

Colorado

Water Supply Outlook Report

June 1, 2018



The fourteen thousand foot peaks of the southern Sangre de Cristo Mountains in Colorado were almost entirely snow-free by mid-May this year. The Rio Grande and Arkansas River basins, fed in part from these mountains, are extremely dry as of June 1st. Since the beginning of the water year on October 1st, both basins have received precipitation that is far below average and have been subject to above average temperatures. These conditions have resulted in snowpack peaks near half of normal and the disappearance of the seasonal snowpack as much as a month early in some locations. Streamflows reflect these conditions and are very low across these basins and the rest of southern Colorado.

Photo By: Lexi Landers Date: May 15, 2018

REMINDER: We are soliciting field work photos from the field 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.

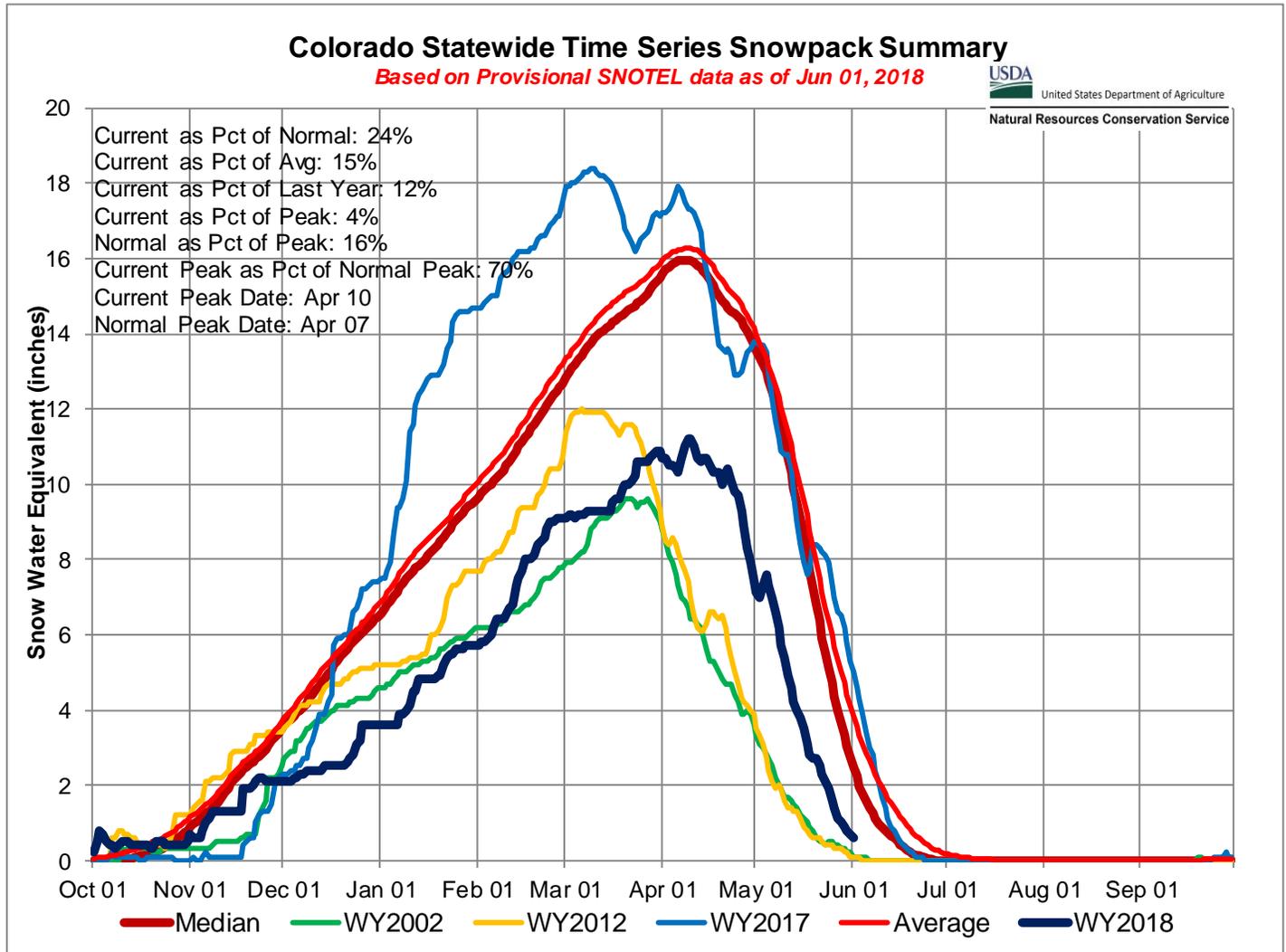
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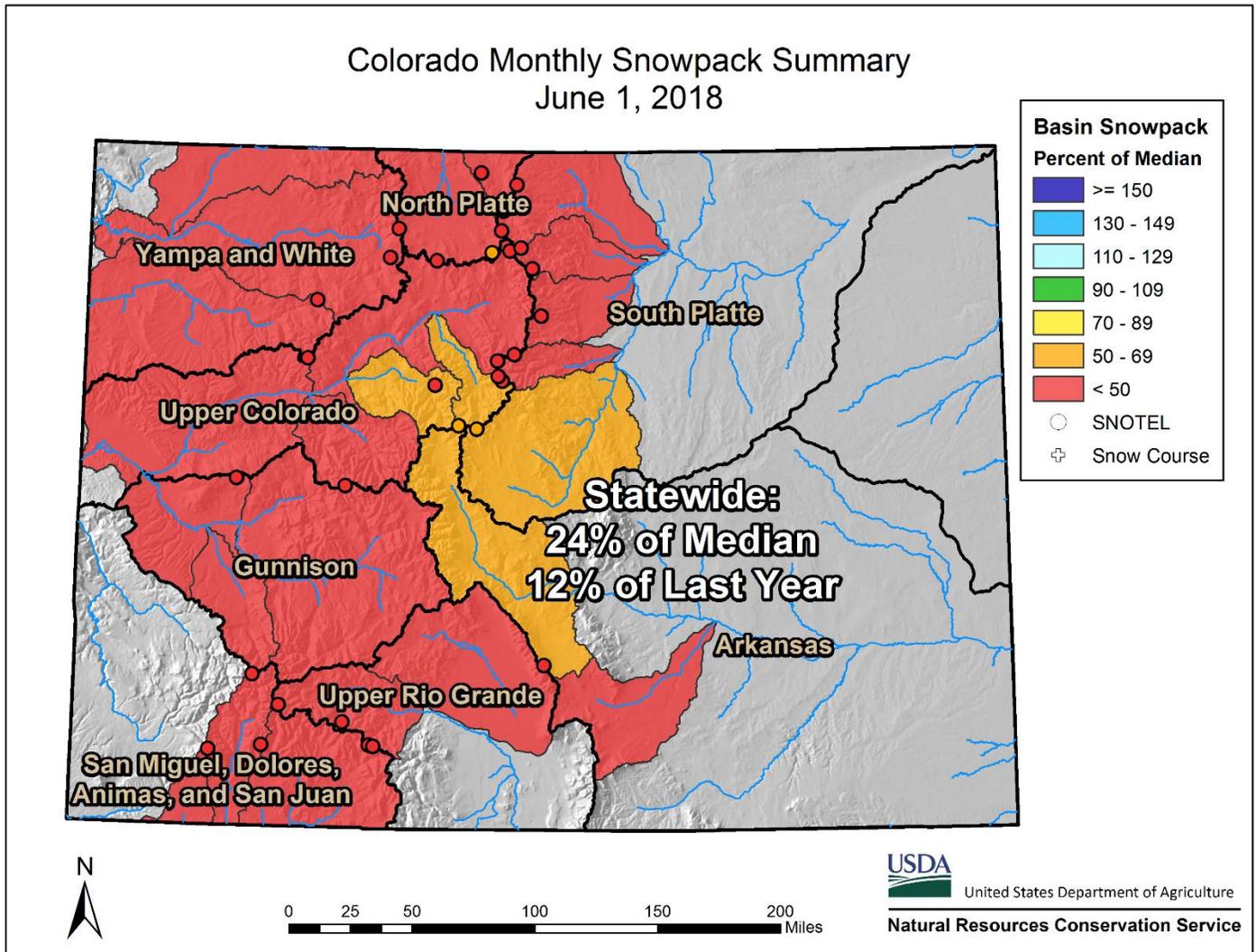
Colorado Statewide Water Supply Conditions

Summary



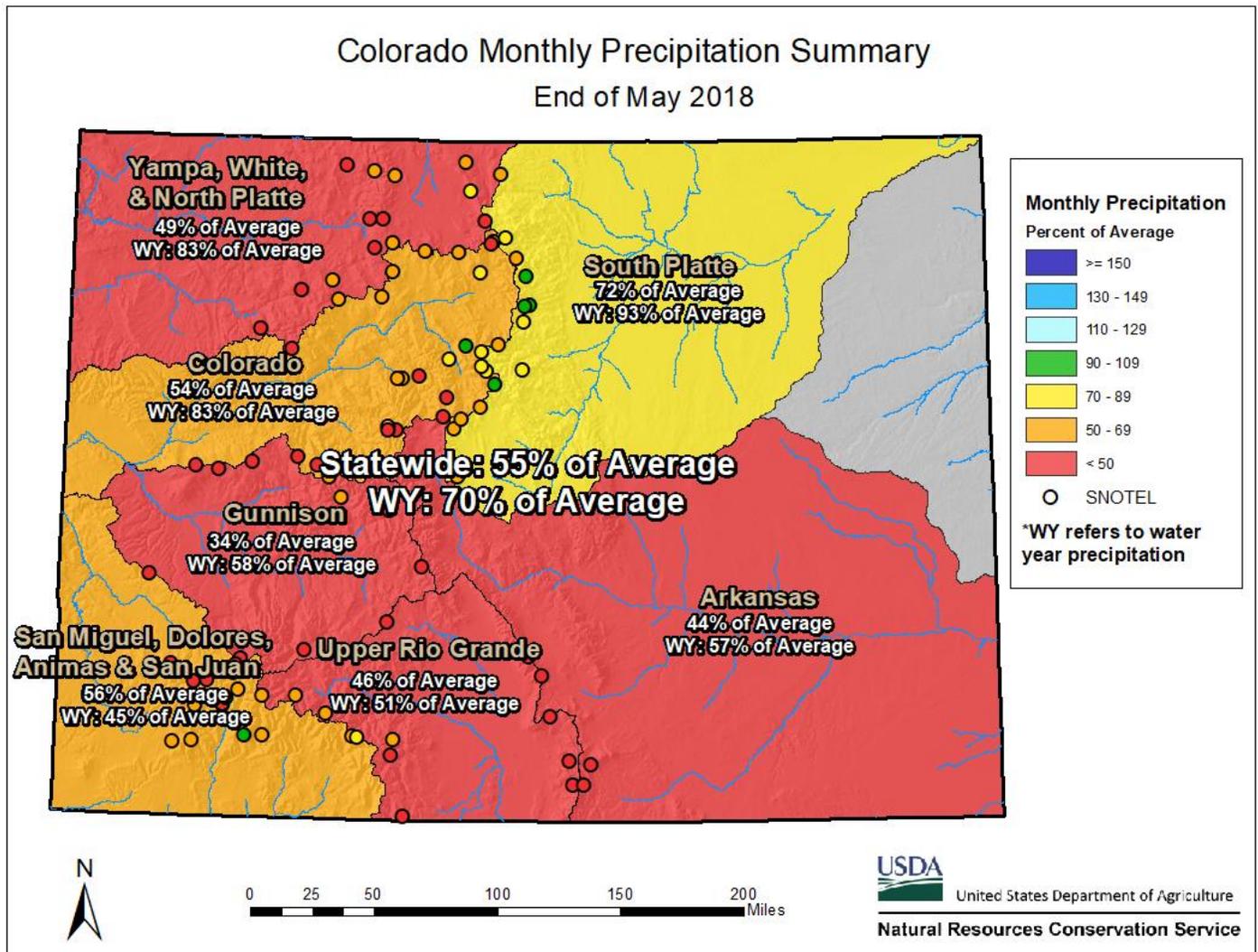
Going into June, the general trends of Colorado’s precipitation distribution that have been observed all winter have continued. Water year precipitation in southern Colorado basins is between 45-58 percent of average compared to the range of 80-93 percent in the northern basins. There are very few April-July streamflow forecasts across all of the Gunnison, Rio Grande, and combined San Miguel Dolores, Animas, and San Juan basins for above 50 percent of average streamflow and many are forecast to have the potential for record low flows. Conversely, while still below normal, the Colorado, North Platte, South Platte, and combined Yampa and White basins were all at least able to obtain a snowpack above 80 percent of normal at times this winter. Streamflow forecasts in these basins reflect the better snowpack, but still none are calling for above average volumes. The Arkansas basin ended up in the middle of the extremes across the state but has stark differences between the extremely dry southern sub-basins and its headwaters, which received notably more precipitation. Reservoir storage across the state had remained above average in all major basins until the last couple of months when significant drawdowns were observed in the Rio Grande and the combined basins of southwest Colorado. These losses have accounted for 25 percent of each basin’s respective average storage for this time of year. There was also a notable loss of storage in the Gunnison basin leaving it as the only other basin currently holding below average reservoir storage, with all other basins holding 114-127 percent of average. Water restrictions are already in place in many parts of the state, information on these can be found by zip code at <http://www.coh2o.co/>.

Snowpack



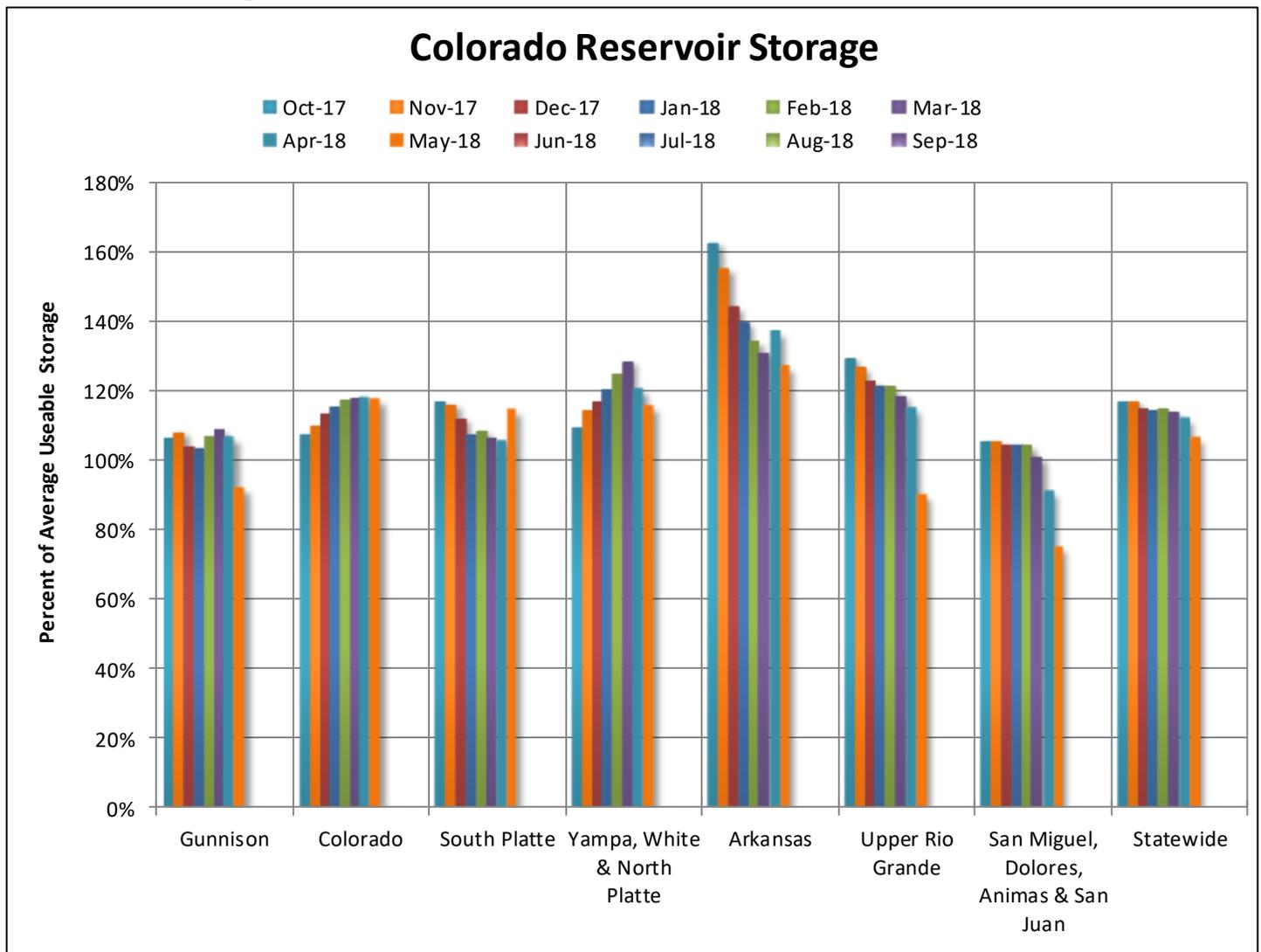
Snowmelt across Colorado's mountains accelerated rapidly during May as a result of the predominantly warm and dry weather conditions that were widespread during the month. As of June 1st, there are only a handful of SNOTEL sites that are still reporting the presence of snow, when typically more than a quarter of the sites scattered across the state become snow-free after June 1st. SNOTEL stations with a lingering snowpack are located at high elevation locations in the Colorado, South Platte, North Platte, and Yampa-White River basins. There is no snow remaining at any SNOTEL sites in southern Colorado, and many locations in the southern basins have been snow-free since the first week of May. Given the short-range weather forecast, many of the remaining sites in northern Colorado will most likely be snow-free by the end of the week. Even sites that reached close to normal snowpack peaks this year have melted out earlier than normal, some more than two weeks early. Overall, the North Platte River basin had the best snowpack this winter and achieved a snowpack peak slightly above normal. The South Platte, Colorado, and Yampa-White River basins also fared decently this winter compared to the southern half of the state, with snowpack peaks at 91, 88, and 87 percent of normal respectively. The remaining river basins all peaked with less than 60 percent of normal accumulations. Statewide, Colorado has not experienced a winter and spring this prohibitive to growing and maintaining a robust snowpack since 2012, but for the Rio Grande, and combined San Miguel, Dolores, Animas, and San Juan River basins, 2018 has only been slightly better than 2002, the worst winter on record for SNOTEL data collection.

Precipitation



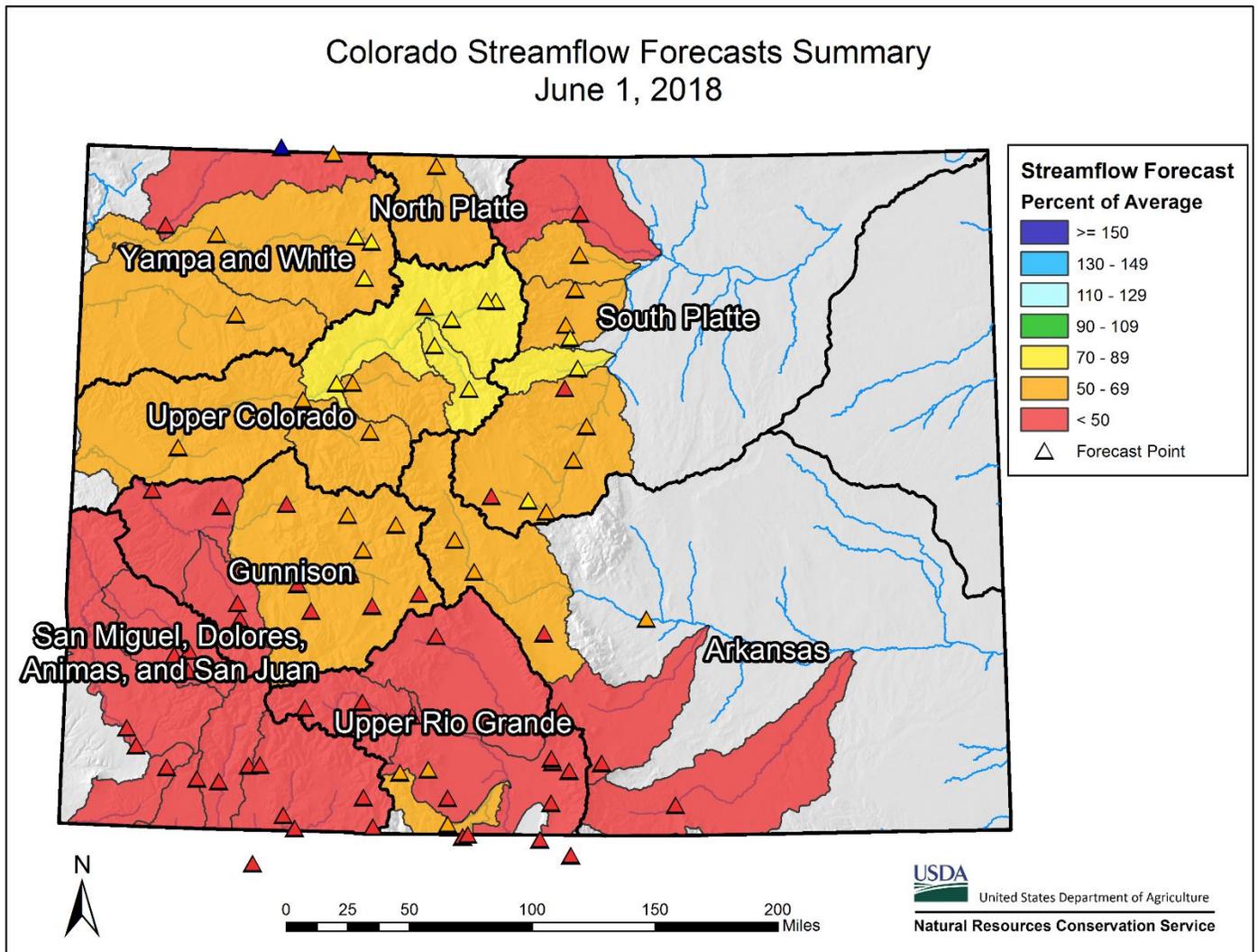
May was the second driest month for statewide monthly precipitation since the start of the water year on October 1st, behind only December in terms of percent of normal accumulations. While conditions remain parched in southern Colorado, dry weather patterns influenced the northern mountains as well this month. Monthly precipitation in every major watershed was much below normal, with the highest monthly accumulations reaching only 72 percent of average for the South Platte River basin. Only the Colorado and combined San Miguel, Dolores, Animas, and San Juan river basins were also above half of normal May precipitation at 54 and 56 percent of average respectively. The remaining river basins received below 50 percent of normal monthly accumulations with the Gunnison River basin receiving the most meager precipitation during May. SNOTEL sites averaged only 0.7 inches of precipitation across the Gunnison River basin, which is only 34 percent of average. The lack of May precipitation has led to a drop in the water year-to-date precipitation levels in every major river basin. The South Platte continues to have the highest moisture levels for the water year, at 93 percent of average, while the Colorado and combined Yampa, White, and North Platte basins are both at 83 percent of average. The southern river basins are all faring much worse for the water year, ranging from only 45 percent of average accumulations for the combined San Miguel, Dolores, Animas, and San Juan River basins to 58 percent of normal water year precipitation for the Gunnison River basin. This is not a good position to be in as we enter a series of summer months that typically provide the lowest statewide precipitation accumulations during the water year.

Reservoir Storage



While statewide Colorado is still holding above average reservoir storage, at 106 percent of normal, there were dramatic declines across much of southern and western Colorado over the last month. The Upper Rio Grande basin experienced a drop of 25 percent of average from 115 percent a month ago down to 90 percent where it currently lies. This decline was followed closely by the Gunnison and combined San Miguel, Dolores, Animas, and San Juan basins which lost 14 and 16 percent of average leaving them at 92 and 75 percent of average, respectively. For the southwest basins this also follows a 9 percent drop from the month before as well. These basins, which are now holding below average reservoir storage, are also the ones with the lowest streamflow forecasts in the state. The Arkansas River basin experienced a 10 percent drop but still holds 127 percent of average storage, the highest in the state. There were also declines observed in the combined Yampa, White, and North Platte river basins leaving that region holding 115 percent of average storage. The Colorado River basin retained similar storage levels to last month and is holding 117 percent of average and the South Platte was the only basin in the state to increase storage last month, leaving it with 114 percent of its normal storage values. While reservoir storage was above average in all major Colorado basins through most of the water year, we are starting to see the effects of the minimal snowpack in southern Colorado with low natural streamflows and resulting declines in reservoir storage. Water resources in those areas will surely be watched and managed closely for the foreseeable future.

Streamflow

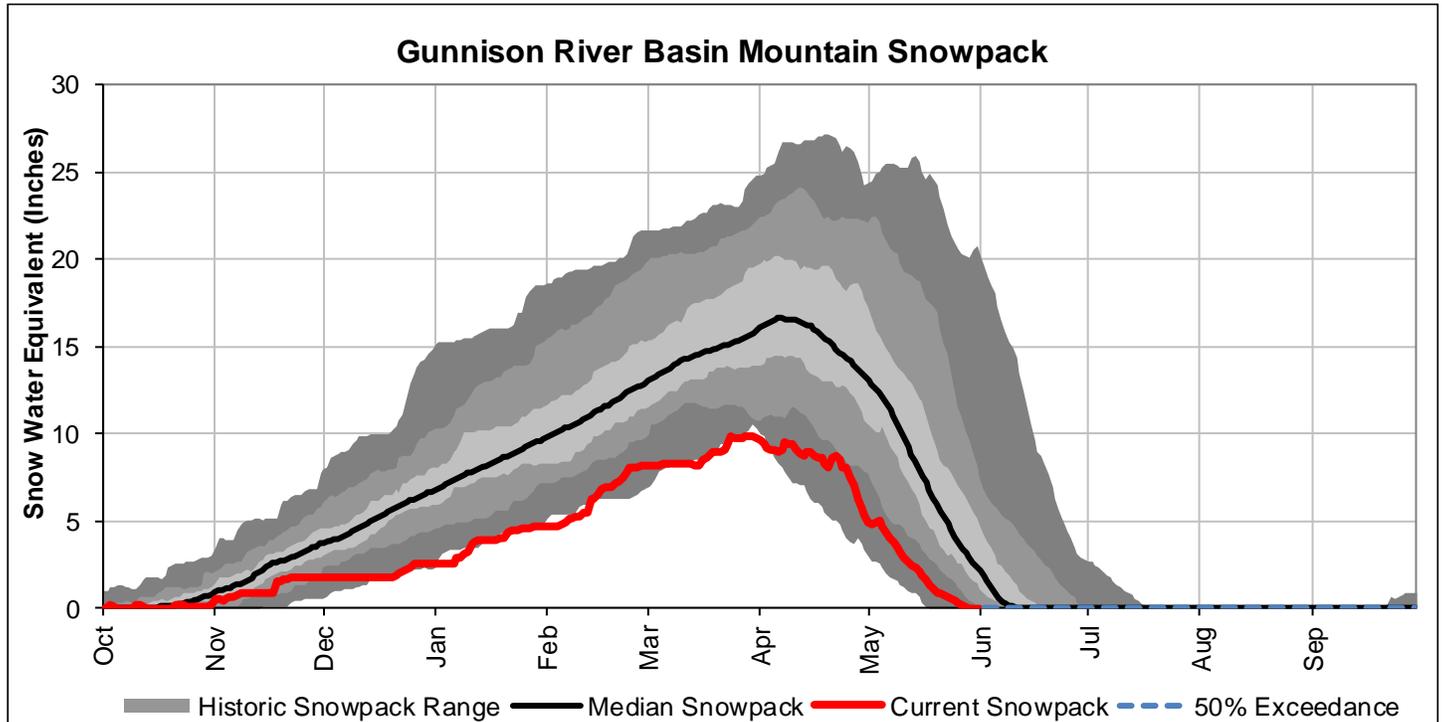


Now halfway through the April-July streamflow forecast period it has been an interesting start to the snowmelt runoff season. Thin snowpacks and above normal temperatures across much of western and southern Colorado have led many basins to melt out quickly resulting in much earlier and lower than normal streamflow peaks. These peaks are unlikely to be topped without substantial and sustained precipitation in the near future, which is not forecasted. With meager winter snowpack and a mostly dry May, most rivers across southern Colorado are forecast to produce less than 30 percent of normal volumes over the next two months. Alternatively, rivers originating in the northern Front Range and supplying water to the South Platte and the Colorado River headwaters have been flowing with closer to normal rates and timing. While there are still no forecast points in the state calling for above average flows these areas still retain the closest to normal seasonal volumetric forecasts. Interestingly, even in portions of the state that had a close to normal snowpack it appears as though much of the streamflow has been arriving earlier than normal, likely resulting from warm temperatures. This has resulted in the forecasts for the June-July period being disproportionately lower than for the whole April-July (or April-September) period. As has been the case with snowpack all winter long the take home story for Colorado water supply this summer is the dramatic differences across the state. Much of southern Colorado has the potential for record low streamflows while rivers with origins in the northern mountains are generally (but not uniformly) forecast for much closer to normal streamflow volumes.

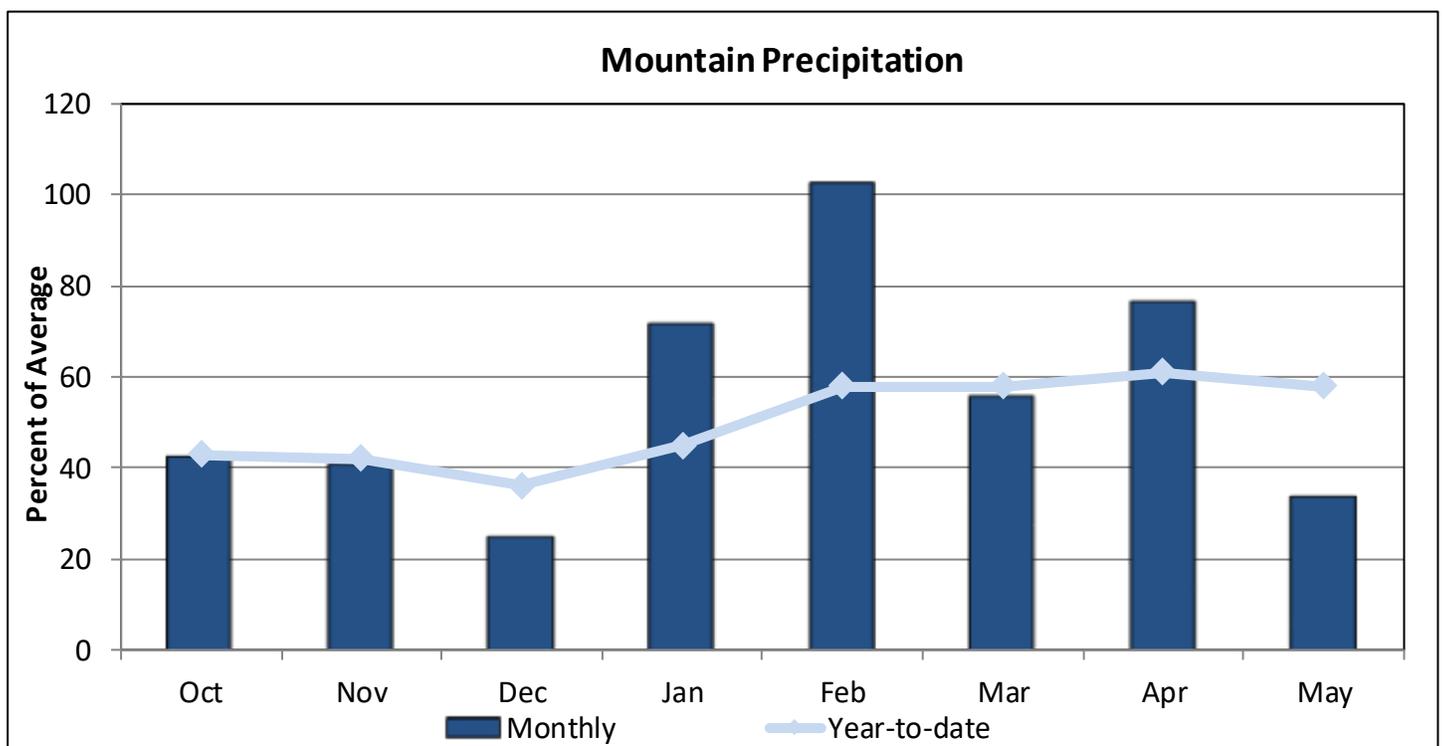
GUNNISON RIVER BASIN

June 1, 2018

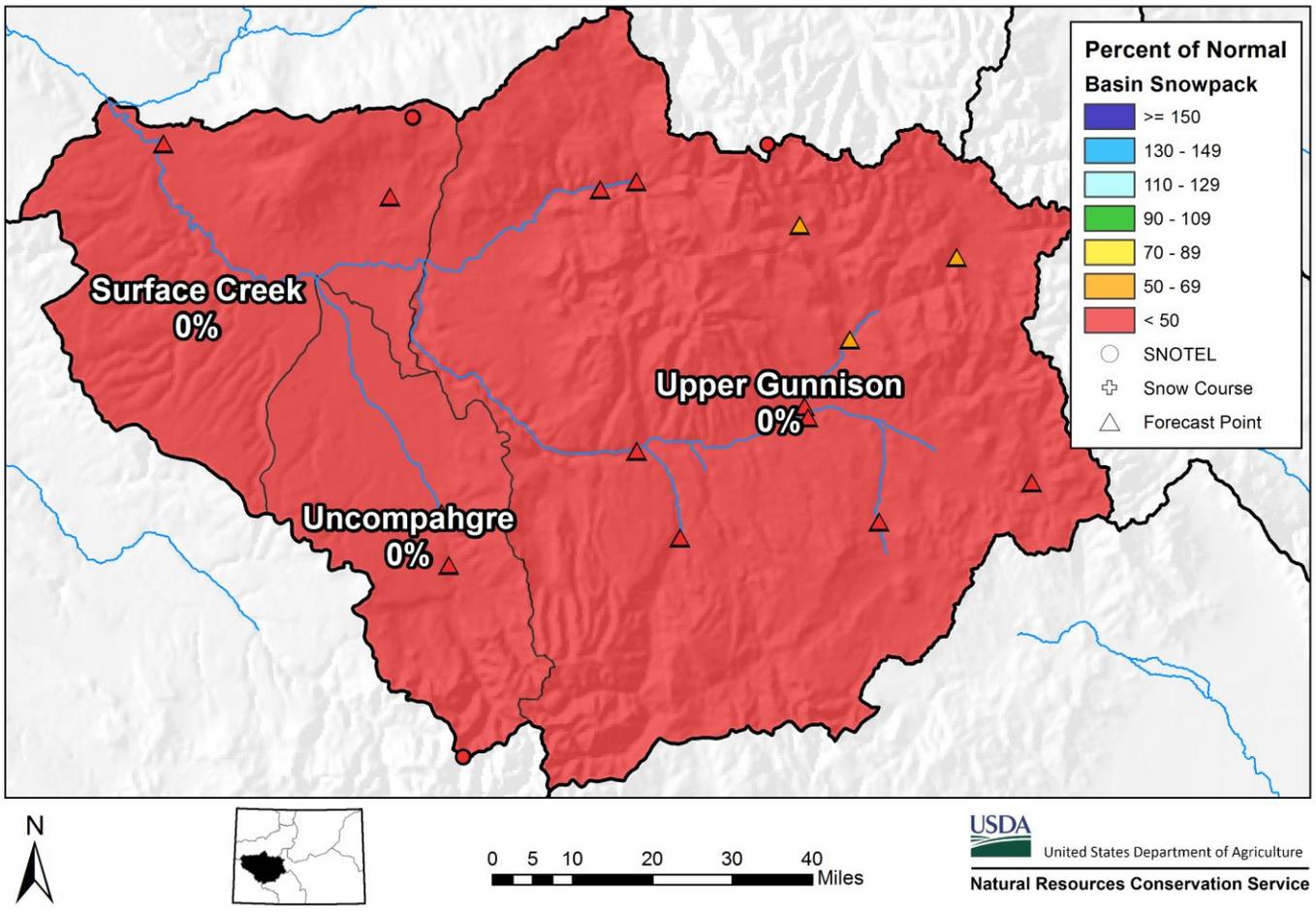
Snowpack in the Gunnison River basin is below normal at 0% of the median. Precipitation for May was 34% of average which brings water year-to-date precipitation to 58% of average. Reservoir storage at the end of May was 92% of average compared to 102% last year. Current streamflow forecasts range from 48% of average for the Slate River near Crested Butte to 10% for the inflow to Paonia Reservoir.



*SWE values calculated using daily SNOTEL data only



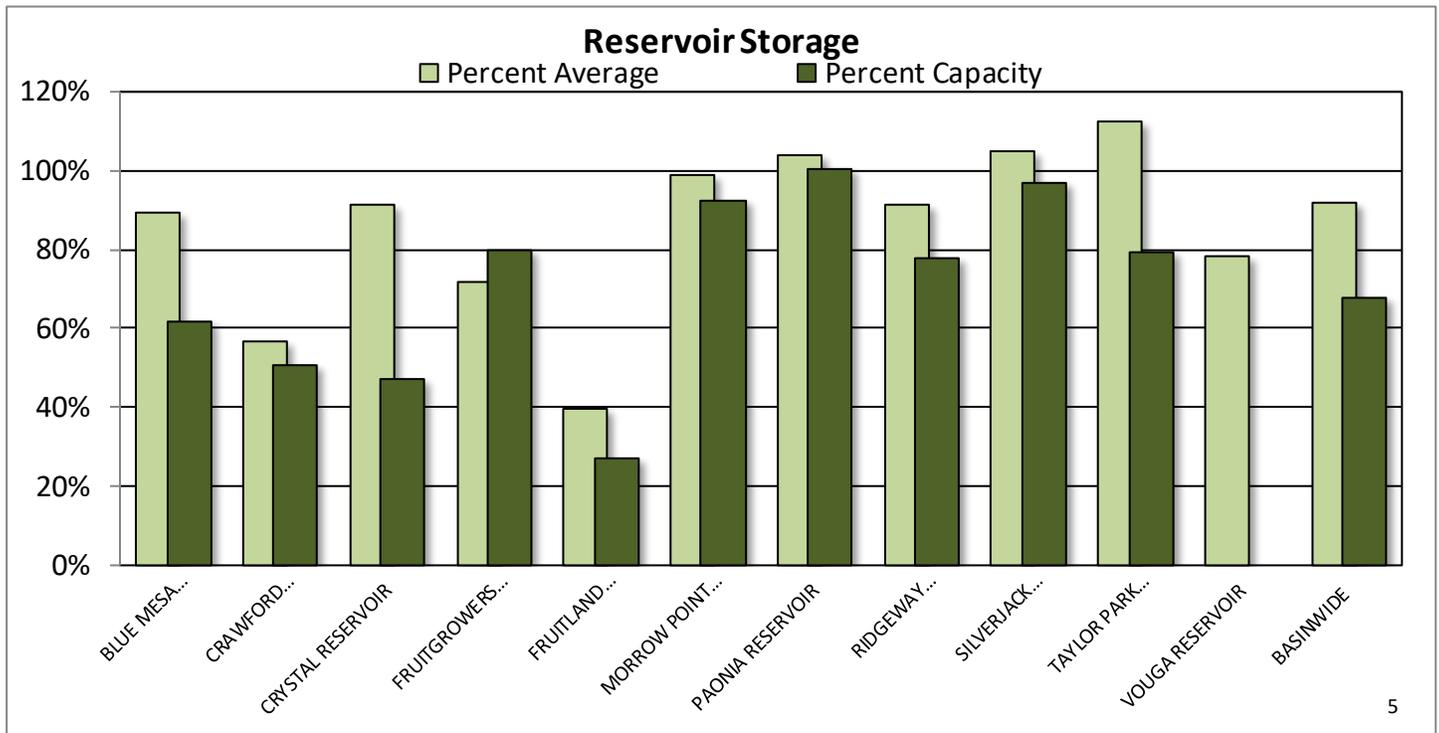
Gunnison River Basin Snowpack and Streamflow Forecasts June 1, 2018



Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
				Median
Upper Gunnison	10	0		188
Surface Creek	2	0		148
Uncompahgre	3	0		227
Basin-Wide Total	13	0		197

*SWE values calculated using first of month SNOTEL data and snow course measurements



Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
BLUE MESA RESERVOIR	512.6	596.8	575.3	830.0
CRAWFORD RESERVOIR	7.1	14.4	12.5	14.0
CRYSTAL RESERVOIR	8.2	11.3	9.0	17.5
FRUITGROWERS RESERVOIR	2.9	3.5	4.0	3.6
FRUITLAND RESERVOIR	2.5	7.3	6.2	9.2
MORROW POINT RESERVOIR	112.0	108.8	113.2	121.0
PAONIA RESERVOIR	15.5	11.9	14.9	15.4
RIDGEWAY RESERVOIR	64.4	64.5	70.6	83.0
SILVERJACK RESERVOIR	12.4	11.6	11.8	12.8
TAYLOR PARK RESERVOIR	83.9	84.3	74.7	106.0
VOUGA RESERVOIR	0.7	0.5	0.9	0.9
BASINWIDE	822.1	915.1	893.1	1213.4
Number of Reservoirs	11	11	11	11

GUNNISON RIVER BASIN

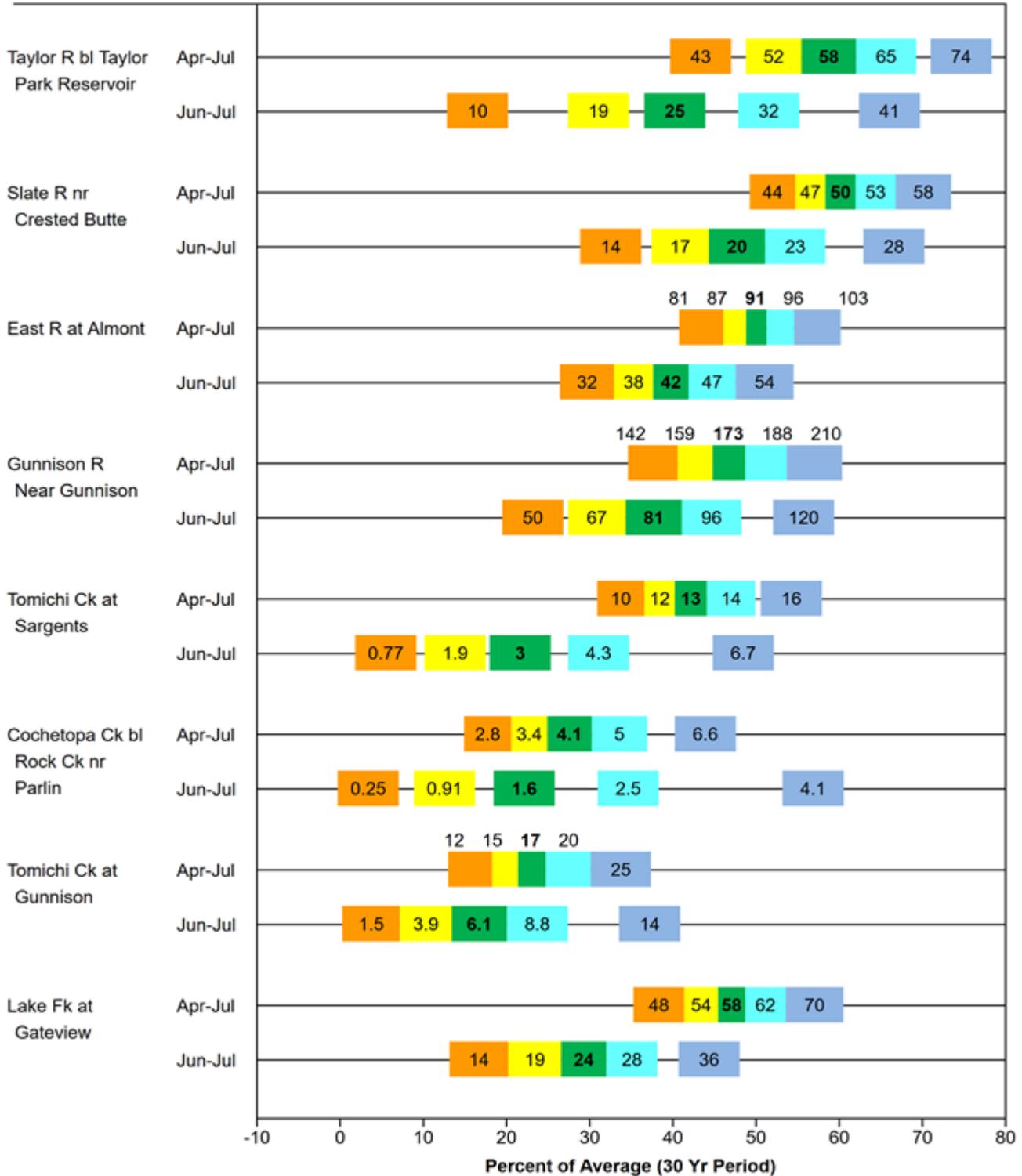
Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

Box labels on chart are volumes of water in thousand acre-feet.



<p>10% Exceedance Forecast (KAF)</p> <p>5% Exceedance</p>	<p>30% Exceedance Forecast (KAF)</p> <p>There is a 30% chance that flows will exceed this volume.</p>	<p>50% Exceedance Forecast (KAF)</p> <p>There is a 50% chance that flows will exceed this volume.</p>	<p>70% Exceedance Forecast (KAF)</p> <p>There is a 70% chance that flows will exceed this volume.</p>	<p>90% Exceedance Forecast (KAF)</p> <p>95% Exceedance</p>
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GUNNISON RIVER BASIN

Water Supply Forecasts

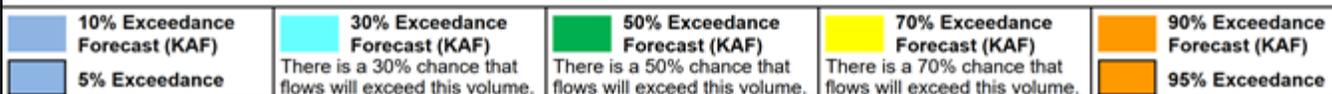
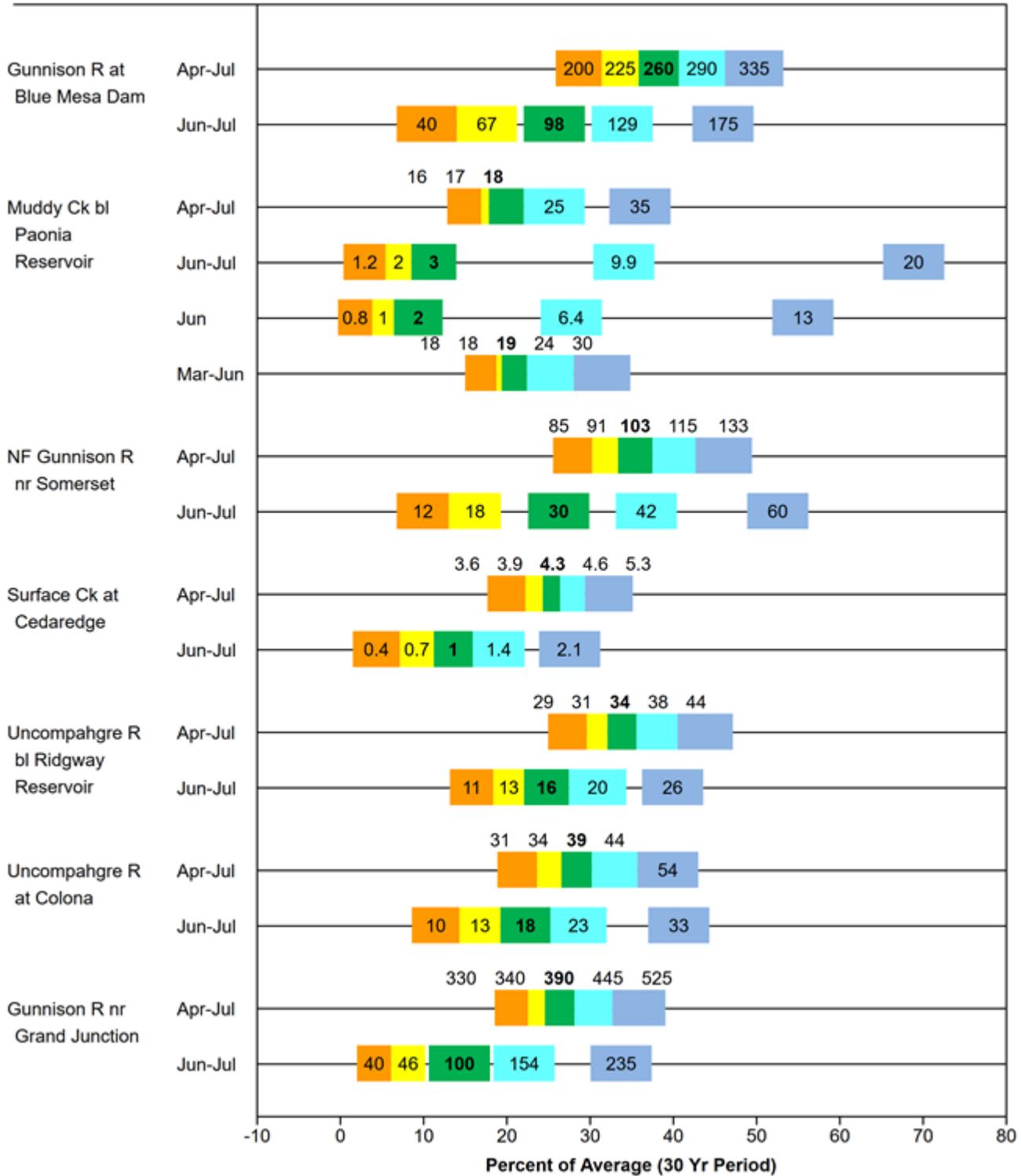
June 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

Forecast Point Forecast Period

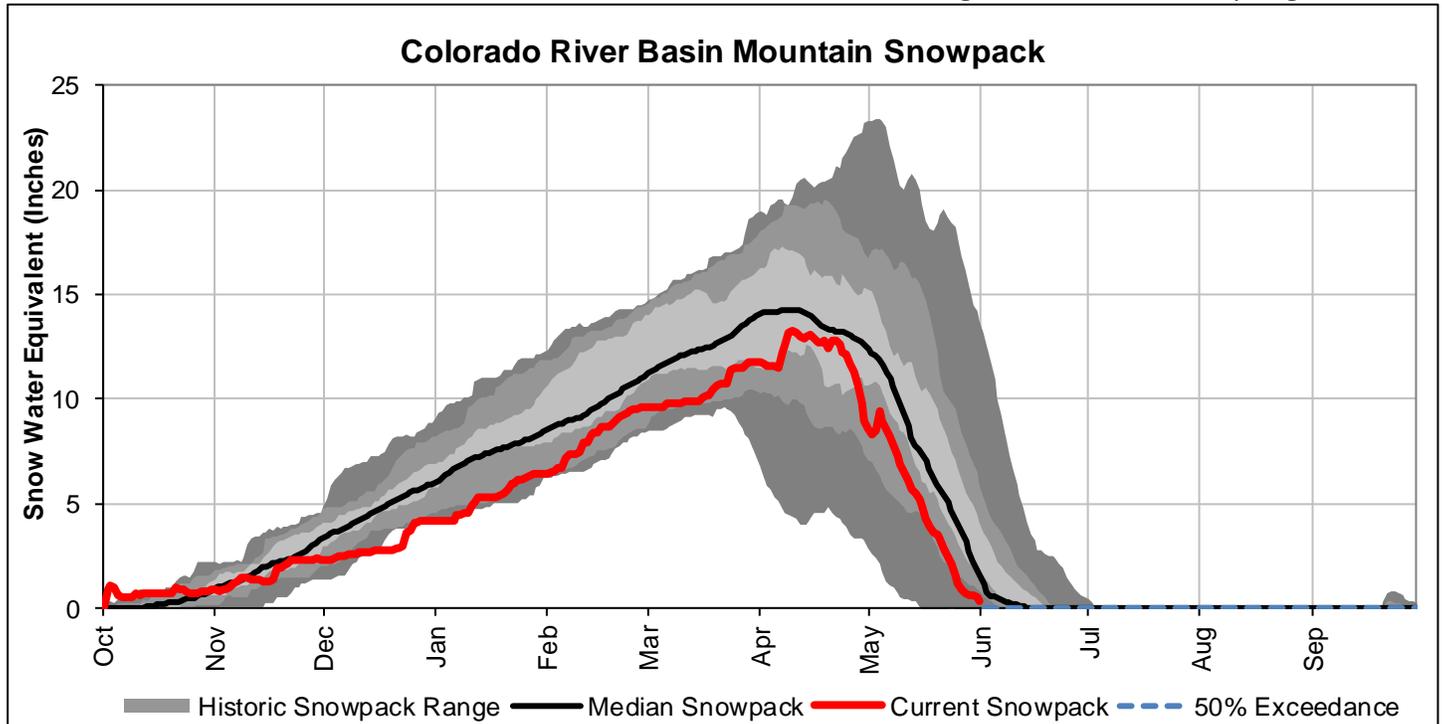
Box labels on chart are volumes of water in thousand acre-feet.



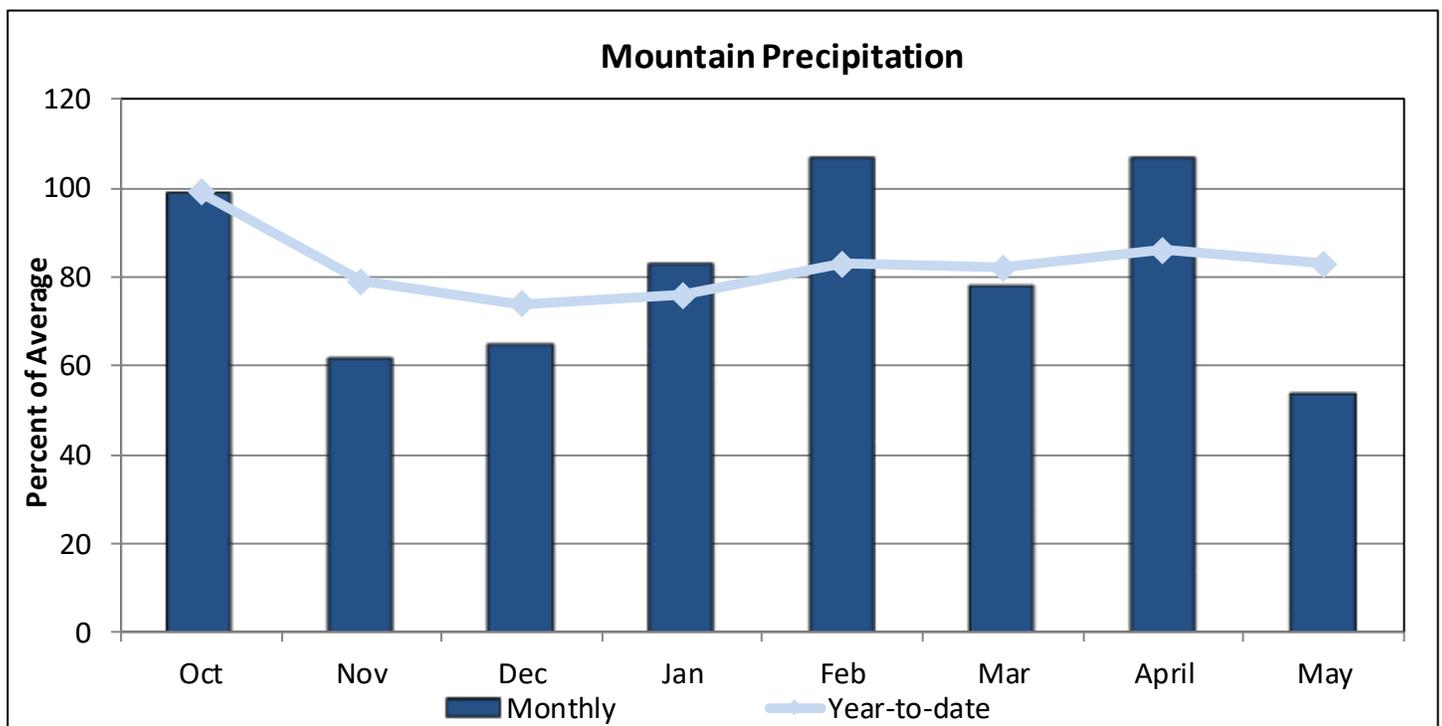
UPPER COLORADO RIVER BASIN

June 1, 2018

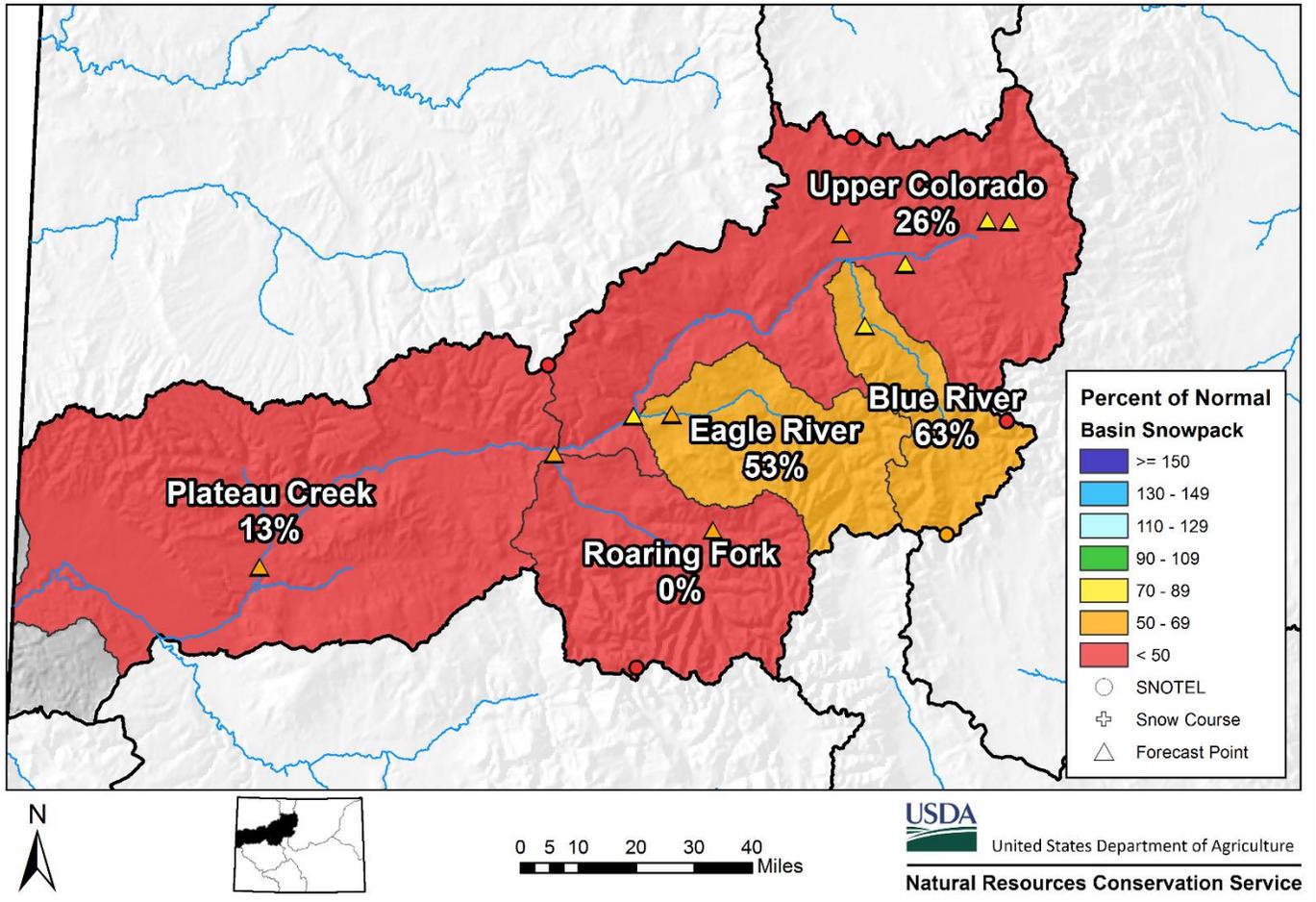
Snowpack in the Colorado River basin is below normal at 21% of the median. Precipitation for May was 54% of average which brings water year-to-date precipitation to 83% of average. Reservoir storage at the end of May was 117% of average compared to 109% last year. Current streamflow forecasts range from 73% of average for the Williams Fork below Williams Fork Reservoir to 38% for the Roaring Fork at Glenwood Springs.



*SWE values calculated using daily SNOTEL data only



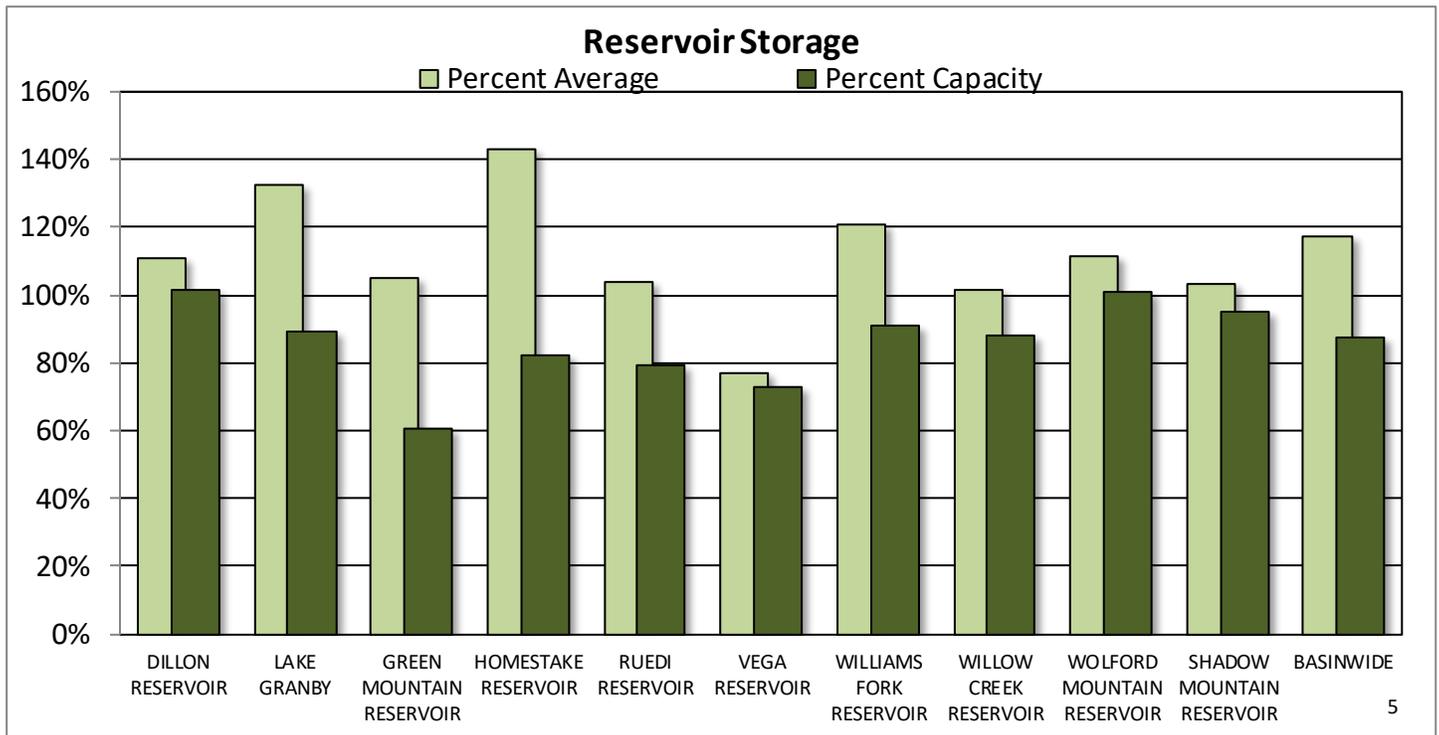
Upper Colorado River Basin Snowpack and Streamflow Forecasts June 1, 2018



Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
				Median
Blue River	5	63		334
Upper Colorado	19	26		239
Muddy Creek	3	31		277
Eagle River	4	53		110
Plateau Creek	5	13		124
Roaring Fork	7	0		288
Williams Fork	3	0		188
Willow Creek	2		Median is 0	
Basin-Wide Total	28	21		214

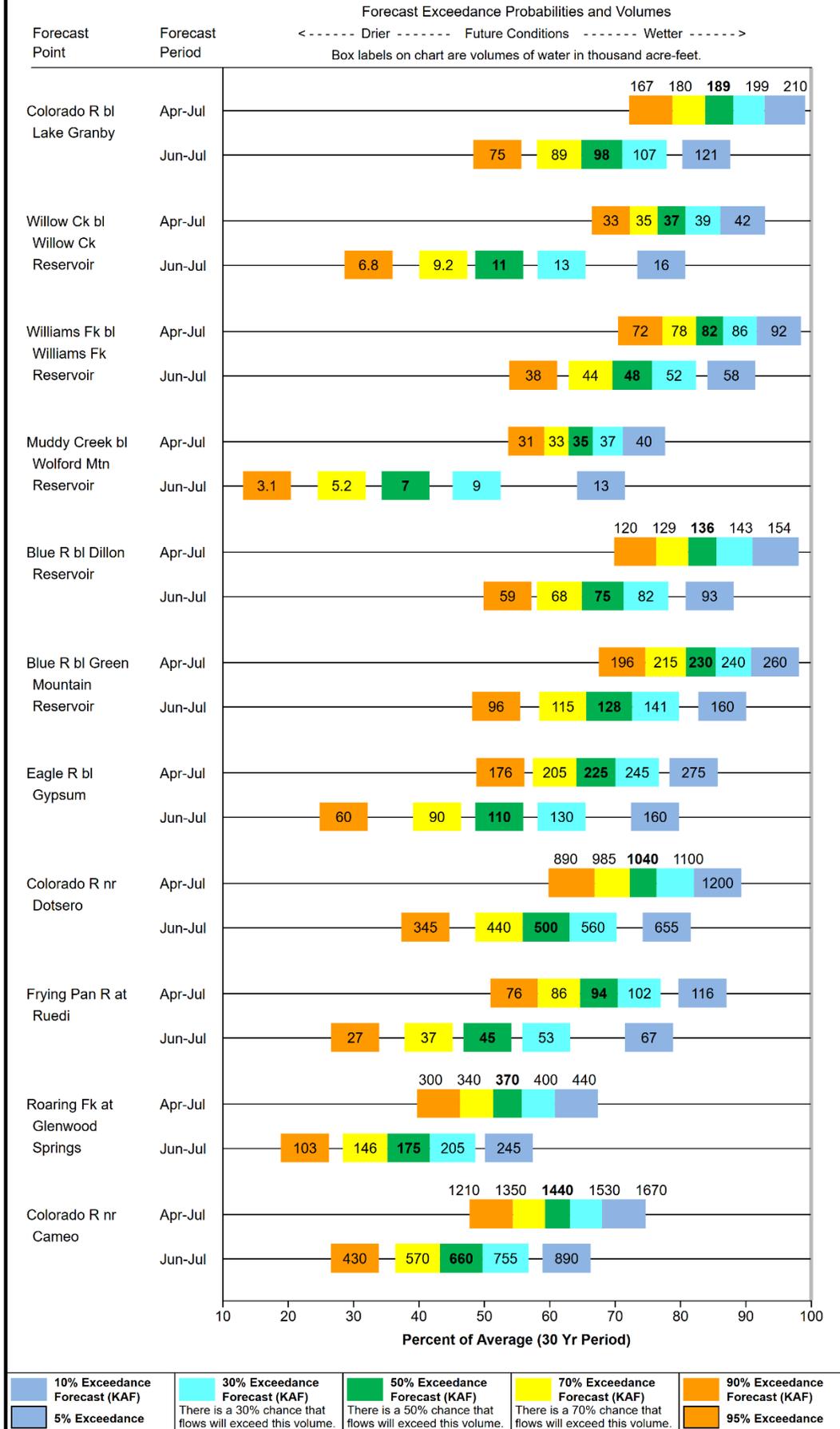
*SWE values calculated using first of month SNOTEL data and snow course measurements



Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
DILLON RESERVOIR	252.1	227.7	227.8	249.1
LAKE GRANBY	415.8	377.5	313.6	465.6
GREEN MOUNTAIN RESERVOIR	89.0	82.7	84.9	146.8
HOMESTAKE RESERVOIR	35.3	29.7	24.7	43.0
RUEDI RESERVOIR	81.1	78.1	78.0	102.0
VEGA RESERVOIR	24.0	32.6	31.3	32.9
WILLIAMS FORK RESERVOIR	88.1	82.5	73.0	97.0
WILLOW CREEK RESERVOIR	8.0	7.8	7.9	9.1
WOLFORD MOUNTAIN RESERVOIR	66.6	67.0	59.9	65.9
SHADOW MOUNTAIN RESERVOIR	17.5	16.8	16.9	18.4
BASINWIDE	1077.6	1002.3	918.0	1229.8
Number of Reservoirs	10	10	10	10

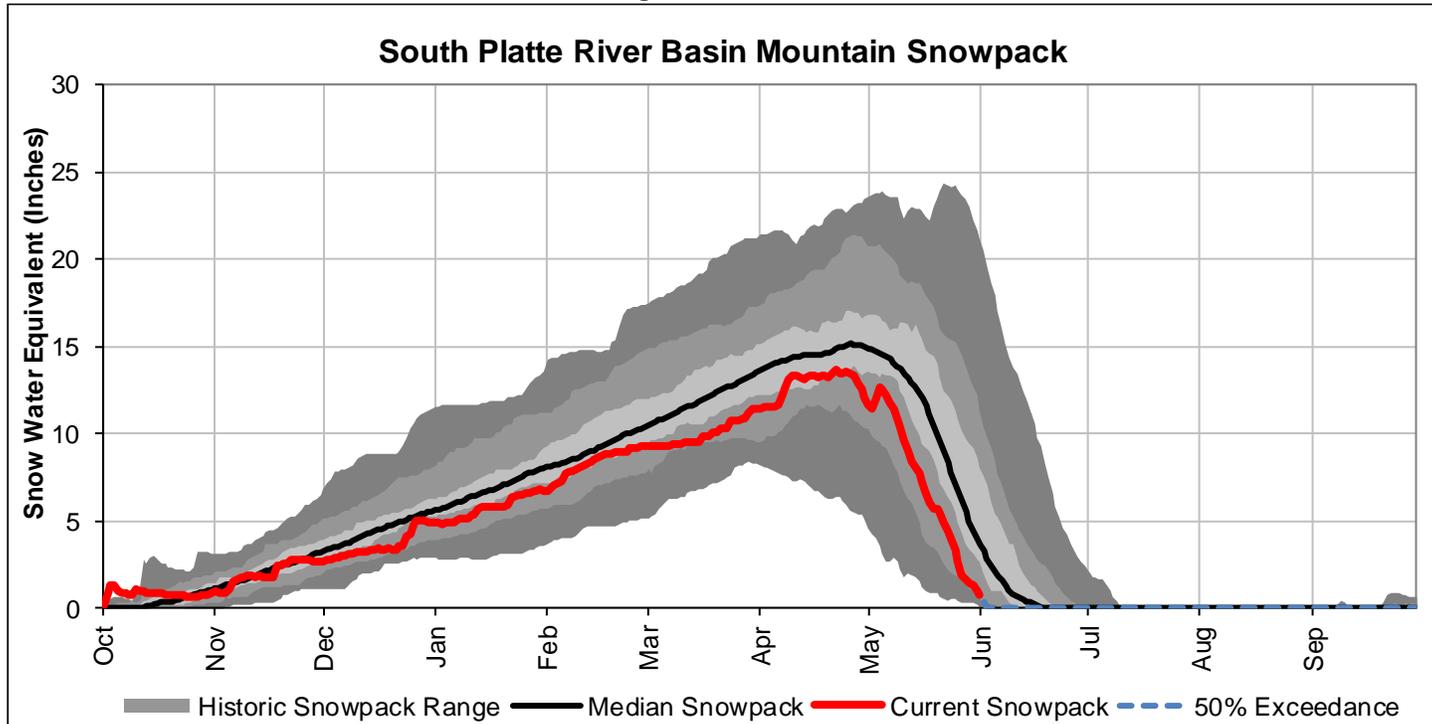
UPPER COLORADO RIVER BASIN Water Supply Forecasts June 1, 2018



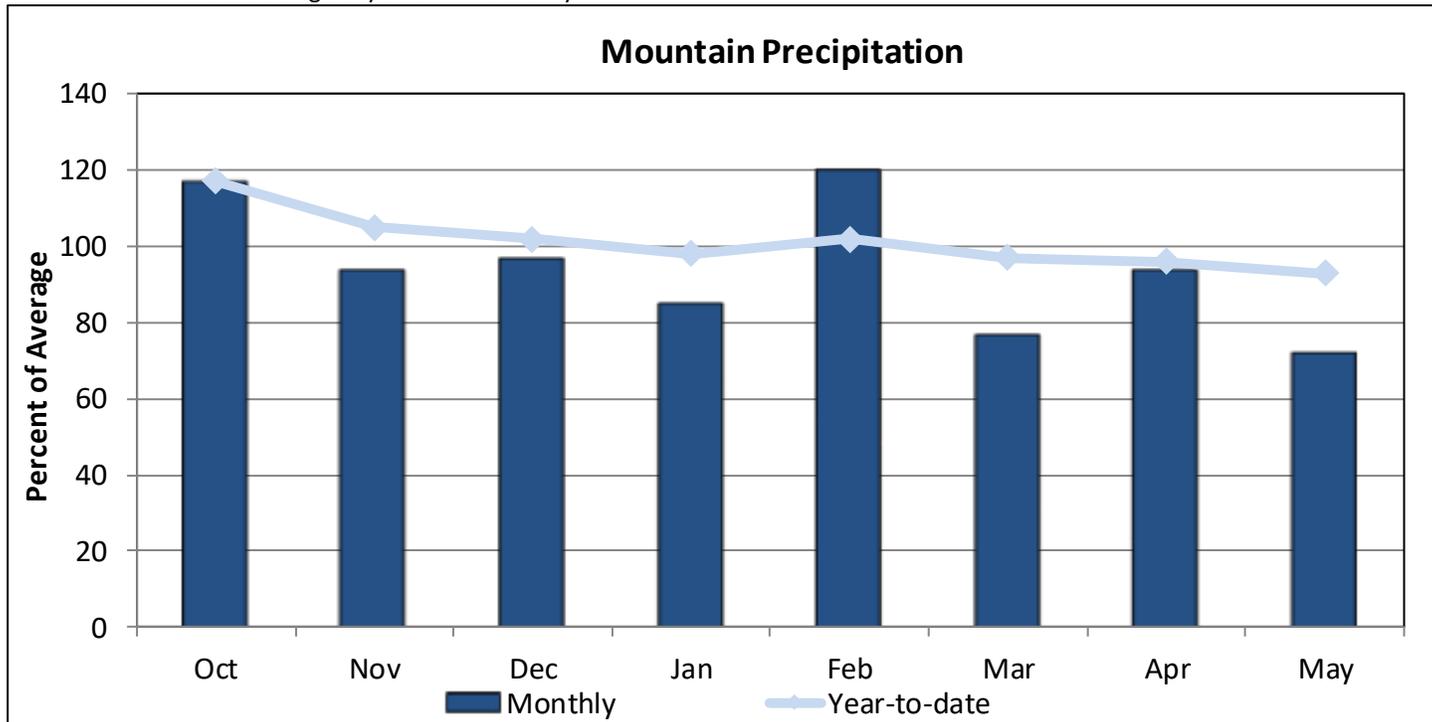
SOUTH PLATTE RIVER BASIN

June 1, 2018

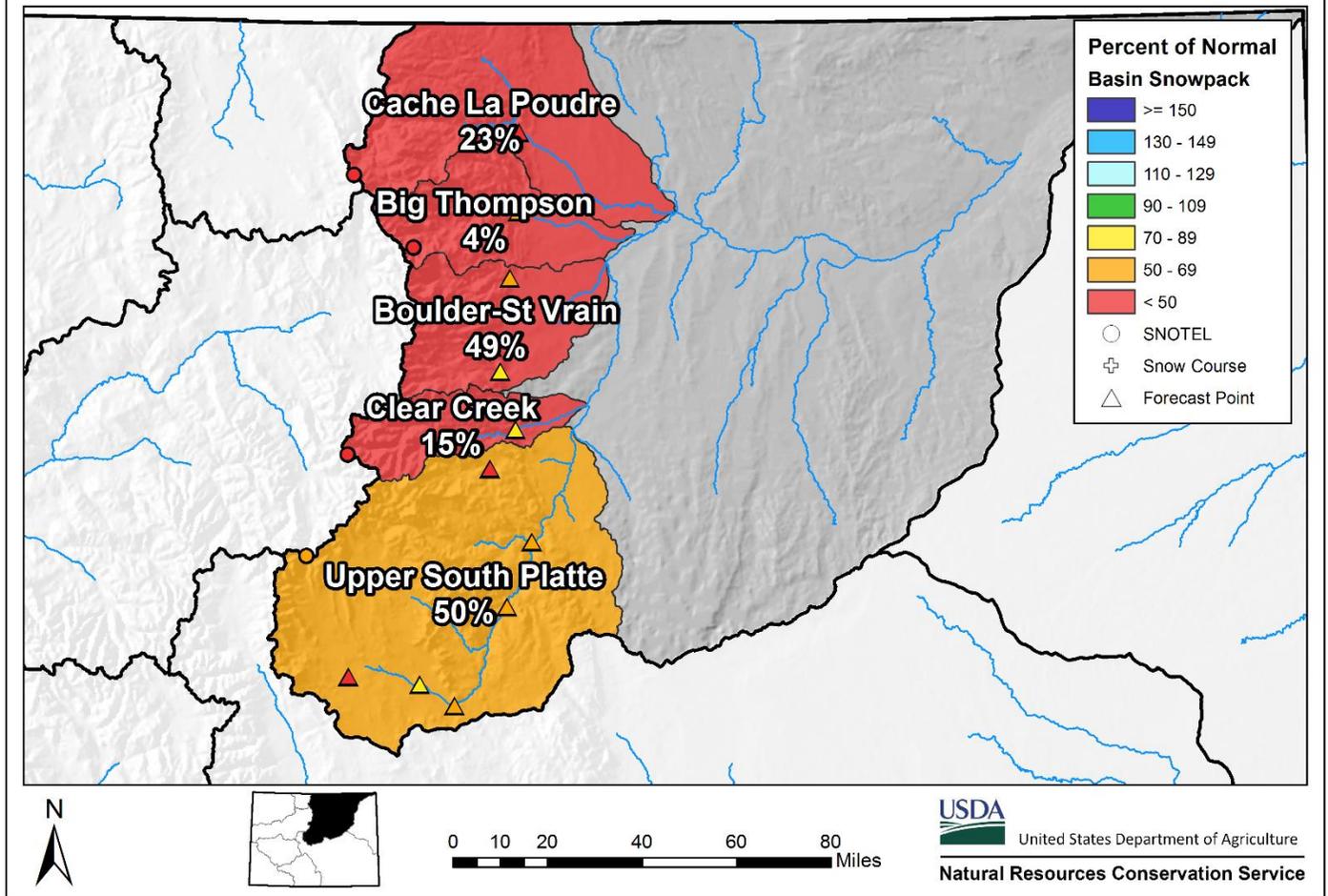
Snowpack in the South Platte River basin is below normal at 20% of the median. Precipitation for May was 72% of average which brings water year-to-date precipitation to 93%. Reservoir storage at the end of May was 114% of average compared to 113% last year. Streamflow forecasts range from 86% of average for Boulder Creek near Orodell to 36% for Bear Creek at Evergreen.



*SWE values calculated using daily SNOTEL data only



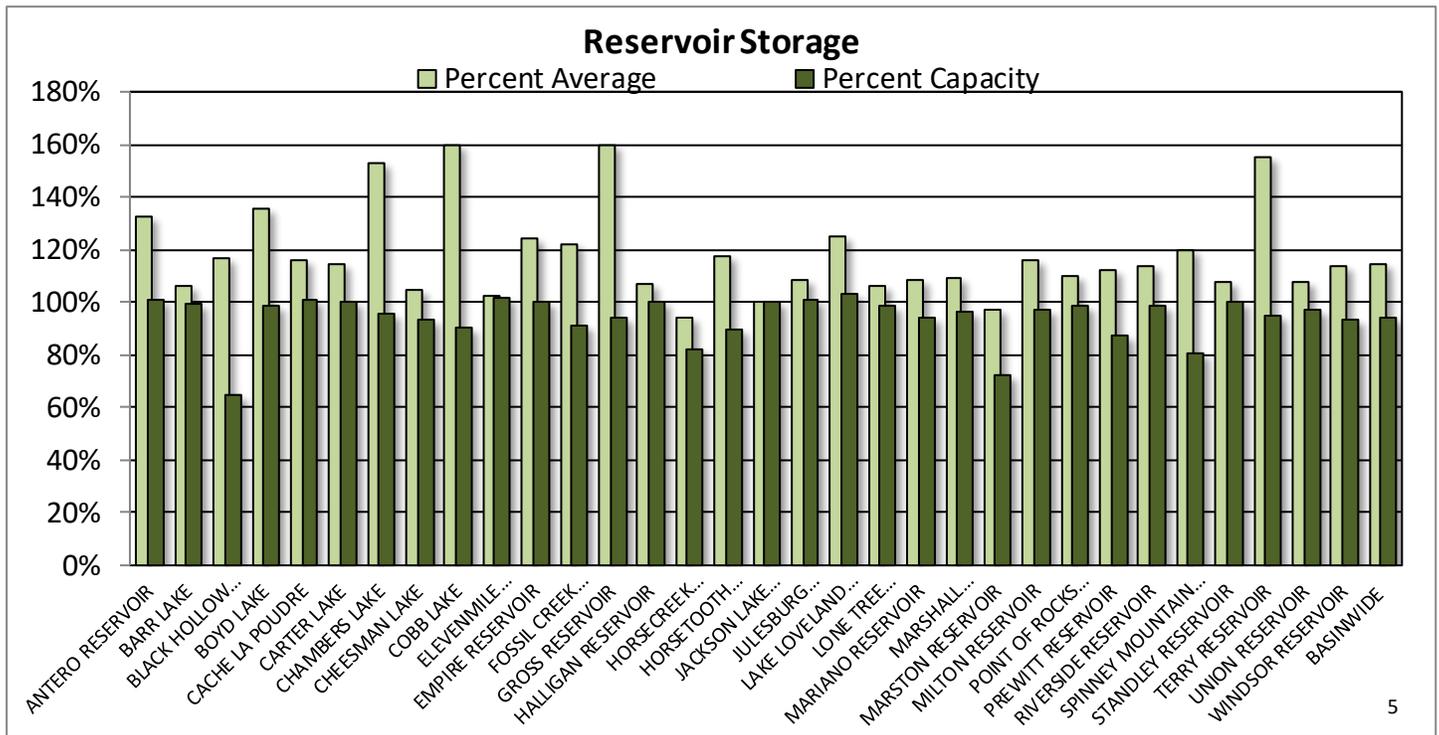
South Platte River Basin Snowpack and Streamflow Forecasts June 1, 2018



Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
			Median	
Big Thompson	3	4	237	
Boulder Creek	3	49	251	
Cache La Poudre	2	23	135	
Clear Creek	2	15	201	
Saint Vrain	1	Median is 0		
Upper South Platte	6	50	8400	
Basin-Wide Total	17	20	247	

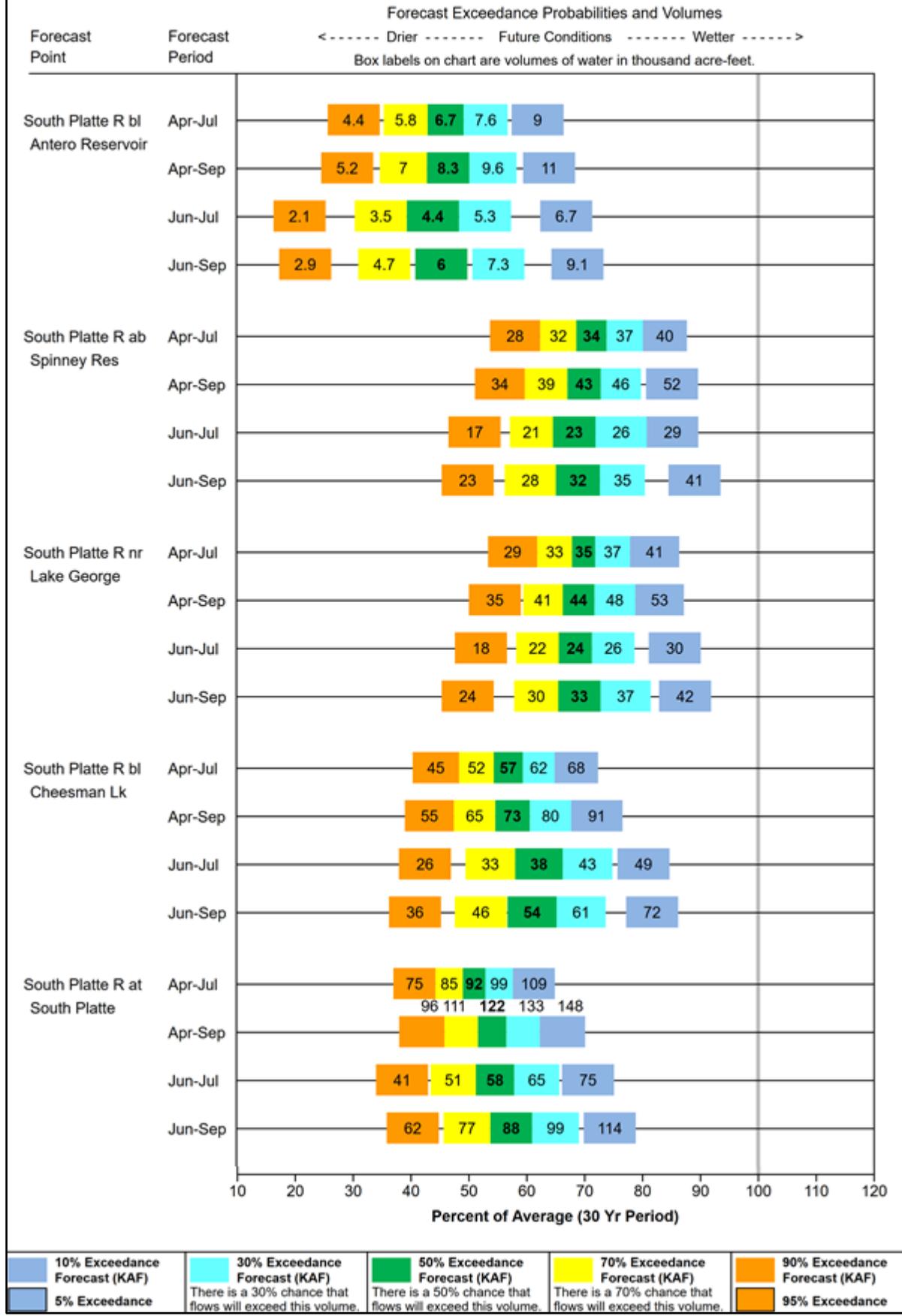
*SWE values calculated using first of month SNOTEL data and snow course measurements



Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ANTERO RESERVOIR	20.1	17.9	15.2	19.9
BARR LAKE	29.9	29.6	28.2	30.1
BLACK HOLLOW RESERVOIR	4.2	4.5	3.6	6.5
BOYD LAKE	47.9	36.3	35.4	48.4
CACHE LA POUVRE	10.2	10.6	8.8	10.1
CARTER LAKE	108.8	106.7	95.2	108.9
CHAMBERS LAKE	8.4	7.9	5.5	8.8
CHEESMAN LAKE	73.7	75.0	70.3	79.0
COBB LAKE	20.1	19.7	12.6	22.3
ELEVENMILE CANYON RESERVOIR	99.5	99.4	97.3	98.0
EMPIRE RESERVOIR	36.5	36.5	29.4	36.5
FOSSIL CREEK RESERVOIR	10.1	10.6	8.3	11.1
GROSS RESERVOIR	28.1	18.7	17.6	29.8
HALLIGAN RESERVOIR	6.4	6.4	6.0	6.4
HORSECREEK RESERVOIR	12.1	12.8	12.9	14.7
HORSETOOTH RESERVOIR	134.5	148.2	114.2	149.7
JACKSON LAKE RESERVOIR	26.1	25.8	26.1	26.1
JULESBURG RESERVOIR	20.6	20.4	19.0	20.5
LAKE LOVELAND RESERVOIR	10.6	9.3	8.5	10.3
LONE TREE RESERVOIR	8.6	8.6	8.1	8.7
MARIANO RESERVOIR	5.1	5.2	4.7	5.4
MARSHALL RESERVOIR	9.6	9.7	8.8	10.0
MARSTON RESERVOIR	9.4	12.1	9.7	13.0
MILTON RESERVOIR	22.9	23.0	19.8	23.5
POINT OF ROCKS RESERVOIR	69.6	70.3	63.2	70.6
PREWITT RESERVOIR	24.6	24.2	22.0	28.2
RIVERSIDE RESERVOIR	55.2	54.1	48.5	55.8
SPINNEY MOUNTAIN RESERVOIR	39.5	31.3	33.1	49.0
STANDLEY RESERVOIR	42.0	41.2	39.1	42.0
TERRY RESERVOIR	7.6	7.7	4.9	8.0
UNION RESERVOIR	12.6	9.3	11.7	13.0
WINDSOR RESERVOIR	14.2	14.3	12.5	15.2
BASINWIDE	1028.7	1007.2	900.2	1079.5
Number of Reservoirs	32	32	32	32

SOUTH PLATTE RIVER BASIN Water Supply Forecasts June 1, 2018



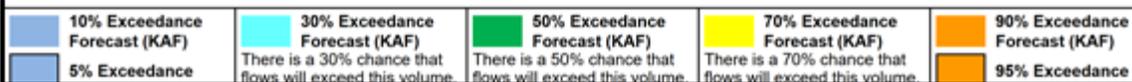
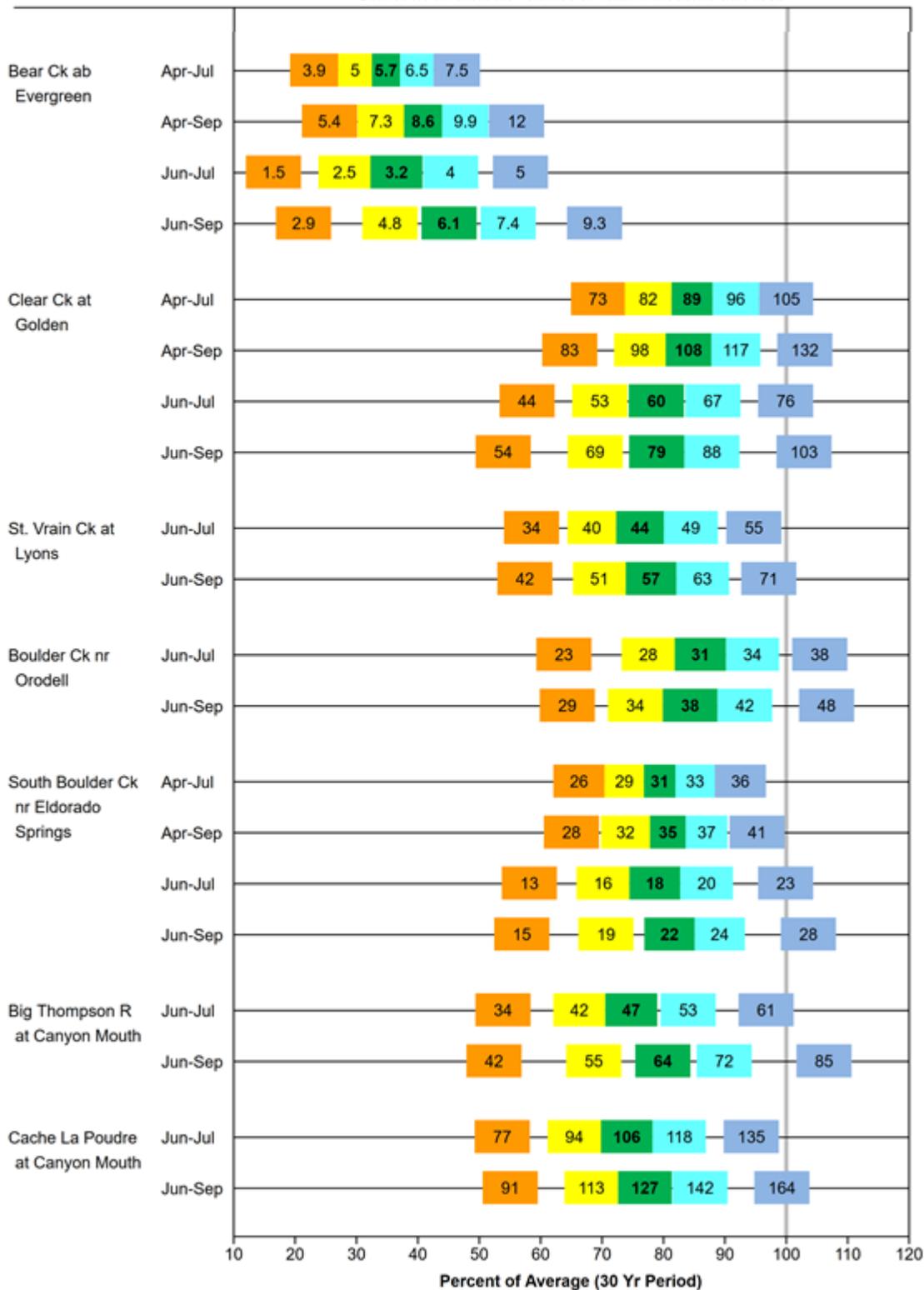
SOUTH PLATTE RIVER BASIN

Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

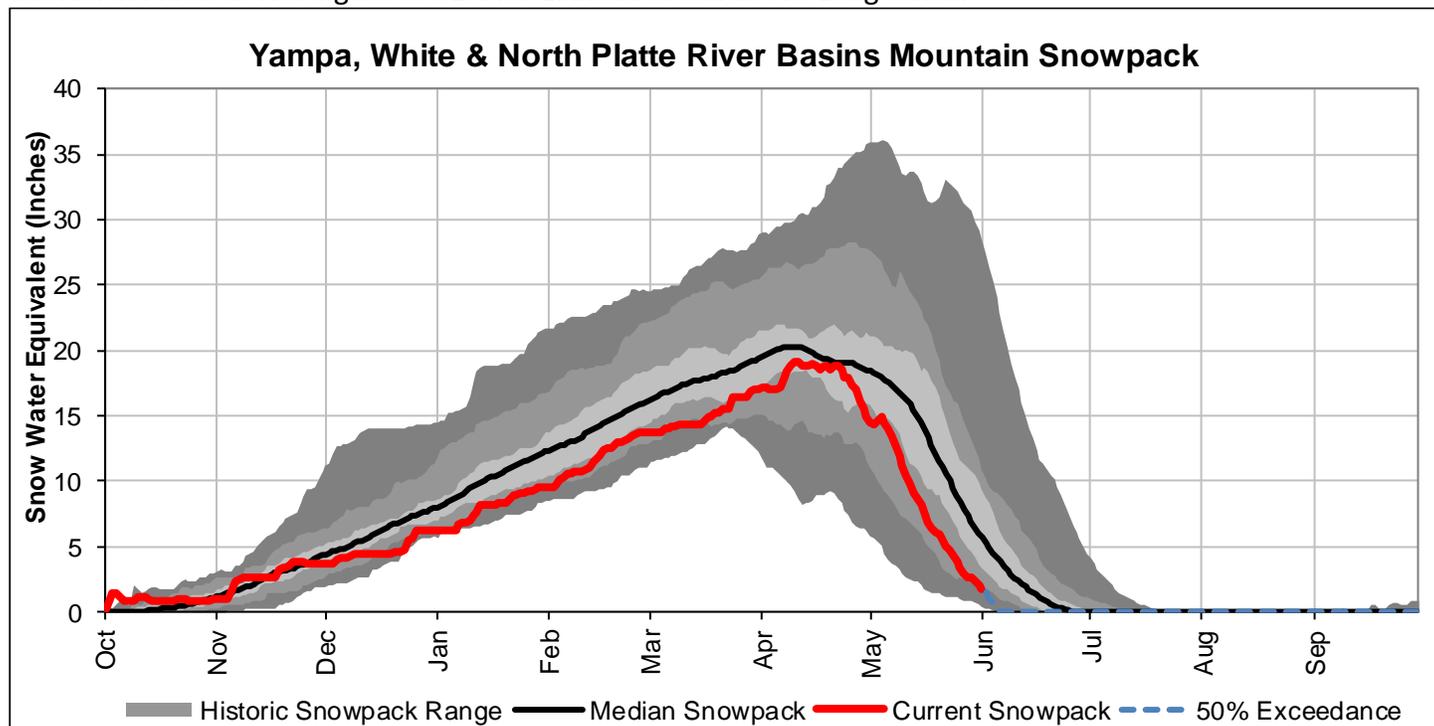
Forecast Point Forecast Period <----- Drier ----- Future Conditions ----- Wetter ----->
 Box labels on chart are volumes of water in thousand acre-feet.



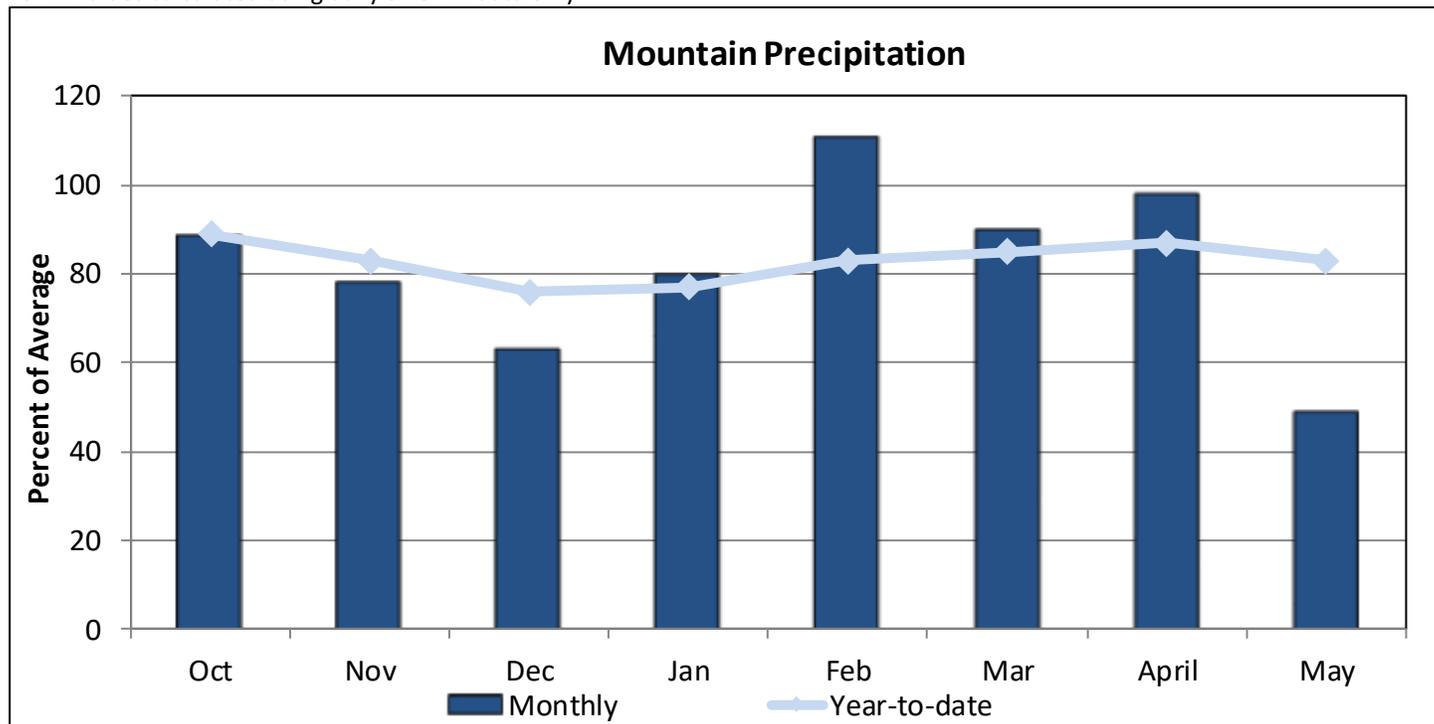
YAMPA, WHITE, NORTH PLATTE, AND LARAMIE RIVER BASINS

June 1, 2018

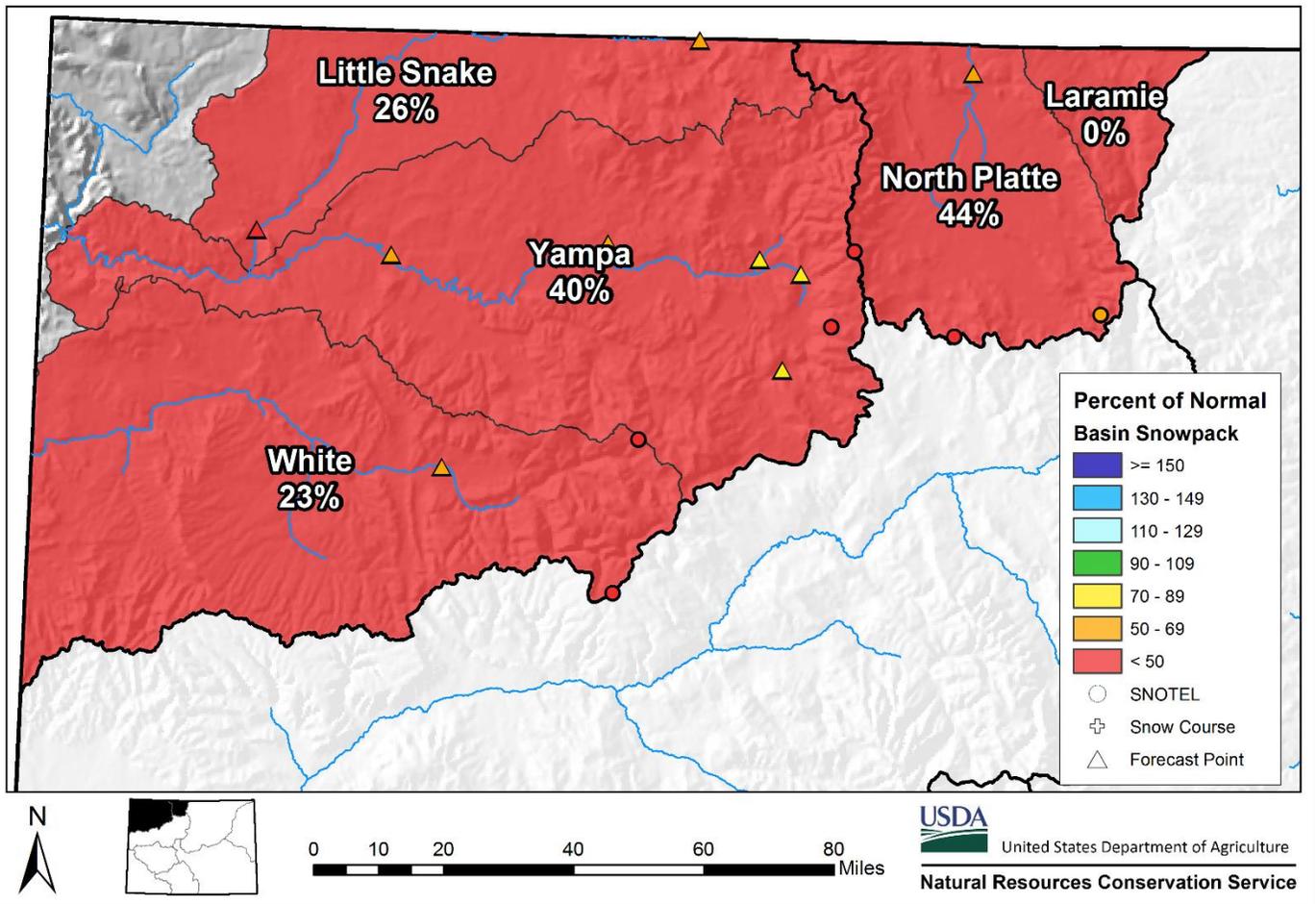
Snowpack in the Yampa, White & North Platte basins is below normal at 33% of the median. Precipitation for May was 49% of average and water year-to-date precipitation is 83% of average. Reservoir storage at the end of May was 115% of average compared to 113% last year. Streamflow forecasts range from 83% of average for the North Platte at Northgate to 32% for Elkhead Creek above Long Gulch.



*SWE values calculated using daily SNOTEL data only



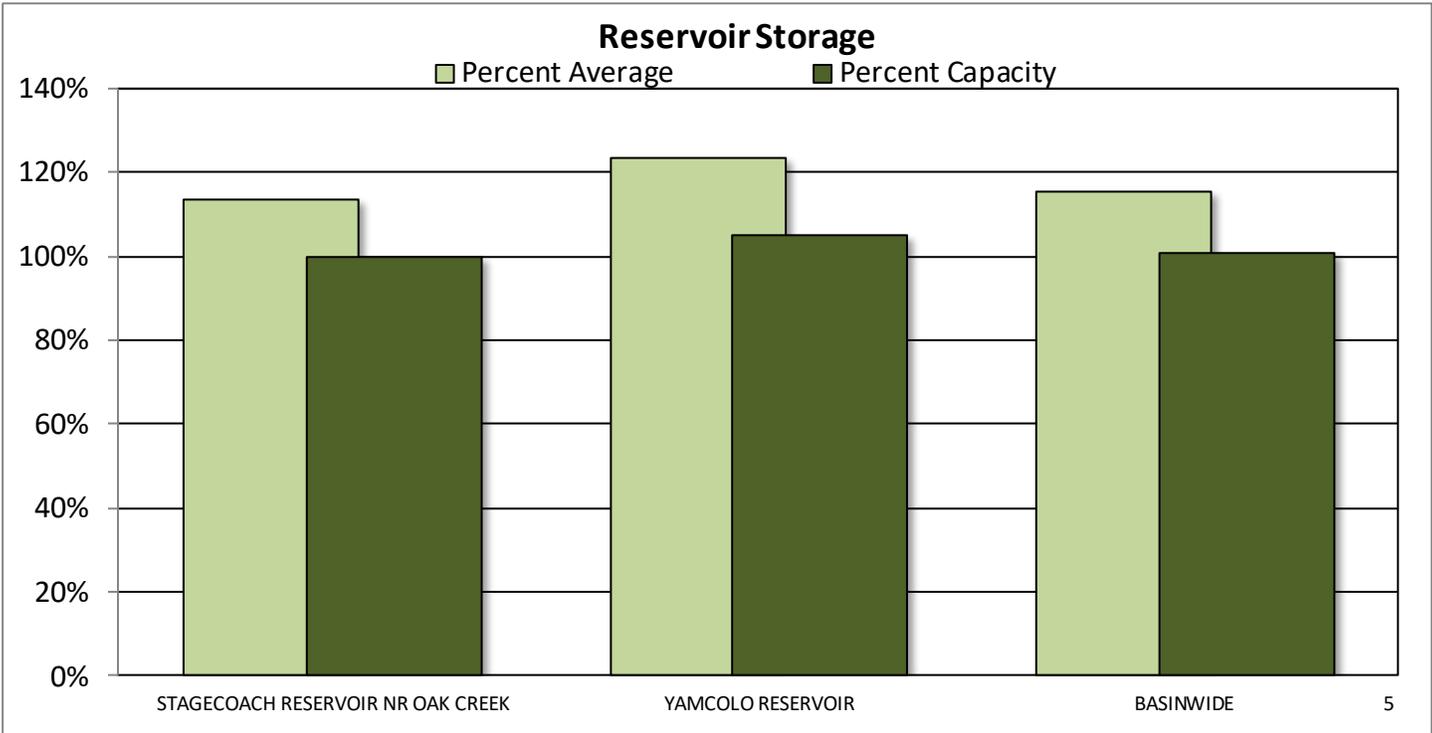
Yampa, White, and North Platte River Basins Snowpack and Streamflow Forecasts June 1, 2018



Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
				Median
Laramie	2	0		204
North Platte	8	44		143
Total Laramie & North Platte	10	38		151
Elk	2	Median is 0		
Yampa	9	40		124
White	3	23		145
Total Yampa & White	11	35		120
Little Snake	7	26		145
Basin-Wide Total	25	33		148

*SWE values calculated using first of month SNOTEL data and snow course measurements



Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
STAGECOACH RESERVOIR NR OAK C	36.4	35.0	32.1	36.5
YAMCOLO RESERVOIR	9.1	9.8	7.4	8.7
BASINWIDE	45.5	44.8	39.5	45.2
Number of Reservoirs	2	2	2	2

YAMPA-WHITE-NORTH PLATTE RIVER BASINS

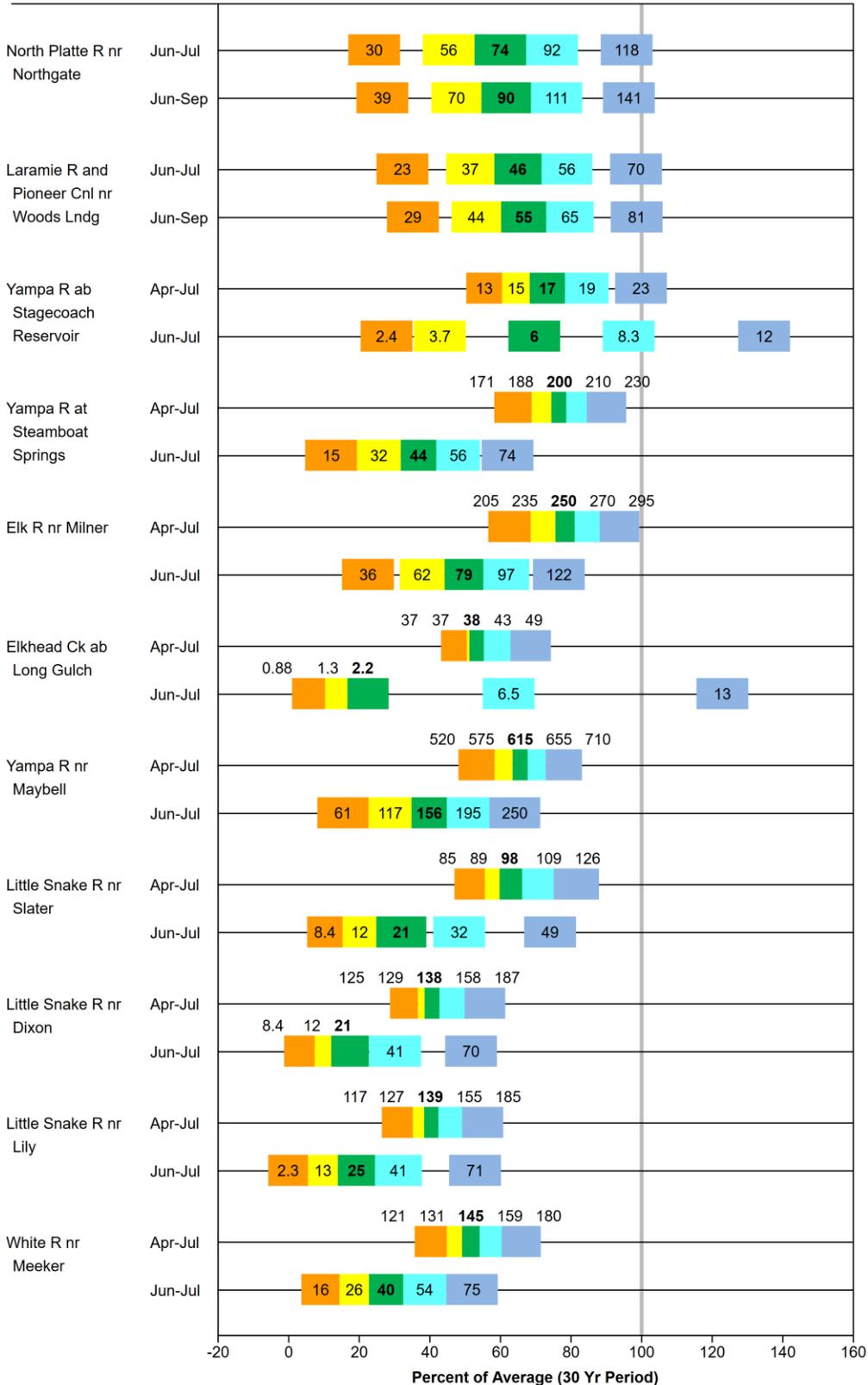
Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

< ----- Drier ----- Future Conditions ----- Wetter ----- >

Box labels on chart are volumes of water in thousand acre-feet.

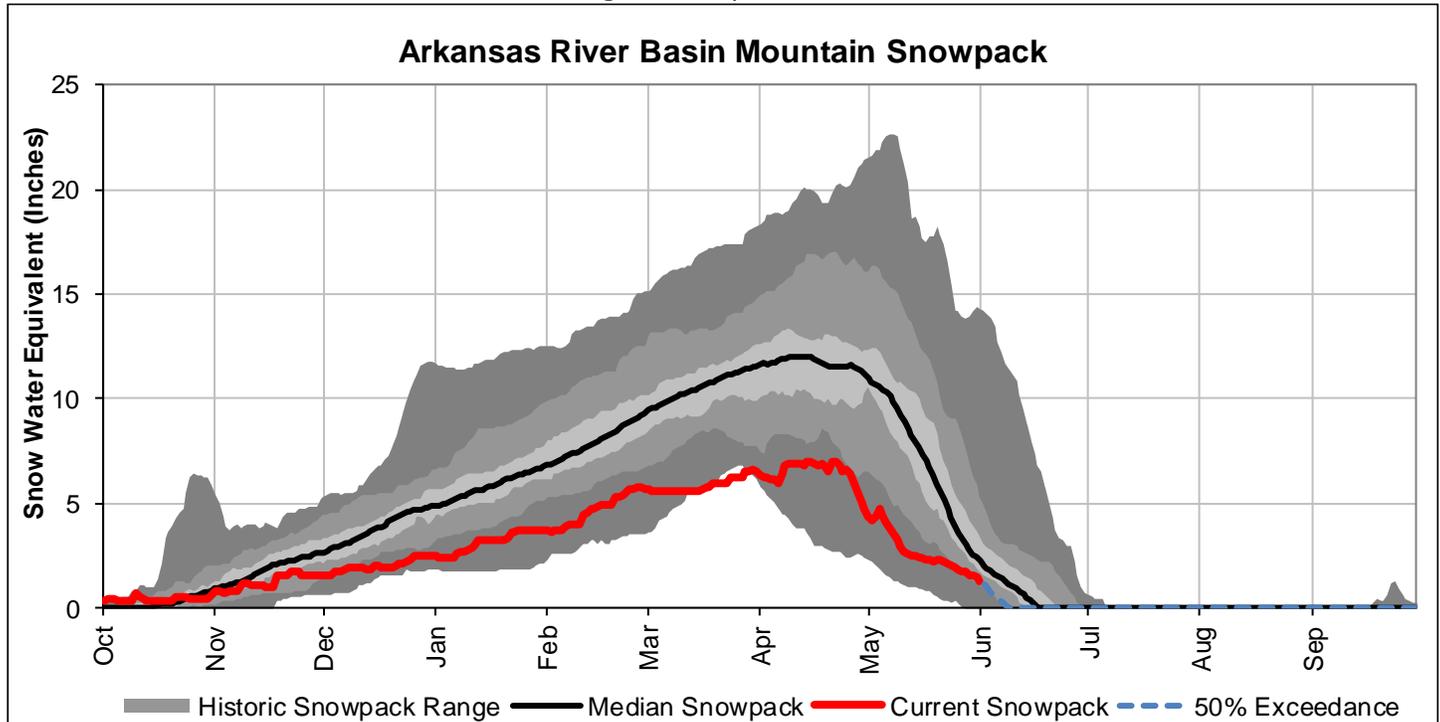


10% Exceedance Forecast (KAF)	30% Exceedance Forecast (KAF) There is a 30% chance that flows will exceed this volume.	50% Exceedance Forecast (KAF) There is a 50% chance that flows will exceed this volume.	70% Exceedance Forecast (KAF) There is a 70% chance that flows will exceed this volume.	90% Exceedance Forecast (KAF)
5% Exceedance				

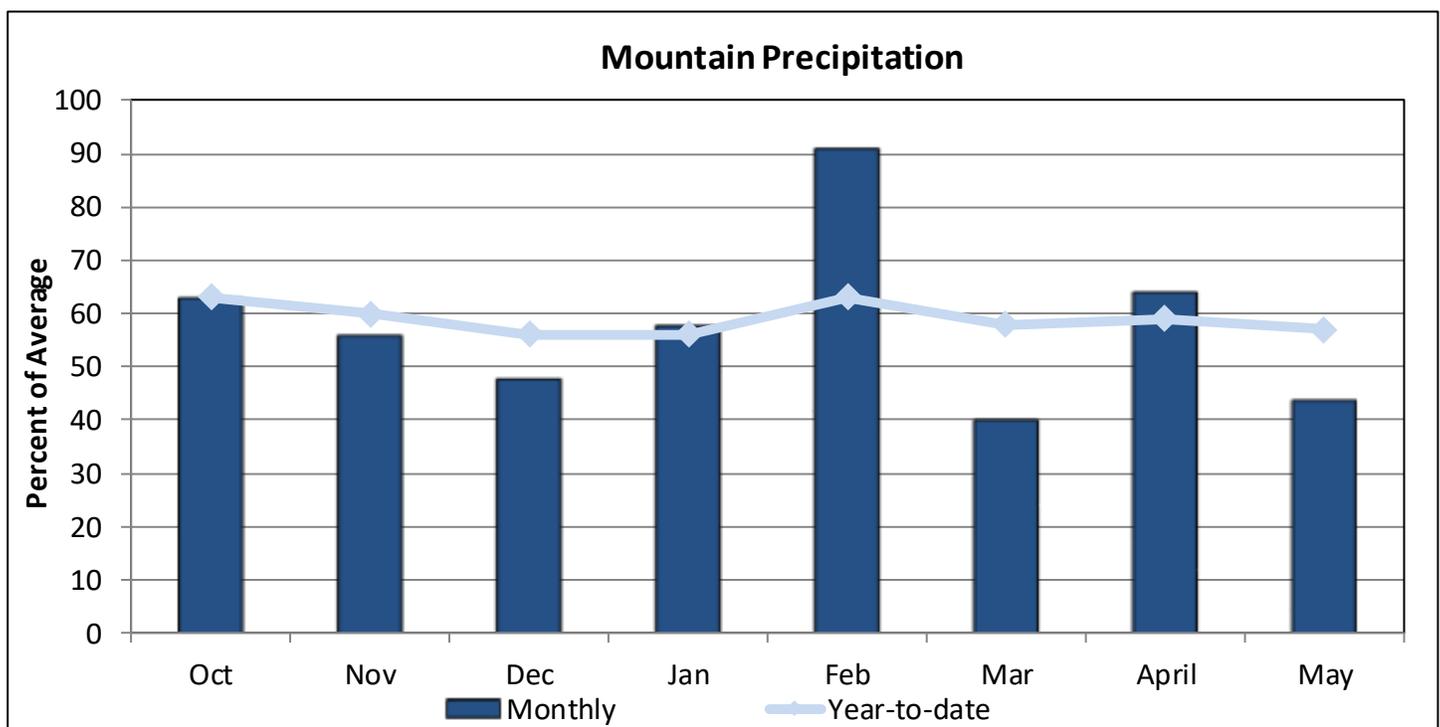
ARKANSAS RIVER BASIN

June 1, 2018

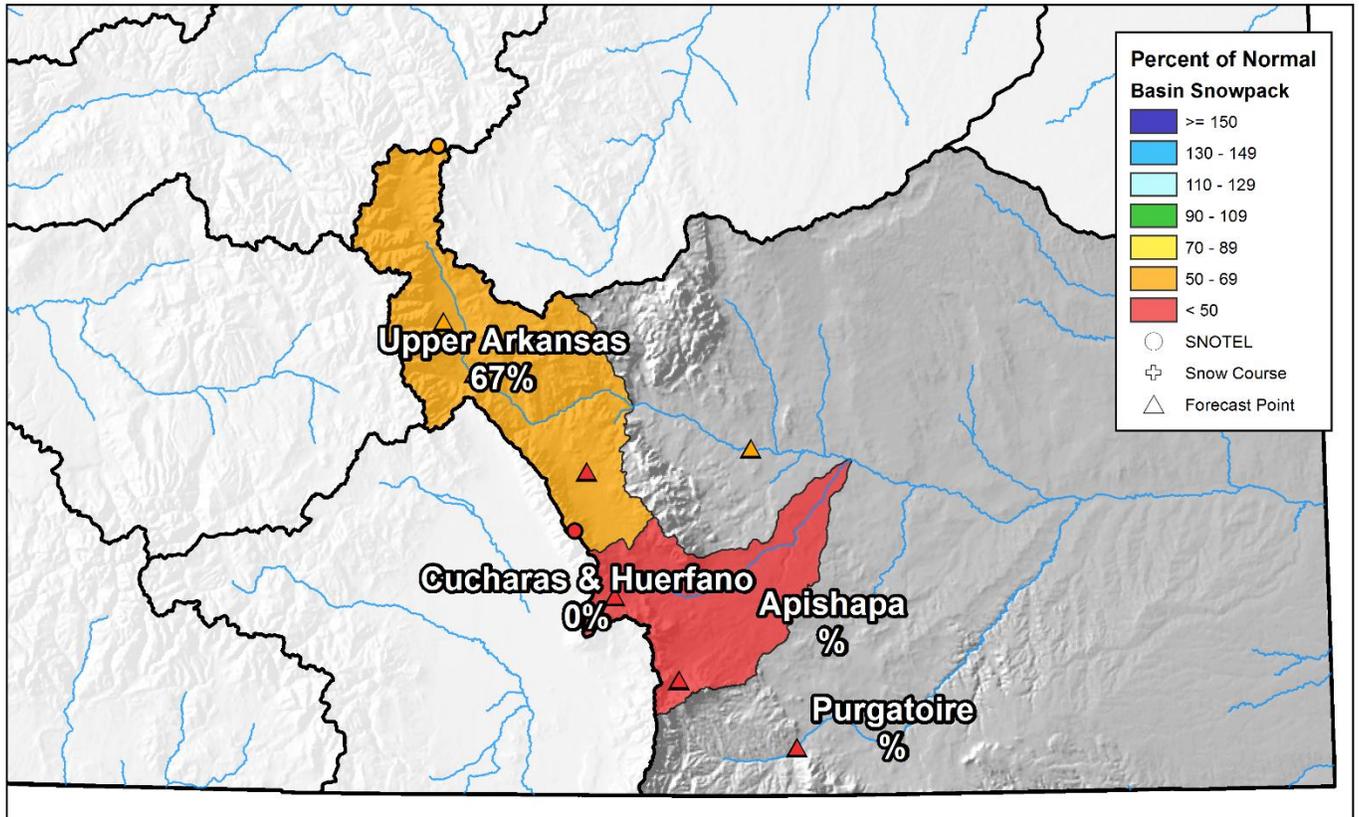
Snowpack in the Arkansas River basin is below normal at 60% of the median. Precipitation for May was 44% of average which brings water year-to-date precipitation to 57% of average. Reservoir storage at the end of May was 127% of average compared to 119% last year. Current streamflow forecasts range from 46% of average for the Arkansas River at Salida to 8% of average for Grape Creek near Westcliffe.



*SWE values calculated using daily SNOTEL data only



Arkansas River Basin Snowpack and Streamflow Forecasts June 1, 2018



0 10 20 40 60 80 Miles



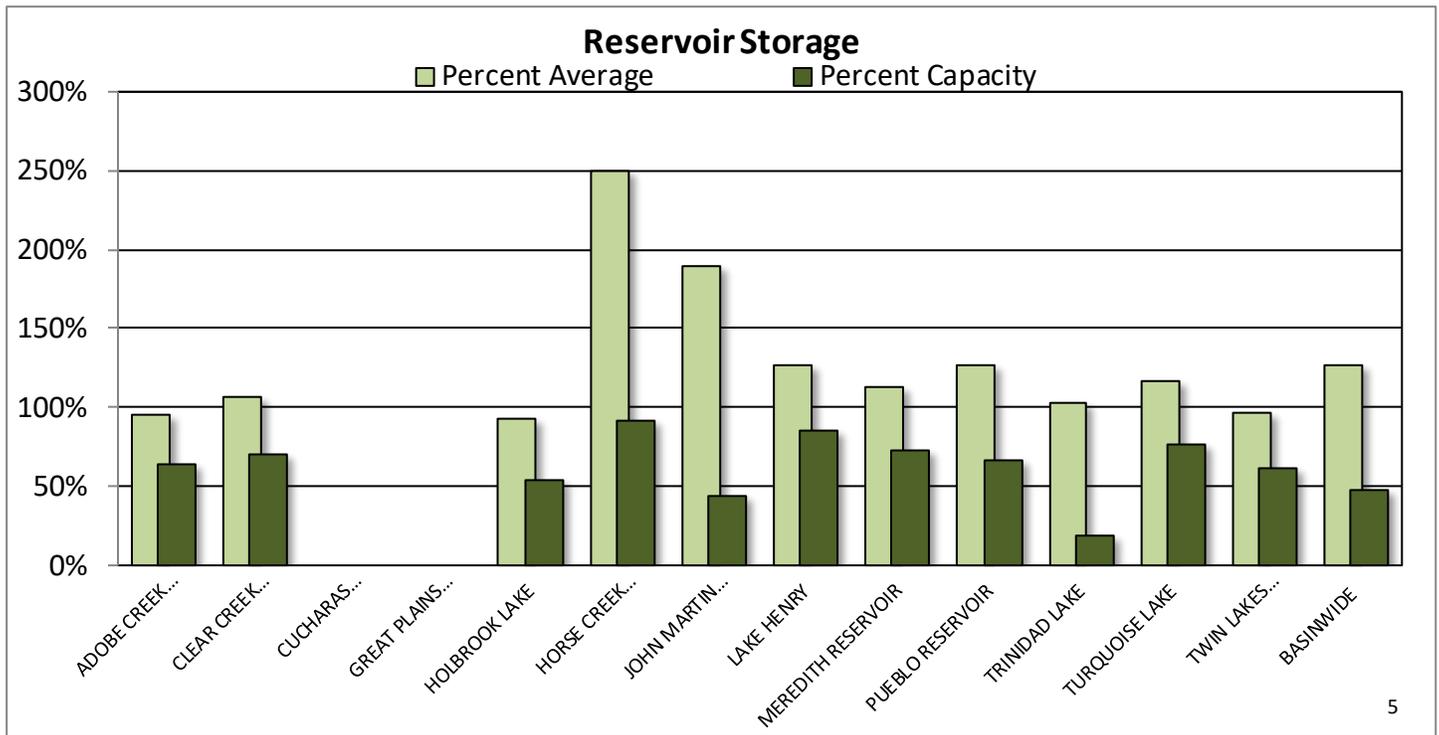
United States Department of Agriculture

Natural Resources Conservation Service

Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
			Median	
Upper Arkansas	3	67	143	
Cucharas & Huerfano	3	0	100	
Purgatoire	2	Median is 0		
Basin-Wide Total	8	60	139	

*SWE values calculated using first of month SNOTEL data and snow course measurements



Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ADOBE CREEK RESERVOIR	39.3	51.5	41.4	62.0
CLEAR CREEK RESERVOIR	8.0	8.6	7.5	11.4
CUCHARAS RESERVOIR				40.0
GREAT PLAINS RESERVOIR				150.0
HOLBROOK LAKE	3.8	6.1	4.1	7.0
HORSE CREEK RESERVOIR	24.7	25.8	9.9	27.0
JOHN MARTIN RESERVOIR	268.1	221.4	141.9	616.0
LAKE HENRY	8.0	9.5	6.3	9.4
MEREDITH RESERVOIR	30.3	42.9	26.8	42.0
PUEBLO RESERVOIR	236.1	242.5	186.4	354.0
TRINIDAD LAKE	30.3	37.8	29.3	167.0
TURQUOISE LAKE	96.4	61.8	82.3	127.0
TWIN LAKES RESERVOIR	52.9	40.6	54.9	86.0
BASINWIDE	797.9	748.4	590.8	1698.8
Number of Reservoirs	11	11	11	13

ARKANSAS RIVER BASIN

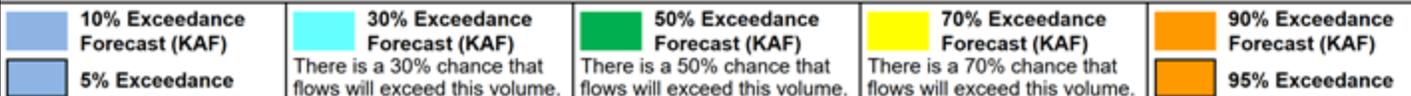
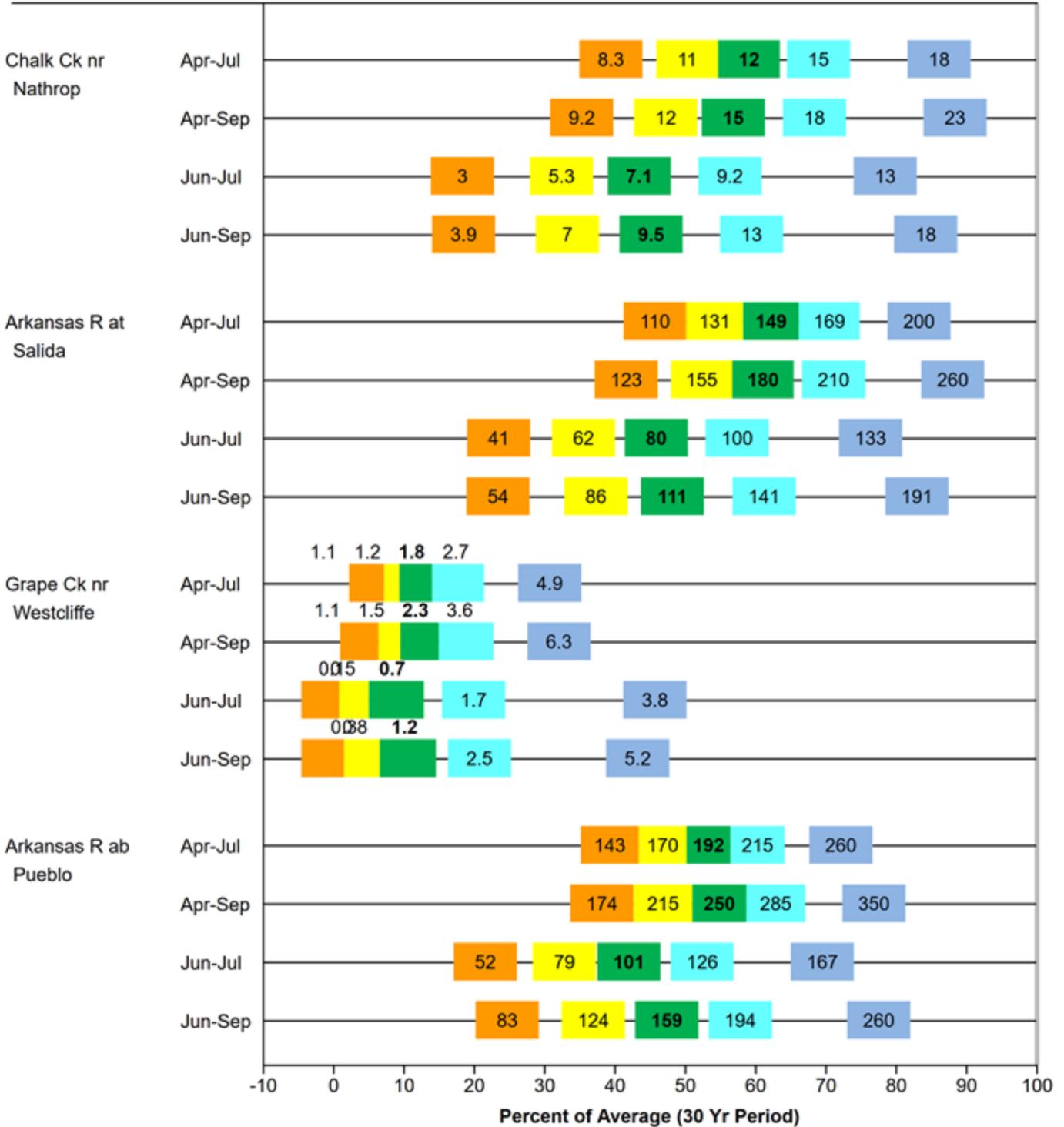
Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

Box labels on chart are volumes of water in thousand acre-feet.



ARKANSAS RIVER BASIN

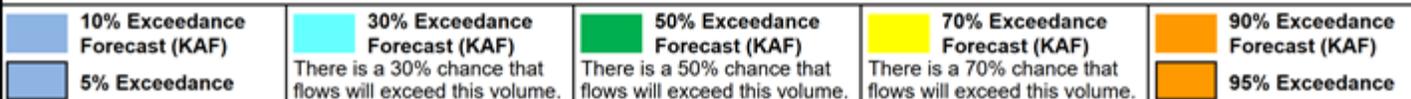
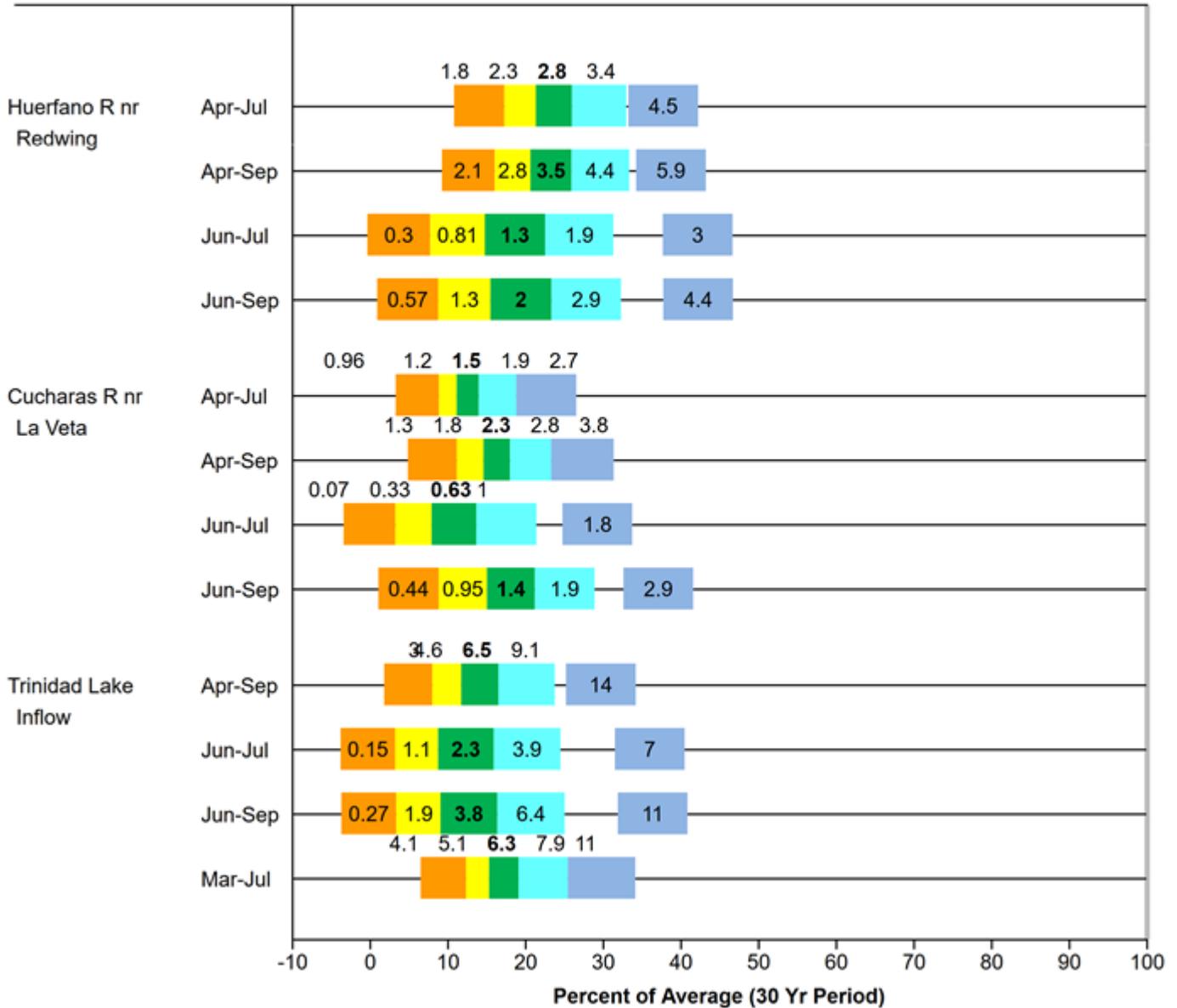
Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

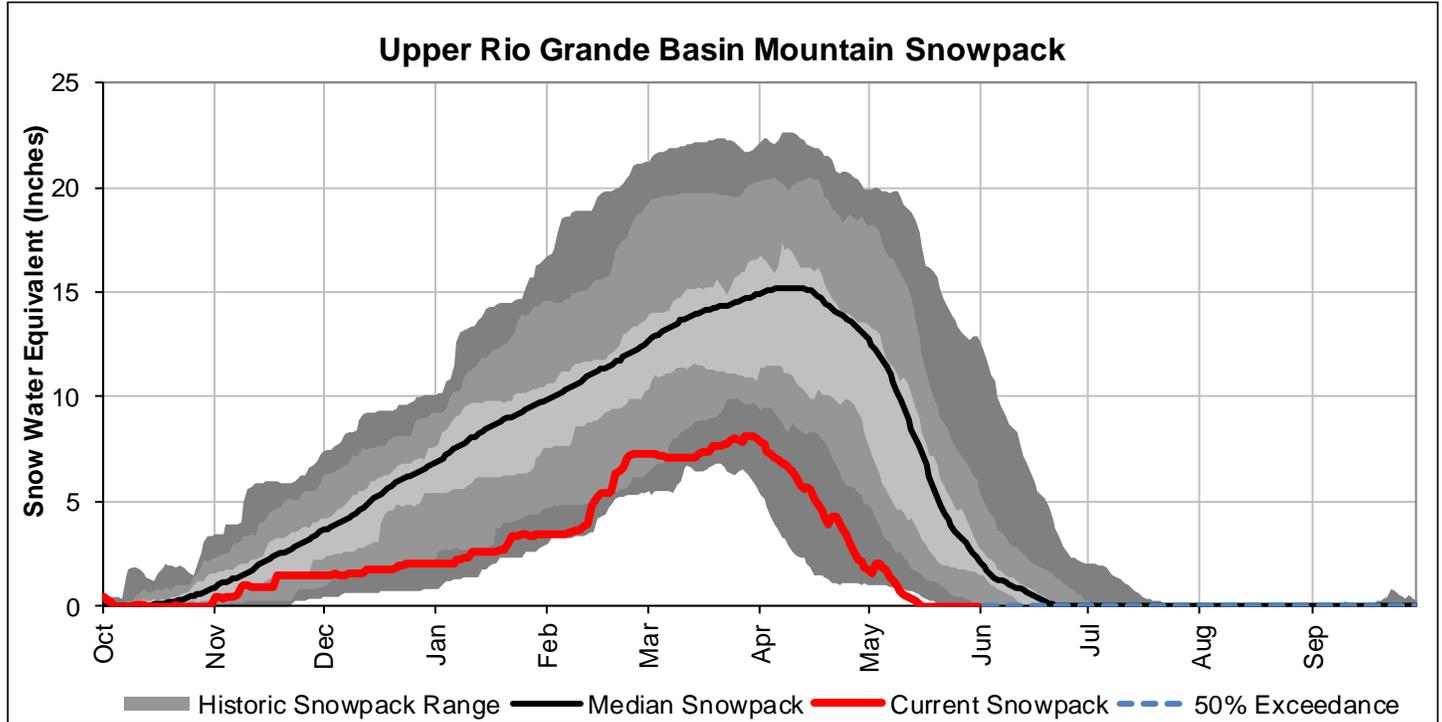
Box labels on chart are volumes of water in thousand acre-feet.



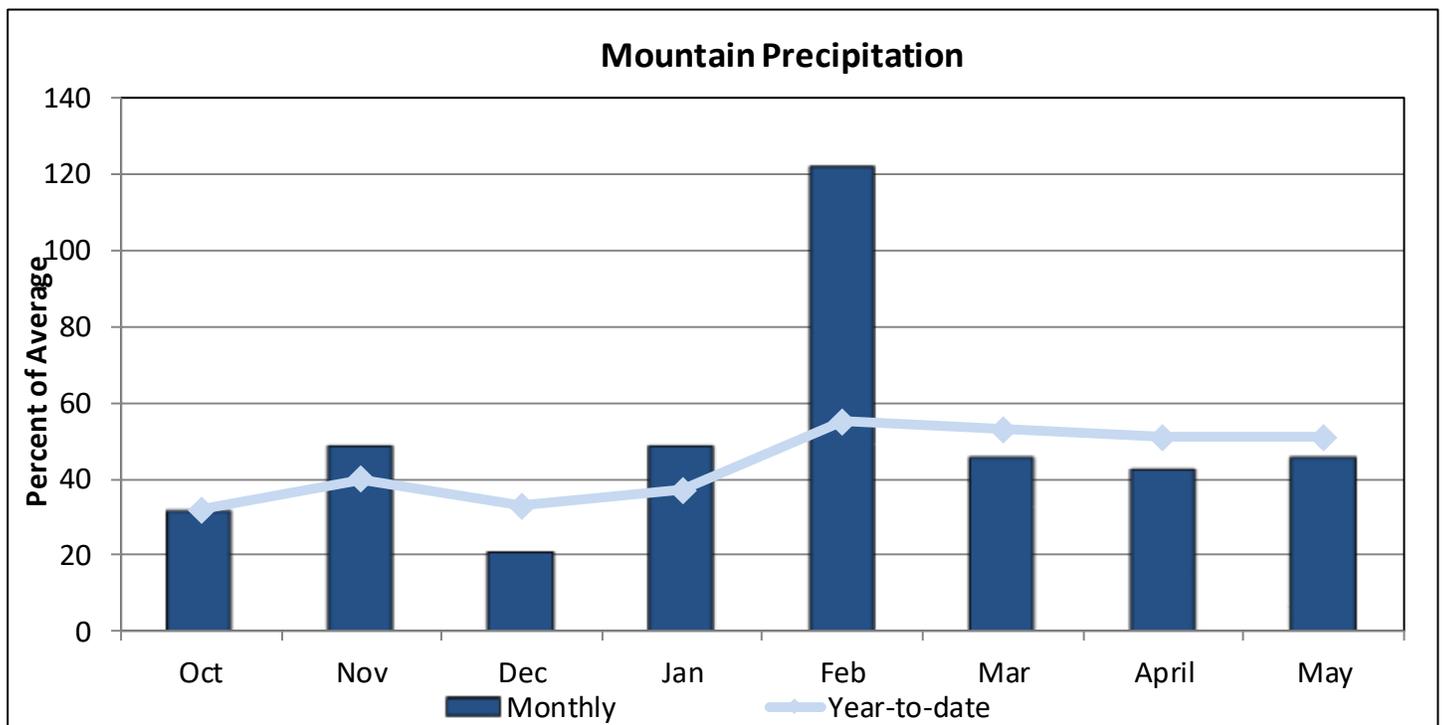
UPPER RIO GRANDE RIVER BASIN

June 1, 2018

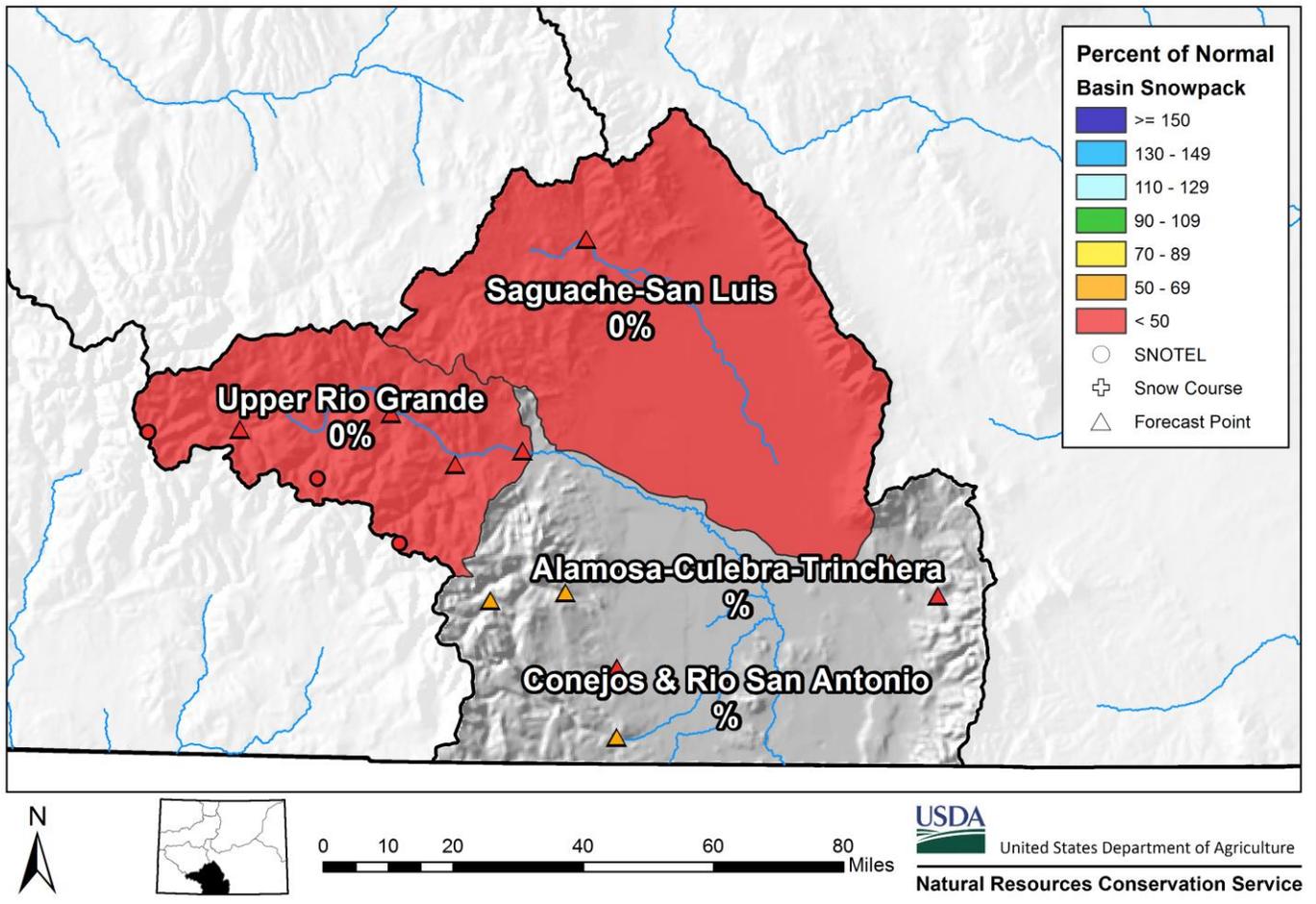
Snowpack in the Upper Rio Grande River basin is below normal at 0% of median. Precipitation for May was 46% of average which brings water year-to-date precipitation to 51% of average. Reservoir storage at the end of May was 90% of average compared to 91% last year. Streamflow forecasts range from 32% of average for the Rio Grande at Wagon Wheel Gap to 4% of average for the San Antonio River at Ortiz.



*SWE values calculated using daily SNOTEL data only



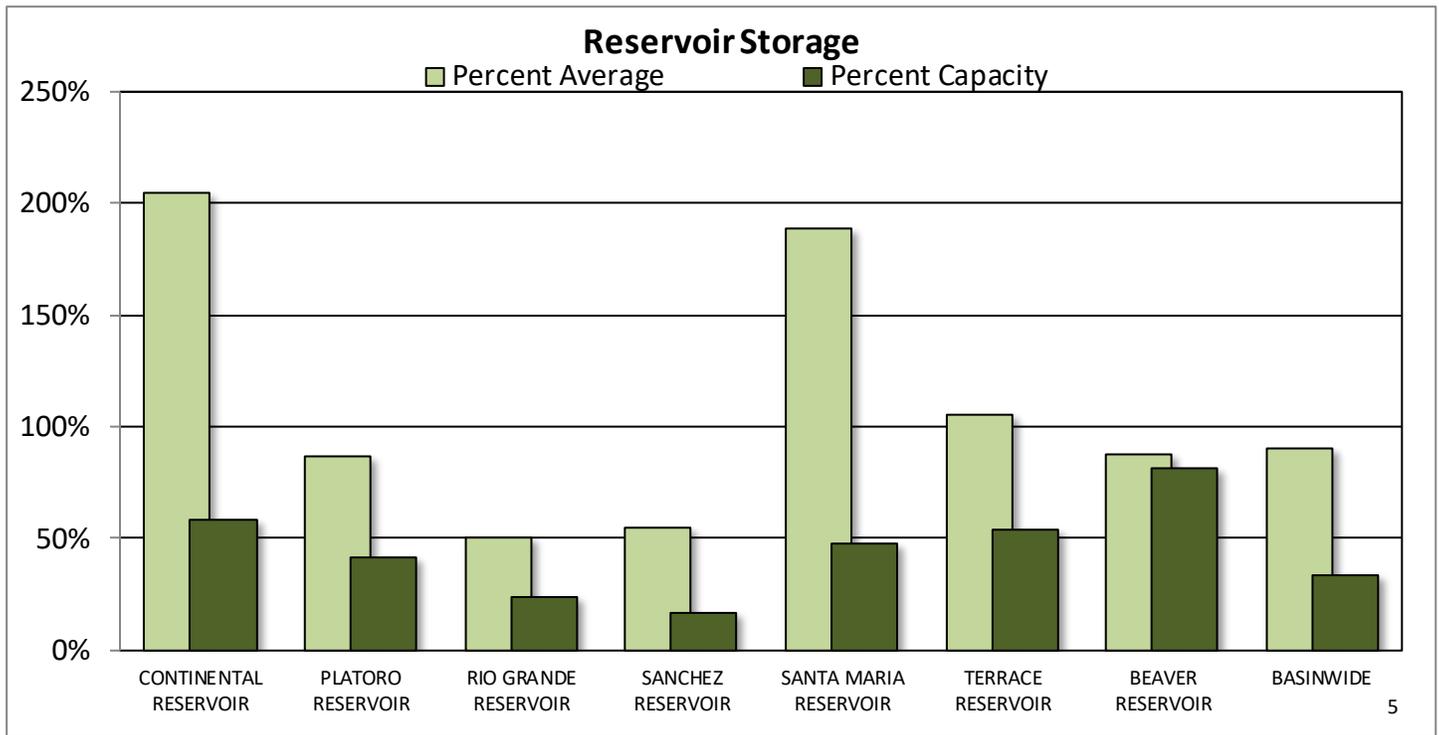
Upper Rio Grande River Basin Snowpack and Streamflow Forecasts June 1, 2018



Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
				Median
Alamosa Creek	1		Median is 0	
Conejos & Rio San Antonio	2		Median is 0	
Culebra & Trinchera Creek	3		Median is 0	
Upper Rio Grande	6	0		106
Basin-Wide Total	12	0		156

*SWE values calculated using first of month SNOTEL data and snow course measurements

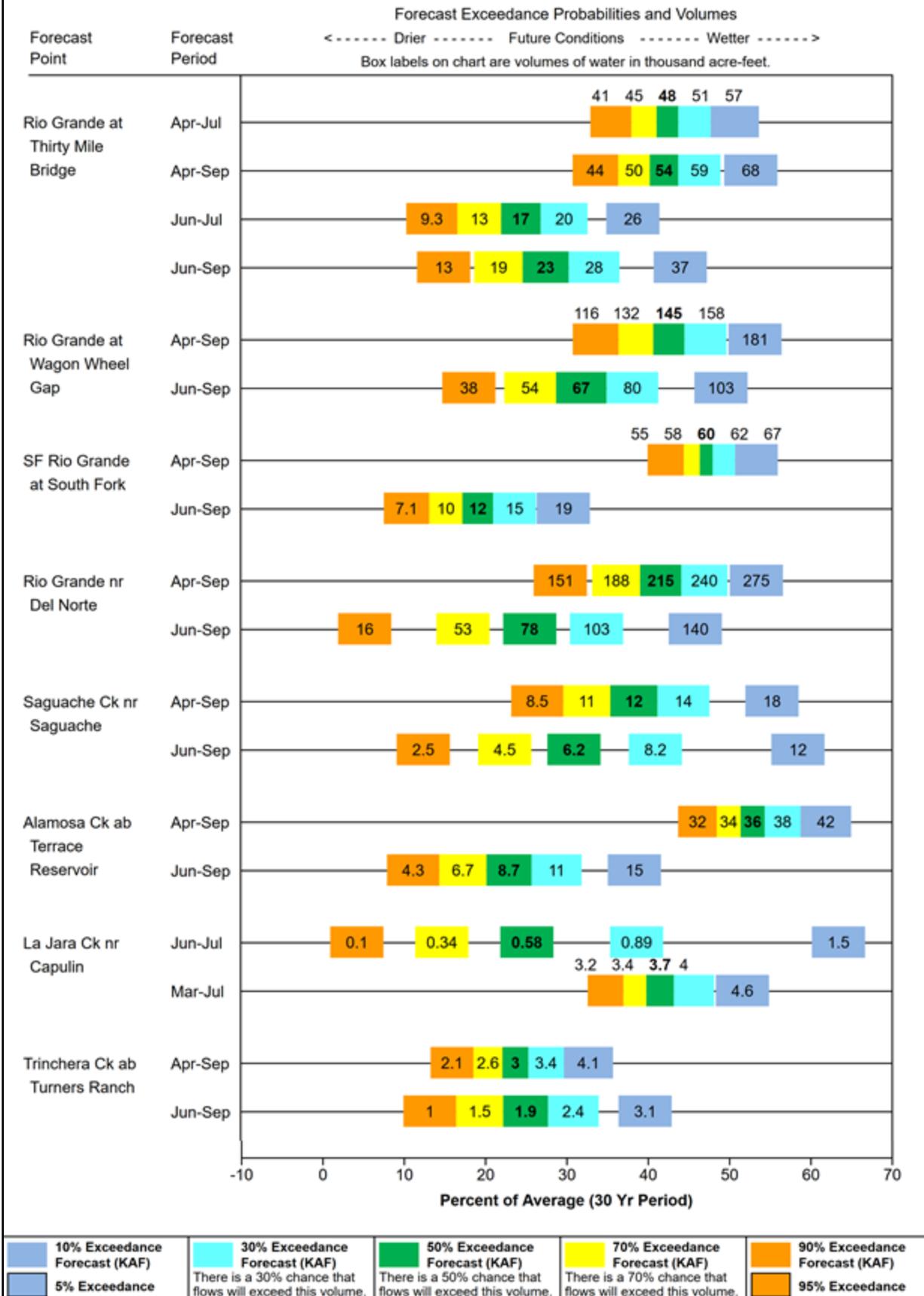


Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CONTINENTAL RESERVOIR	15.8	15.0	7.7	27.0
PLATORO RESERVOIR	24.9	20.4	28.7	60.0
RIO GRANDE RESERVOIR	12.0	20.7	23.9	51.0
SANCHEZ RESERVOIR	16.8	16.9	30.8	103.0
SANTA MARIA RESERVOIR	21.4	17.4	11.3	45.0
TERRACE RESERVOIR	9.6	11.6	9.1	18.0
BEAVER RESERVOIR	3.7	3.4	4.2	4.5
BASINWIDE	104.0	105.5	115.7	308.5
Number of Reservoirs	7	7	7	7

UPPER RIO GRANDE BASIN

Water Supply Forecasts June 1, 2018



UPPER RIO GRANDE BASIN

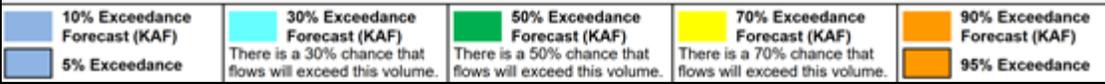
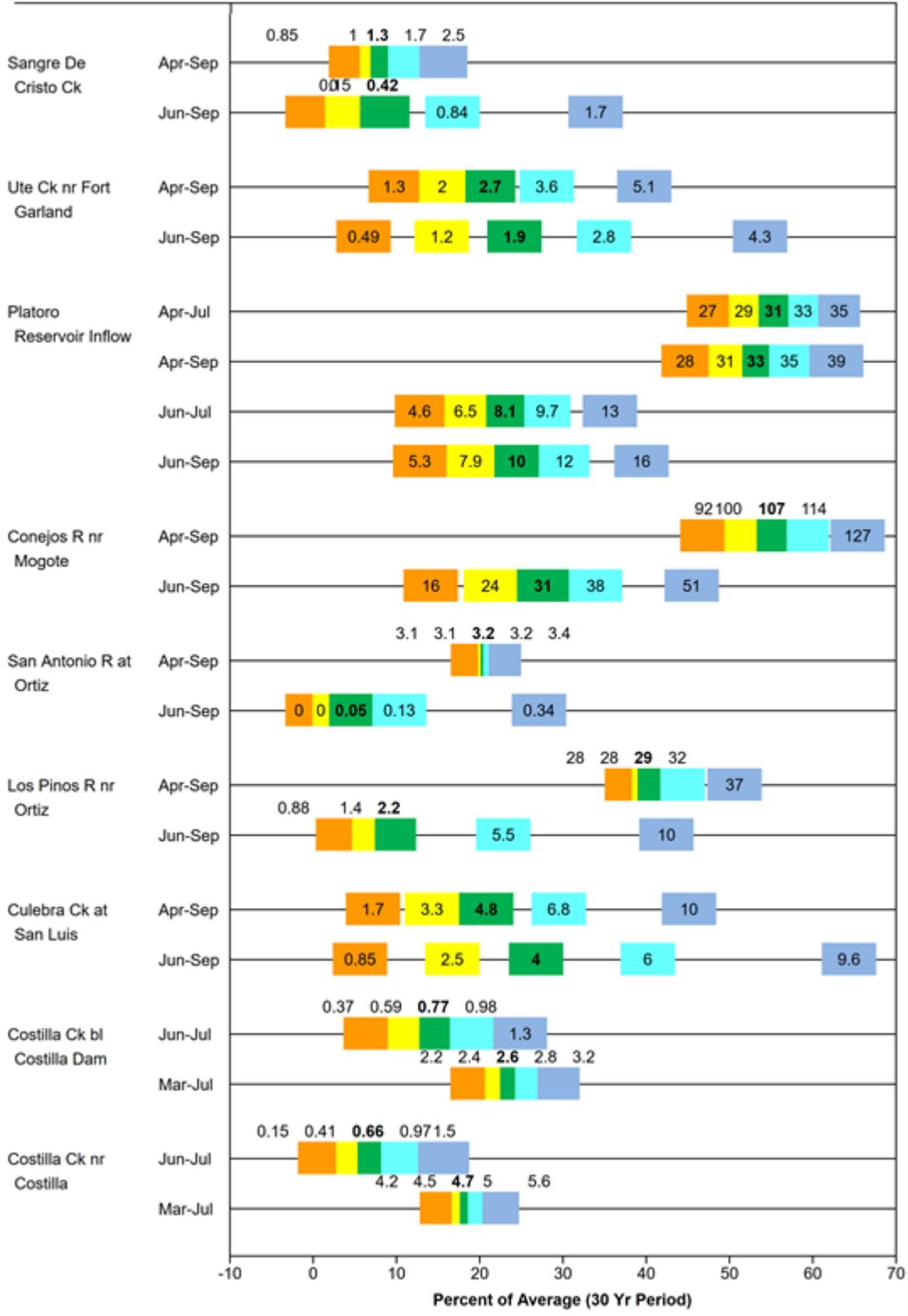
Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

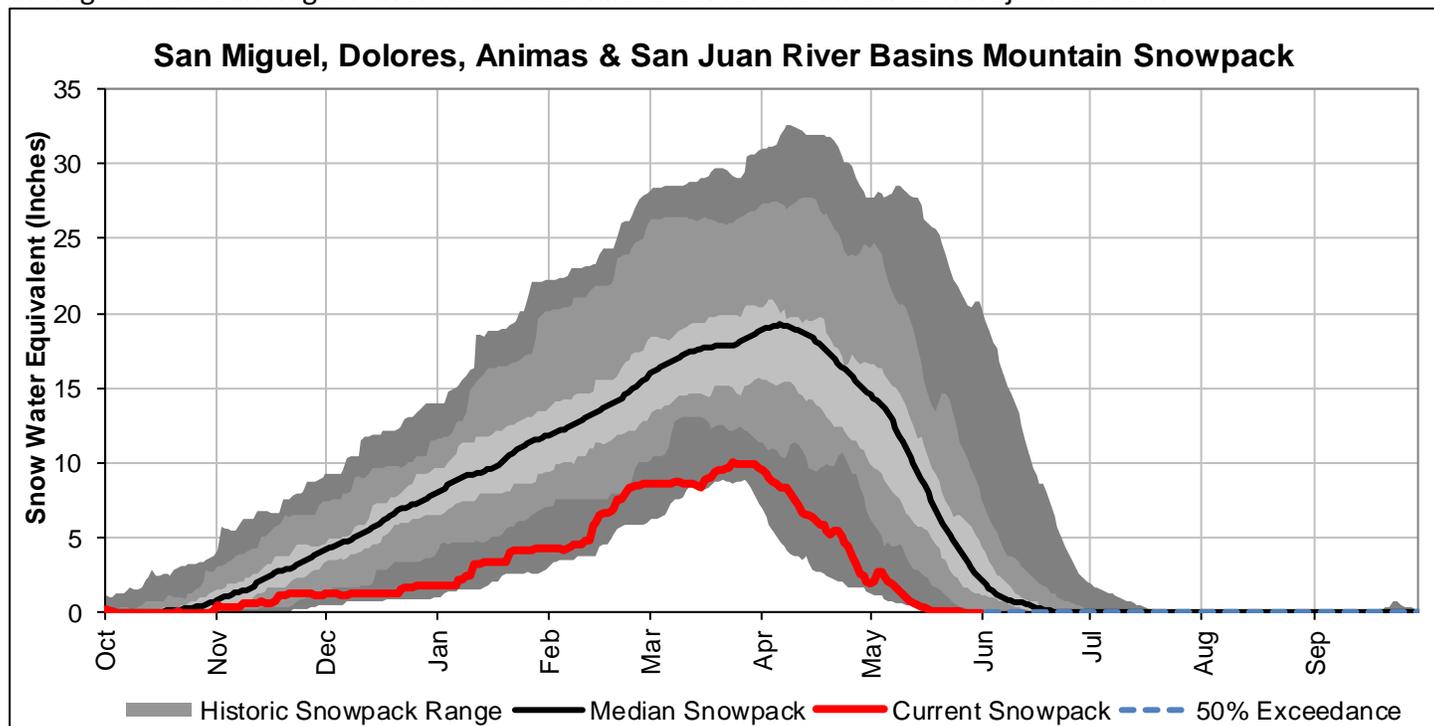
Box labels on chart are volumes of water in thousand acre-feet.



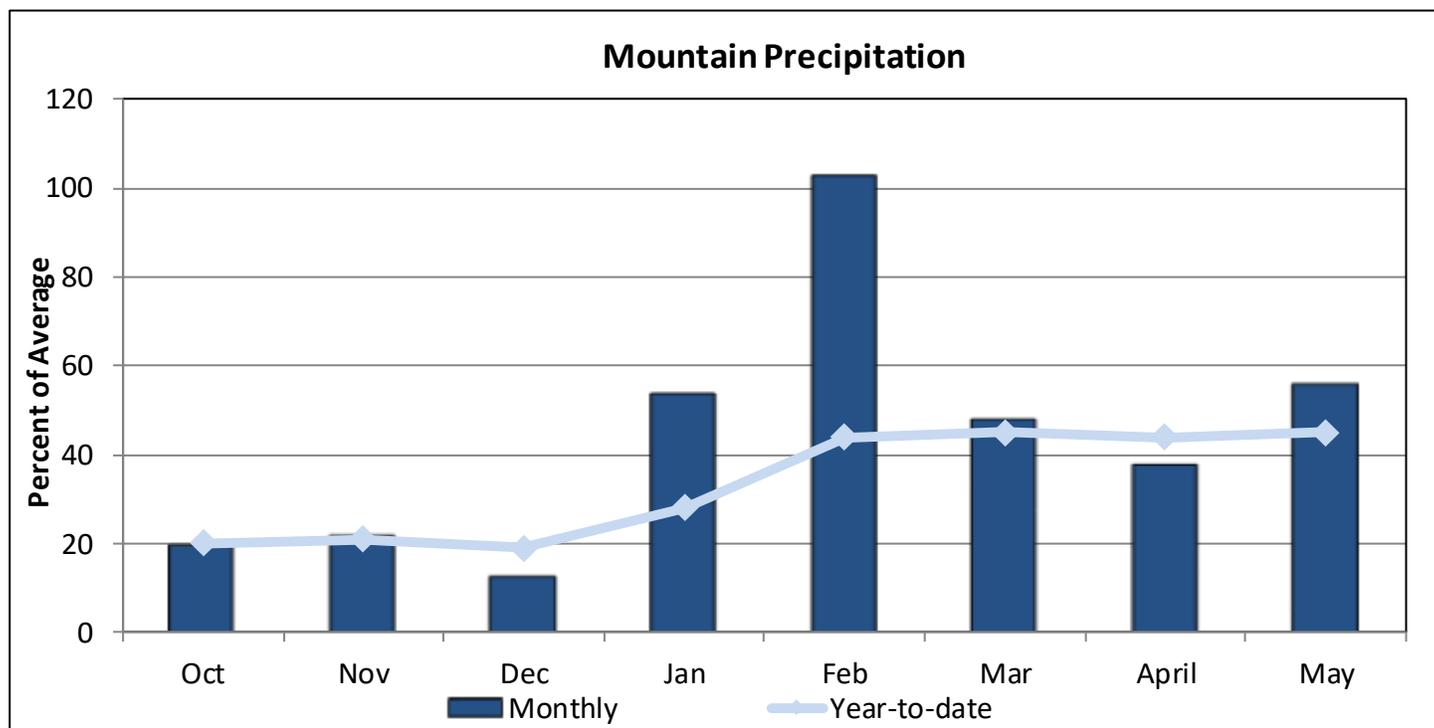
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

June 1, 2018

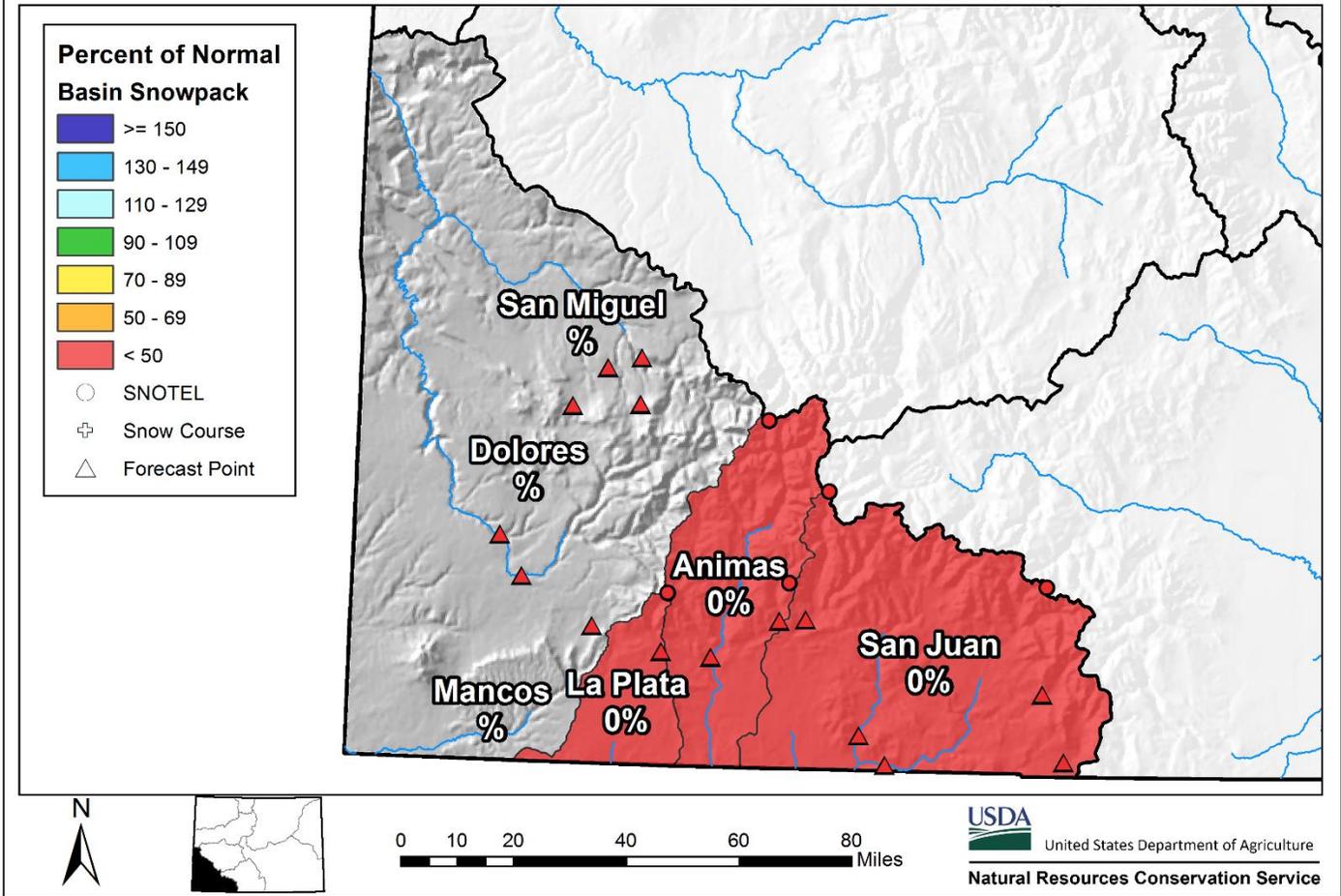
Snowpack in the combined southwest river basins is below normal at 0% of median. Precipitation for May was 56% of average which brings water year-to-date precipitation to 45% of average. Reservoir storage at the end of May was 75% of average compared to 108% last year. Current streamflow forecasts range from 23% of average for the San Miguel River near Placerville to 6% for the inflow to Navajo Reservoir.



*SWE values calculated using daily SNOTEL data only



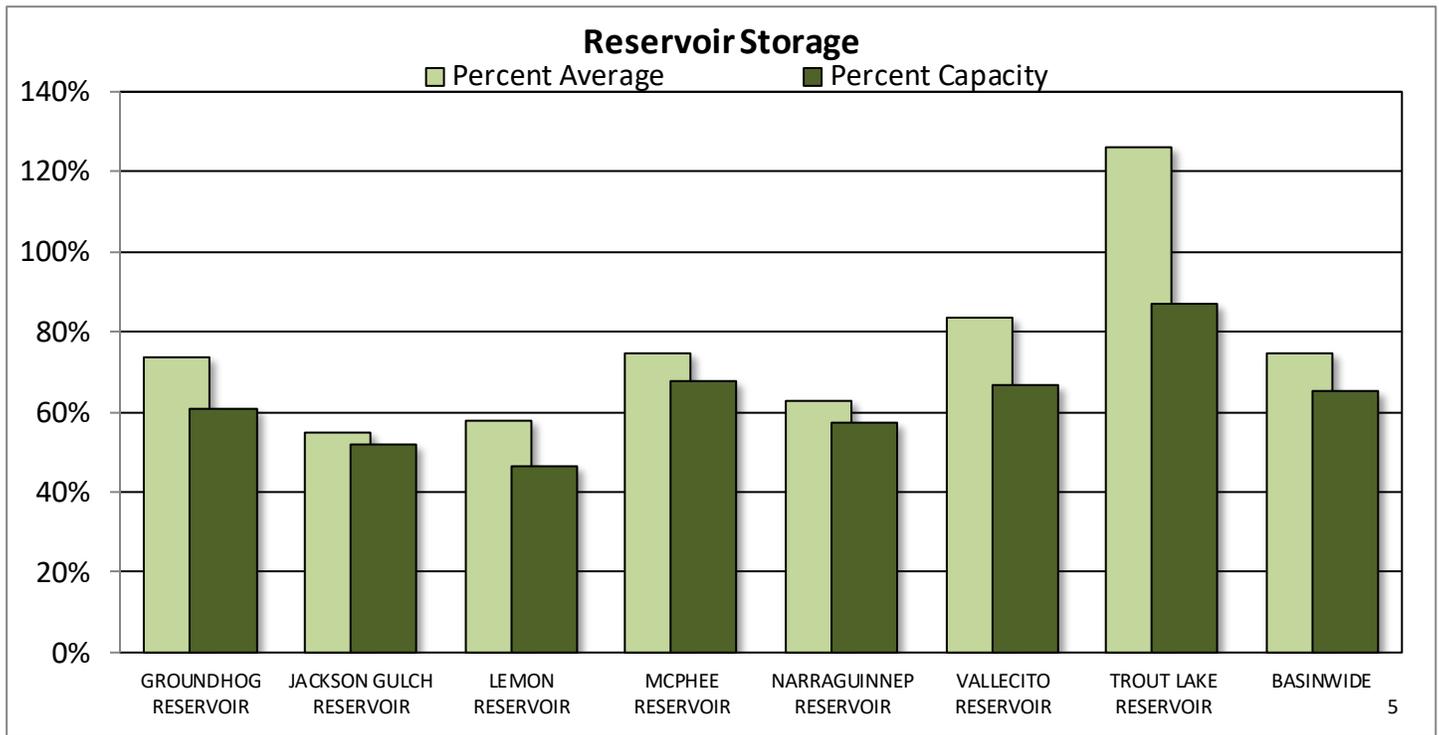
San Miguel, Dolores, Animas, and San Juan River Basins Snowpack and Streamflow Forecasts June 1, 2018



Watershed Snowpack Analysis June 1st, 2018

Sub-Basin	# of Sites	% Median	Last Year %	
			0	Median
Animas	9	0	0	267
Dolores	5	Median is 0		
San Miguel	3	Median is 0		
San Juan	3	0	0	127
Basin-Wide Total	19	0	0	205

*SWE values calculated using first of month SNOTEL data and snow course measurements



Reservoir Storage End of May 2018

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
GROUNDHOG RESERVOIR	13.4	25.2	18.2	22.0
JACKSON GULCH RESERVOIR	5.2	10.0	9.5	10.0
LEMON RESERVOIR	18.5	36.0	32.1	40.0
MCPHEE RESERVOIR	257.2	367.1	344.7	381.0
NARRAGUINNEP RESERVOIR	10.9	18.9	17.3	19.0
VALLECITO RESERVOIR	84.4	109.1	100.7	126.0
TROUT LAKE RESERVOIR	2.8	2.1	2.2	3.2
BASINWIDE	392.3	568.4	524.7	601.2
Number of Reservoirs	7	7	7	7

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS

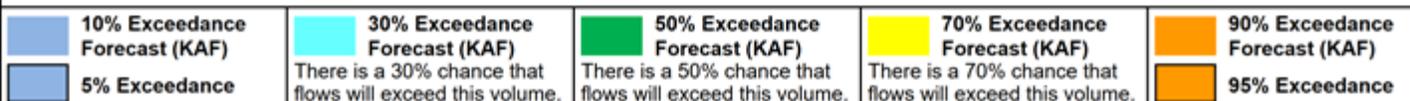
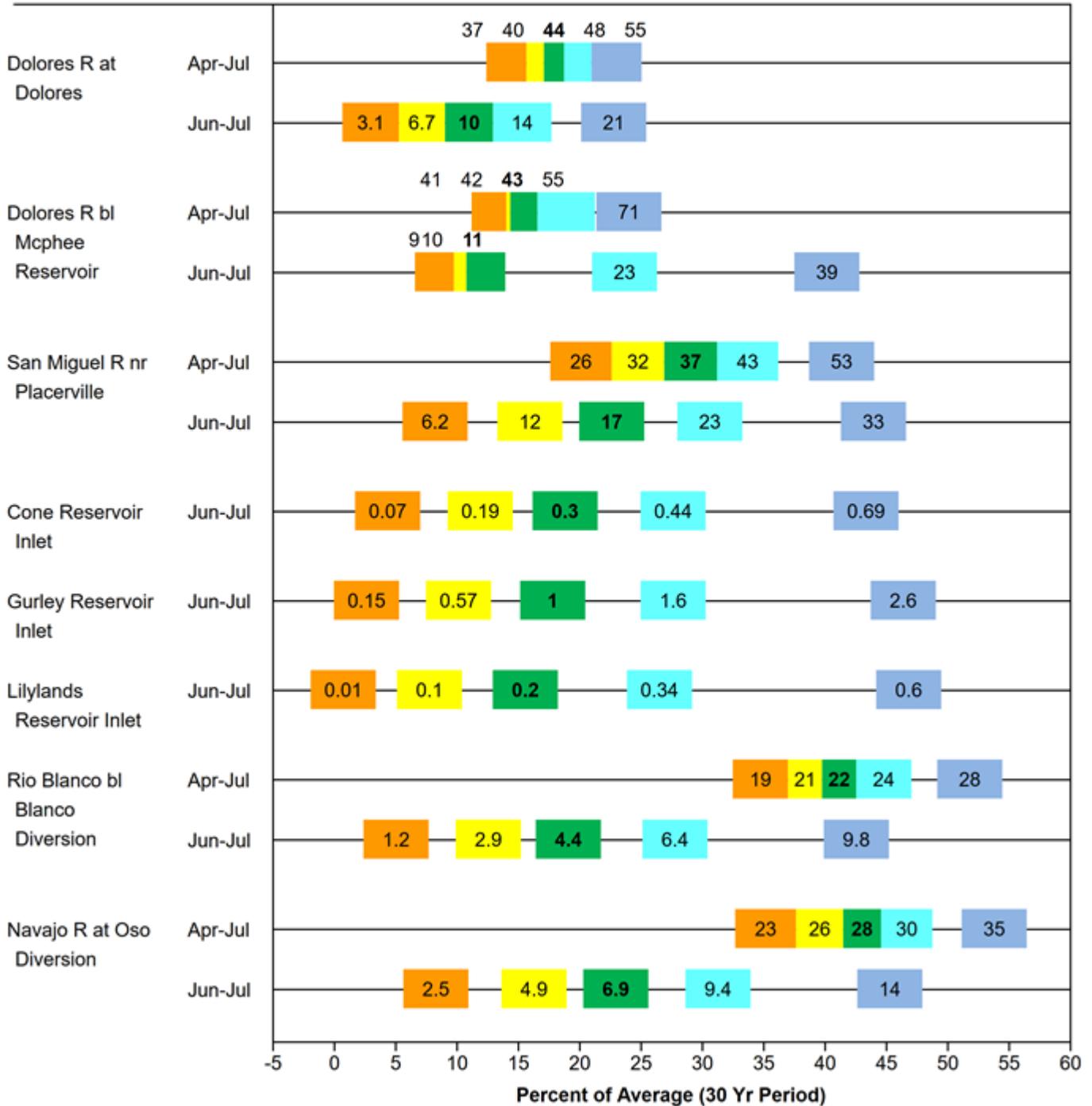
Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

Box labels on chart are volumes of water in thousand acre-feet.



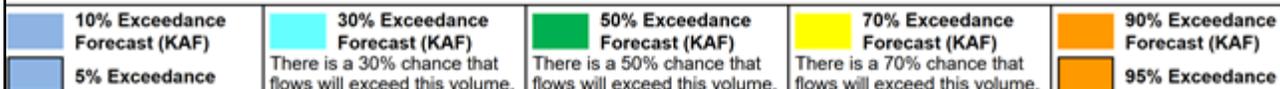
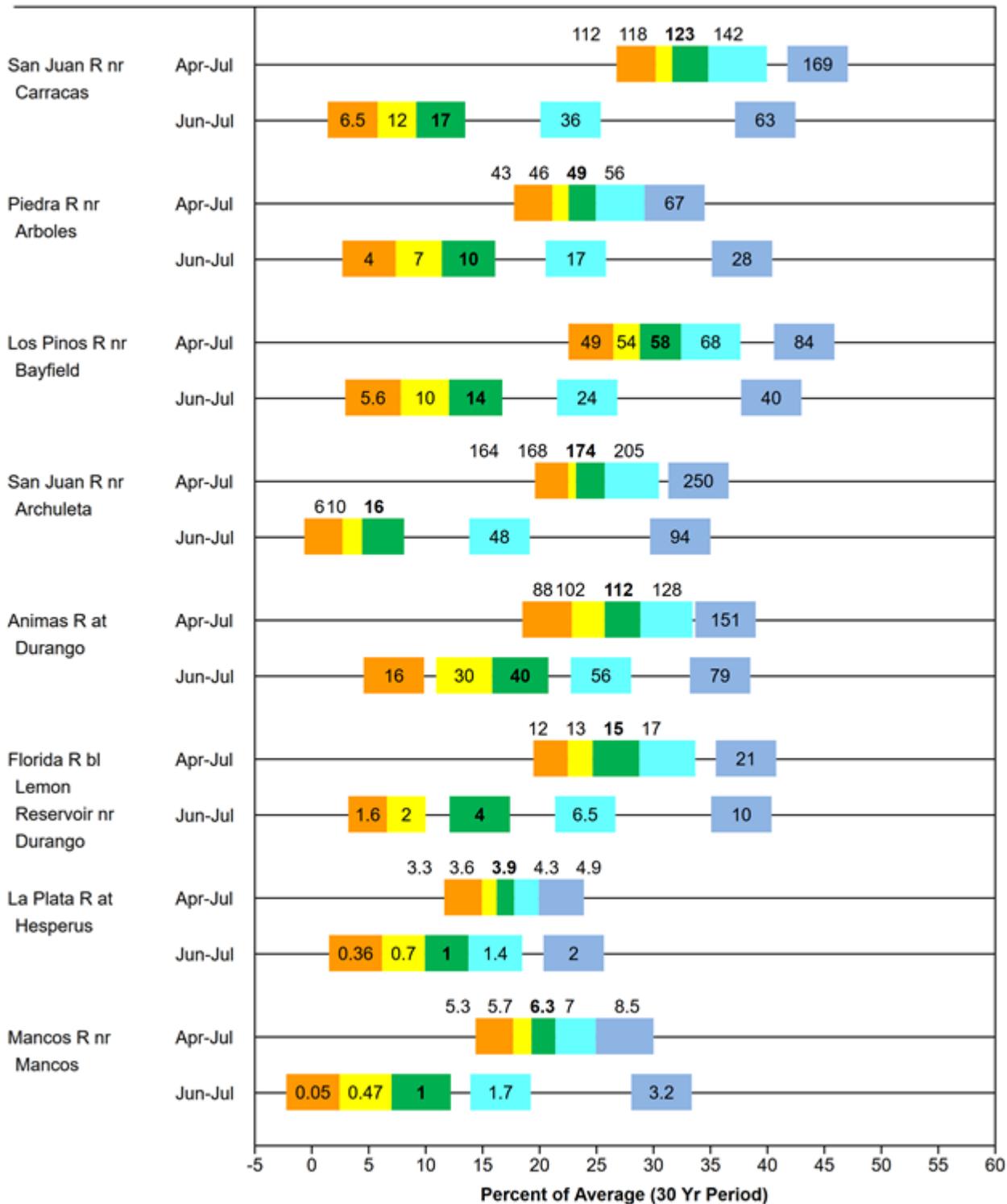
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS

Water Supply Forecasts

June 1, 2018

Forecast Exceedance Probabilities and Volumes

Forecast Point Forecast Period <----- Drier ----- Future Conditions ----- Wetter ----->
 Box labels on chart are volumes of water in thousand acre-feet.



How to Read Snowpack Graphs

The graphs show snow water equivalent (SWE) (in inches), using daily SNOTEL data. 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.

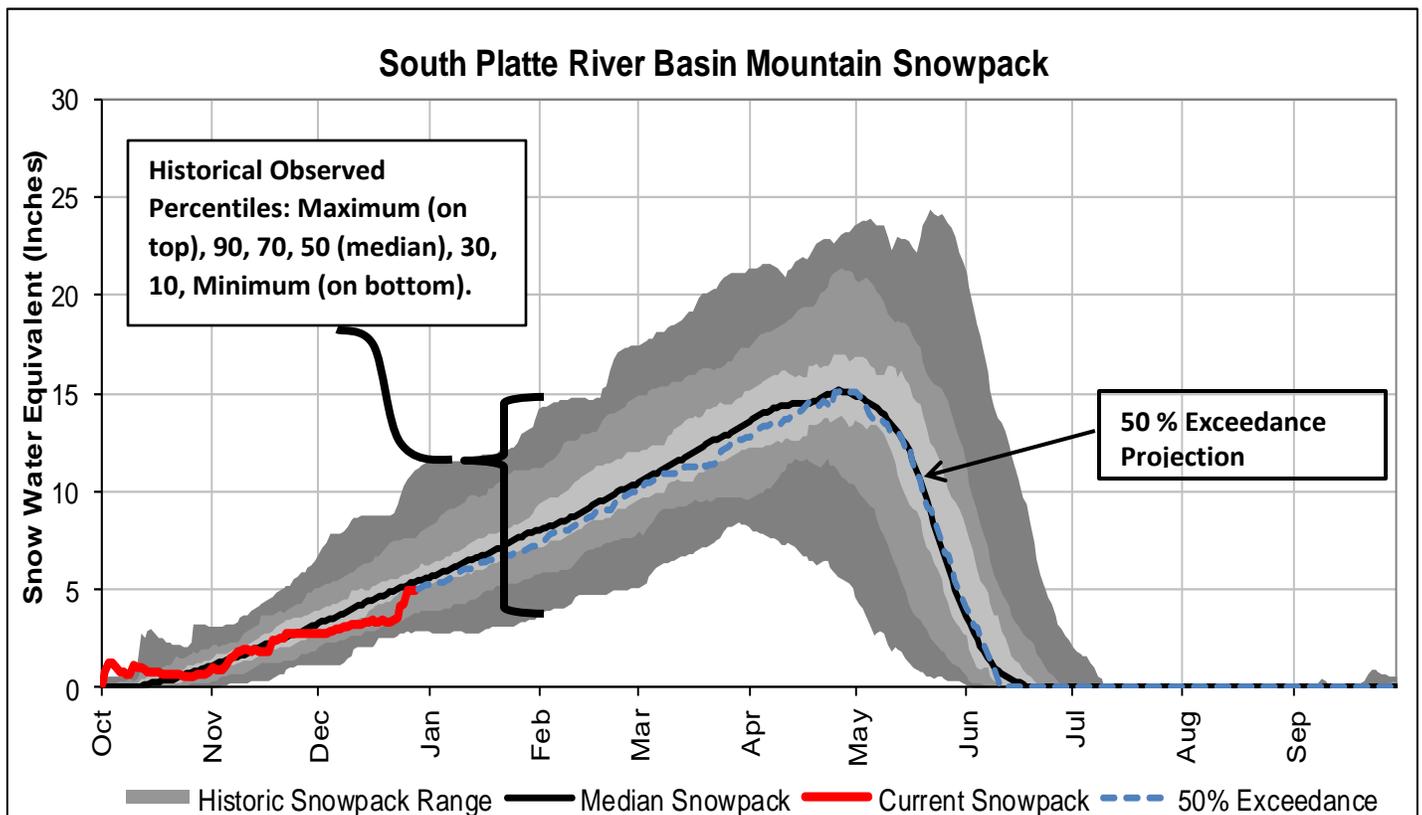
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

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.

50 % Excedance Projection: The most probabilistic snowpack projection, based on the median snowpack is projected forward from the end of the current period to the end of the current water year.

For more detailed information on these graphs visit:

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



How Forecasts Are Made

For more water supply and resource management information, contact:

Brian Domonkos

Snow Survey Supervisor

USDA, Natural Resources Conservation Service

Denver Federal Center, Bldg 56, Rm 2604

PO Box 25426

Denver, CO 80225-0426

Phone (720) 544-2852

Website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/co/snow/>

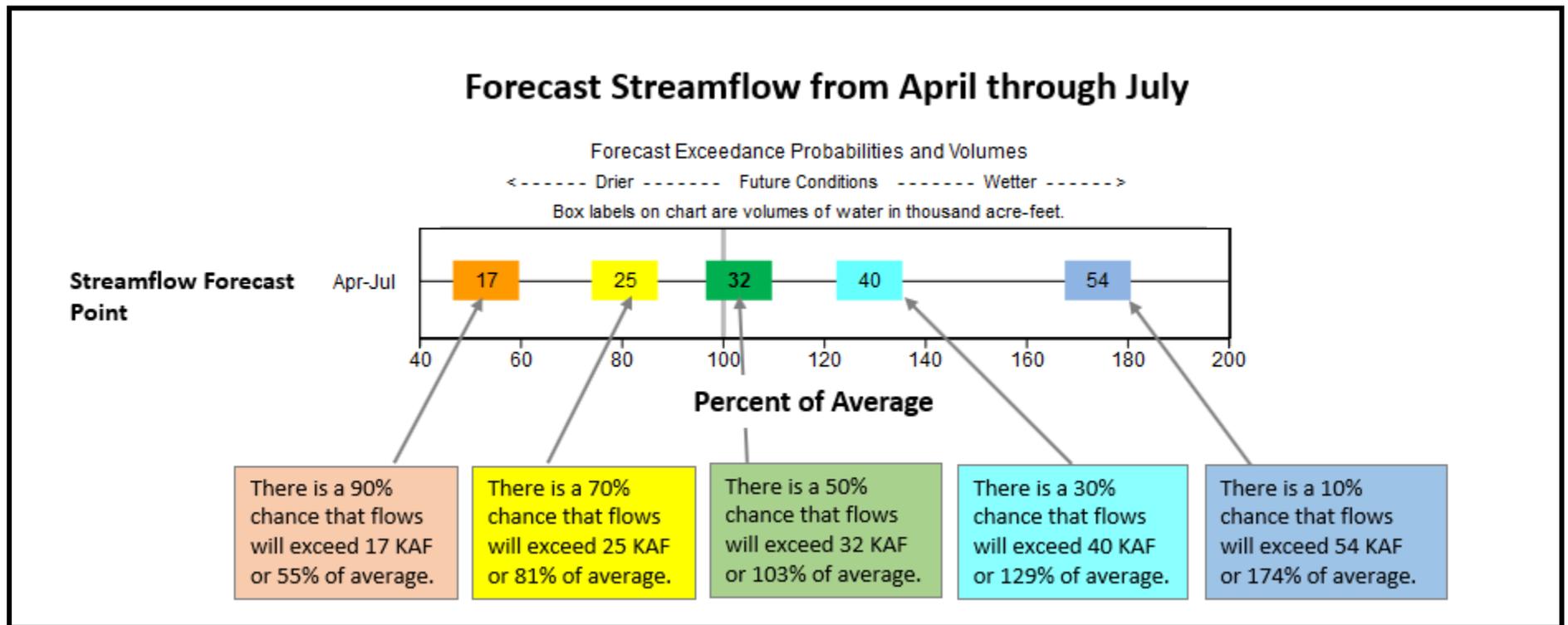
Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual 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.

Interpreting the Forecast Graphics

These graphics provide the same information that was contained in the previously published basin forecast tables, but provide a new way to visualize the range of streamflows represented by the forecast exceedance probabilities for each forecast period. The numbers displayed in the box represent the actual forecasted streamflow volume (in KAF) for the given exceedance probability, and the horizontal position of the box represents the percent of average of that streamflow volume. The spread of the forecasts offers an indication of the uncertainty in a given forecast; when the colored boxes are spread far a part, the forecast skill is low and uncertainty is high; when the boxes are close together, the forecast skill is higher and uncertainty lower.





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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.wcc.nrcs.usda.gov/wsf/westwide.html>

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

Colorado
Water Supply Outlook Report
Natural Resources Conservation Service
Lakewood, CO