COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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March 2013

The Surface Water Supply Index (SWSI) developed by this office and the U.S.D.A. Natural Resources Conservation Service (NRCS) 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 of November through April (December 1 through May 1). 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 enclosed narratives are provided by the Division Office in each stream basin.

The statewide SWSI values for February (March 1) range from a high value of -1.0 in the Rio Grande Basin to a low value of -3.4 in the Colorado River Basin. Drought conditions continue to be widespread throughout the state. The SWSI decreased in every basin in the state compared to last month. With the exception of reservoir storage in the Rio Grande Basin, all components of the SWSI (reservoir storage, cumulative precipitation, and snowpack) are below normal for March 1.

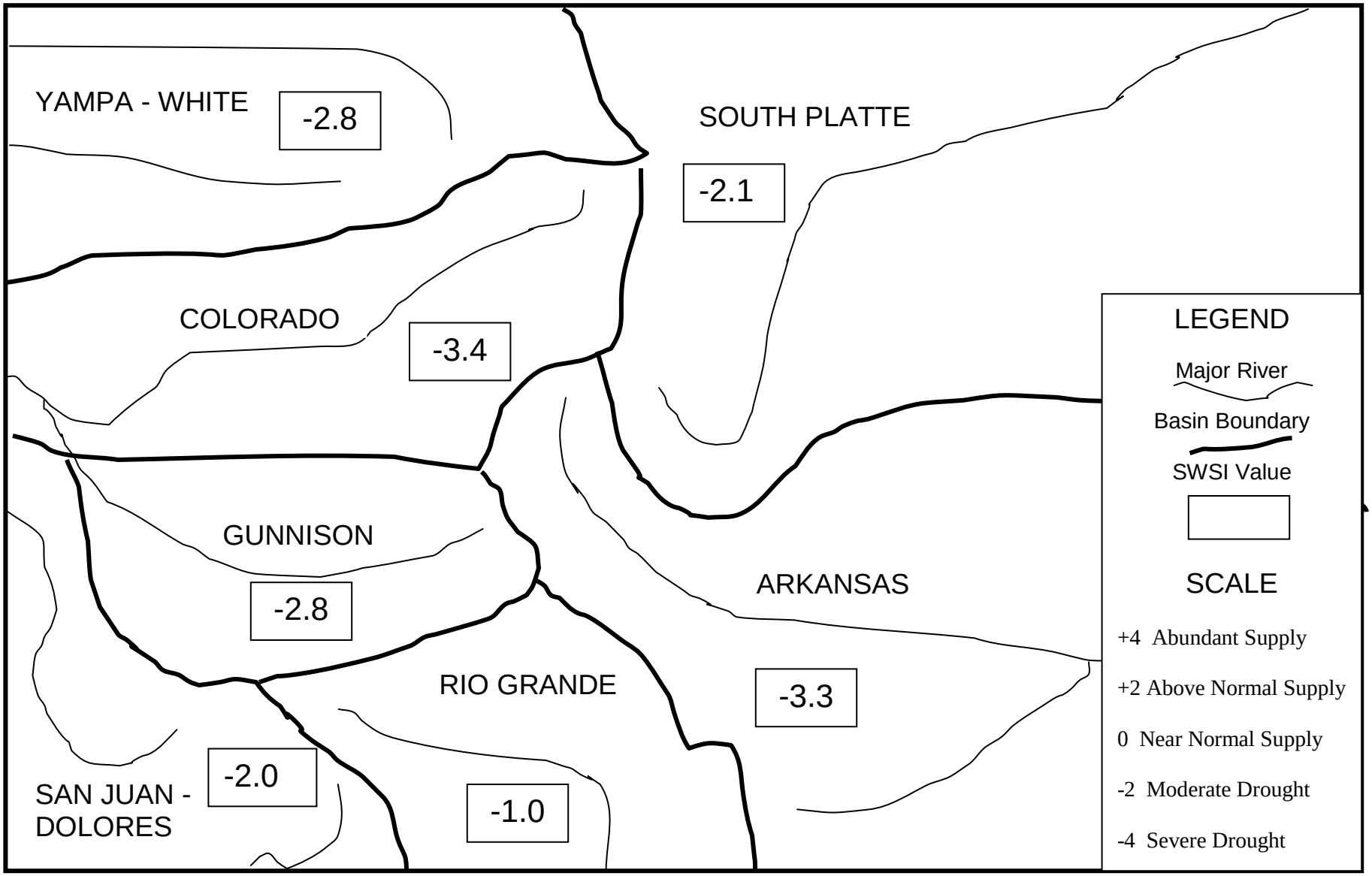
The following SWSI values were computed for each of the seven major basins for March 1, 2013, and reflect the conditions during the month of February. Additional information about SWSI calculations and the NRCS National Water and Climate Center SWSI by HUC are included on Page 10.

Basin	March 1 SWSI	Change from Previous Month	Change from Previous Year
South Platte	-2.1	-0.3	-3.7
Arkansas	-3.3	-0.2	-1.5
Rio Grande	-1.0	-0.3	-0.9
Gunnison	-2.8	-0.1	-1.4
Colorado	-3.4	-0.1	-1.7
Yampa/White	-2.8	-0.5	0.1
San Juan/Dolores	-2.0	-0.1	-1.8

SWSI 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



March 1, 2013

Basinwide Conditions Assessment

The SWSI value for the month was -2.1. March 1 snowpack remains low with a nonexceedance probability (PN) of 7[1]. Cumulative storage in the major plains reservoirs (Julesburg, North Sterling, and Prewitt) is at 68% of capacity. Cumulative storage in the major upper-basin reservoirs (Cheesman, Eleven Mile, Spinney, and Antero) is at 75% of capacity.

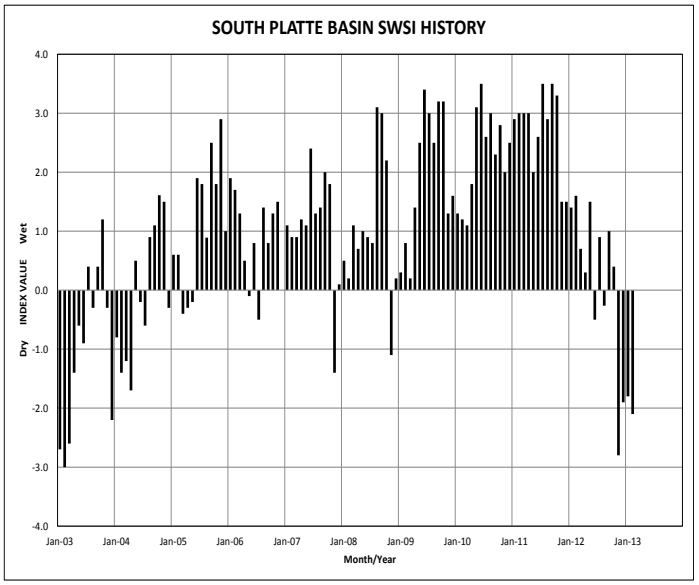
February gave the South Platte basin a transition from generally mild and dry to cool and, thankfully, wet at the lower elevations. This was primarily because of two winter storms the last half of the month. However, the overall snow pack at the higher elevations only improved from 60% of average at the end of January to 65% of average at the end of February. This continued the status of the South Platte Basin having the lowest snow pack percentage in the state. The sort of good news is that the lower elevation moisture moved the lower end of the basin from the exceptional (D4) to the extreme (D3) drought category while the rest of the basin remained in the severe (D2) or extreme (D3) drought categories.

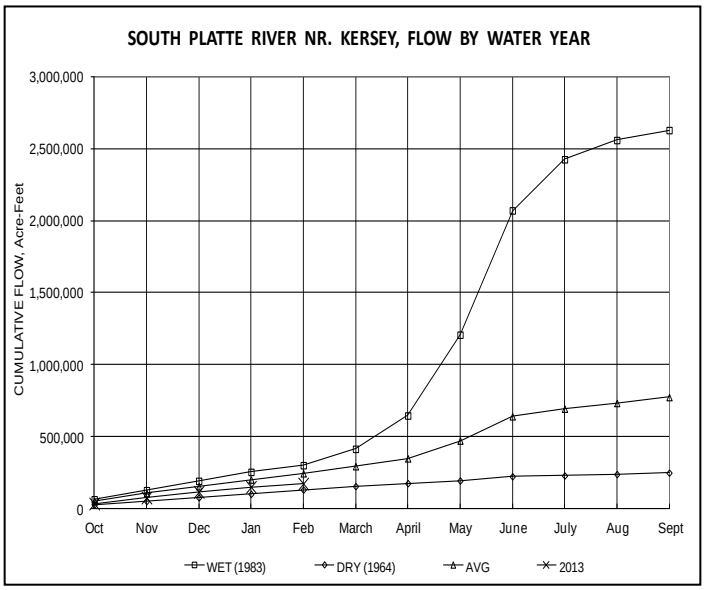
Stream flows at both the Kersey and Julesburg index gages remained below average for February. The Kersey gage monthly mean stream flow was 412 cfs or 61% of the historic mean of 674 cfs and below the February 2003 mean of 576 cfs. The February Julesburg gage monthly mean stream flow value was 67 cfs or 12% of the historic mean of 582 cfs. This is above the February 2003 mean of 40 cfs.

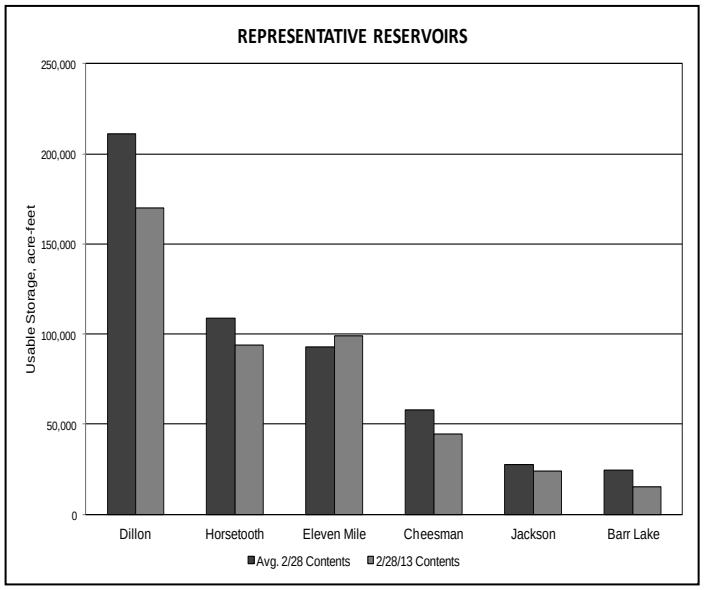
Overall reservoir storage in the basin was at 82% of the end of February average. This compares with an end of February 2003 average of 54% and an end of February 2002 average of 84%.

Outlook

The mainstem and tributary river calls continued with diversions to storage rights throughout the month. The tributary calls generally remained stable throughout the month but the mainstem calls did continue the slow movement started in January toward more junior calls. The lower elevation moisture definitely helped in this regard.







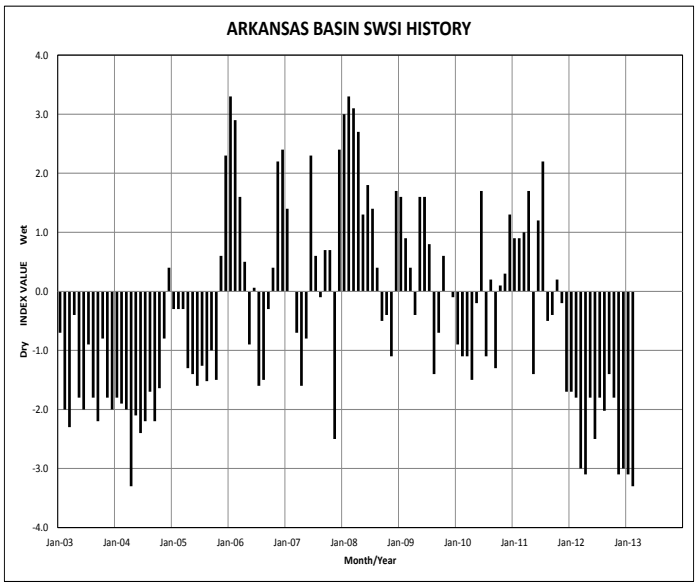
[1] At least 93 percent of recorded values are higher than a PN of 7

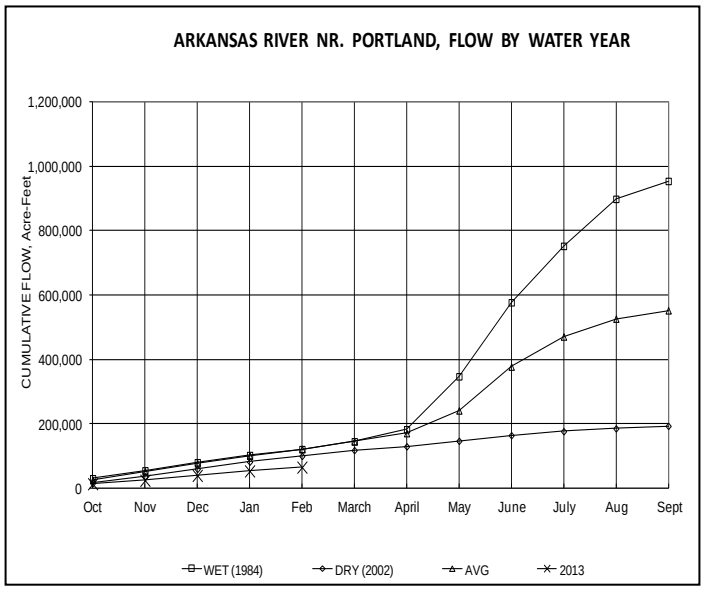
Basinwide Conditions Assessment

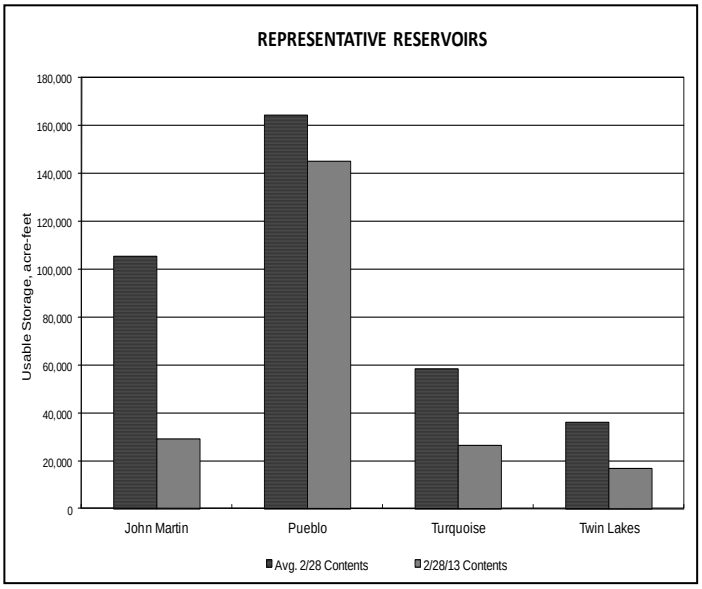
The SWSI value for the month was -3.3. Snowpack accounts for the majority of the SWSI in the Arkansas Basin and was very low with a PN of 6. Water year cumulative precipitation, the other major component of the Arkansas Basin's winter SWSI, was also very low (PN of 4).

Reservoir storage in the Pueblo Winter Water Program totaled 60,113 acre-feet as of the end of February. This storage amount is lower than last year's storage to date (only 53% of last year) and represents 48% of the past five-year average. Conservation storage in John Martin Reservoir has accumulated 4,453 acre-feet versus 15,070 acre-feet as of the end of February last year (30%).

Lack of availability of municipal leased water and expected reductions in yield of other replacement sources have caused each major well association to submit replacement plans at the end of February that project from zero to 30% pumping allocations







Basinwide Conditions Assessment

The SWSI value for the month was -1.0. Flow at the gaging station Rio Grande near Del Norte averaged 131 cfs (72% of normal). The Conejos River near Mogote had a mean flow of 36 cfs (71% of normal). Flow to the state line was 63% of normal due to some freezing of ice in and around the river channel.

Temperatures were slightly below normal in the San Luis Valley during February. Alamosa received only 0.15 inches of precipitation during the month, 0.11 inches below average.

Outlook

Snowpack conditions throughout the upper Rio Grande basin roughly followed the normal gain seen during February with the exception of the Conejos River and its tributaries where snowfall was scarce. Unfortunately, the whole upper Rio Grande basin is tracking at roughly 20% to 30% below normal snowpack since mid-December.

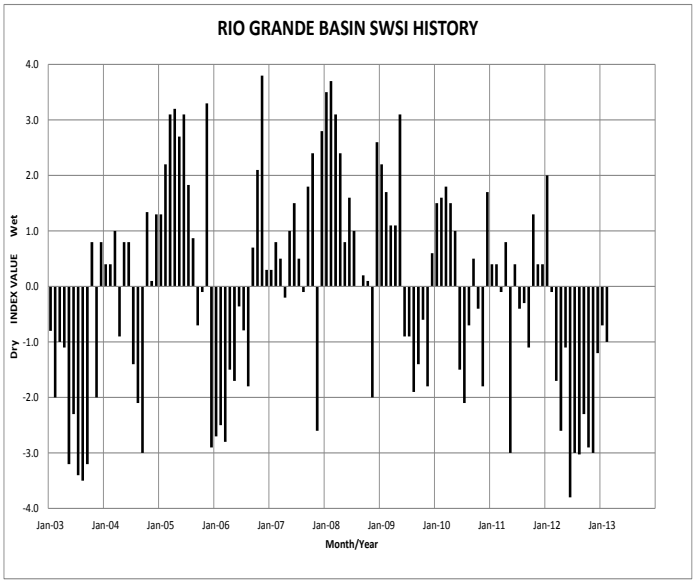
Recent NRCS stream flow forecasts are calling for well below average runoff in the upper Rio Grande basin this year. The expected April through September runoff is 70 percent of normal for the Rio Grande near Del Norte and 71 percent for the Conejos River near Mogote. At the northern end of the San Luis Valley, the Saguache Creek runoff is predicted to be 69 percent of normal. The Sangre de Cristo Range is in very poor shape, forecasted runoff for 2013 is 33 to 63% of normal.

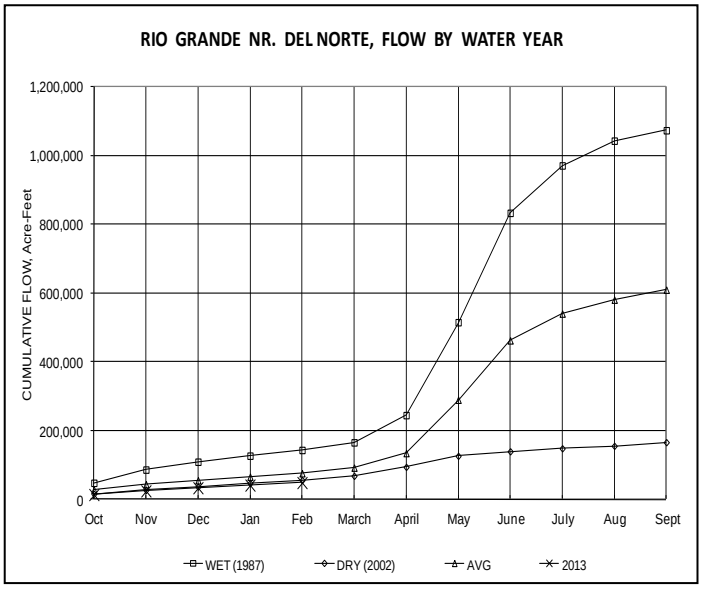
The NOAA three-month outlook suggests this basin and most of Colorado should expect above normal temperatures and below normal precipitation for the April through June period.

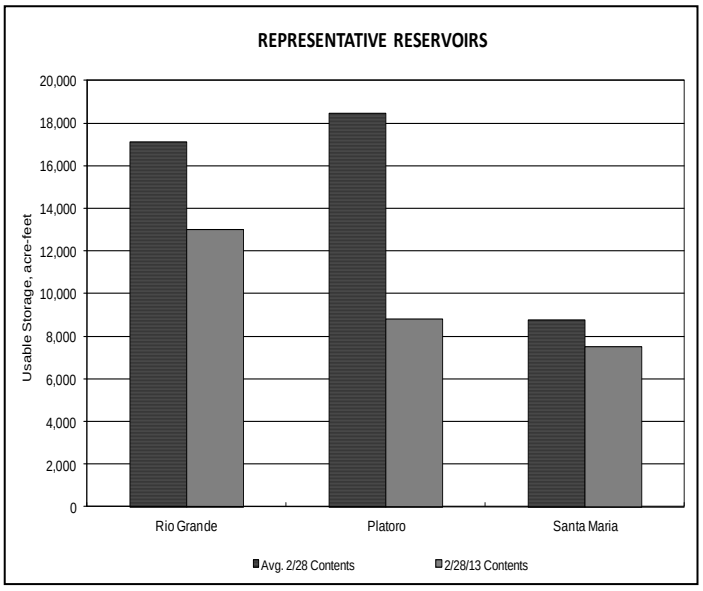
Administrative/Management Concerns

The 74th annual meeting of the Rio Grande Compact Commission will be held in Alamosa in McDaniel Hall on the Adams State University campus on Thursday, March 21, 2013. The public is invited to attend. The meeting is scheduled to start at 10:00 a.m.

If the current trend of warm and dry conditions persists, the Division Engineer expects early calls for irrigation water this year. Diversions from the Rio Grande and Conejos will commence around the first of April.

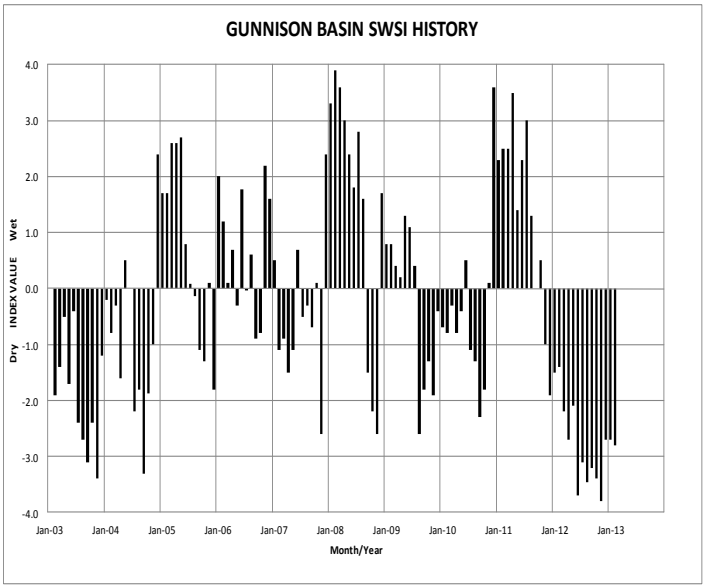






Basinwide Conditions Assessment

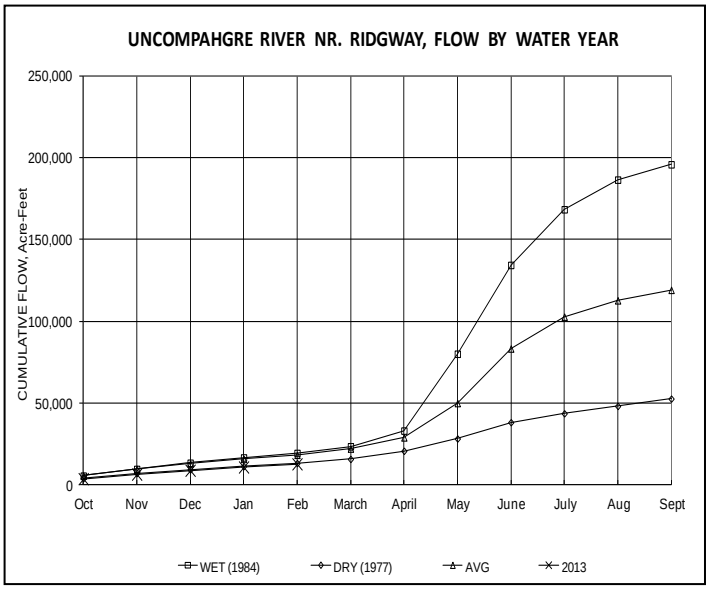
The SWSI value for the month was -2.8. February returned to a drier than average pattern everywhere in the basin except the Uncompahgre Plateau, which is the only Snotel in the Gunnison basin reporting greater than average snow water equivalent (SWE) at 103%. Overall snowpack conditions in the basin fell to 72% of average on March 1st. More unsettling is that the basin as a whole had approximately 2 inches lower SWE than on March 1, 2012. The Cochetopa Creek, Tomichi Creek and Taylor River drainages improved slightly, but continue to contain the worst conditions in the basin, with only 60% of average SWE above Taylor Park Reservoir. Good news is that although the Park Reservoir Snotel site on the Grand Mesa is reporting 70% of average, measurements performed by the Division of Water Resources indicate it is reporting 2 inches less SWE than what is actually there, which would bring it to closer to 78%. Grand Junction reports of areas on the west end of the Grand Mesa are even better at close to 90% of average. The Uncompahgre River above Ridgway Reservoir and the San Miguel are in better condition at 79% of average.



Outlook

With average snow the remainder of the season, the NRCS predicts that the Gunnison basin snowpack will reach 75% of average peak, but the probable maximum has decreased to 90% of average while the probable minimum is now 65% of average.

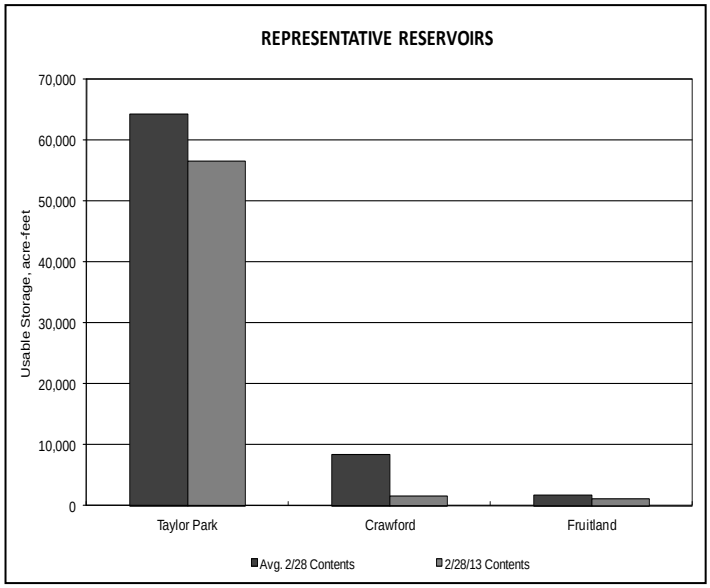
Colorado Basin River Forecast Center (CBRFC) streamflow forecasts within the Gunnison basin range from 47% on Tomichi Creek to 85% on Surface Creek. Most of the forecasts are lower than the current snowpack percent of average because of the dry soil moisture conditions going into winter.



Administrative/Management Concerns

The April-July inflow forecast for Blue Mesa Reservoir was reduced to 360,000 acre-feet (53% of average). It appears that drought rules will apply for determining endangered fish base flows and Black Canyon reserved water right peaks. The target peak flow in the Black Canyon would be less than 768 cfs, and the target base flow at Whitewater would be 900 cfs instead of 1050 cfs. Blue Mesa releases continue to generally match outflows, preventing the reservoir from gaining much storage volume and it currently sits 30 feet below the same time last year. Blue Mesa is predicted to reach a maximum level 48 feet below the spillway (55% active capacity) and Taylor Park will only fill to 76% of capacity.

The Upper Gunnison River Water Conservancy District (UGRWCD) is working with the Uncompahgre Valley Water Users (UVWUA), the Bureau of Reclamation (USBR), and Tri-County Water Conservancy District (TCWCD) to purchase up to 6500 acre-feet of water out of Ridgway Reservoir (managed by TCWCD) and the Aspinall Unit, in order to provide additional water to the UVWUA and forestall an early (April & May) Gunnison Tunnel call on the entire Upper Gunnison basin. An agreement for this one year sale has not been finalized, but would allow irrigators in the Upper Gunnison to get water on their pastures in April and May when it is available.

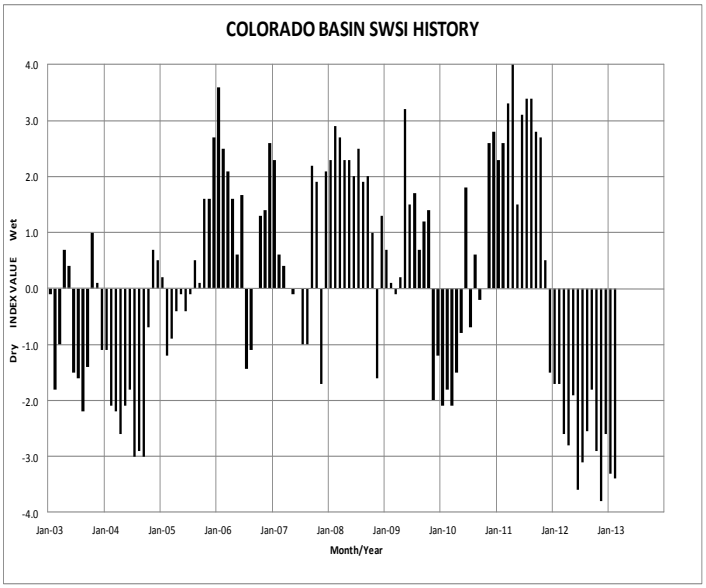


Pubic Use Impacts

Temperatures in February remained 3 to 5 degrees below average, but moderated allowing the Redlands Power Canal to remove the ice from their ditch and begin taking water again.

Basinwide Conditions Assessment

The SWSI value for the month was -3.4. The snowpack PN declined this month to a value of 10.

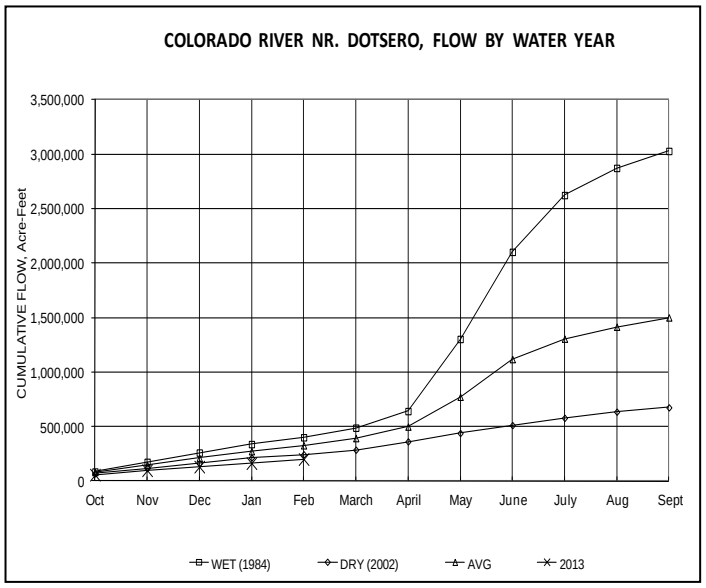


Outlook

Warmer temperatures have alleviated ice-affected conditions for most gages on the Eagle and Roaring Fork Rivers. Flows will continue to run significantly below average through March. Williams Fork and Green Mountain Reservoirs releases should remain unchanged through March. Storms throughout February have done little to improve snowpack with the Upper Colorado River and Roaring Fork Basin snowpack reporting 71 and 75 percent of average snow water equivalent respectively as of March 1st. The western Colorado forecast through the month of March again calls for a below average chance of precipitation.

Administrative/Management Concerns

Grand Valley Irrigators will begin canal diversions the final week of March. Shoshone Power plant will operate both turbines at capacity related to river flows through March. Green Mountain Reservoir releases were reduced slightly due to Dillon Reservoir release reductions, but will maintain a release rate of 150 cfs. Williams Fork and Ruedi Reservoirs will maintain releases of 41-45 cfs.

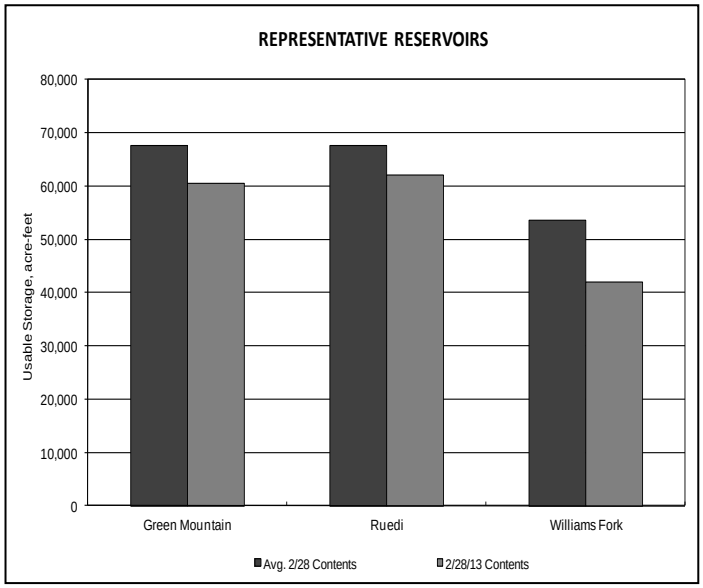


Public Use Impacts

The rafting industry reported a state-wide 17 percent drop in overall user days last season. However, there was significant variation among independent tributaries. The upper Colorado River, including Glenwood Canyon/Shoshone rapid, actually increased by approximately 7000 user days between 2011 and 2012, while the upper Roaring Fork decreased significantly by 6500 to just over 100 user days.

A study assessing flows in the Roaring Fork and Crystal rivers performed by S.K. Mason Environmental for Public Counsel of the Rockies, Friends of Rivers and Renewables, and the Roaring Fork Conservancy, has identified segments of both rivers "running significantly below the levels…necessary to protect the environment". The CWCB holds instream rights for environmental protection junior to nearly all transmountain and irrigation water rights which have reduced flow in these segments for decades.

The projected inflow to Lake Powell for water year 2013 is 5.81 maf which is 54% of the 30 year average beginning 1980. This compares to the water year 2012 inflow volume of 4.91 maf and water year 2011 inflow of 16 maf. Removal of 70,000 cubic yards of rock/dirt from the Castle Rock Cut boat launch area will begin in March, to accommodate boaters due to low lake levels.



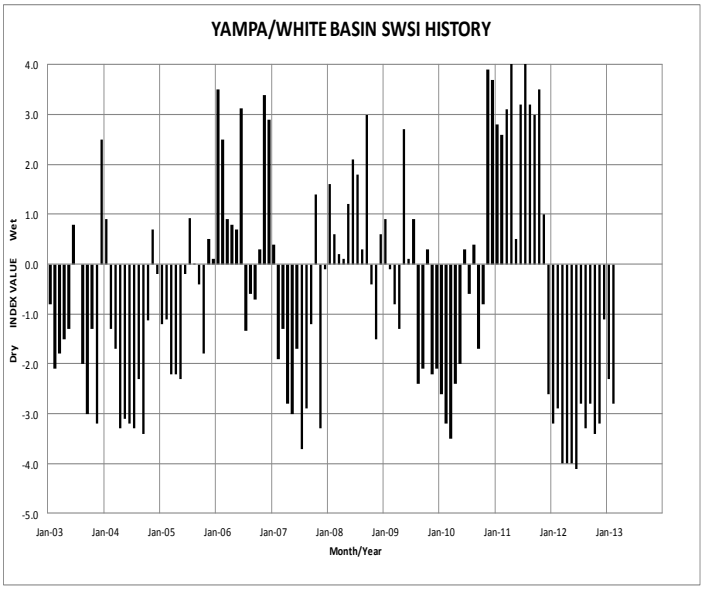
Basinwide Conditions Assessment

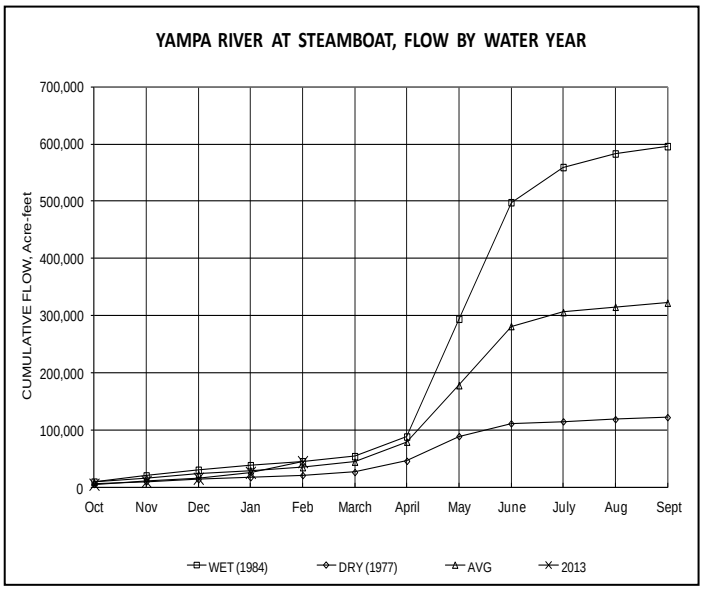
The SWSI value for the month was -2.8. February precipitation was well below average in the Yampa, White, and North Platte River basins. Precipitation for the month, as measured at the SNOTEL sites operated by NRCS, was reported at 77% of average for the Yampa, White, and North Platte River basins. Total precipitation for the water year as a percent of average to date in the combined basins at the end of February was 78%, the highest in the state.

The snow water equivalent (SWE) as of February 28 was 75% of average for the North Platte River basin and 76% of average for the Yampa River basin and White River basin.

NRCS predicts well below average spring and summer streamflows in the Yampa, White, and North Platte River basins. The latest runoff forecasts from the NRCS for the April through July period are 38% of average for the North Platte River near Northgate, 58% of average for the Yampa River near Maybell, 51% of average for the Little Snake River near Lily, and 61% of average for the White River near Meeker.

All Division 6 stream gages should be re-opened by mid-April. Note: The graphed Yampa River streamflow for February is likely overestimated due to ice.





Outlook

As of February 28th Fish Creek Reservoir was storing approximately 1,460 AF, 35% of capacity. Yamcolo Reservoir was storing 4,366 AF, 46% of capacity. Elkhead Creek Reservoir was storing 16,983, 69% of capacity. Stagecoach Reservoir was storing 28,900 AF, 79% of capacity.

Water stored in Fish Creek Reservoir is used primarily for municipal purposes, Yamcolo Reservoir for irrigation purposes, and Elkhead Creek Reservoir for municipal, industrial, recreational, and fish recovery releases. Stagecoach Reservoir is primarily used for recreation though a significant amount of stored water is allocated for municipal, industrial, irrigation and augmentation uses.

Public Use Impacts

Consistent February and early March snowfall helped Steamboat Ski Resort continue to have good conditions with a 62 inch base and 294 inches of snowfall since late October.

Stagecoach Reservoir is covered by approximately 16 inches of ice with 6-12 inches of snow on top. Fishing is reported as very good in most of the prime fishing locations and great at the tailwaters.

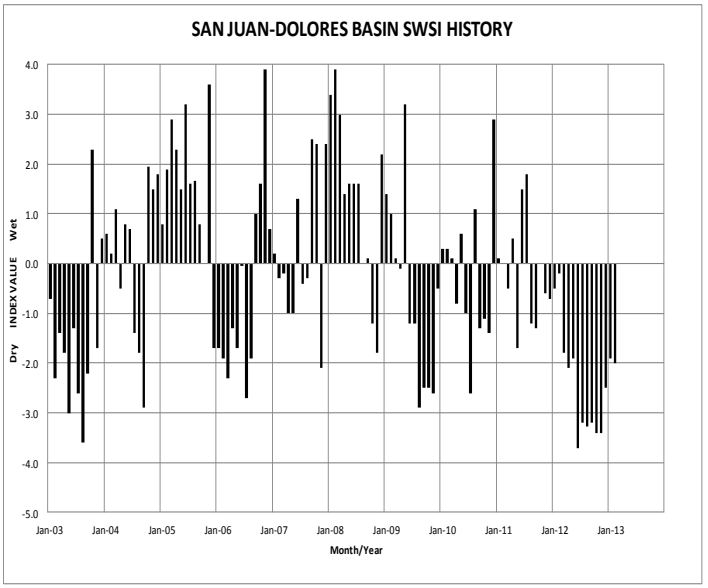
Steamboat Lake is reporting ski trails open with regular grooming. There is about 36 inches of snow on the ground. The Marina continues to be a great spot for ice fishing.

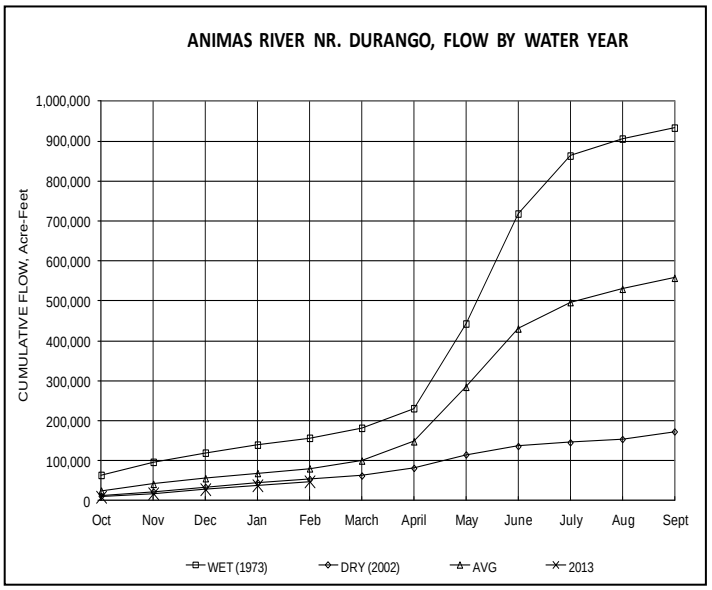
Basinwide Conditions Assessment

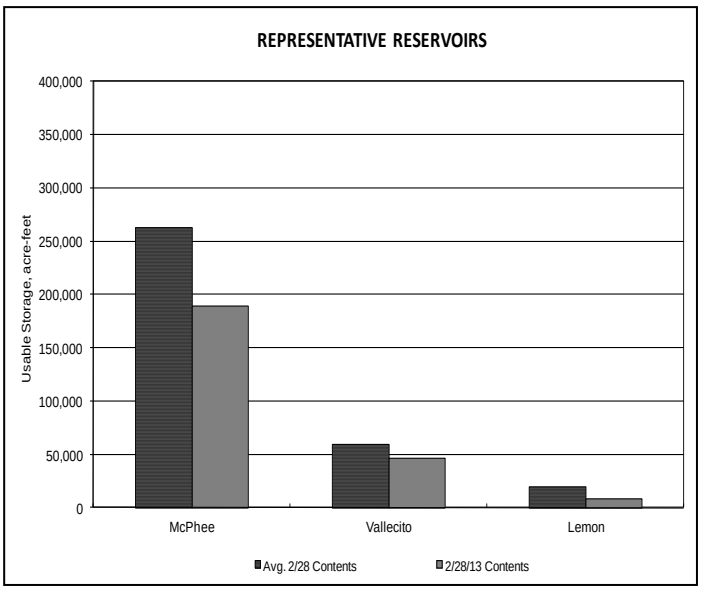
The SWSI value for the month was -2.0. Flow at the Animas River at Durango was estimated to average 157 cfs (76% of average). The flow at the Dolores River at Dolores was estimated to average 31 cfs (55% of average). The La Plata River at Hesperus was estimated to average 3.4 cfs (46% of average). At the end of the month Vallecito Reservoir contained 46,010 acre-feet compared to its average content of 54,952 acre-feet (84% of average). McPhee Reservoir was up to 188,976 acre-feet compared to its average content of 268,095 (70% of average), while Lemon Reservoir was up to 8,180 acre-feet as compared to its average content of 20,246 acre-feet (40% of average).

Precipitation in Durango was 1.06 inches for the month, 65% of the 30-year average of 1.63 inches. Precipitation to date in Durango, for the water year, is 4.68 inches, 56% of the 30-year average of 8.35 inches. The average high and low temperatures for the month of February in Durango were 40^{o} and 13^{o}. In comparison, the 30-year average high and low for the month is 45^{o} and 19^{o}.

Precipitation (1.06-inches) was below average for February in Durango. There are 68 years out of 119 years of record where there was more precipitation than this year. The flows on the Animas River were below average this February. There were 80 out of 103 years of record where the total flow past the Durango stream gauge was more than this year. The other basins within the division did not fare much better. The NRCS is reporting snow-water-equivalent of 81% of average at the end of the month which was slightly lower than the 88% of average reported at the end of January.







ADDITIONAL INFORMATION ABOUT COLORADO SWSI CALCULATIONS - Mar-13

The SWSI for each basin is based on probability of nonexceedance (PN) curves for each of three components: reservoir storage, snowpack, and water year cumulative precipitation. The weighting, or importance, for each component in the SWSI calculation varies by basin as shown below.

Winter SWSI Component Weights

Basin	Reservoir Storage	Snowpack	Water Year Cumulative Precipitation
South Platte	0.55	0.27	0.18
Arkansas	0.15	0.51	0.34
Rio Grande	0.05	0.63	0.32
Gunnison	0.10	0.54	0.36
Colorado	0.15	0.51	0.34
Yampa/White	None	0.60	0.40
San Juan/Dolores/Animas	0.10	0.54	0.36

The PN curves were developed in the 1980s and are generally based on a period of record of 1950-1979. As reservoir storage (and streamflow for the summer SWSI) is affected by human action, the reservoir storage PN curves may not reflect current practices for reservoir operation. DWR and NRCS are currently considering options for modifying the SWSI to address this and other concerns about its computation.

SWSI BY HUC FROM NRCS NATIONAL WATER & CLIMATE CENTER

Included below is the SWSI generated by the NRCS National Water and Climate Center, based on data as of March 1. The SWSI below is a predictive indicator of surface water availability for the spring and summer water use seasons. It is calculated by combining reservoir storage with forecasts of spring and summer streamflow, based on current snowpack and other hydrologic variables. The scale of -4 to +4 is the same as shown on Page 1. The Upper Arkansas Basin reflects extreme drought due to the drawdown of water storage in Homestake Reservoir for maintenance.