

# Colorado Basin Outlook Report March 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 March 1, 2012

## Summary

The month of February brought improvements to snowpack percentages in all major basins in Colorado. Unfortunately the snowy month was not enough to boost the snowpack to average conditions; as of March 1 the state snowpack was at just 81 percent of average. With only four to six weeks remaining in the typical accumulation season the odds of the snowpack obtaining average conditions are diminishing. Runoff forecasts remain below average across the state, with slight improvements over last month in the northern and southwest portions of the state. A majority of basins have considerably dry soils beneath the snowpack which can reduce surface water supply. Thanks in part to a good water supply year in 2011 reservoir storage volumes for the state are currently at 107 percent of average.

## Snowpack

Despite above average snow accumulation during the month of February the statewide snowpack remains below average. The good news is that last month's snowfall was very beneficial to the Yampa, White and North Platte basins. These basin's snowpacks have been well below average for the entire season and previously reported just 65 percent of average conditions on February 1. As of March 1 the basins snowpack percentages had improved to 78 percent of average. The combined San Juan, Animas, Dolores, and San Miguel basins also benefited from above average snowfall in February. These basins saw a snowpack increase from 73 percent of average on February 1 to 86 percent of average measured on March 1. Across the rest of the state snowpack improvements were more nominal. The South Platte basins' snowpack increased 8 percentage points over the last month from 81 percent on February 1 to 89 percent of average on March 1. In the Gunnison, Colorado, Arkansas and Upper Rio Grande basins only slight increases in snowpack percentages were measured compared to last month's readings. For the state overall, the March 1 snowpack was reported at 81 percent of average, this is only 71 percent of last year's readings at this same time. Comparisons to last year show indicate that the current snowpack is well below last year's readings for all basins except for the Rio Grande and the combined basins in the southwest.

## Precipitation

Mountain precipitation measured at SNOTEL sites across Colorado during the month of February was near to well above average. Statewide monthly totals were at 111 percent of average, marking a welcome turn in conditions after three consecutive months with below average precipitation measured. The Arkansas and Colorado basins were the only basins in the state to post below average monthly precipitation totals; still each basin reported a respectable 92 percent of average for the month. While February brought above average precipitation, water year totals are still below average for most basins. Year to date precipitation totals now range from just 80 percent of average in the Colorado basin to 103 percent of average in the Upper Rio Grande basin. The Upper Rio Grande and the combined San Miguel, Dolores, Animas, and San Juan basins are the only basins in the state with above average water year precipitation totals. Statewide year to date precipitation was at 90 percent of average at the close of February. Without the wet month of October and the return to above average conditions this past month, water year totals would be quite dismal.

## Reservoir Storage

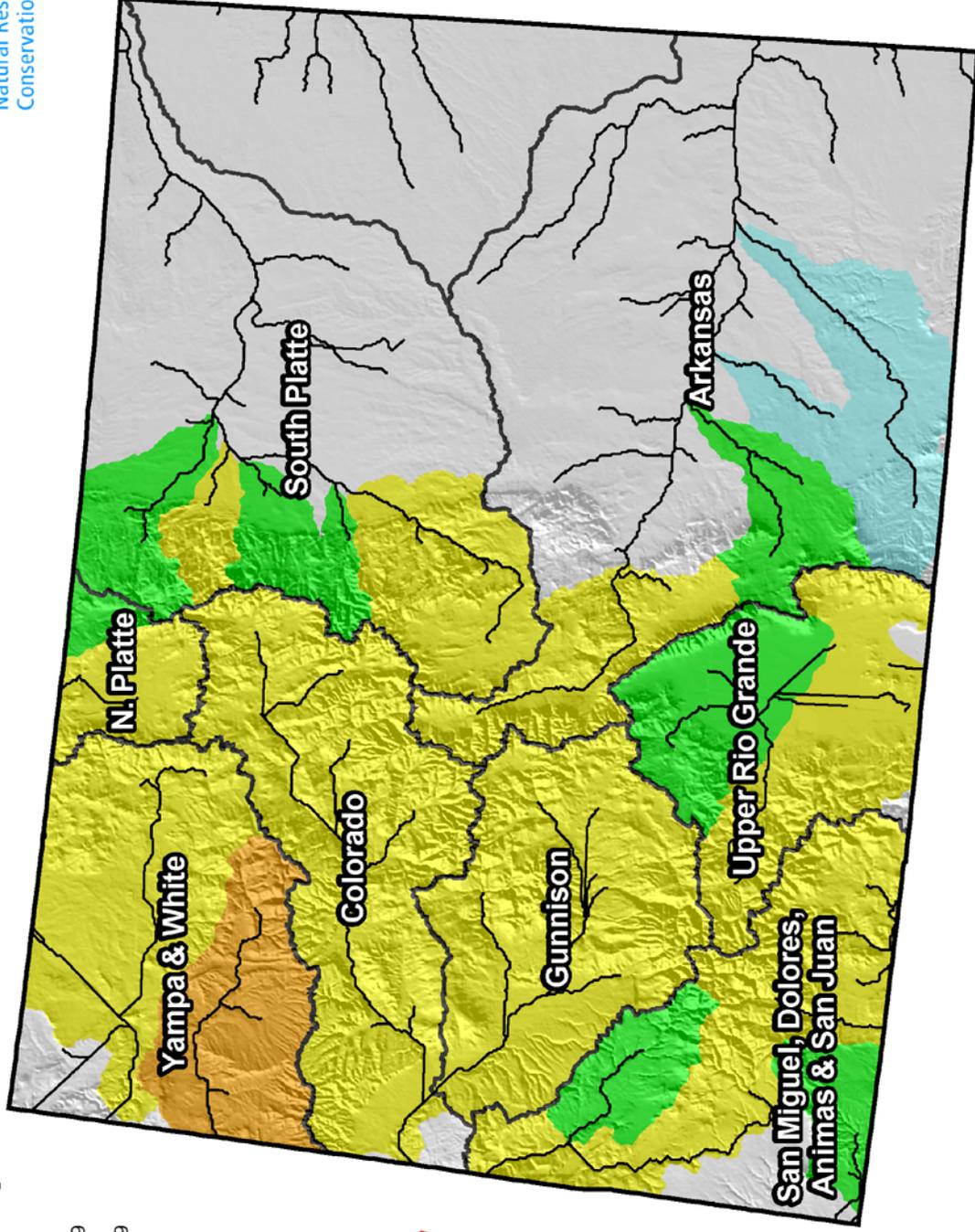
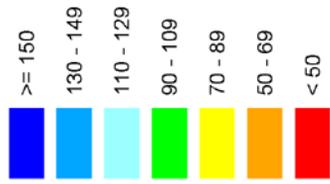
End of February storage data from the state's major reservoirs indicates that volumes increased slightly during the past month. Statewide, storage is at 107 percent of average and there are a total of 3,588,000 acre feet of water available in the state's reservoirs. Only two basins, the Upper Rio Grande and the Arkansas have below average storage volumes as of March 1. The lowest percentage in the state, at 69 percent of average, was reported in the Upper Rio Grande, this basin has had well below average storage volumes since the beginning of the water year. The highest storage amounts, as a percent of average, were reported in the Yampa basin which was 124 percent of average on March 1. Strictly looking at total volumes, the Colorado basin is storing the largest volumes above the average for this time of year with 117,000 acre feet greater than average stored as of March 1. Statewide storage on March 1 was 102 percent of last year's storage amounts on this same date. This equates to an additional 56,000 acre feet of water compared to last year's levels. Once again, the good storage volumes across most of the state will most certainly aid those water users who face potential surface water shortages this summer.

## Streamflow

Below average streamflow runoff is expected this spring and summer across the state of Colorado. Outlooks for the northwest and southwest portions of the state have improved in the past month thanks to above average snowfall. Elsewhere forecasts remained consistent with those issued on February 1. Currently, the lowest forecasts in the state occur in the headwater tributaries to the Gunnison and South Platte rivers. Most of these forecasts range from 60 to 75 percent of average. March 1 forecasts for most of the rest of the state generally range from 75 to 85 percent of average. Volumes in this range are expected to prevail throughout the Yampa, White, Colorado, and combined San Juan, Animas, Dolores and San Miguel basins. The lower portion of the South Platte and the northeastern portion of the Rio Grande are in slightly better shape with forecasts ranging from 80 to 95 percent of average at most locations.

# Colorado Snowpack Map

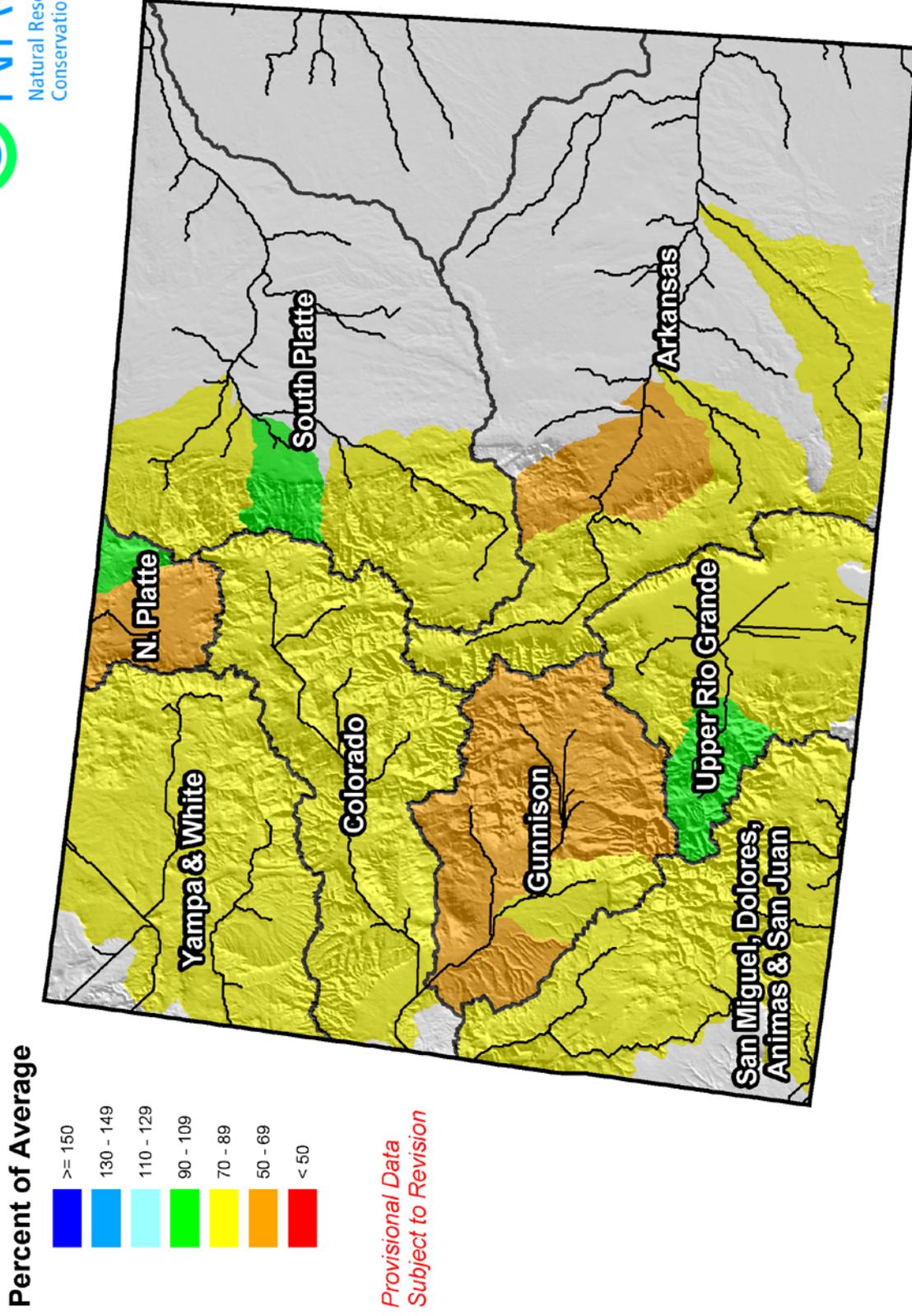
Percent of Average



*Provisional Data  
Subject to Revision*

Current as of March 1, 2012

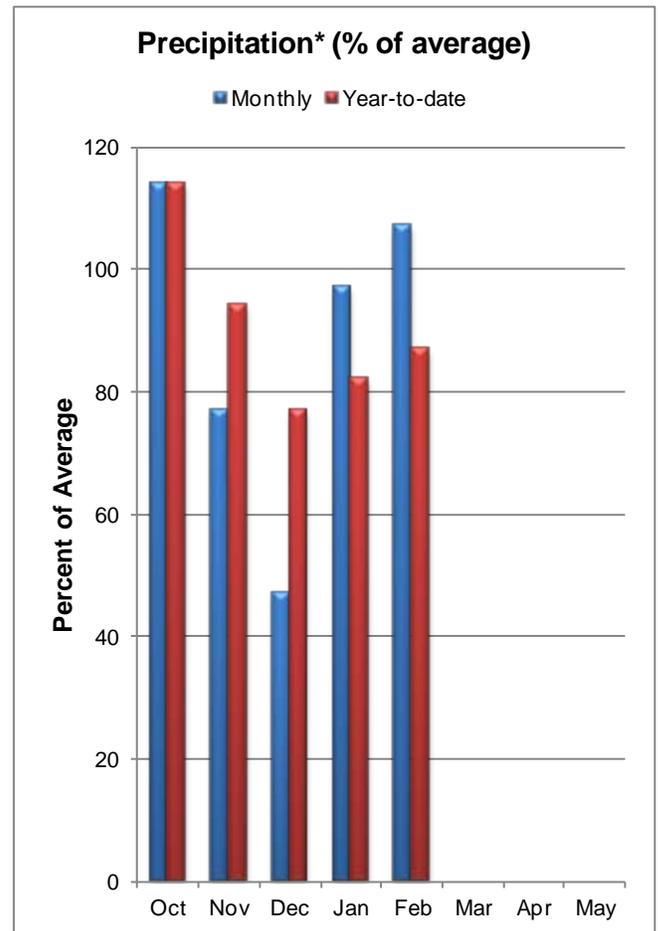
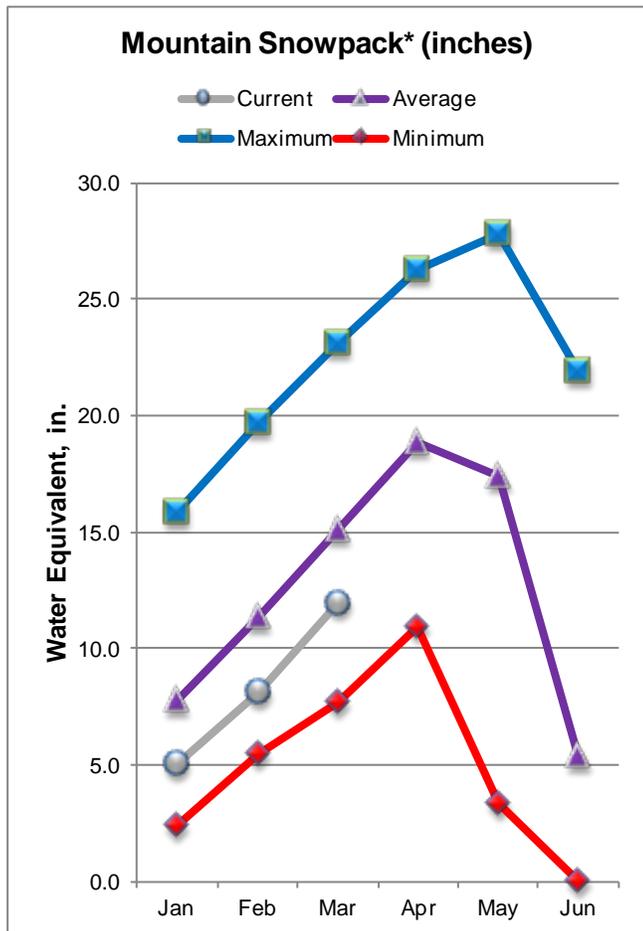
# Colorado Streamflow Forecast Map



Current as of March 1, 2012

# GUNNISON RIVER BASIN

## as of March 1, 2012



\*Based on selected stations

The Gunnison River basin saw moderate improvements to its snowpack in the month of February. Slightly above average snowfall in the basin boosted the overall snowpack percentage from 72 percent of average on February 1 to 79 percent of average as of March 1. Storms in just the last few days of February were especially beneficial; according to preliminary SNOTEL data, the basin received nearly three times its average snowfall between February 27<sup>th</sup> and March 1<sup>st</sup>. Sub-basin snowpack's all improved in February as well. The Uncompahgre and Surface Creek drainages saw a 10 percent point increase to 88 and 82 percent of average respectively as of March 1. The Upper Gunnison's snowpack was 77 percent of average on March 1 up from 71 percent reported on February 1.

Precipitation measured at SNOTEL sites in the Gunnison basin was 107 percent of average for the month of February. Year to date precipitation was reported to be 87 percent of average as of March 1 revealing an upward trend over the last two months. Reservoir storage in the basin is in great condition at 112 percent of average and 67 percent of capacity. Current water supply forecasts reflect current snowpack conditions throughout the basin. Below average runoff volumes are expected at all forecast points in the basin, ranging from 59 percent of average expected for Tomichi Creek at Gunnison to 88 percent of average for Ridgway Reservoir Inflow.

GUNNISON RIVER BASIN  
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
Taylor Park Reservoir Inflow (2)	APR-JUL	49	62	72	70	83	100	103
Slate R nr Crested Butte	APR-JUL	48	55	60	67	65	73	89
East R at Almont	APR-JUL	82	103	118	62	134	160	192
Gunnison R near Gunnison (2)	APR-JUL	155	200	235	60	270	330	390
Tomichi Ck at Sargents	APR-JUL	14.1	19.6	24	75	29	38	32
Cochetopa Ck bl Rock Ck nr Parlin	APR-JUL	5.5	8.6	11.2	65	14.3	19.9	17.3
Tomichi Ck at Gunnison	APR-JUL	22	36	48	59	63	90	81
Lake Fk at Gateview	APR-JUL	68	84	96	76	109	129	126
Blue Mesa Reservoir Inflow (2)	APR-JUL	295	385	450	63	520	635	720
Paonia Reservoir Inflow (2)	MAR-JUN	43	58	70	70	83	104	100
	APR-JUL	41	58	71	70	86	110	102
NF Gunnison R nr Somerset (2)	APR-JUL	135	169	195	64	220	265	305
Surface Ck at Cedaredge	APR-JUL	8.5	11.0	13.0	76	15.2	18.9	17.1
Ridgway Reservoir Inflow (2)	APR-JUL	59	77	90	88	104	128	102
Uncompahgre R at Colona (2)	APR-JUL	59	87	110	79	135	177	139
Gunnison R nr Grand Junction (2)	APR-JUL	600	845	1040	67	1250	1600	1560

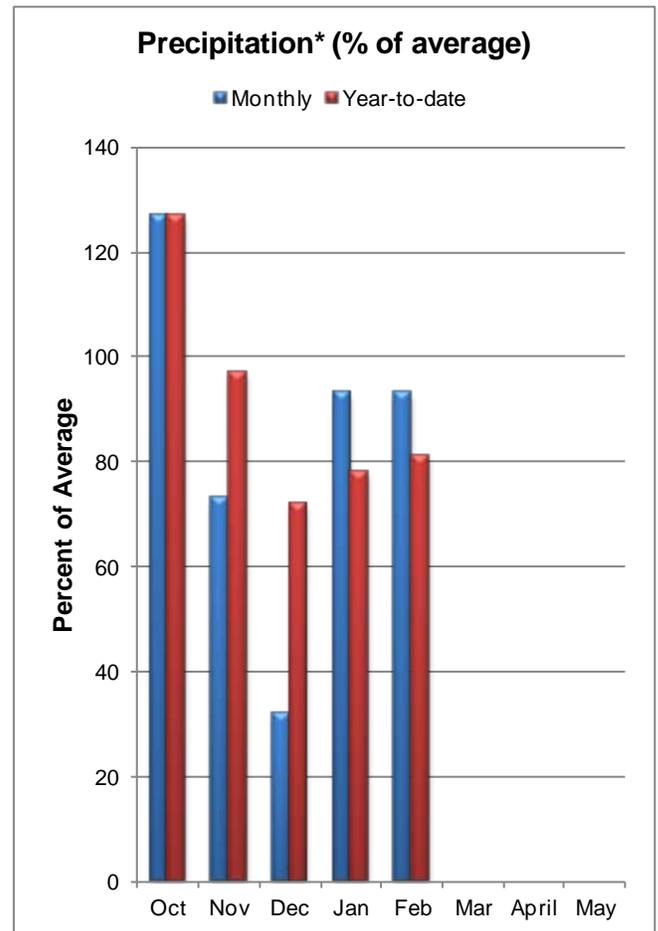
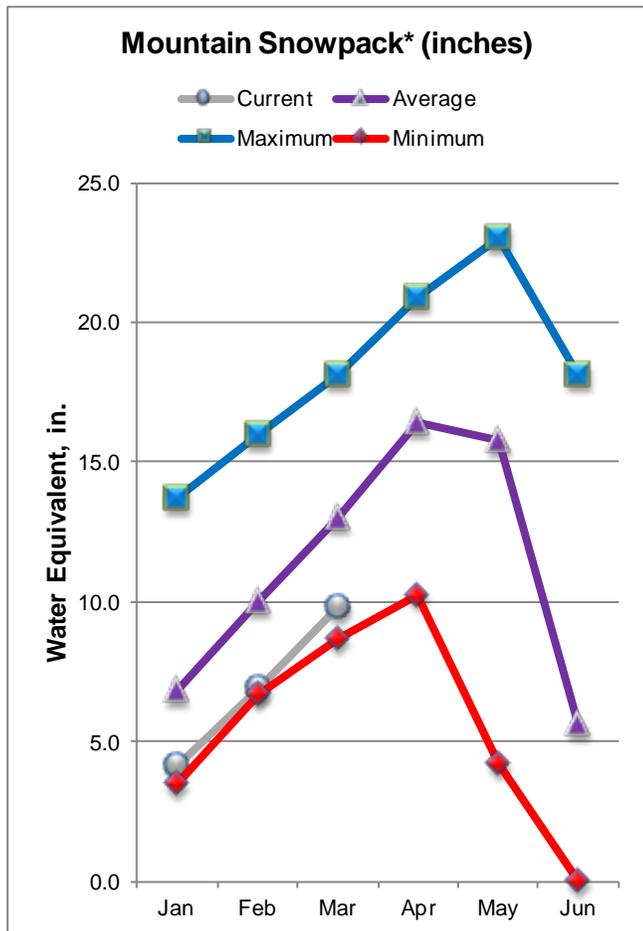
GUNNISON RIVER BASIN Reservoir Storage (1000 AF) - End of February					GUNNISON RIVER BASIN Watershed Snowpack Analysis - March 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BLUE MESA	830.0	532.8	531.2	446.5	UPPER GUNNISON BASIN	15	61	77
CRAWFORD	14.0	6.4	6.5	9.2	SURFACE CREEK BASIN	3	63	82
FRUITGROWERS	3.6	3.6	3.3	3.7	UNCOMPAHGRE BASIN	4	78	88
FRUITLAND	9.2	2.2	1.7	2.1	TOTAL GUNNISON RIVER BASIN	19	65	79
MORROW POINT	121.0	113.2	110.7	113.4				
PAONIA	15.4	0.4	0.6	4.9				
RIDGWAY	83.0	68.2	67.4	60.5				
TAYLOR PARK	106.0	65.5	74.0	65.5				

\* 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 March 1, 2012



\*Based on selected stations

Near average monthly snowfall in February has boosted the overall snowpack percent of average in the Upper Colorado River basin for the second month in a row. As of March 1 the snowpack in the basin was at 75 percent of average, up from 69 percent of average recorded on February 1, but still below average and just 59 percent of what was measured last year at this time. This is the fifth lowest March 1 snowpack recorded in this basin in the last thirty years. Sub-basin snowpack's vary quite a bit this month ranging from 73 percent of average in the Williams Fork drainage to 92 percent of average in the Muddy Creek watershed. Mountain precipitation measured in February was near normal for the basin at 92 percent of average. Total water year precipitation in the basin has been on an upward trend for the last two months increasing from 72 percent of average at the end of December to 77 percent of average at the end of January and then reporting 80 percent of average at the close of February. Reservoir storage in the basin remains well above average with end of February volumes at 116 percent of average and 101 percent of last year's storage. Current water supply forecasts have remained consistent with those issued last month. Below average runoff is expected for all forecast points in the basin. March 1 forecasts range from 69 percent of average at the Inflow to Willow Creek Reservoir to 84 percent of average for Williams Fork Reservoir Inflow.

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UPPER COLORADO RIVER BASIN  
Streamflow Forecasts - March 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	123	156	180	80	205	245	225
Willow Ck Reservoir Inflow (2)	APR-JUL	19.0	28	35	69	43	56	51
Williams Fk Reservoir Inflow (2)	APR-JUL	54	69	80	84	92	111	95
Dillon Reservoir Inflow (2)	APR-JUL	91	116	135	81	155	187	167
Green Mountain Reservoir Inflow (2)	APR-JUL	155	198	230	82	265	320	280
Muddy Ck bl Wolford Mtn Resv (2)	APR-JUL	26	37	45	75	54	69	60
Eagle R bl Gypsum (2)	APR-JUL	166	215	250	75	290	350	335
Colorado R nr Dotsero (2)	APR-JUL	750	920	1090	76	1270	1570	1440
Ruedi Reservoir Inflow (2)	APR-JUL	71	90	105	75	121	146	141
Roaring Fk at Glenwood Springs (2)	APR-JUL	380	460	520	73	585	685	710
Colorado R nr Cameo (2)	APR-JUL	1250	1490	1760	73	2050	2510	2420

UPPER COLORADO RIVER BASIN Reservoir Storage (1000 AF) - End of February					UPPER COLORADO RIVER BASIN Watershed Snowpack Analysis - March 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	244.0	222.2	216.8	BLUE RIVER BASIN	9	59	78
LAKE GRANBY	465.6	358.0	350.1	281.1	UPPER COLORADO RIVER BASI	35	58	75
GREEN MOUNTAIN	146.8	75.7	66.2	70.0	MUDDY CREEK BASIN	4	71	91
HOMESTAKE	43.0	0.6	35.9	26.6	PLATEAU CREEK BASIN	3	63	82
RUEDI	102.0	73.0	69.3	68.0	ROARING FORK BASIN	8	57	75
VEGA	32.9	16.7	13.2	12.2	WILLIAMS FORK BASIN	4	61	73
WILLIAMS FORK	97.0	80.6	80.0	57.3	WILLOW CREEK BASIN	4	60	84
WILLOW CREEK	9.1	7.6	7.9	6.7	TOTAL COLORADO RIVER BASI	46	58	75

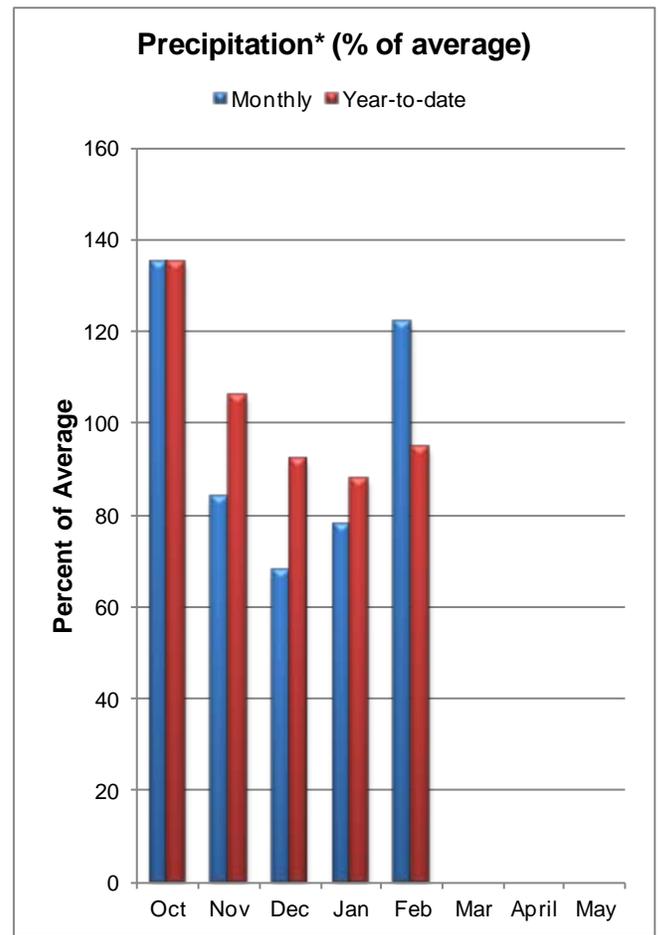
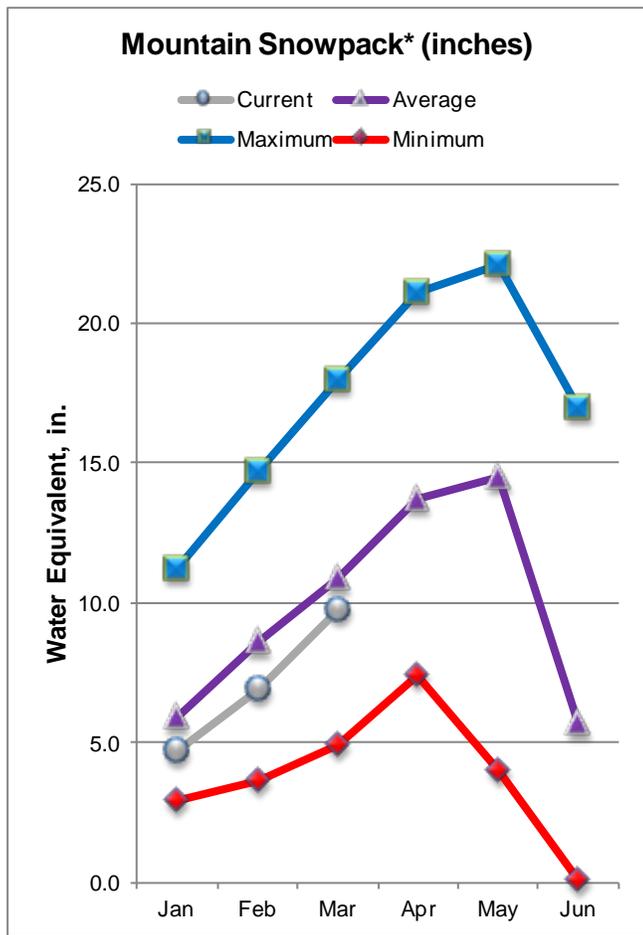
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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 March 1, 2012



\*Based on selected stations

Snow accumulation received in the South Platte River basin during the month of February was well above average. The total snowpack in the basin on February 1 was 81 percent of average, but accumulation during the month has brought the average up to 89 percent of average as of March 1. This basin boasts the highest snowpack percentage in the state. The snowpack's in the Boulder Creek and Cache la Poudre sub-basins both reached average conditions this past month with Boulder Creek snowpack percentage creeping slightly above to 104 percent of average. The Upper South Platte did not receive much relief from the February storm systems; it was reported just at 76 percent of average on March 1.

The South Platte basin received precipitation amounts during February that were 121 percent of average. This was the second highest monthly precipitation percentage recorded in any major river basin in the state this month. This boosted the water year precipitation totals in the basin to near average, as of March 1 year to date precipitation was 95 percent of average. Storage in the South Platte River basin's 33 reservoirs was at 105 percent of average and 84 percent of capacity on March 1. April -July streamflow forecasts within the watershed show large variation; the Cache la Poudre is expected to flow at 88 percent of average, Boulder Creek near Orodell is expected to flow at 94 percent of average, and the South Platte River at South Platte is expected to flow at 70 percent of average.

SOUTH PLATTE RIVER BASIN  
Streamflow Forecasts - March 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)
Antero Reservoir Inflow (2)	APR-JUL	8.2	12.2	16.0	95	21	31	16.8				
	APR-SEP	9.9	15.0	20	91	27	40	22				
Spinney Mountain Res Inflow (2)	APR-JUL	21	31	40	71	52	76	56				
	APR-SEP	25	38	50	73	66	100	69				
Elevenmile Canyon Res Inflow (2)	APR-JUL	21	31	41	71	54	81	58				
	APR-SEP	25	38	52	72	70	110	72				
Cheesman Lake Inflow (2)	APR-JUL	39	61	83	73	112	174	114				
	APR-SEP	48	76	103	74	140	220	140				
South Platte R at South Platte (2)	APR-JUL	67	106	144	70	196	310	205				
	APR-SEP	82	130	178	70	245	385	255				
Bear Ck ab Evergreen	APR-JUL	6.2	10.2	14.3	74	20	33	19.3				
	APR-SEP	8.7	14.0	19.3	77	27	43	25				
Bear Ck at Morrison	APR-JUL	6.5	11.8	17.6	70	26	47	25				
	APR-SEP	8.6	15.3	22	71	33	59	31				
Clear Ck at Golden	APR-JUL	65	83	96	87	109	127	110				
	APR-SEP	75	100	117	87	134	159	134				
St. Vrain Ck at Lyons (2)	APR-JUL	63	76	84	89	92	105	94				
	APR-SEP	73	88	98	90	108	123	109				
Boulder Ck nr Orodell (2)	APR-JUL	38	45	49	94	53	60	52				
	APR-SEP	42	51	56	93	61	70	60				
S Boulder Ck nr Eldorado Springs (2)	APR-JUL	32	37	40	98	43	48	41				
	APR-SEP	33	40	44	96	48	55	46				
Big Thompson R at Canyon Mouth (2)	APR-JUL	65	79	88	89	97	111	99				
	APR-SEP	68	85	96	81	107	124	119				
Cache La Poudre at Canyon Mouth (2)	APR-JUL	136	183	215	88	245	295	245				
	APR-SEP	151	205	240	87	275	330	275				

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

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

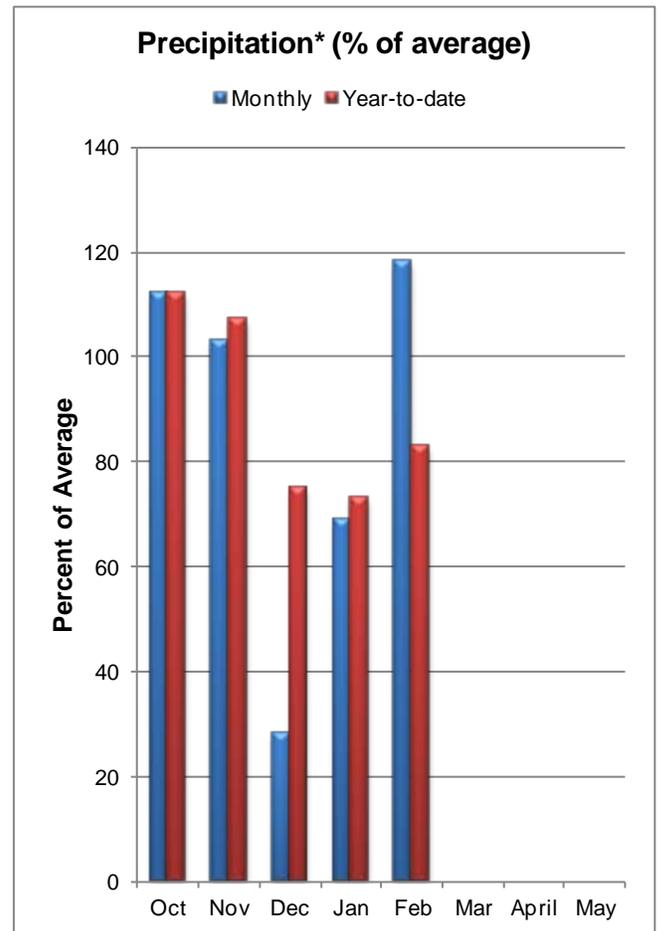
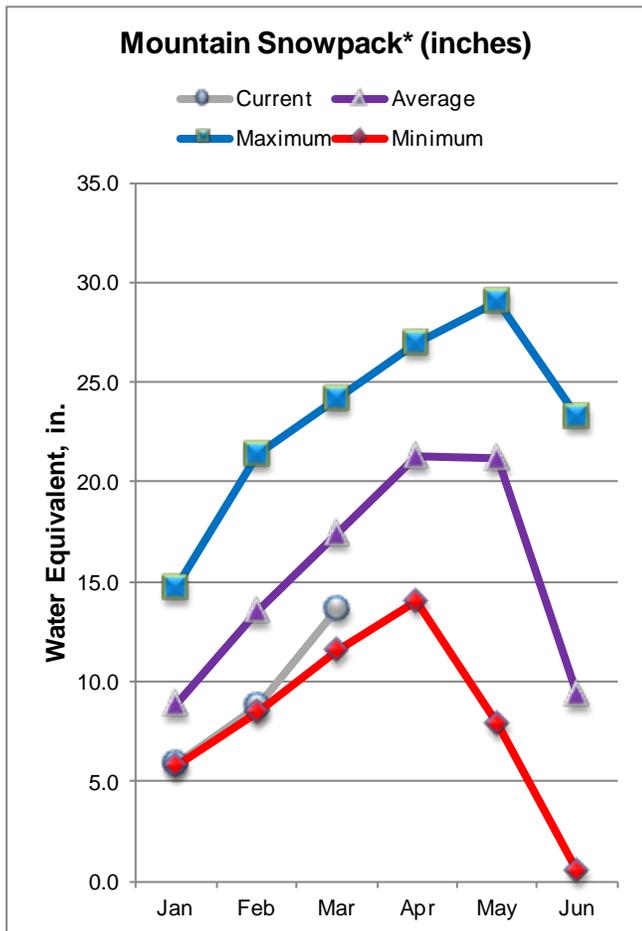
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ANTERO	19.9	15.9	20.0	16.3	BIG THOMPSON BASIN	7	61	83
BARR LAKE	30.1	28.3	25.7	26.0	BOULDER CREEK BASIN	5	89	104
BLACK HOLLOW	6.5	3.8	2.7	3.9	CACHE LA POUFRE BASIN	8	68	100
BOYD LAKE	48.4	40.5	36.8	32.4	CLEAR CREEK BASIN	4	64	91
BUTTON ROCK/RALPH PRICE	16.2	13.1	13.5	12.4	SAINT VRAIN BASIN	4	84	95
CACHE LA POUFRE	10.1	9.9	10.1	7.8	UPPER SOUTH PLATTE BASIN	16	81	76
CARTER	108.9	57.0	71.1	93.4	TOTAL SOUTH PLATTE BASIN	44	72	89
CHAMBERS LAKE	8.8	5.9	3.5	3.1				
CHEESMAN	79.0	69.0	73.8	59.0				
COBB LAKE	22.3	19.4	20.2	13.9				
ELEVEN MILE	98.0	99.3	99.2	95.8				
EMPIRE	36.5	36.0	36.0	25.6				
FOSSIL CREEK	11.1	9.2	8.9	7.4				
GROSS	41.8	27.2	25.6	25.3				
HALLIGAN	6.4	5.7	3.9	4.8				
HORSECREEK	14.7	11.6	9.0	12.5				
HORSETOOTH	149.7	133.2	92.8	109.2				
JACKSON	26.1	24.7	26.1	27.3				
JULESBURG	20.5	17.3	16.5	18.9				
LAKE LOVELAND	10.3	9.2	7.4	8.8				
LONE TREE	8.7	6.7	7.4	6.7				
MARIANO	5.4	3.2	3.4	4.3				
MARSHALL	10.0	7.6	4.3	5.4				
MARSTON	13.0	5.3	2.9	12.9				
MILTON	23.5	20.6	20.1	17.1				
POINT OF ROCKS	70.6	65.2	66.6	65.4				
PREWITT	28.2	22.3	22.4	21.0				
RIVERSIDE	55.8	47.1	49.6	48.9				
SPINNEY MOUNTAIN	49.0	45.7	36.5	32.2				
STANDLEY	42.0	36.5	32.1	33.6				
TERRY LAKE	8.0	5.6	5.3	5.3				
UNION	13.0	12.3	12.2	11.0				
WINDSOR	15.2	11.7	11.1	11.5				

\* 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 March 1, 2012



\*Based on selected stations

Snowpack conditions in the Yampa, White, North Platte and Laramie River basins improved greatly over the past month. According to preliminary SNOTEL data these basins received snowfall totals that were 126 percent of average for the month of February. Unfortunately the storms were not enough to boost the deficient snowpack to average conditions. March 1 snow surveys reported the snowpack at 78 percent of average, up a whopping 13 percentage points from the February 1 report but still just 62 percent of what was reported this time last year. Sub-basin snowpack's are somewhat varied, the Yampa and White basins recorded just 74 percent of average on March 1 and the North Platte and Little Snake basins reporting 80 and 83 percent of average respectively.

Precipitation in these basins during February was 118 percent of average, increasing the year to date precipitation to 83 percent of average as of March 1. This positive trend follows three consecutive months of decreasing year to date precipitation percentages. Reservoir storage is up slightly from last month at 124 percent of average on March 1; current storage volumes are 129 percent of last year's storage at this same time. Following the snowpack trends, current streamflow forecasts have increased slightly from those issued last month. As of March 1 runoff volumes are forecast to range from 65 percent of average for the North Platte near Northgate to 94 percent of average at the Laramie River near Woods Landing.

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Streamflow Forecasts - March 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	47	113	158	65	205	270	245
	APR-SEP	50	125	175	65	225	300	270
Laramie R nr Woods	APR-JUL	80	101	115	94	129	150	123
	APR-SEP	87	110	126	93	142	165	135
Yampa R ab Stagecoach Reservoir (2)	APR-JUL	9.0	13.4	17.0	74	21	29	23
Yampa R at Steamboat Springs (2)	APR-JUL	140	170	196	70	225	270	280
Elk R nr Milner	APR-JUL	190	230	260	80	290	340	325
Elkhead Ck ab Long Gulch nr Hayden	APR-JUL	26	39	49	69	61	80	71
Yampa R nr Maybell (2)	APR-JUL	425	590	715	72	855	1050	990
Little Snake R nr Slater (2)	APR-JUL	89	113	130	82	149	178	159
Little Snake R nr Savery (2)	APR-JUL	170	225	270	82	320	390	330
Little Snake R nr Lily (2)	APR-JUL	175	225	280	77	340	400	365
White R nr Meeker	APR-JUL	136	178	210	72	245	300	290

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

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Watershed Snowpack Analysis - March 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	31.2	21.9	24.0	LARAMIE RIVER BASIN	3	72	96
YAMCOLO	8.7	6.6	7.5	6.5	NORTH PLATTE RIVER BASIN	11	59	77
					TOTAL NORTH PLATTE BASIN	13	61	80
					ELK RIVER BASIN	2	60	79
					YAMPA RIVER BASIN	12	60	77
					WHITE RIVER BASIN	6	60	69
					TOTAL YAMPA AND WHITE RIV	17	60	74
					LITTLE SNAKE RIVER BASIN	8	69	83
TOTAL YAMPA, WHITE AND NO	35	62	78					

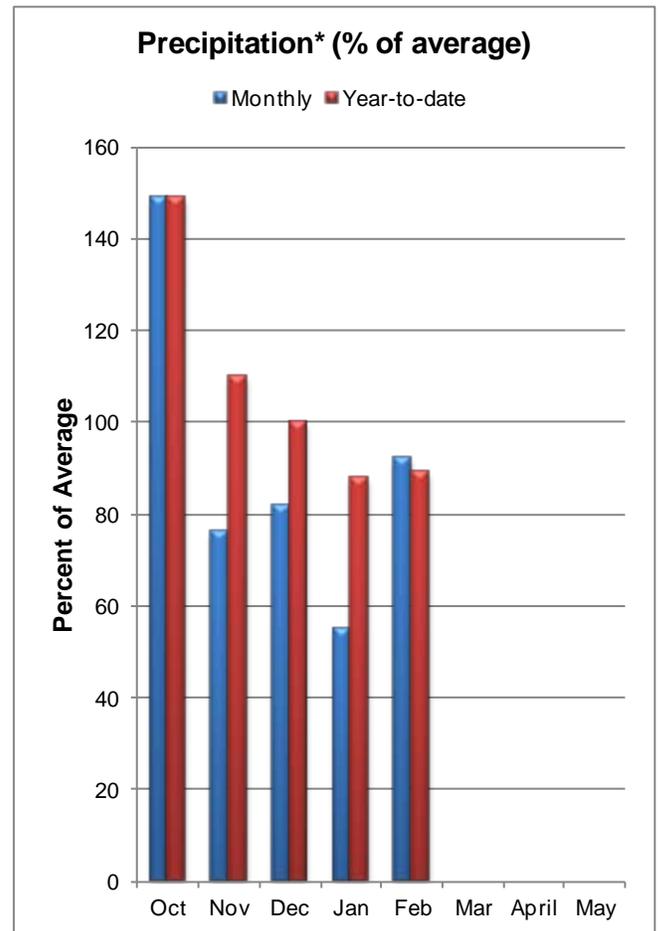
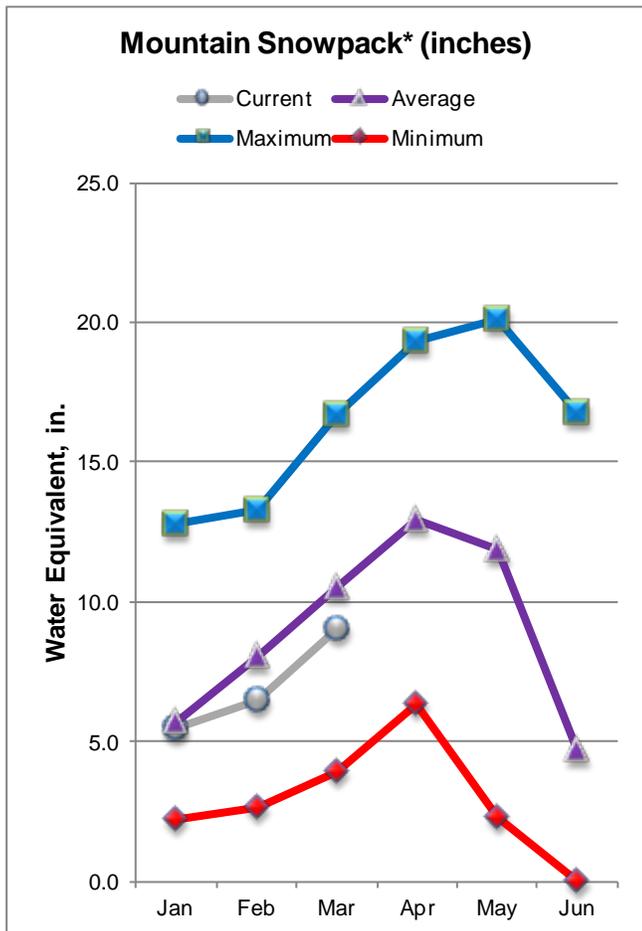
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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 March 1, 2012



\*Based on selected stations

The snowpack within the Arkansas River basin was reported at 86 percent of average following March 1 snow surveys. The basin has seen small gains since February's report when the snowpack percent of average was reported at 81 percent. While the snowpack in the basin as a whole has improved the sub-basins are still demonstrating disparity. The Upper Arkansas sub-basin's snowpack was at just 78 percent of average while the basins downstream are fairing much better. Percents of average for these basins as of March 1 are 102 percent in the Cucharas and Huerfano and 111 percent in Purgatoire.

Basin wide year to date precipitation was at 89 percent of average on March 1. The Arkansas basin received precipitation for the month of February that was 92 percent of average; this is the fourth consecutive month to record below average precipitation amounts. Reservoir storage levels within the Arkansas River Basin are currently at 98 percent of average and 34 percent of total capacity, these averages omit Great Plains, Holbrook and Horse Creek reservoirs which were not reported this month. Current streamflow forecasts follow the snowpack trends within the basin. Forecasts in the Upper Arkansas range from 66 percent of average at the Arkansas River above Pueblo to 77 percent of average for the Arkansas River at Salida. In the downstream basins April - July forecasts were 79 percent of average for the Purgatoire River at Trinidad and 85 percent of average on the Huerfano near Redwing.

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ARKANSAS RIVER BASIN  
Streamflow Forecasts - March 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)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	
Chalk Ck nr Nathrop	APR-JUL	8.9	13.5	17.2	75	21	28	23
	APR-SEP	11.6	17.1	22	82	26	34	27
Arkansas R at Salida (2)	APR-JUL	136	170	195	77	220	265	255
	APR-SEP	165	210	240	77	275	330	310
Grape Ck nr Westcliffe	APR-JUL	2.2	7.3	12.4	77	18.8	31	16.1
	APR-SEP	4.2	10.1	15.5	79	22	34	19.6
Arkansas R ab Pueblo (2)	APR-JUL	138	205	255	66	310	405	385
	APR-SEP	188	270	330	68	400	510	485
Huerfano R nr Redwing	APR-JUL	5.5	8.3	10.5	85	13.0	17.2	12.3
	APR-SEP	7.4	10.8	13.5	87	16.5	21	15.5
Cucharas R nr La Veta	APR-JUL	3.7	6.8	9.5	84	12.6	18.0	11.3
	APR-SEP	4.7	8.1	11.0	85	14.3	19.9	13.0
Purgatoire R at Trinidad (2)	MAR-JUL	8.4	18.2	27	79	38	56	34
	APR-SEP	12.3	25	36	82	49	72	44

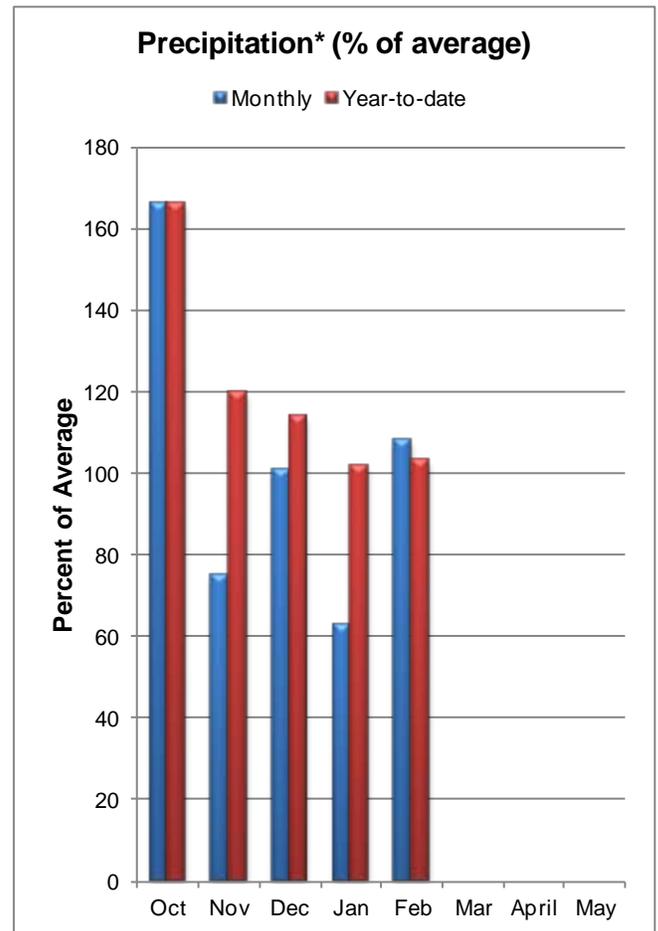
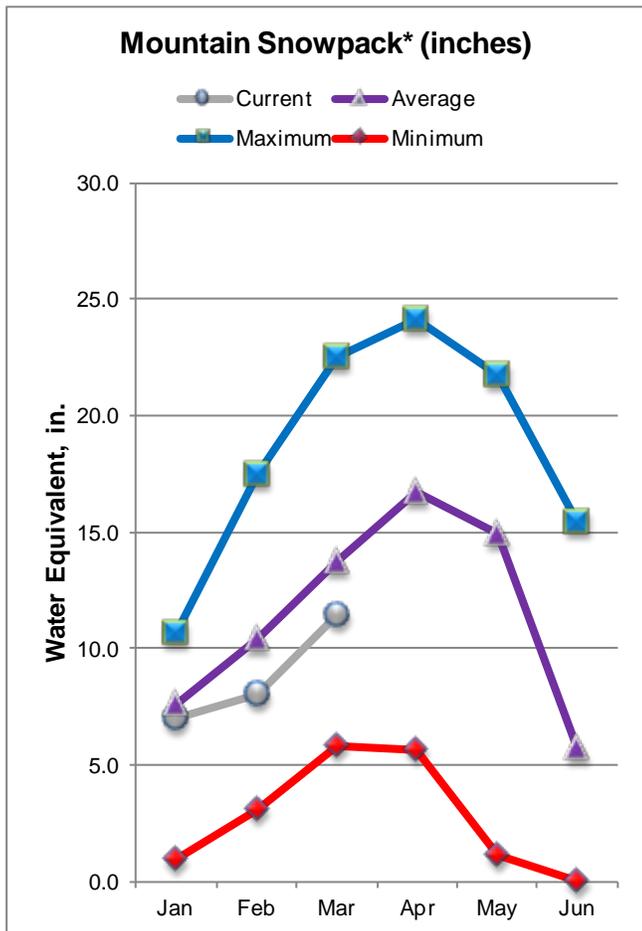
ARKANSAS RIVER BASIN Reservoir Storage (1000 AF) - End of February					ARKANSAS RIVER BASIN Watershed Snowpack Analysis - March 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ADOBE	62.0	36.7	41.5	36.0	UPPER ARKANSAS BASIN	10	65	78
CLEAR CREEK	11.4	7.6	8.4	6.8	CUCHARAS & HUERFANO RIVER	4	128	102
CUCHARAS RESERVOIR	40.0	0.1	0.1	4.7	PURGATOIRE RIVER BASIN	2	135	111
GREAT PLAINS		NO REPORT			TOTAL ARKANSAS RIVER BASI	15	77	86
HOLBROOK		NO REPORT						
HORSE CREEK		NO REPORT						
JOHN MARTIN	616.0	39.1	57.6	132.2				
LAKE HENRY	8.0	7.8	8.6	5.6				
MEREDITH	42.0	38.9	38.4	18.1				
PUEBLO	354.0	239.7	248.8	168.7				
TRINIDAD	167.0	16.0	18.7	26.2				
TURQUOISE	127.0	78.0	49.3	77.3				
TWIN LAKES	86.0	47.6	45.3	44.0				

\* 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 March 1, 2012



\*Based on selected stations

The Upper Rio Grande basin’s snowpack has increased 5 percentage points from the February 1 report of 78 percent of average to 83 percent of average as of March 1. Sub-basin snowpack's are showing the greatest variation in the state; the Culebra and Trinchera Creek drainages are looking good at 90 percent of average, while the Alamosa Creek watershed was at just 62 percent of average on March 1. The Alamosa Creek drainage currently has the largest departure from average in the state.

Year to date precipitation in the basin was at 103 percent of average on March 1, and 111 percent of last year's totals at this same time. The Upper Rio Grande along with the combined basin's in the southwest are the only major basins in the state reporting above average water year precipitation totals. Total reservoir storage in the Upper Rio Grande basin was at 69 percent of average and 20 percent of capacity on March 1, the lowest in the state. The basin boasts some of the highest projected river flows in the state; both the Rio Grande at Thirty Mile Bridge and the Rio Grande near Del Norte are expected to run at 94 percent of average. The lowest forecast in the basin is for the San Antonio River at Ortiz, April - September volumes at this gage are expected to be just 61 percent of average.

UPPER RIO GRANDE BASIN  
Streamflow Forecasts - March 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)	
Rio Grande at Thirty Mile Bridge (2)	APR-SEP	90	112	128	94	145	172	136
	APR-JUL	81	98	111	94	125	148	118
Rio Grande at Wagon Wheel Gap (2)	APR-SEP	217	276	320	93	367	443	345
SF Rio Grande at South Fork (2)	APR-SEP	88	109	125	95	142	171	132
Rio Grande nr Del Norte (2)	APR-SEP	343	432	500	94	575	698	531
Saguache Ck nr Saguache (2)	APR-SEP	15.1	22	27	82	33	42	33
Alamosa Ck ab Terrace Reservoir	APR-SEP	40	51	60	86	70	85	70
La Jara Ck nr Capulin	MAR-JUL	4.0	5.8	7.4	85	9.2	12.4	8.7
Trinchera Ck ab Turners Ranch	APR-SEP	5.7	7.6	9.0	75	10.5	13.0	12.0
Sangre de Cristo Ck (2)	APR-SEP	1.7	4.0	6.0	68	8.4	12.8	8.8
Ute Creek	APR-SEP	4.0	6.7	9.0	74	11.6	16.1	12.2
Platoro Reservoir Inflow	APR-JUL	39	47	53	83	60	71	64
	APR-SEP	43	52	59	83	67	79	71
Conejos R nr Mogote (2)	APR-SEP	116	147	170	85	196	240	200
San Antonio R at Ortiz	APR-SEP	4.9	7.7	10.0	61	12.8	17.7	16.4
Los Pinos R nr Ortiz	APR-SEP	34	46	55	74	66	83	74
Culebra Ck at San Luis (2)	APR-SEP	8.4	14.0	19.0	83	25	36	23
Costilla Reservoir Inflow	MAR-JUL	4.5	6.9	9.0	85	11.4	15.7	10.6
Costilla Ck nr Costilla (2)	MAR-JUL	10.7	16.8	22	85	28	39	26

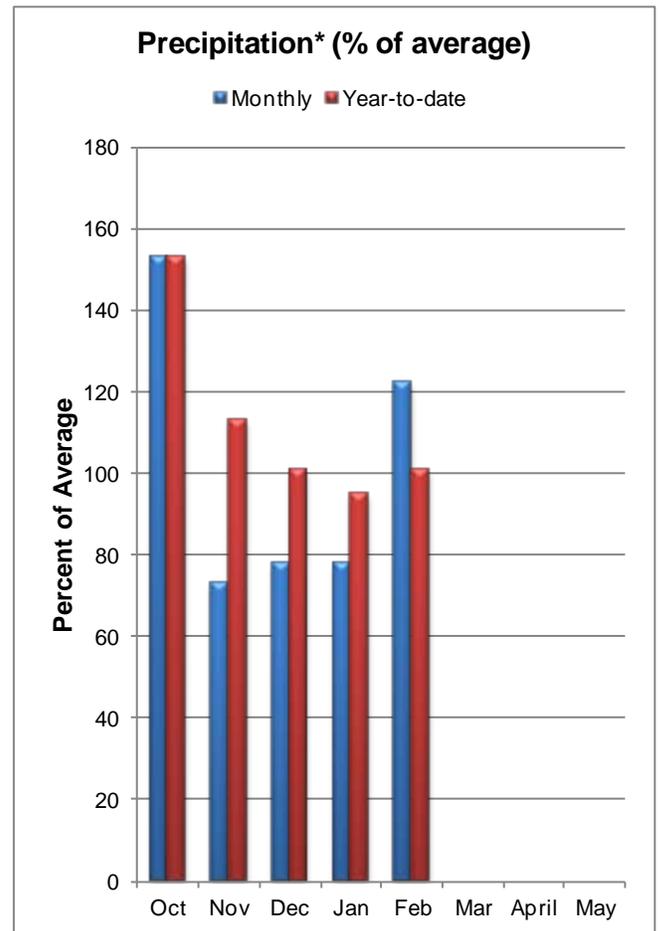
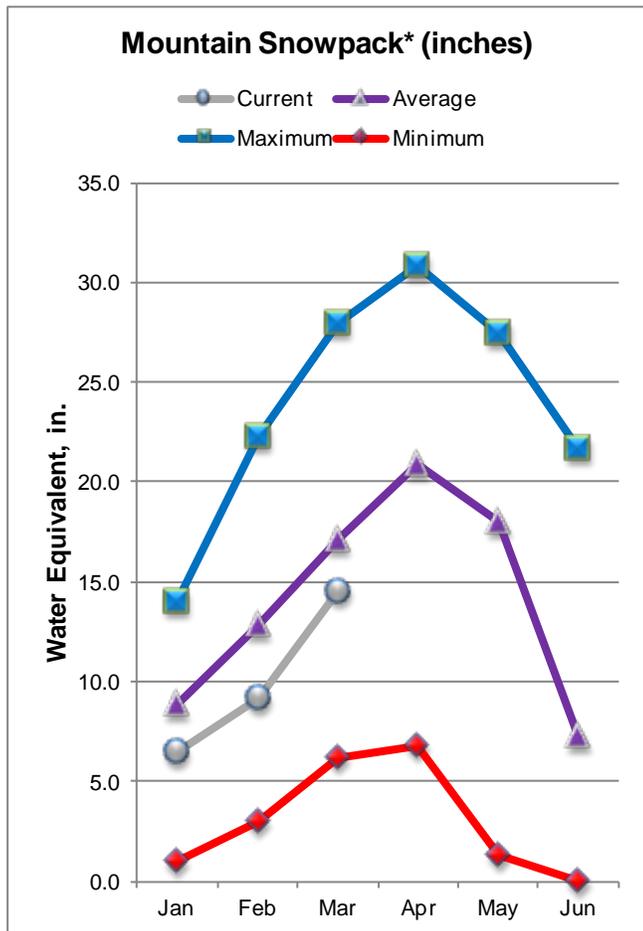
UPPER RIO GRANDE BASIN Reservoir Storage (1000 AF) - End of February					UPPER RIO GRANDE BASIN Watershed Snowpack Analysis - March 1, 2012			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CONTINENTAL	27.0	4.6	5.0	5.3	ALAMOSA CREEK BASIN	2	85	69
PLATORO	60.0	15.4	21.6	24.3	CONEJOS & RIO SAN ANTONIO	4	83	71
RIO GRANDE	51.0	18.5	18.2	17.6	CULEBRA & TRINCHERA CREEK	5	115	90
SANCHEZ	103.0	8.5	16.7	24.1	UPPER RIO GRANDE BASIN	11	91	85
SANTA MARIA	45.0	8.2	6.7	10.6	TOTAL UPPER RIO GRANDE BA	22	94	83
TERRACE	18.0	5.6	4.3	6.7				

\* 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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# SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS as of March 1, 2012



\*Based on selected stations

February storms brought above average snow accumulation to the combined San Miguel, Dolores, Animas and San Juan basins. According to preliminary SNOTEL data snowfall totals for the month were 116 percent of average. March 1 snow surveys reported the snowpack in these basins to be at 86 percent of average, up from just 73 percent of average recorded on February 1. All sub-basins reported improvements to their snowpack's as well. Snowpack's vary from 84 percent of average in the San Juan basin to 91 percent of average in the San Miguel basin.

Year to date precipitation was up 6 percentage points from last month to 101 percent of average on March 1. Precipitation in February was 122 percent of average, a welcome change after three consecutive months of well below average precipitation in the basins. Reservoir storage reported at the end of February remains above average at 104 percent average and 102 percent of last year's volumes. April - July streamflow forecasts issued on March 1 have improved somewhat over those issued previously; however runoff volumes are still expected to be below average across the basins. Current forecasts range from 75 percent of average for McPhee Reservoir Inflow to 90 percent of average for Vallecito Reservoir Inflow. The prediction for the Mancos River near Mancos changed the most; flows are now expected to be 82 percent of average this season up from the previous forecast of 70 percent of average.

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

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<===== Drier =====>>		=====		>>===== Wetter =====>>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Dolores R at Dolores	APR-JUL	137	178	210	79	245	305	265
McPhee Reservoir Inflow (2)	APR-JUL	150	200	240	75	280	350	320
San Miguel R nr Placerville	APR-JUL	70	90	105	80	122	150	132
Gurley Reservoir Inlet	APR-JUL	10.3	13.2	15.4	84	17.9	22	18.3
Cone Reservoir Inlet	APR-JUL	0.7	1.6	2.7	83	4.1	7.0	3.3
Lilylands Reservoir Inlet	APR-JUL	1.4	1.9	2.3	78	2.8	3.6	2.9
Rio Blanco at Blanco Diversion (2)	APR-JUL	25	37	46	87	55	67	53
Navajo R at Oso Diversion (2)	APR-JUL	38	49	57	83	66	82	69
San Juan R nr Carracas (2)	APR-JUL	189	275	335	83	395	480	405
Piedra R nr Arboles	APR-JUL	138	172	195	85	220	250	230
Vallecito Reservoir Inflow (2)	APR-JUL	136	165	185	90	205	235	205
Navajo Reservoir Inflow (2)	APR-JUL	405	550	650	83	750	895	785
Animas R at Durango	APR-JUL	260	330	375	85	420	490	440
Lemon Reservoir Inflow (2)	APR-JUL	36	45	52	90	59	71	58
La Plata R at Hesperus	APR-JUL	14.2	18.6	22	88	26	32	25
Mancos River Near Mancos	APR-JUL	15.4	22	27	82	32	39	33

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

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

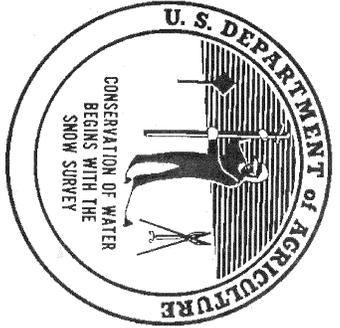
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GROUNDHOG	22.0	4.8	13.2	12.0	ANIMAS RIVER BASIN	9	84	85
JACKSON GULCH	10.0	3.7	5.2	4.6	DOLORES RIVER BASIN	6	93	85
LEMON	40.0	14.3	14.5	20.4	SAN MIGUEL RIVER BASIN	5	96	88
MCPHEE	381.0	287.7	273.3	276.3	SAN JUAN RIVER BASIN	4	83	84
NARRAGUINNEP	19.0	16.4	17.6	13.5	TOTAL SAN MIGUEL, DOLORES	23	87	85
VALLECITO	126.0	76.6	72.4	60.8	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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