

Colorado

Water Supply Outlook Report

April 1, 2017



The Wager Gulch basin near the remote ghost town of Carson was blanketed in a healthy layer of snow in late March. Wager Gulch SNOTEL is located about a mile below Carson and had 24 inches of snow and 10.3 inches snow water equivalent on the day this photo was taken, March 29th. Wager Gulch was installed in 2011 so it does not yet have an official median, but it serves as an important monitoring location for the area above Lake San Cristobal near Lake City.

Date: 03/29/2017 Photo By: Brian Domonkos

REMINDER: We are soliciting field work photos from our snow surveyors again this year. Each month we will pick one to grace the cover of this report! Please include information on where, when and of who/what the photo was taken.

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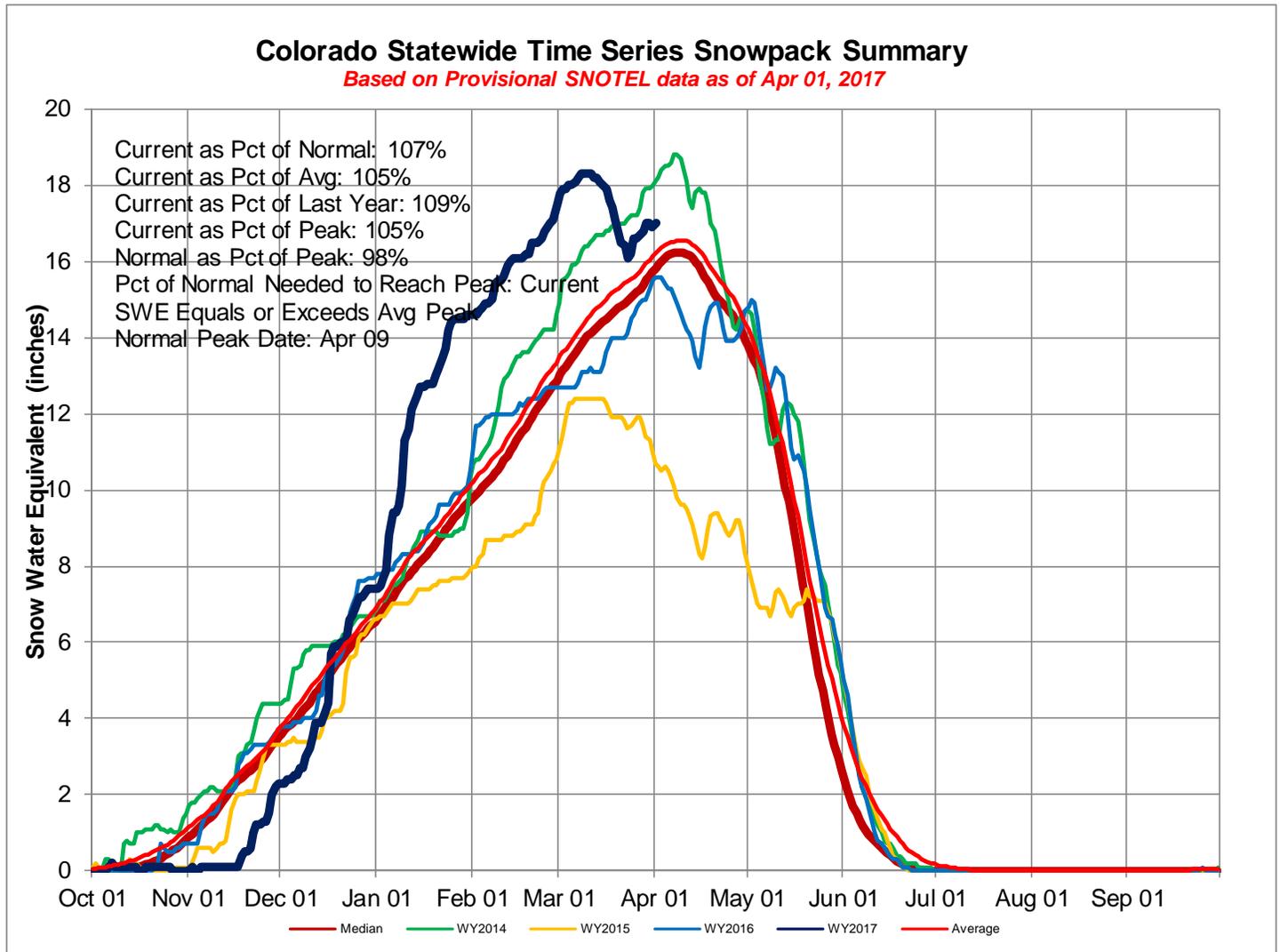
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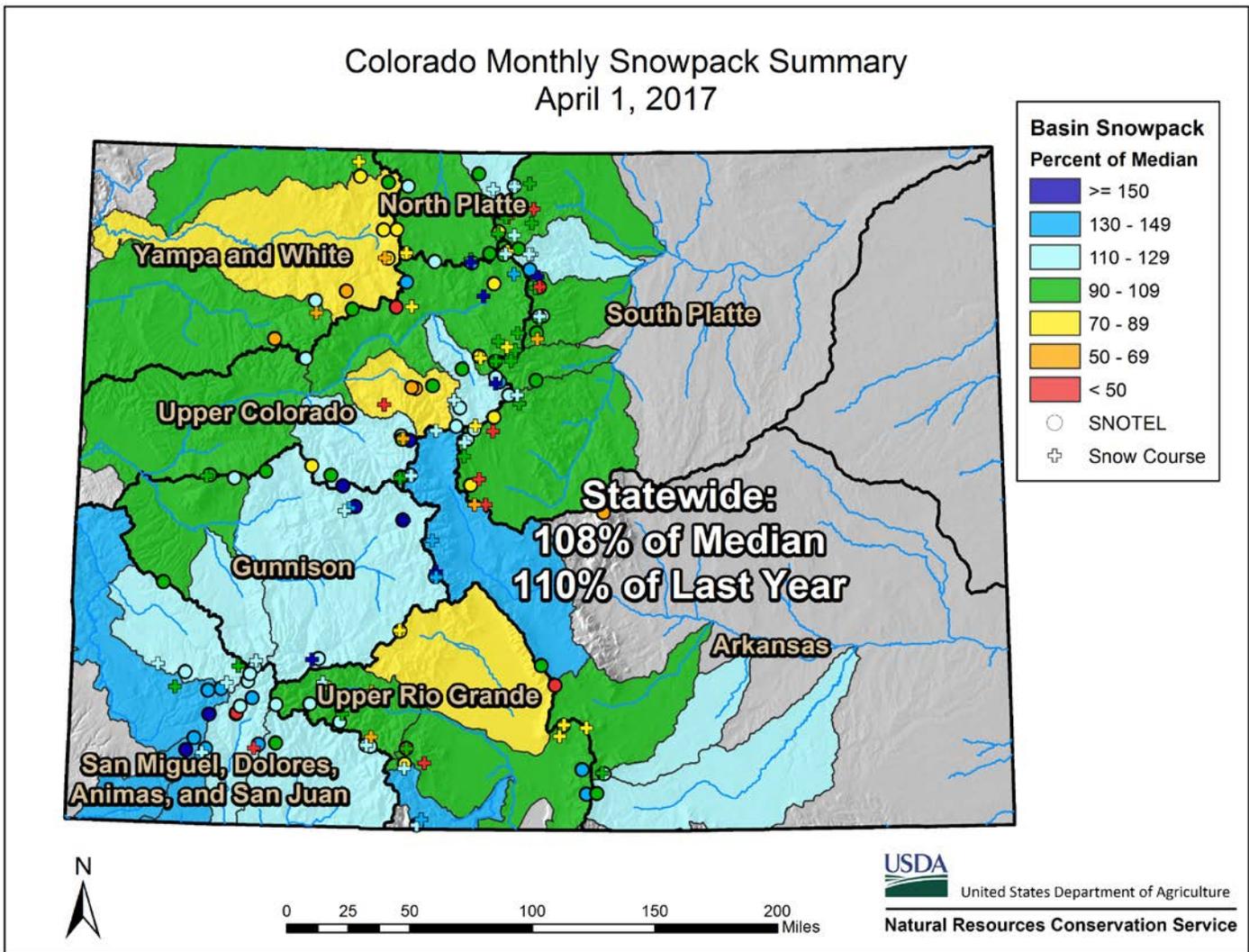
Statewide Water Supply Conditions

Summary

Unseasonably warm and dry weather dominated the opening two-thirds of March across Colorado resulting in earlier than normal snowpack melt in all of the state's basins. Accordingly, streamflows responded with some of the greater March flows in decades. Fortunately the end of March ushered in a wetter weather pattern facilitating the recovery of most basin-wide March 1 snow water equivalent values. Statewide snowpack recovery was considerable, however net March snowpack change resulted in a reduction in percent of normal values from higher values at the beginning of March. Statewide precipitation was well short of average with the Arkansas River basin the only exception just below normal. Most notably in this basin, Apishapa and Culebra #2 SNOTELs saw well above average precipitation accumulation and Apishapa received much of the accumulation in the form of snow. Around the rest of the state and closer to the state percent of normal, Arapaho Ridge and El Diente Peak SNOTELs saw 64% & 63% of normal precipitation, respectively. The greater picture shows statewide year-to-date precipitation totals are falling closer to normal. Factoring in March snowpack change and the dearth of precipitation, streamflow forecasts for the coming upcoming spring and summer dropped considerably this month.

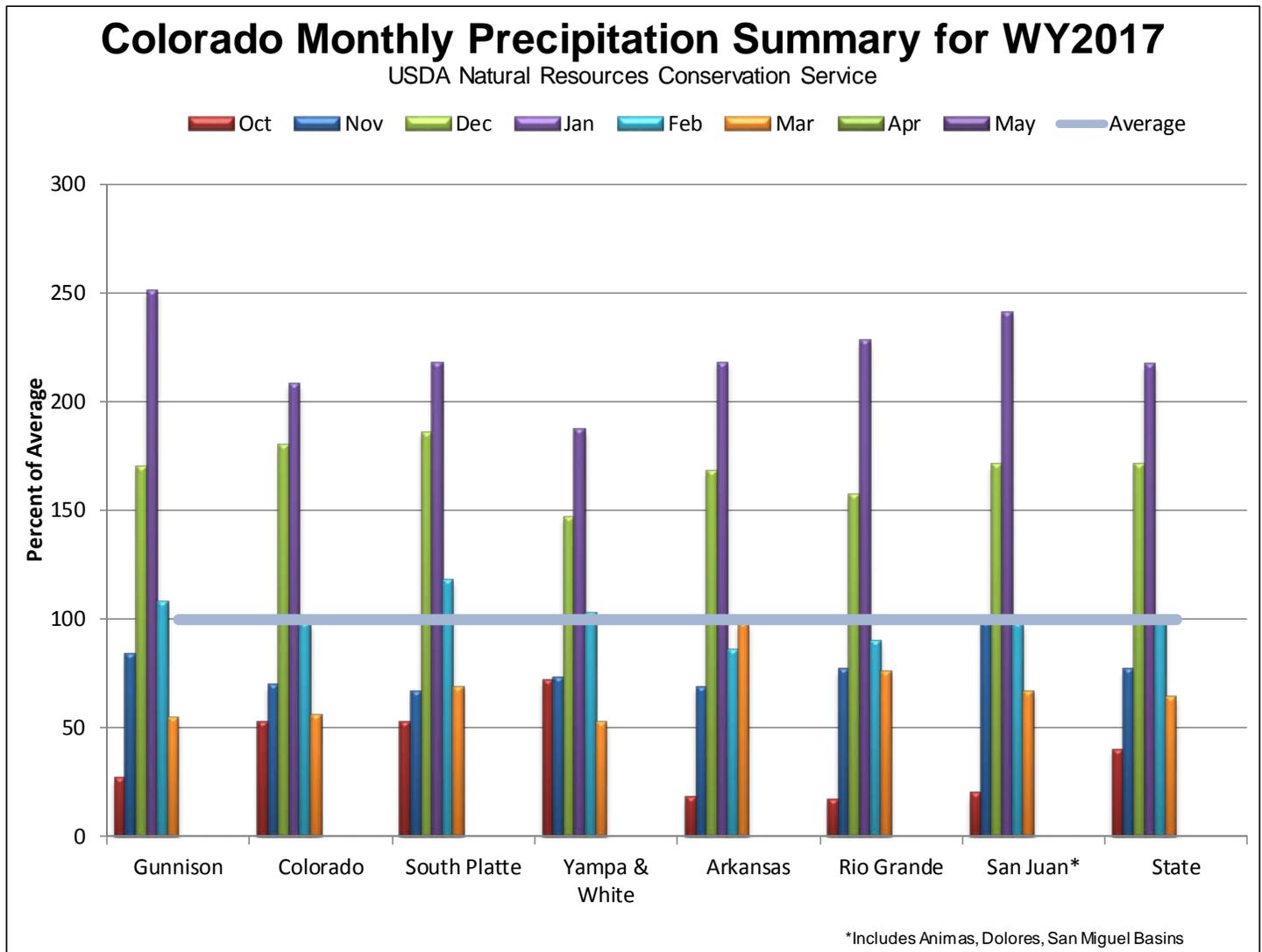


Snowpack



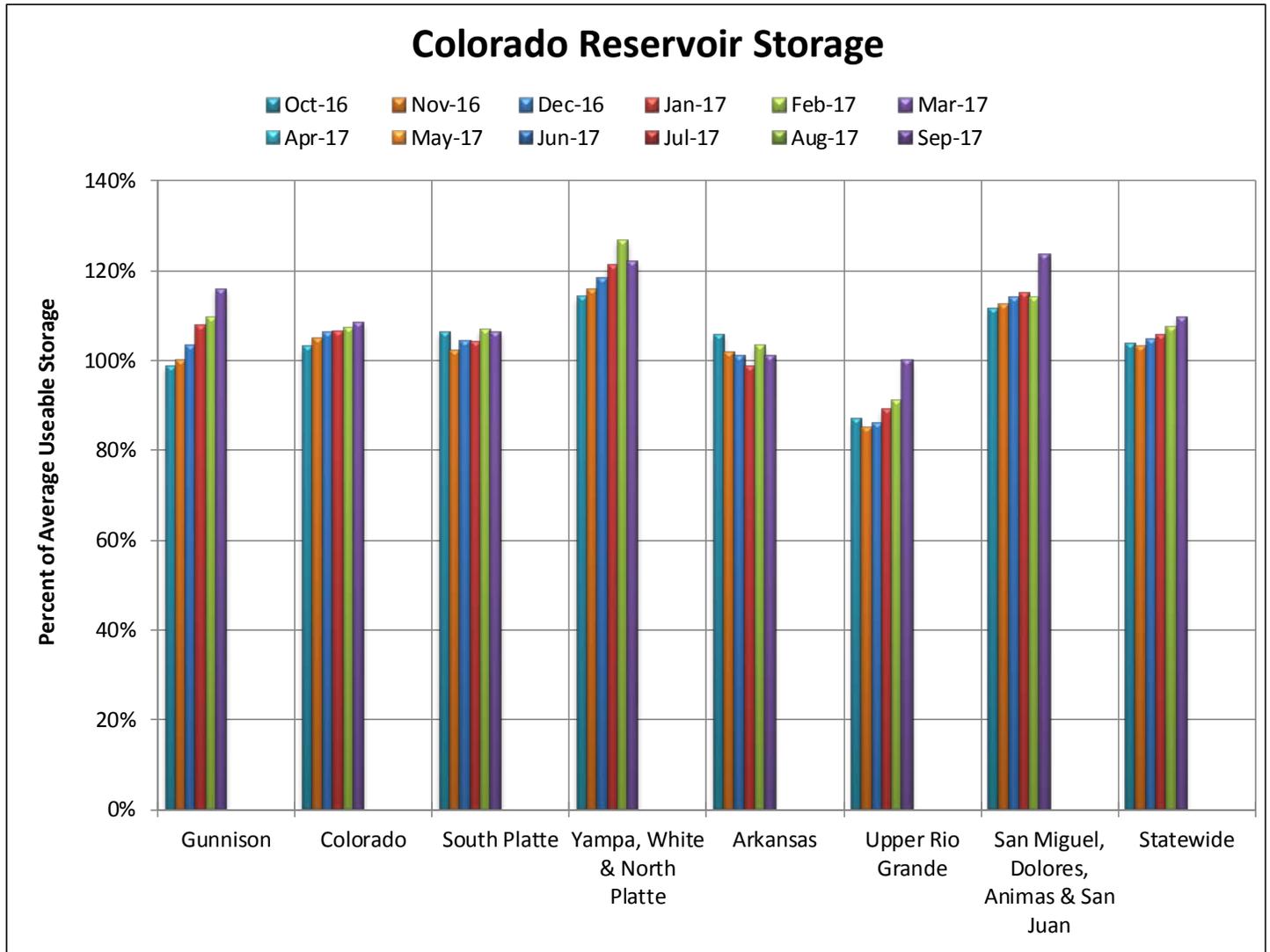
Notable new snowfall was absent in Colorado's mountains during much of March. This coupled with sun and warm temperatures led to the onset of melt at many low, middle, and even several high elevation SNOTEL sites. Typically, most of the major river basins continue to have gains to their mountain snowpacks until the first or second week of April. Fortunately, weather patterns shifted during the last several days of March, bringing a return to cooler temperatures and snowy conditions across the state. This allowed the SNOTEL sites that had not reached advanced stages of melt to continue accumulating, and some sites may yet reach new snowpack peaks. All of the major river basins experienced drops of 20 to 40 percent of normal during March, but most basins had sufficient snowpack to remain above the median for April 1st despite the lack of snowfall during much of March. The Yampa-White River basin was the only basin to fall below normal and is now at 86 percent of median. This basin now needs above normal snowfall to reach its normal peak snowpack. The South Platte River basin had the largest decrease in percent of normal and is now at 103 percent of the median. The Colorado, North Platte, and Rio Grande River basins are also just above normal at 105, 106, and 108 percent of the median respectively. The Arkansas and combined San Miguel, Dolores, Animas, and San Juan River basins are considerably above normal at 118 and 121 percent of median respectively, while the Gunnison continues to have the most remarkable snowpack at 125 percent of median. Statewide the snowpack was 108 percent of median on April 1st, promising for water supplies provided rapid melt does not resume for a few more weeks.

Precipitation



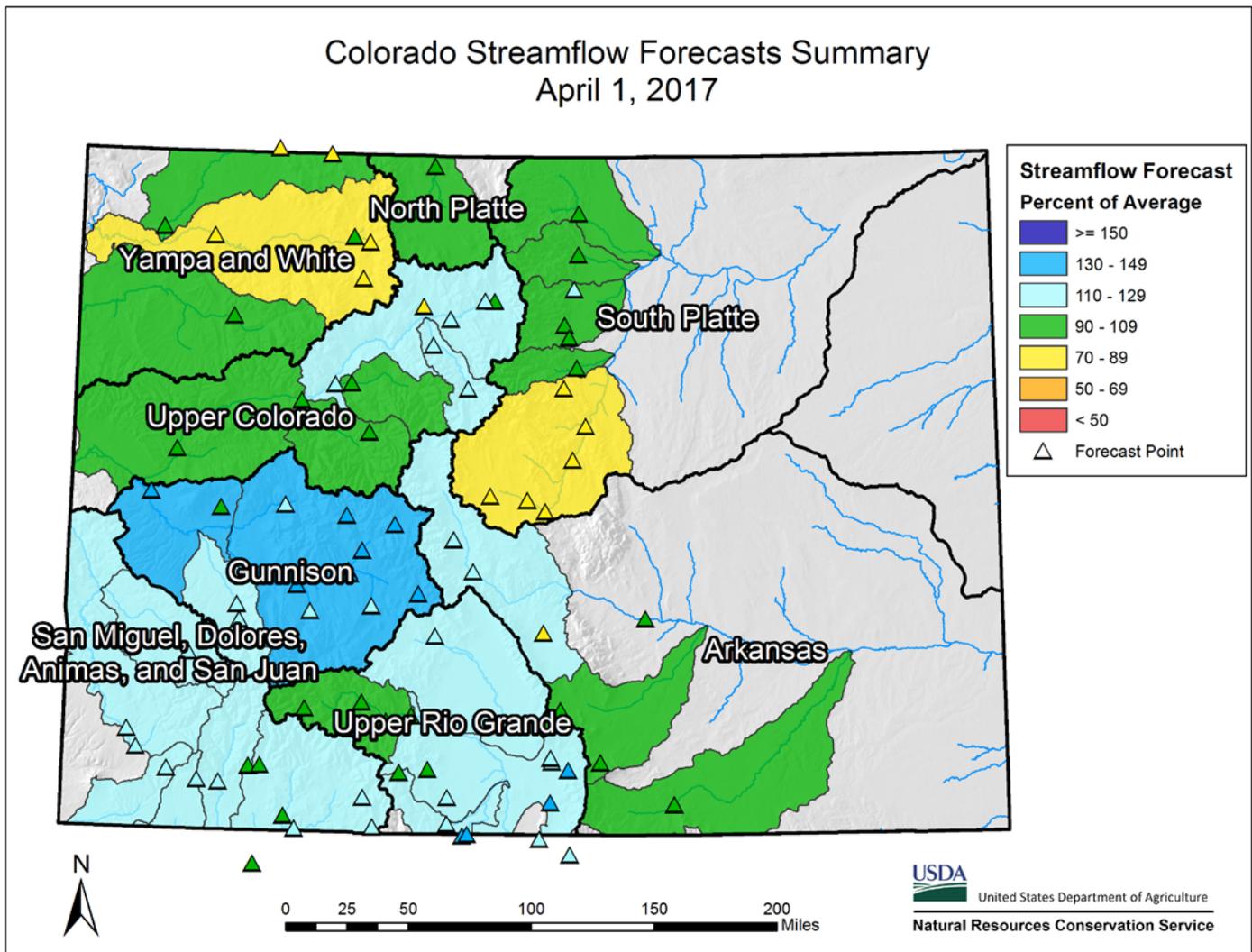
The month of March brought below average precipitation to the mountains of every major river basin in Colorado, the first time since November. The Arkansas basin received very close to normal precipitation, at 98 percent of the 1981-2010 average value. This basin, however, was the outlier on the high end with all others receiving between 53 and 76 percent of average mountain precipitation for the month. At the opposite end of the spectrum from the Arkansas were the combined Yampa, White, and North Platte basins, the Gunnison, and the Colorado which received 53, 55, and 56 percent of average March precipitation, respectively. In the Southwest corner of the state in the combined San Miguel, Dolores, Animas, and San Juan basins the March monthly precipitation was 67 percent of average. The South Platte got slightly more, relative to the normal amount at 69 percent. Finally, the mountains of the upper Rio Grande received 76 percent of average precipitation last month. This is a very interesting and stark difference from what was observed in January when all but one basin got more than 200 percent of average precipitation. Despite the differences month to month, water year-to-date precipitation across Colorado has evened out to fairly similar levels with all basins being above normal, between 107 and 118 percent of average. Statewide water year-to-date precipitation was 112 percent of average as of April 1st.

Reservoir Storage



Continuing the trend that has persisted throughout this water Colorado statewide reservoir storage has continued to rise relative to its normal monthly amounts and currently resides at 110 percent of average. The largest increases in storage were observed in the combined San Miguel, Dolores, Animas, and San Juan basins as well as the upper Rio Grande, with both regions experiencing a nearly 10 percent increase over the last month. This puts the basins in southwest Colorado as having the highest percent of average reservoir storage in the state at 124 percent. Also, of particular note, the recent increase in the upper Rio Grande basin have brought storage up to 100 percent of normal, where it has not been since 2009. The Gunnison basin also experienced a substantial increase over the last month and is now holding 116 percent of average storage in its reservoirs. The Colorado and South Platte basins remain at similar levels as last month and are holding 108 and 106 percent of average storage, respectively. The combined Yampa, White, and North Platte basins underwent a drop in percent of average storage but are at still well above normal, at 122 percent of average. The Arkansas basin also experienced a drop in storage compared to last month and is currently reporting 101 percent of average.

Streamflow



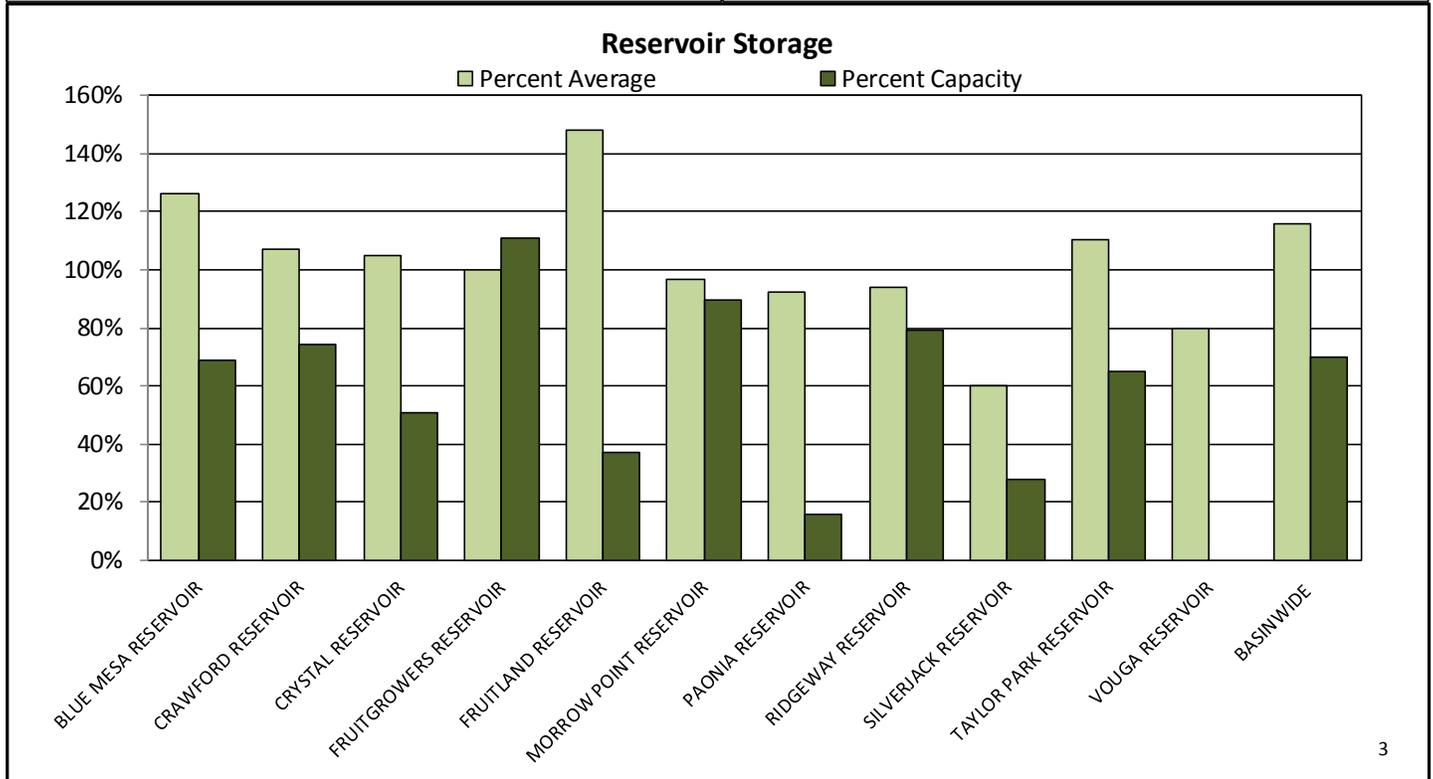
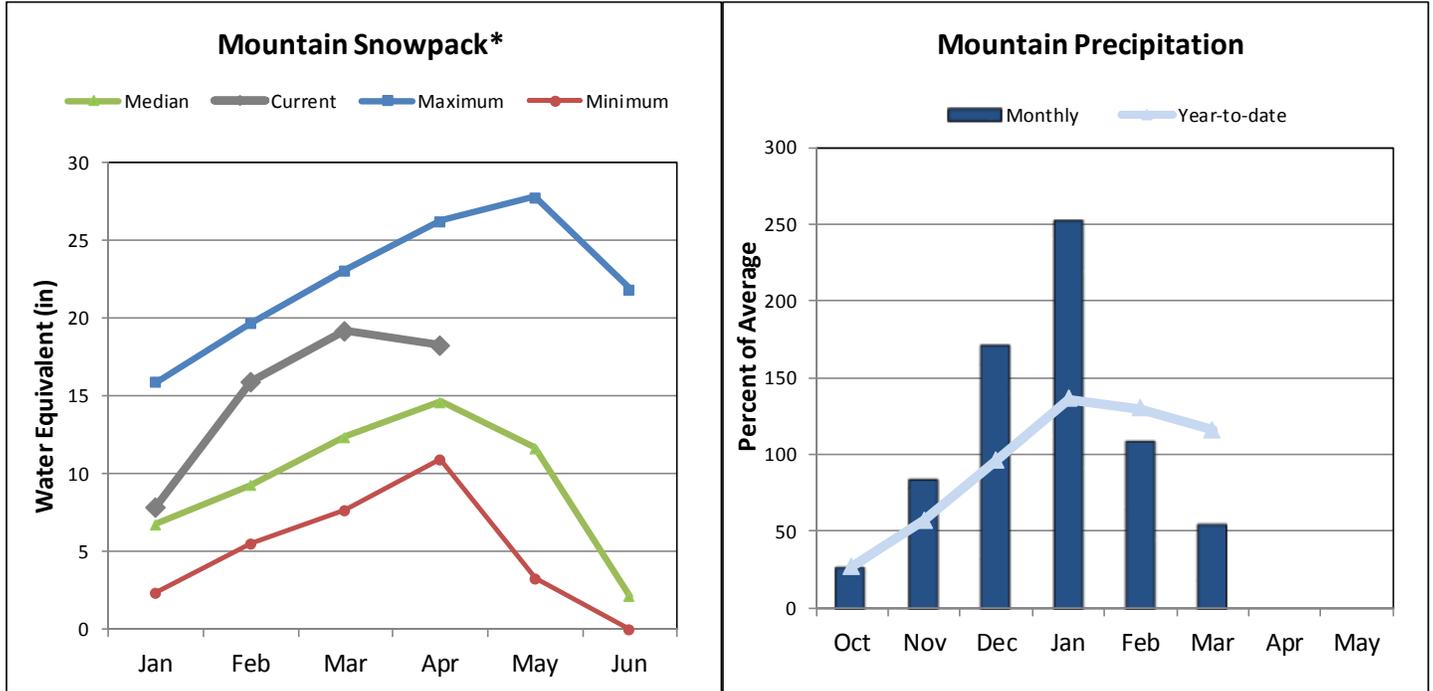
Exceptionally warm mountain temperatures led to an increase in runoff in many Colorado streams during March. This, along with below normal precipitation and snowfall caused the April through July streamflow forecasts to decrease at all but a handful of gages from the flows predicted on March 1st. Nonetheless, the majority of streams in Colorado are still anticipated to produce normal to above normal flows, with the exception of the Upper South Platte and streams in the Yampa and White River basins. In these basins, the April through July flows are currently forecast to be between 79 and 88 percent of average. Streams in the northern drainages of the South Platte and the North Platte River are expected to have near normal flows ranging from 97 to 107 percent of average. Tributaries of the Colorado River and most streams in the Arkansas River basin are forecast to have above average flows ranging from 101 to 121 percent of average, with the exception of the inflow to Wolford Mountain Reservoir and Grape Creek at Westcliffe, which are expected to have below average flows. Predicted runoff volumes in the combined San Miguel, Dolores, Animas, and San Juan River basins are similar and range from 101 to 126 percent of average. Streams in Upper Rio Grande and Gunnison River basins have the highest forecasts for April through July streamflow volumes, ranging from 100 to 147 percent of average. The highest runoff with respect to normal is expected to occur in the headwaters of the upper Gunnison River and the southern tributaries of the Rio Grande in Colorado. The forecasts discussed above assume normal future weather conditions, but barring drastic changes, the water supply outlook remains positive for most of Colorado's water users.

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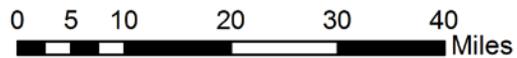
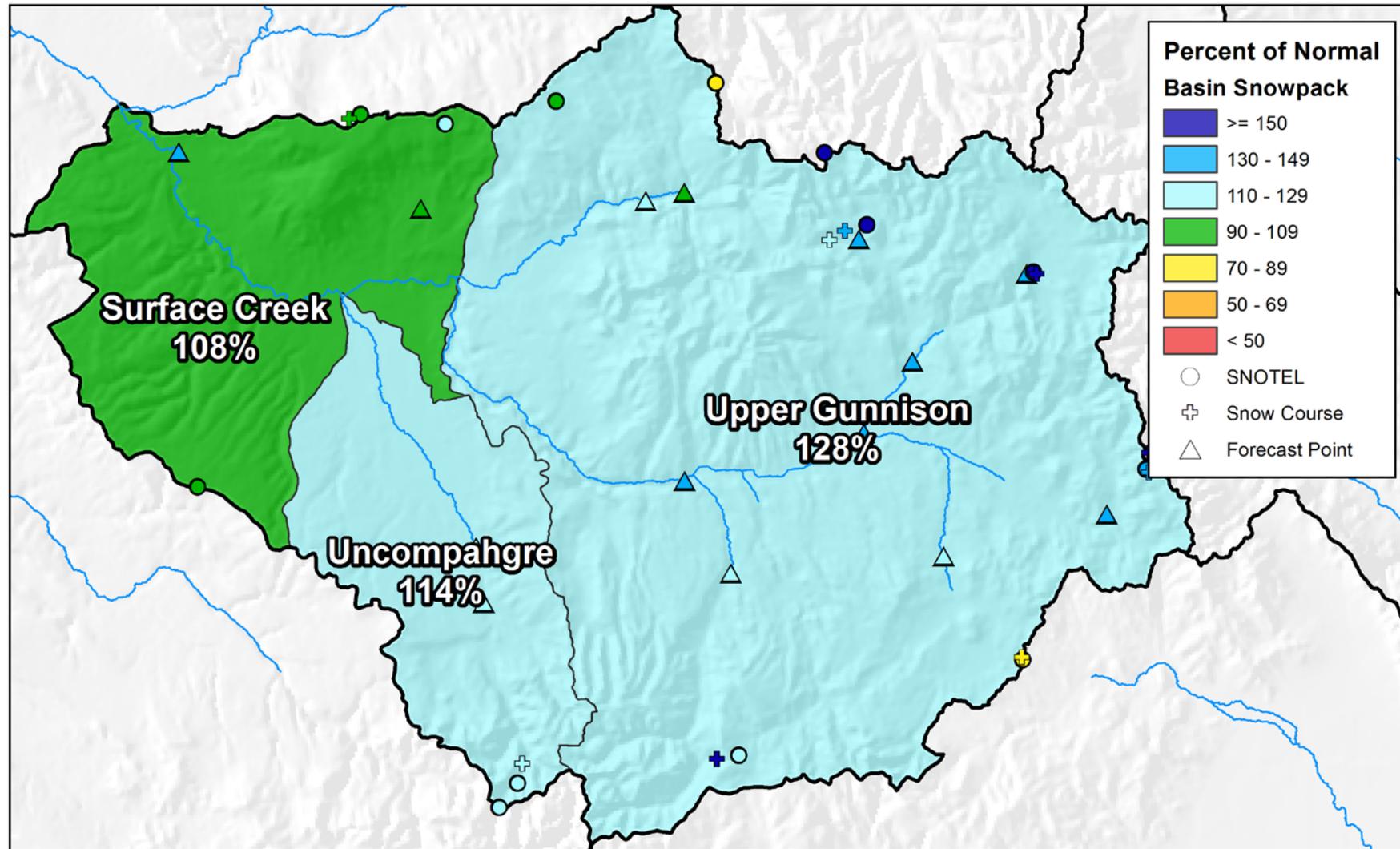
GUNNISON RIVER BASIN

April 1, 2017

Snowpack in the Gunnison River basin is above normal at 125% of the median. Precipitation for March was 55% of average which brings water year-to-date precipitation down to 116% of average. Reservoir storage at the end of March was 116% of average compared to 115% last year. Current streamflow forecasts range from 147% of average for Tomichi Creek at Gunnison to 101% for Surface Creek at Cedaredge.



Gunnison River Basin Snowpack and Streamflow Forecasts April 1, 2017



United States Department of Agriculture

Natural Resources Conservation Service

Gunnison River Basin Streamflow Forecasts - April 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

GUNNISON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Taylor Park Reservoir Inflow	APR-JUL	105	120	130	131%	140	155	99
Slate R nr Crested Butte	APR-JUL	98	107	114	137%	121	131	83
East R at Almont	APR-JUL	205	230	245	135%	260	290	182
Gunnison R near Gunnison ²	APR-JUL	410	470	510	138%	555	620	370
Tomichi Ck at Sargents	APR-JUL	28	35	41	137%	48	58	30
Cochetopa Ck bl Rock Ck nr Parlin	APR-JUL	10.3	15.4	19.3	129%	24	31	15
Tomichi Ck at Gunnison	APR-JUL	63	89	109	147%	131	168	74
Lake Fk at Gateview	APR-JUL	114	134	149	121%	164	188	123
Blue Mesa Reservoir Inflow ²	APR-JUL	760	855	920	136%	985	1080	675
Paonia Reservoir Inflow	MAR-JUN	75	94	107	111%	120	139	96
	APR-JUN	65	84	97	107%	110	129	91
	APR-JUL	66	89	104	107%	119	142	97
NF Gunnison R nr Somerset ²	APR-JUL	310	345	375	129%	400	440	290
Surface Ck at Cedaredge	APR-JUL	13.6	15.6	17	101%	18.5	21	16.8
Ridgway Reservoir Inflow	APR-JUL	94	109	119	118%	129	144	101
Uncompahgre R at Colona ²	APR-JUL	111	139	160	117%	183	220	137
Gunnison R nr Grand Junction ²	APR-JUL	1560	1790	1940	131%	2090	2320	1480

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

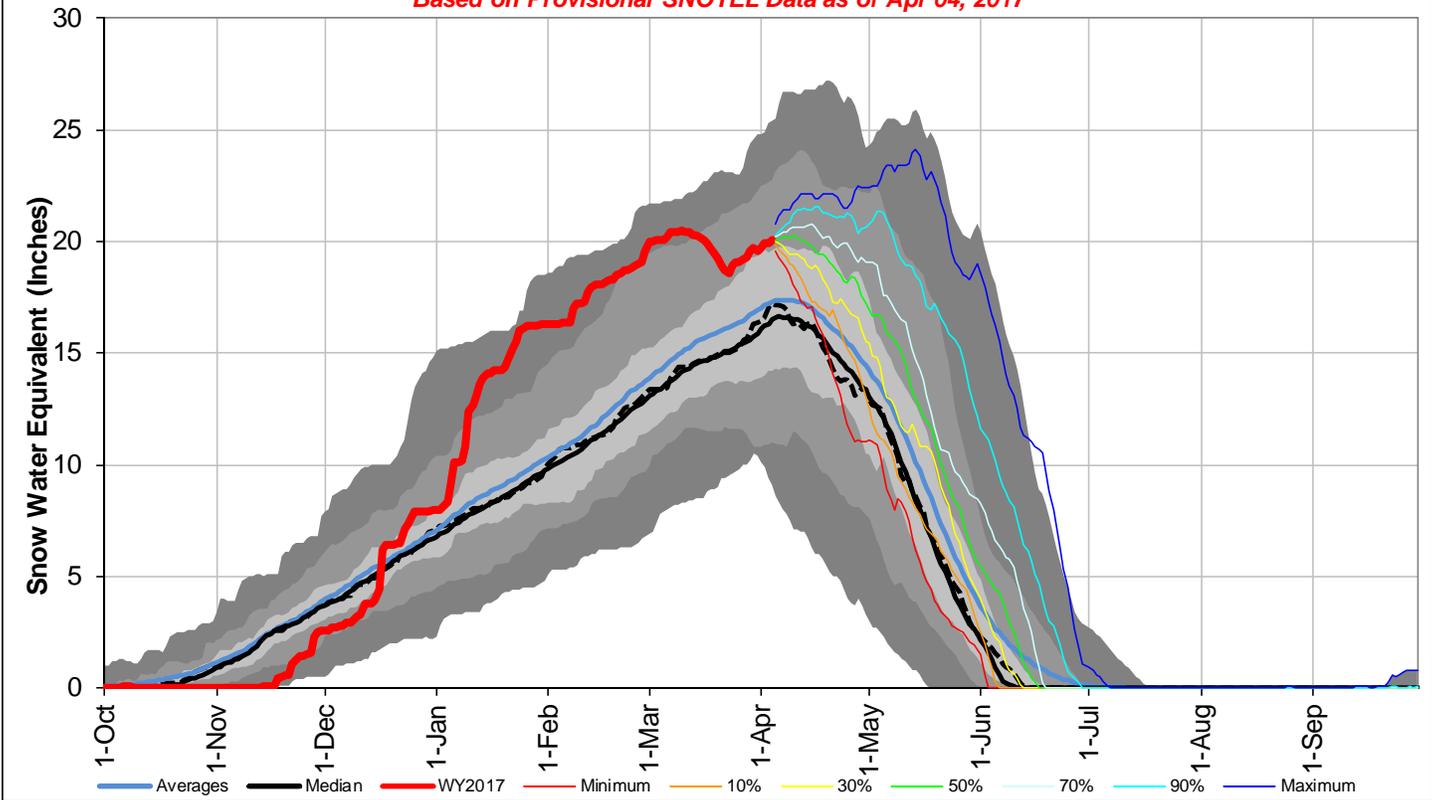
3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Blue Mesa Reservoir	573.3	563.0	454.9	830.0
Crawford Reservoir	10.4	9.7	9.7	14.0
Crystal Reservoir	8.9	9.1	8.5	17.5
Fruitgrowers Reservoir	4.0	3.6	4.0	3.6
Fruitland Reservoir	3.4	3.7	2.3	9.2
Morrow Point Reservoir	108.2	111.3	111.7	121.0
Paonia Reservoir	2.4	3.1	2.6	15.4
Ridgway Reservoir	65.6	64.5	70.0	83.0
Silverjack Reservoir	3.6	5.0	6.0	12.8
Taylor Park Reservoir	68.8	67.4	62.4	106.0
Vouga Reservoir	0.6	0.9	0.8	0.9
Basin-wide Total	849.2	841.3	732.9	1213.4
# of reservoirs	11	11	11	11

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
UPPER GUNNISON BASIN	18	128%	94%
SURFACE CREEK BASIN	3	108%	99%
UNCOMPAHGRE BASIN	4	114%	101%
GUNNISON RIVER BASIN	22	125%	95%

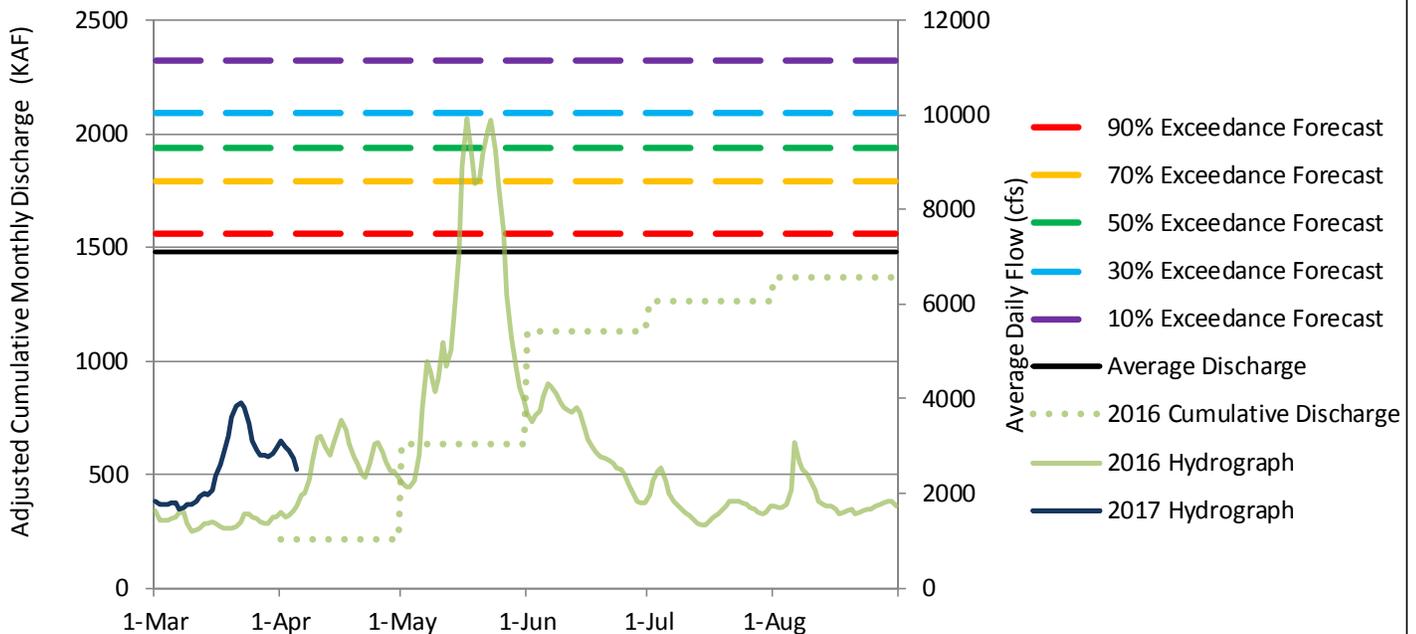
Gunnison River Basin with Non-Exceedance Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Gunnison River near Grand Junction, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

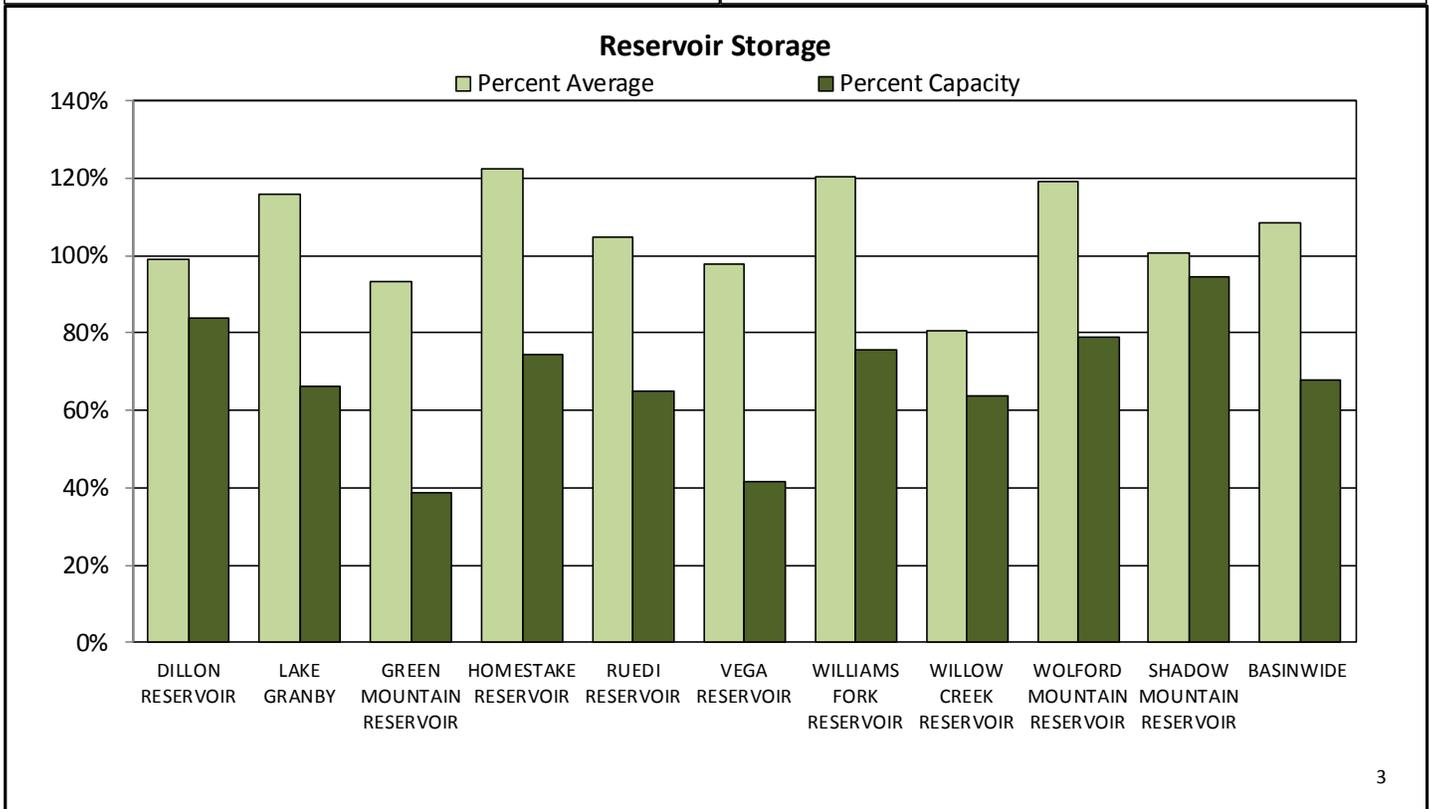
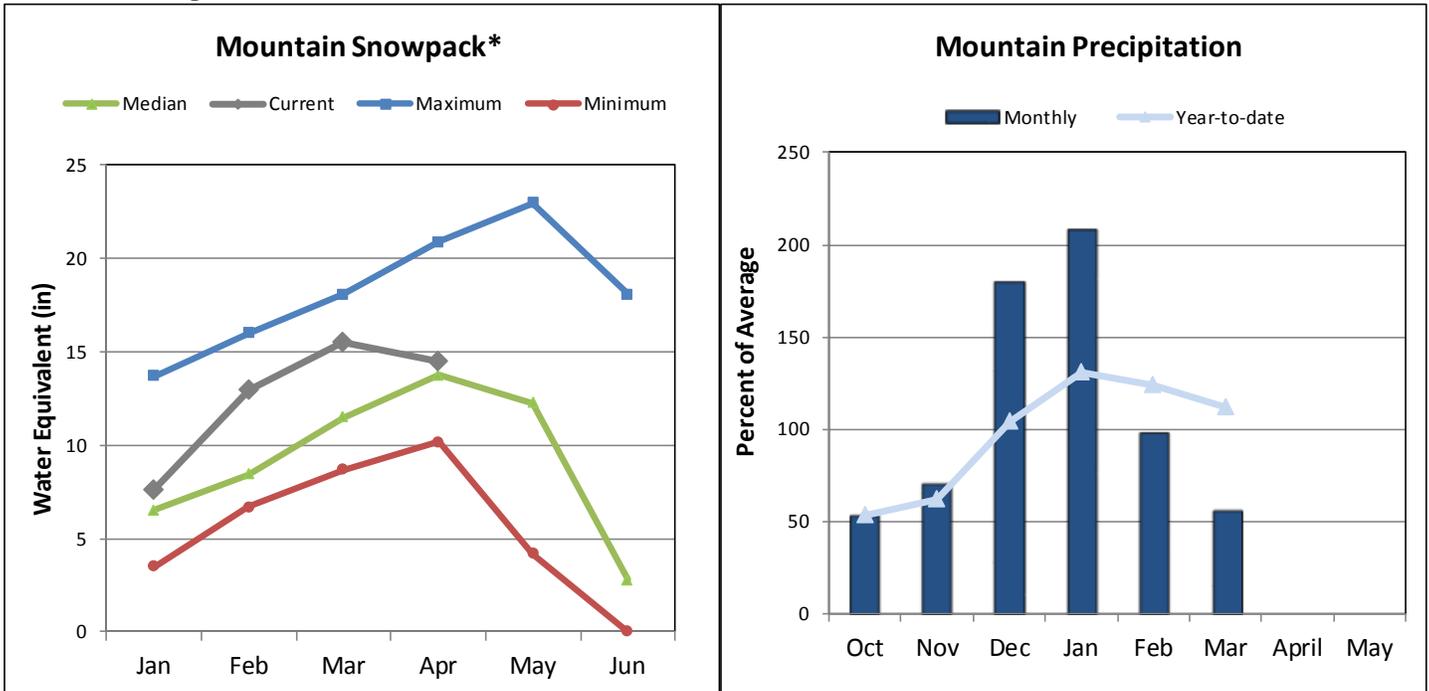


Please refer to the sections at the end of this report for further explanation concerning these graphs.

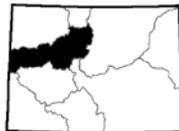
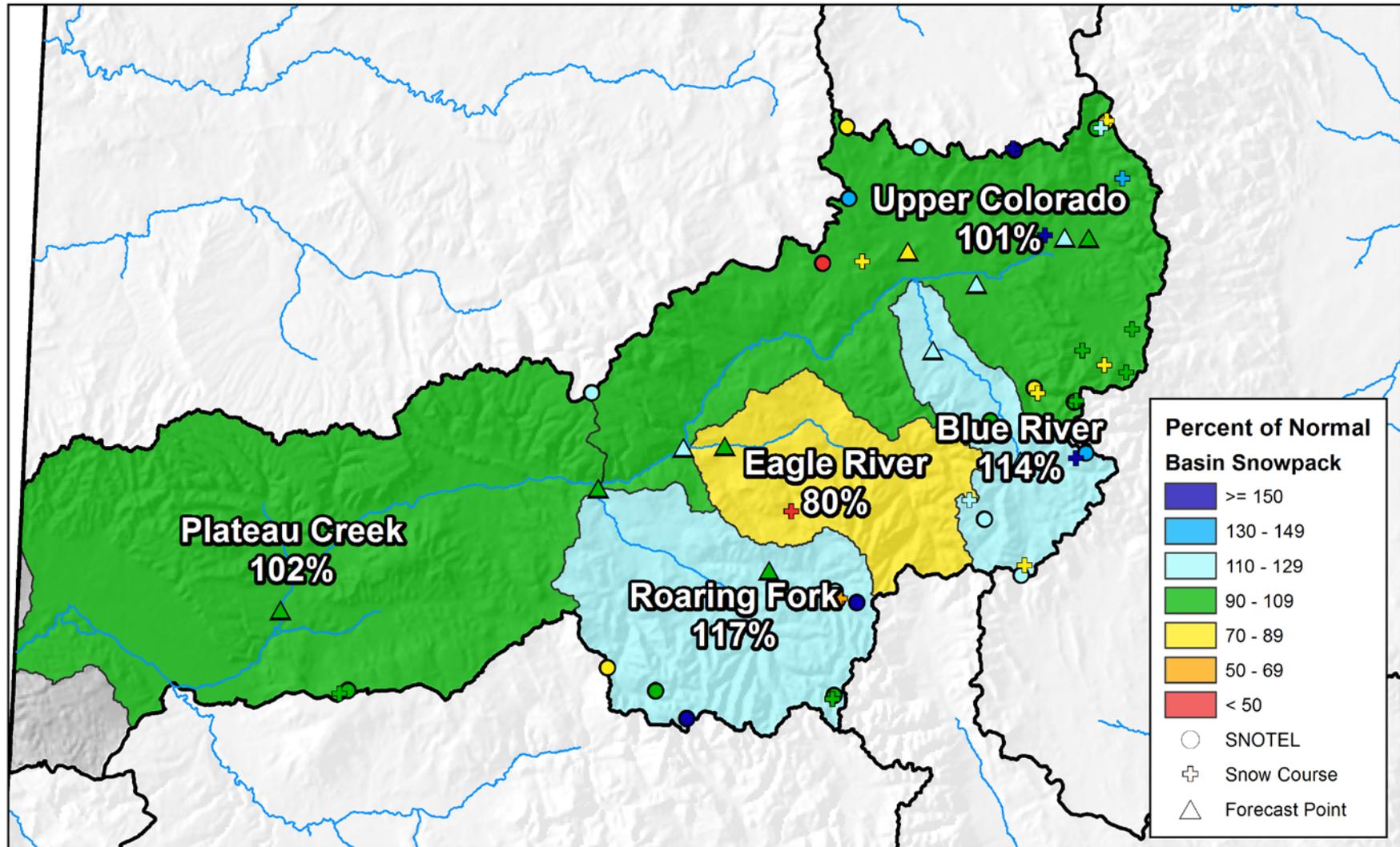
UPPER COLORADO RIVER BASIN

April 1, 2017

Snowpack in the Colorado River basin is above normal at 105% of the median. Precipitation for March was 56% of average which brings water year-to-date precipitation down to 112% of average. Reservoir storage at the end of March was 108% of average compared to 111% last year. Current streamflow forecasts range from 121% of average for the inflow to Willow Creek Reservoir to 75% for the Wolford Mountain Reservoir.



Upper Colorado River Basin Snowpack and Streamflow Forecasts April 1, 2017



0 5 10 20 30 40
Miles



United States Department of Agriculture

Natural Resources Conservation Service

Upper Colorado River Basin Streamflow Forecasts - April 1, 2017

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

UPPER COLORADO RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Granby Inflow ²	APR-JUL	173	210	235	107%	260	295	220
Willow Ck Reservoir Inflow	APR-JUL	36	48	57	121%	67	82	47
Williams Fk bl Williams Fk Reservoir ²	APR-JUL	91	104	112	115%	121	134	97
Wolford Mtn Reservoir Inflow	APR-JUL	25	34	40	74%	47	58	54
Dillon Reservoir Inflow ²	APR-JUL	150	176	195	120%	215	245	163
Green Mountain Reservoir Inflow ²	APR-JUL	250	290	315	115%	340	380	275
Eagle R bl Gypsum ²	APR-JUL	250	305	340	101%	375	430	335
Colorado R nr Dotsero ²	APR-JUL	1160	1400	1550	111%	1710	1950	1400
Ruedi Reservoir Inflow ²	APR-JUL	110	127	140	101%	153	174	139
Roaring Fk at Glenwood Springs ²	APR-JUL	590	680	740	107%	800	890	690
Colorado R nr Cameo ²	APR-JUL	1990	2330	2560	109%	2790	3130	2350

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

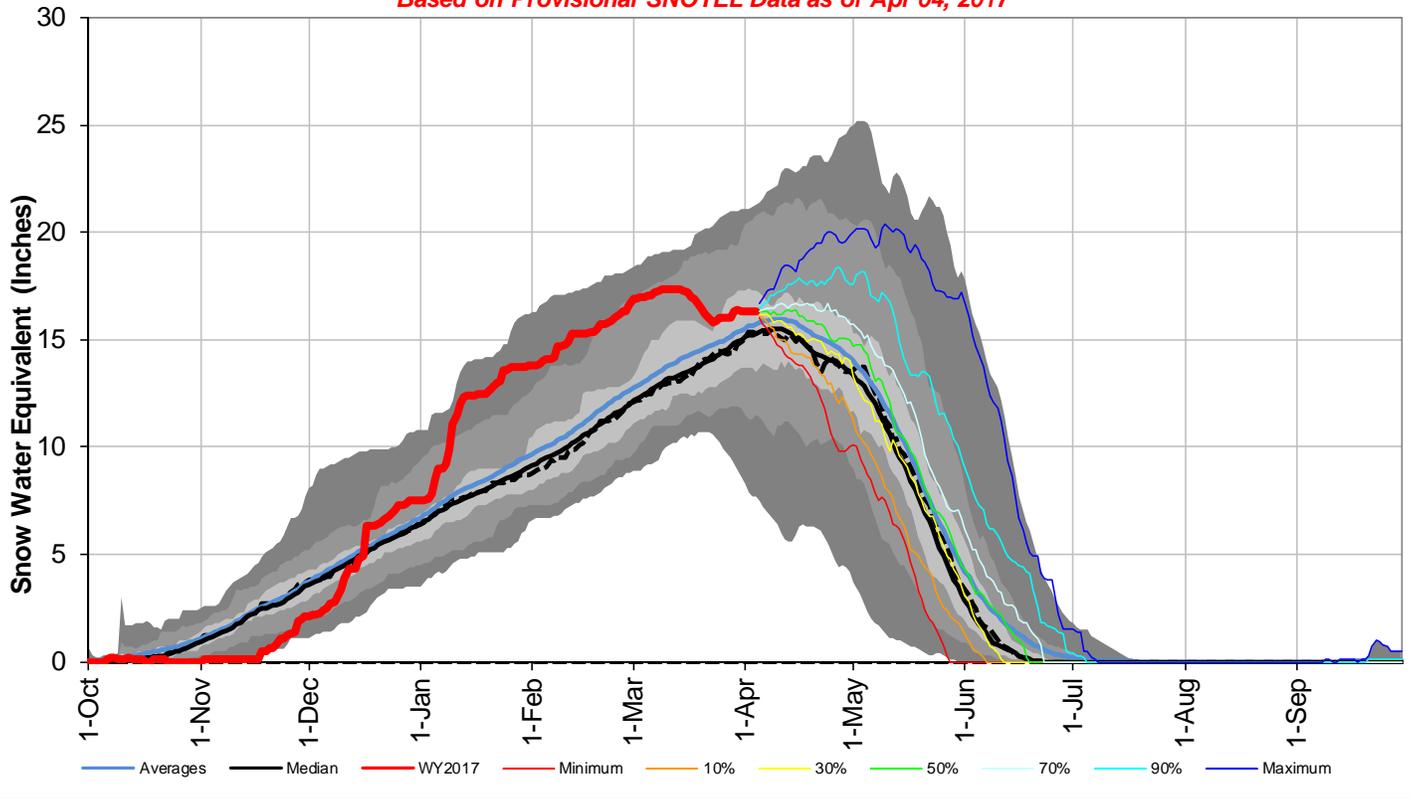
3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dillon Reservoir	209.1	231.0	210.7	249.1
Green Mountain Reservoir	57.1	54.9	61.2	146.8
Homestake Reservoir	32.0	41.1	26.1	43.0
Lake Granby	307.5	304.7	265.0	465.6
Ruedi Reservoir	66.2	67.5	63.2	102.0
Shadow Mountain Reservoir	17.4	17.3	17.3	18.4
Vega Reservoir	13.7	13.3	14.0	32.9
Williams Fork Reservoir	73.2	75.7	60.8	97.0
Willow Creek Reservoir	5.8	7.7	7.2	9.1
Wolford Mountain Reservoir	52.1	41.9	43.7	65.9
Basin-wide Total	834.1	855.1	769.2	1229.8
# of reservoirs	10	10	10	10

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
BLUE RIVER BASIN	8	114%	108%
HEADWATERS COLORADO RIVER	35	101%	113%
MUDDY CREEK BASIN	4	105%	122%
EAGLE RIVER BASIN	5	80%	100%
PLATEAU CREEK BASIN	3	108%	99%
ROARING FORK BASIN	9	117%	95%
WILLIAMS FORK BASIN	5	92%	119%
WILLOW CREEK BASIN	4	138%	134%
UPPER COLORADO RIVER BASIN	47	105%	107%

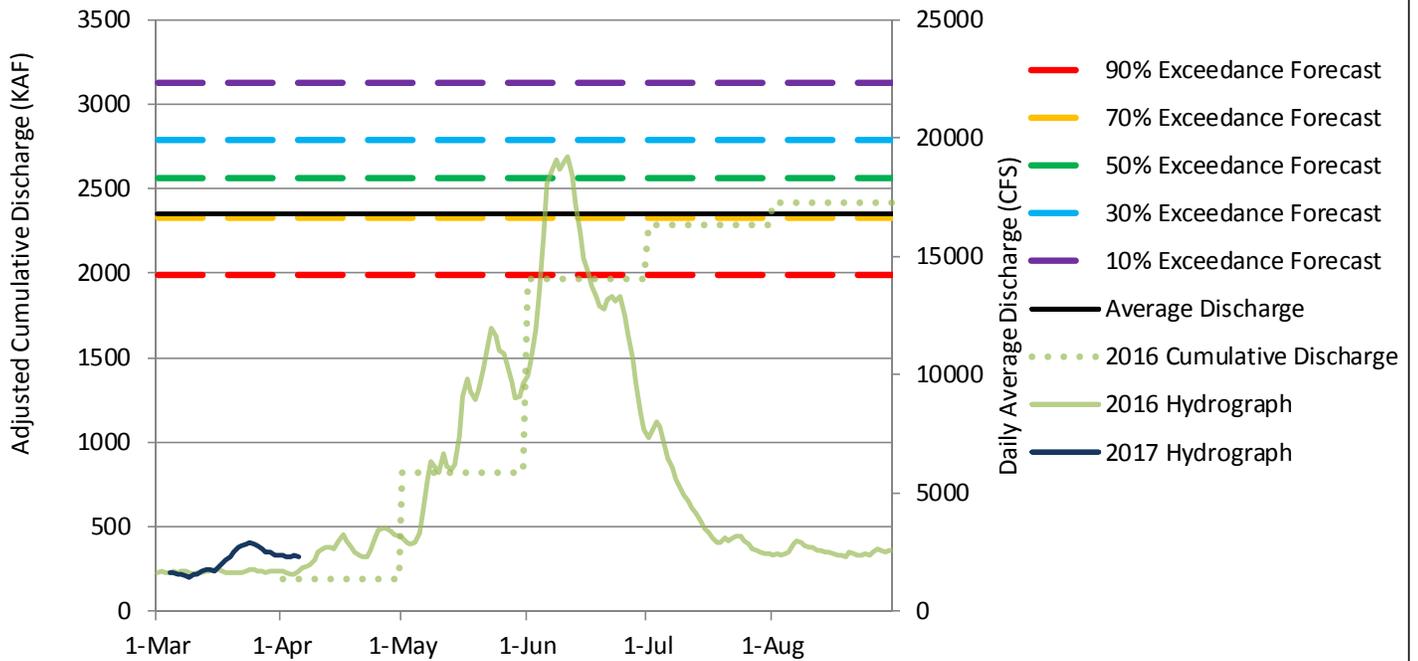
Upper Colorado River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Colorado River near Cameo, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

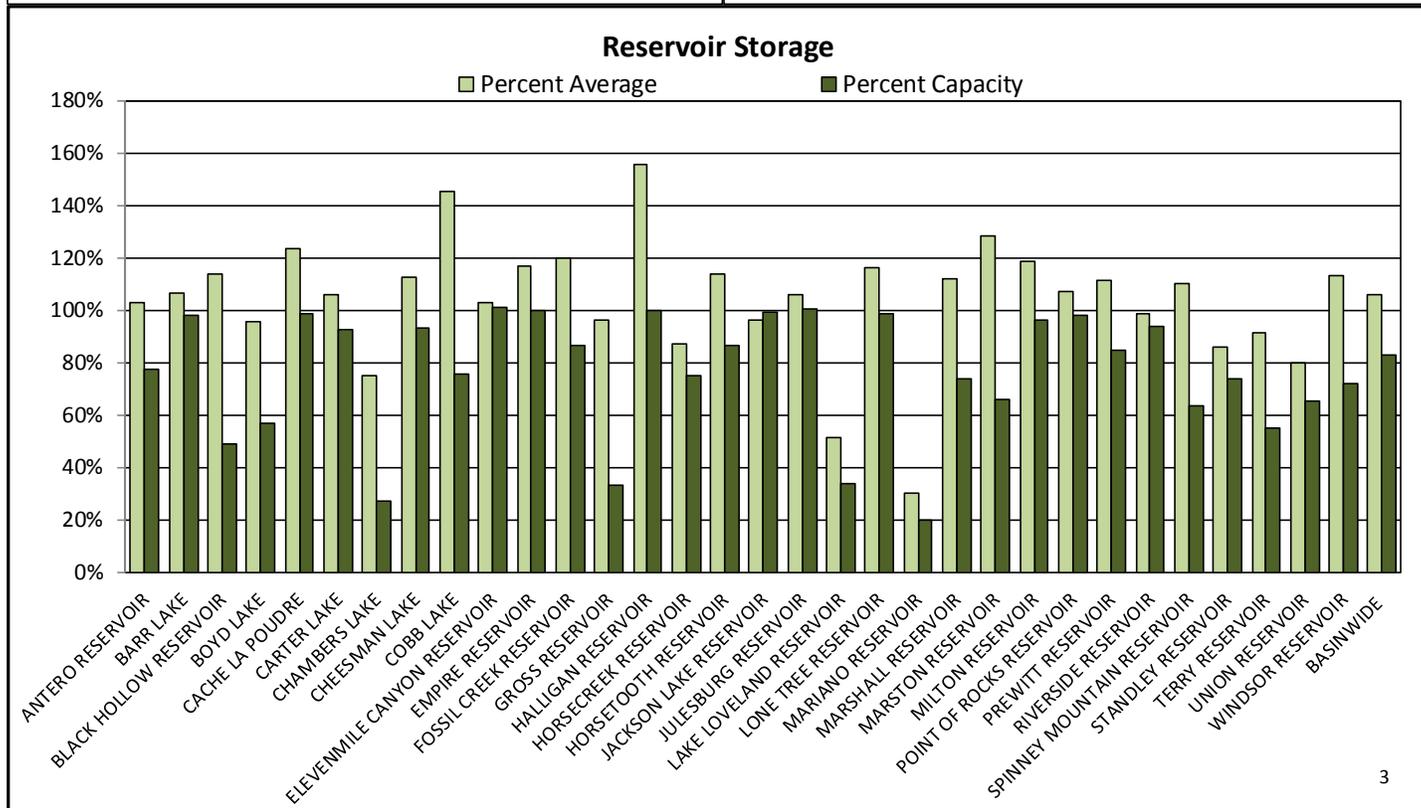
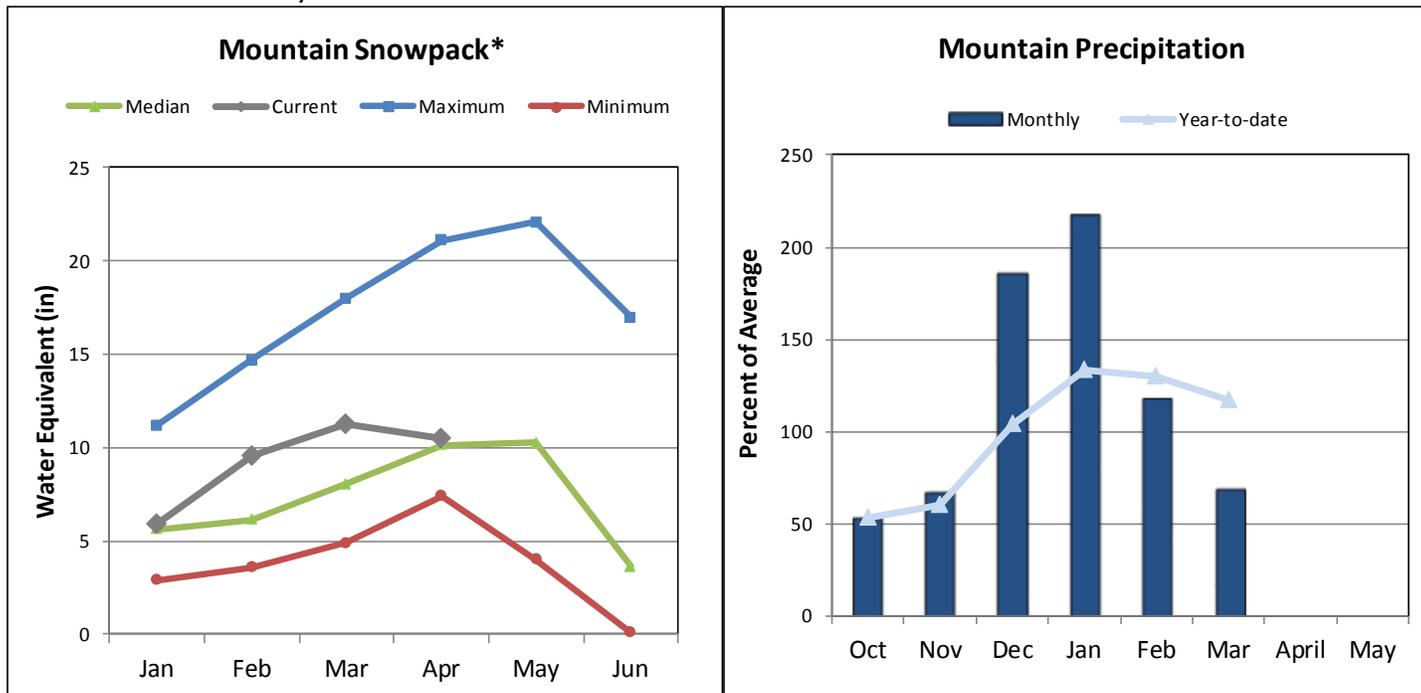


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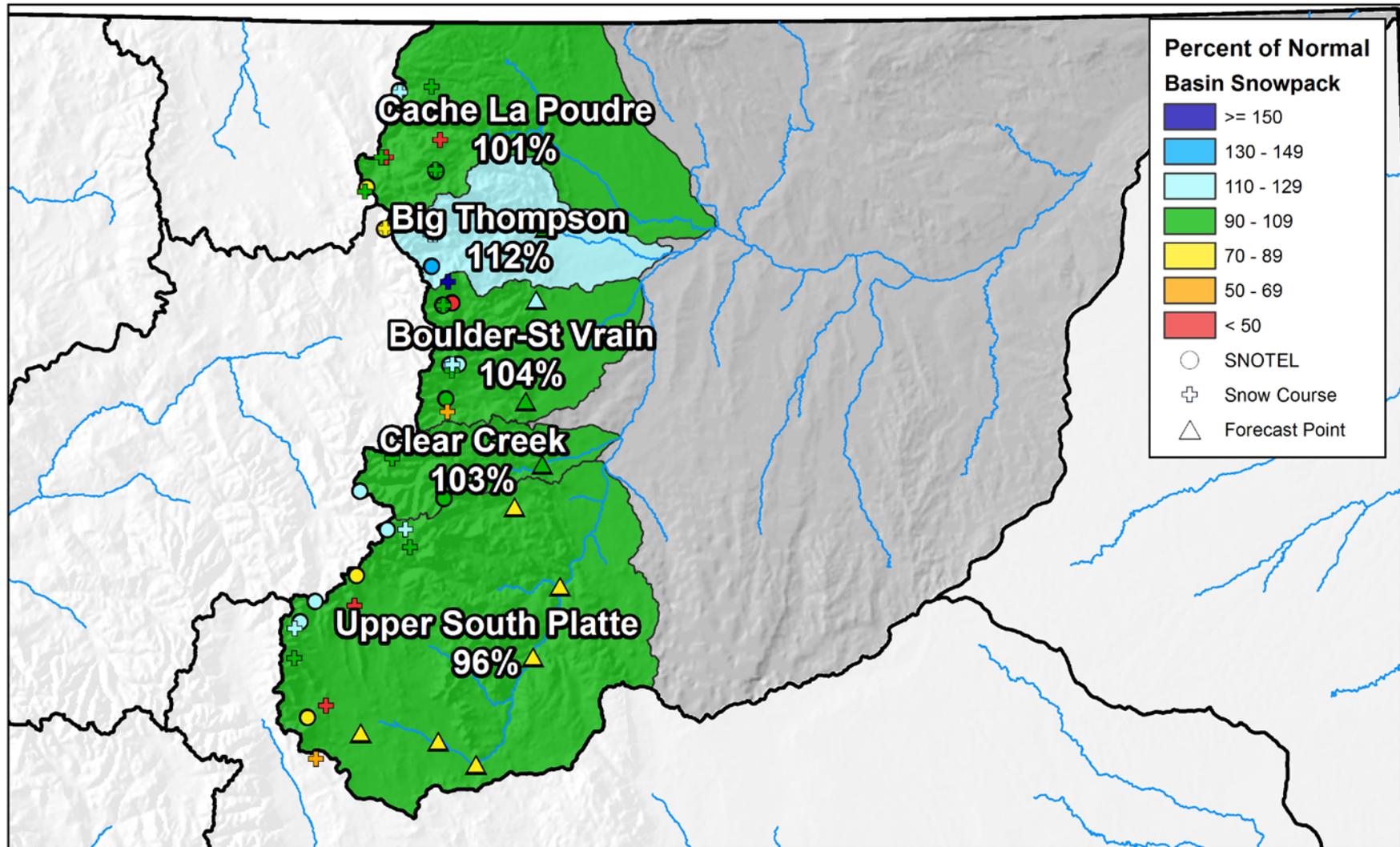
SOUTH PLATTE RIVER BASIN

April 1, 2017

Snowpack in the South Platte River basin is above normal at 103% of the median. Precipitation for March was 69% of average which brings water year-to-date precipitation down to 117%. Reservoir storage at the end of March was 106% of average compared to 109% last year. Streamflow forecasts range from 110% of average for St. Vrain Creek at Lyons to 79% for the inflow to Antero Reservoir.



South Platte River Basin Snowpack and Streamflow Forecasts April 1, 2017



0 10 20 40 60 80 Miles



United States Department of Agriculture

Natural Resources Conservation Service

South Platte River Basin Streamflow Forecasts - April 1, 2017

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

SOUTH PLATTE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Antero Reservoir Inflow ²	APR-JUL	5.7	9.1	11.4	79%	13.7	17.1	14.5
	APR-SEP	7.2	11.1	13.8	78%	16.4	20	17.8
Spinney Mountain Reservoir Inflow ²	APR-JUL	27	36	42	88%	48	57	48
	APR-SEP	33	44	52	85%	60	71	61
Elevenmile Canyon Reservoir Inflow ²	APR-JUL	26	36	43	86%	50	60	50
	APR-SEP	33	45	54	84%	63	75	64
Cheesman Lake Inflow ²	APR-JUL	47	67	82	82%	95	115	100
	APR-SEP	60	86	103	82%	120	146	126
South Platte R at South Platte ²	APR-JUL	81	124	153	85%	182	225	180
	APR-SEP	104	156	189	84%	225	280	225
Bear Ck ab Evergreen	APR-JUL	6.1	10.4	13.4	82%	16.4	21	16.4
	APR-SEP	7.8	13.3	16.9	80%	21	26	21
Clear Ck at Golden	APR-JUL	83	99	110	105%	121	137	105
	APR-SEP	96	118	133	104%	148	171	128
St. Vrain Ck at Lyons ²	APR-JUL	72	87	97	110%	107	122	88
	APR-SEP	83	102	114	111%	126	145	103
Boulder Ck nr Orodell ²	APR-JUL	44	52	57	106%	62	70	54
	APR-SEP	49	59	66	105%	73	83	63
South Boulder Ck nr Eldorado Springs ²	APR-JUL	27	34	38	97%	42	49	39
	APR-SEP	29	37	42	98%	47	55	43
Big Thompson R at Canyon Mouth ²	APR-JUL	68	85	96	107%	108	124	90
	APR-SEP	77	100	115	107%	130	152	107
Cache La Poudre at Canyon Mouth ²	APR-JUL	161	210	240	107%	275	320	225
	APR-SEP	173	230	265	106%	300	355	250

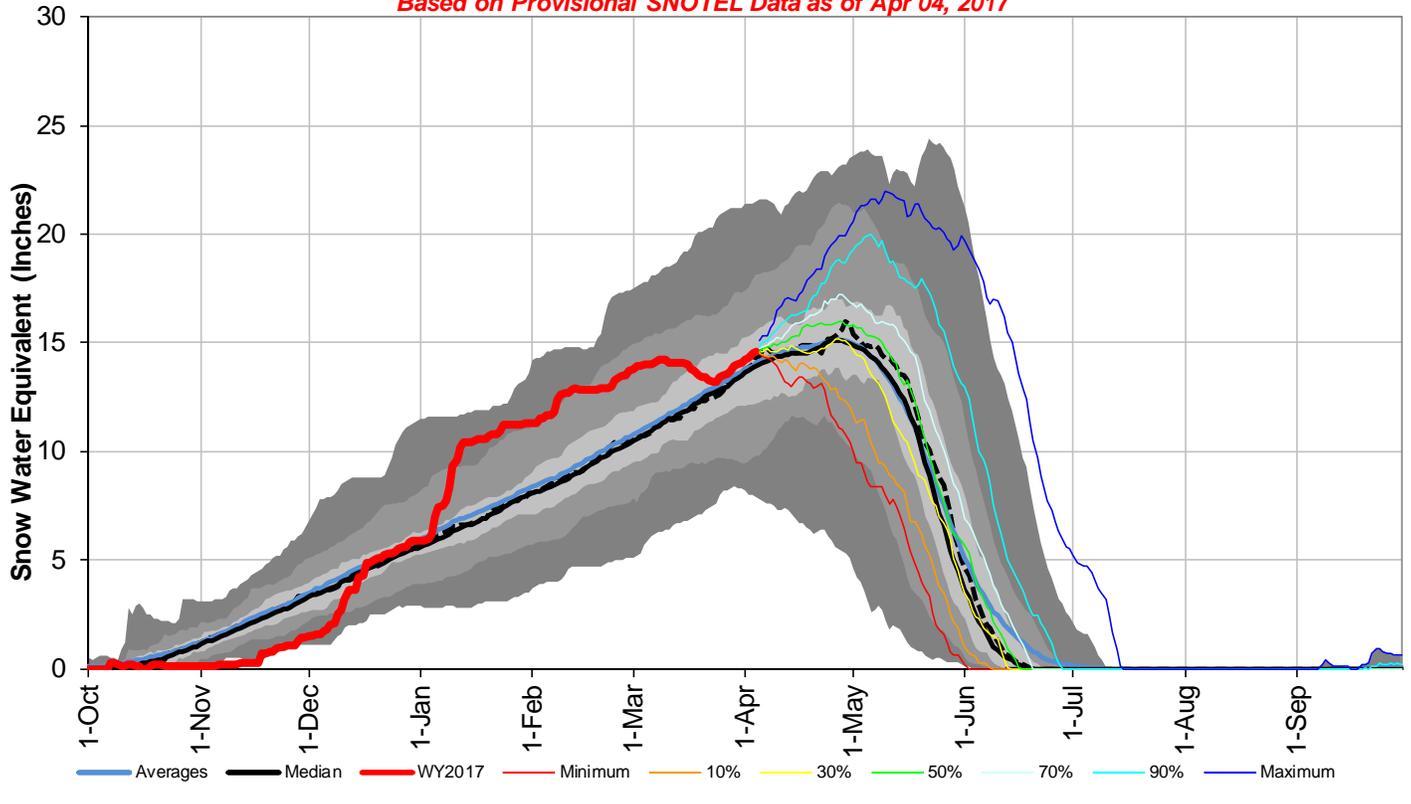
- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Antero Reservoir	15.4	0.5	14.9	19.9
Barr Lake	29.6	29.1	27.8	30.1
Black Hollow Reservoir	3.2	3.0	2.8	6.5
Boyd Lake	27.5	35.8	28.7	48.4
Cache La Poudre	10.0	10.0	8.1	10.1
Carter Lake	100.8	102.2	94.9	108.9
Chambers Lake	2.4	4.9	3.2	8.8
Cheesman Lake	73.6	73.6	65.1	79.0
Cobb Lake	16.9	18.6	11.6	22.3
Elevenmile Canyon Reservoir	99.5	99.4	96.4	98.0
Empire Reservoir	36.5	34.5	31.2	36.5
Fossil Creek Reservoir	9.6	9.7	8.0	11.1
Gross Reservoir	10.0	9.9	10.4	29.8
Halligan Reservoir	6.4	6.4	4.1	6.4
Horseshoe Reservoir	11.1	11.3	12.7	14.7
Horsetooth Reservoir	129.6	129.3	113.7	149.7
Jackson Lake Reservoir	26.0	25.9	26.9	26.1
Julesburg Reservoir	20.6	20.5	19.4	20.5
Lake Loveland Reservoir	3.5	0.5	6.8	10.3
Lone Tree Reservoir	8.6	6.9	7.4	8.7
Mariano Reservoir	1.1	4.0	3.6	5.4
Marshall Reservoir	7.4	8.4	6.6	10.0
Marston Reservoir	8.6	7.8	6.7	13.0
Milton Reservoir	22.7	22.3	19.1	23.5
Point Of Rocks Reservoir	69.3	70.3	64.4	70.6
Prewitt Reservoir	23.9	21.3	21.4	28.2
Ralph Price Reservoir	10.8	11.8		16.2
Riverside Reservoir	52.6	55.8	53.1	55.8
Spinney Mountain Reservoir	31.1	30.0	28.2	49.0
Standley Reservoir	31.1	40.0	36.2	42.0
Terry Reservoir	4.4	5.9	4.8	8.0
Union Reservoir	8.5	12.5	10.6	13.0
Windsor Reservoir	11.0	11.2	9.7	15.2
Basin-wide Total	912.5	921.5	858.5	1079.5
# of reservoirs	32	32	32	32

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
BIG THOMPSON BASIN	7	112%	103%
BOULDER CREEK BASIN	6	110%	113%
CACHE LA POUFRE BASIN	10	101%	117%
CLEAR CREEK BASIN	4	103%	110%
SAIN VRAIN BASIN	3	76%	108%
UPPER SOUTH PLATTE BASIN	16	96%	99%
SOUTH PLATTE RIVER BASIN	46	103%	108%

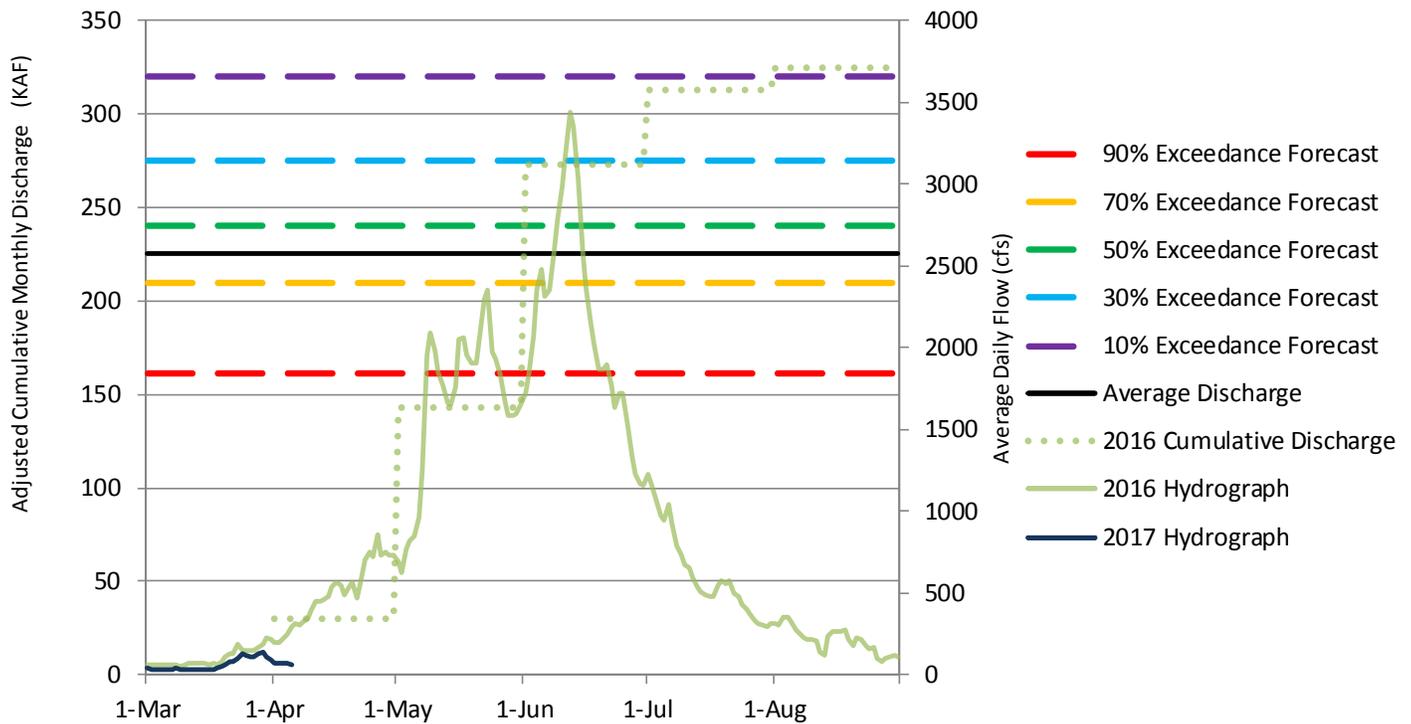
South Platte River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Cache La Poudre River at Canyon Mouth

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

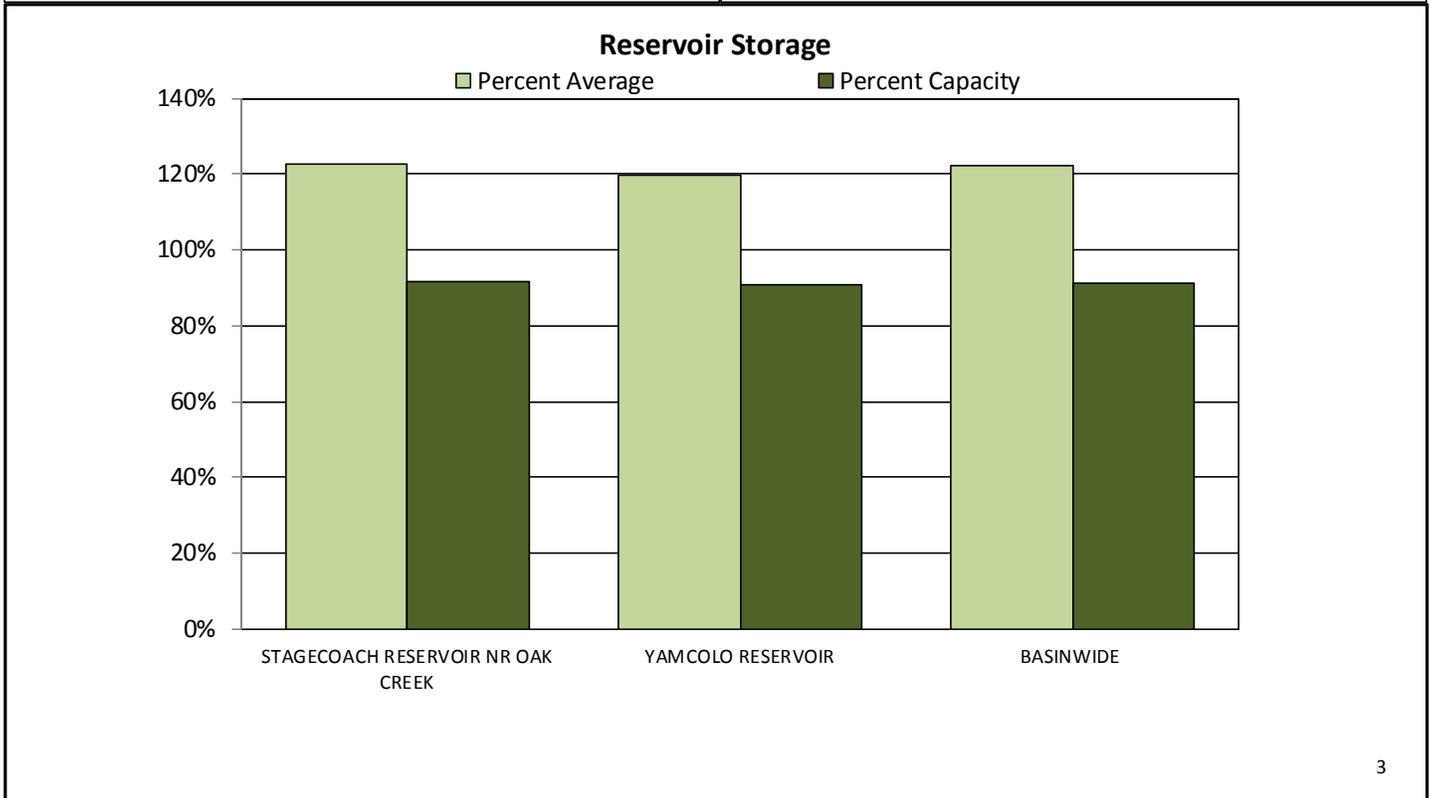
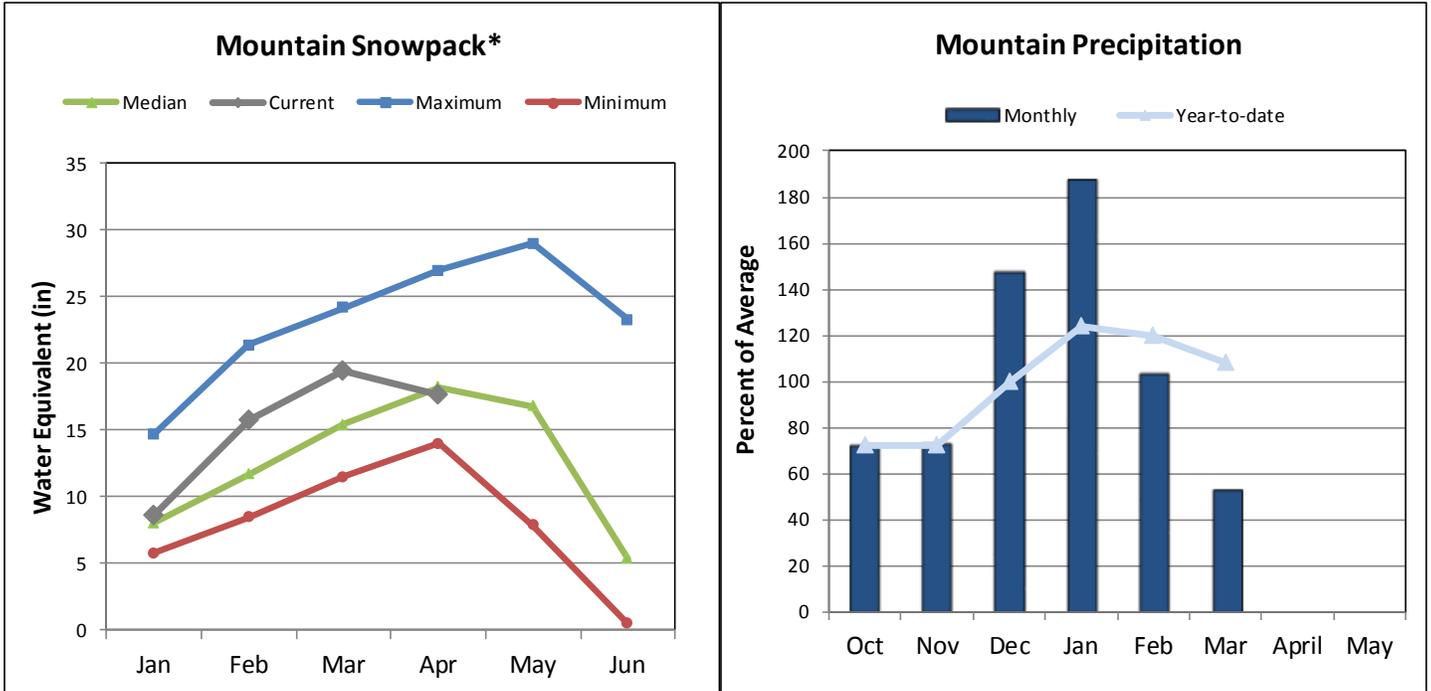


Please refer to the sections at the end of this report for further explanation concerning these graphs.

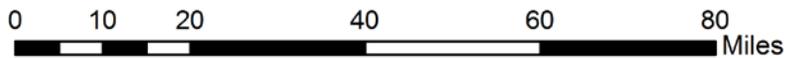
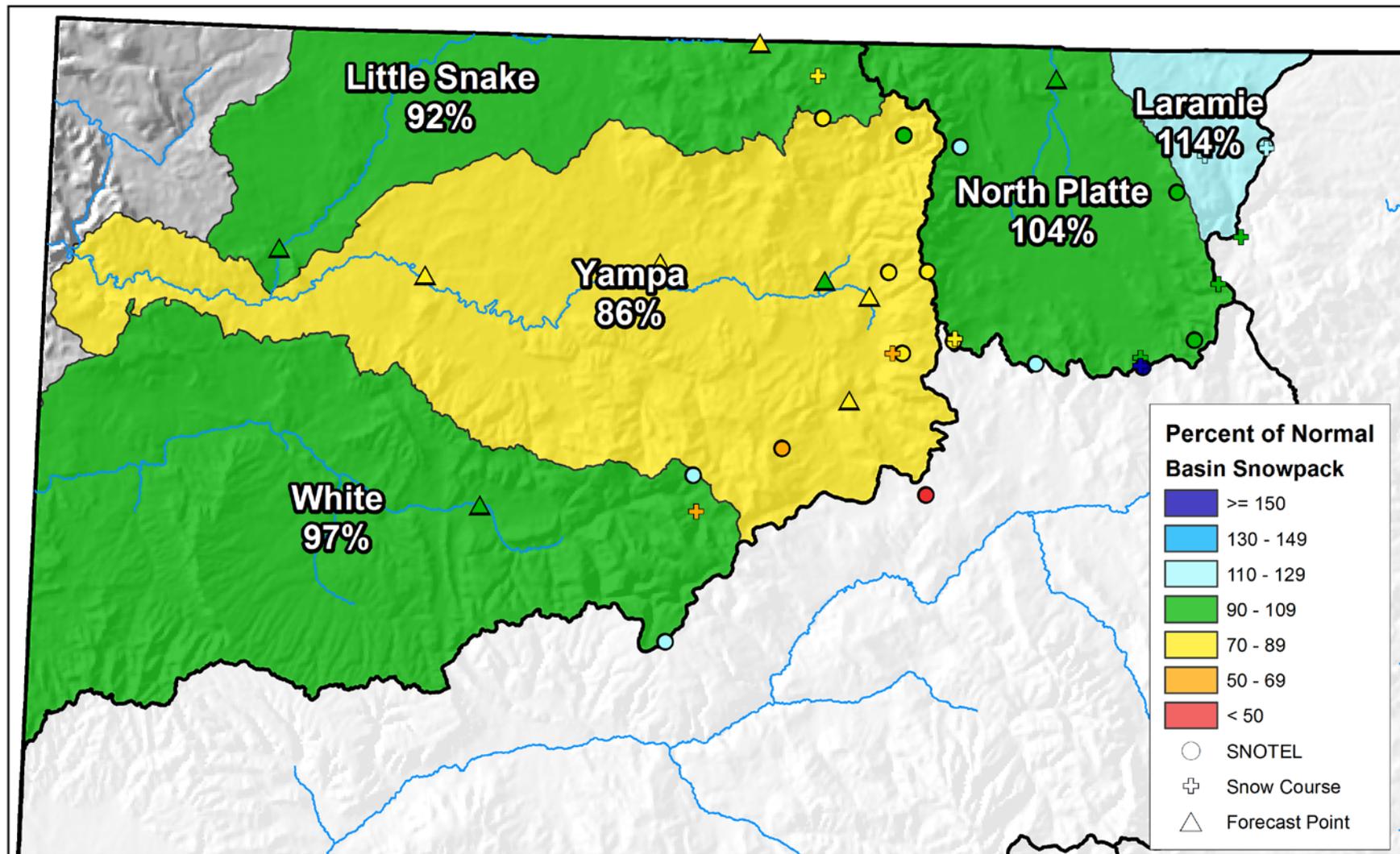
YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS

April 1, 2017

Snowpack in the Yampa, White & North Platte basins is below normal at 86% of the median. Precipitation for March was 53% of average and water year-to-date precipitation is 108% of average. Reservoir storage at the end of March was 122% of average compared to 120% last year. Streamflow forecasts range from 106% of average for the Laramie River near Woods to 78% for the Yampa River above Stagecoach Reservoir.



Yampa, White, and North Platte River Basins Snowpack and Streamflow Forecasts April 1, 2017



United States Department of Agriculture

Natural Resources Conservation Service

Yampa-White-North Platte River Basins Streamflow Forecasts - April 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

YAMPA-WHITE-NORTH PLATTE RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
North Platte R nr Northgate	APR-JUL	113	183	230	102%	275	345	225
	APR-SEP	125	200	255	102%	310	385	250
Laramie R nr Woods ²	APR-JUL	72	102	122	106%	142	172	115
	APR-SEP	81	113	135	107%	157	189	126
Yampa R ab Stagecoach Reservoir ²	APR-JUL	4.2	12.4	18	78%	24	32	23
Yampa R at Steamboat Springs ²	APR-JUL	142	185	215	83%	245	285	260
Elk R nr Milner	APR-JUL	200	260	300	94%	345	420	320
Elkhead Ck ab Long Gulch	APR-JUL	34	47	58	79%	69	89	73
Yampa R nr Maybell ²	APR-JUL	485	665	790	84%	915	1100	935
Little Snake R nr Slater ²	APR-JUL	98	120	136	87%	153	180	156
Little Snake R nr Dixon ²	APR-JUL	157	225	280	81%	340	440	345
Little Snake R nr Lily ²	APR-JUL	143	240	310	90%	380	475	345
White R nr Meeker	APR-JUL	163	215	250	89%	285	335	280

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

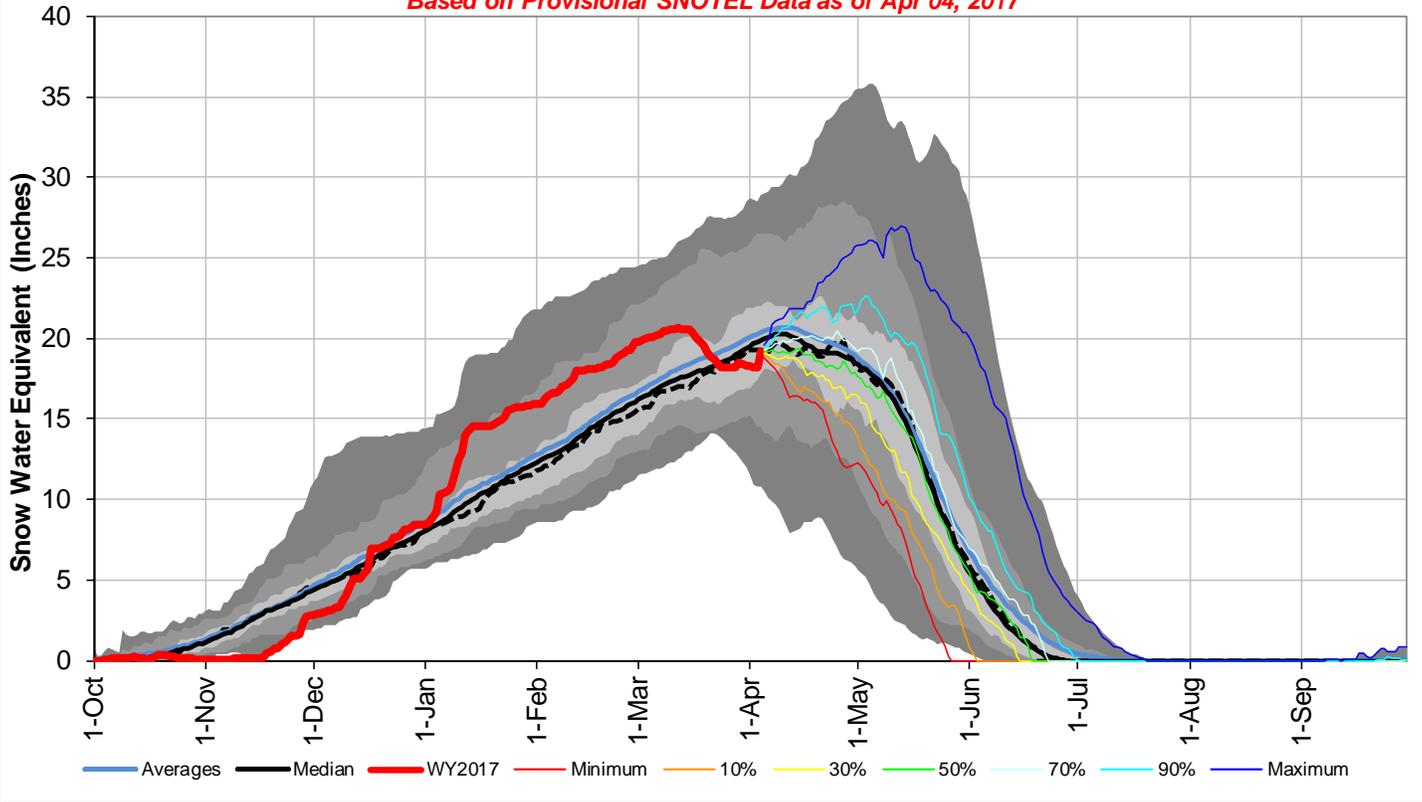
3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Stagecoach Reservoir nr Oak Creek	33.4	33.4	27.2	36.5
Yamcolo Reservoir	7.9	7.3	6.6	8.7
Basin-wide Total	41.3	40.7	33.8	45.2
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
LARAMIE RIVER BASIN	5	114%	125%
NORTH PLATTE RIVER BASIN	12	104%	105%
LARAMIE & NORTH PLATTE RIVER BASINS	17	106%	109%
ELK RIVER BASIN	2	91%	94%
YAMPA RIVER BASIN	11	86%	107%
WHITE RIVER BASIN	4	97%	98%
YAMPA & WHITE RIVER BASINS	14	86%	104%
LITTLE SNAKE RIVER BASIN	9	92%	100%
YAMPA-WHITE-NORTH PLATTE RIVER BASINS	36	97%	107%

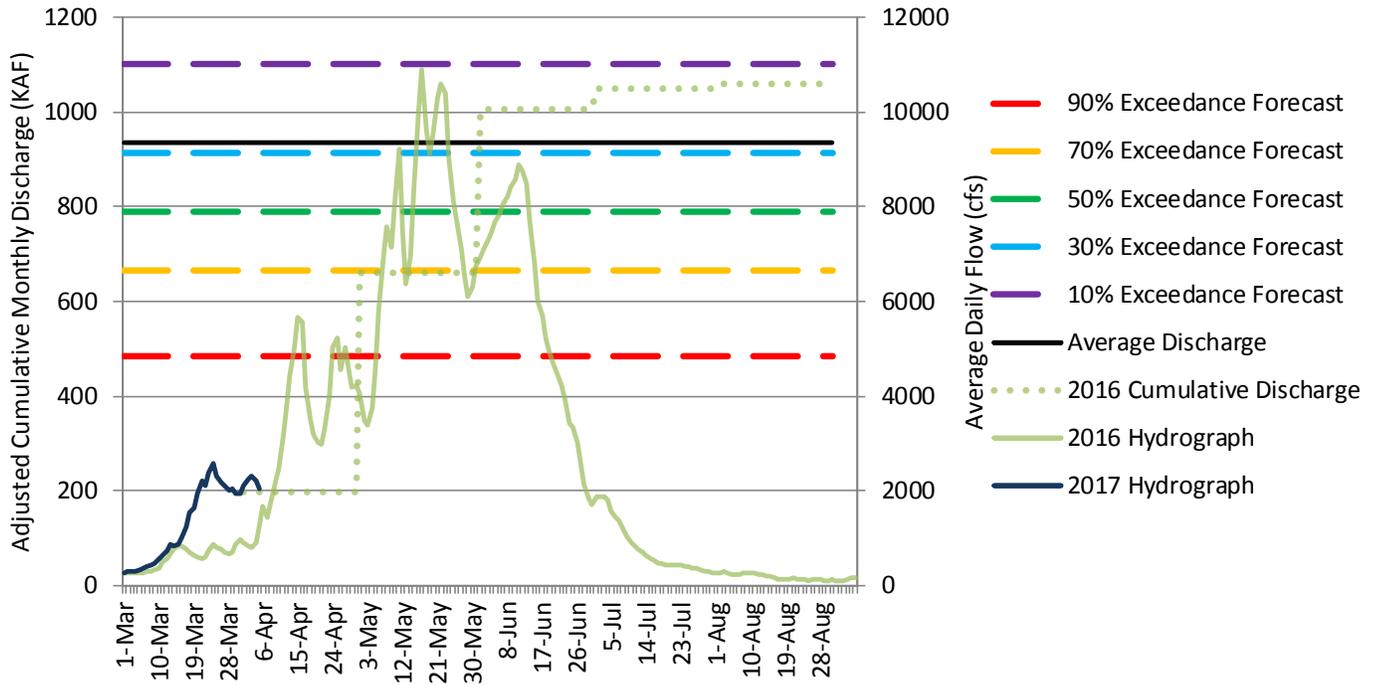
Yampa, White & North Platte River Basins with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Yampa River near Maybell

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

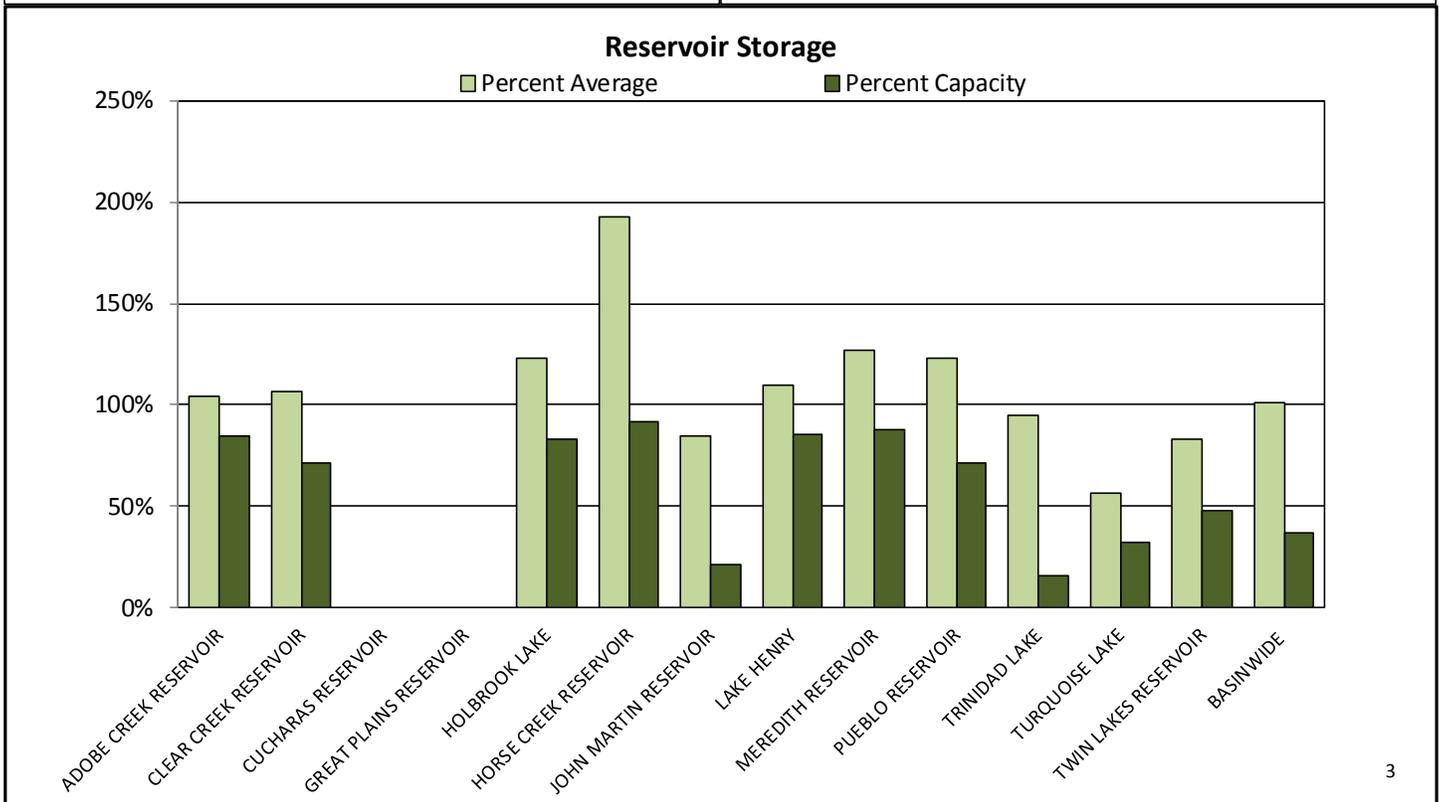
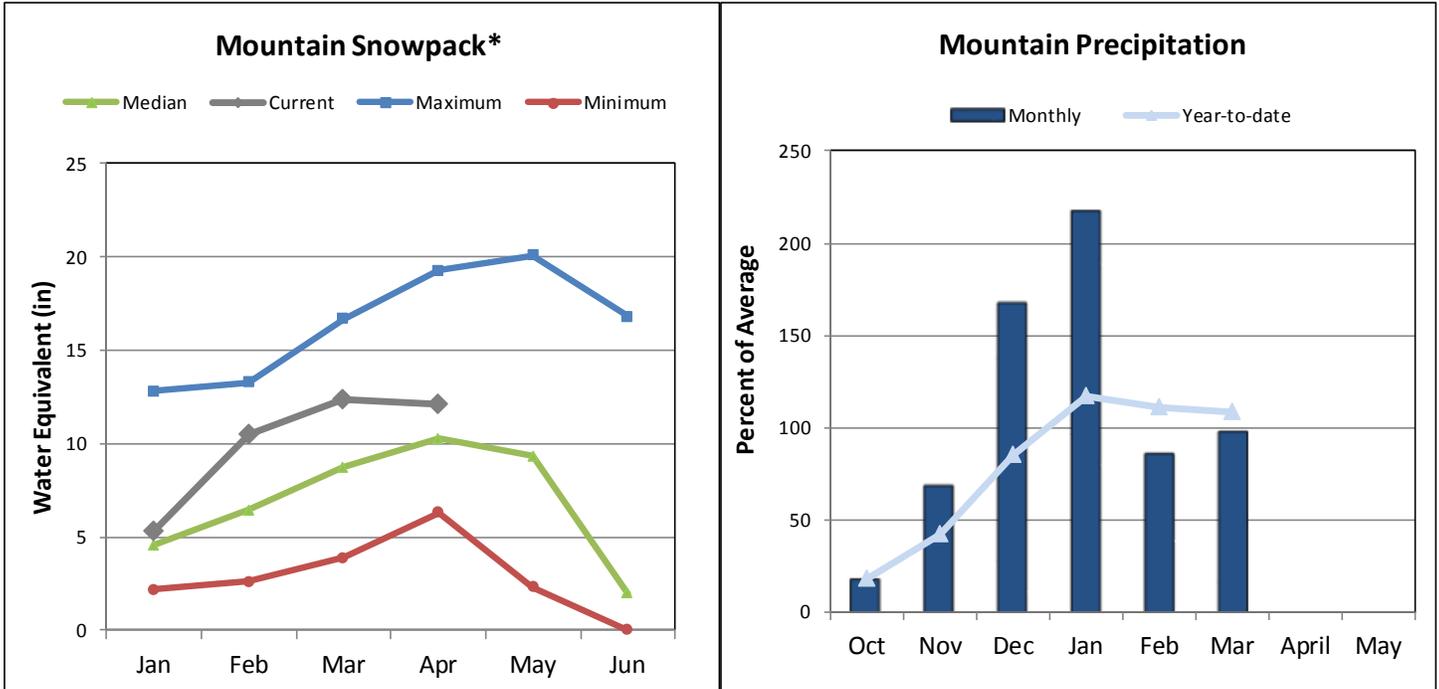


Please refer to the sections at the end of this report for further explanation concerning these graphs.

ARKANSAS RIVER BASIN

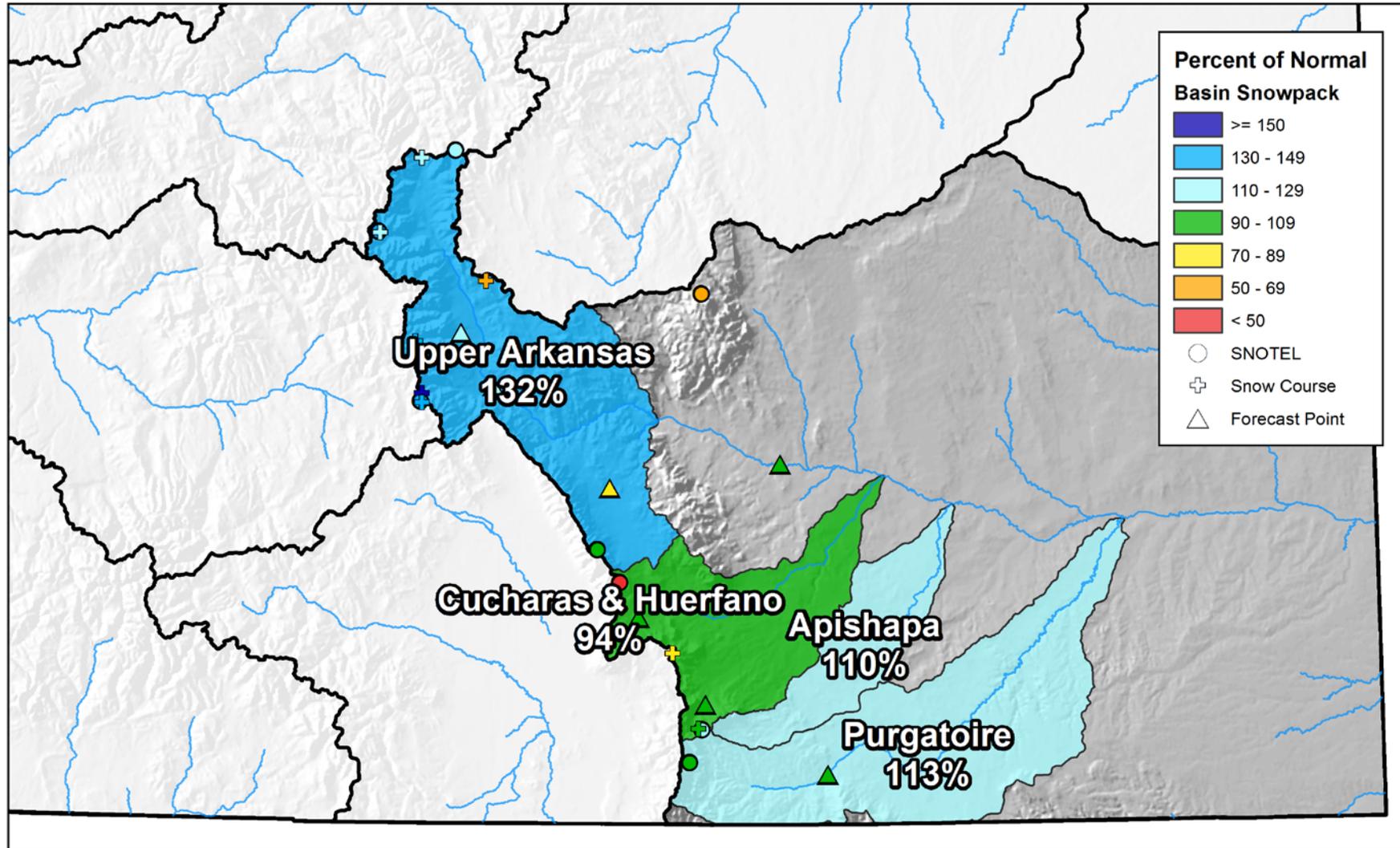
April 1, 2017

Snowpack in the Arkansas River basin is above normal at 118% of the median. Precipitation for March was 98% of average which brings water year-to-date precipitation to 108% of average. Reservoir storage at the end of March was 101% of average compared to 120% last year. Current streamflow forecasts range from 117% of average for the Arkansas River at Salida to 88% of average for Grape Creek near Westcliffe.



Arkansas River Basin Snowpack and Streamflow Forecasts

April 1, 2017



0 10 20 40 60 80 Miles



United States Department of Agriculture

Natural Resources Conservation Service

Arkansas River Basin Streamflow Forecasts - April 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

ARKANSAS RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Chalk Ck nr Nathrop	APR-JUL	14.8	20	24	114%	28	35	21
	APR-SEP	18.7	25	30	115%	35	44	26
Arkansas R at Salida ²	APR-JUL	260	270	280	117%	290	305	240
	APR-SEP	300	325	340	115%	355	380	295
Grape Ck nr Westcliffe	APR-JUL	10.4	12.5	14	88%	15.6	18.2	15.9
	APR-SEP	14.5	16.2	17.5	89%	18.8	21	19.6
Pueblo Reservoir Inflow ²	APR-JUL	245	335	400	111%	475	590	360
	APR-SEP	300	405	490	108%	580	730	455
Huerfano R nr Redwing	APR-JUL	7.3	10.1	12.2	103%	14.6	18.4	11.9
	APR-SEP	9.2	12.5	15.1	99%	17.9	22	15.2
Cucharas R nr La Veta	APR-JUL	7	10.4	13.1	107%	16.1	21	12.2
	APR-SEP	8.8	12.3	15.1	107%	18.1	23	14.1
Trinidad Lake Inflow ²	MAR-JUL	17	28	38	103%	49	68	37
	APR-JUL	14.9	26	36	103%	47	66	35
	APR-SEP	17.9	34	47	100%	63	90	47

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

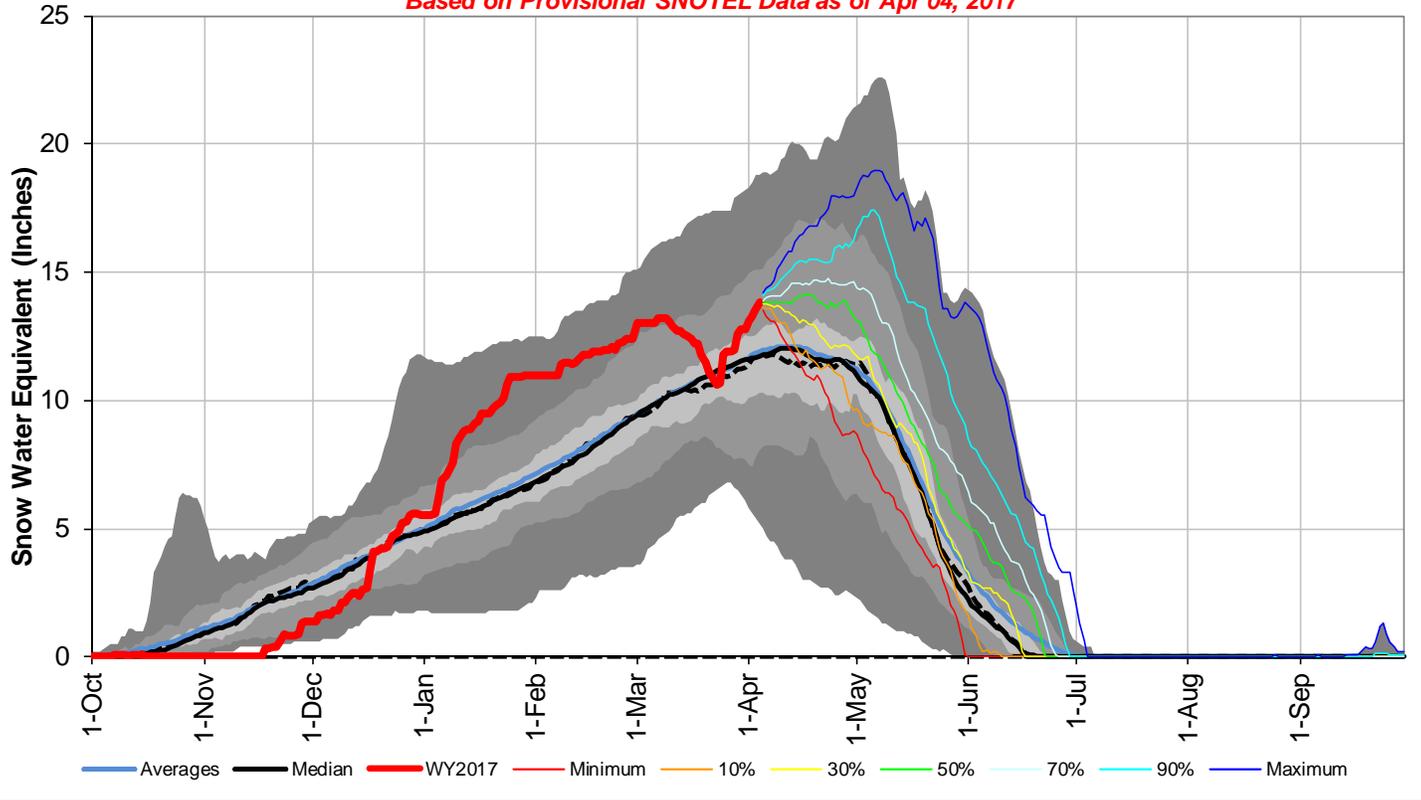
3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Adobe Creek Reservoir	52.4	70.1	50.4	62.0
Clear Creek Reservoir	8.1	8.3	7.6	11.4
Cucharas Reservoir			5.9	40.0
Great Plains Reservoir		0.0	37.0	150.0
Holbrook Lake	5.8	3.0	4.7	7.0
Horse Creek Reservoir	24.7	25.8	12.8	27.0
John Martin Reservoir	131.9	239.3	155.0	616.0
Lake Henry	8.0	8.9	7.3	9.4
Meredith Reservoir	37.0	41.9	29.2	42.0
Pueblo Reservoir	253.0	259.3	205.8	354.0
Trinidad Lake	27.0	28.8	28.5	167.0
Turquoise Lake	41.5	60.3	73.5	127.0
Twin Lakes Reservoir	41.2	44.8	49.6	86.0
Basin-wide Total	630.6	790.5	624.4	1508.8
# of reservoirs	11	11	11	11

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
UPPER ARKANSAS BASIN	9	132%	107%
CUCHARAS & HUERFANO BASINS	5	95%	67%
PURGATOIRE RIVER BASIN	2	113%	33%
ARKANSAS RIVER BASIN	16	118%	92%

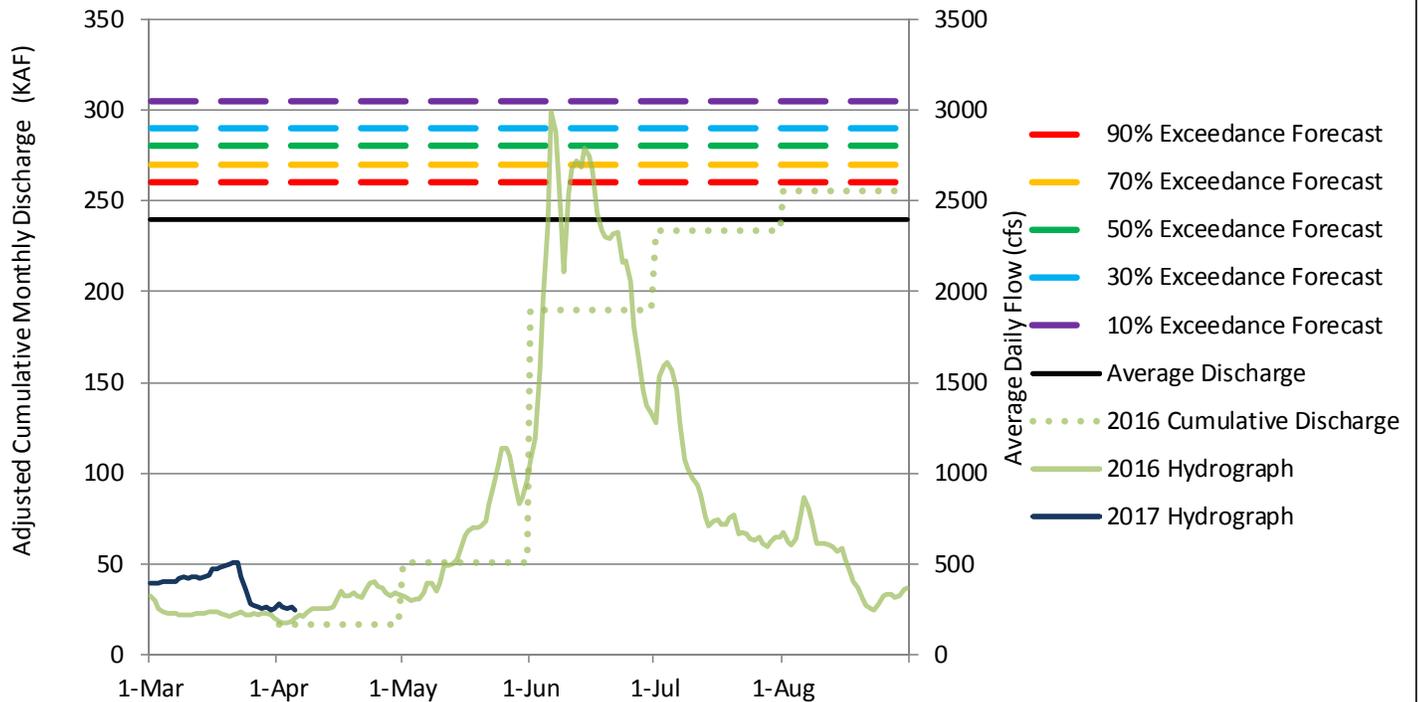
Arkansas River Basin with Non-Exceedance Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Arkansas River at Salida, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

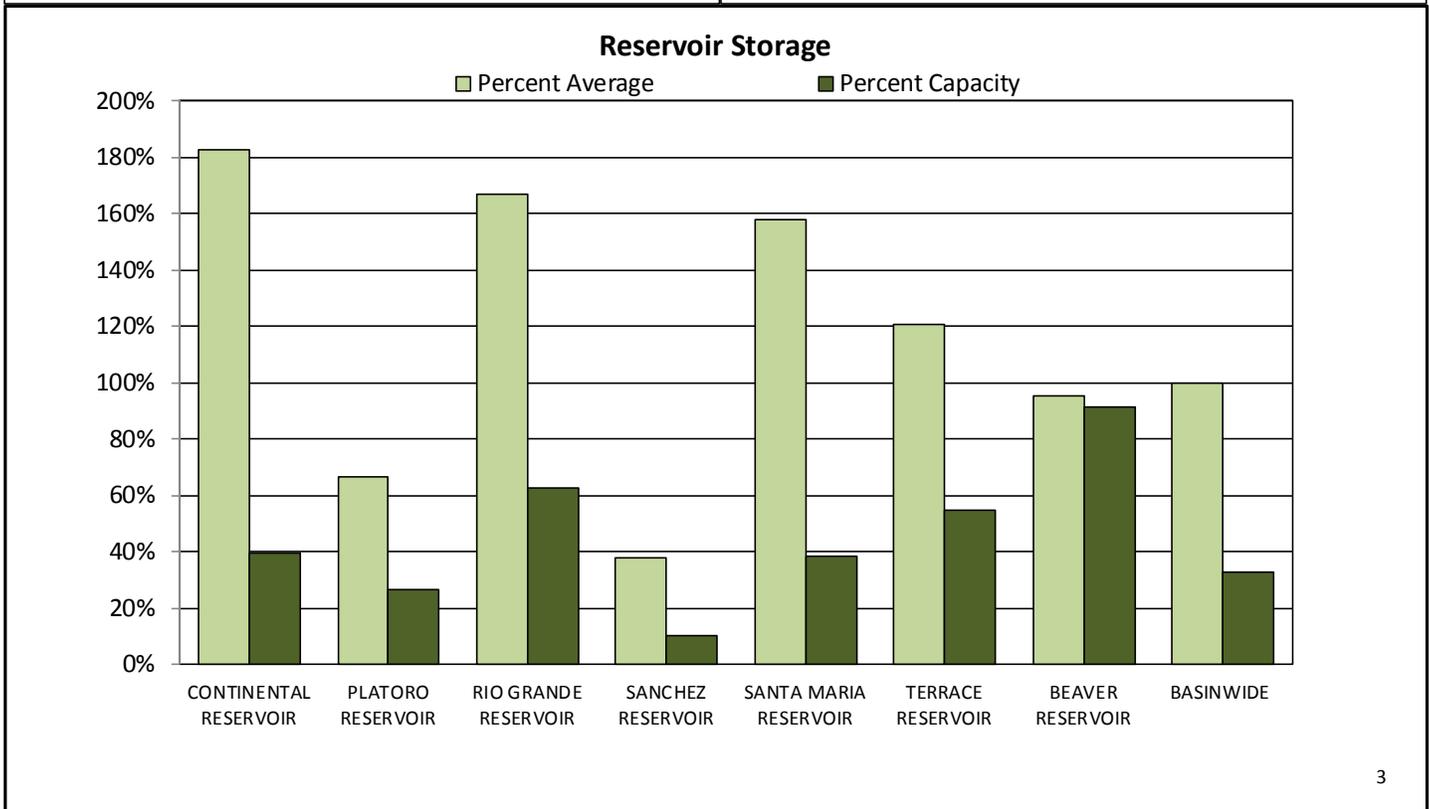
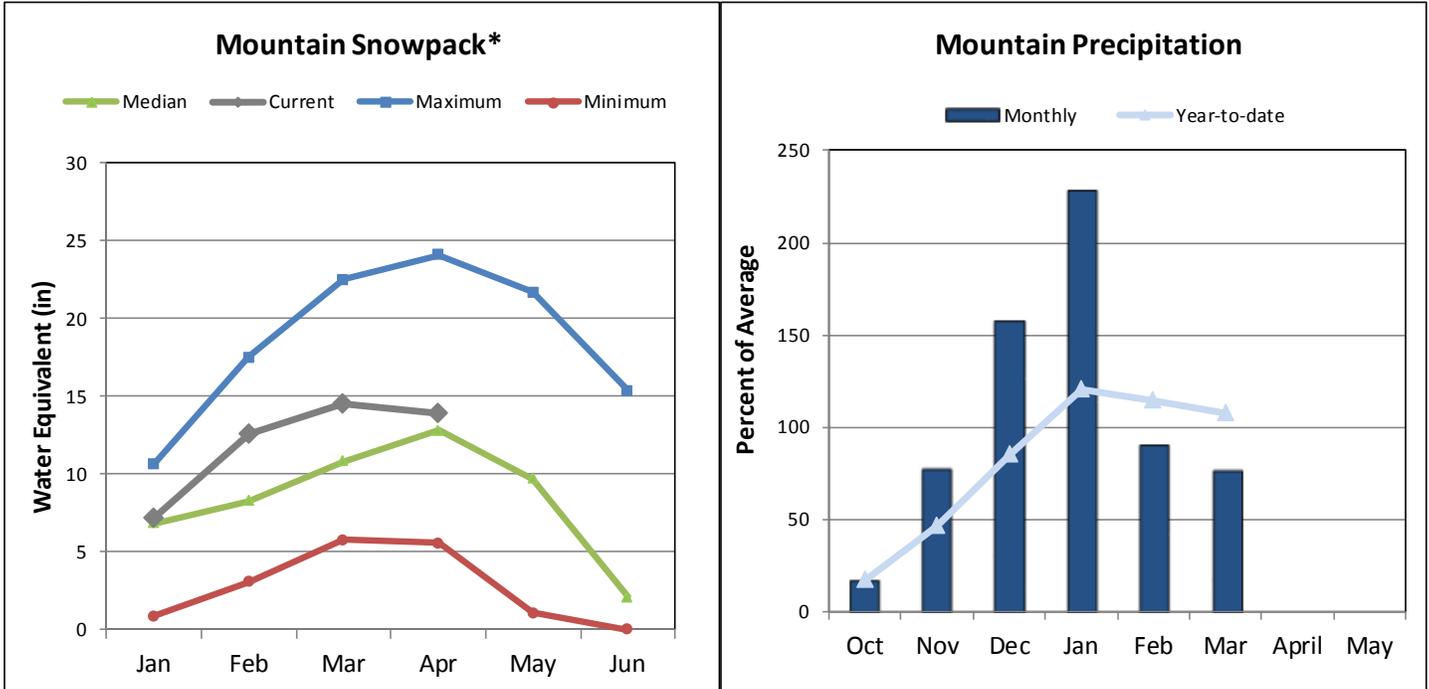


Please refer to the sections at the end of this report for further explanation concerning these graphs.

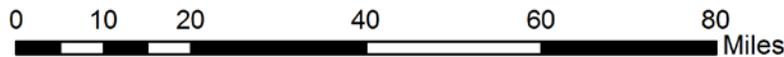
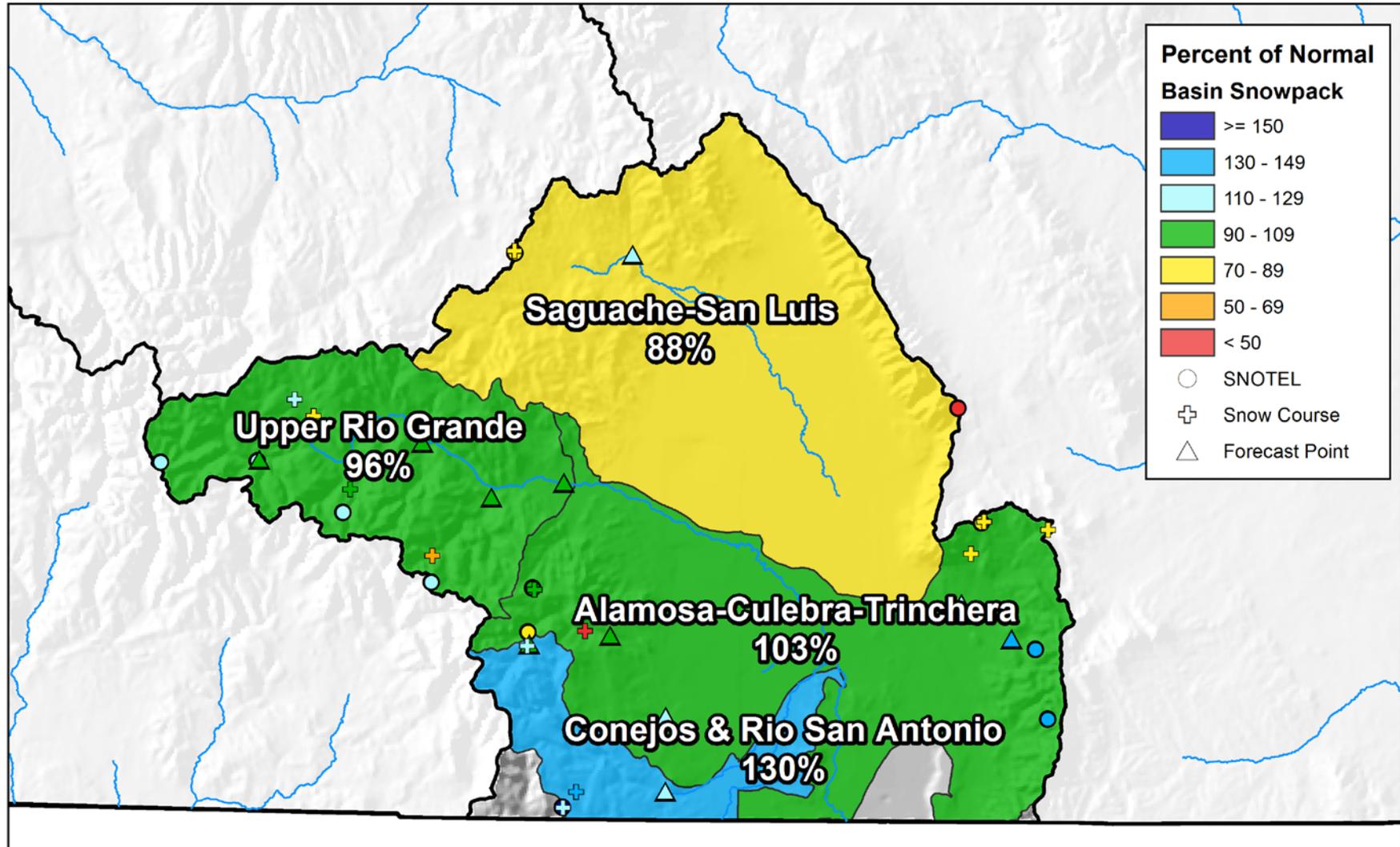
UPPER RIO GRANDE RIVER BASIN

April 1, 2017

Snowpack in the Upper Rio Grande River basin is above normal at 108% of median. Precipitation for March was 76% of average which brings water year-to-date precipitation to 107% of average. Reservoir storage at the end of March was 100% of average compared to 94% last year. Streamflow forecasts range from 141% of average for the San Antonio River at Ortiz to 100% of average for the Alamosa Creek above Terrace Reservoir.



Upper Rio Grande River Basin Snowpack and Streamflow Forecasts April 1, 2017



United States Department of Agriculture

Natural Resources Conservation Service

Upper Rio Grande Basin Streamflow Forecasts - April 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

UPPER RIO GRANDE BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rio Grande at Thirty Mile Bridge ²	APR-JUL	87	106	120	106%	135	158	113
	APR-SEP	94	117	135	105%	154	184	129
Rio Grande at Wagon Wheel Gap ²	APR-SEP	255	320	365	107%	420	500	340
SF Rio Grande at South Fork ²	APR-SEP	105	124	138	109%	153	175	127
Rio Grande nr Del Norte ²	APR-SEP	400	490	560	109%	630	745	515
Saguache Ck nr Saguache	APR-SEP	23	32	38	119%	45	57	32
Alamosa Ck ab Terrace Reservoir	APR-SEP	50	61	68	100%	77	90	68
La Jara Ck nr Capulin	MAR-JUL	6	8.2	9.9	111%	11.8	14.9	8.9
	APR-JUL	5.2	7.4	9.1	111%	11	14.1	8.2
Trinchera Ck ab Turners Ranch	APR-SEP	12.8	15	16.7	133%	18.4	21	12.6
Sangre de Cristo Ck ²	APR-SEP	11.5	16.8	21	129%	26	33	16.3
Ute Ck nr Fort Garland	APR-SEP	10.1	13.4	16	125%	18.8	23	12.8
Platoro Reservoir Inflow	APR-JUL	47	55	60	107%	66	75	56
	APR-SEP	51	60	67	108%	74	85	62
Conejos R nr Mogote ²	APR-SEP	175	205	230	119%	255	295	194
San Antonio R at Ortiz	APR-SEP	16.3	19.7	22	141%	25	29	15.6
Los Pinos R nr Ortiz	APR-SEP	76	88	97	133%	106	120	73
Culebra Ck at San Luis	APR-SEP	19.6	26	30	130%	35	44	23
Costilla Reservoir Inflow	APR-JUL	7.4	10.2	12.4	120%	14.7	18.6	10.3
Costilla Ck nr Costilla ²	APR-JUL	14.7	22	27	113%	34	44	24

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

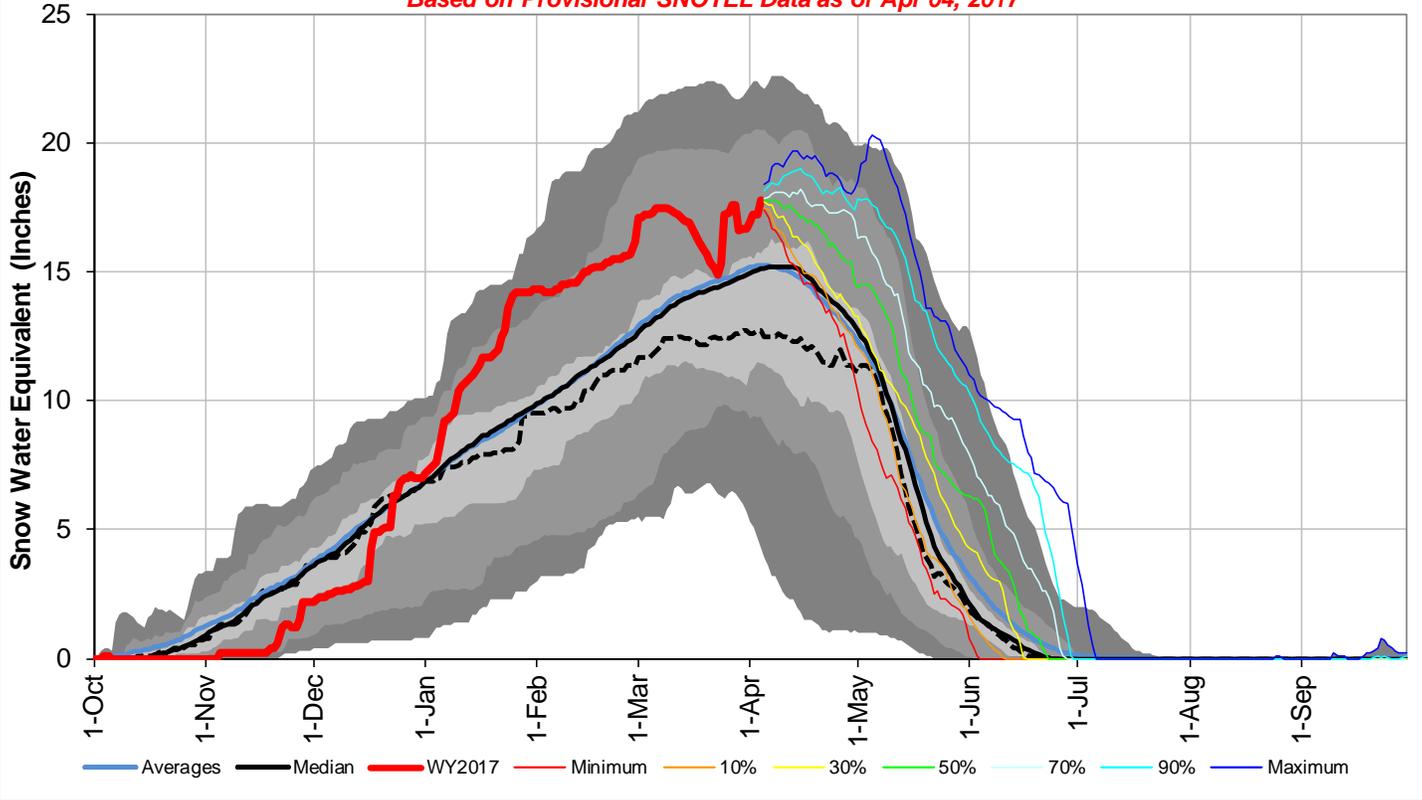
3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Beaver Reservoir	4.1	1.6	4.3	4.5
Continental Reservoir	10.6	5.3	5.8	27.0
Platoro Reservoir	16.1	13.8	24.2	60.0
Rio Grande Reservoir	31.9	35.3	19.1	51.0
Sanchez Reservoir	10.7	11.7	28.1	103.0
Santa Maria Reservoir	17.2	19.7	10.9	45.0
Terrace Reservoir	9.9	7.4	8.2	18.0
Basin-wide Total	100.5	94.8	100.6	308.5
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
ALAMOSA CREEK BASIN	3	91%	57%
CONEJOS & RIO SAN ANTONIO BASINS	5	130%	74%
CULEBRA & TRINCHERA BASINS	5	112%	77%
HEADWATERS RIO GRANDE RIVER BASIN	13	96%	85%
UPPER RIO GRANDE BASIN	25	108%	78%

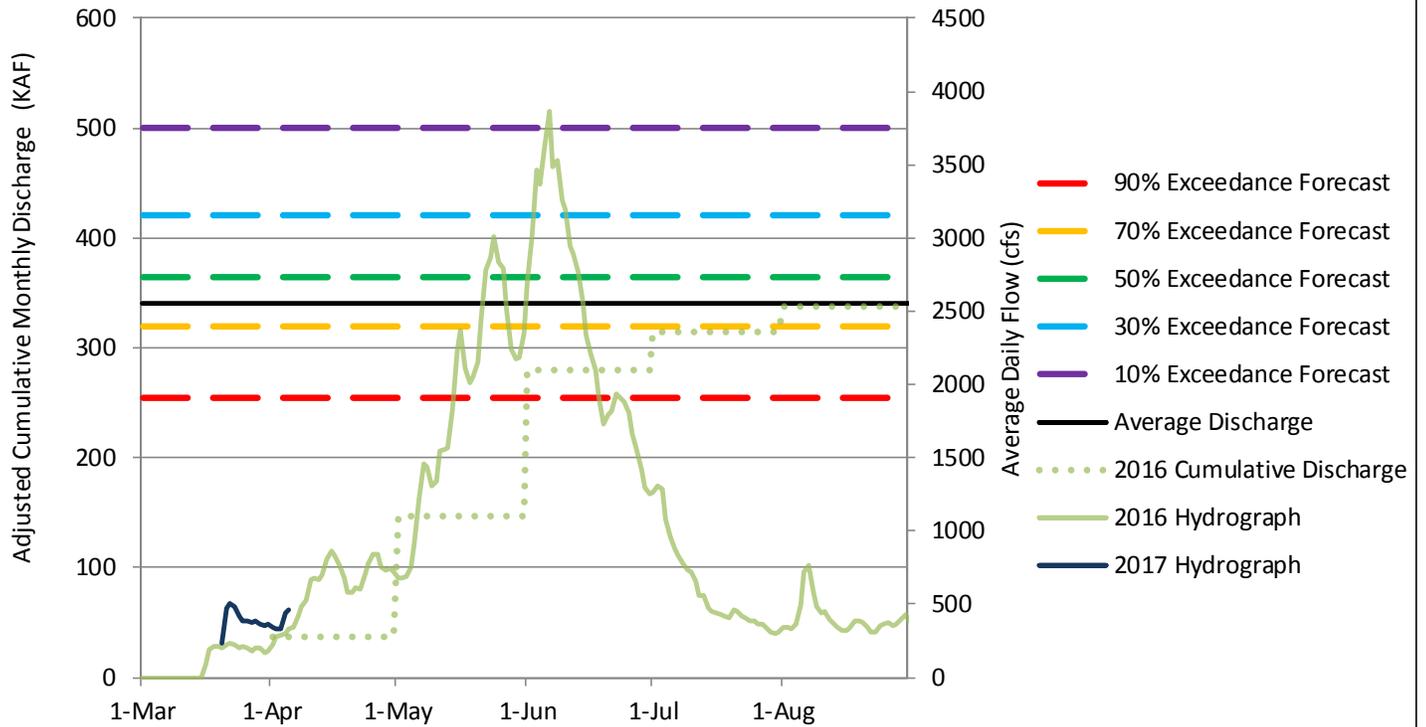
Upper Rio Grande River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Rio Grande at Wagon Wheel Gap

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr-Sep)

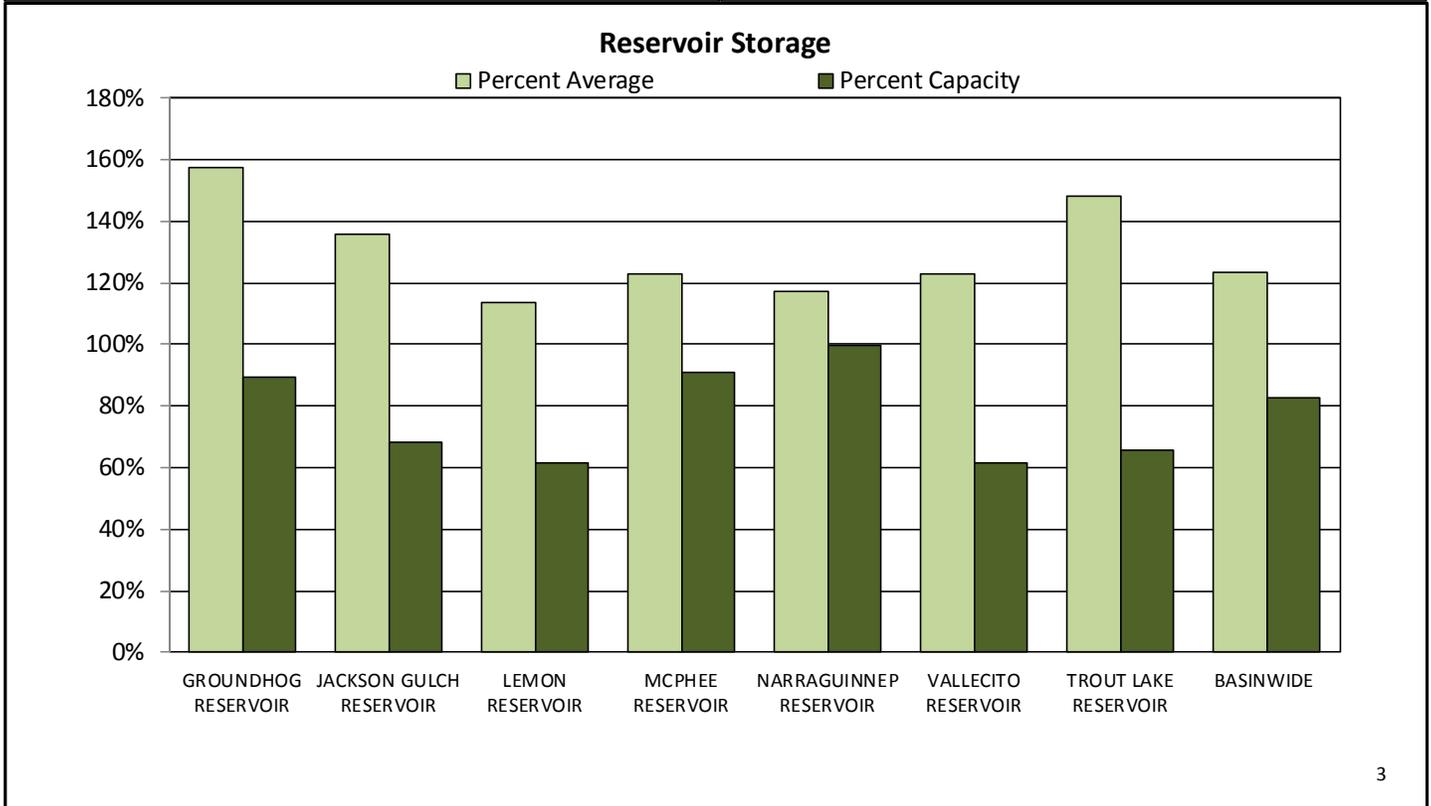
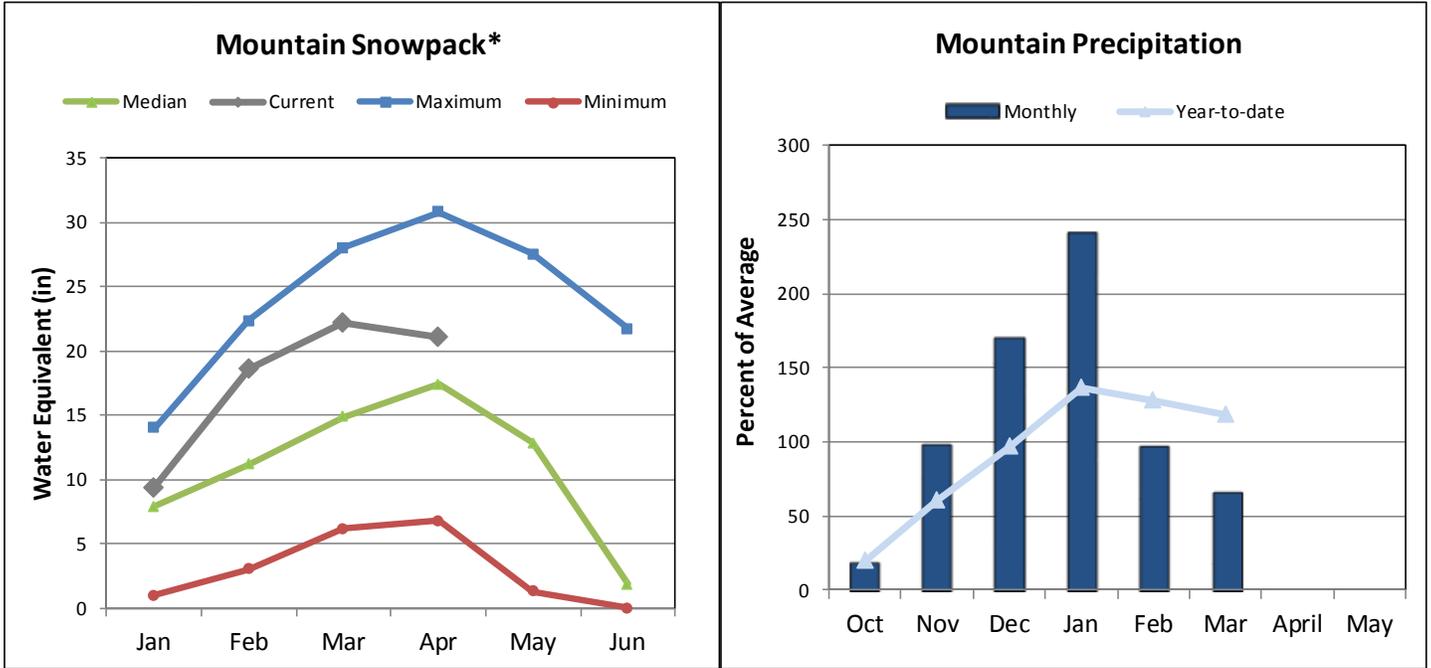


Please refer to the sections at the end of this report for further explanation concerning these graphs.

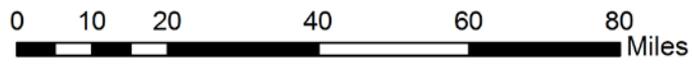
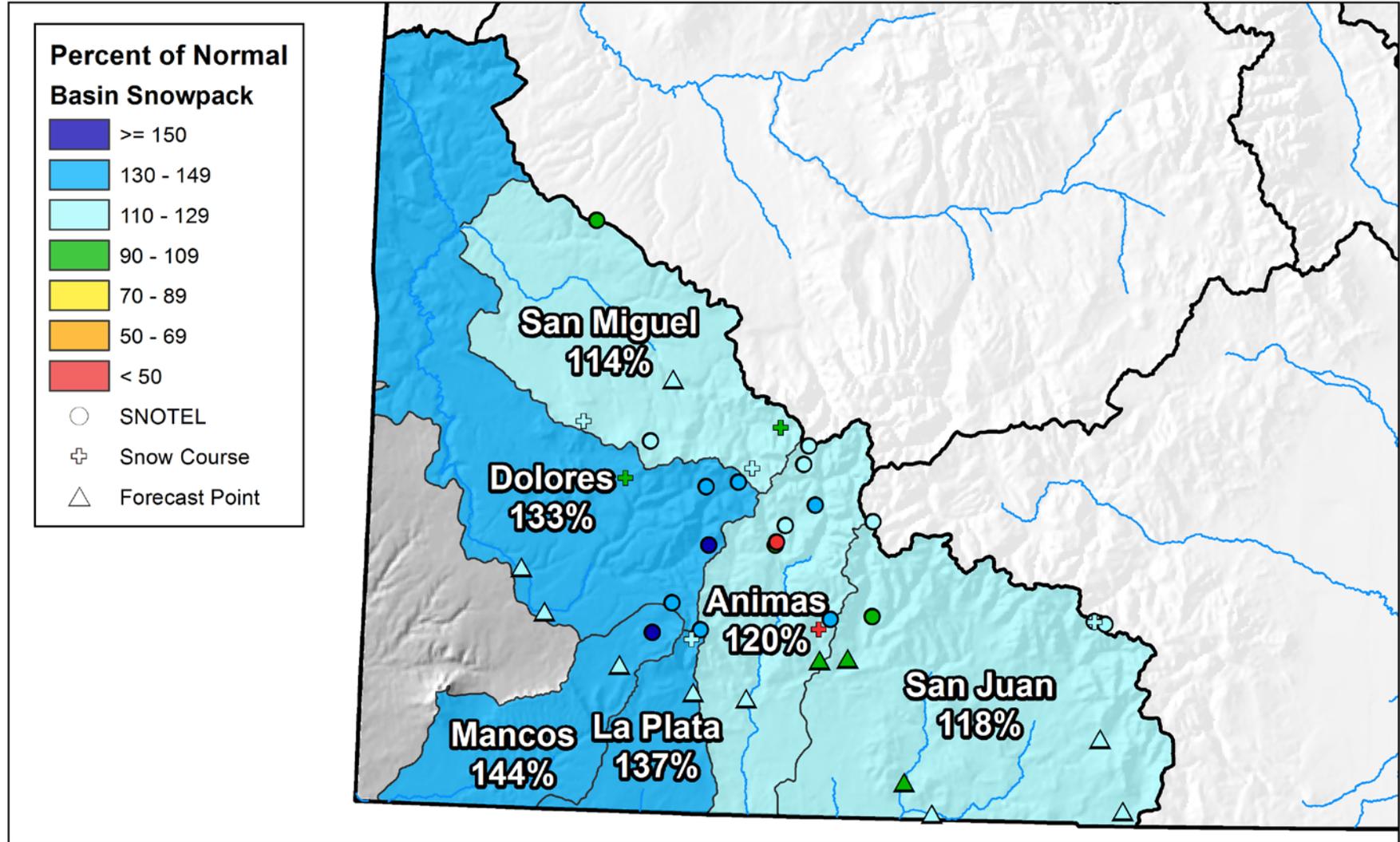
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

April 1, 2017

Snowpack in the combined southwest river basins is above normal at 121% of median. Precipitation for March was 67% of average which brings water year-to-date precipitation to 118% of average. Reservoir storage at the end of March was 124% of average compared to 105% last year. Current streamflow forecasts range from 125% of average for the inflow to McPhee Reservoir to 100% for the Piedra River near Arboles.



San Miguel, Dolores, Animas, and San Juan River Basins Snowpack and Streamflow Forecasts April 1, 2017



San Miguel-Dolores-Animas-San Juan River Basins Streamflow Forecasts - April 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Dolores R at Dolores	APR-JUL	235	275	305	124%	335	385	245
McPhee Reservoir Inflow	APR-JUL	290	340	370	125%	400	450	295
San Miguel R nr Placerville	APR-JUL	109	133	150	117%	168	197	128
Cone Reservoir Inlet	APR-JUL	2.8	3.3	3.7	119%	4.1	4.7	3.1
Gurley Reservoir Inlet	APR-JUL	14.7	17.2	19	117%	21	24	16.3
Lilylands Reservoir Inlet	APR-JUL	2.1	2.7	3.2	119%	3.7	4.6	2.7
Rio Blanco at Blanco Diversion ²	APR-JUL	47	56	63	117%	70	81	54
Navajo R at Oso Diversion ²	APR-JUL	57	67	75	115%	83	96	65
San Juan R nr Carracas ²	APR-JUL	345	410	450	118%	490	555	380
Piedra R nr Arboles	APR-JUL	160	189	210	100%	225	255	210
Vallecito Reservoir Inflow	APR-JUL	149	177	196	101%	215	245	194
Navajo Reservoir Inflow ²	APR-JUL	595	710	785	107%	860	970	735
Animas R at Durango	APR-JUL	375	435	475	114%	515	575	415
Lemon Reservoir Inflow	APR-JUL	44	52	58	105%	64	72	55
La Plata R at Hesperus	APR-JUL	21	24	27	117%	29	34	23
Mancos R nr Mancos ²	APR-JUL	27	33	38	123%	43	51	31

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

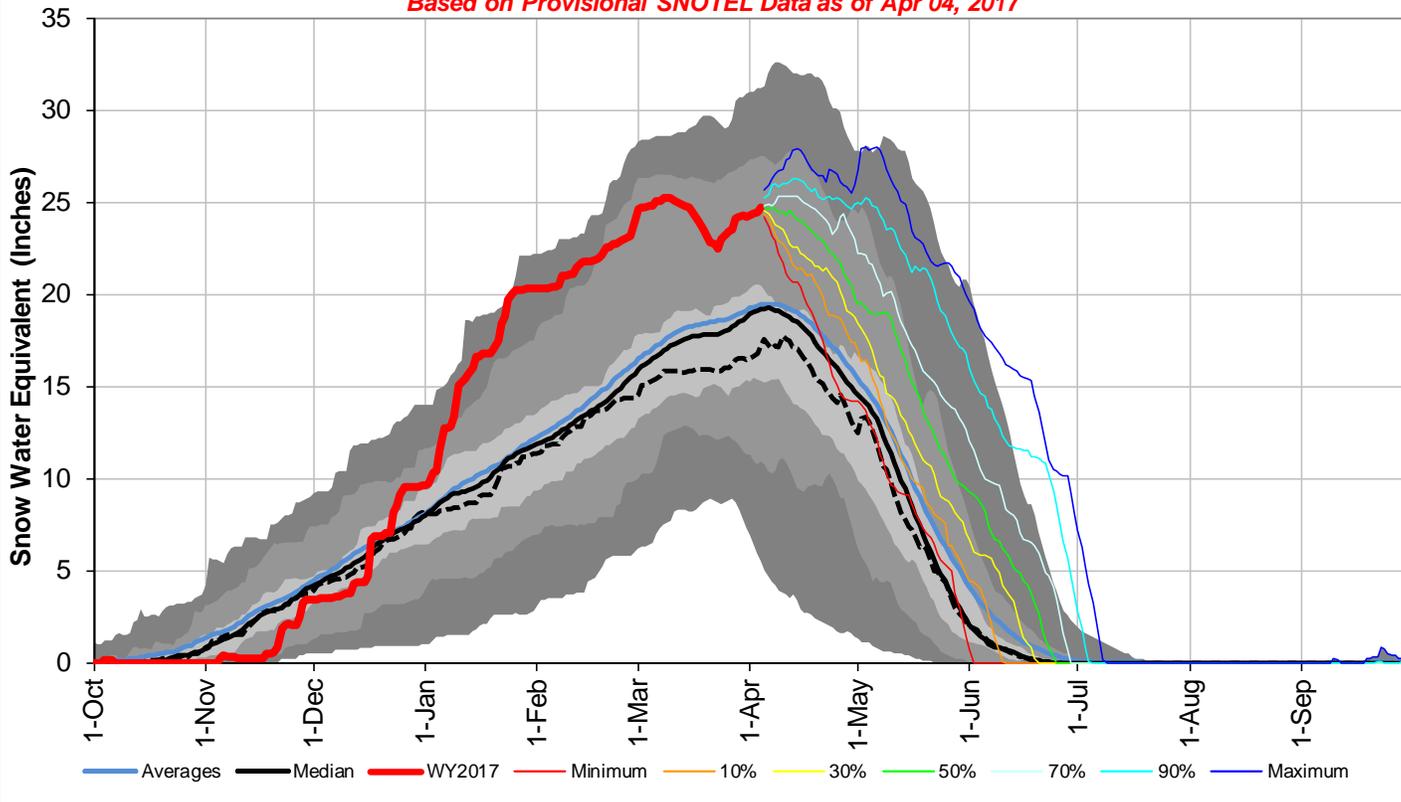
3) Median value used in place of average

Reservoir Storage End of March, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Groundhog Reservoir	19.7	20.4	12.5	22.0
Jackson Gulch Reservoir	6.8	6.1	5.0	10.0
Lemon Reservoir	24.7	23.3	21.7	40.0
Mcphee Reservoir	347.0	255.8	282.2	381.0
Narraguinnep Reservoir	18.9	18.9	16.1	19.0
Trout Lake Reservoir	2.1	2.3	1.4	3.2
Vallecito Reservoir	77.8	93.7	63.3	126.0
Basin-wide Total	497.0	420.5	402.2	601.2
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis April 1, 2017	# of Sites	% Median	Last Year % Median
ANIMAS RIVER BASIN	11	120%	77%
DOLORES RIVER BASIN	7	133%	87%
SAN MIGUEL RIVER BASIN	5	116%	97%
SAN JUAN RIVER BASIN	4	118%	76%
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	25	121%	81%

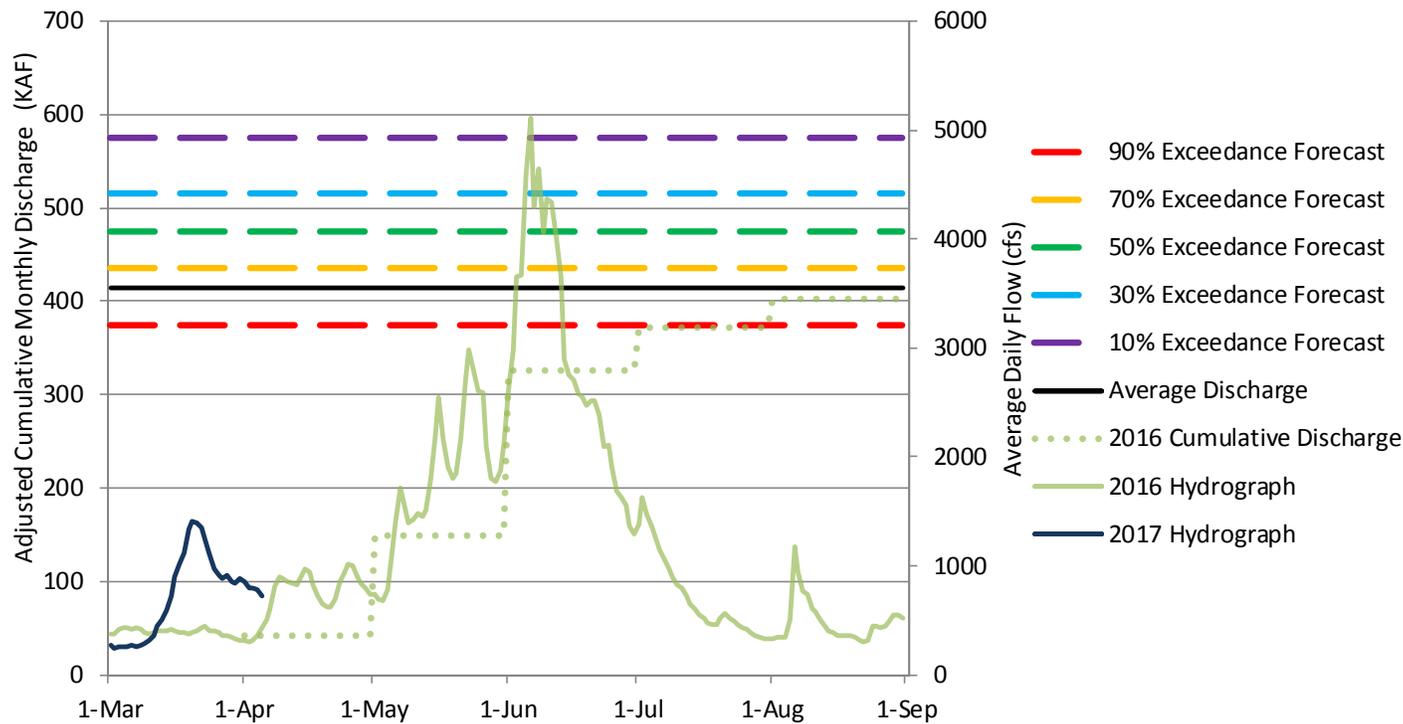
San Miguel, Dolores, Animas and San Juan River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 04, 2017



Animas River at Durango, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)



Please refer to the sections at the end of this report for further explanation concerning these graphs.

How to Read Non-Exceedance Projections Graphs

The graphs show snow water equivalent (SWE) projections (in inches) for the October 1 through September 30 water year. Basin “observed” SWE values are computed using SNOTEL sites which are characteristic of the snowpack of the particular basin. The SWE observations at these sites are averaged and normalized to produce these basin snowpack graphs. This new graph format uses non-exceedance projections.

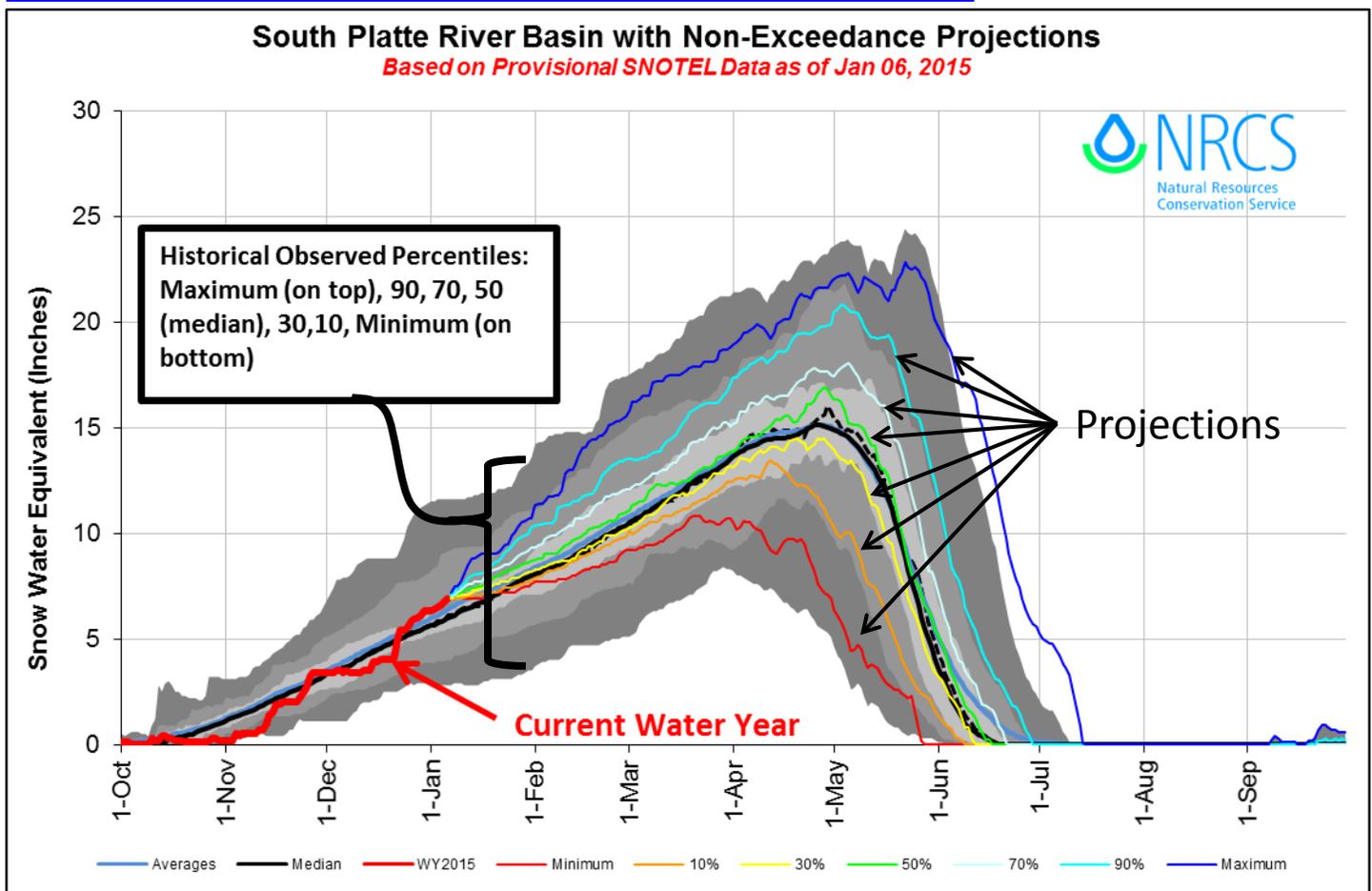
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

Historical observed percentile range is shown as a gray background area on the graph. Shades of gray indicate maximum, 90 percentile, 70 percentile, 50 percentile (solid black line), 30 percentile, 10 percentile, and minimum for the period of record.

Projections for maximum, 90 percent, 70 percent, 50 percent (most probabilistic snowpack projection, based on median), 30 percent, 10 percent, and minimum exceedances are projected forward from the end of the current line as different colored lines.

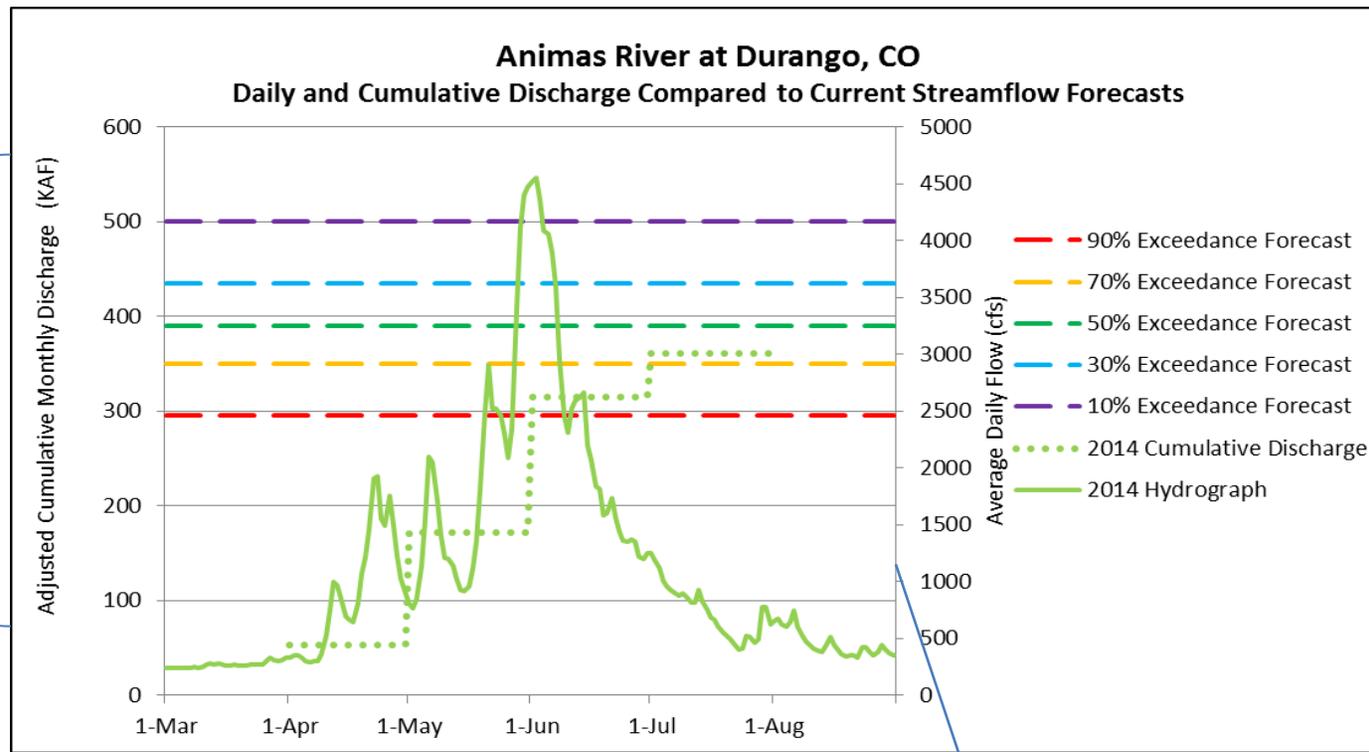
For more detailed information on these graphs visit:

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_062291.pdf



Explanation of Flow Comparison Charts

The flow comparison charts were developed to provide a quick comparison between the previous years' observed hydrograph, cumulative seasonal discharge, the current streamflow forecasts, and the current years' observed discharge (both hydrograph and cumulative discharge, as the season progresses). Forecast points for these products were generally chosen to be lower in the basin to best represent the basin-wide streamflow response for the season; the true degree of representativeness will vary between basins. When making comparisons of how the shape of the hydrograph relates to the monthly (and seasonal) cumulative discharges it is important to note that the hydrograph represents observed daily flows at the forecast point while the cumulative values may be adjusted for changes in reservoir storage and diversions to best represent what would be "natural flows" if these impoundments and diversions did not exist. This product can provide additional guidance regarding how to most wisely utilize the five exceedance forecasts based on past observations, current trends, and future uncertainty for a wide variety of purposes and water users.



The left y-axis represents values of adjusted cumulative discharge (KAF). This axis is to be used for comparing the current and previous years to the current five volumetric seasonal exceedance forecasts. This graphic only displays the previous years data but data for the current water year will be added as the season progresses.

The legend displays the symbology and color schemes for the various parameters represented. Exceedance forecasts represent total cumulative discharge for the April through July time period with the exception of the Rio Grande at Wagon Wheel Gap (Apr-Sep).

The right y-axis represents observed daily average discharge at the forecast point of interest. This graphic only displays the previous years data but data for the current water year will be added as the Season progresses.

How Forecasts Are Made

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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. 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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In addition to the water supply 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 June. The information may be obtained from the Natural Resources Conservation Service web page at <http://www.nrcs.usda.gov/wsf/westwide.html>

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