The annual meeting of the Colorado-Kansas Arkansas River Compact Administration takes place in Garden City, Kansas, on December 6th and 7th. Major topics include the past year's operations at John Martin Reservoir and at Trinidad Reservoir, and state line deliveries.

Public Use Impacts

None.



Basinwide Conditions Assessment

The SWSI value of -3.7 indicates that for November the basin water supplies were below normal. The Natural Resources Conservation Service reports that December 1 snowpack is 12% of normal. Flow at the gaging station Rio Grande near Del Norte was 339 cfs, as compared to the long-term average of 263 cfs, or 118% of normal. The Conejos River near Mogote had a mean flow of 48 cfs (50% of normal). In general, stream flow in the Rio Grande Basin was still above normal north of the Conejos River drainage. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 127% of normal as of the end of November.

Precipitation in Alamosa was only a trace for the entire month, 0.43 inches below normal.

Outlook

Winter still has not really arrived in the San Luis Valley. Snowfall at the higher elevations has been scarce. November was very mild, with clear skies, warm temperatures, and low wind. The forecast is calling for similar conditions through the end of the year. Lack of precipitation has caused area stream flow to drop dramatically.

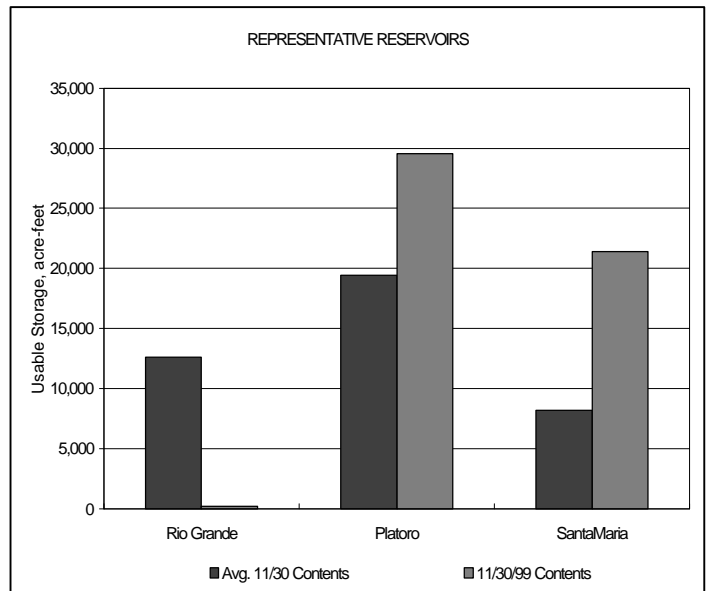
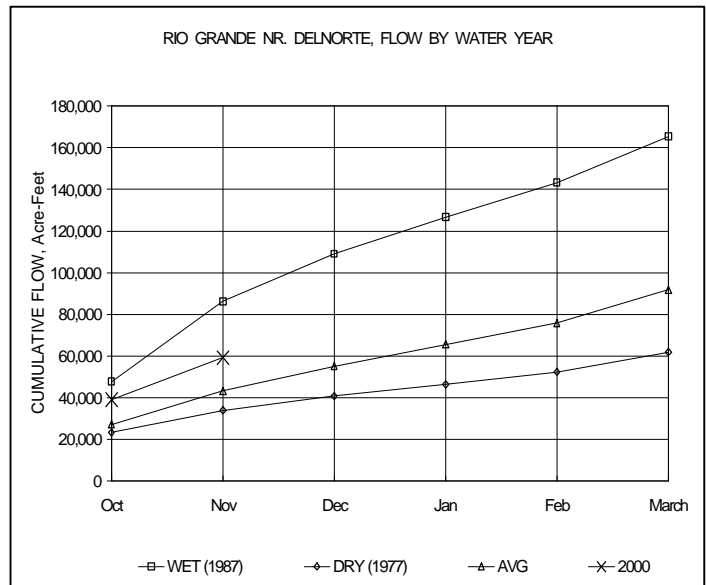
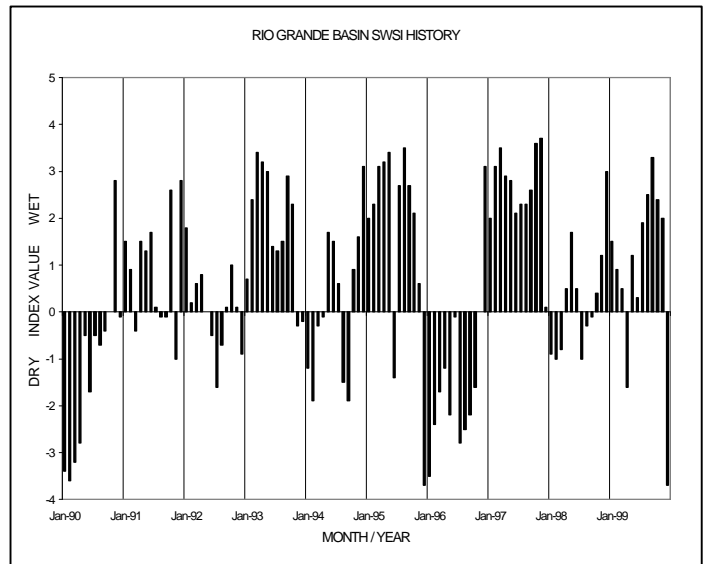
Administrative/Management Concerns

The upper Rio Grande Basin is getting another late start on snowpack accumulation this year. Fortunately, soil moisture conditions are very good in most areas of the basin.

Sanchez Reservoir is the fullest it has been for this time of year. Officials are closely monitoring this situation. Rio Grande Reservoir is nearly empty as repairs to the outlet works delayed inflow storage until the first week of December. The inflow into Platoro Reservoir is insufficient for maintaining or increasing storage. The minimum release of 7 cfs is exceeding inflow.

Public Use Impacts

Outdoor activities not dependent upon snowfall continue to prosper as the warm and dry autumn continues.



Basinwide Conditions Assessment

The SWSI value of -3.7 indicates that for November the basin water supplies were below normal. The Natural Resources Conservation Service reports that December 1 snowpack is 12% of normal. Flow at the gaging station Uncompahgre River near Ridgway was 54 cfs, as compared to the long-term average of 66.1 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 114% of normal as of the end of November.

Outlook

It has been a relatively warm and extremely dry month. The precipitation this November, compared to last November, has dropped by 82%. Total precipitation for this November was a mere 0.21 inches. Fortunately, the late summer moisture has contributed to keeping the Gunnison Basin's reservoirs full.

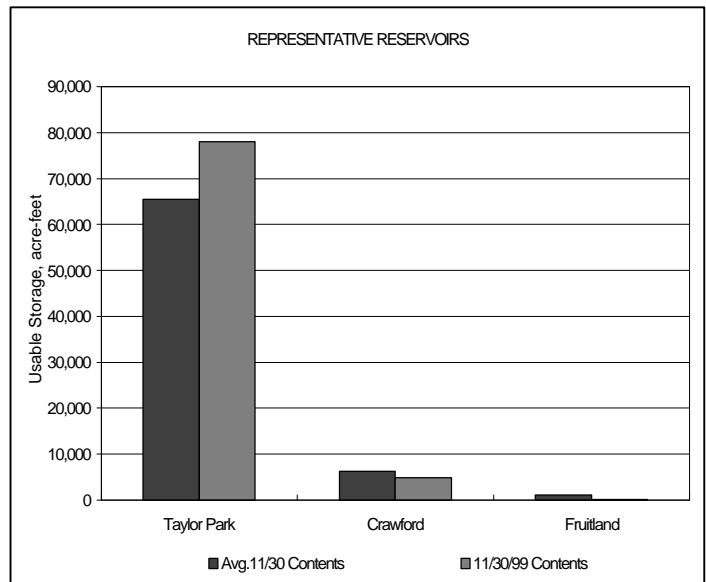
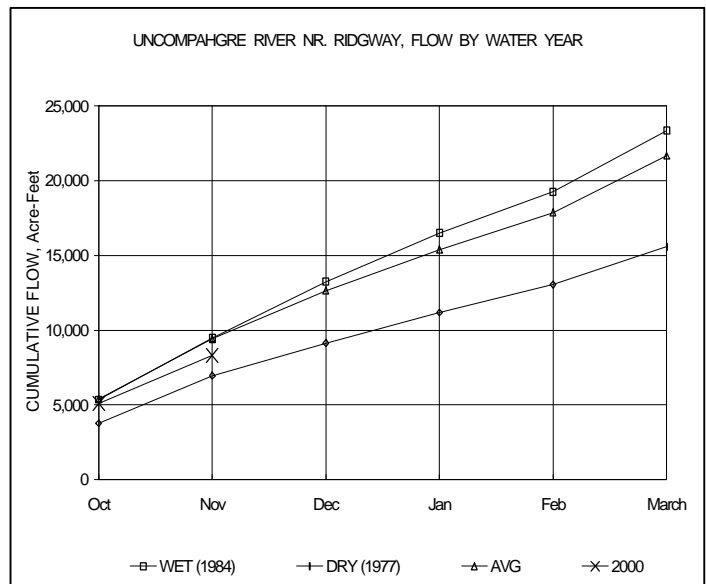
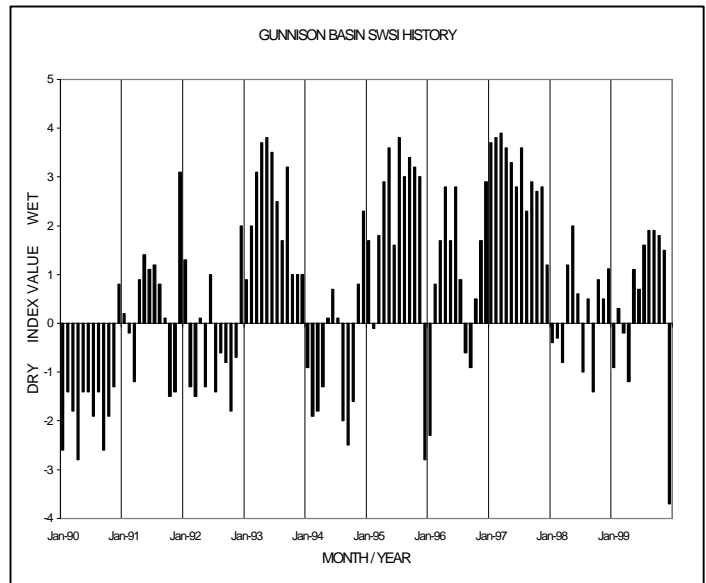
Administrative/Management Concerns

This time of the year is pretty quiet, administratively. Generally, this time of year allows administrators to resolve standing issues, correct old decrees, and bring various structures into compliance.

Public Use Impacts

Telluride Mountain Village has increased well diversions by 34% this November over November of 1998. This is largely attributed to additional water demand for snowmaking. So far, this fall has been relatively dry and only two ski runs have been opened as Telluride this season.

The Division of Wildlife has been disappointed in the elk harvest this past hunting season. Again, the warm, dry weather provides unfavorable hunting conditions.



Basinwide Conditions Assessment

The SWSI value of -3.1 indicates that for November the basin water supplies were below normal. The Natural Resources Conservation Service reports that December 1 snowpack is 33% of normal. Flow at the gaging station Colorado River near Dotsero was 1,160 cfs, as compared to the long-term average of 1,156 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 106% of normal as of the end of November.

Outlook

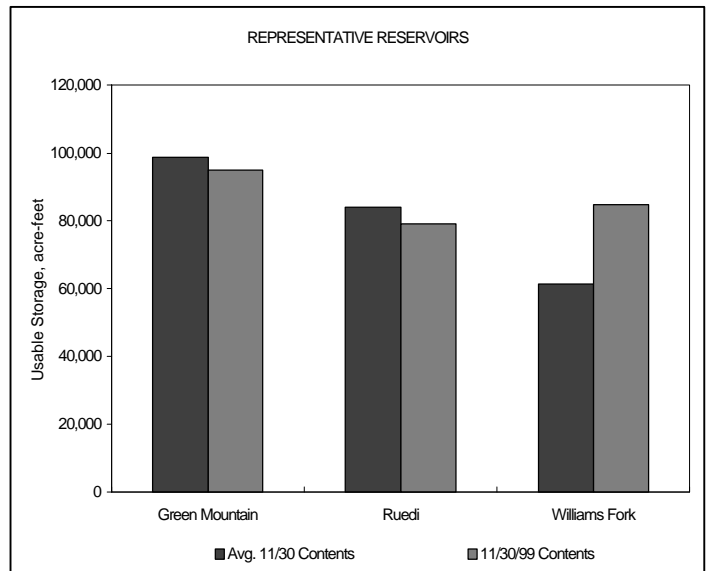
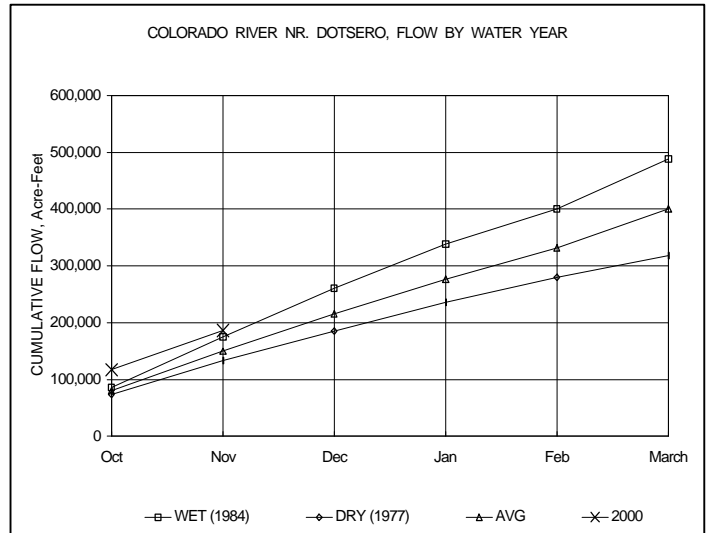
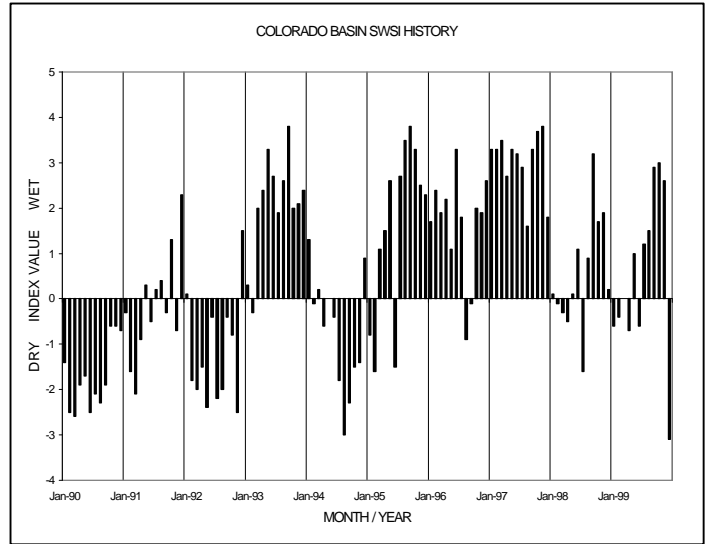
Temperatures are expected to be below normal through early December. Snotel data indicates 39% of average for snow water equivalent and 40% of average for total precipitation.

Administrative/Management Concerns

None.

Public Use Impacts

Many ski areas were late in opening their slopes due to the minimal amount of natural and manmade snow. Water Division 5, the Colorado River Basin, has fifteen ski areas within its boundaries: Arapahoe Basin, Keystone, Breckenridge, Berthoud Pass, Winter Park/Mary Jane, Copper Mountain, Vail, Beaver Creek, Arrowhead, Aspen Mountain, Highlands, Buttermilk, Snowmass, Sunlight, and Powderhorn. Those areas that did open early in the season and those opened through early December still had marginal skiing conditions.



Basinwide Conditions Assessment

The SWSI value of -3.5 indicates that for November the basin water supplies were below normal. The Natural Resources Conservation Service reports that December 1 snowpack is 40% of normal. Flow at the gaging station Yampa River at Steamboat was 148 cfs, as compared to the long-term average of 124 cfs.

The abnormally dry autumn that the Yampa/White Basin has been experiencing continued throughout November. Steamboat Springs received 0.97 inches of moisture for the month, 45% of average. At Hayden, 0.77 inches of precipitation was recorded, 55% of average. Fire bans continued throughout much of the area. Warm temperatures and lack of precipitation have contributed to low soil moisture contents. These conditions have continued into the early days of December.

Outlook

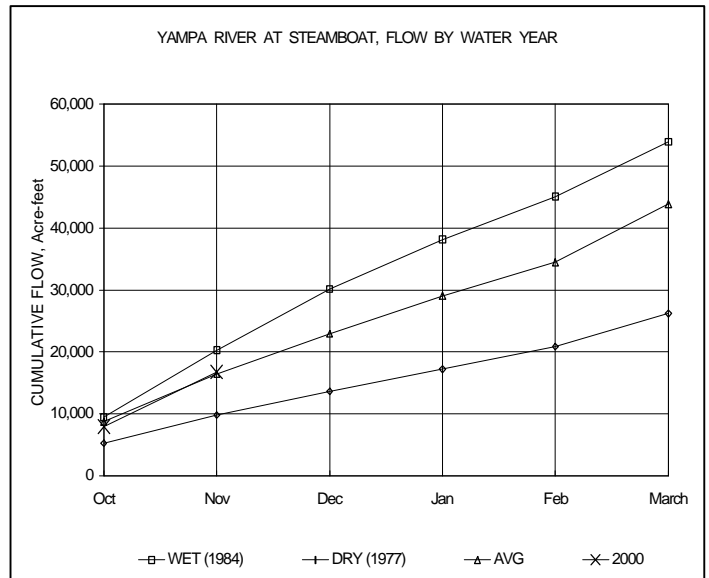
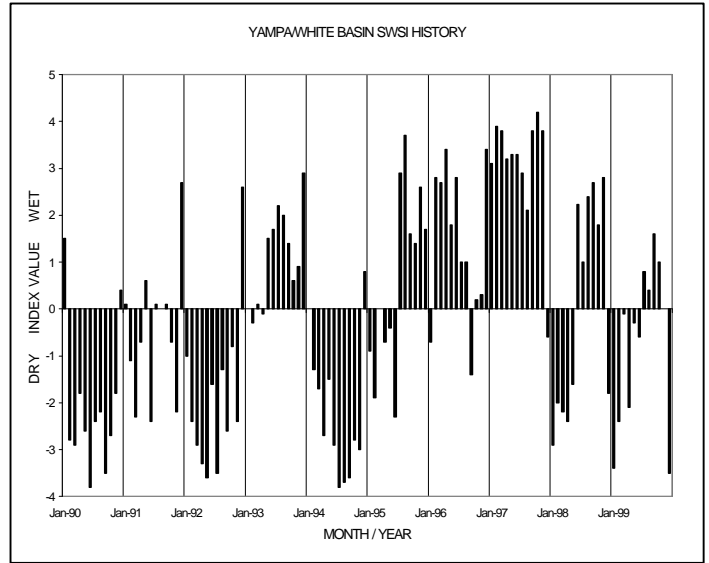
Stream flows were near normal in November and are expected to remain at normal levels in December. Reservoirs have begun storage operation, with most having good carryover.

Administrative/Management Concerns

None.

Public Use Impacts

Lack of snow cover at higher elevations has delayed the normal winter activities throughout the basin.



Basinwide Conditions Assessment

The SWSI value of -3.3 indicates that for November the basin water supplies were below normal. The Natural Resources Conservation Service reports that December 1 snowpack is 13% of normal. Flow at the gaging station Animas River near Durango was 208 cfs, as compared to the long-term average of 282 cfs. Generally, river flows decreased to well below average, at around 65-70% of normal. The Dolores River was at 50 cfs at the end of November. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 120% of normal as of the end of November.

Temperatures in Durango averaged 6°F above the normal low and 10°F above the normal high. This warm and dry spell has further depleted ground water moisture, leaving many areas baked and vegetation needing winter root watering.

Outlook

After three months of well below normal precipitation and warm weather, the possibility of drought has become apparent in Southwestern Colorado. However, above-normal reservoir storage relieves some concern, and with almost the entire season of snowpack accumulation remaining, it is too early to predict next irrigation season's water supplies.

Administrative/Management Concerns

None.

Public Use Impacts

Very little snow has been retained in the mountains. Ski areas did not have adequate snow to open for the season by the end of November.

