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
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December 2002

The statewide water supply conditions have shown improvement during November due to good snowfall across the state during the month. The actual index numbers shown below seem to indicate great improvement from the previous month and a normal level of water supply. However, the basis for calculating the index must be considered while viewing the index numbers, particularly for the December 1st report. This month the calculation changes to the winter evaluation. Snowpack becomes a component and is heavily weighted. Since snowpack is minimal in November, small amounts of change have a large impact on the final SWSI number. Statewide the snowpack was 101% of average. The lowest snowpack average was in the Rio Grande basin at 75% of average, and the highest was in the Colorado basin with 123% of average.

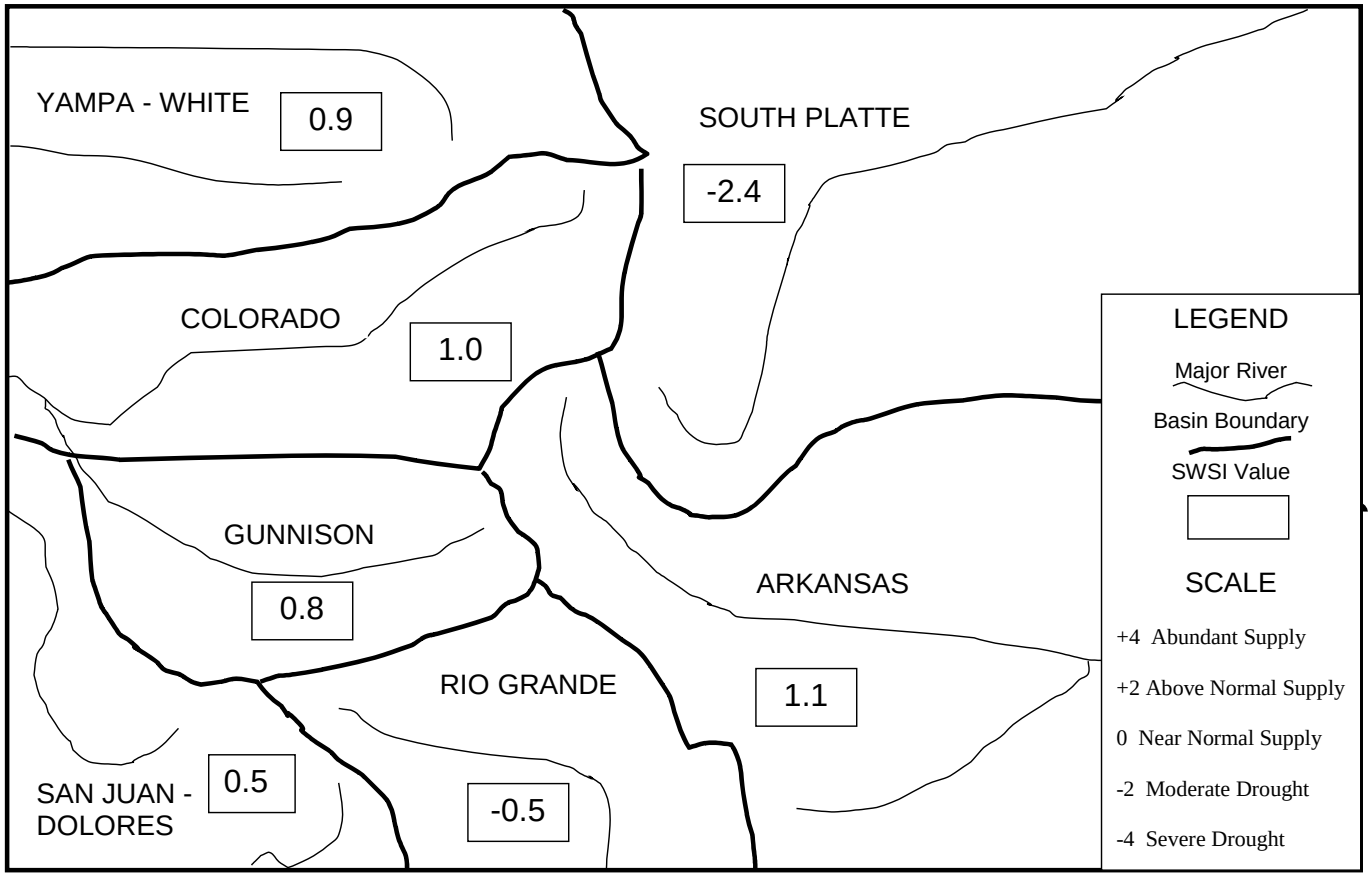
The SWSI Index developed by this office and the U.S.D.A. Natural Resources Conservation Service is used as an indicator of mountain-based water supply conditions in the major river basins of the state. It is based on snowpack, reservoir storage, and precipitation for the winter period (November through 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, 2002, and reflect the conditions during the month of November.

Basin	Dec 1, 2002 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	-2.4	-0.2	0.0
Arkansas	+1.1	+3.6	+3.1
Rio Grande	-0.5	+2.4	+2.3
Gunnison	+0.8	+3.6	+2.0
Colorado	+1.0	+4.5	+2.8
Yampa/White	+0.9	+4.1	+2.7
San Juan/Dolores	+0.5	+1.6	+1.6

Scale

-4	-3	-2	-1	0	1	2	3	4
Severe Drought		Moderate Drought		Near Normal Supply		Above Normal Supply		Abundant Supply

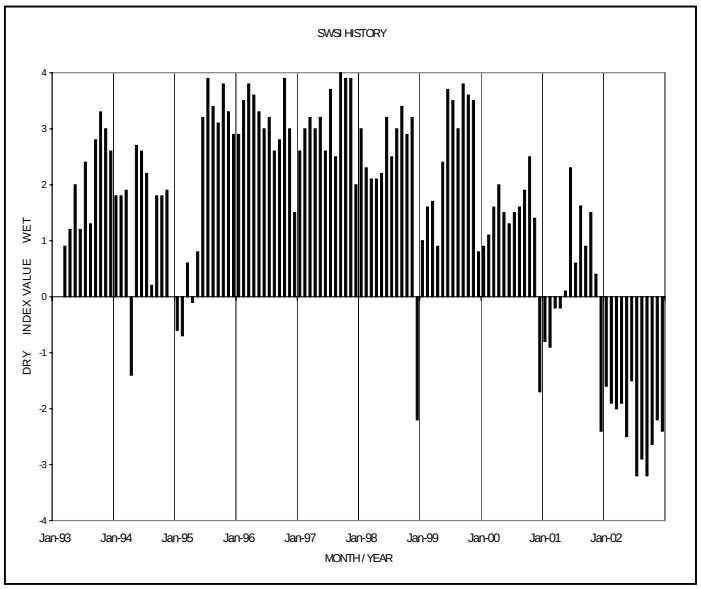
SURFACE WATER SUPPLY INDEX FOR COLORADO



DECEMBER 1, 2002

Basinwide Conditions Assessment

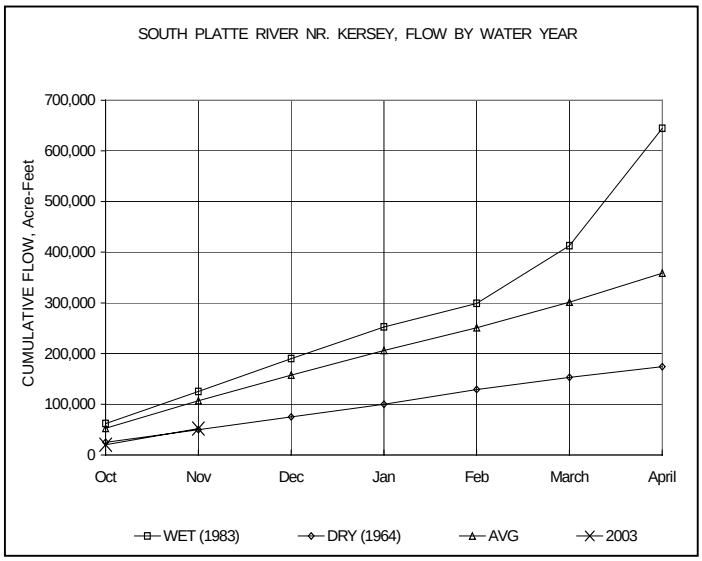
The SWSI value of –2.4 indicates that for November the basin water supplies were below normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 57% of normal as of the end of November. Cumulative storage in the major plains reservoirs: Julesberg, North Sterling, and Prewitt, is at 22% of capacity. Cumulative storage in the major upper-basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero is at 49% of capacity. The Natural Resources Conservation Service reports that December 1 snowpack is 102% of normal. Flow at the gaging station South Platte River near Kersey was 536 cfs, as compared to the long-term average of 780 cfs. Flow at the Colorado/Nebraska state line averaged 16 cfs.



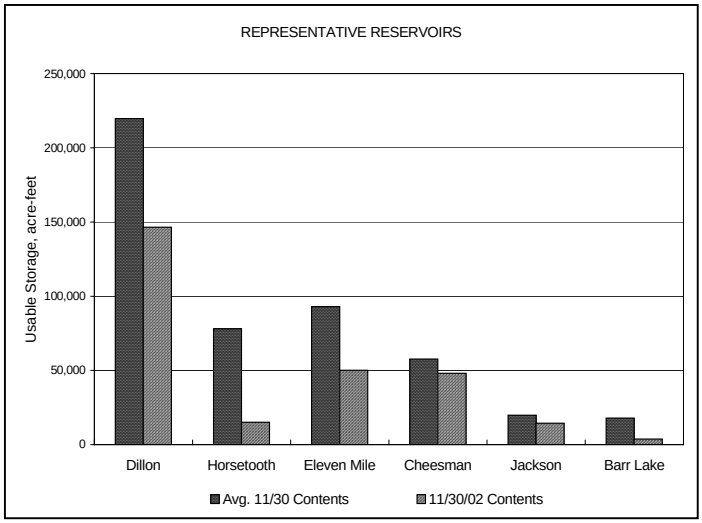
Outlook

Reservoir storage continued in November for the plains reservoirs on the South Platte. The call on the mainstem and many of the South Platte tributaries for the whole month was for storage. This is the second year in the last three years that we have had a storage call on the mainstem of the South Platte on the lower end of the Platte in District 1 and 64. The previous storage call existed in the fall of 2000. Prior to that, there had been over 20 years without a storage call in District 1 and 64.

As in 2000, plains irrigation reservoirs were emptied. In 2000, river storage began in early fall while this year irrigation storage did not begin until the last week in October. Because reservoirs were empty, irrigation storage began late and under low flow conditions. Mainstem irrigation reservoir storage is significantly behind normal levels for this time of year. Storage levels are similar to those in the 1950's when irrigation reservoirs did not fill. Reservoir storage will continue through out the winter and will only be affected by freezing conditions that will limit the amount of water certain reservoir owners may take.



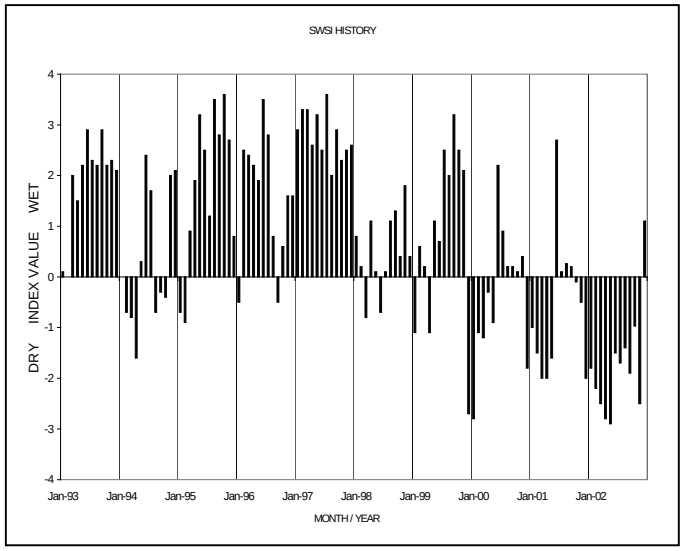
Unlike 2000 when municipal suppliers were able to keep nearly full reservoirs, storage levels for municipal providers along the South Platte and its tributaries and west slope storage reservoirs (Grandby and Dillon) are also extremely low. Flows into many of the municipal front range storage reservoirs do not presently exceed demand and thus little storage is being made in these reservoirs. The low storage levels create continued concern for all municipal suppliers similar to irrigator concerns. Municipal suppliers will have to continue similar or more restrictive water saving limitations on users next year unless conditions improve dramatically.



Early snowpack was above average for most of November in both the South Platte basin and on the east slope. However, it is very early in the year and present conditions are not a good indicator of conditions through the winter period. Like always, we are extremely dependent on the late winter and early spring snow and rain to assure an adequate supply throughout the basin for next summer's supply. We are also concerned about adequate recharge to provide augmentation supplies and maintain flows in the river during next summer.

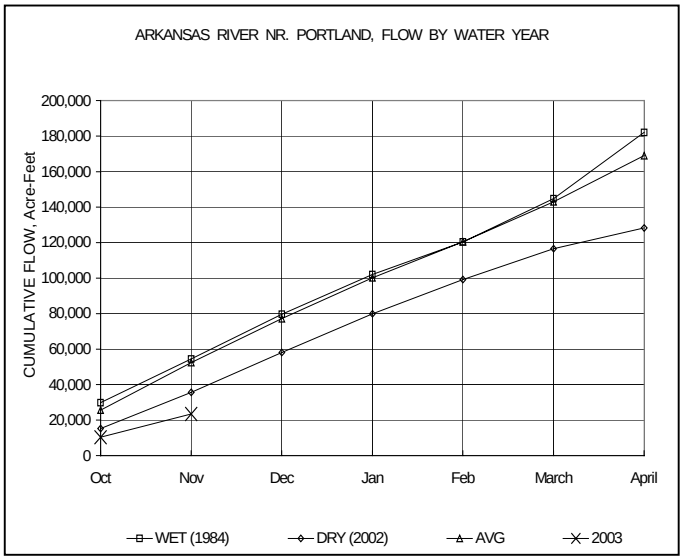
Basinwide Conditions Assessment

The SWSI value of 1.1 indicates that for November the basin water supplies were above normal. This value may indicate conditions are better than they actually are. The Natural Resources Conservation Service reports that December 1 snowpack is 88% of normal. Flow at the gaging station Arkansas River near Portland was 220 cfs, as compared to the long-term average of 451 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 43% of normal as of the end of November.



Outlook

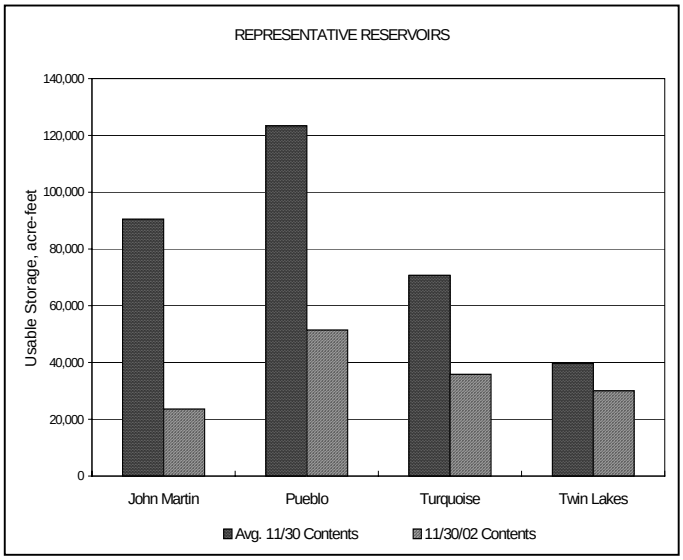
Winter Compact storage began in John Martin Reservoir on November 1, 2002. The Pueblo Winter Water Program began operation on November 15, 2002 with storage taking place in both Pueblo and John Martin Reservoirs and several off-channel locations. Several ditches that are non-participants in the Pueblo Winter Water Program (Rocky Ford, Otero and Excelsior) elected to direct flow irrigate during the Pueblo Winter Water Program period. River flows available for storage have so far been low, even compared to flows last year.



Administrative/Management Concerns

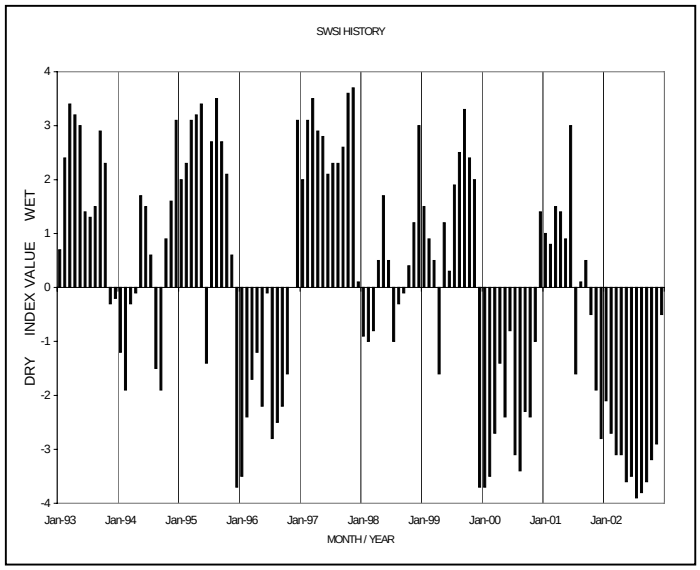
Low river flows during the storage season are allowing only limited diversion to off-channel reservoirs making it impractical to try to deliver a small amount of flow through a long section of dry ditch to the storage vessels. Some of the Pueblo Winter Water participants that would normally elect to take delivery to their own off-channel reservoirs are pooling their diversions at the Colorado Canal to store in Lake Meredith and are interested in as much storage as possible in Pueblo Reservoir of Winter Water flows.

All of the major ground water associations are bracing themselves for the possibility that only very small amounts of critical pumping will be able to be allowed under their 2003-2004 replacement plans and are attempting to secure as much replacement water as they can find, even at substantially higher than average costs, in order to ensure that critical pumping needs can be met. The associations generally assume that agricultural pumping will be severely limited in at least the early part of 2003 due to diminished replacement supplies.



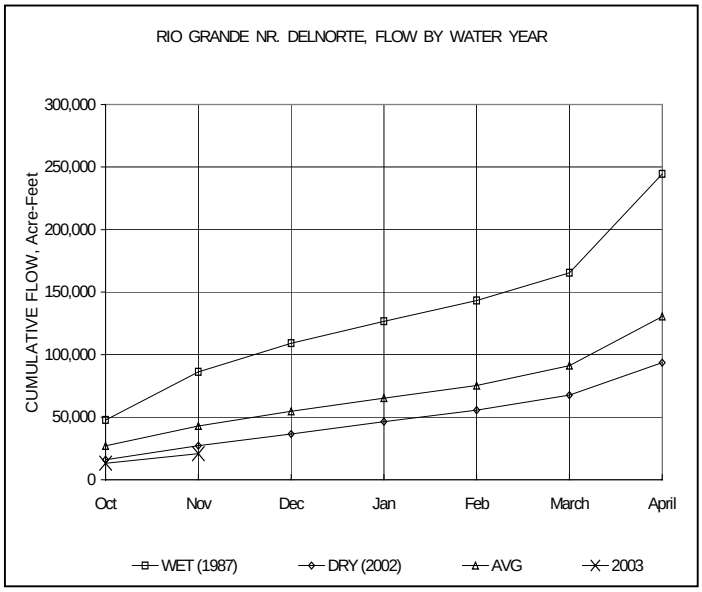
Basinwide Conditions Assessment

The SWSI value of –0.5 indicates that for November the basin water supplies were normal. This value may indicate conditions are better than they actually are. The Natural Resources Conservation Service reports that December 1 snowpack is 75% of normal. Flow at the gaging station Rio Grande near Del Norte averaged 127 cfs (44% of normal). The Conejos River near Mogote had a mean flow of 37 cfs (38% of normal). In general, stream flow in the basin remained significantly below normal. Precipitation in Alamosa was only 0.06 inch for the whole month, 0.42 inch below normal. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 91% of normal as of the end of November.



Outlook

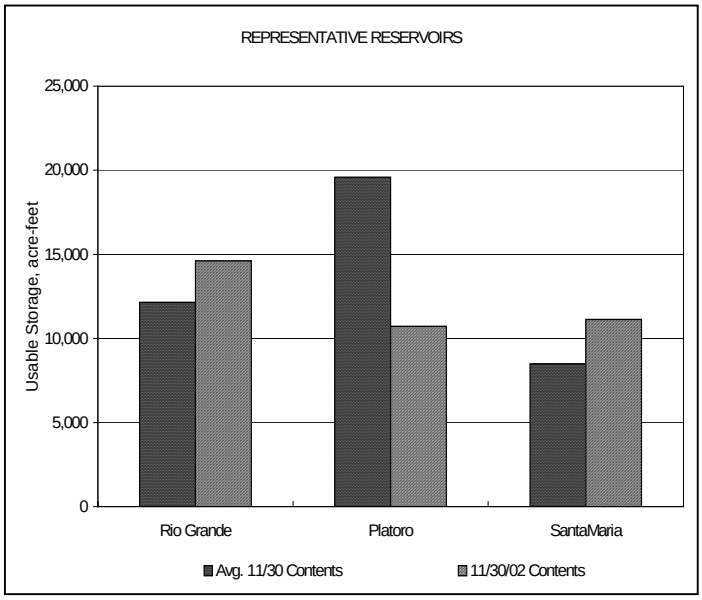
Snowfall in the higher elevations was generous during the early part of the month. However, as November came to a close, snowpack in the upper Rio Grande basin was below normal, checking in at about 80%. Still, this represented a great improvement over last year. Long-range forecasts indicate a dry trend during December and January. But, that might give way to above average snowfall for the February through April period.



Administrative/Management Concerns

The extreme drought of 2002 and lack of recharge to the aquifers of the San Luis Valley are the focus of local water users and administrators. The low streamflow this year made area farmers and ranchers even more reliant on ground water supplies to meet irrigation and stock watering needs. The resulting impact to the aquifers has been staggering. A 500 square mile area in the Closed Basin generally bounded by the Rio Grande on the south, Highway 17 on the east, and the foothills to the west lost approximately 400,000 acre-feet of water stored in the unconfined aquifer since January. The impacts to the confined aquifer are harder to estimate, but it can be assumed the aquifer storage has been seriously reduced. A symposium detailing this issue has been scheduled for January 10, 2003, on the Adams State campus. The staff at the Rio Grande Water Conservation District can be contacted for more details. The phone number is (719) 589-6301.

Those farms in the Valley with a reliable water source in 2002 may be able to capitalize on above-normal crop yields and fair market prices. Potato growers are especially optimistic.



Public Use Impacts

Wintertime activities got off to a fast start after the early jump in the snowpack during November. By the end of the month, diversions from area streams for irrigation purposes had ceased.

Basinwide Conditions Assessment

The SWSI value of 0.8 indicates that for November the basin water supplies were normal. This value may indicate conditions are better than they actually are. The Natural Resources Conservation Service reports that December 1 snowpack is 104% of normal. Flow at the gaging station Uncompahgre River near Ridgway was 59.8 cfs, as compared to the long-term average of 66.8 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 61% of normal as of the end of November.

Outlook

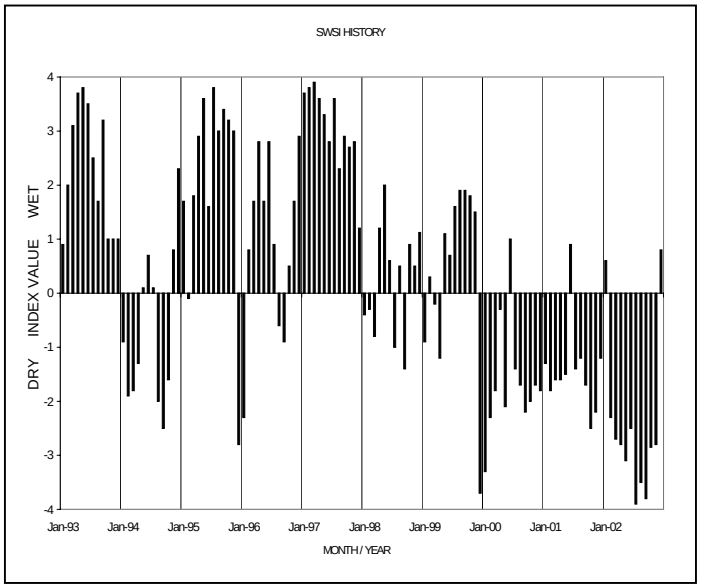
The water supply outlook for November in the Gunnison and San Miguel Basins improved early in the month. The latter half of the month brought mostly dry conditions, with the end result being highly variable precipitation amounts. Many areas reported above-average precipitation, with Cochetopa Creek, Gunnison and Taylor Park receiving 300, 185 and 163 percent of the monthly normal, respectively. On the dry side of the spectrum, Uravan, Delta and Cedaredge reported only 36, 37 and 57 percent of normal, respectively. Schofield Pass received 12 inches of snow on the 2nd and 3rd. Heavy snowfall on the 14th and 15th caused an avalanche to close U.S. Highway 550 over Red Mountain Pass.

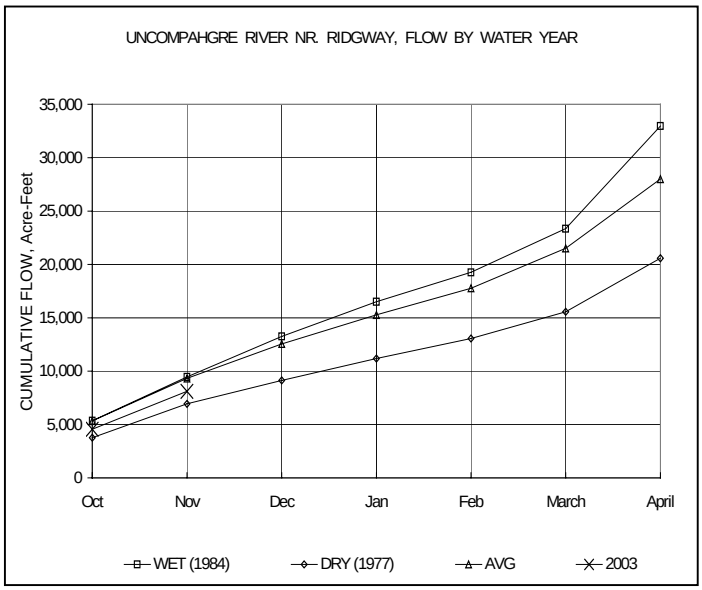
Administrative/Management Concerns

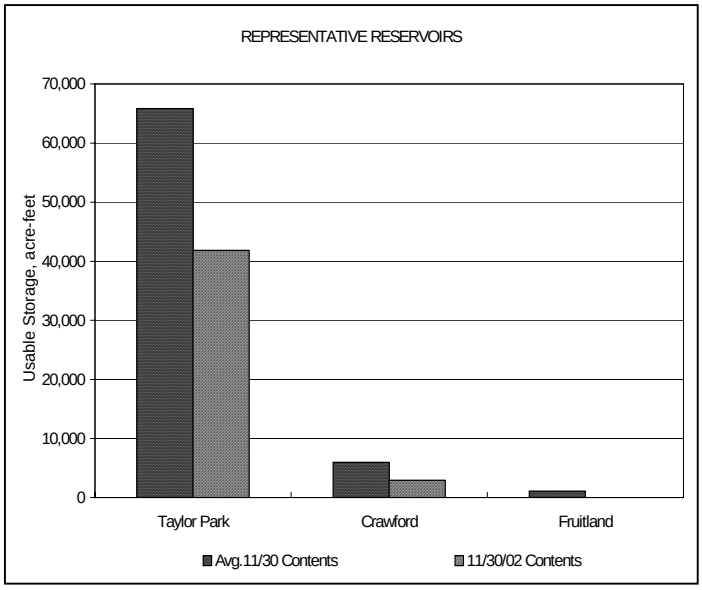
The current low stream levels, combined with a more aggressive approach by the Colorado Water Conservation Board, has caused us to closely monitor instream flow rights in Division 4. There was particular concern in late summer that the ISF rights would have a severe impact on snowmaking operations. Fortunately, the period from early September through mid-November was significantly wetter than normal, resulting in near-normal stream levels by mid-month.

Public Use Impacts

Abundant snowfall early in November caused winter sports enthusiasts to be optimistic about the upcoming season. Unfortunately, dry conditions from mid-month on resulted in less than ideal snow conditions for the Thanksgiving holiday.







Basinwide Conditions Assessment

The SWSI value of 1.0 indicates that for November the basin water supplies were above normal. This value may indicate conditions are better than they actually are. The Natural Resources Conservation Service reports that December 1 snowpack is 123% of normal. Flow at the gaging station Colorado River near Dotsero was 795 cfs, as compared to the long-term average of 1154 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 39% of normal as of the end of November.

Outlook

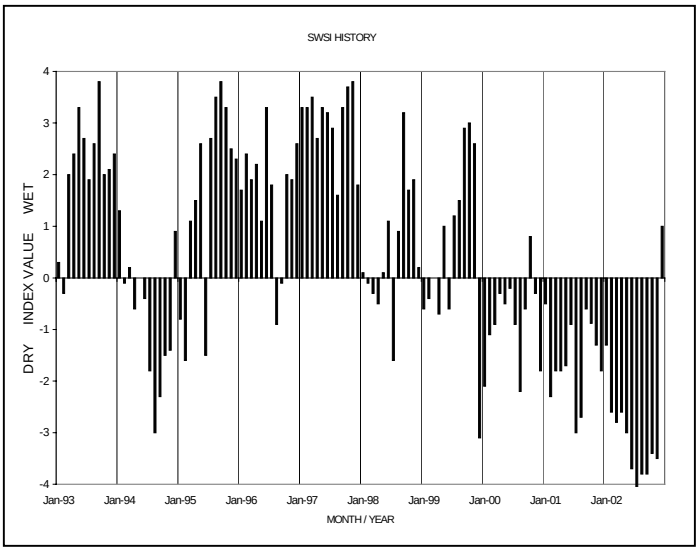
A drying trend in late November and early December has reduced the overall Basin snowpack to just near the long-term average. As is typical, some sub-basins are above average while others are below.

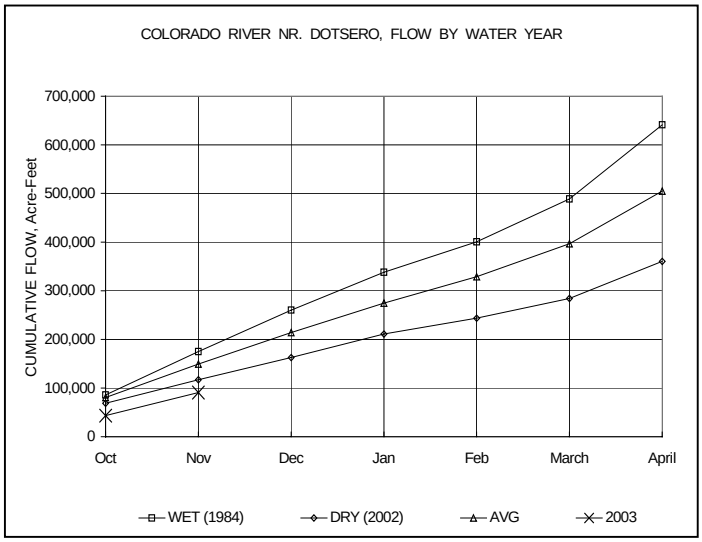
Administrative/Management Concerns

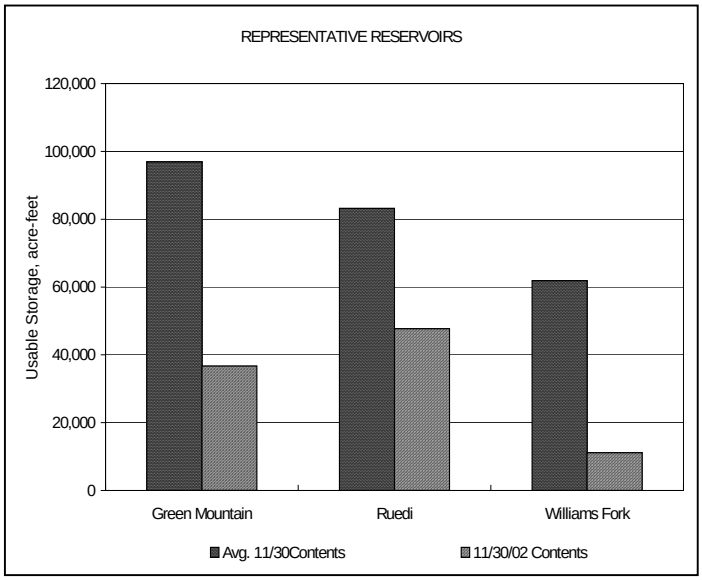
The senior Shoshone call remained on throughout the month.

Public Use Impacts

Thanksgiving snowpack was above average and ski resorts did well. December snow storms will be needed in order for the numerous skiing resorts to have successful Christmas season.



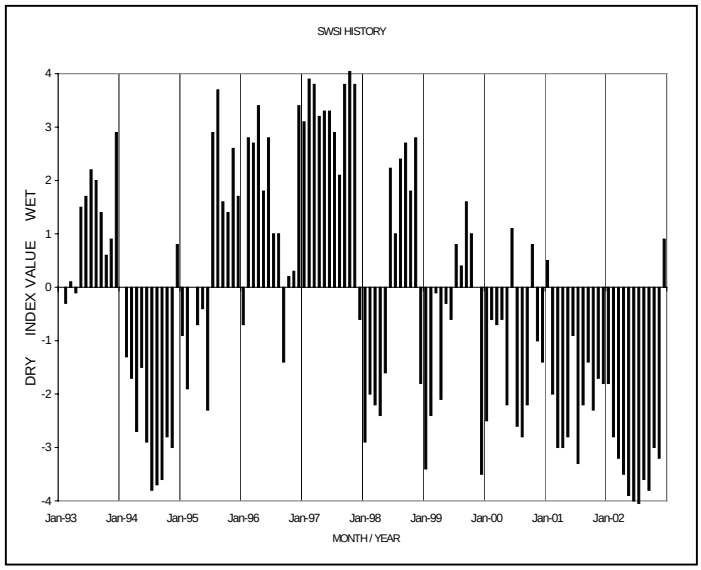


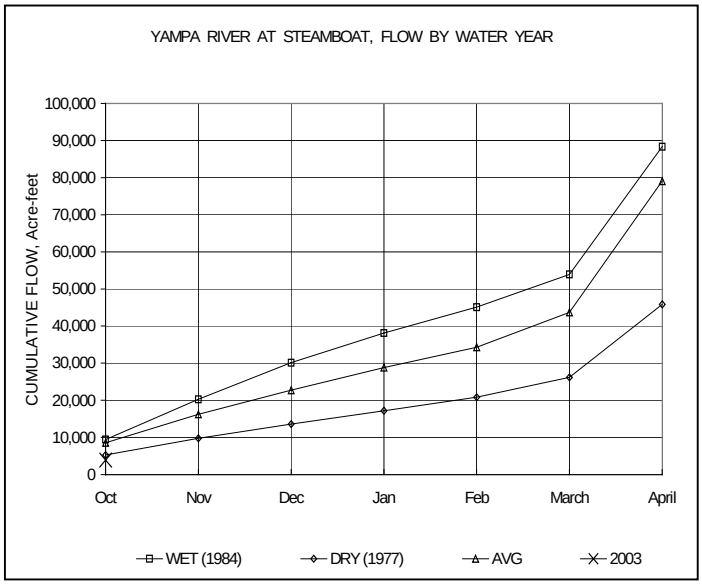


Basinwide Conditions Assessment

The SWSI value of 0.9 indicates that for November the basin water supplies were normal. This value may indicate conditions are better than they actually are. The Natural Resources Conservation Service reports that December 1 snowpack is 95% of normal. Flow for the gaging station Yampa River at Steamboat is not available this month due to an equipment malfunction.

November was a month that brought periods of good snowfall and dry, sunny weather. At the end of the month the snowpack for the Laramie/North Platte River Basins was 92% of average and for the Yampa/White River Basins 108 % of average, down appreciably from the middle of the month. Precipitation amounts for the month were 0.88 inches in Meeker, 77% of average; 1.72 inches in Steamboat, 88% of average; and 0.71 inches in Walden, 97% of average. The majority of the precipitation came in the first half of the month, with much drier conditions in the second half. Much of the lower elevations are without snow cover. Reservoirs in the Division are storing the little inflow that is available. Steam flows in the major rivers are approaching normal winter levels.





Outlook

After several good snowfall events, the weather has returned to a dryer pattern. Hopes are that winter will return with above average snowfall, beginning in December.

Basinwide Conditions Assessment

The SWSI value of 0.5 indicates that for November the basin water supplies were normal. This value may indicate conditions are better than they actually are. The Natural Resources Conservation Service reports that December 1 snowpack is 84% of normal. Flow at the gaging station Animas River near Durango was 239 cfs, as compared to the long-term average of 284 cfs. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 55% of normal as of the end of November.

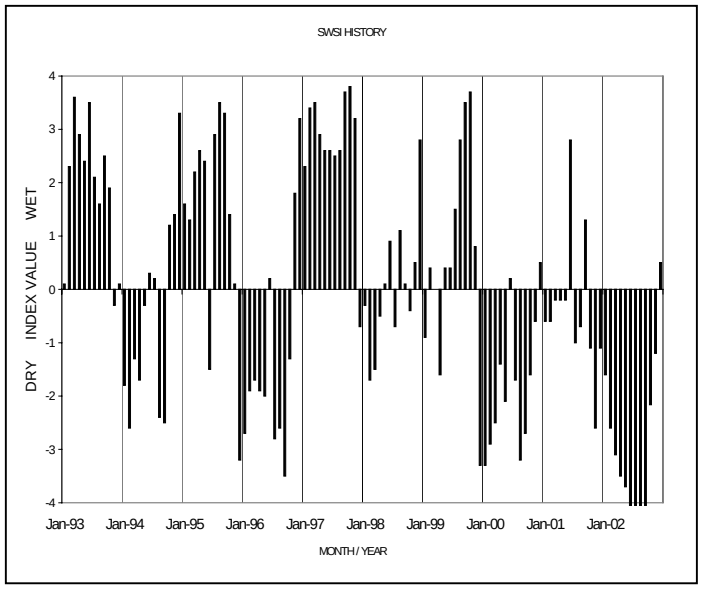
November began with a continuation of the precipitation from the previous month. This however ceased after November 11, 2002. The rest of the month brought little additional moisture in the lower elevations. The mountains continued to catch some of the fronts and were reported at normal snow water accumulations by the end of the month. The water year total precipitation remained above normal with 4.0 inches in Durango – 120% of the typical amount.

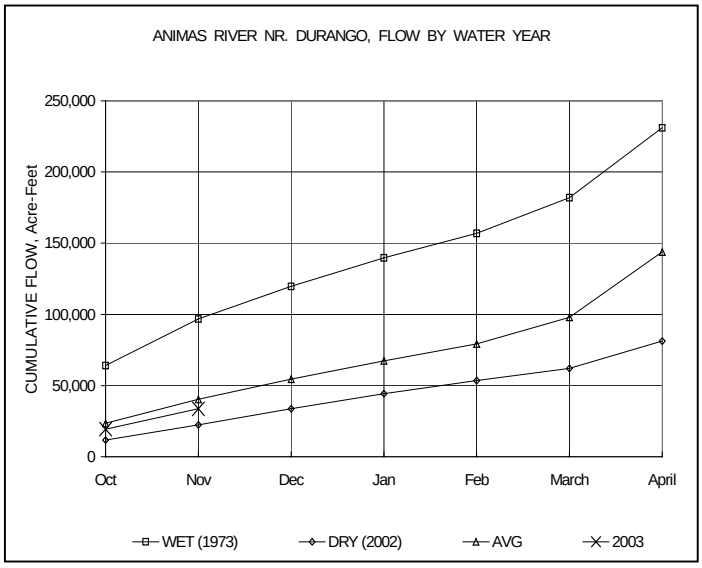
River flows remained below normal but rose during the month and were comparable to the typical base flow. Temperatures were near the averages with 51° F for the average high and 25° F for the average low in Durango.

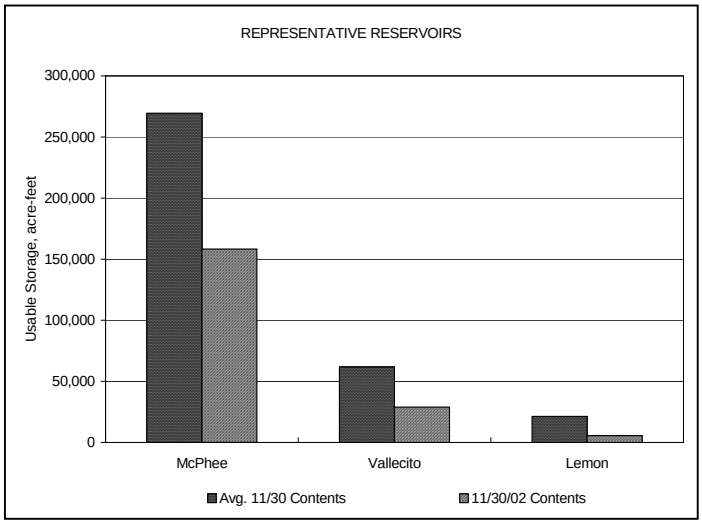
Reservoirs remained very low. Lemon Reservoir contained only 5,600 acre feet, 27% of normal. Vallecito and McPhee Reservoirs were about 57% of normal storage. They were all gaining at a very low rate. Ski areas were able to open very early this year. Wolf Creek began operations on November 9th.

Outlook

There were concerns that the weather may clear up and remain dry like the previous year. However, more weather patterns bringing precipitation were entering the Rocky Mountain area and it appeared possible that Southwestern Colorado will gain from those patterns.







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