USDA United States Department of Agriculture

**Natural Resources Conservation Service**

# Colorado Basin Outlook Report JANUARY 1, 2004

# Basin Outlook Reports
## and
## Federal - State - Private
## Cooperative Snow Surveys

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### *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

# COLORADO
# WATER SUPPLY OUTLOOK REPORT
# JANUARY 1, 2004

## Summary

While the 2004 water year began with a dry start in October, precipitation patterns improved in November and December, leaving optimism for at least a near average snowpack by spring. This is especially true for some of the driest basins, which are currently boasting some of the highest snowpack percentages in the state. While it remains early in the winter season, most of the state can expect near average runoff this summer, assuming near average precipitation throughout the remainder of the winter months. With reservoir storage volumes below average in all basins, this outlook should allow the state to continue its recovery from the drought of 2002 and 2003.

## Snowpack

With a warm and dry fall lingering through October, there were early concerns about a low snowpack year. By the end of October, only a few SNOTEL sites had recorded the winter's first snowfall. The season's first significant storms began in early November with impressive totals. These storms helped to ease concerns, with above average snowfall in all basins. All basins except the South Platte and Arkansas, received well above average snowfall during November, which helped to erase the deficit from the dry October. For the most part, December's snowfall was slightly below average with continued dryness across the South Platte and Arkansas basins. By January 1, the statewide snowpack was 92% of average and was 108% of last year's snowpack. The current statewide readings are the seventh consecutive year of below average January 1 snowpack readings. However, these readings are the highest since the abundant early season snowpack of 1997. This year's snowpack totals were the lowest in the South Platte and Arkansas basins at only 67% and 69% of average, respectively. Meanwhile, the Yampa and White River basins reported the highest snowpack percentage at 108% of average. Typically, by January 1 we've received about 40% of our total seasonal snowpack. So, much of the state has an adequate start to the 2004 season. As the South Platte and Arkansas basins continue to lag below average, any recovery will increasingly depend upon a wet spring.

## Precipitation

The 2004 water year began with an extremely dry month. During October, 2003 statewide precipitation at SNOTEL sites was only 32% of the monthly average. Recovery came quickly in November, when SNOTEL sites recorded a statewide monthly total of 142% of average. The November storms brought abundant moisture to all basins except the South Platte and Arkansas which received only slightly above average monthly totals. Statewide precipitation during December was only 85% of average, leaving the state at 90% of average for the first three months of the 2004 water year. By January 1, water year totals range from a low of only 71% of average in the South Platte Basin to a high of 100% of average in the Yampa and White river basins. The three-month deficit, that has accumulated in the South Platte Basin, totals slightly more than two inches, and is nearly a month's accumulation at most locations in that basin.

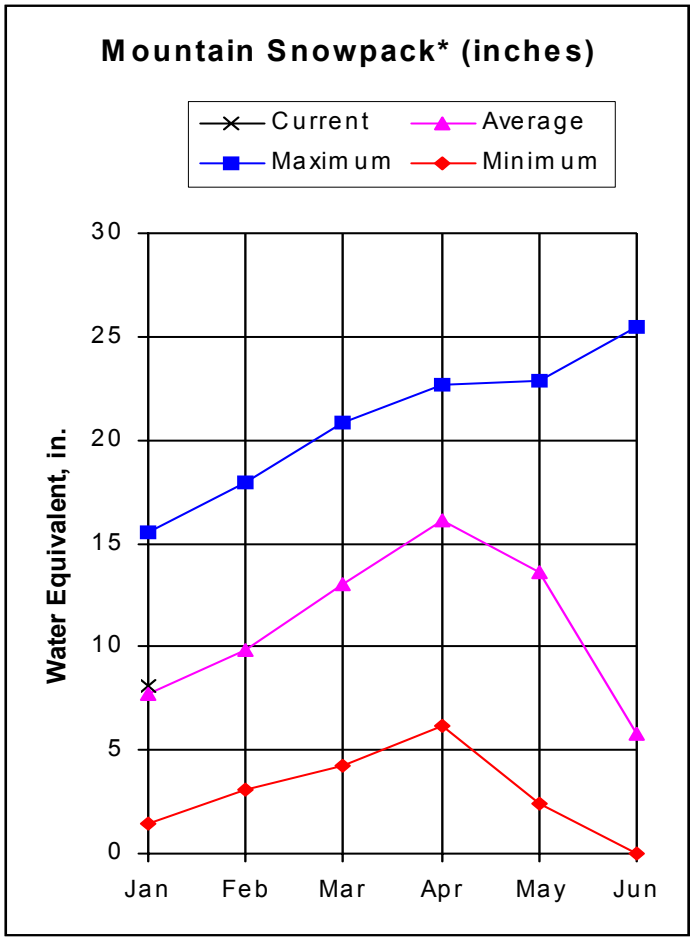
## Reservoir Storage

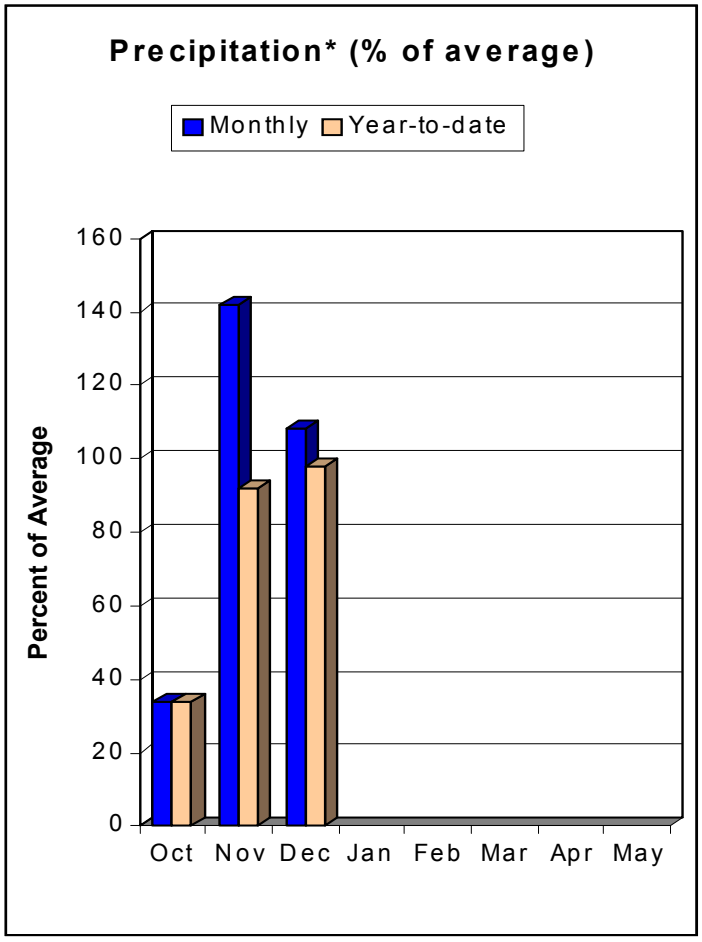
Reservoir storage across Colorado continues to improve from its most recent low point in August, 2002. While storage volumes remain below average in all basins, the current storage volumes are generally higher than last year's. Statewide, storage on January 1 was 74% of average and is 148% of last year's. Last year's low runoff across southern Colorado has left those basins with the lowest percent of average storage. The Rio Grande Basin is reporting the lowest percentages at only 38% of average. The Arkansas and combined San Juan, Animas, Dolores and San Miguel basins are in only slightly better condition, at 54% and 65% of average, respectively. Current storage is above last year's in all basins except the Rio Grande which is reporting only 64% of last year's volumes. The Colorado Basin is reporting the highest percent of last year's storage, at 222% of those volumes. In order for the state's reservoirs to recover from the current drought conditions, runoff will need to be abundant this year and perhaps even into the next several years.

## Streamflow

For the first time since 2001, Colorado begins a new year with near average streamflow forecasts for most of the state. Runoff volumes which range from 90% to 110% of average are forecast throughout most of the Yampa, North Platte, Gunnison, Rio Grande, Arkansas San Juan, Animas, Dolores, and San Miguel basins, including the headwaters of the Arkansas River. While most forecasts in the Colorado Basin range from 75% to 90% of average, these conditions remain well within the range for improvement even with just a few good storms. Of most concern for summer water availability are most of the streams in the South Platte Basin and the southern tributaries to the Arkansas River. Runoff forecasts in portions of these basins range from only 50% to 85% of average. The state's lowest forecasts are primarily concentrated in the upper reaches of the South Platte River where most of this winter's storms have missed South Park. Unless the storm track significantly improves in the next few months, water users along the South Platte River will be facing another critically short water year.

# GUNNISON RIVER BASIN
as of January 1, 2004




*Based on selected stations

The Gunnison Basin has received above average snowfall during the early winter months. Basinwide snowpack totals are 105% of average as of January 1. These readings are 112% of last year's reading on this date. Typical of most of the Western Slope basins, most of this snowfall occurred during November's storms. This year's January snowpack is the highest percent of average since 1997 in the Gunnison Basin. Water year precipitation is 98% of average as of January 1. The eight major reservoirs in the basin are currently storing 79% of the average volume, and are 126% of last year's storage on this date. The good snowfall has increased the potential for a near average runoff season throughout the Gunnison Basin. Streamflow forecasts range from only 78% of average along Cochetopa Creek to 115% of average for the inflow into Paonia Reservoir.

GUNNISON RIVER BASIN
Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | 50% (Most Probable) (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| Taylor River blw Taylor Park Resv | APR-JUL | 58 | 83 | 100 | 97 | 117 | 142 | 103 |
| Slate River nr Crested Butte | APR-JUL | 68 | 83 | 93 | 105 | 103 | 118 | 89 |
| East River at Almont | APR-JUL | 115 | 162 | 195 | 102 | 230 | 275 | 192 |
| Gunnison River nr Gunnison | APR-JUL | 220 | 320 | 385 | 99 | 450 | 550 | 390 |
| Tomichi Creek at Sargents | APR-JUL | 7.9 | 19.0 | 27 | 84 | 35 | 46 | 32 |
| Cochetopa Creek blw Rock Creek | APR-JUL | 5.2 | 9.7 | 13.4 | 78 | 17.1 | 22 | 17.3 |
| Tomichi Creek at Gunnison | APR-JUL | 23 | 47 | 68 | 84 | 93 | 137 | 81 |
| Lake Fork at Gateview | APR-JUL | 75 | 102 | 120 | 95 | 138 | 165 | 126 |
| Blue Mesa Reservoir Inflow | APR-JUL | 340 | 545 | 685 | 95 | 825 | 1030 | 720 |
| Paonia Reservoir Inflow | MAR-JUN | 55 | 88 | 115 | 115 | 145 | 196 | 100 |
| | APR-JUL | 49 | 86 | 117 | 115 | 153 | 213 | 102 |
| N.F. Gunnison River nr Somerset | APR-JUL | 202 | 274 | 330 | 108 | 391 | 490 | 305 |
| Surface Creek nr Cedaredge | APR-JUL | 10.2 | 14.3 | 18.0 | 105 | 23 | 32 | 17.1 |
| Ridgway Reservoir Inflow | APR-JUL | 74 | 92 | 107 | 105 | 124 | 154 | 102 |
| Uncompahgre River at Colona | APR-JUL | 94 | 120 | 140 | 101 | 161 | 195 | 139 |
| Gunnison River nr Grand Junction | APR-JUL | 765 | 1180 | 1460 | 94 | 1740 | 2150 | 1560 |

GUNNISON RIVER BASIN
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| BLUE MESA | 830.0 | 376.4 | 283.2 | 545.8 |
| CRAWFORD | 14.3 | 2.5 | 3.5 | 7.5 |
| FRUITGROWERS | 4.3 | 1.1 | 1.0 | 2.8 |
| FRUITLAND | 9.2 | 0.0 | 0.1 | 1.3 |
| MORROW POINT | 121.0 | 111.7 | 109.6 | 113.4 |
| PAONIA | 18.0 | 2.4 | 3.8 | 4.7 |
| RIDGWAY | 83.2 | 70.0 | 59.7 | 60.1 |
| TAYLOR PARK | 106.0 | 71.2 | 41.5 | 67.7 |

GUNNISON RIVER BASIN
Watershed Snowpack Analysis - January 1, 2004

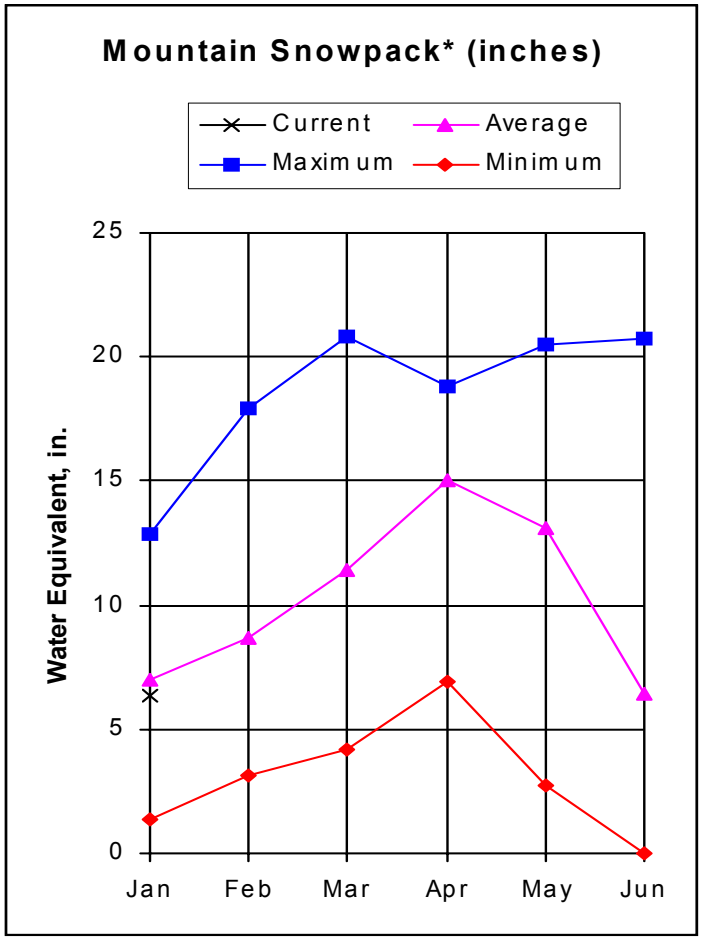
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| UPPER GUNNISON BASIN | 9 | 115 | 105 |
| SURFACE CREEK BASIN | 2 | 133 | 115 |
| UNCOMPAHGRE BASIN | 3 | 106 | 105 |
| TOTAL GUNNISON RIVER BASIN | 12 | 112 | 105 |

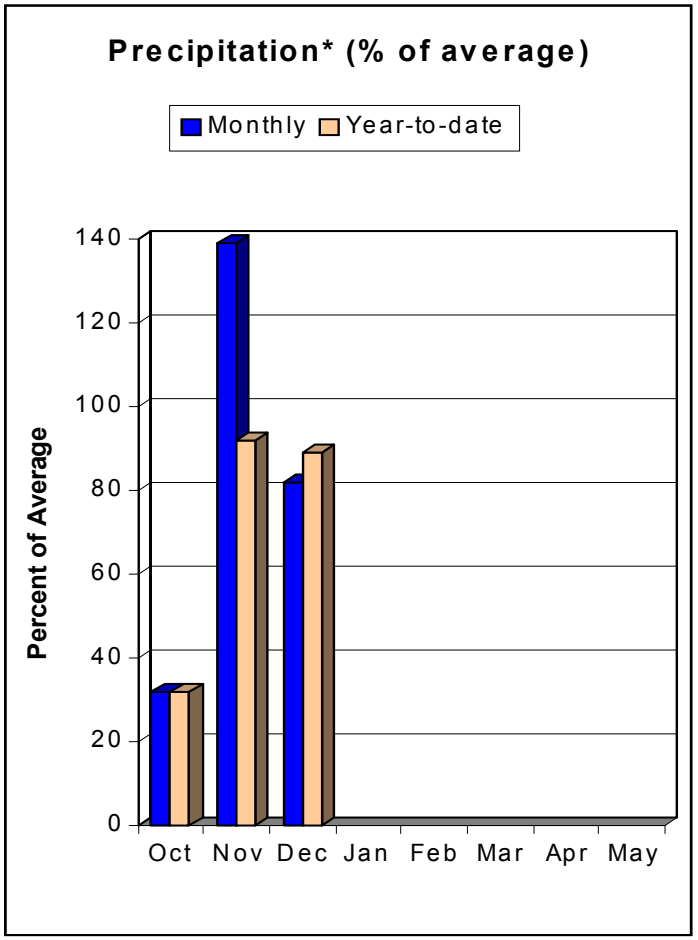
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# UPPER COLORADO RIVER BASIN
as of January 1, 2004




*Based on selected stations

The snowpack measurements at SNOTEL sites in the Colorado Basin are 91% of average and is just slightly less than last year, at 98% of those readings. The highest percentages were measured on the Grand Mesa while the lowest percentages were measured in the Blue River Drainage. Most of the water year precipitation occurred during November, and the current water year totals are now 89% of average. Reservoir storage has steadily improved since last August and is now 86% of average and is more than two times last year's storage volumes on this date. With the best snowpack conditions on the Grand Mesa, those streams originating along the Mesa have the best outlook for summer runoff. Meanwhile, forecasts along the main stem of the Colorado River, consistently range from 80% to 85% of average. Water users can still hope for a wet month which could easily improve the outlook for summer water supplies.

UPPER COLORADO RIVER BASIN
Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| Lake Granby Inflow | APR-JUL | 127 | 159 | 185 | 82 | 215 | 269 | 225 |
| Willow Creek Reservoir Inflow | APR-JUL | 23 | 33 | 41 | 80 | 50 | 65 | 51 |
| Williams Fork Reservoir inflow | APR-JUL | 58 | 73 | 84 | 88 | 96 | 115 | 95 |
| Dillon Reservoir Inflow | APR-JUL | 58 | 101 | 130 | 78 | 159 | 204 | 167 |
| Green Mountain Reservoir inflow | APR-JUL | 176 | 207 | 230 | 82 | 254 | 291 | 280 |
| Muddy Creek blw Wolford Mtn. Resv. | APR-JUL | 35 | 48 | 60 | 100 | 74 | 102 | 60 |
| Eagle River blw Gypsum | APR-JUL | 179 | 231 | 275 | 82 | 327 | 423 | 335 |
| Colorado River nr Dotsero | APR-JUL | 515 | 890 | 1150 | 80 | 1410 | 1790 | 1440 |
| Ruedi Reservoir Inflow | APR-JUL | 81 | 103 | 120 | 85 | 140 | 177 | 141 |
| Roaring Fork at Glenwood Springs | APR-JUL | 438 | 559 | 650 | 92 | 748 | 904 | 710 |
| Colorado River nr Cameo | APR-JUL | 1000 | 1600 | 2000 | 83 | 2400 | 3000 | 2420 |

UPPER COLORADO RIVER BASIN
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| DILLON | 250.8 | 223.9 | 140.8 | 224.8 |
| LAKE GRANBY | 465.6 | 250.0 | 59.5 | 322.1 |
| GREEN MOUNTAIN | 139.0 | 65.0 | 35.7 | 90.3 |
| HOMESTAKE | 43.0 | 21.8 | 17.0 | 28.4 |
| RUEDI | 102.0 | 69.4 | 46.8 | 79.7 |
| VEGA | 32.0 | 9.1 | 3.6 | 11.0 |
| WILLIAMS FORK | 96.8 | 60.6 | 8.9 | 62.9 |
| WILLOW CREEK | 9.0 | 6.5 | 6.6 | 6.1 |

UPPER COLORADO RIVER BASIN
Watershed Snowpack Analysis - January 1, 2004

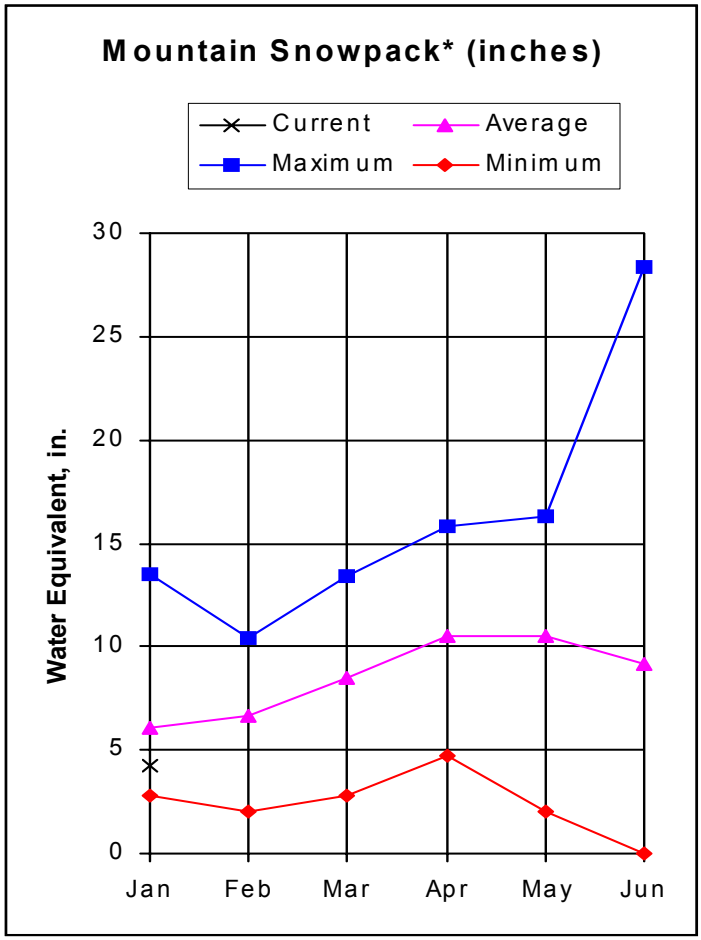
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| BLUE RIVER BASIN | 5 | 81 | 76 |
| UPPER COLORADO RIVER BASI | 19 | 90 | 84 |
| MUDDY CREEK BASIN | 2 | 116 | 105 |
| PLATEAU CREEK BASIN | 2 | 133 | 115 |
| ROARING FORK BASIN | 7 | 104 | 100 |
| WILLIAMS FORK BASIN | 2 | 104 | 82 |
| WILLOW CREEK BASIN | 2 | 78 | 86 |
| TOTAL COLORADO RIVER BASI | 28 | 98 | 91 |

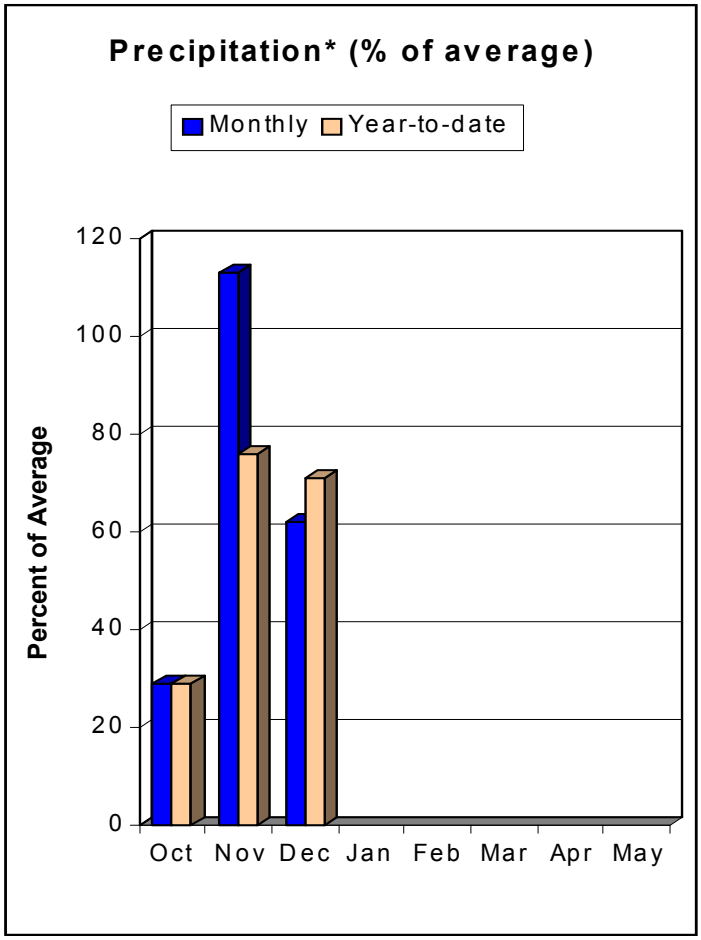
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# SOUTH PLATTE RIVER BASIN
as of January 1, 2004




*Based on selected stations

The 2004 winter has gotten off to a slow start in the South Platte Basin. No measurable accumulation of snowpack occurred until early November and since then the accumulation rate has been less than average. This leaves the South Platte Basin with a snowpack of only 67% of average on January 1, and is only 88% of last year's readings for this date. While most of the remainder of the state received abundant precipitation during November, the monthly totals in the South Platte Basin were just 13% above average. After another dry month in December, water year totals are now only 71% of average and are the lowest basinwide percentage in the state. Although reservoir storage is only 77% of average, these volumes remain at 163% of last year's January 1 storage. Streamflow forecasts range from well below average, along the South Platte Headwaters, to just slightly below average along some of the Front Range tributaries. The longer these dry conditions persist the more critical it will become to rely upon another wet spring for adequate water supplies.

SOUTH PLATTE RIVER BASIN
Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| Antero Reservoir inflow | APR-JUL | 2.3 | 4.4 | 6.5 | 37 | 9.6 | 17.7 | 17.5 |
| Spinney Mountain Reservoir inflow | APR-JUL | 14.8 | 23 | 31 | 54 | 40 | 62 | 57 |
| Elevenmile Canyon Reservoir inflow | APR-JUL | 0.6 | 20 | 33 | 56 | 47 | 67 | 59 |
| Cheesman Lake inflow | APR-JUL | 33 | 48 | 65 | 57 | 86 | 127 | 114 |
| South Platte River at South Platte | APR-SEP | 10.0 | 102 | 163 | 64 | 225 | 310 | 254 |
| Bear Creek at Morrison | APR-SEP | 3.0 | 10.6 | 15.7 | 51 | 21 | 28 | 31 |
| Clear Creek at Golden | APR-SEP | 69 | 92 | 108 | 81 | 124 | 147 | 134 |
| St. Vrain Creek at Lyons | APR-SEP | 38 | 51 | 60 | 71 | 69 | 82 | 84 |
| Boulder Creek nr Orodell | APR-SEP | 35 | 43 | 49 | 93 | 55 | 63 | 53 |
| South Boulder nr Eldorado Spgs | APR-SEP | 17.7 | 32 | 41 | 90 | 50 | 64 | 46 |
| Big Thompson River at mouth nr Drake | APR-SEP | 69 | 85 | 95 | 81 | 105 | 121 | 117 |
| CACHE LaPOUDRE at Canyon Mouth | APR-SEP | 145 | 196 | 230 | 84 | 265 | 315 | 275 |

SOUTH PLATTE RIVER BASIN
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| ANTERO | 20.0 | 0.0 | 0.0 | 16.5 |
| BARR LAKE | 32.0 | 21.1 | 11.6 | 22.4 |
| BLACK HOLLOW | 8.0 | 2.9 | 2.1 | 3.8 |
| BOYD LAKE | 49.0 | 30.4 | 6.1 | 31.7 |
| CACHE LA POUDRE | 10.0 | 0.8 | 1.0 | 6.3 |
| CARTER | 108.9 | 36.1 | 71.3 | 74.7 |
| CHAMBERS LAKE | 9.0 | 6.4 | 3.2 | 2.8 |
| CHEESMAN | 79.0 | 59.9 | 51.5 | 60.9 |
| COBB LAKE | 34.0 | 5.2 | 2.5 | 13.9 |
| ELEVEN MILE | 97.8 | 70.5 | 44.6 | 95.9 |
| EMPIRE | 38.0 | 10.2 | 7.9 | 22.2 |
| FOSSIL CREEK | 12.0 | 2.4 | 2.9 | 6.3 |
| GROSS | 41.8 | 32.4 | 17.2 | 26.2 |
| HALLIGAN | 6.4 | 2.5 | 2.5 | 3.6 |
| HORSECREEK | 16.0 | 3.3 | 1.1 | 10.9 |
| HORSETOOTH | 149.7 | 86.7 | 9.8 | 87.8 |
| JACKSON | 35.0 | 23.7 | 24.8 | 23.0 |
| JULESBURG | 28.0 | 15.3 | 15.7 | 18.4 |
| LAKE LOVELAND | 14.0 | 10.6 | 7.6 | 8.9 |
| LONE TREE | 9.0 | 5.9 | 5.1 | 6.0 |
| MARIANO | 6.0 | 1.0 | 0.5 | 4.1 |
| MARSHALL | 10.0 | 5.7 | 2.9 | 4.7 |
| MARSTON | 13.0 | 18.9 | 4.9 | 12.7 |
| MILTON | 24.0 | 5.5 | 2.4 | 14.8 |
| POINT OF ROCKS | 70.0 | 24.5 | 13.7 | 51.1 |
| PREWITT | 33.0 | 3.5 | 0.0 | 18.0 |
| RIVERSIDE | 63.1 | 24.4 | 8.4 | 38.1 |
| SPINNEY MOUNTAIN | 48.7 | 26.6 | 17.0 | 35.4 |
| STANDLEY | 42.0 | 38.8 | 20.7 | 32.5 |
| TERRY LAKE | 8.0 | 5.6 | 1.4 | 5.2 |
| UNION | 13.0 | 10.8 | 5.7 | 10.4 |
| WINDSOR | 19.0 | 7.0 | 0.4 | 10.0 |

SOUTH PLATTE RIVER BASIN
Watershed Snowpack Analysis - January 1, 2004

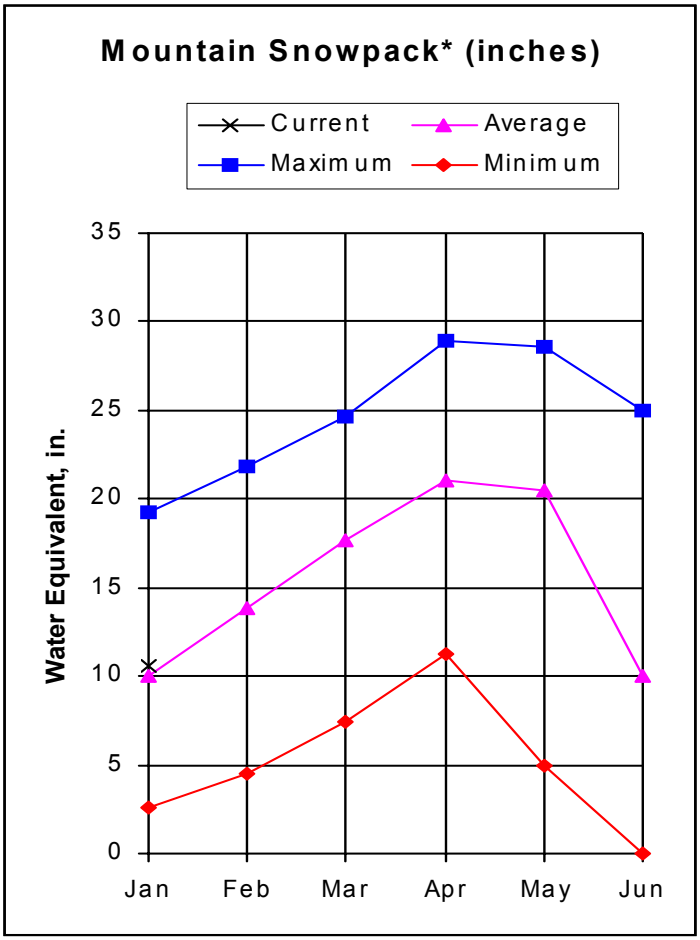
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| BIG THOMPSON BASIN | 3 | 92 | 79 |
| BOULDER CREEK BASIN | 3 | 74 | 59 |
| CACHE LA POUDRE BASIN | 2 | 102 | 72 |
| CLEAR CREEK BASIN | 2 | 106 | 90 |
| SAINT VRAIN BASIN | 1 | 109 | 126 |
| UPPER SOUTH PLATTE BASIN | 6 | 69 | 46 |
| TOTAL SOUTH PLATTE BASIN | 17 | 88 | 67 |

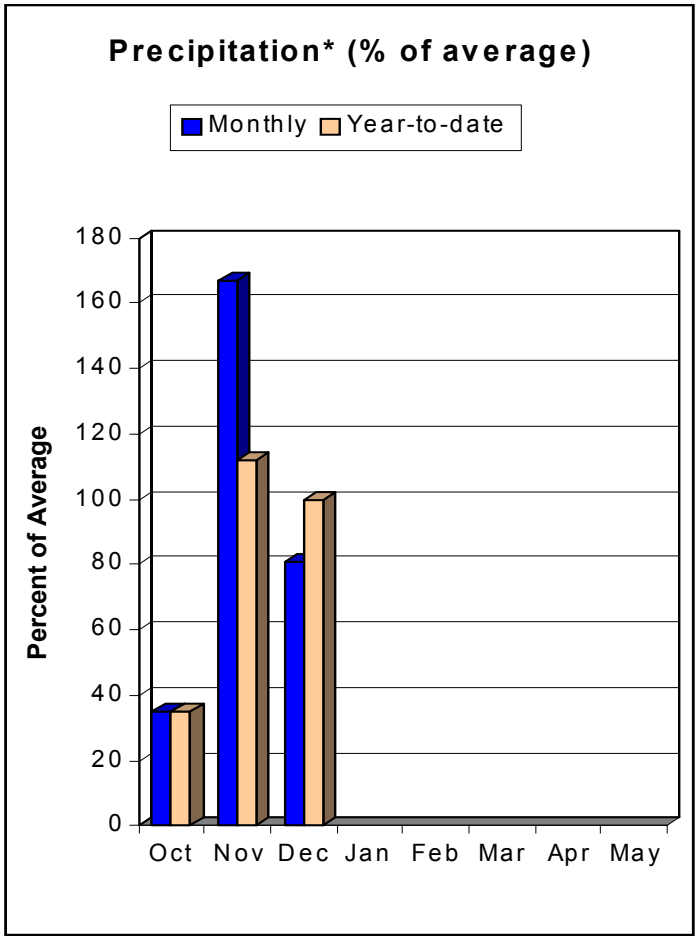
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS
as of January 1, 2004




*Based on selected stations

Although not spectacular, the Yampa and White basins can boast as the highest basinwide snowpack percentage in the state. The January 1 readings were 108% of average, and are 18% above last year's January 1 readings. The snowpack in the Little Snake River Basin, mostly in Wyoming, is even higher at 133% of average. While precipitation during October and December was below average, November's precipitation was 167% of average, and was the highest basinwide percentage in the state for that month. Water year totals are now at 100% of average and is the highest water year percentage in the state. Runoff is forecast near average along most of the Yampa River and slightly below average along the White River. With the best snowpack conditions north of the Yampa River, most of those tributaries are forecast to produce above average volumes this summer.

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS
Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | 50% (Most Probable) (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| NORTH PLATTE RIVER nr Northgate | APR-SEP | 99 | 186 | 245 | 91 | 305 | 390 | 270 |
| LARAMIE RIVER nr Woods | APR-SEP | 37 | 79 | 107 | 79 | 135 | 177 | 135 |
| Yampa R abv Stagecoach Res | APR-JUL | 15.1 | 23 | 29 | 100 | 35 | 43 | 29 |
| Yampa River at Steamboat Springs | APR-JUL | 157 | 210 | 250 | 89 | 290 | 345 | 280 |
| Elk River nr Milner | APR-JUL | 198 | 273 | 330 | 102 | 393 | 496 | 325 |
| Elkhead Creek nr Elkhead | APR-JUL | 23 | 33 | 41 | 105 | 52 | 72 | 39 |
| ELKHEAD CREEK blw Maynard Gulch | APR-JUL | 40 | 54 | 64 | 109 | 74 | 88 | 59 |
| Fortification Ck nr Fortification | MAR-JUN | 4.20 | 6.80 | 8.60 | 115 | 10.40 | 13.00 | 7.50 |
| Yampa River nr Maybell | APR-JUL | 505 | 740 | 900 | 91 | 1060 | 1300 | 990 |
| Little Snake River nr Slater | APR-JUL | 98 | 140 | 172 | 108 | 208 | 266 | 159 |
| LITTLE SNAKE R nr Dixon | APR-JUL | 250 | 320 | 365 | 111 | 410 | 480 | 330 |
| LITTLE SNAKE R nr Lily | APR-JUL | 280 | 350 | 400 | 110 | 450 | 520 | 365 |
| White River nr Meeker | APR-JUL | 152 | 204 | 250 | 86 | 306 | 412 | 290 |

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| STAGECOACH | 33.3 | 29.6 | 24.5 | 26.4 |
| YAMCOLO | 9.1 | 4.0 | 4.0 | 5.5 |

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS
Watershed Snowpack Analysis - January 1, 2004

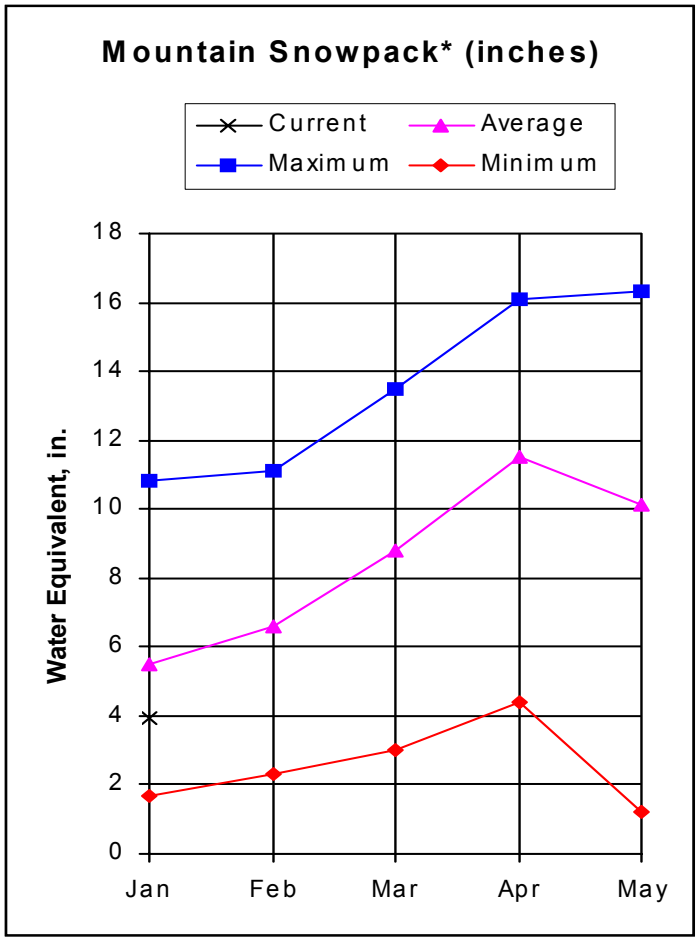
| Watershed | Number of Data Sites | This Year as % of Last Yr | This Year as % of Average |
|---|---|---|---|
| LARAMIE RIVER BASIN | 2 | 145 | 89 |
| NORTH PLATTE RIVER BASIN | 7 | 112 | 98 |
| TOTAL NORTH PLATTE BASIN | 9 | 116 | 97 |
| ELK RIVER BASIN | 2 | 147 | 109 |
| YAMPA RIVER BASIN | 9 | 117 | 110 |
| WHITE RIVER BASIN | 4 | 120 | 109 |
| TOTAL YAMPA AND WHITE RIV | 12 | 118 | 108 |
| LITTLE SNAKE RIVER BASIN | 6 | 159 | 124 |

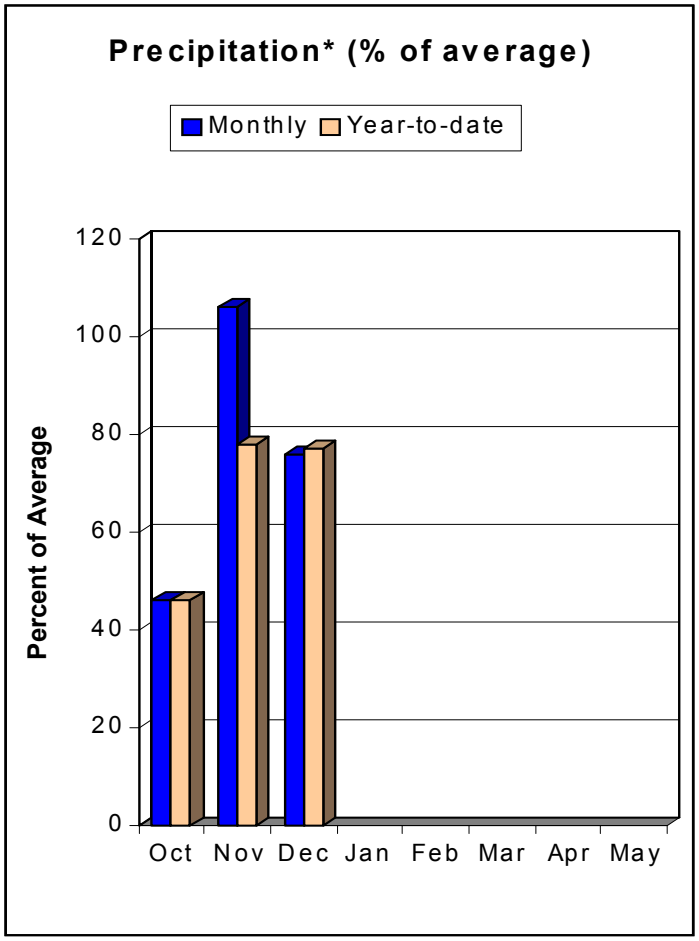
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# ARKANSAS RIVER BASIN
# as of January 1, 2004




*Based on selected stations

The 2004 water year is shaping up to be a tight year for most water users in the Arkansas Basin. Early winter snowfall has been well below average, and as of January 1, is only 69% of average and only 90% of last year's totals for this date. While below average throughout the basin, the highest percentages occur along the main stem of the Arkansas Headwaters. Snowpack readings above Salida are 76% of average, while along the southern tributary streams readings range from 50% to 70% of average. For the first three months of the 2004 water year, only November's precipitation was near average. With precipitation during October and December well below average, water year totals are only 77% of average as of January 1. Reservoir storage remains extremely low in this basin's reservoirs. Data for January 1 indicates that storage is only 54% of average, yet is 17% above last year's volumes. Streamflow forecasts for the spring and summer of 2004 range from near average along the Arkansas River Headwaters to well below average on the southern tributaries.

ARKANSAS RIVER BASIN
Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | 50% (Most Probable) (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| Chalk Creek nr Nathrop | APR-SEP | 8.6 | 20 | 27 | 100 | 34 | 45 | 27 |
| Arkansas River at Salida | APR-SEP | 154 | 230 | 280 | 90 | 330 | 405 | 310 |
| Grape Creek nr Westcliffe | APR-SEP | 2.0 | 3.8 | 14.0 | 71 | 24 | 39 | 19.6 |
| Pueblo Reservoir Inflow | APR-SEP | 185 | 290 | 360 | 84 | 430 | 535 | 430 |
| Huerfano River nr Redwing | APR-SEP | 4.7 | 6.2 | 11.5 | 74 | 16.5 | 24 | 15.5 |
| Cucharas River nr La Veta | APR-SEP | 1.3 | 3.9 | 7.7 | 59 | 13.8 | 23 | 13.0 |
| Trinidad Lake Inflow | APR-SEP | 6.6 | 16.0 | 33 | 75 | 50 | 76 | 44 |

ARKANSAS RIVER BASIN
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| ADOBE | 70.0 | 0.0 | 0.0 | 23.4 |
| CLEAR CREEK | 11.0 | 7.6 | 6.4 | 5.9 |
| GREAT PLAINS | 150.0 | 0.0 | 6.8 | 32.2 |
| HOLBROOK | 7.0 | 0.0 | 0.0 | 3.0 |
| HORSE CREEK | 28.0 | 0.0 | 0.0 | 8.4 |
| JOHN MARTIN | 335.7 | 26.8 | 26.8 | 108.7 |
| LAKE HENRY | 8.0 | 4.2 | 0.5 | 3.7 |
| MEREDITH | 42.0 | 3.7 | 5.8 | 13.6 |
| PUEBLO | 236.7 | 84.1 | 88.8 | 144.0 |
| TRINIDAD | 72.3 | 15.4 | 14.9 | 24.2 |
| TURQUOISE | 126.6 | 68.0 | 41.6 | 87.9 |
| TWIN LAKES | 86.0 | 59.2 | 39.9 | 46.3 |

ARKANSAS RIVER BASIN
Watershed Snowpack Analysis - January 1, 2004

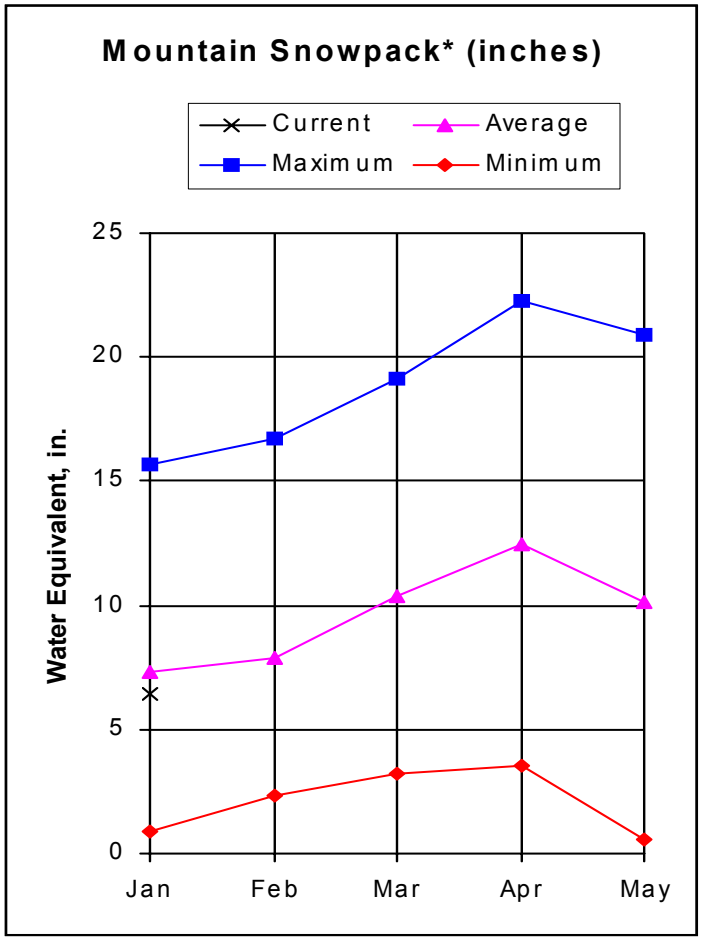
| Watershed | Number of Data Sites | This Year as % of Last Yr | This Year as % of Average |
|---|---|---|---|
| UPPER ARKANSAS BASIN | 3 | 81 | 76 |
| CUCHARAS & HUERFANO RIVER | 2 | 131 | 67 |
| PURGATOIRE RIVER BASIN | 2 | 90 | 51 |
| TOTAL ARKANSAS RIVER BASIN | 6 | 90 | 69 |

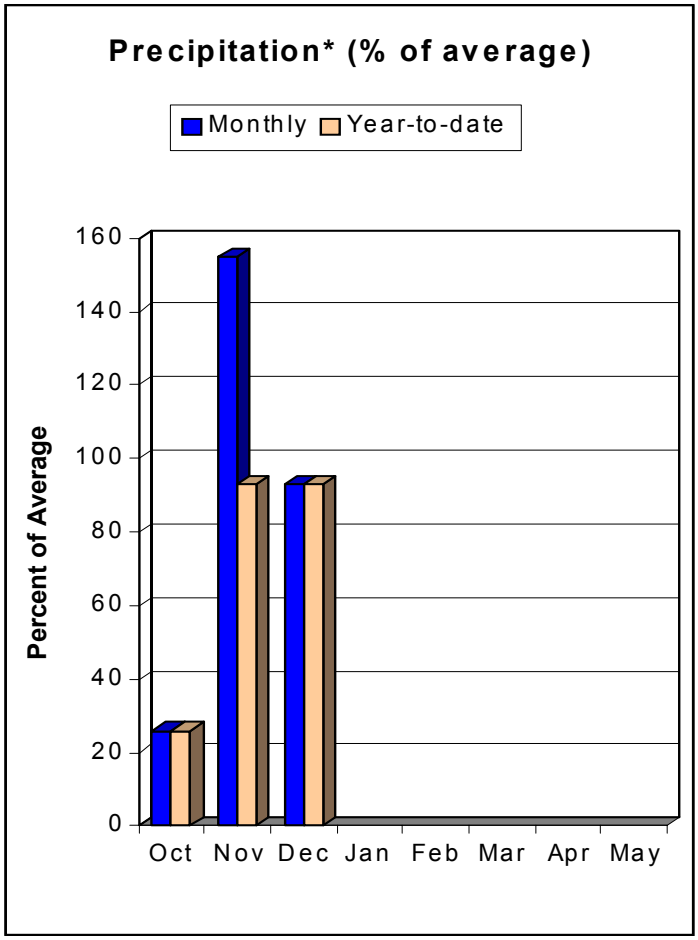
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# UPPER RIO GRANDE RIVER BASIN
as of January 1, 2004




*Based on selected stations

After two extremely dry winters in the Rio Grande Basin, the 2004 water year has brought a promising storm track to this basin's water users. Readings from SNOTEL sites in the basin were 85% of average on January 1 and are 33% above those of last year. The highest snowpack percentages were measured in the Alamosa and Conejos River basins, while the snowpack along the Sange de Cristo Mountains has the lowest percentage in the basin. The snow water content at the Lily Pond SNOTEL, near Platoro Reservoir, is more than two times last year's January 1 readings. Most of this water year's precipitation was measured during the early November storms. Totals for the water year are now 93% of average. The six major reservoirs in the Rio Grande Basin are reporting only 38% of average volumes, the lowest of any basin in Colorado. These volumes remain well below those of last year, at only 64% of last year. Prospects for summer water supplies are best along the upper reaches of the Rio Grande, while decreasing considerably along those streams originating from the Sange de Cristo Range.

UPPER RIO GRANDE BASIN

Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| Rio Grande at Thirty Mile Bridge | APR-SEP | 95 | 122 | 145 | 107 | 172 | 220 | 136 |
| Rio Grande Reservoir Inflow | APR-JUL | 86 | 108 | 127 | 108 | 149 | 188 | 118 |
| Rio Grande at Wagon Wheel Gap | APR-SEP | 220 | 315 | 380 | 110 | 445 | 540 | 345 |
| South Fork Rio Grande at South Fork | APR-SEP | 103 | 135 | 157 | 119 | 179 | 210 | 132 |
| Rio Grande nr Del Norte | APR-SEP | 330 | 490 | 600 | 113 | 710 | 870 | 531 |
| Saguache Creek nr Saguache | APR-SEP | 12.6 | 22 | 29 | 88 | 36 | 45 | 33 |
| Alamosa Creek abv Terrace Reservoir | APR-SEP | 52 | 69 | 80 | 114 | 91 | 108 | 70 |
| La Jara Creek nr Capulin | MAR-JUL | 4.20 | 7.60 | 10.00 | 115 | 12.40 | 15.80 | 8.70 |
| Trinchera Creek | APR-SEP | 1.5 | 5.4 | 8.0 | 67 | 10.6 | 14.5 | 12.0 |
| Sangre de Cristo Creek | APR-SEP | 0.49 | 2.60 | 5.80 | 66 | 9.00 | 13.70 | 8.80 |
| Ute Creek | APR-SEP | 1.4 | 5.1 | 8.0 | 66 | 10.9 | 15.1 | 12.2 |
| Platoro Reservoir Inflow | APR-JUL | 49 | 62 | 70 | 109 | 78 | 91 | 64 |
| | APR-SEP | 54 | 68 | 77 | 109 | 86 | 100 | 71 |
| Conejos River nr Mogote | APR-SEP | 138 | 187 | 220 | 110 | 255 | 300 | 200 |
| San Antonio River at Ortiz | APR-SEP | 5.3 | 10.8 | 15.6 | 95 | 21 | 31 | 16.4 |
| Los Pinos River nr Ortiz | APR-SEP | 33 | 56 | 71 | 96 | 86 | 109 | 74 |
| Culebra Creek at San Luis | APR-SEP | 2.8 | 11.3 | 17.0 | 74 | 23 | 31 | 23 |
| Costilla Reservoir inflow | MAR-JUL | 2.4 | 5.8 | 8.0 | 76 | 10.2 | 13.6 | 10.6 |
| Costilla Creek nr Costilla | MAR-JUL | 5.9 | 14.3 | 19.3 | 74 | 24 | 32 | 26 |

UPPER RIO GRANDE BASIN
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| CONTINENTAL | 15.0 | 2.1 | 2.1 | 4.9 |
| PLATORO | 53.7 | 4.9 | 7.8 | 24.3 |
| RIO GRANDE | 51.0 | 7.6 | 16.3 | 15.1 |
| SANCHEZ | 103.0 | 12.6 | 10.8 | 23.9 |
| SANTA MARIA | 45.0 | 4.6 | 11.1 | 10.1 |
| TERRACE | 13.1 | 0.0 | 1.8 | 5.6 |

UPPER RIO GRANDE BASIN
Watershed Snowpack Analysis - January 1, 2004

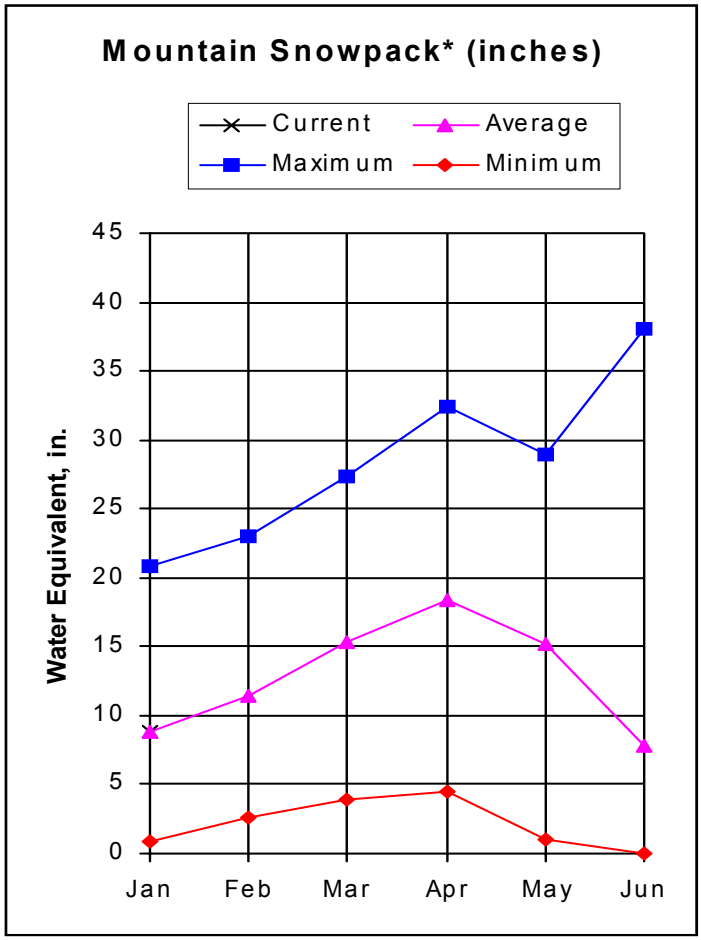
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| ALAMOSA CREEK BASIN | 1 | 215 | 124 |
| CONEJOS & RIO SAN ANTONIO | 2 | 132 | 98 |
| CULEBRA & TRINCHERA CREEK | 3 | 103 | 69 |
| UPPER RIO GRANDE BASIN | 4 | 152 | 90 |
| TOTAL UPPER RIO GRANDE BA | 10 | 133 | 85 |

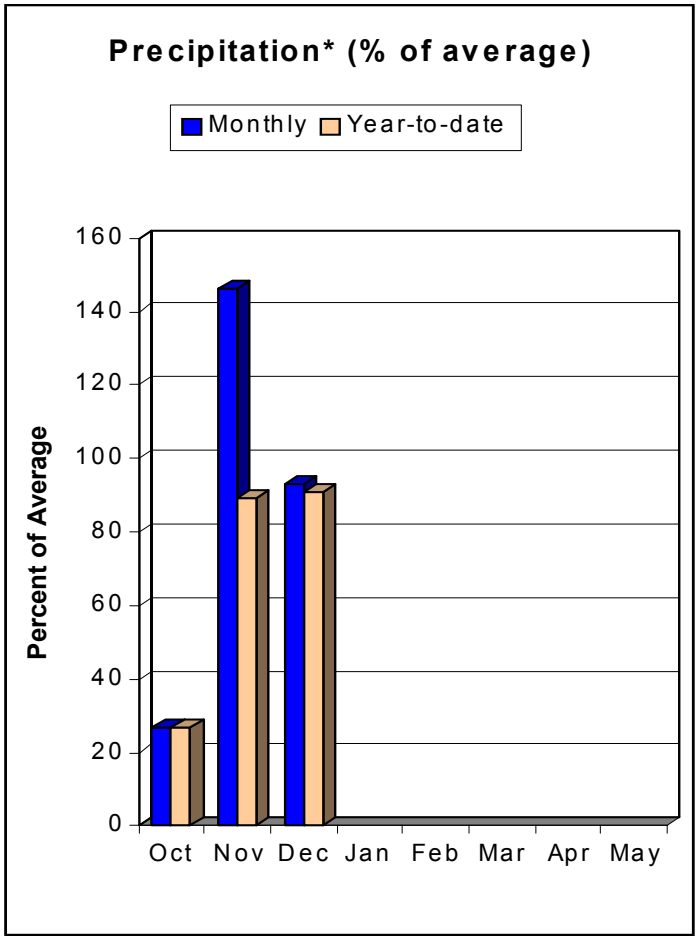
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS as of January 1, 2004




*Based on selected stations

The snowpack totals for these combined basins are 99% of average as of January 1. These totals are 18% above those measured last year at this time. The highest percentages were measured in the San Juan Basin, while the lowest were measured in the Dolores Basin. For the first three months of the 2004 water year, only November's precipitation contributed significantly to the water year totals. December was somewhat dry across these basins at 93% of average, leaving the water year totals at 91% of average. The last two dry years have left the reservoir storage in these basins at only 65% of average as of January 1. However, these volumes remain at 17% above last year's January 1 storage. For the six major reservoirs in these basins, storage is down from the average by more than 130,000 acre-feet. To the relief of water users in these basins, streamflow forecasts are near to slightly above average for this spring and summer. The best prospects for runoff occur along the San Juan River, with the inflow into Navajo Reservoir estimated at 114% of average.

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS
Streamflow Forecasts - January 1, 2004

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF) | 70% (1000AF) | 50% (Most Probable) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| Dolores River at Dolores | APR-JUL | 161 | 220 | 260 | 98 | 300 | 360 | 265 |
| McPhee Reservoir inflow | APR-JUL | 200 | 270 | 315 | 98 | 360 | 430 | 320 |
| San Miguel River nr Placerville | APR-JUL | 88 | 116 | 135 | 102 | 154 | 182 | 132 |
| Gurley Reservoir Inlet | APR-JUL | 7.2 | 13.0 | 17.0 | 103 | 21 | 27 | 16.5 |
| | APRIL | | | 1.70 | 102 | | | 1.66 |
| | MAY | | | 9.00 | 102 | | | 8.83 |
| | JUNE | | | 5.00 | 107 | | | 4.67 |
| | JULY | | | 1.30 | 99 | | | 1.32 |
| Cone Reservoir Inlet | APR-JUL | 1.42 | 2.70 | 3.60 | 102 | 4.50 | 5.80 | 3.53 |
| | APRIL | | | 0.45 | 98 | | | 0.46 |
| | MAY | | | 1.65 | 101 | | | 1.64 |
| | JUNE | | | 1.10 | 106 | | | 1.04 |
| | JULY | | | 0.40 | 105 | | | 0.38 |
| Lilylands Reservoir Inlet | APR-JUL | 0.68 | 2.06 | 3.00 | 105 | 3.90 | 5.30 | 2.86 |
| | APRIL | | | 0.40 | 100 | | | 0.40 |
| | MAY | | | 1.40 | 106 | | | 1.32 |
| | JUNE | | | 0.90 | 103 | | | 0.87 |
| | JULY | | | 0.30 | 111 | | | 0.27 |
| Rio Blanco at Blanco Diversion | APR-JUL | 37 | 51 | 60 | 113 | 69 | 83 | 53 |
| Navajo River at Oso Diversion | APR-JUL | 41 | 61 | 75 | 109 | 89 | 109 | 69 |
| San Juan River nr Carracus | APR-JUL | 294 | 383 | 450 | 111 | 522 | 639 | 405 |
| Piedra River nr Arboles | APR-JUL | 154 | 215 | 260 | 113 | 305 | 365 | 230 |
| Vallecito Reservoir Inflow | APR-JUL | 131 | 187 | 225 | 110 | 265 | 320 | 205 |
| Navajo Reservoir Inflow | APR-JUL | 565 | 770 | 910 | 114 | 1050 | 1260 | 800 |
| Animas River at Durango | APR-JUL | 255 | 375 | 460 | 105 | 545 | 665 | 440 |
| Lemon Reservoir Inflow | APR-JUL | 32 | 49 | 60 | 103 | 71 | 88 | 58 |
| La Plata River at Hesperus | APR-JUL | 12.6 | 20 | 25 | 100 | 30 | 37 | 25 |
| Mancos River nr Mancos | APR-JUL | 12.1 | 29 | 40 | 100 | 51 | 68 | 40 |
| | APRIL | | | 5.80 | 100 | | | 5.80 |
| | MAY | | | 15.9 | 100 | | | 15.9 |
| | JUNE | | | 13.7 | 100 | | | 13.7 |
| | JULY | | | 4.60 | 100 | | | 4.60 |

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS
Reservoir Storage (1000 AF) - End of December

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| GROUNDHOG | 21.7 | 7.0 | 3.8 | 12.0 |
| JACKSON GULCH | 10.0 | 2.9 | 2.5 | 4.6 |
| LEMON | 40.0 | 9.2 | 5.8 | 20.1 |
| MCPHEE | 381.2 | 172.0 | 159.1 | 271.1 |
| NARRAGUINNEP | 19.0 | 8.1 | 7.8 | 12.7 |
| VALLECITO | 126.0 | 47.8 | 32.5 | 58.6 |

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS
Watershed Snowpack Analysis - January 1, 2004

| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| ANIMAS RIVER BASIN | 7 | 117 | 94 |
| DOLORES RIVER BASIN | 4 | 85 | 88 |
| SAN MIGUEL RIVER BASIN | 3 | 96 | 90 |
| SAN JUAN RIVER BASIN | 3 | 159 | 121 |
| TOTAL SAN MIGUEL, DOLORES | 16 | 118 | 99 |
| AN JUAN RIVER BASINS | | | |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

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In addition to the basin outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, January through May.  The information may be obtained from the National Resources Conservation Service web page at http://www.wcc.nrcs.usda.gov/water/quantity/westwide.html.

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*Issued by*

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**Natural Resources Conservation Service**
**U.S. Department of Agriculture**

*Released by*

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**State Conservationist**
**Natural Resources Conservation Service**
**Lakewood, Colorado**

# Colorado
# Basin Outlook Report

**Natural Resources Conservation Service**
**Lakewood, CO**