

# Colorado Basin Outlook Report April 1, 2012



# 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.

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# Colorado

## Water Supply Outlook Report

### April 1, 2012

#### Summary

March was a very dry month across Colorado, marking the fourth consecutive month of below average snowpack and year to date precipitation totals for the state. Statewide snowpack percentages declined dramatically after a brief boost on March 1, leaving the state with the lowest snowpack percentage reported since 2002 and the second lowest in the entire 45 year historical record. Forecasts for spring and summer streamflow volumes are well below average across the entire state. While many water users may have a feeling of déjà vu remembering conditions in 2002, reservoir storage provides a little optimism going into this runoff season. Most of the state's major river basins are reporting above average reservoir storage with the notable exceptions of the Upper Rio Grande and Arkansas basins. Judicious use of existing supplies will be critical in minimizing impacts and there is always the potential for unexpected late season snowfall and above average spring precipitation to help ease impacts.

#### Snowpack

Colorado's statewide snowpack percentage took a huge hit during March. The current readings are now only 52 percent of average down 29 percentage points from the report on March 1. The current snowpack is just 46 percent of last year's April 1 snowpack report. Not since the memorable drought year of 2002, when the state also had an April 1 snowpack that was 52 percent of average, has conditions been this poor. Exacerbating matters is the fact that by this date, nearly 100 percent of the seasonal snowpack has accumulated in an average year. Currently, the lowest snowpack percentages occur in the Colorado and combined Yampa and White River basins which are 49 and 47 percent of average respectively. The combined San Juan, Animas, Dolores, and San Miguel basins are reporting only 54 percent of average. This past month, the Upper Rio Grande basin saw its snowpack percentage decrease sharply from last month's reading of 83 percent of average and is currently only 53 percent. The state's best snowpack percentage occurs in the North Platte basin which is reporting a snowpack at 57 percent of average, the Arkansas and Gunnison basins follow close behind, both reporting 56 percent of average. All basins have percentages well below those reported last year at this time; ranging from only 38 percent of last year in the Colorado basin, to a high of 69 percent of last year in the Upper Rio Grande basin. During March, warm temperatures induced snowmelt at a number of SNOTEL sites. Across southern Colorado, some lower elevation sites have already melted out and earlier season melt is even occurring at the higher elevation sites. At current melt rates; many sites will be completely melted out about a month earlier than normal.

#### Precipitation

Precipitation totals for March, measured at NRCS SNOTEL sites, were well below average across the state. Statewide precipitation for the month was a dismal 29 percent of average. The South Platte was the driest basin with precipitation totals at only 17 percent of average. The Arkansas and Upper Rio Grande basins recorded the highest monthly totals in the state at 41 and 40 percent of average respectively. The remaining basins ranged from 27 percent of average in the Colorado basin to 36 percent of average in the Gunnison basin. Water year precipitation totals have dropped to below average in all basins but year to date percentages are still slightly skewed by the abnormally wet conditions in October. Basin wide water year totals range from only 70 percent of average in the Colorado basin, to a high of 91 percent of average in the Upper Rio Grande basin. Water year to date precipitation for the state is 78 percent of average.

## Reservoir Storage

Statewide reservoir storage was reported to be 108 percent of average at the end of March. The combined Yampa and White River basins boast the highest storage amounts in the state, currently storing 128 percent of average volumes for this date. Storage volumes in the other major basins range from only 73 percent of average in the Upper Rio Grande basin, to 122 percent of average in the Gunnison River basin. Statewide 2012 storage volumes are slightly above where they were this time last year. Only the Arkansas and Upper Rio Grande basins are reporting volumes less than those reported last year. The Arkansas basin average storage is currently at only 86 percent of average and 95 percent of last year's amounts. Storage in the Upper Rio Grande basin continues to be the lowest in the state, at only 73 percent of average. Reservoirs in the state are currently at 60 percent of capacity.

## Streamflow

Colorado's water users can anticipate very low streamflow volumes this summer. Due to extremely poor snowpack conditions spring and summer streamflow volumes may approach the minimum volumes on record. Projected inflow into Dillon Reservoir is only 60 percent of average and forecasts elsewhere in the Colorado basin are slightly lower. Clear Creek at Golden is expected to flow at 66 percent of average this season. The forecast for the Cache la Poudre River is only 53 percent of average. The Gunnison River near Gunnison is only expected to see volumes at 45 percent of average. All of these forecasts assume normal precipitation amounts throughout the April to July forecast period. Should the current weather trend continue into spring and summer, these forecasts will continue to decline even further.

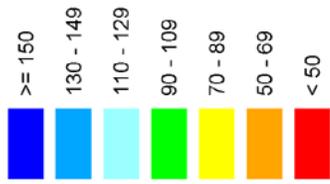
## Special Note on Interpreting Forecasts

According to the National Water and Climate Center (NWCC), "a water supply forecast is a prediction of streamflow volume that will flow past a point on a stream during a specified season, typically in the spring and summer. These forecasts are given not as a single number, but as a range of numbers to reflect risk and forecast uncertainty. Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all forecasts are for streamflow volumes that would occur naturally without any upstream influences."

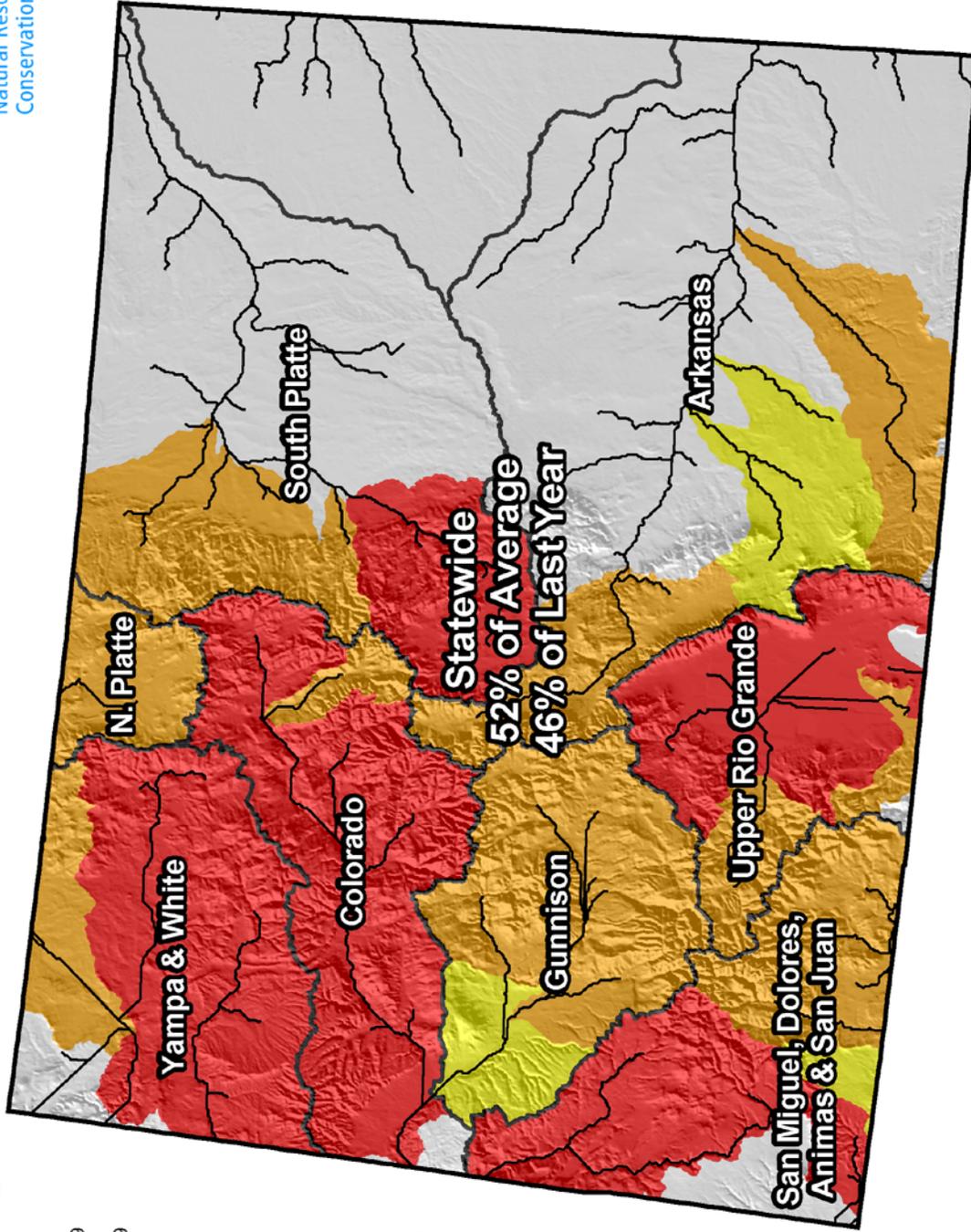
The forecasts we typically emphasize in this report are the 50 percent exceedance probability forecasts because they are in the middle of the range of forecasts with 50 percent chance that actual volumes will be above or below the predicted volume. The 50 percent exceedance forecasts assume that typical weather patterns will prevail into the forecast season. In a water year such as this one, when conditions have been anything but typical, it is important to pay attention to the other forecasts provided. If the dry conditions that occurred in March continue into the rest of spring and summer it may be prudent to use the 70 or 90 percent exceedance forecasts for management purposes this season. If we receive late season snowfall or above average precipitation this spring, actual streamflow volumes may be more in line with the 50 or 30 percent exceedance forecasts.

# Colorado Snowpack Map

## Percent of Average

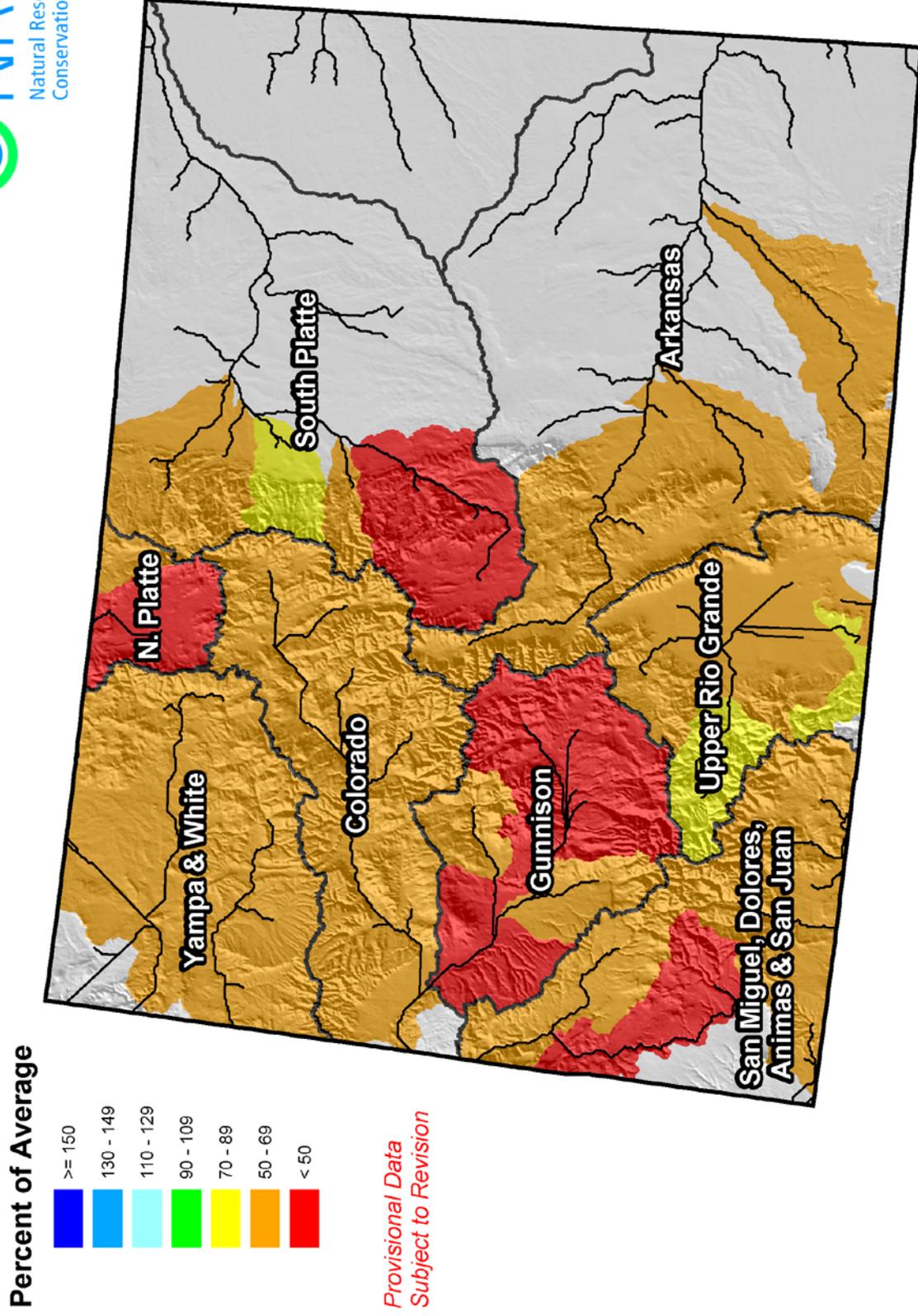


*Provisional Data  
Subject to Revision*



Current as of April 1, 2012

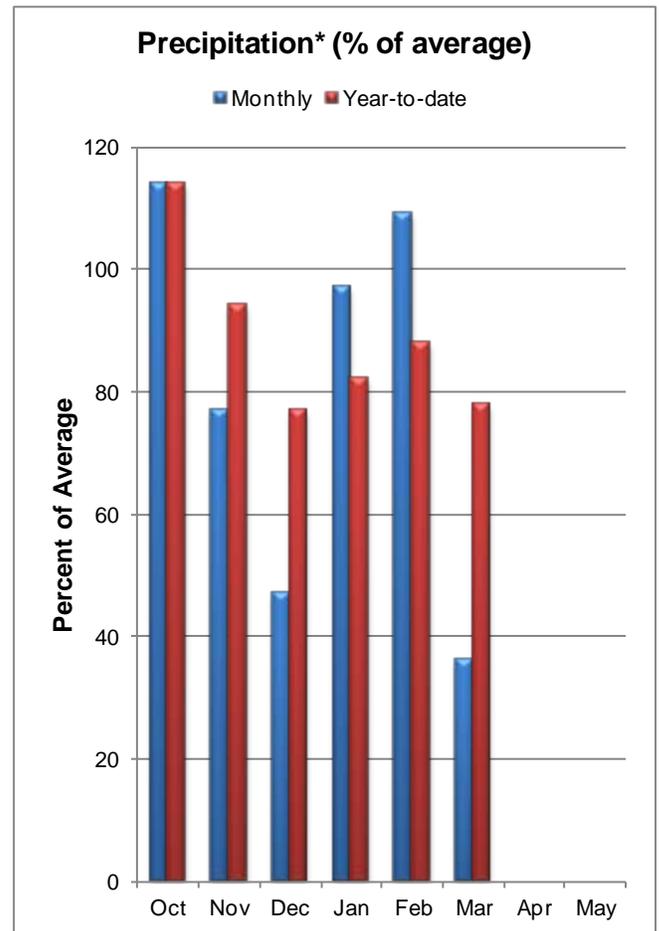
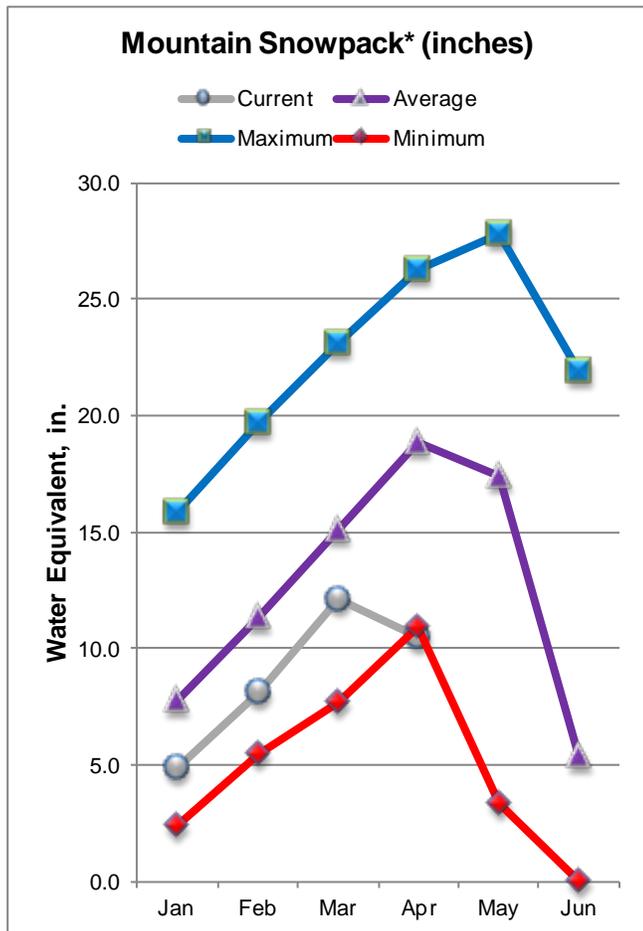
# Colorado Streamflow Forecast Map



Current as of April 1, 2012

# GUNNISON RIVER BASIN

## as of April 1, 2012



\*Based on selected stations

In the last few weeks of March the snowpack in the Gunnison River basin began melting. April 1 measurements show the basin's snowpack at just 56 percent of average. If April proves to be as warm and dry as March was, what little snow is left will rapidly disappear. Sub-basin snowpack's all decreased significantly from what was reported on March 1. The Uncompahgre watershed saw the largest drop from 88 percent of average on March 1 to 56 percent on April 1. The other sub-basins snowpack's current reports ranged from 70 percent of average in the Surface Creek drainage to 57 percent of average reported for the Upper Gunnison.

In March the basin received even less precipitation than the meager totals recorded in December of this water year. Precipitation measured at SNOTEL sites in the Gunnison basin was a just 36 percent of average for the month. Year to date precipitation totals dropped from 88 percent of average on March 1 to 78 percent of average as of April 1. Reservoir storage in the basin continues to track along at above average with reservoirs storing 808,000 acre-feet, 145,000 acre-feet more than is typically stored this time of year. Current water supply forecasts have dropped an average of 20 percent from those issued last month. At this point well below average runoff volumes are expected at all forecast points in the basin, ranging from 36 percent of average expected for Tomichi Creek at Gunnison to 67 percent of average for Ridgway Reservoir Inflow.

GUNNISON RIVER BASIN  
Streamflow Forecasts - April 1, 2012

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Taylor Park Reservoir Inflow (2)	APR-JUL	36	45	52	51	59	71	103
Slate R nr Crested Butte	APR-JUL	38	43	47	53	51	56	89
East R at Almont	APR-JUL	63	77	88	46	99	118	192
Gunnison R near Gunnison (2)	APR-JUL	116	150	175	45	200	245	390
Tomichi Ck at Sargents	APR-JUL	9.1	12.4	15.0	47	18.0	23	32
Cochetopa Ck bl Rock Ck nr Parlin	APR-JUL	3.6	5.6	7.3	42	9.4	13.0	17.3
Tomichi Ck at Gunnison	APR-JUL	13.6	22	29	36	38	53	81
Lake Fk at Gateview	APR-JUL	57	69	78	62	88	103	126
Blue Mesa Reservoir Inflow (2)	APR-JUL	225	285	330	46	375	455	720
Paonia Reservoir Inflow (2)	MAR-JUN	37	48	56	56	65	80	100
	APR-JUN	29	40	48	51	57	72	95
	APR-JUL	26	37	46	45	56	72	102
NF Gunnison R nr Somerset (2)	APR-JUL	113	137	155	51	174	205	305
Surface Ck at Cedaredge	APR-JUL	6.8	8.6	10.0	59	11.5	14.0	17.1
Ridgway Reservoir Inflow (2)	APR-JUL	46	59	68	67	78	94	102
Uncompahgre R at Colona (2)	APR-JUL	48	67	82	59	98	125	139
Gunnison R nr Grand Junction (2)	APR-JUL	455	605	720	46	845	1050	1560

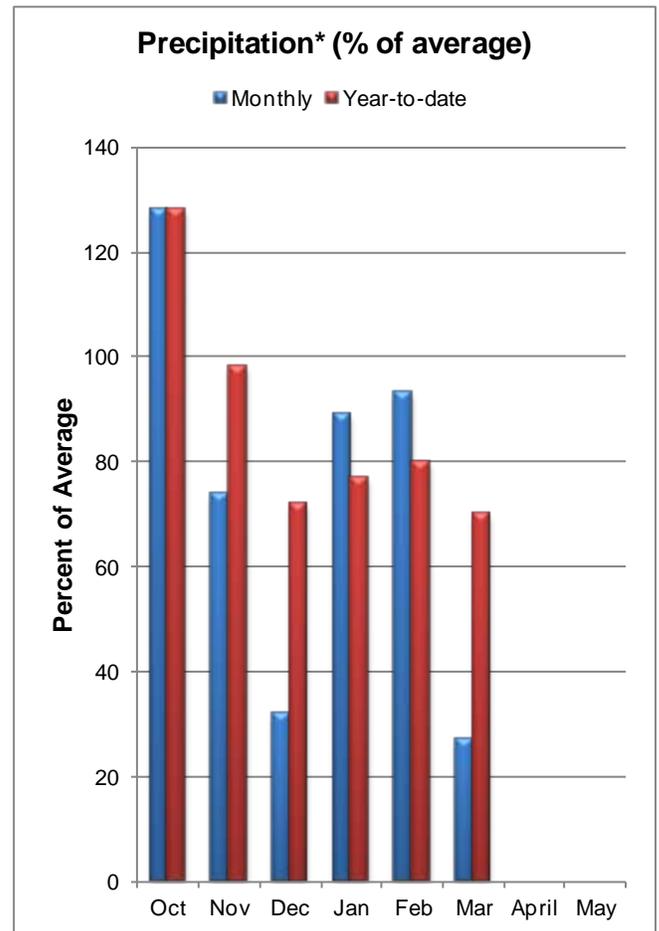
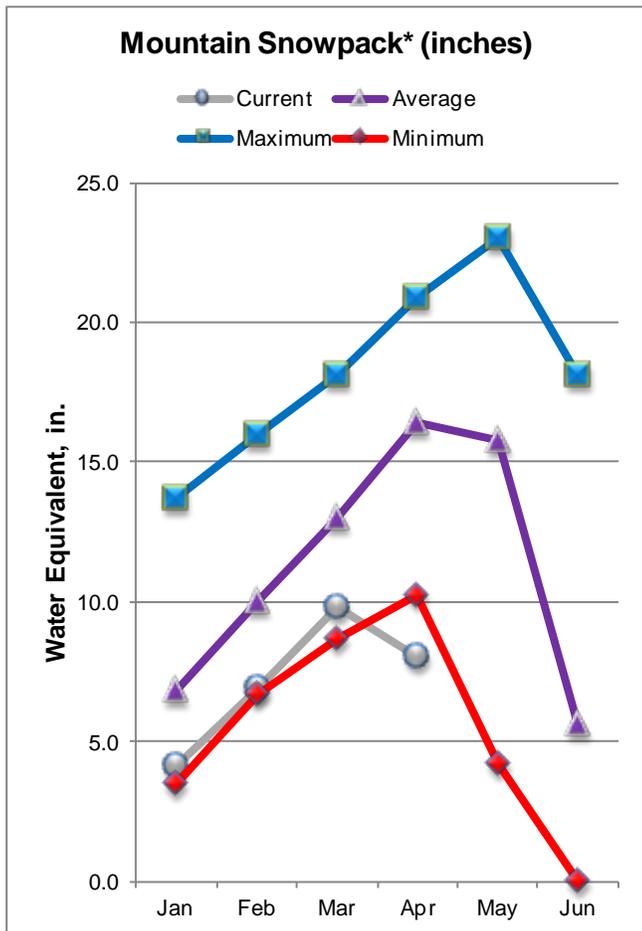
GUNNISON RIVER BASIN Reservoir Storage (1000 AF) - End of March					GUNNISON RIVER BASIN Watershed Snowpack Analysis - April 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BLUE MESA	830.0	538.9	494.9	404.5	UPPER GUNNISON BASIN	15	48	57
CRAWFORD	14.0	9.0	7.9	10.8	SURFACE CREEK BASIN	3	57	70
FRUITGROWERS	3.6	3.6	3.6	4.0	UNCOMPAHGRE BASIN	4	54	56
FRUITLAND	9.2	3.0	2.3	2.5	TOTAL GUNNISON RIVER BASIN	19	49	56
MORROW POINT	121.0	114.0	112.5	113.6				
PAONIA	15.4	1.0	0.7	4.6				
RIDGWAY	83.0	70.9	64.0	60.9				
TAYLOR PARK	106.0	67.2	73.0	61.9				

\* 90%, 70%, 50%, 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.
- (3) - Median value used in place of average.

# UPPER COLORADO RIVER BASIN as of April 1, 2012



\*Based on selected stations

It seems that snow accumulation in the Colorado River basin may have already reached its peak in early March. The paltry snowpack the basin had accumulated this winter has diminished by 26 percent since the beginning of March. As of April 1, snow surveys reported the snowpack in the basin to be at 49 percent of average, this is the lowest April 1 snowpack percentage on record in the basin. Snowpack percentages in the sub-basins are quite variable, ranging from a high, 70 percent of average, report for the Plateau Creek drainage to just 47 percent of average recorded in the Roaring Fork and Upper Colorado basins.

March precipitation in the basin was just 27 percent of average making this the fifth month in a row that precipitation has been below normal. The lack of moisture in March reduced total water year precipitation in the basin from 80 percent of average on March 1 to 70 percent of average measured on April 1. Fortunately the combined reservoir storage levels in the basin are 20 percent above average and 6 percent greater than they were this time last year. Current water supply forecasts have decreased significantly from those issued last month. The largest decrease was for Muddy Creek below Wolford Mountain Reservoir, which is down 33 percentage points to just 42 percent of average as of April 1. Elsewhere in the basin spring and summer runoff is expected to be range from 47 to 67 percent of average

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UPPER COLORADO RIVER BASIN  
Streamflow Forecasts - April 1, 2012

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Lake Granby Inflow (2)	APR-JUL	102	130	150	67	172	205	225
Willow Ck Reservoir Inflow (2)	APR-JUL	11.9	18.6	24	47	30	40	51
Williams Fk Reservoir Inflow (2)	APR-JUL	38	48	55	58	63	75	95
Dillon Reservoir Inflow (2)	APR-JUL	68	86	100	60	115	138	167
Green Mountain Reservoir Inflow (2)	APR-JUL	116	147	170	61	195	235	280
Muddy Ck bl Wolford Mtn Resv (2)	APR-JUL	12.4	19.4	25	42	31	42	60
Eagle R bl Gypsum (2)	APR-JUL	118	153	180	54	210	255	335
Colorado R nr Dotsero (2)	APR-JUL	485	645	770	54	905	1120	1440
Ruedi Reservoir Inflow (2)	APR-JUL	53	66	75	53	85	100	141
Roaring Fk at Glenwood Springs (2)	APR-JUL	275	335	380	54	425	500	710
Colorado R nr Cameo (2)	APR-JUL	855	1100	1280	53	1470	1790	2420

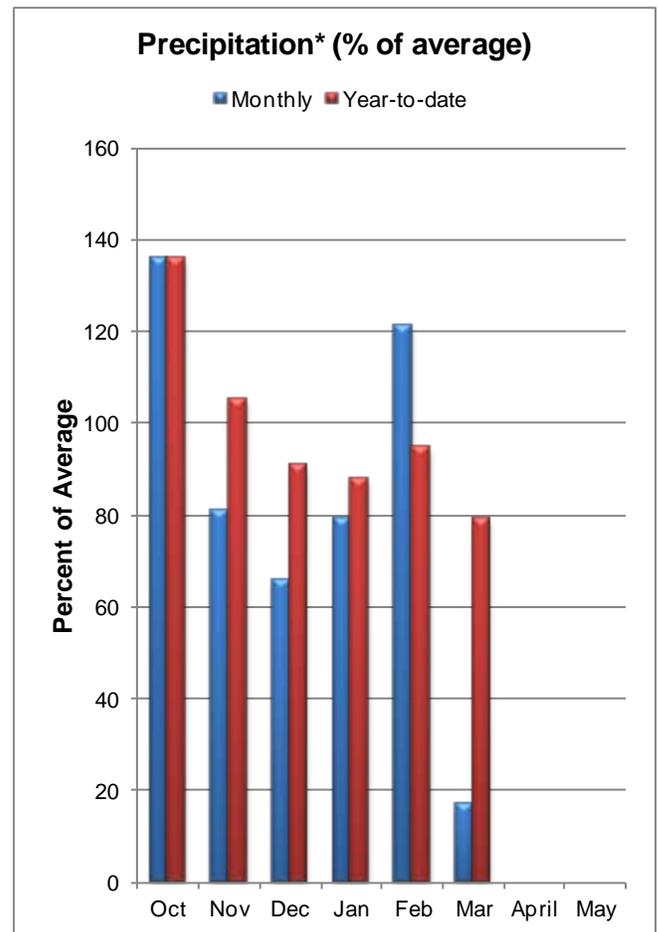
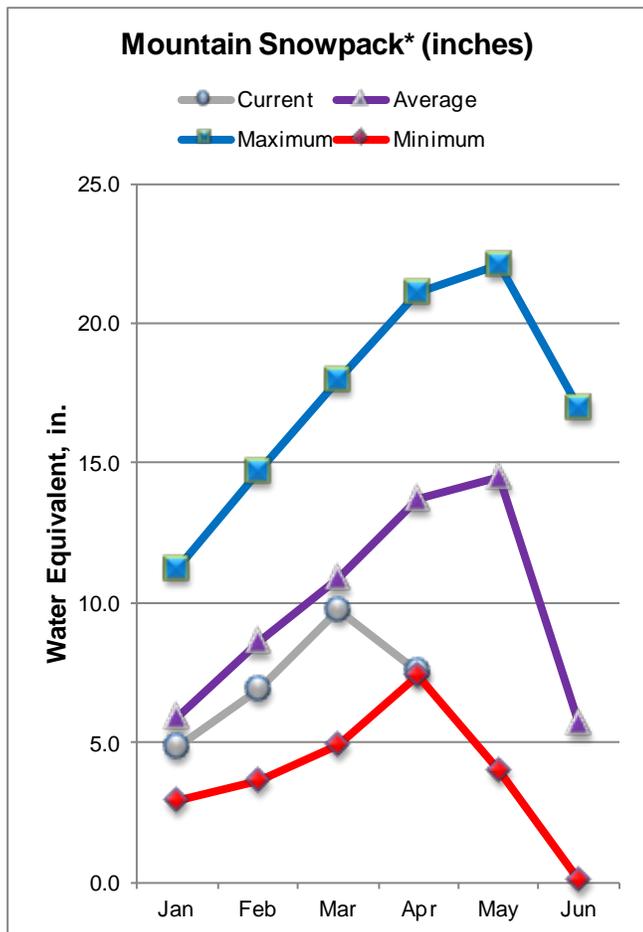
UPPER COLORADO RIVER BASIN Reservoir Storage (1000 AF) - End of March					UPPER COLORADO RIVER BASIN Watershed Snowpack Analysis - April 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DILLON	254.0	243.1	221.8	214.5	BLUE RIVER BASIN	9	39	53
LAKE GRANBY	465.6	338.2	320.6	263.7	UPPER COLORADO RIVER BASI	36	37	47
GREEN MOUNTAIN	146.8	72.9	59.4	59.8	MUDDY CREEK BASIN	4	45	63
HOMESTAKE	43.0	0.5	23.4	22.5	PLATEAU CREEK BASIN	3	57	70
RUEDI	102.0	71.3	64.7	61.9	ROARING FORK BASIN	8	39	47
VEGA	32.9	18.8	14.2	13.1	WILLIAMS FORK BASIN	4	40	51
WILLIAMS FORK	97.0	82.4	79.5	54.8	WILLOW CREEK BASIN	4	36	60
WILLOW CREEK	9.1	6.6	5.7	6.8	TOTAL COLORADO RIVER BASI	47	39	49

\* 90%, 70%, 50%, 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.
- (3) - Median value used in place of average.

# SOUTH PLATTE RIVER BASIN as of April 1, 2012



\*Based on selected stations

The South Platte River basin's snowpack, while still above the statewide average, saw the largest decrease from conditions reported at the beginning of March. The basin's snowpack dropped 34 percentage points from 89 percent of average on March 1 to 55 percent of average on April 1. Unless the basin benefits from late season storms this spring, snow accumulation in the South Platte River basin has likely already peaked. The sub-basin's snow survey results range from only 49 percent of average in the Upper South Platte watershed, to 60 percent of average in the Saint Vrain watershed. If warm temperatures and lack of snowfall continue this spring, the snowpack could disappear as many as 45 days earlier than the typical melt out date in some locations.

Precipitation received in the basin during March was a bleak 17 percent of average, the lowest percentage in the state. Precipitation for the water year is now only 79 percent of average. Combined reservoir storage was a healthy 104 percent of average at the end of March. All streamflow forecasts for the basin have decreased from last month's predictions. They now range from only 45 percent of average for the Inflow to Elevenmile Canyon Reservoir to 73 percent of average for Boulder Creek near Orodell. It is suggested that if dry and warm conditions persist in the basin this spring that it may be prudent for water users to use the 70 or 90 percent exceedance forecasts for management purposes.

SOUTH PLATTE RIVER BASIN  
Streamflow Forecasts - April 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<==== Drier =====		Future Conditions		====>> Wetter =====>>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Antero Reservoir Inflow (2)	APR-JUL	5.9	8.6	11.1	66	14.4	21	16.8
	APR-SEP	6.8	10.1	13.3	61	17.5	26	22
Spinney Mountain Res Inflow (2)	APR-JUL	14.1	20	26	46	33	48	56
	APR-SEP	16.5	24	32	46	42	62	69
Elevenmile Canyon Res Inflow (2)	APR-JUL	13.7	20	26	45	34	49	58
	APR-SEP	15.7	24	32	44	43	65	72
Cheesman Lake Inflow (2)	APR-JUL	26	40	52	46	68	102	114
	APR-SEP	32	49	65	46	86	131	140
South Platte R at South Platte (2)	APR-JUL	44	69	94	46	128	205	205
	APR-SEP	54	86	118	46	162	260	255
Bear Ck ab Evergreen	APR-JUL	5.4	8.5	11.6	60	15.8	25	19.3
	APR-SEP	7.5	11.8	16.0	64	22	34	25
Bear Ck at Morrison	APR-JUL	5.4	9.4	13.7	55	19.9	34	25
	APR-SEP	7.5	12.9	18.6	60	27	46	31
Clear Ck at Golden	APR-JUL	41	59	72	66	85	103	110
	APR-SEP	48	73	90	67	107	132	134
St. Vrain Ck at Lyons (2)	APR-JUL	49	59	66	70	73	83	94
	APR-SEP	57	69	77	71	85	97	109
Boulder Ck nr Orodell (2)	APR-JUL	27	33	38	73	43	49	52
	APR-SEP	30	39	45	75	51	60	60
S Boulder Ck nr Eldorado Springs (2)	APR-JUL	20	26	29	71	32	38	41
	APR-SEP	23	29	34	74	39	45	46
Big Thompson R at Canyon Mouth (2)	APR-JUL	43	56	65	66	74	87	99
	APR-SEP	52	68	79	66	90	106	119
Cache La Poudre at Canyon Mouth (2)	APR-JUL	87	110	130	53	153	195	245
	APR-SEP	98	125	147	54	173	220	275

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

SOUTH PLATTE RIVER BASIN  
Watershed Snowpack Analysis - April 1, 2012

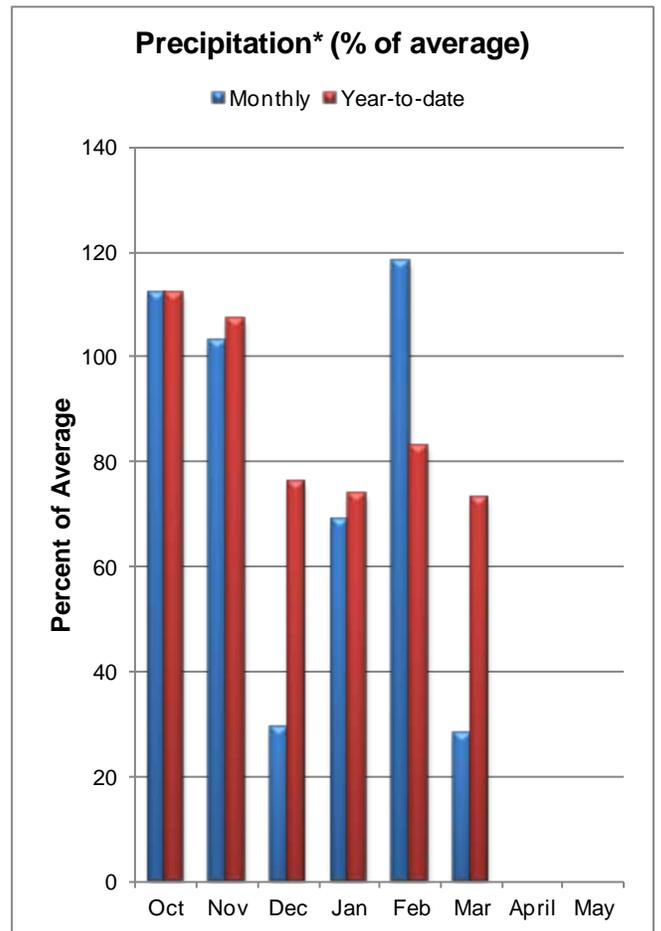
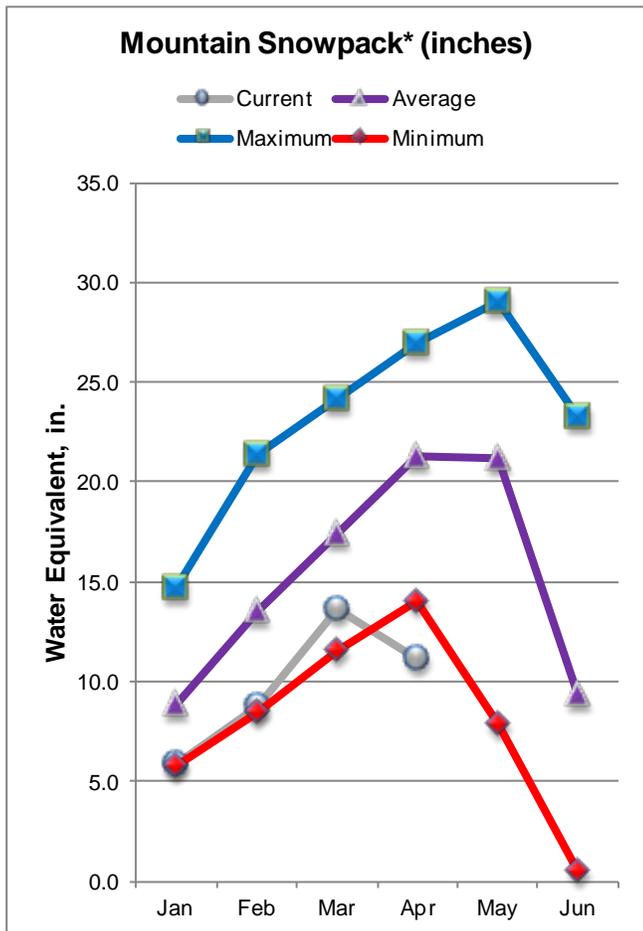
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ANTERO	19.9	16.0	20.0	15.9	BIG THOMPSON BASIN	7	42	57
BARR LAKE	30.1	28.6	29.3	27.9	BOULDER CREEK BASIN	5	49	58
BLACK HOLLOW	6.5	3.6	2.7	4.0	CACHE LA POUFRE BASIN	8	39	55
BOYD LAKE	48.4	40.2	36.5	33.0	CLEAR CREEK BASIN	4	42	58
BUTTON ROCK/RALPH PRICE	16.2	12.5	12.8	12.1	SAINT VRAIN BASIN	4	52	60
CACHE LA POUFRE	10.1	10.6	10.4	8.6	UPPER SOUTH PLATTE BASIN	16	51	49
CARTER	108.9	74.6	88.2	100.9	TOTAL SOUTH PLATTE BASIN	44	44	55
CHAMBERS LAKE	8.8	5.8	3.6	3.3				
CHEESMAN	79.0	66.8	71.2	60.8				
COBB LAKE	22.3	19.2	20.0	13.9				
ELEVEN MILE	98.0	99.8	99.4	96.4				
EMPIRE	36.5	36.4	36.5	31.8				
FOSSIL CREEK	11.1	9.5	7.4	7.9				
GROSS	41.8	28.1	19.5	23.9				
HALLIGAN	6.4	5.0	5.0	4.7				
HORSECREEK	14.7	12.2	13.0	13.9				
HORSETOOTH	149.7	137.5	104.7	119.1				
JACKSON	26.1	26.1	25.5	29.9				
JULESBURG	20.5	20.5	20.5	20.8				
LAKE LOVELAND	10.3	9.1	7.5	9.0				
LONE TREE	8.7	7.8	7.4	7.2				
MARIANO	5.4	3.1	4.4	4.5				
MARSHALL	10.0	8.5	4.6	6.0				
MARSTON	13.0	4.7	3.1	13.3				
MILTON	23.5	21.7	22.5	18.3				
POINT OF ROCKS	70.6	69.4	70.6	68.8				
PREWITT	28.2	24.5	24.4	25.0				
RIVERSIDE	55.8	55.6	55.7	58.2				
SPINNEY MOUNTAIN	49.0	46.4	39.1	32.1				
STANDLEY	42.0	36.5	32.1	34.6				
TERRY LAKE	8.0	5.5	5.2	5.4				
UNION	13.0	12.3	12.2	11.1				
WINDSOR	15.2	12.6	11.0	12.4				

\* 90%, 70%, 50%, 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.
- (3) - Median value used in place of average.

# YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS as of April 1, 2012



\*Based on selected stations

The combined Yampa, White, North Platte and Laramie River basins did not receive noteworthy snowfall in March. According to preliminary SNOTEL data, March snowfall in these basins was a mere 19 percent of average, all of which occurred during the first week of the month. April 1 snow surveys showed the snowpack at 52 percent of average and just 39 percent of what was reported this time last year. The Yampa and White basins snowpack reports were lower than the combined basin at just 49 and 46 percent of average respectively. The North Platte and Little Snake basins reports were higher than the combined basins at 57 and 56 percent of average respectively.

Precipitation in these basins during March was just 28 percent of average, knocking the year to date precipitation down to 73 percent of average as of April 1. This is the fourth consecutive month to report below average year to date precipitation. Reservoir storage in Stagecoach and Yamcolo reservoirs has increased for the third month in a row with current storage levels at 128 percent of average. After a boost last month, water supply forecasts plunged back down to well below average across the basins. The North Platte near Northgate currently has the lowest forecast as a percent of average in the state; it is expected to run at 20 percent of average from April to July. Elsewhere in the basins seasonal forecasts range from 68 percent of average for the Laramie near Woods Landing to 39 percent of average on Elkhead Creek near Hayden.

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Streamflow Forecasts - April 1, 2012

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ==== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
North Platte R nr Northgate	APR-JUL	20	32	50	20	88	143	245
	APR-SEP	23	38	57	21	100	163	270
Laramie R nr Woods	APR-JUL	44	67	83	68	99	122	123
	APR-SEP	48	74	92	68	110	136	135
Yampa R ab Stagecoach Reservoir (2)	APR-JUL	5.9	9.2	12.0	52	15.4	21	23
Yampa R at Steamboat Springs (2)	APR-JUL	101	129	150	54	172	210	280
Elk R nr Milner	APR-JUL	133	166	190	59	215	255	325
Elkhead Ck ab Long Gulch nr Hayden	APR-JUL	13.7	22	28	39	35	47	71
Yampa R nr Maybell (2)	APR-JUL	320	410	500	51	600	780	990
Little Snake R nr Slater (2)	APR-JUL	52	68	80	50	93	114	159
Little Snake R nr Savery (2)	APR-JUL	97	143	180	55	220	290	330
Little Snake R nr Lily (2)	APR-JUL	88	141	185	51	235	310	365
White R nr Meeker	APR-JUL	106	137	160	55	185	225	290

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

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Watershed Snowpack Analysis - April 1, 2012

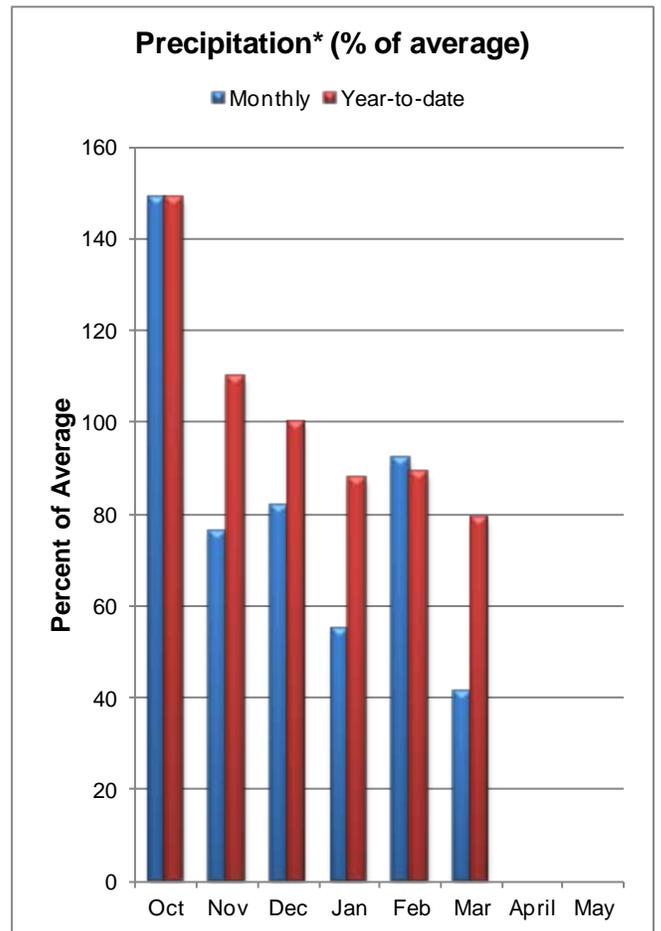
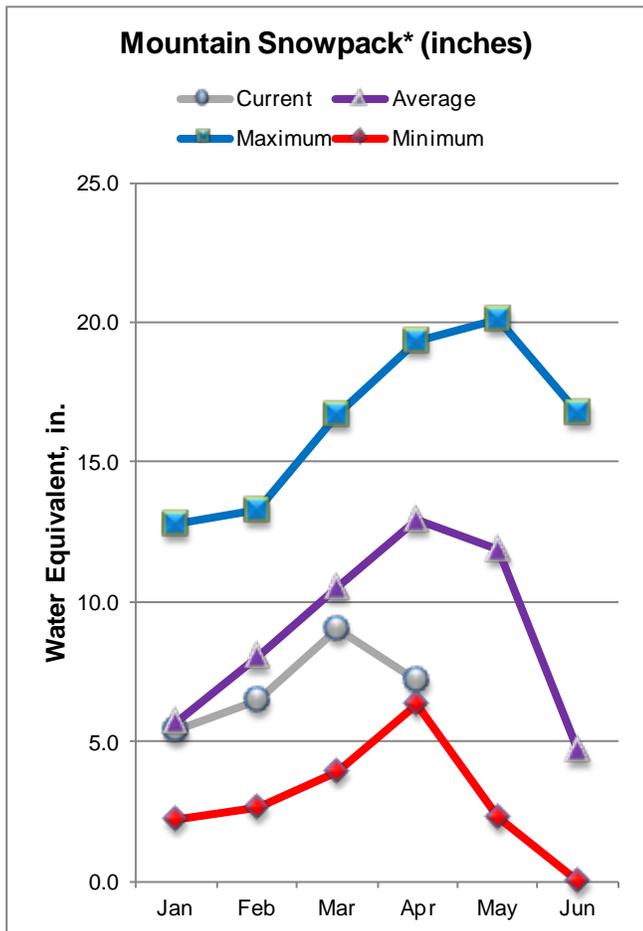
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
STAGECOACH	36.4	33.7	21.3	24.6	LARAMIE RIVER BASIN	4	48	65
YAMCOLO	8.7	6.6	8.1	6.9	NORTH PLATTE RIVER BASIN	11	39	54
					TOTAL NORTH PLATTE BASIN	14	42	57
					ELK RIVER BASIN	2	35	47
					YAMPA RIVER BASIN	12	35	49
					WHITE RIVER BASIN	6	39	46
					TOTAL YAMPA AND WHITE RIV	17	36	47
					LITTLE SNAKE RIVER BASIN	8	43	56
TOTAL YAMPA, WHITE AND NO	36	39	52					

\* 90%, 70%, 50%, 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.
- (3) - Median value used in place of average.

# ARKANSAS RIVER BASIN as of April 1, 2012



\*Based on selected stations

The snowmelt and runoff season is underway in the Arkansas basin. While the basin did receive some additional snow accumulation in the last month, the early melt out dramatically altered the snowpack average compared to last month. At the beginning of March, the snowpack was at 86 percent of average yet on April 1 the overall snowpack percentage for the basin had fallen to 56 percent of average. The Upper Arkansas sub-basin reported 52 percent of average snowpack conditions while the combined Cucharas and Huerfano drainages and the Purgatoire sub-basin recorded 70 and 66 percent of average conditions respectively. .

Year to date precipitation for the basin was 79 percent as of April 1. Monthly totals for March registered a meager 41 percent of the average; this is the fifth month in a row to report below average precipitation in the basin. Reservoir storage within the Arkansas basin has dropped from 98 percent of average at the end of February to 86 percent of average at the end of March. Current streamflow forecasts for the basin have decreased anywhere between 20 and 40 percent from those issued last month. The Arkansas River at Salida is forecast to flow at 50 percent of average, Chalk Creek near Nathrop is expected to flow at 40 percent of average and the Purgatoire River at Trinidad is expected to flow at 61 percent of average from April to July.

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ARKANSAS RIVER BASIN  
Streamflow Forecasts - April 1, 2012

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
Chalk Ck nr Nathrop	APR-JUL	3.9	6.8	9.2	40	12.0	16.7	23
	APR-SEP	5.4	9.0	12.0	44	15.4	21	27
Arkansas R at Salida (2)	APR-JUL	113	122	128	50	134	144	255
	APR-SEP	130	144	155	50	166	183	310
Grape Ck nr Westcliffe	APR-JUL	3.6	4.9	5.9	37	7.0	8.7	16.1
	APR-SEP	6.0	7.2	8.0	41	8.9	10.3	19.6
Arkansas R ab Pueblo (2)	APR-JUL	95	144	185	48	230	315	385
	APR-SEP	68	193	245	51	305	415	485
Huerfano R nr Redwing	APR-JUL	3.7	5.7	7.4	60	9.2	12.3	12.3
	APR-SEP	5.2	7.8	9.8	63	12.1	15.8	15.5
Cucharas R nr La Veta	APR-JUL	2.7	5.0	6.9	61	9.1	13.0	11.3
	APR-SEP	3.7	6.1	8.1	62	10.4	14.2	13.0
Purgatoire R at Trinidad (2)	MAR-JUL	6.4	13.8	21	62	29	44	34
	APR-JUL	5.2	12.6	19.5	61	28	43	32
	APR-SEP	17.7	23	27	61	31	38	44

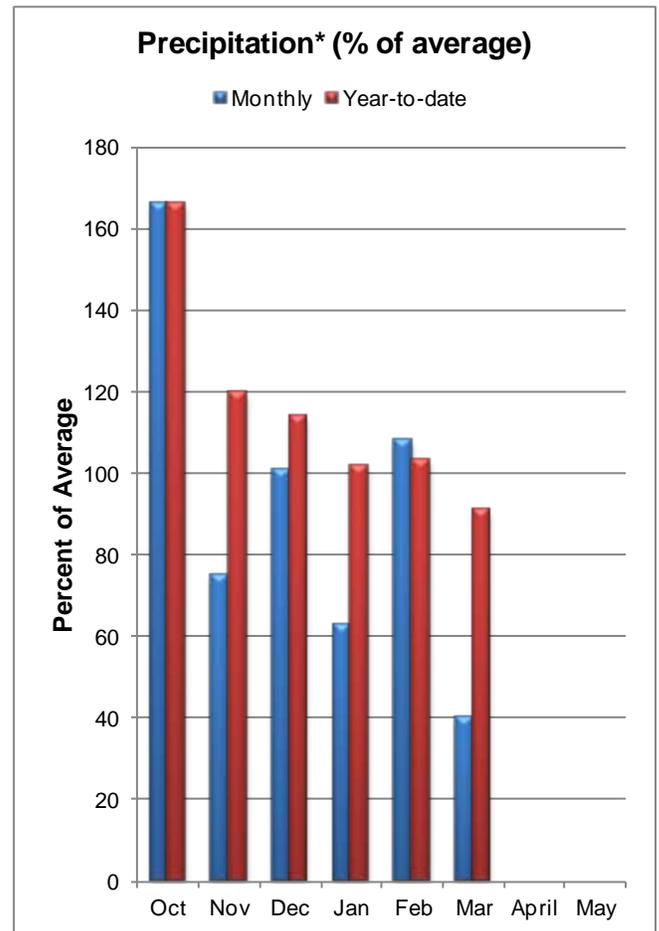
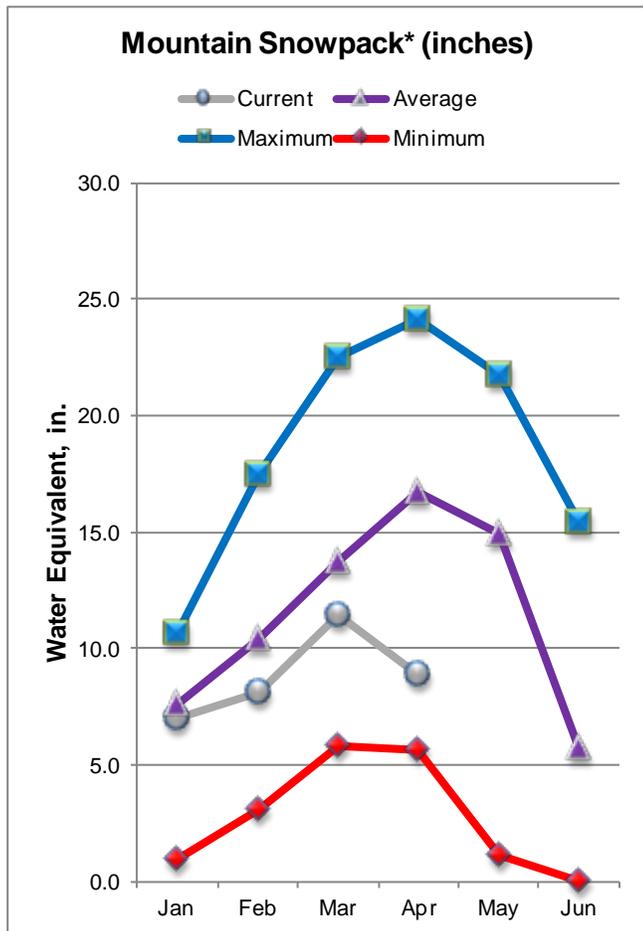
ARKANSAS RIVER BASIN Reservoir Storage (1000 AF) - End of March					ARKANSAS RIVER BASIN Watershed Snowpack Analysis - April 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ADOBE	62.0	40.5	40.6	37.0	UPPER ARKANSAS BASIN	10	45	52
CLEAR CREEK	11.4	7.8	8.5	6.7	CUCHARAS & HUERFANO RIVER	4	114	70
CUCHARAS RESERVOIR	40.0	0.1	0.1	5.4	PURGATOIRE RIVER BASIN	2	120	65
GREAT PLAINS	150.0	0.0	0.0	41.9	TOTAL ARKANSAS RIVER BASIN	15	54	56
HOLBROOK	7.0	2.0	0.9	4.9				
HORSE CREEK	27.0	0.0	0.0	12.6				
JOHN MARTIN	616.0	45.5	64.1	137.3				
LAKE HENRY	8.0	7.8	9.0	6.7				
MEREDITH	42.0	37.0	39.7	19.0				
PUEBLO	354.0	244.1	264.1	173.3				
TRINIDAD	167.0	17.0	20.1	27.5				
TURQUOISE	127.0	63.8	44.8	74.0				
TWIN LAKES	86.0	39.1	39.0	42.5				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

# UPPER RIO GRANDE RIVER BASIN as of April 1, 2012



\*Based on selected stations

Although there was some additional snowfall in the Upper Rio Grande River basin during March, early snowmelt has reduced the snowpack percentage by 30 percentage points from the report issued March 1. Current measurements are only 53 percent of average as of April 1, which is just 69 percent of the snowpack measured last year at this time. Snowpack measurements range from only 21 percent of average in the Alamosa Creek watershed, to 59 percent of average in the Upper Rio Grande sub-basin. Precipitation during March was only 40 percent of the average monthly total. Total year to date precipitation was 91 percent of average as of April 1, this is the first month in this water year that cumulative precipitation has fallen below average in the basin. Reservoirs in the basin are storing volumes that are 73 percent of average as of April 1. This is approximately 8,000 acre-feet less than was available last year at this time. Current streamflow volume forecasts for April to September are below 74 percent of average at all forecast points in the basin. They range from only 35 percent of average for the San Antonio River at Ortiz to 74 percent of average at the Rio Grande at Thirty Mile Bridge. It is suggested that if dry and warm conditions persist in the basin this spring that it may be prudent for water users to use the 70 or 90 percent exceedance forecasts for management purposes.

UPPER RIO GRANDE BASIN  
Streamflow Forecasts - April 1, 2012

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
Rio Grande at Thirty Mile Bridge (2)	APR-SEP	72	88	101	74	114	135	136				
	APR-JUL	64	76	85	72	95	110	118				
Rio Grande at Wagon Wheel Gap (2)	APR-SEP	169	215	250	73	285	345	345				
SF Rio Grande at South Fork (2)	APR-SEP	68	81	91	69	101	118	132				
Rio Grande nr Del Norte (2)	APR-SEP	265	330	375	71	425	510	531				
Saguache Ck nr Saguache (2)	APR-SEP	10.8	15.9	20	61	25	32	33				
Alamosa Ck ab Terrace Reservoir	APR-SEP	35	42	48	69	54	64	70				
La Jara Ck nr Capulin	MAR-JUL	3.6	4.8	5.8	67	7.0	9.1	8.7				
	APR-JUL	2.3	3.5	4.5	56	5.7	7.8	8.0				
Trinchera Ck ab Turners Ranch	APR-SEP	3.3	5.3	7.0	58	8.9	12.1	12.0				
Sangre de Cristo Ck (2)	APR-SEP	0.3	2.1	4.1	47	6.8	12.1	8.8				
Ute Creek	APR-SEP	1.8	4.5	7.0	57	10.0	15.5	12.2				
Platoro Reservoir Inflow	APR-JUL	33	39	43	67	48	56	64				
	APR-SEP	36	43	48	68	53	62	71				
Conejos R nr Mogote (2)	APR-SEP	105	125	140	70	156	182	200				
San Antonio R at Ortiz	APR-SEP	3.0	4.5	5.8	35	7.3	10.1	16.4				
Los Pinos R nr Ortiz	APR-SEP	25	32	38	51	44	55	74				
Culebra Ck at San Luis (2)	APR-SEP	5.3	8.8	12.0	52	15.8	23	23				
Costilla Reservoir Inflow	MAR-JUL	3.1	4.3	5.4	51	6.7	8.9	10.6				
	APR-JUL	2.4	3.6	4.7	47	6.0	8.2	10.1				
Costilla Ck nr Costilla (2)	MAR-JUL	6.2	9.1	11.7	45	14.9	21	26				
	APR-JUL	4.3	7.2	9.8	41	13.0	18.7	24				

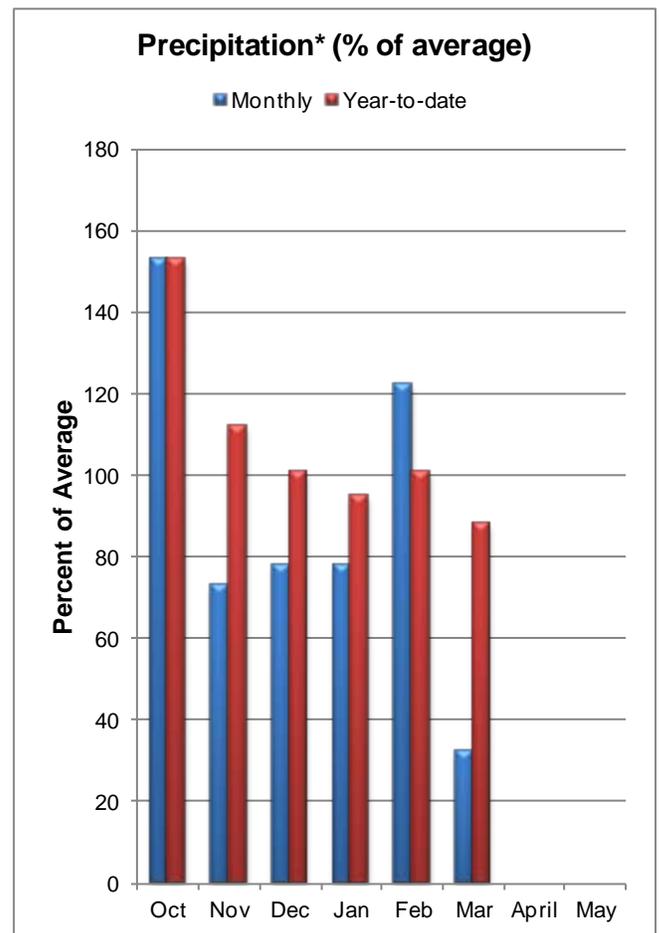
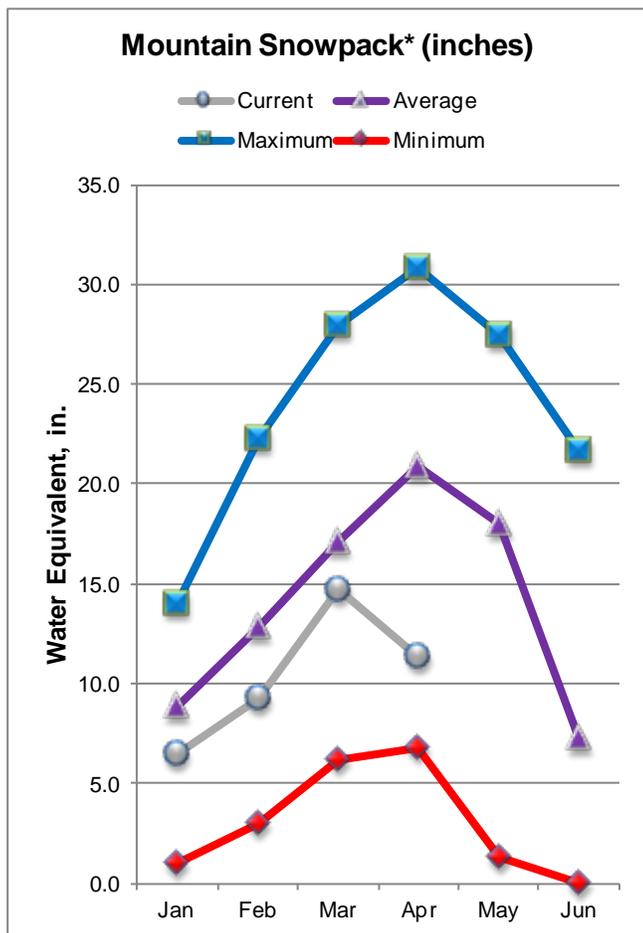
UPPER RIO GRANDE BASIN Reservoir Storage (1000 AF) - End of March					UPPER RIO GRANDE BASIN Watershed Snowpack Analysis - April 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CONTINENTAL	27.0	5.8	5.6	5.9	ALAMOSA CREEK BASIN	2	45	21
PLATORO	60.0	15.5	21.6	24.5	CONEJOS & RIO SAN ANTONIO	4	63	50
RIO GRANDE	51.0	21.3	19.7	19.3	CULEBRA & TRINCHERA CREEK	5	75	48
SANCHEZ	103.0	9.0	16.8	24.9	UPPER RIO GRANDE BASIN	12	71	59
SANTA MARIA	45.0	8.5	6.9	10.8	TOTAL UPPER RIO GRANDE BA	23	69	53
TERRACE	18.0	7.6	5.2	7.6				

\* 90%, 70%, 50%, 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.
- (3) - Median value used in place of average.

# SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS as of April 1, 2012



\*Based on selected stations

Although the combined San Miguel, Dolores, Animas and San Juan River basins did receive additional snowfall in early March the amounts were nominal and the basins then lost 25 percent of their snowpack during the last week of March, according to preliminary SNOTEL data. April 1 snow measurements were just 54 percent of average for all the basins combined; a drop of 32 percentage points from surveys done on March 1. All sub-basins snowpack's were well below average as well, ranging from 59 percent of average in the San Juan basin to 45 percent of average in the Dolores River basin.

Prior to this month the San Miguel, Dolores, Animas and San Juan basins were one of only two major basins in the state with above average year to date precipitation. Minimal precipitation during March (32 percent of average) has caused year to date precipitation totals to drop to 88 percent of average as of April 1. Reservoirs in the basins have combined storage levels at 111 percent of average and 106 percent of the levels reported last year at this time. As we head into the runoff season, forecasted spring and summer volumes for the rivers in these basins are now all expected to be less than 70 percent of average. Current forecasts range from 47 percent of average expected for the Inflow to McPhee Reservoir to 69 percent of average expected for the Inflow to Lemon Reservoir.

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Streamflow Forecasts - April 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<==== Drier =====		===== Chance Of Exceeding * 50% (1000AF) (% AVG.)		===== Wetter =====>>		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	30% (1000AF)	10% (1000AF)		
Dolores R at Dolores	APR-JUL	90	115	135	51	157	193	265
McPhee Reservoir Inflow (2)	APR-JUL	96	127	150	47	175	215	320
San Miguel R nr Placerville	APR-JUL	55	69	80	61	92	112	132
Gurley Reservoir Inlet	APR-JUL	7.9	10.1	11.7	64	13.5	16.5	18.3
Cone Reservoir Inlet	APR-JUL	0.6	1.3	2.0	61	2.9	4.6	3.3
Lilylands Reservoir Inlet	APR-JUL	1.0	1.4	1.7	58	2.1	2.7	2.9
Rio Blanco at Blanco Diversion (2)	APR-JUL	20	29	35	66	41	50	53
Navajo R at Oso Diversion (2)	APR-JUL	28	35	40	58	46	56	69
San Juan R nr Carracas (2)	APR-JUL	125	188	230	57	270	335	405
Piedra R nr Arboles	APR-JUL	97	123	140	61	157	183	230
Vallecito Reservoir Inflow (2)	APR-JUL	89	113	130	63	147	171	205
Navajo Reservoir Inflow (2)	APR-JUL	265	370	445	57	520	625	785
Animas R at Durango	APR-JUL	182	240	275	63	310	370	440
Lemon Reservoir Inflow (2)	APR-JUL	29	35	40	69	45	53	58
La Plata R at Hesperus	APR-JUL	9.4	12.0	14.0	56	16.2	19.8	25
Mancos River Near Mancos	APR-JUL	11.0	16.4	20	61	24	29	33

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

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Watershed Snowpack Analysis - April 1, 2012

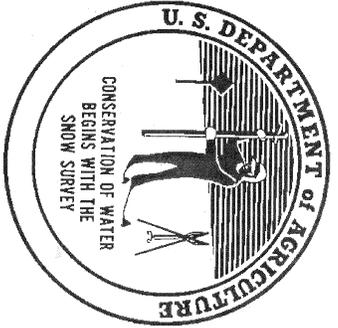
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GROUNDHOG	22.0	5.4	13.2	12.2	ANIMAS RIVER BASIN	9	66	56
JACKSON GULCH	10.0	4.2	5.6	5.1	DOLORES RIVER BASIN	6	54	45
LEMON	40.0	16.2	15.1	21.2	SAN MIGUEL RIVER BASIN	5	62	51
MCPHEE	381.0	303.1	279.5	273.6	SAN JUAN RIVER BASIN	4	64	59
NARRAGUINNEP	19.0	19.0	18.9	15.5	TOTAL SAN MIGUEL, DOLORES	23	63	54
VALLECITO	126.0	84.2	77.0	62.0	AN JUAN RIVER BASINS			

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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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 Natural Resources Conservation Service web page at <http://www.wcc.nrcs.usda.gov/wsf/westwide.html>

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