

# Colorado

## Water Supply Outlook Report

### January 1, 2021



Much of the Font Range has seen below-median snowpack so far this season. The Geneva Creek river basin, shown above from the air, is one of the few exceptions. On January 1<sup>st</sup>, 2021, the Jackwhacker Gulch SNOTEL in the upper Geneva Creek river basin recorded 4.7 inches of snow water equivalent, which is 109 percent of the median snowpack for this date.

Photo By: Ana Posadaflores

Date: December 24<sup>th</sup>, 2020

**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.

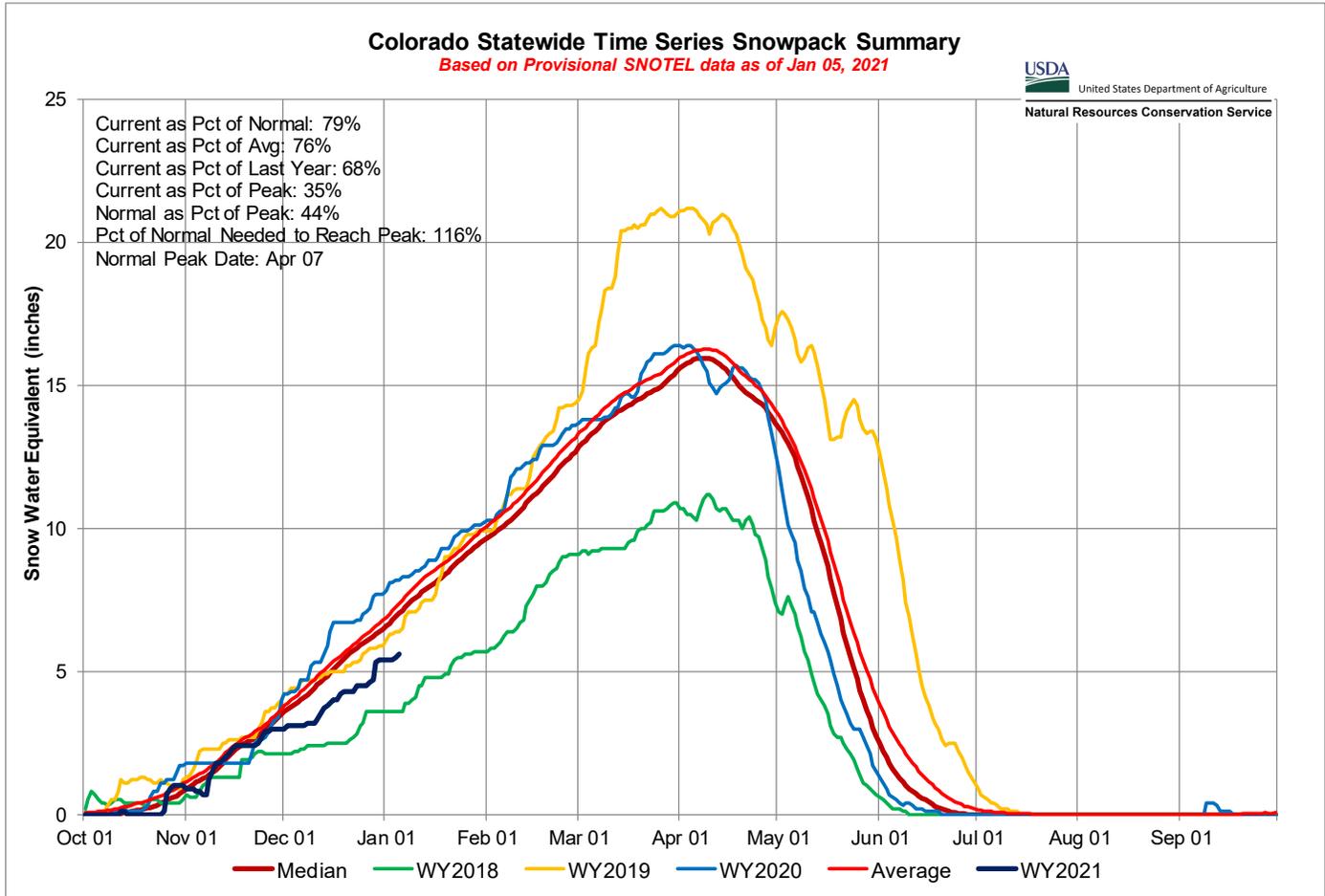
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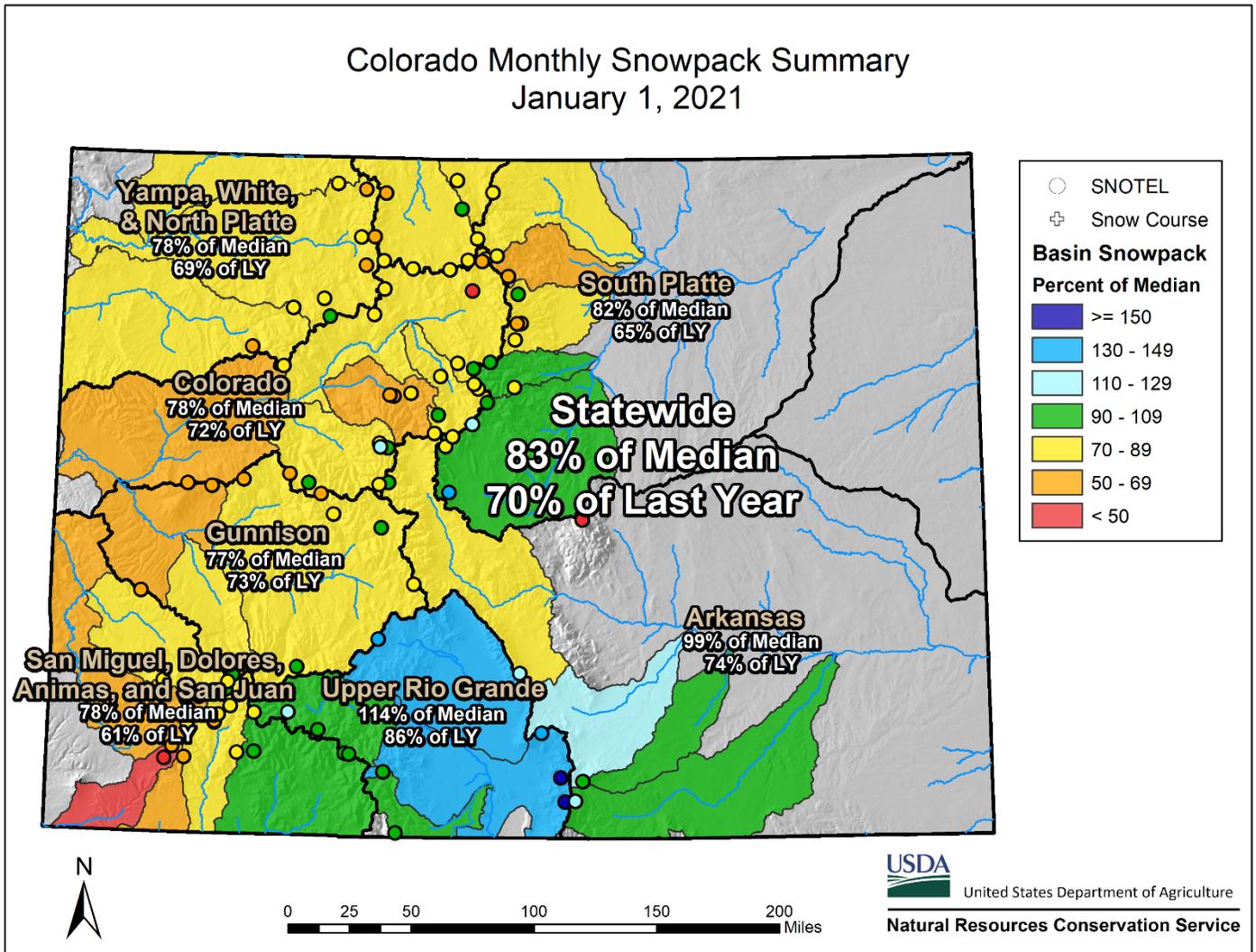
# Colorado Statewide Water Supply Conditions

## Summary



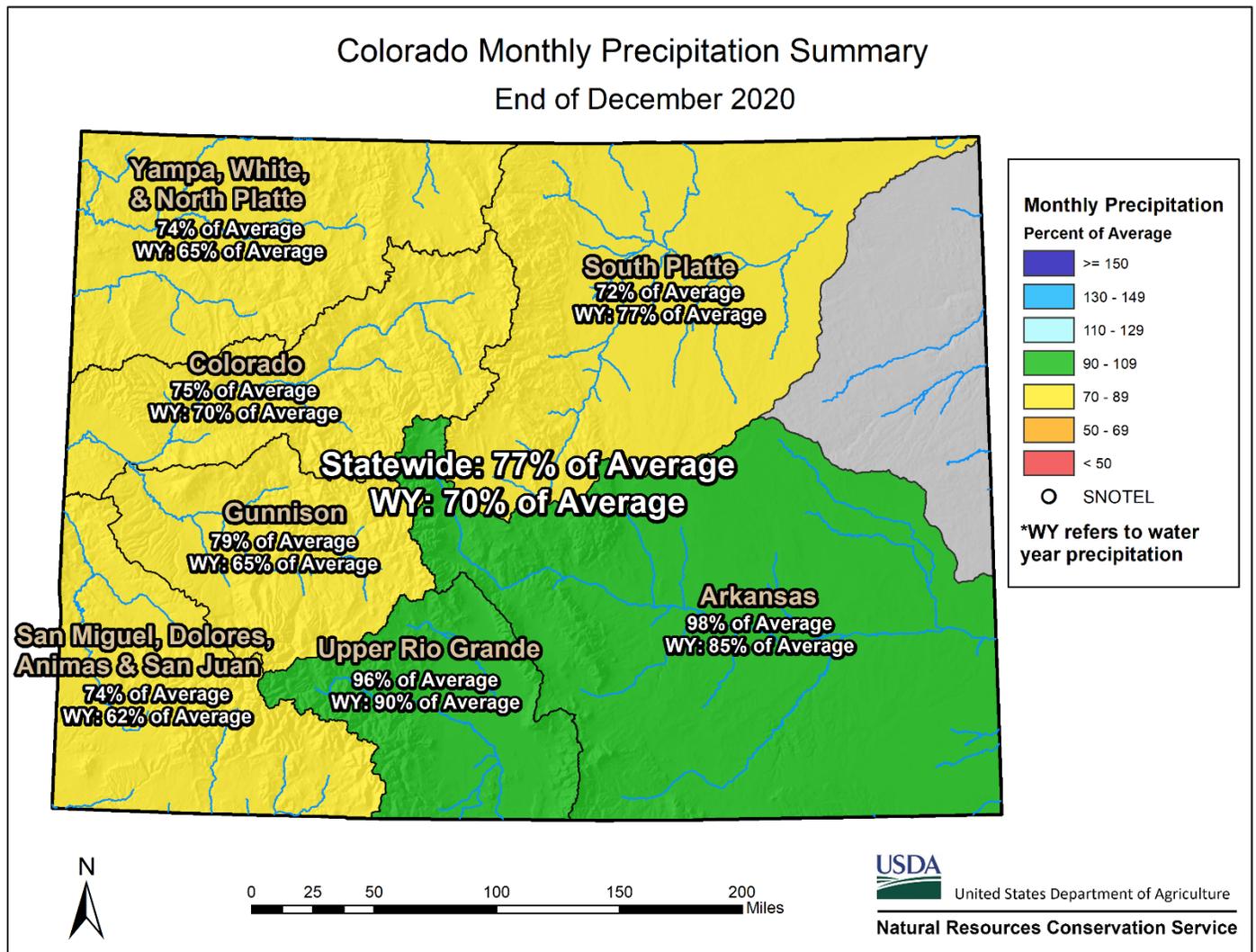
Drought conditions across most of the state have persisted through much of the 2021 water year. The state experienced warm temperatures and received record low precipitation through most of October. A stormy pattern developed in late October and continued through most of November that brought much-needed precipitation to all major basins across the state. December was variable, with drought conditions dominating the first half of the month, and stormy weather patterns dominating the last half of the month. Although November and December brought more precipitation than October, statewide precipitation was below average for all three months. As of January 1<sup>st</sup>, water year-to-date precipitation for Colorado is 70 percent of average. Current statewide snowpack is 83 percent of median, with a high in the Upper Rio Grande river basin at 114 percent of median, and a low in the Gunnison river basin at 77 percent of median. Several of the precipitation events that have occurred so far in the 2021 water year followed a southerly storm track, which delivered the highest snowfall amounts to the Upper Rio Grande and Arkansas river basins. Streamflow forecasts across the state follow similar spatial trends as precipitation and snowpack, with forecasts currently highest in the Arkansas and Upper Rio Grande river basins at 85 and 80 percent of average, respectively. Streamflow volume forecasts for April through July range from a high of 98 percent of average for the Cucharas River near La Veta, to a low of 42 percent of average for Surface Creek at Cedaredge. Reservoir levels across the state have decreased since this same time last year, largely, because of the widespread drought conditions that the state has experienced since last summer. Current statewide reservoir storage is 82 percent of average. Although all current indications point to a below average runoff season this year, there is still plenty of time for conditions to improve.

## Snowpack



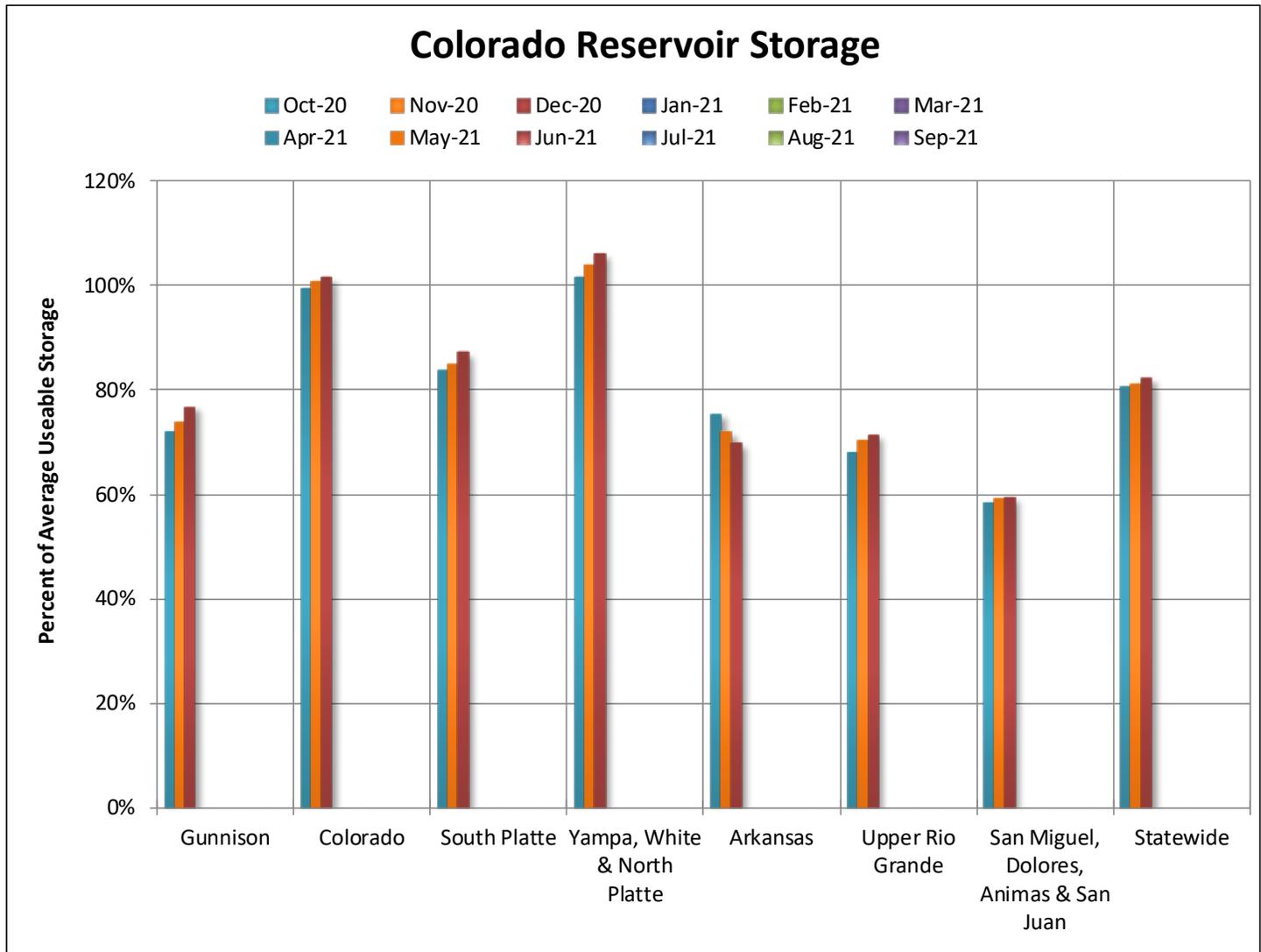
The mountains of Colorado have not received generous snowfall thus far this water year. As a result, every major river basin, except for the Upper Rio Grande, currently maintains a below median snowpack. In late October and early November, wintery storms blanketed much of the state, providing some relief to the long-standing drought, but warm temperatures across the state persisted. More recent snowfall events occurring between the middle and end of December across the state, deposited [upwards of 4.8"](#) of snow water equivalent in northern basins. While the overall low snowpack across the state is likely associated with [La Niña](#), the above normal snowpack in the Upper Rio Grande river basin has continued to build through December. The Moon Pass SNOTEL, in the Upper Rio Grande river basin, has the highest snow water equivalent on record for December. Statewide, snowpack is 83 percent of median as of January 1st, which is 70 percent of last year's median snowpack at this time. The Colorado, combined Yampa-White-North Platte, and the combined San Miguel-Dolores-Animas-Juan river basins all have 78 percent of median snowpack. Similarly, the Gunnison river basin is 77 percent of the median snowpack. The South Platte and Arkansas river basins are slightly higher with snowpack at 82 and 99 percent of median, respectively. However, with much of the winter snowpack accumulation season remaining, a lot can still happen. The state needs above average snowfall for the next three to four months to return conditions to normal before spring and summer runoff begins.

## Precipitation



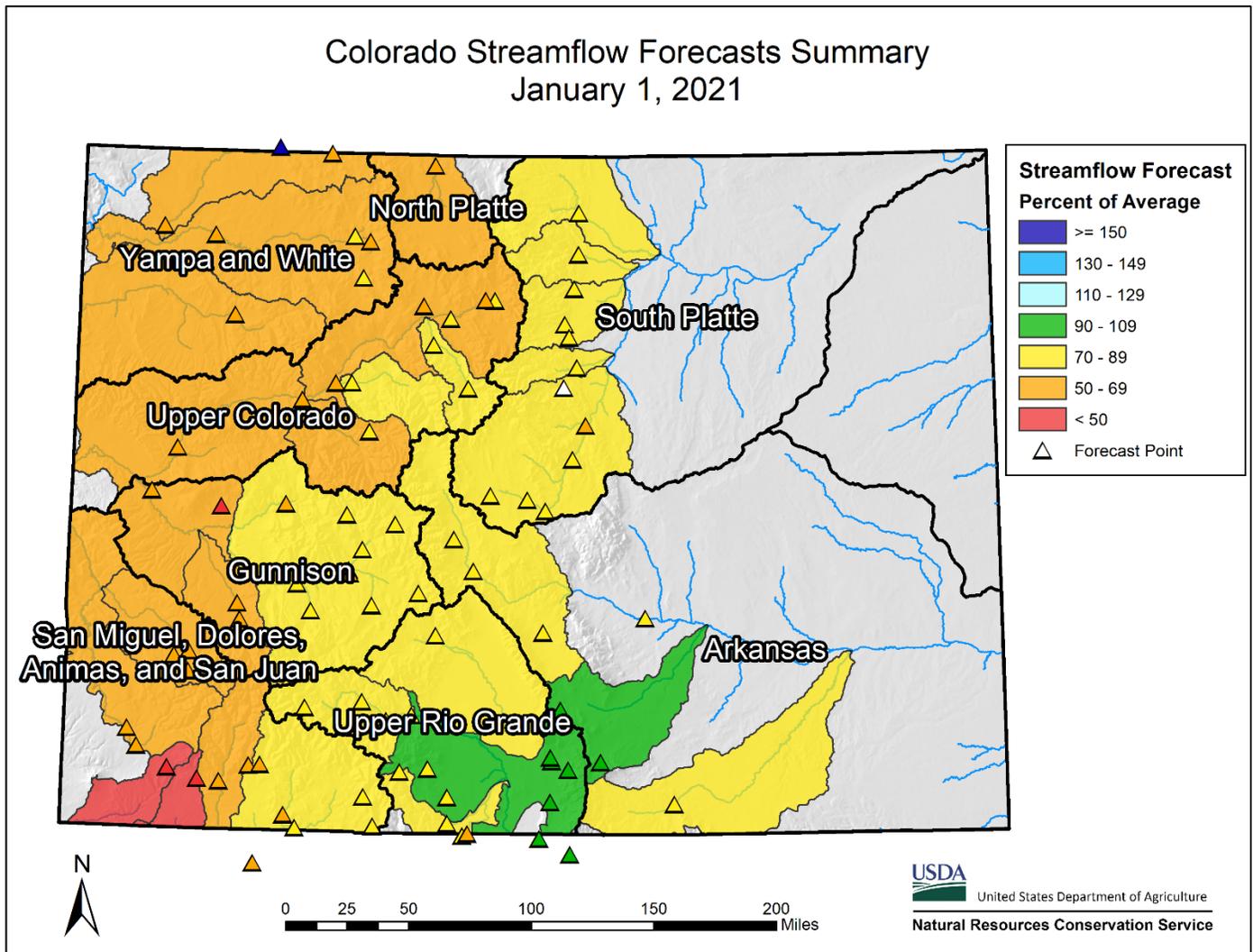
The 2021 water year got off to a slow start with the monthly precipitation summary for October posting 46 percent of average precipitation statewide. The Colorado, Gunnison, and combined San Miguel-Dolores-Animas-San Juan river basins were all below 50 percent; the lowest percentage was in the combined San Miguel-Dolores-Animas-San Juan river basin of 22 percent. The combined Yampa-White-North Platte, South Platte, Arkansas, and Upper Rio Grande river basins ranged between 50 to 69 percent of average for this time period. Late October and November brought storms that improved conditions for much of the state resulting in an increase of the statewide average to 66 percent. On the low end, the combined Yampa-White-North Platte river basin remained at 59 percent of average while the Upper Rio Grande river basin increased to 86 percent during the month of November. The southerly storm track, during this time, favored higher precipitation amounts for the Upper Rio Grande and Arkansas river basins. Storm activity slowed mid-November, resuming in mid-December with a few smaller storms and ended the year making gains in precipitation during the last week of December. Statewide, Colorado ends December with below-average water year-to-date precipitation of 70 percent of average. Despite precipitation gains in November and December much of the state remains in [drought conditions](#). The Climate Prediction Center predicts that moderate [La Nina](#) conditions are likely to continue throughout this winter season. The most recent precipitation [probability outlook](#) shows near-normal precipitation for Colorado over the next thirty days.

## Reservoir Storage



In line with drought conditions, statewide reservoir storage is primarily below-average at the start of this water year. All river basins, except the Colorado and combined Yampa-White-North Platte are starting the 2021 water year with below-average storage due to below-average runoff during the 2019-2020 season and a dry summer. Statewide, reservoir storage started low, with storage for October and November at 81 percent of average. December brought only a slight improvement, ending the month at 82 percent of average. Compared to December of last year, the statewide reservoir storage was 102 percent of average. During the last three months, only the Arkansas river basin reduced relative storage from 75 to 69 percent; other basins remained nearly the same or slightly increased their relative storage. From October through January, the Colorado and combined Yampa-White-North Platte river basins increased relative storage from 99 to 101 percent and 101 to 106 percent respectively. Storage in the combined San Miguel-Dolores-Animas-San Juan river basin remained well below average from 58 percent in October to 59 percent by January 1<sup>st</sup>. This is due to less than average snowpack in this region last season. Last year on January 1<sup>st</sup>, the combined San Miguel-Dolores-Animas-San Juan river basin had 107 percent of average storage. The Gunnison and Upper Rio Grande river basins increased relative storage during October to January 1st from 72 to 77 percent and 68 to 71 percent of average. The South Platte river basin increased storage during October through January 1<sup>st</sup>, from 83 to 87 percent of average. Overall reservoir storage for the state has increased slightly since November, but remains well below average on January 1st, at 82 percent of average.

## Streamflow

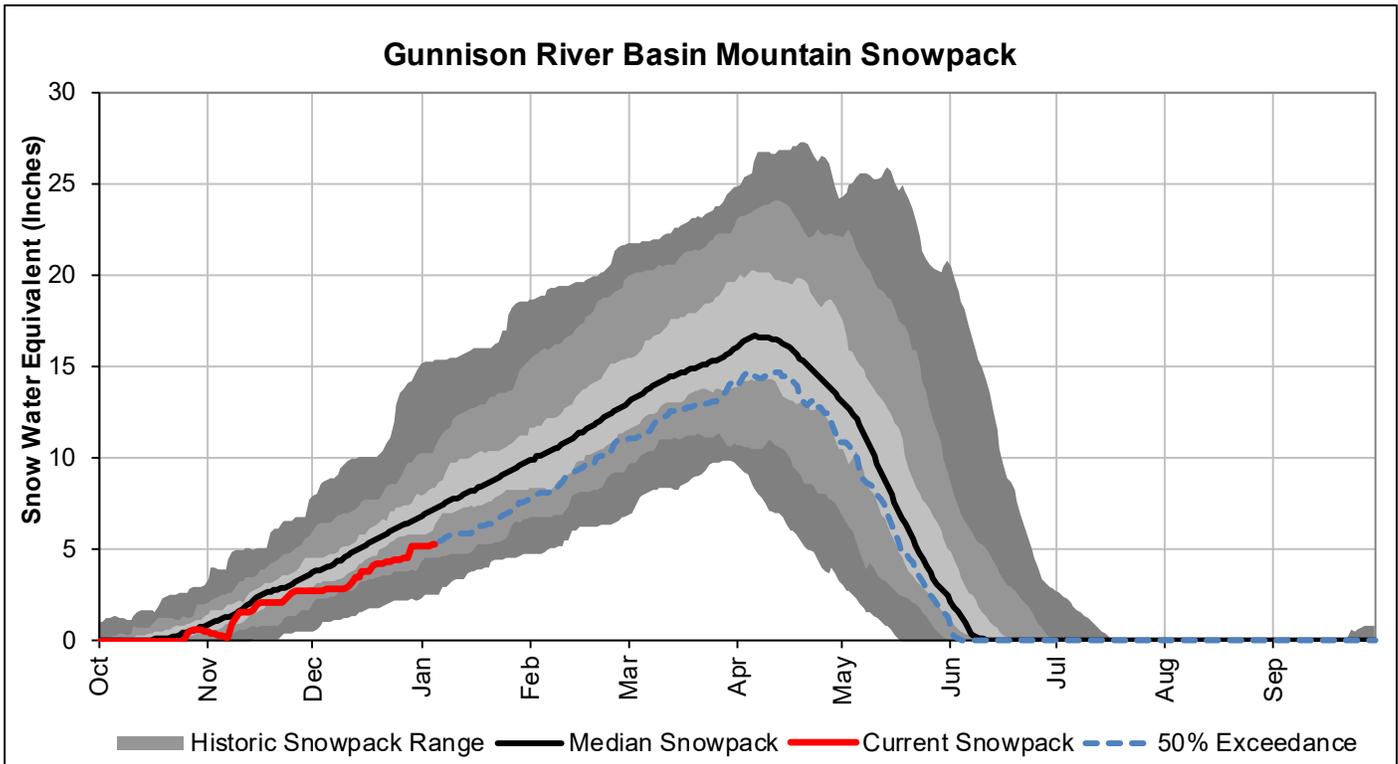


Below average snowpack, below average precipitation, and dry soils combine to produce a rather unpromising outlook for the upcoming runoff season in April through July 2021. The scarcity of precipitation during June through September 2020 was further exacerbated by continued below average precipitation during October through December 2020. These deficits are setting up a similar situation as last year where the first snows fall on parched ground. Dry soils will play a meaningful part in the upcoming runoff season as the ground will absorb much of the first pulse of meltwater during snowmelt. As such, it will take an above-average snow accumulation in many basins to produce average runoff. Statewide, current streamflow forecasts for the major basins are all well below average. Aided by surprisingly abundant snowfall this winter in the Eastern San Juan and Sangre De Cristo mountains, forecasts for the Upper Rio Grande and Arkansas river basins are higher than elsewhere in the state at 80 and 85 percent of average, respectively. The South Platte and North Platte river basin forecasts are at 76 and 52 percent of average, respectively, with most South Platte sub-basin forecasts ranging from 71 to 84 percent of average. On the Western side of the Continental Divide, streamflow volumes for the combined Yampa-White, the Upper Colorado, the Gunnison, and the combined San Miguel-Dolores-Animas-San Juan river basins are all forecasted to be within 64 to 68 percent of average, with some variability within each basin. Streamflow forecasts for these major western river basins are all considerably lower than they were last year at this time. Nevertheless, there are still several months of winter left during which the statewide streamflow forecasts will evolve in response to weather and forecast confidence will improve. As the season evolves anything less than above average snowfall will produce below average streamflow volumes come April in most parts of the state.

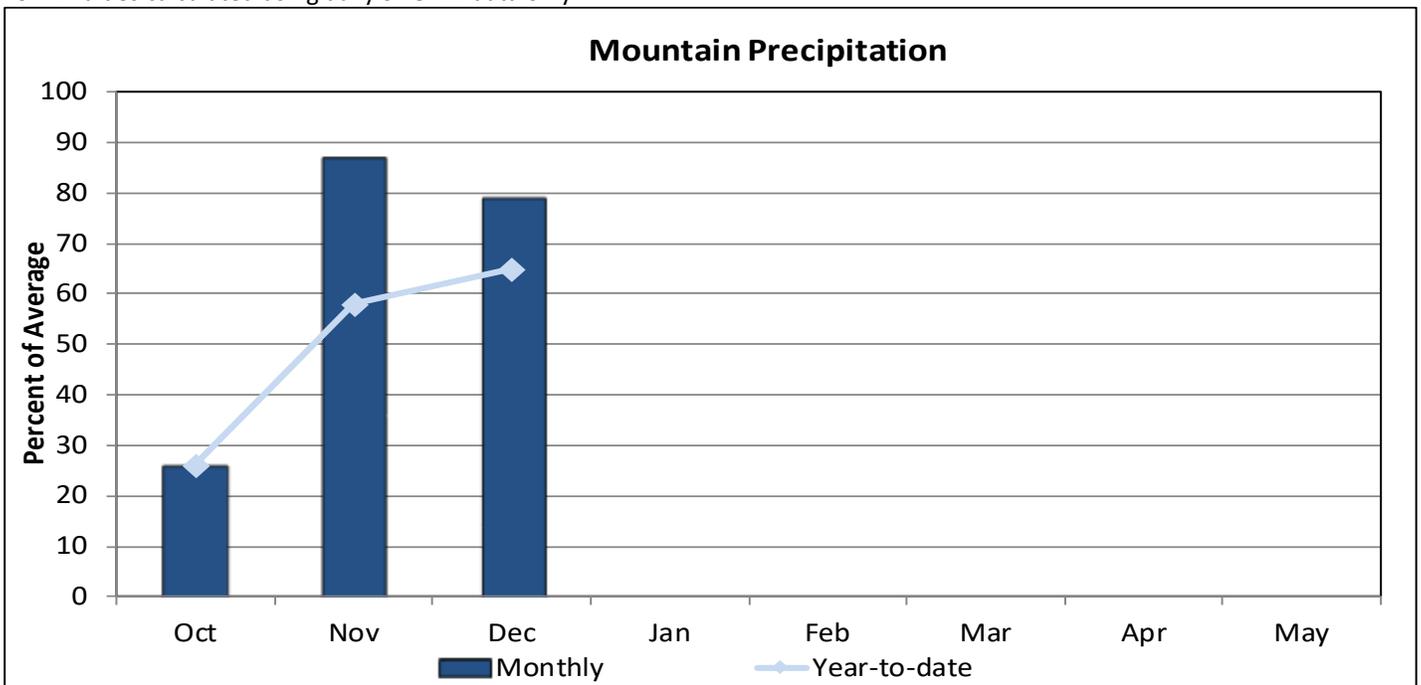
# GUNNISON RIVER BASIN

January 1, 2021

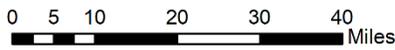
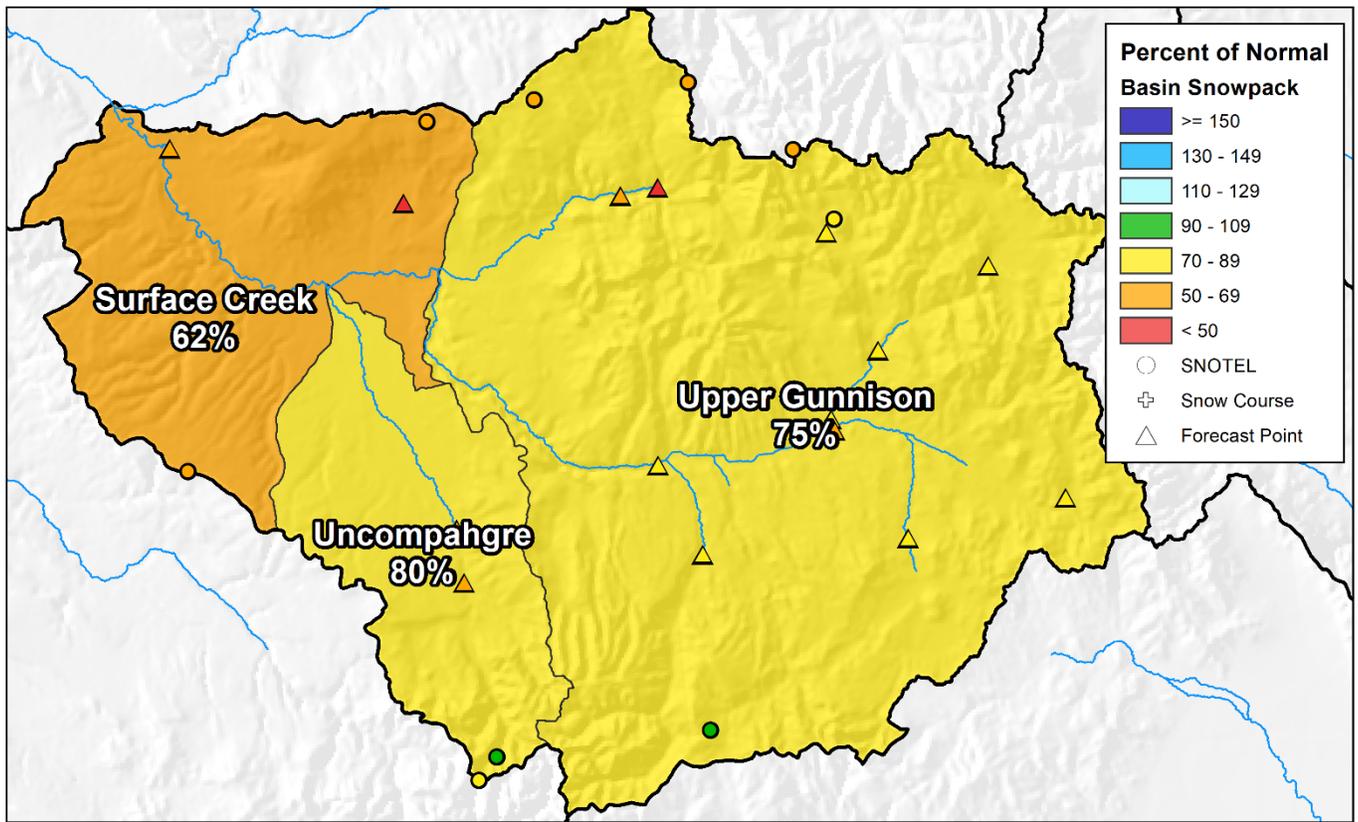
Snowpack in the Gunnison river basin is below normal at 77% of the median. Precipitation for December was 79% of average which brings water year-to-date precipitation to 65% of average. Reservoir storage at the end of December was 77% of average compared to 104% last year. Current streamflow forecasts range from 42% of average for Surface Creek at Cedaredge to 83% of average for Tomichi Creek at Sargents.



\*SWE values calculated using daily SNOTEL data only

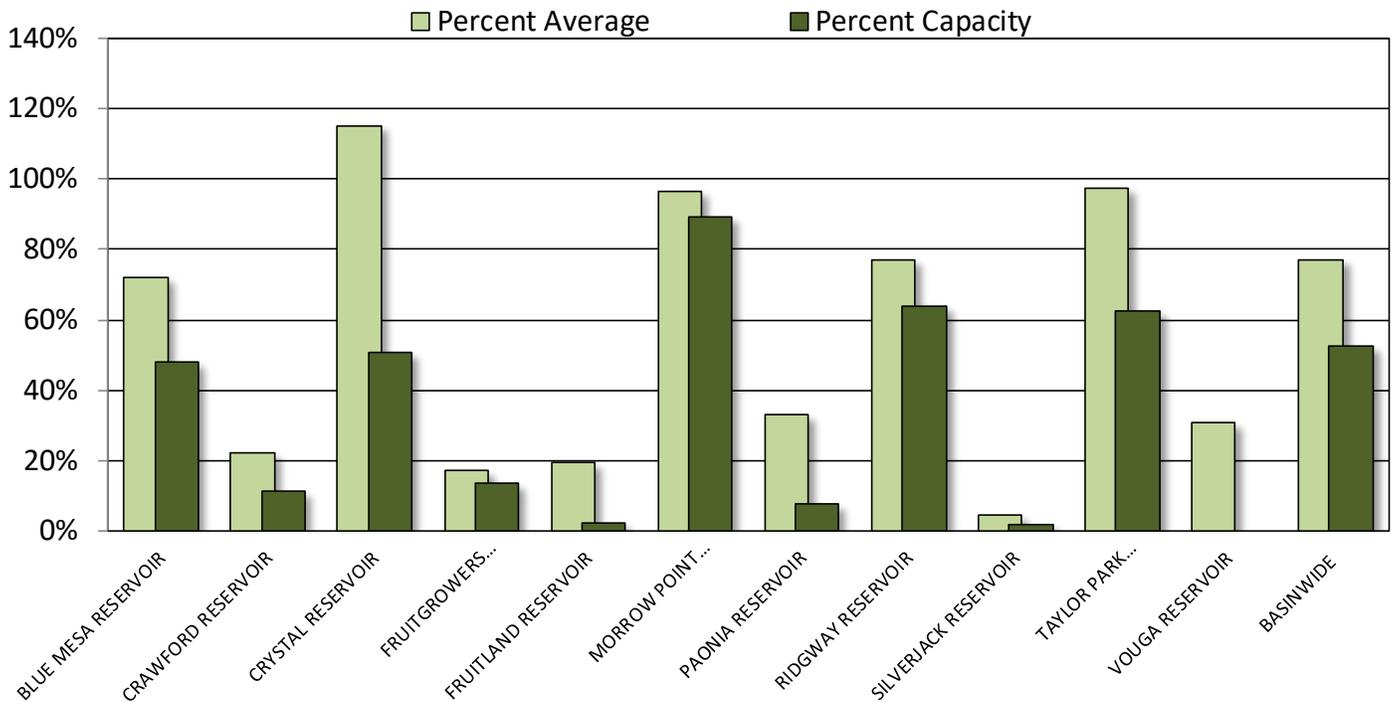


## Gunnison River Basin Snowpack and Streamflow Forecasts January 1, 2021



United States Department of Agriculture  
Natural Resources Conservation Service

### End of December Reservoir Storage



### Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year % Median
Upper Gunnison	10	75	108
Surface Creek	2	62	92
Uncompahgre	3	80	113
<b>Basin-Wide Total</b>	<b>13</b>	<b>77</b>	<b>109</b>

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

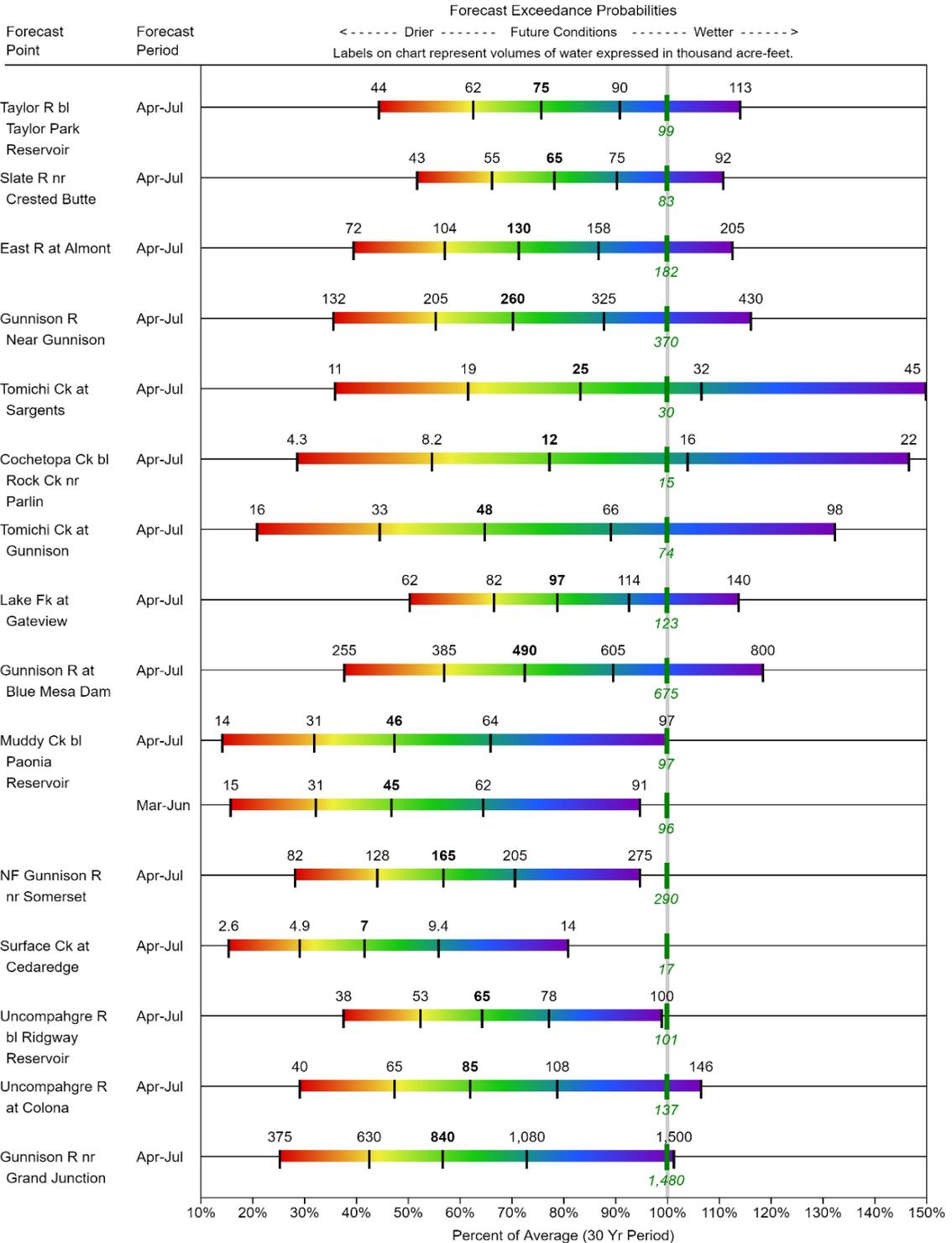
### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
BLUE MESA RESERVOIR	396.8	587.5	549.9	830.0
CRAWFORD RESERVOIR	1.6	6.2	7.1	14.0
CRYSTAL RESERVOIR	8.8	7.4	7.7	17.5
FRUITGROWERS RESERVOIR	0.5	2.0	2.8	3.6
FRUITLAND RESERVOIR	0.2	1.0	1.0	9.2
MORROW POINT RESERVOIR	107.8	108.4	111.6	121.0
PAONIA RESERVOIR	1.2	2.3	3.5	15.4
RIDGWAY RESERVOIR	52.9	64.5	68.8	83.0
SILVERJACK RESERVOIR	0.2	0.8	5.0	12.8
TAYLOR PARK RESERVOIR	66.3	75.4	68.1	106.0
VOUGA RESERVOIR	0.2		0.7	0.9
<b>BASINWIDE</b>	<b>636.5</b>	<b>855.4</b>	<b>826.2</b>	<b>1213.4</b>
Number of Reservoirs	11	10	11	11

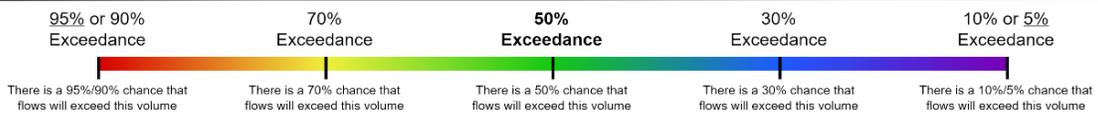
# GUNNISON RIVER BASIN

## Water Supply Forecasts

January 1, 2021



### Legend



When selected, the following historic streamflow values and statistics will be shown.

*Period of Record Minimum Streamflow KAF (Year)*

*1981-2010 Normal Streamflow KAF*

*Observed Streamflow KAF*

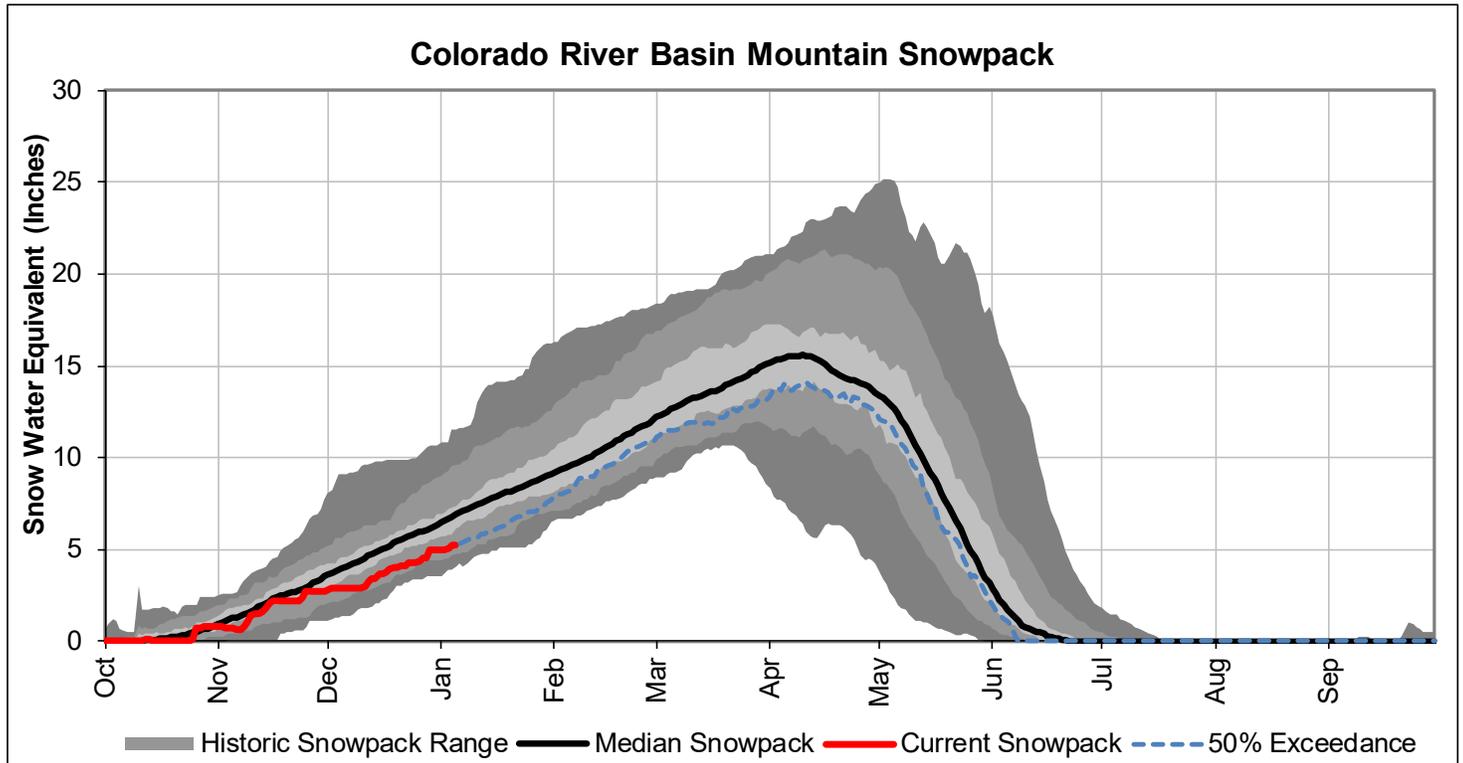
*Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

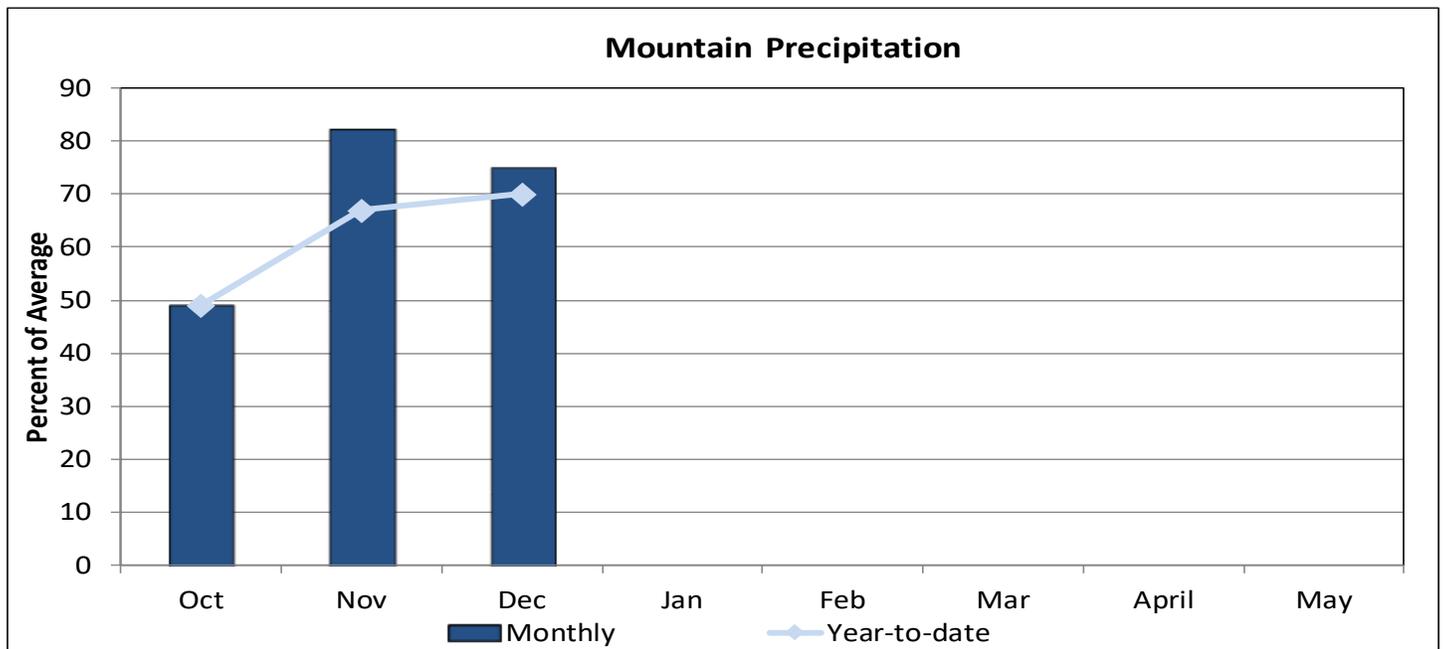
# COLORADO RIVER BASIN

January 1, 2021

Snowpack in the Colorado river basin is below normal at 78% of the median. Precipitation for December was 75% of average which brings water year-to-date precipitation to 70% of average. Reservoir storage at the end of December was 102% of average compared to 107% last year. Current streamflow forecasts range from 59% of average for Muddy Creek below Wolford Mtn. Reservoir to 72% of average for Eagle River below Gypsum.

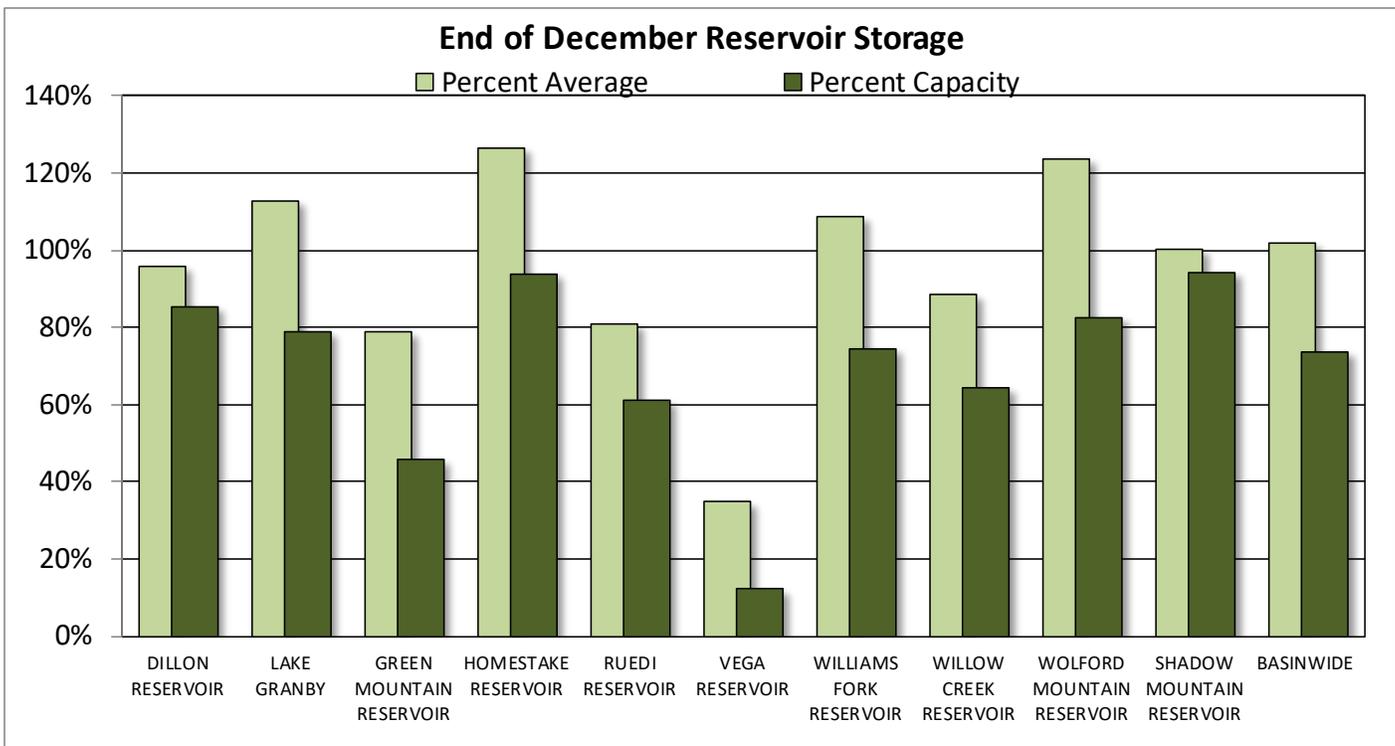
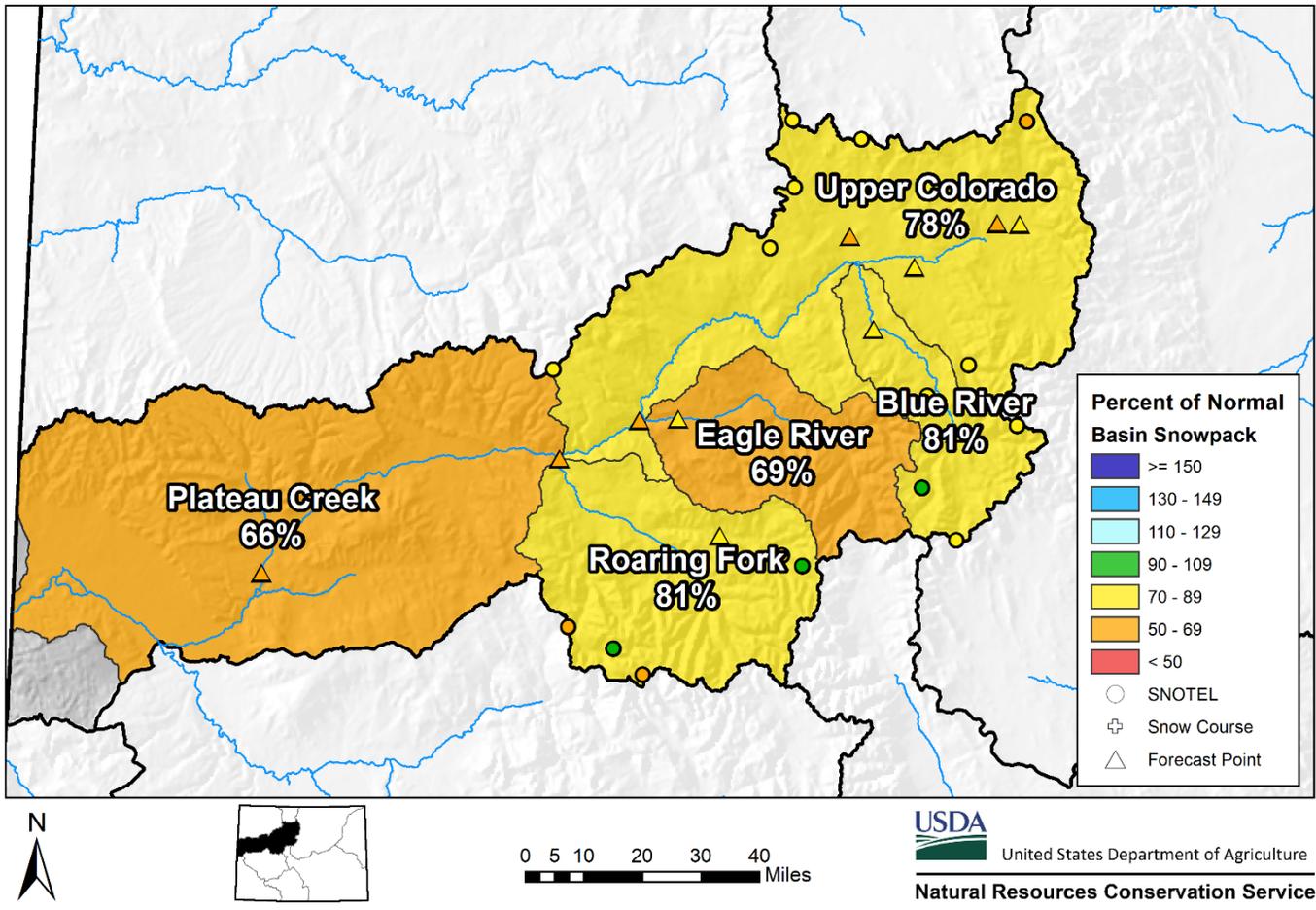


\*SWE values calculated using daily SNOTEL data only



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

## Upper Colorado River Basin Snowpack and Streamflow Forecasts January 1, 2021



### Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year % Median
Blue River	5	81	114
Upper Colorado	19	78	113
Muddy Creek	3	78	122
Eagle River	4	69	100
Plateau Creek	5	66	85
Roaring Fork	7	81	114
Williams Fork	3	93	112
Willow Creek	2	68	121
<b>Basin-Wide Total</b>	<b>28</b>	<b>78</b>	<b>110</b>

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

### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
DILLON RESERVOIR	212.8	222.0	222.1	249.1
LAKE GRANBY	366.6	381.3	325.7	465.6
GREEN MOUNTAIN RESERVOIR	67.2	67.4	85.2	146.8
HOMESTAKE RESERVOIR	40.3	41.2	31.9	43.0
RUEDI RESERVOIR	62.2	75.6	76.8	102.0
VEGA RESERVOIR	4.1	13.8	11.8	32.9
WILLIAMS FORK RESERVOIR	72.2	77.6	66.5	97.0
WILLOW CREEK RESERVOIR	5.8	6.6	6.6	9.1
WOLFORD MOUNTAIN RESERVOIR	54.4	51.3	44.0	65.9
SHADOW MOUNTAIN RESERVOIR	17.3	17.4	17.3	18.4
<b>BASINWIDE</b>	<b>903.0</b>	<b>954.2</b>	<b>887.9</b>	<b>1229.8</b>
Number of Reservoirs	10	10	10	10

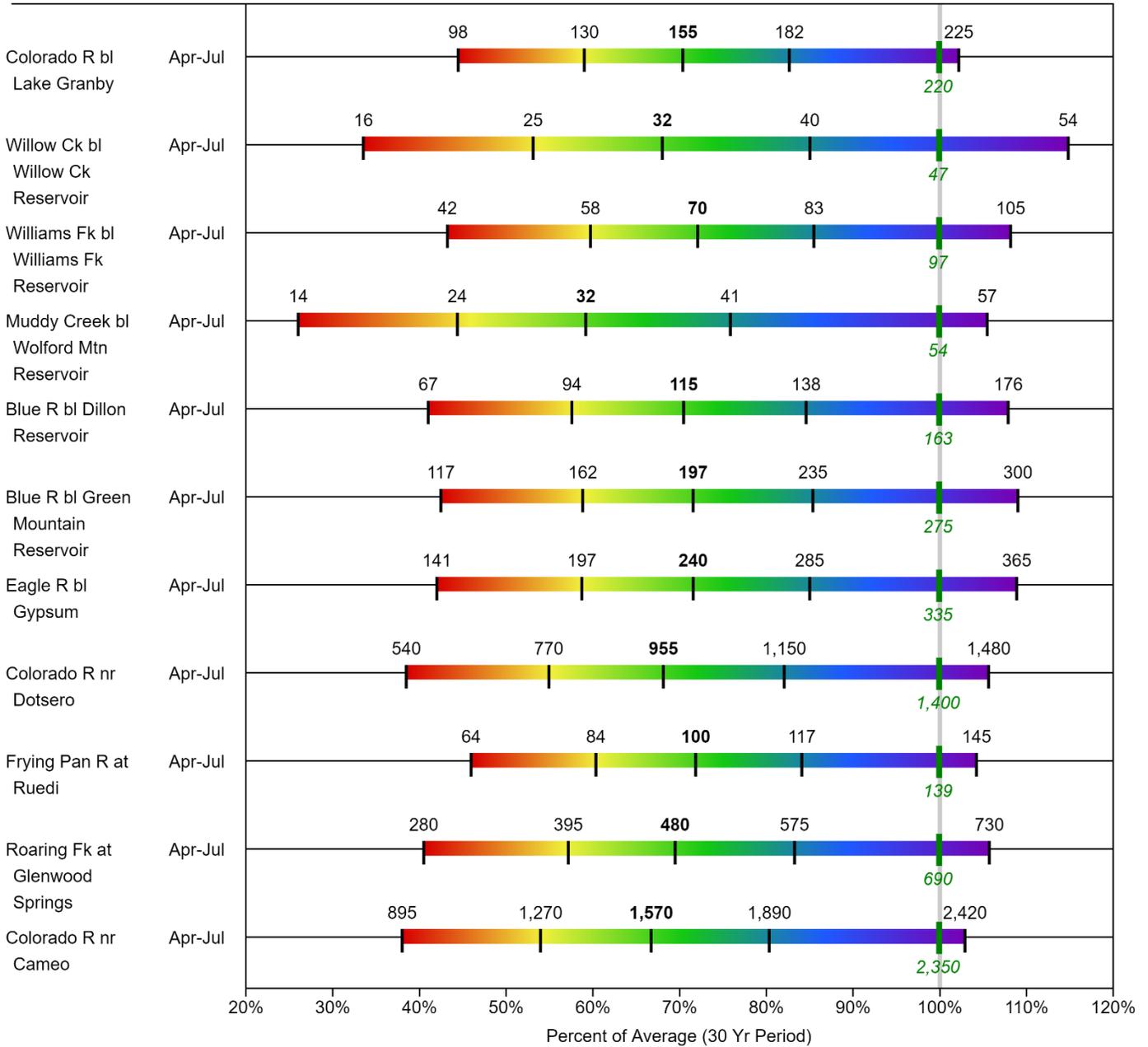
# UPPER COLORADO RIVER BASIN

## Water Supply Forecasts

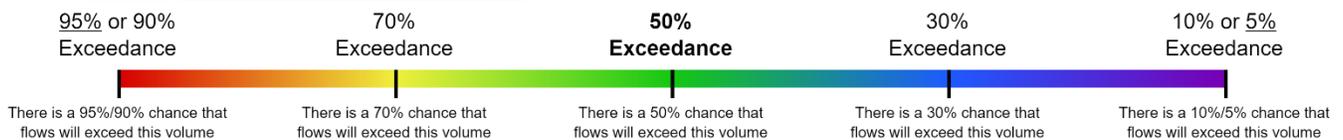
January 1, 2021

### Forecast Exceedance Probabilities

<----- Drier ----- Future Conditions ----- Wetter ----->  
 Labels on chart represent volumes of water expressed in thousand acre-feet.



### Legend



When selected, the following historic streamflow values and statistics will be shown.

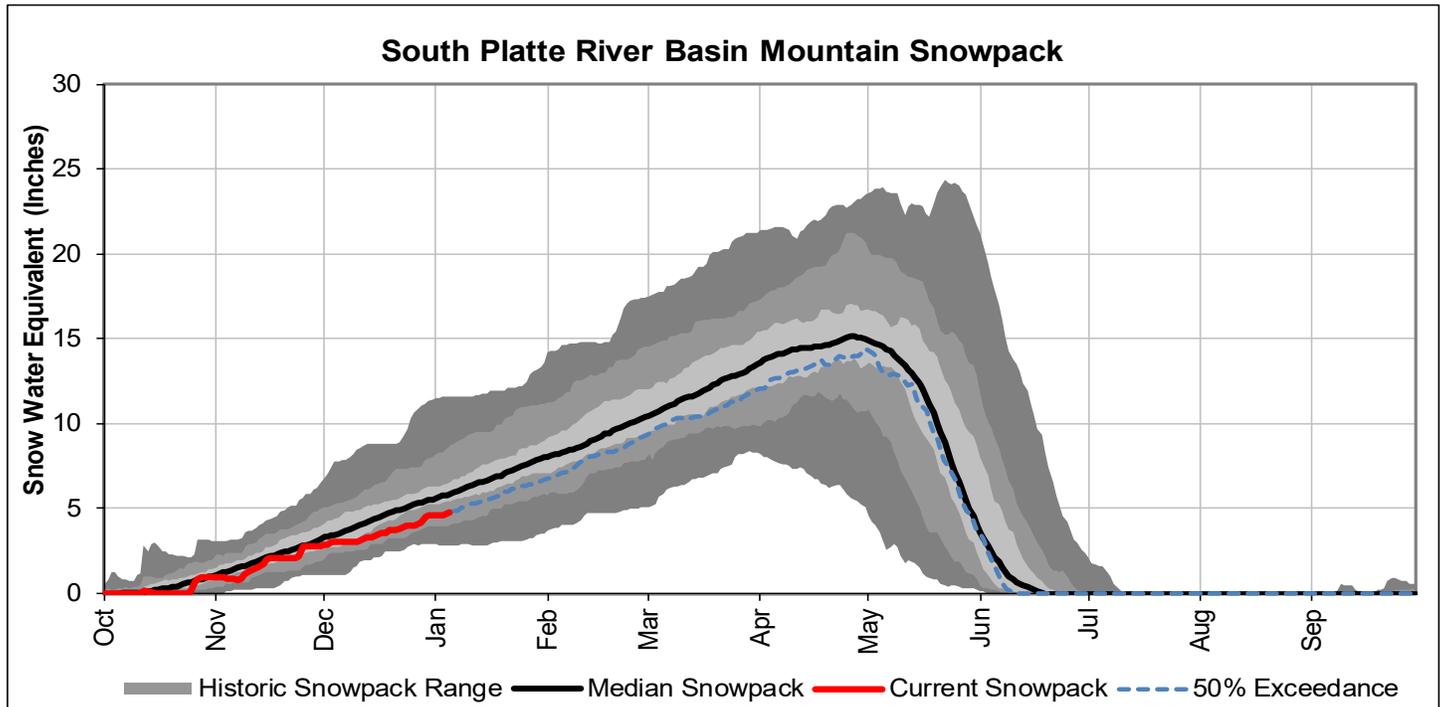
| *Period of Record Minimum Streamflow KAF (Year)*     
 | *1981-2010 Normal Streamflow KAF*     
 | *Observed Streamflow KAF*     
 | *Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

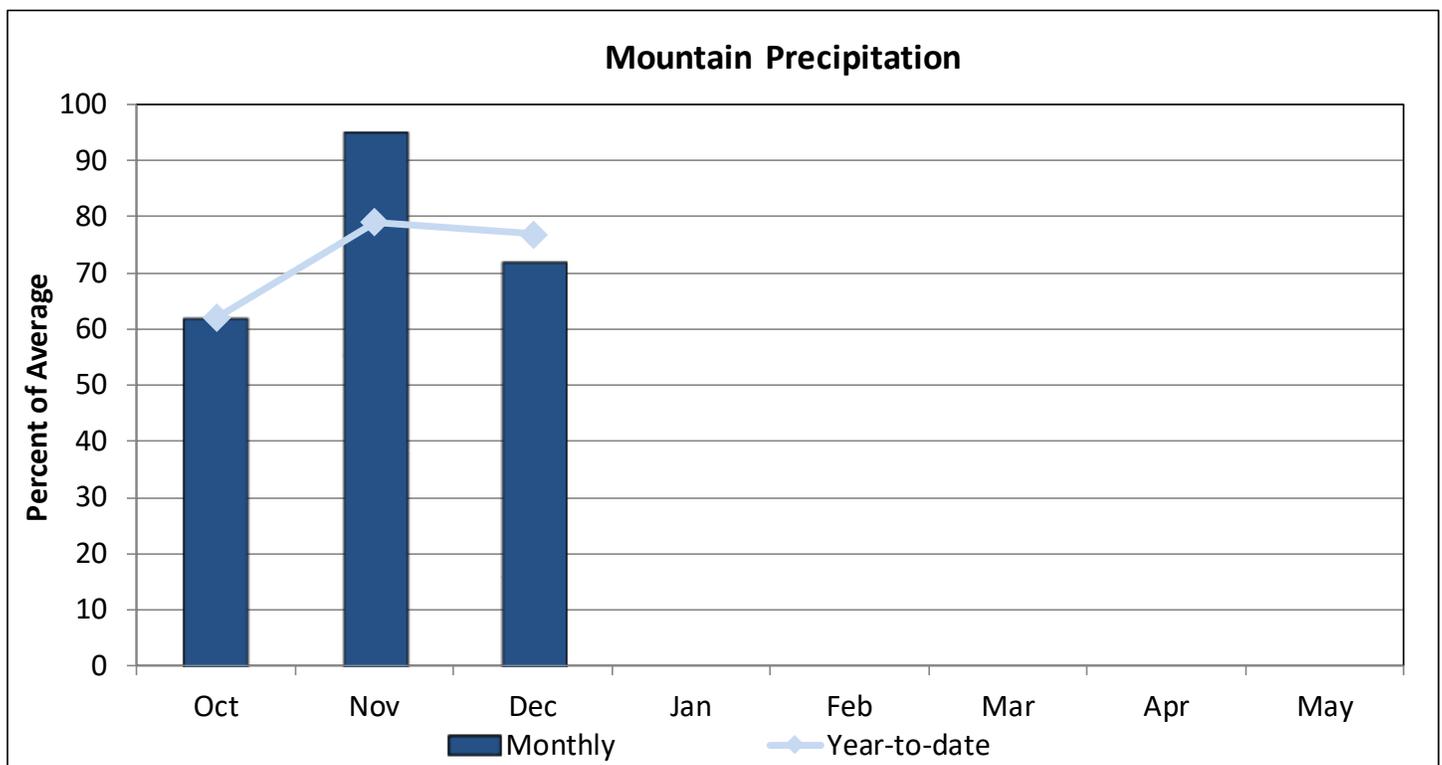
# SOUTH PLATTE RIVER BASIN

January 1, 2021

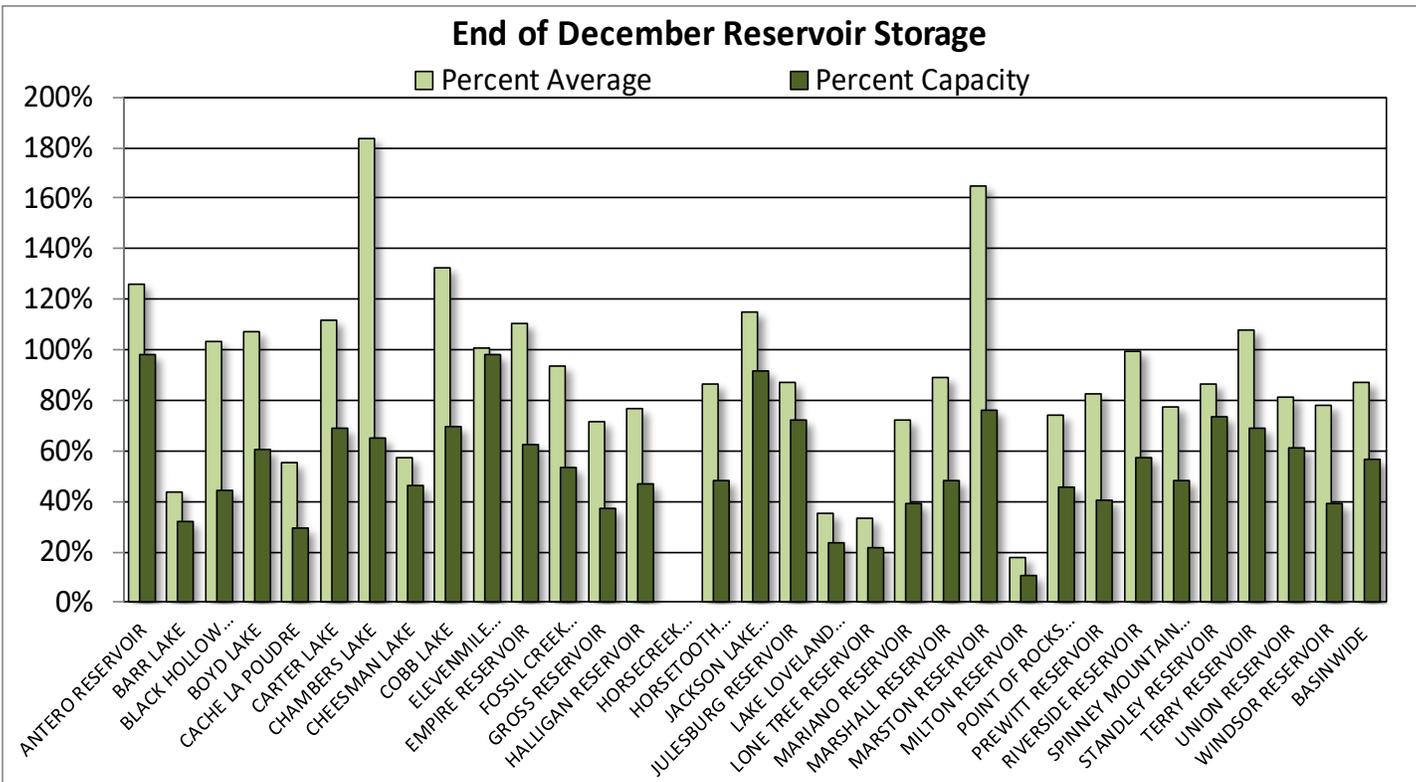
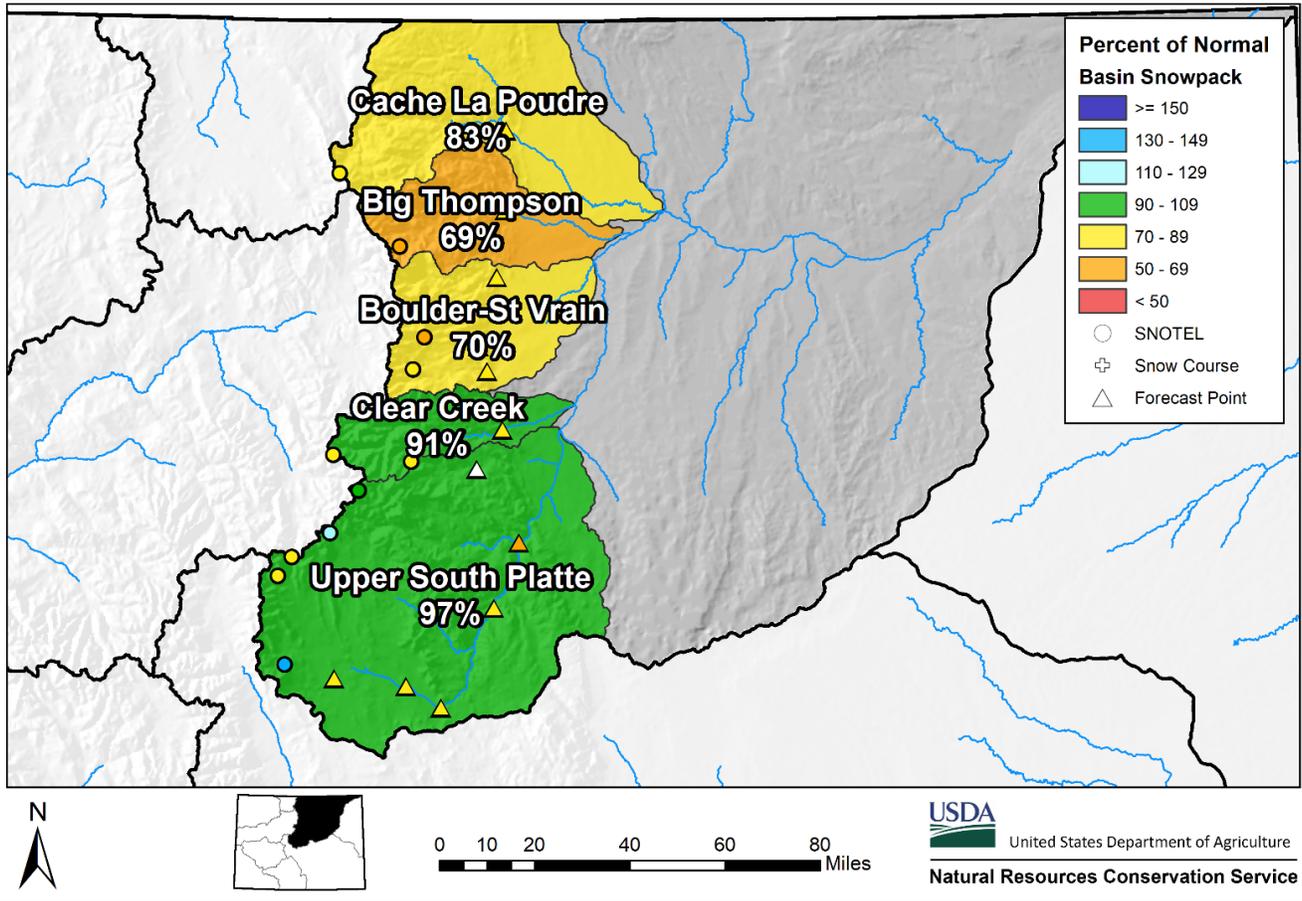
Snowpack in the South Platte river basin is below normal at 82% of the median. Precipitation for December was 72% of average which brings water year-to-date precipitation to 77%. Reservoir storage at the end of December was 87% of average compared to 120% last year. Current streamflow forecasts range from 67% of average for South Platte River at South Platte to 83% of average for the inflow to Antero Reservoir.



\*SWE values calculated using daily SNOTEL data only



## South Platte River Basin Snowpack and Streamflow Forecasts January 1, 2021



## Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year % Median
Big Thompson	3	69	120
Boulder Creek	3	67	134
Cache La Poudre	2	83	101
Clear Creek	2	91	110
Saint Vrain	1	95	152
Upper South Platte	6	97	141
<b>Basin-Wide Total</b>	<b>17</b>	<b>82</b>	<b>123</b>

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

### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ANTERO RESERVOIR	19.5	20.1	15.5	19.9
BARR LAKE	9.7	21.2	22.3	30.1
BLACK HOLLOW RESERVOIR	2.9	3.8	2.8	6.5
BOYD LAKE	29.3	34.3	27.4	48.4
CACHE LA POUFRE	3.0	6.3	5.4	10.1
CARTER LAKE	75.5	68.5	67.5	108.9
CHAMBERS LAKE	5.7	4.7	3.1	8.8
CHEESMAN LAKE	36.8	60.7	64.3	79.0
COBB LAKE	15.5	18.2	11.7	22.3
ELEVENMILE CANYON RESERVOIR	96.3	99.5	95.9	98.0
EMPIRE RESERVOIR	22.7	18.2	20.6	36.5
FOSSIL CREEK RESERVOIR	5.9	9.3	6.3	11.1
GROSS RESERVOIR	11.0	22.8	15.4	29.8
HALLIGAN RESERVOIR	3.0	4.4	3.9	6.4
HORSECREEK RESERVOIR	0.0	0.0	8.5	14.7
HORSETOOTH RESERVOIR	72.0	133.1	83.5	149.7
JACKSON LAKE RESERVOIR	24.0	23.1	20.9	26.1
JULESBURG RESERVOIR	14.8	17.1	17.0	20.5
LAKE LOVELAND RESERVOIR	2.4	2.8	6.8	10.3
LONE TREE RESERVOIR	1.9	5.5	5.7	8.7
MARIANO RESERVOIR	2.1	0.2	2.9	5.4
MARSHALL RESERVOIR	4.8	5.4	5.4	10.0
MARSTON RESERVOIR	9.9	9.4	6.0	13.0
MILTON RESERVOIR	2.5	18.2	14.3	23.5
POINT OF ROCKS RESERVOIR	32.1	61.9	43.3	70.6
PREWITT RESERVOIR	11.5	20.8	13.9	28.2
RIVERSIDE RESERVOIR	31.9	44.2	32.1	55.8
SPINNEY MOUNTAIN RESERVOIR	23.6	38.6	30.5	49.0
STANDLEY RESERVOIR	31.0	39.2	35.8	42.0
TERRY RESERVOIR	5.5	5.2	5.1	8.0
UNION RESERVOIR	7.9	8.5	9.8	13.0
WINDSOR RESERVOIR	6.0	10.1	7.7	15.2
<b>BASINWIDE</b>	<b>620.7</b>	<b>835.3</b>	<b>711.3</b>	<b>1079.5</b>
Number of Reservoirs	32	32	32	32

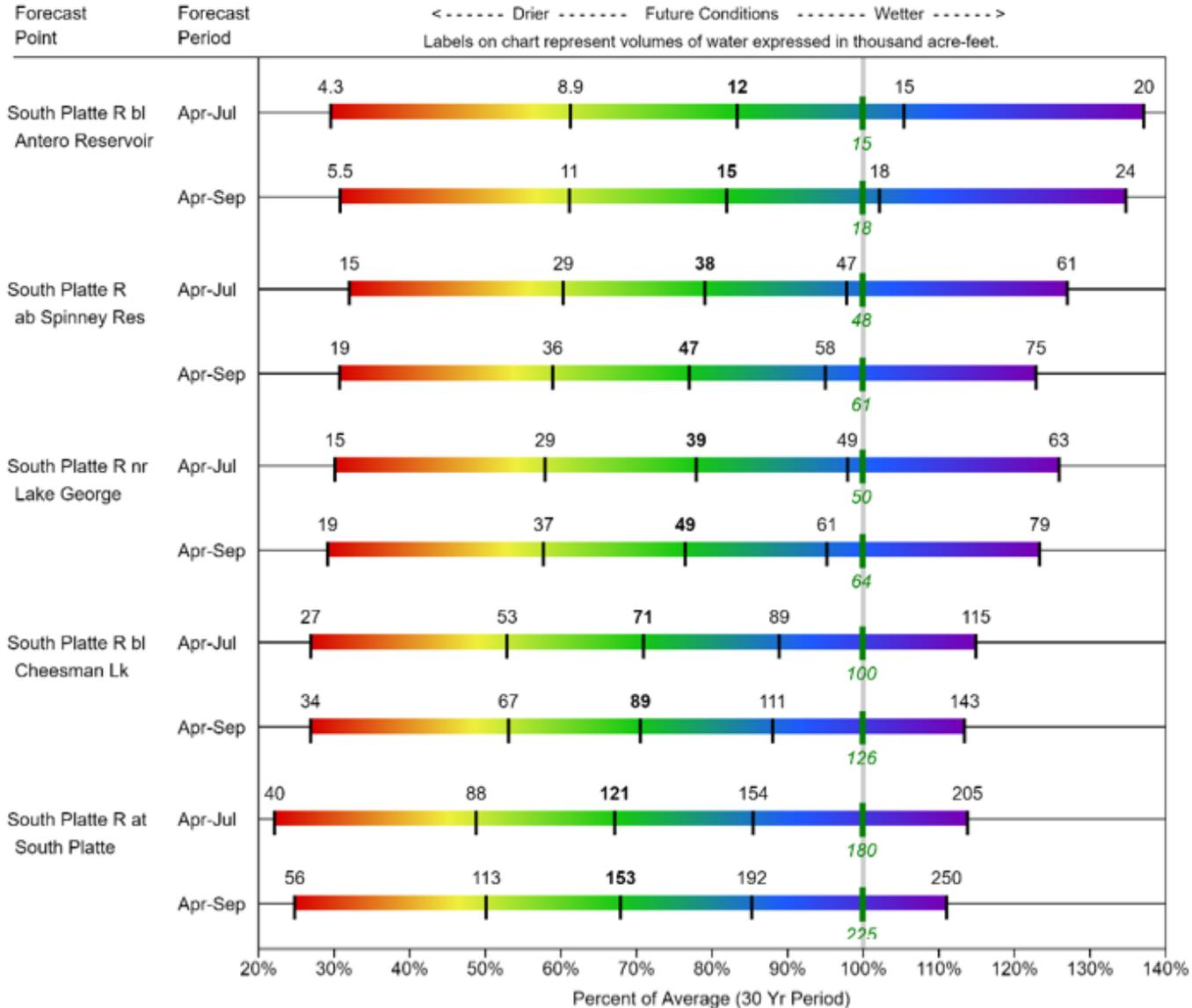
# SOUTH PLATTE RIVER BASIN

## Water Supply Forecasts

January 1, 2021

### Forecast Exceedance Probabilities

<----- Drier ----- Future Conditions ----- Wetter ----->  
 Labels on chart represent volumes of water expressed in thousand acre-feet.



### Legend



When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum  
Streamflow KAF (Year)

1981-2010 Normal  
Streamflow KAF

Observed Streamflow KAF

Period of Record Maximum  
Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

### SOUTH PLATTE RIVER BASIN

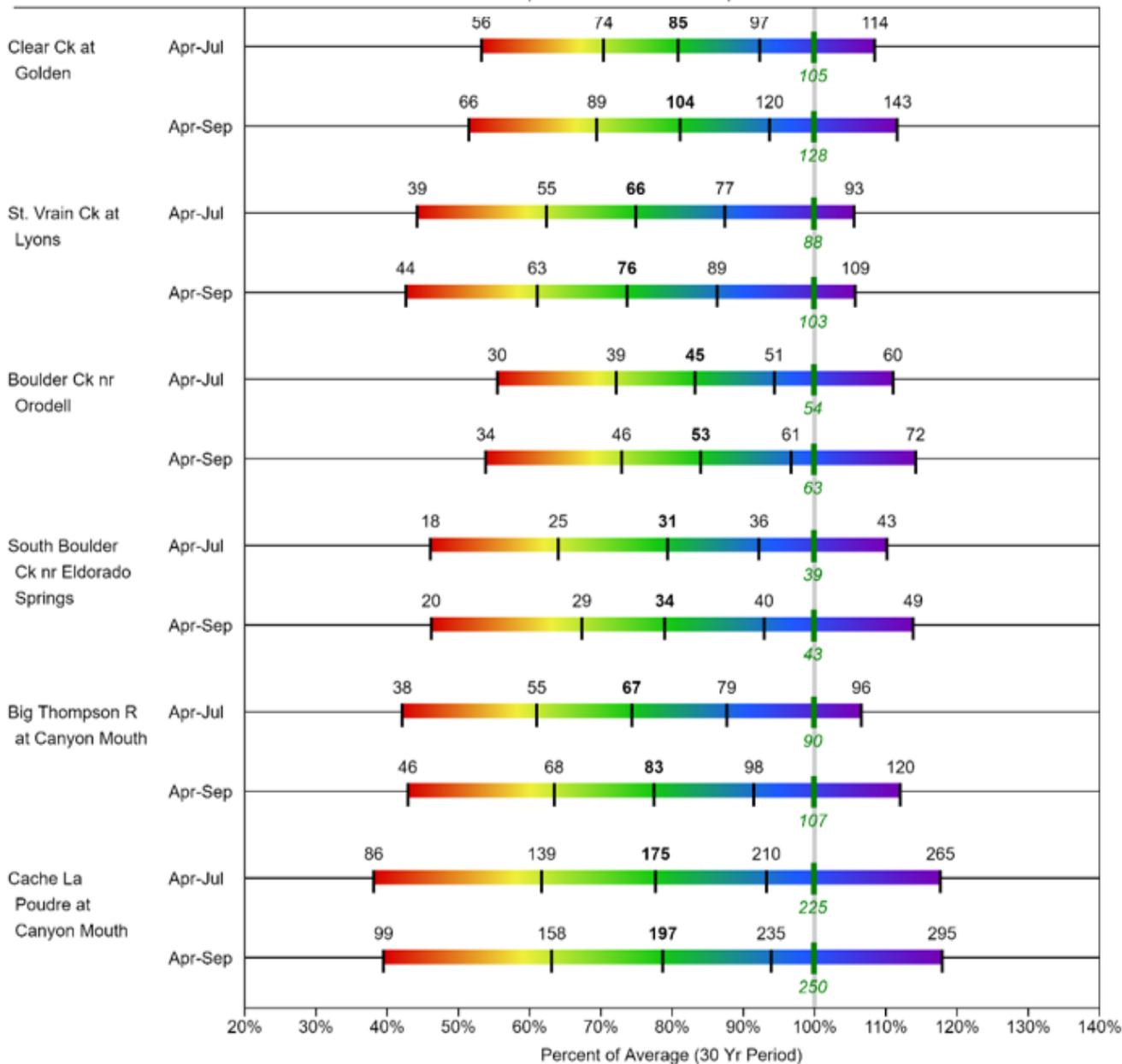
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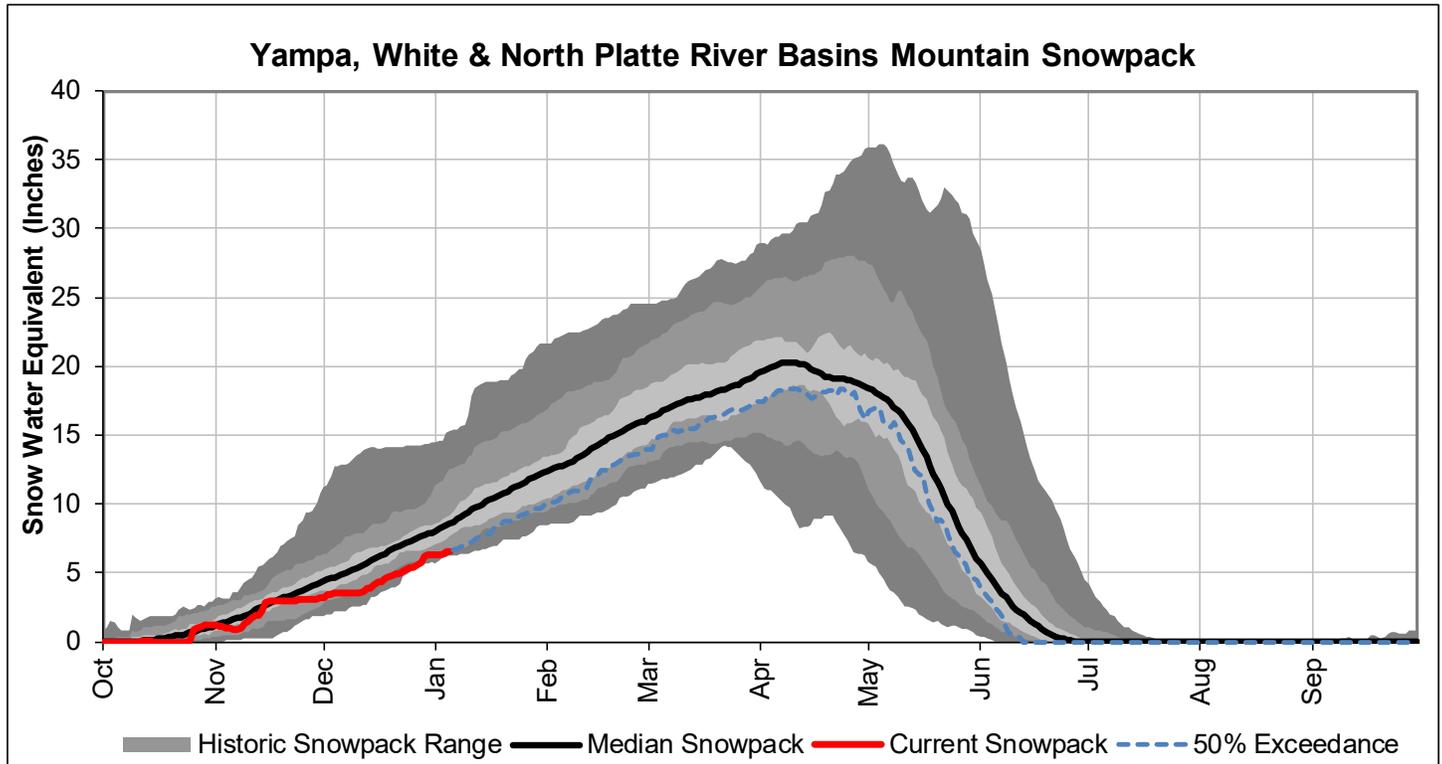
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Streamflow KAF (Year)

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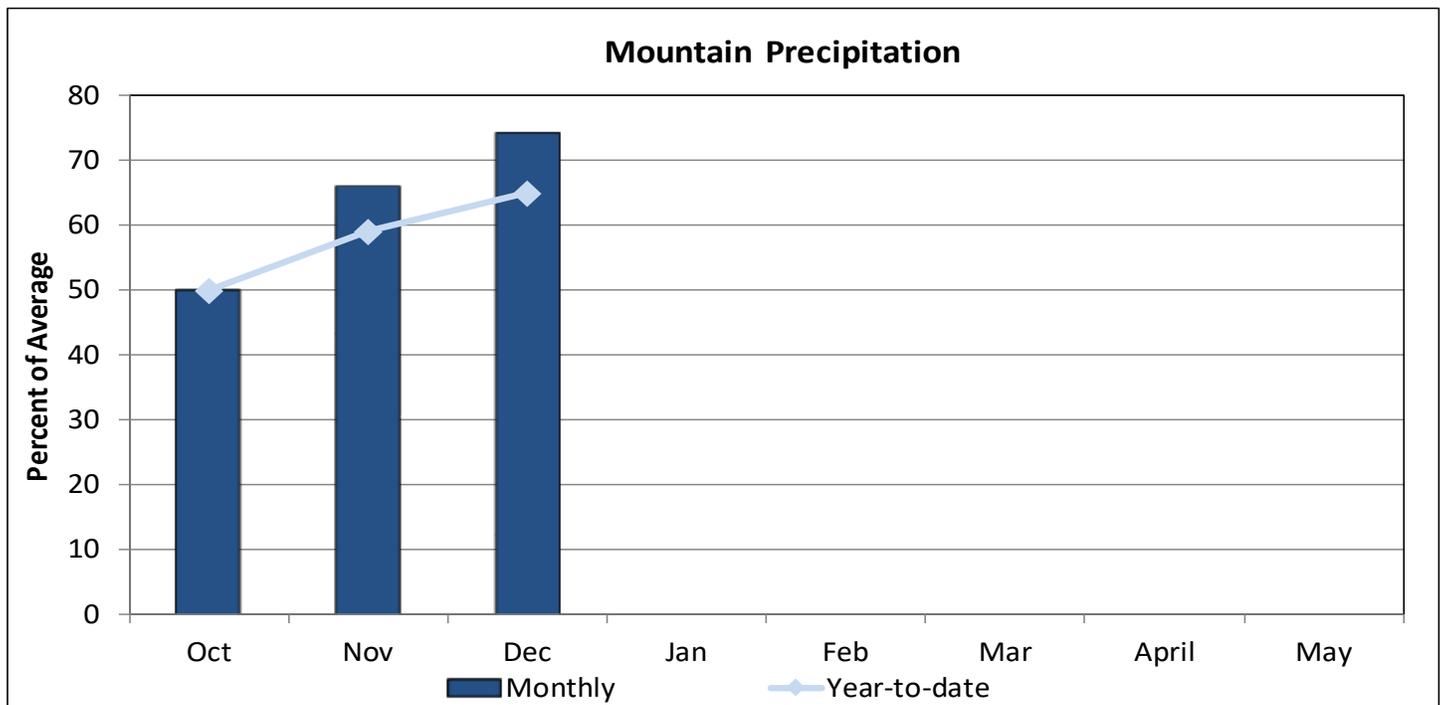
# YAMPA, WHITE, NORTH PLATTE, AND LARAMIE RIVER BASINS

January 1, 2021

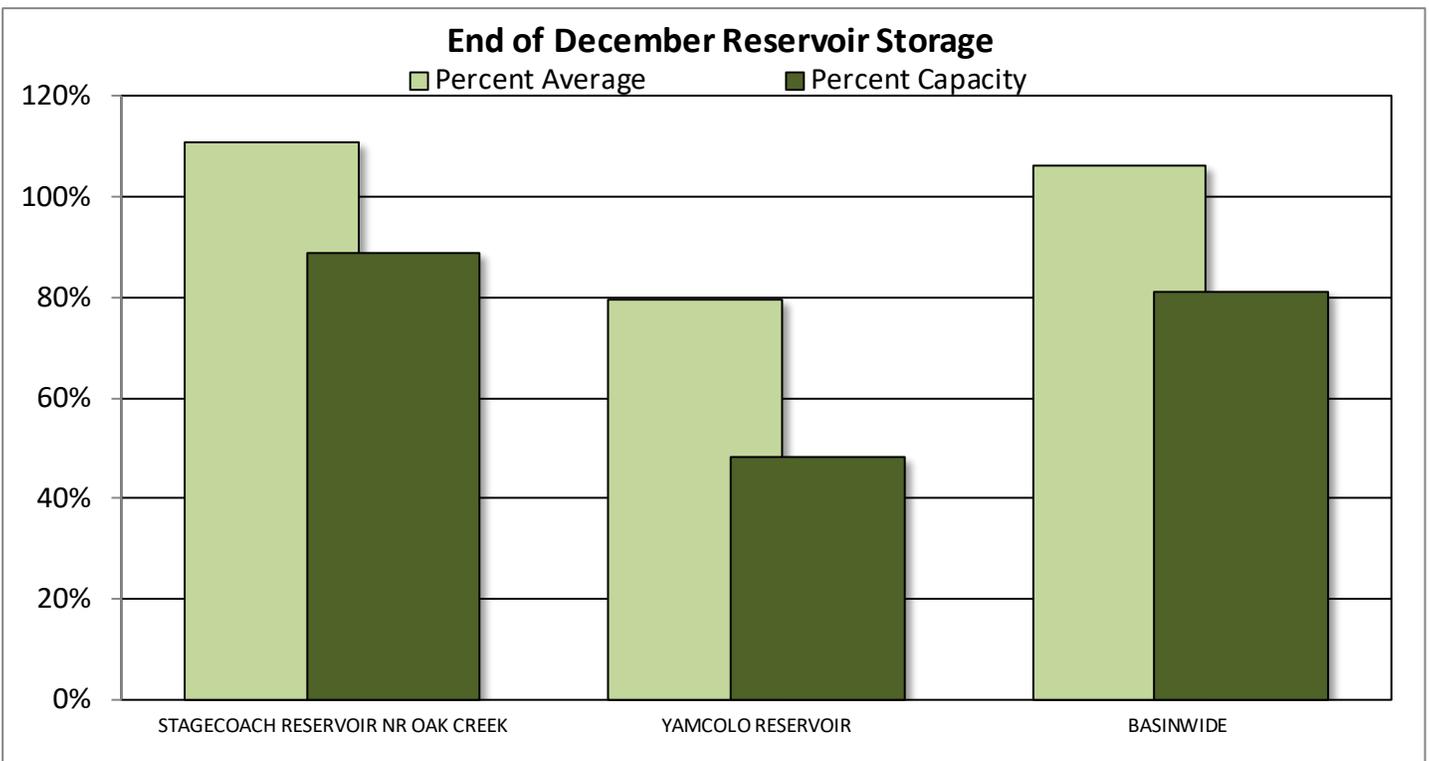
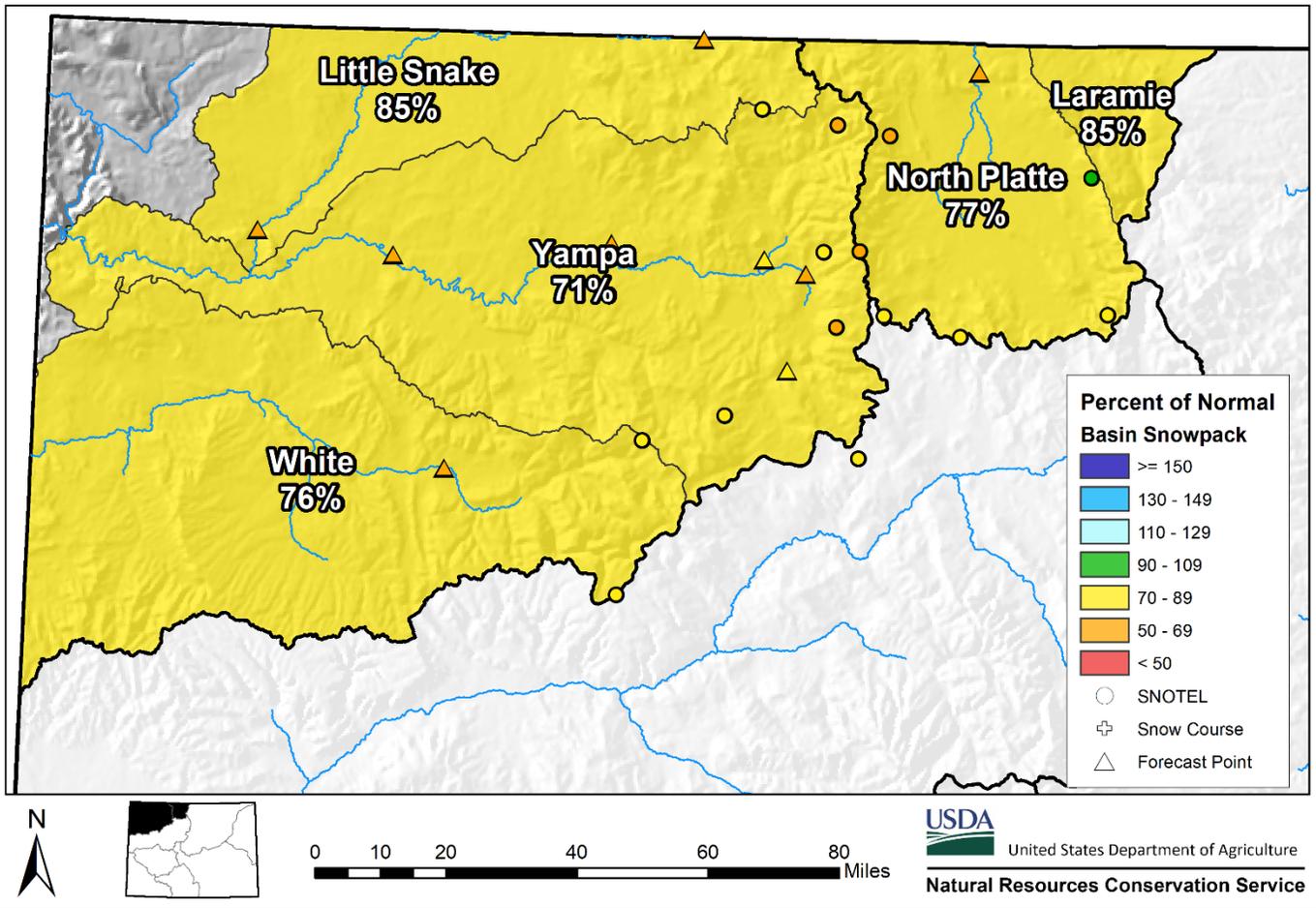
Snowpack in the Yampa, White & North Platte basins is below normal at 78% of the median. Precipitation for December was 74% of average and water year-to-date precipitation is 65% of average. Reservoir storage at the end of December was 106% of average compared to 124% last year. Current streamflow forecasts range from 62% of average for Little Snake River near Lily to 77% of average for the Elk River near Milner.



\*SWE values calculated using daily SNOTEL data only



# Yampa, White, and North Platte River Basins Snowpack and Streamflow Forecasts January 1, 2021



### Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year % Median
Laramie	2	85	115
North Platte	8	77	111
Total Laramie & North Platte	10	79	112
Elk	2	73	109
Yampa	9	71	111
White	3	76	87
Total Yampa & White	11	72	104
Little Snake	7	85	128
<b>Basin-Wide Total</b>	<b>25</b>	<b>78</b>	<b>112</b>

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

### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
STAGECOACH RESERVOIR NR OAK CREEK	32.5	35.2	29.3	36.5
YAMCOLO RESERVOIR	4.2	7.7	5.3	8.7
<b>BASINWIDE</b>	<b>36.7</b>	<b>42.9</b>	<b>34.6</b>	<b>45.2</b>
Number of Reservoirs	2	2	2	2

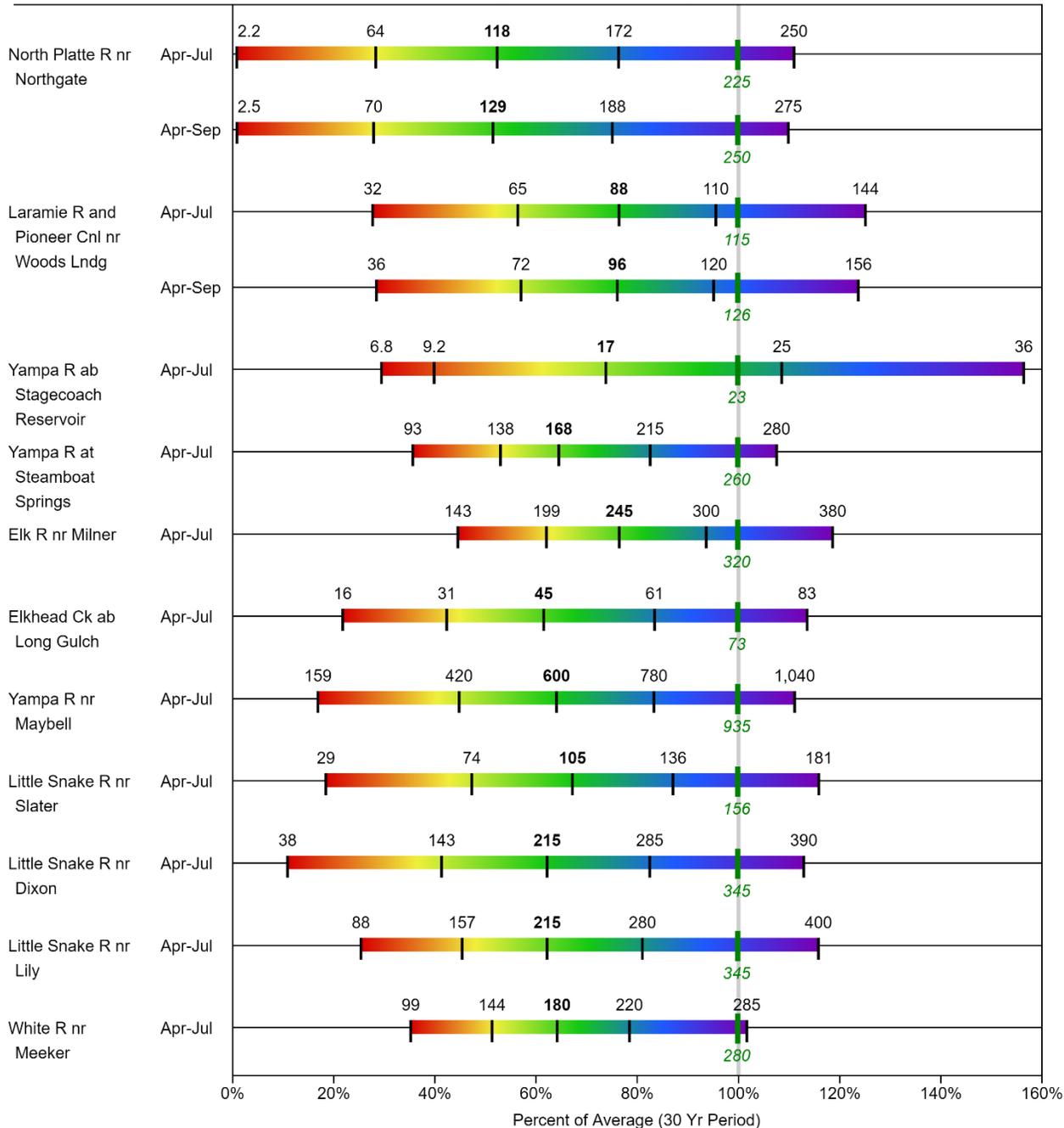
# YAMPA-WHITE-NORTH PLATTE RIVER BASINS

## Water Supply Forecasts

January 1, 2021

### Forecast Exceedance Probabilities

Forecast Point      Forecast Period      <----- Drier ----- Future Conditions ----- Wetter ----->  
 Labels on chart represent volumes of water expressed in thousand acre-feet.



### Legend



When selected, the following historic streamflow values and statistics will be shown.

*Period of Record Minimum Streamflow KAF (Year)*

*1981-2010 Normal Streamflow KAF*

*Observed Streamflow KAF*

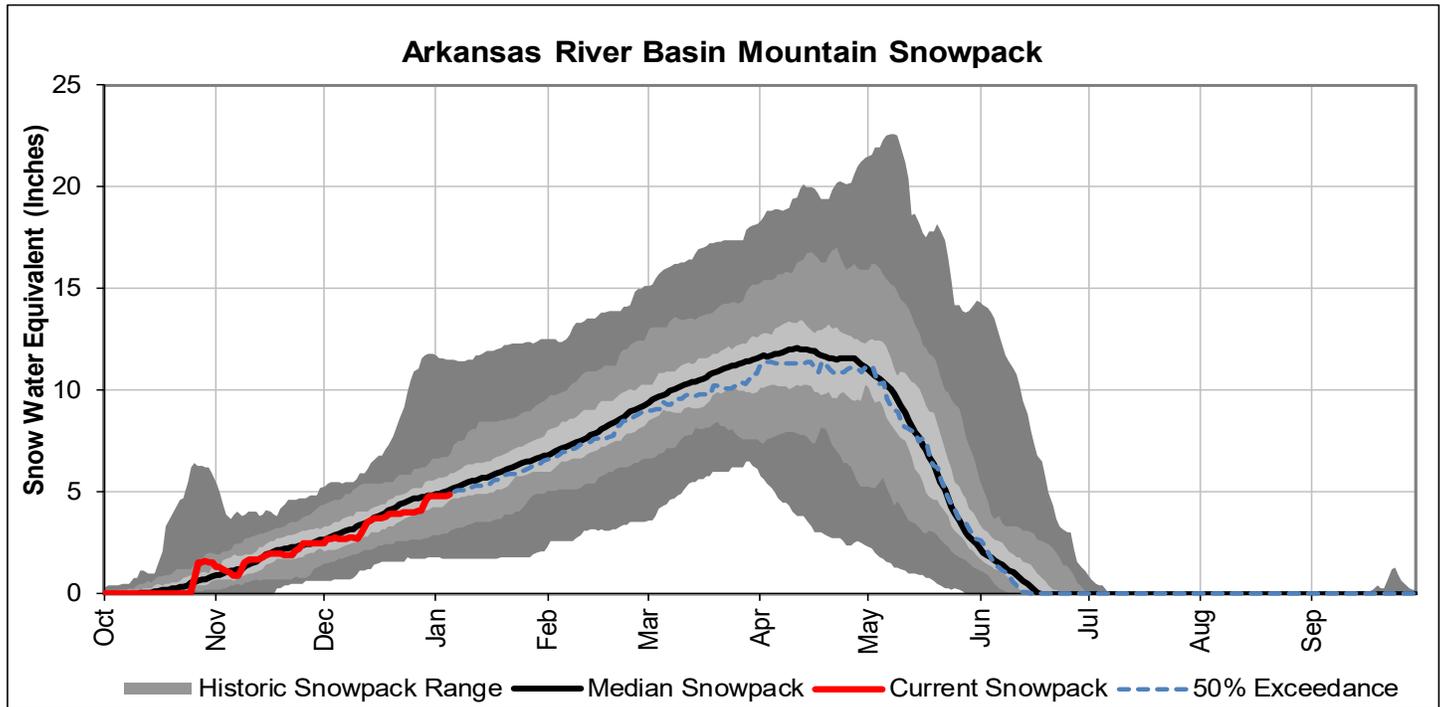
*Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

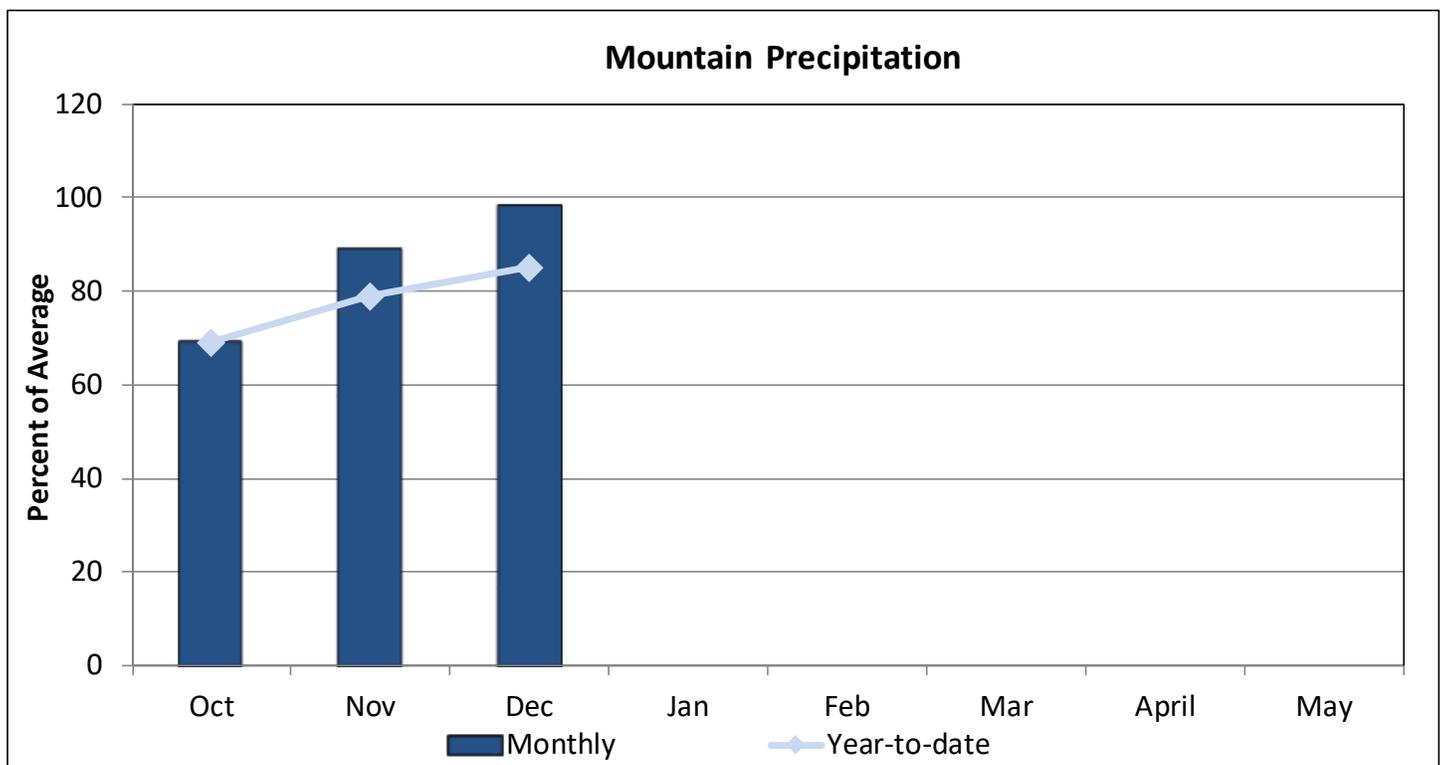
# ARKANSAS RIVER BASIN

February 1, 2021

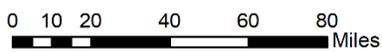
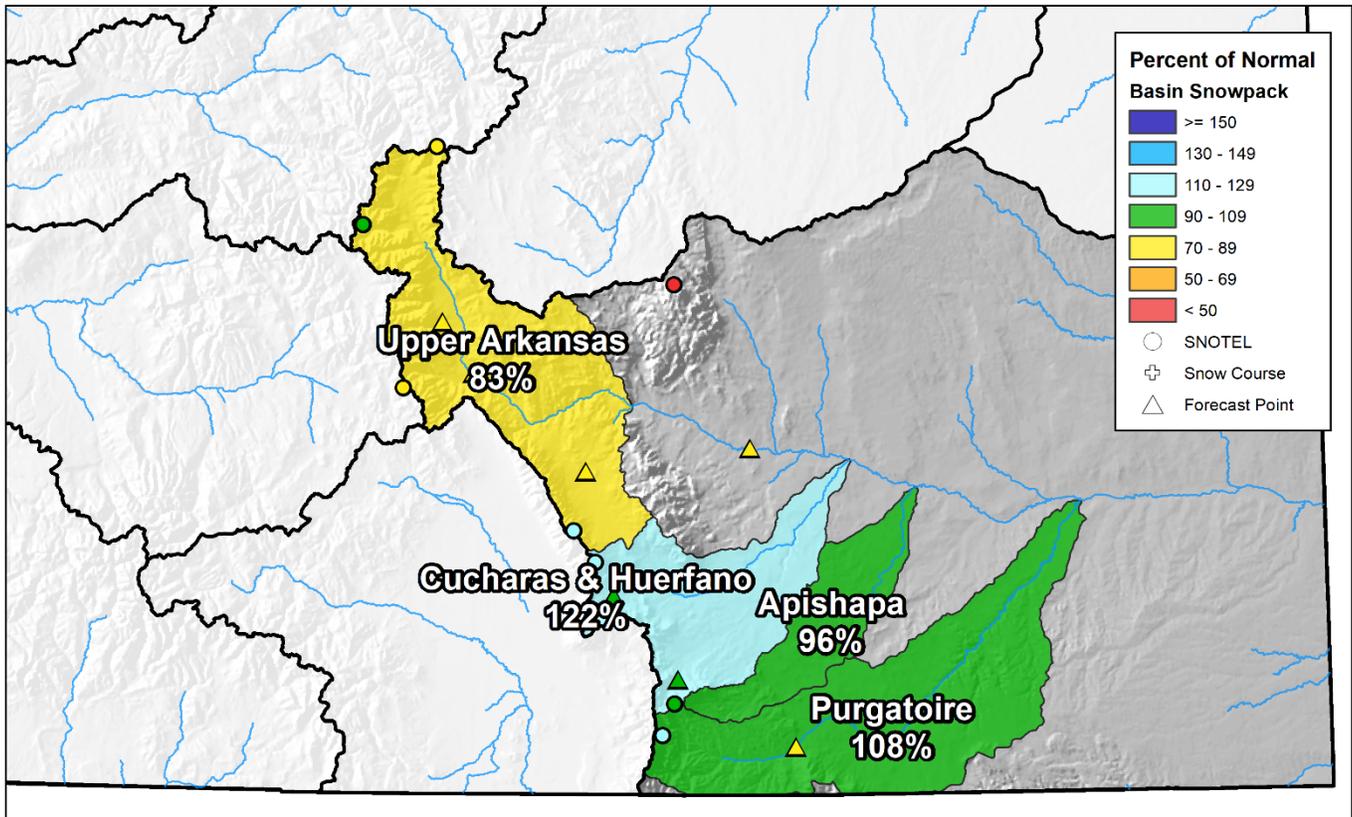
Snowpack in the Arkansas river basin is near normal at 99% of the median. Precipitation for December was 98% of average which brings water year-to-date precipitation to 85% of average. Reservoir storage at the end of December was 70% of average compared to 98% last year. Current streamflow forecasts range from 79% of average for Grape Creek near Westcliffe to 98% of average for the Cucharas River near La Veta.



\*SWE values calculated using daily SNOTEL data only



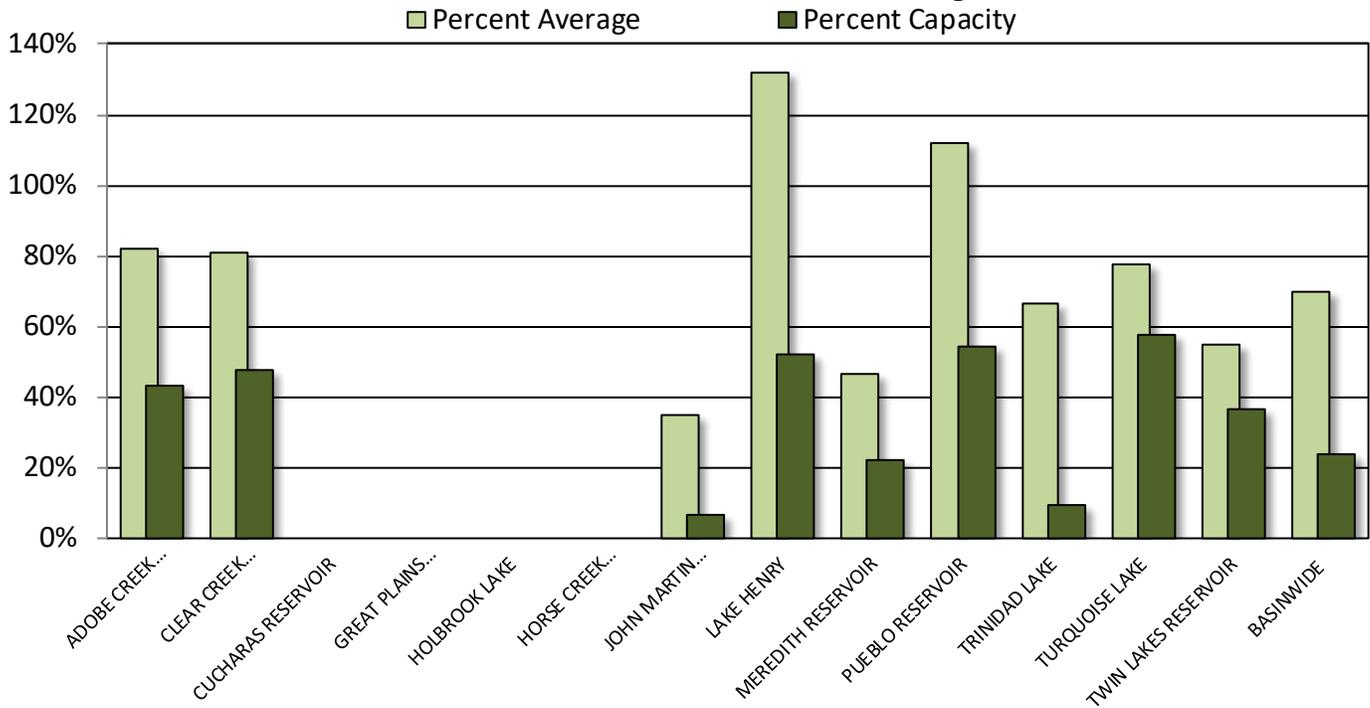
## Arkansas River Basin Snowpack and Streamflow Forecasts January 1, 2021



United States Department of Agriculture

Natural Resources Conservation Service

### End of December Reservoir Storage



### Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year % Median
Upper Arkansas	3	83	133
Cucharas & Huerfano	3	122	122
Purgatoire	2	108	127
<b>Basin-Wide Total</b>	<b>8</b>	<b>99</b>	<b>128</b>

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

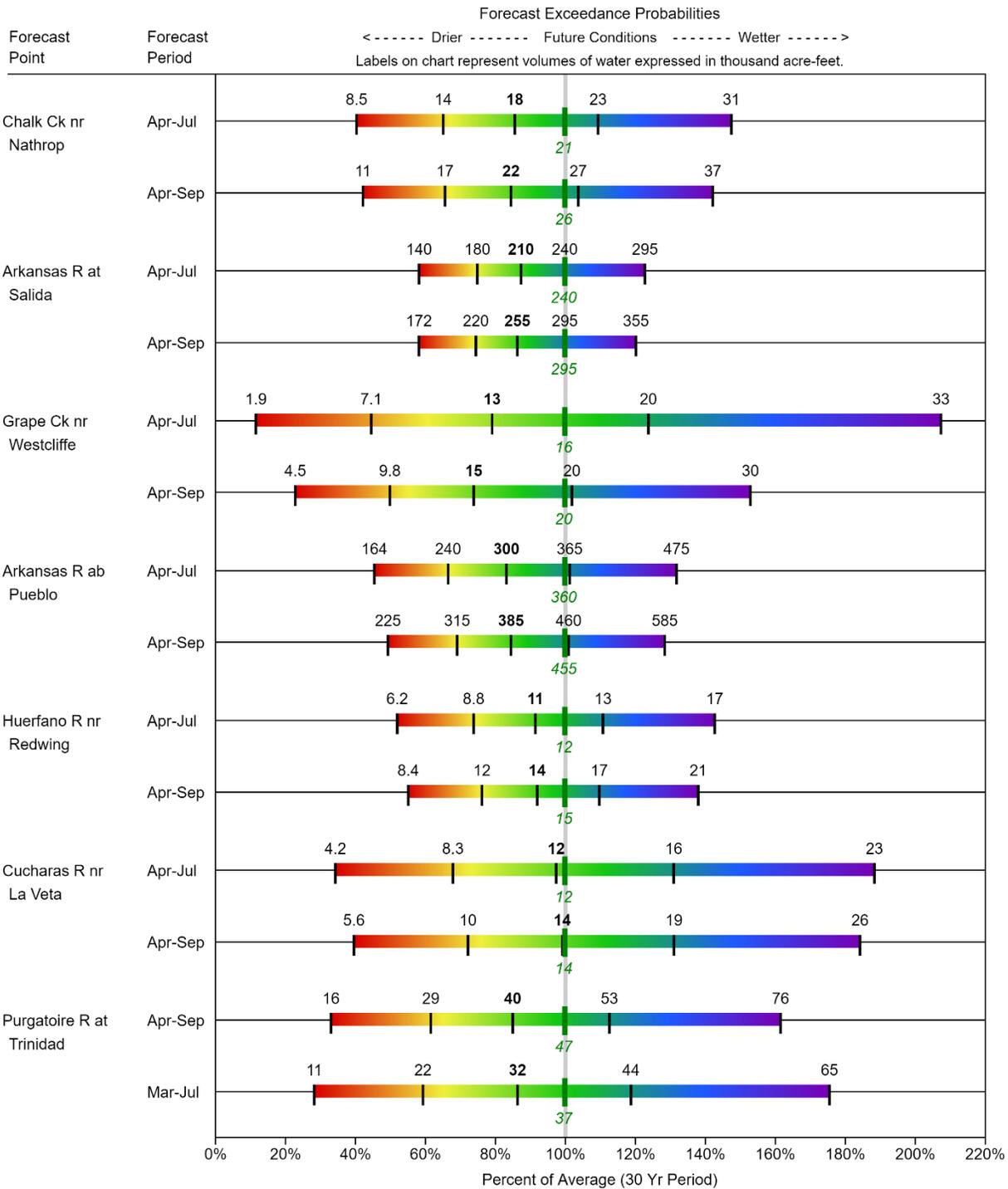
### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ADOBE CREEK RESERVOIR	26.9	23.0	32.7	62.0
CLEAR CREEK RESERVOIR	5.4	7.2	6.7	11.4
CUCHARAS RESERVOIR				40.0
GREAT PLAINS RESERVOIR				150.0
HOLBROOK LAKE	0.0	4.1	2.5	7.0
HORSE CREEK RESERVOIR	0.0	3.5	9.4	27.0
JOHN MARTIN RESERVOIR	42.6	90.1	122.8	616.0
LAKE HENRY	4.9	4.1	3.7	9.4
MEREDITH RESERVOIR	9.2	42.1	19.7	42.0
PUEBLO RESERVOIR	191.6	223.0	170.8	354.0
TRINIDAD LAKE	16.2	21.9	24.4	167.0
TURQUOISE LAKE	72.9	97.2	94.1	127.0
TWIN LAKES RESERVOIR	31.3	45.8	57.0	86.0
<b>BASINWIDE</b>	<b>401.1</b>	<b>562.1</b>	<b>543.8</b>	<b>1698.8</b>
Number of Reservoirs	11	11	11	13

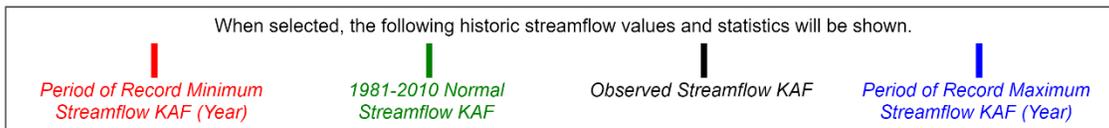
# ARKANSAS RIVER BASIN

## Water Supply Forecasts

January 1, 2021



### Legend

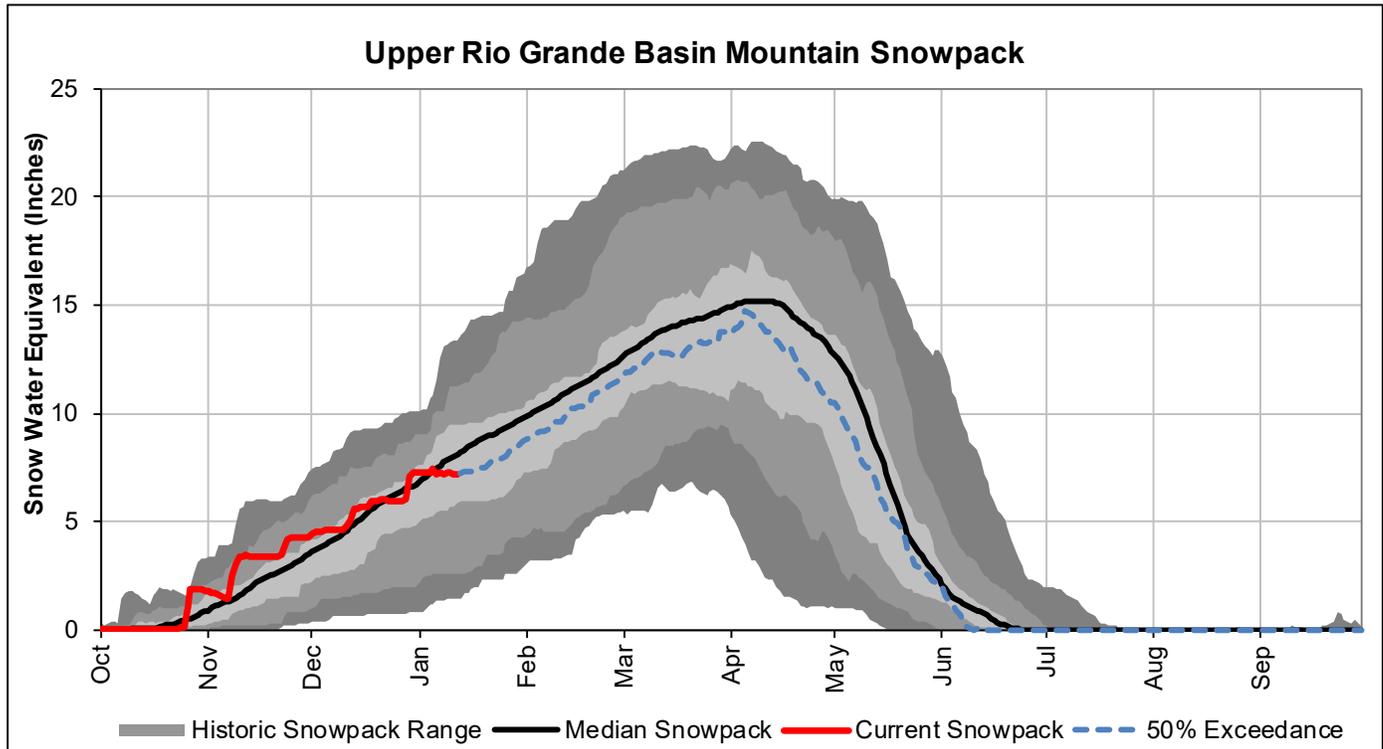


Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

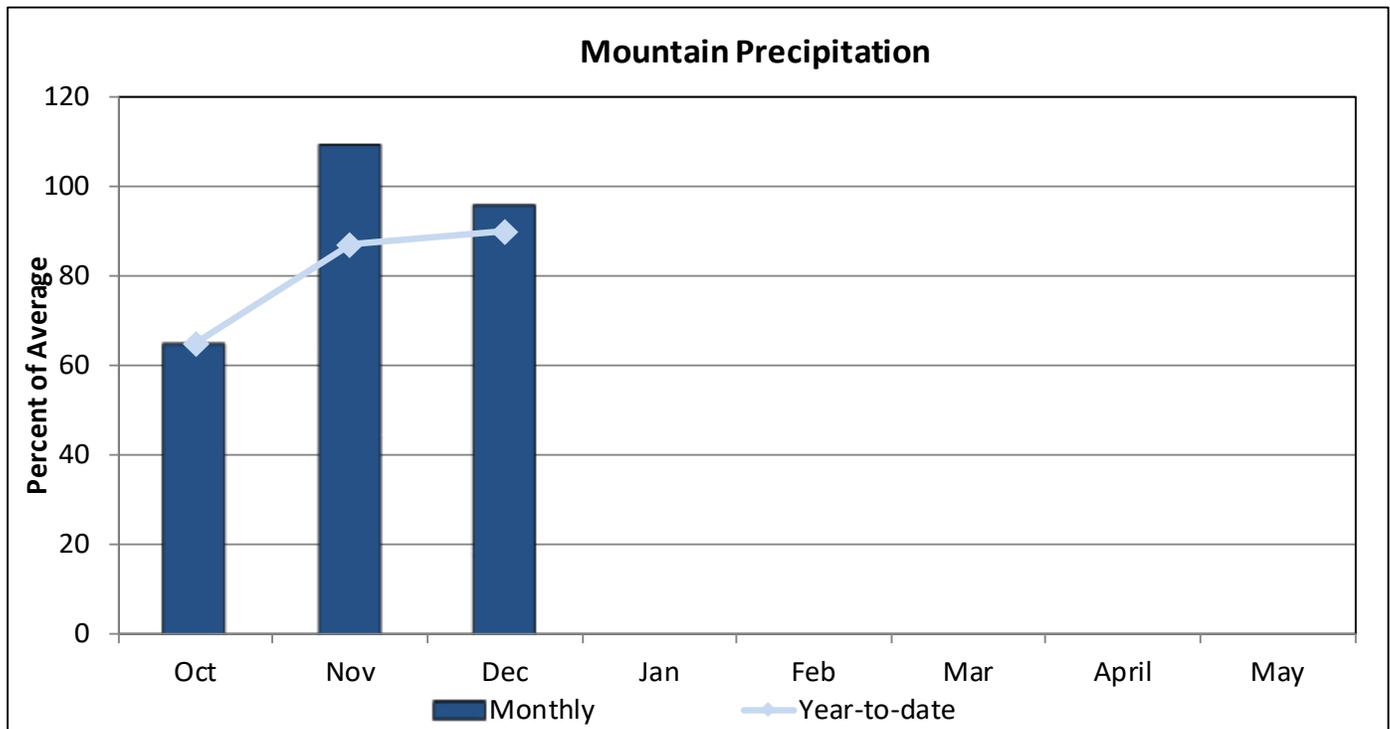
# UPPER RIO GRANDE RIVER BASIN

February 1, 2021

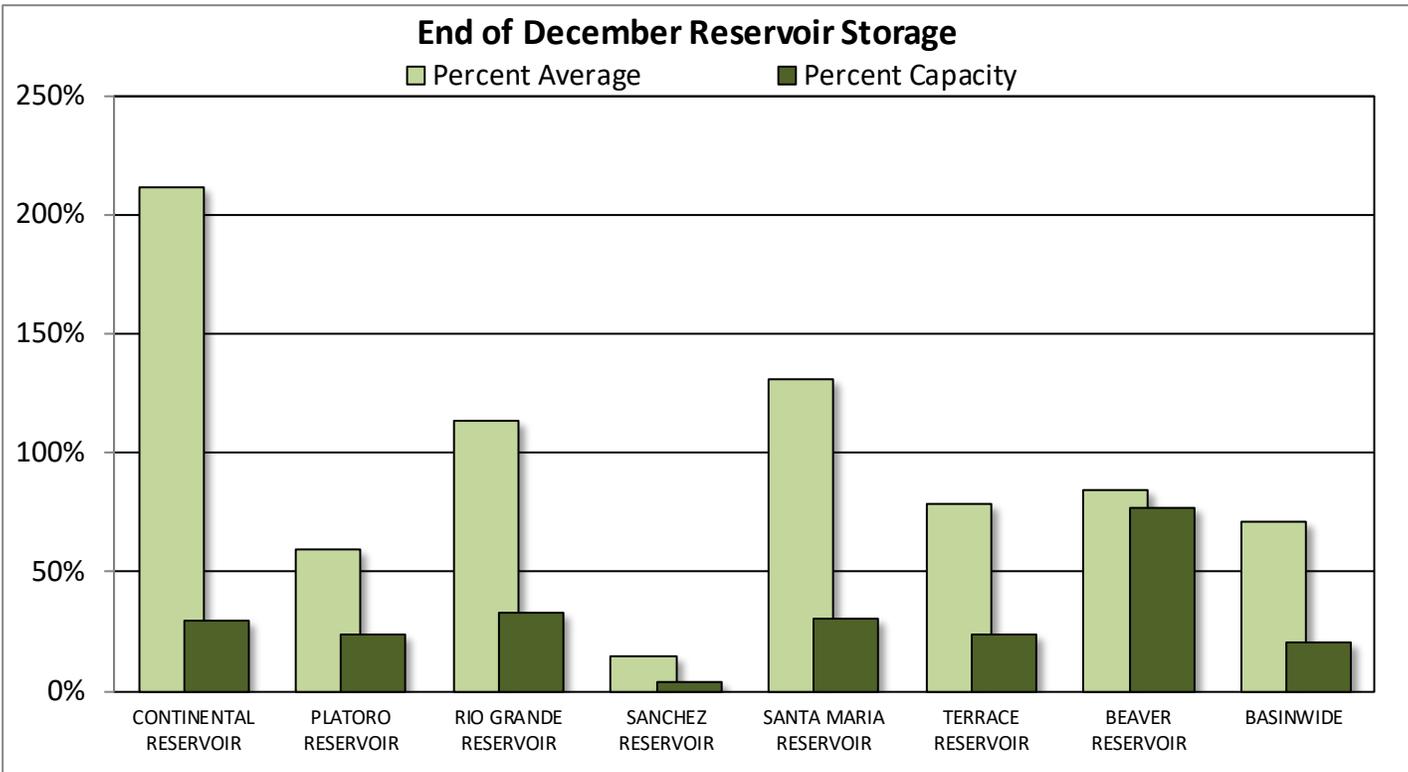
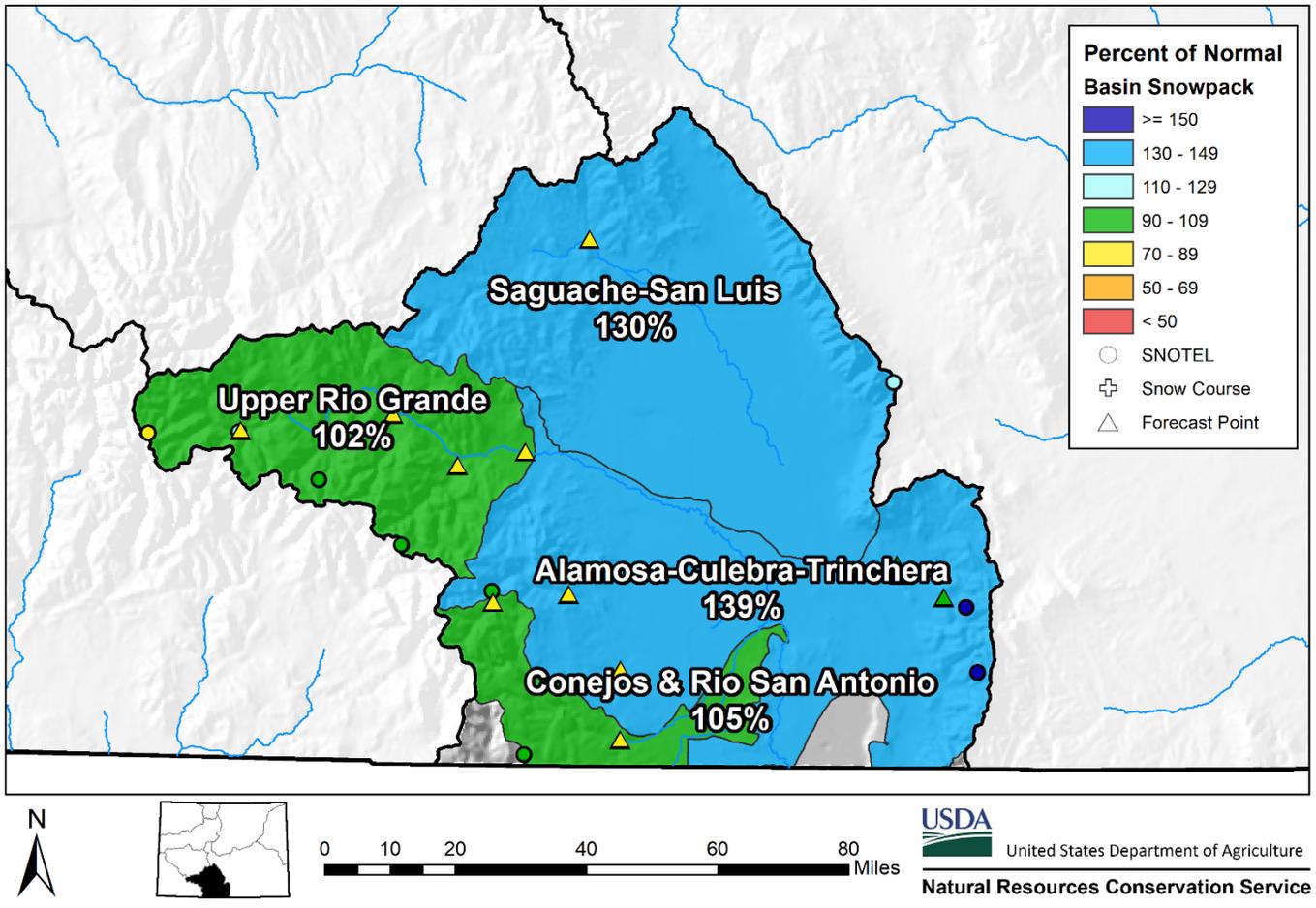
Snowpack in the Upper Rio Grande river basin is above normal at 114% of median. Precipitation for December was 96% of average which brings water year-to-date precipitation to 90% of average. Reservoir storage at the end of December was 71% of average compared to 82% last year. Current streamflow forecasts range from 58% of average for San Antonio River at Ortiz to 102% of average for Trinchera Creek above Turners Ranch.



\*SWE values calculated using daily SNOTEL data only



## Upper Rio Grande River Basin Snowpack and Streamflow Forecasts January 1, 2021



### Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year %	
			Median	
Alamosa Creek	1	109	103	
Conejos & Rio San Antonio	2	105	123	
Culebra & Trinchera Creek	3	152	135	
Upper Rio Grande	5	102	125	
<b>Basin-Wide Total</b>	<b>11</b>	<b>114</b>	<b>129</b>	

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

### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CONTINENTAL RESERVOIR	8.0	15.0	3.8	27.0
PLATORO RESERVOIR	14.2	18.6	24.0	60.0
RIO GRANDE RESERVOIR	16.8	0.0	14.8	51.0
SANCHEZ RESERVOIR	4.0	8.0	27.5	103.0
SANTA MARIA RESERVOIR	13.6	21.5	10.4	45.0
TERRACE RESERVOIR	4.3	7.1	5.5	18.0
BEAVER RESERVOIR	3.5	3.8	4.1	4.5
<b>BASINWIDE</b>	<b>64.4</b>	<b>74.0</b>	<b>90.1</b>	<b>308.5</b>
Number of Reservoirs	7	7	7	7

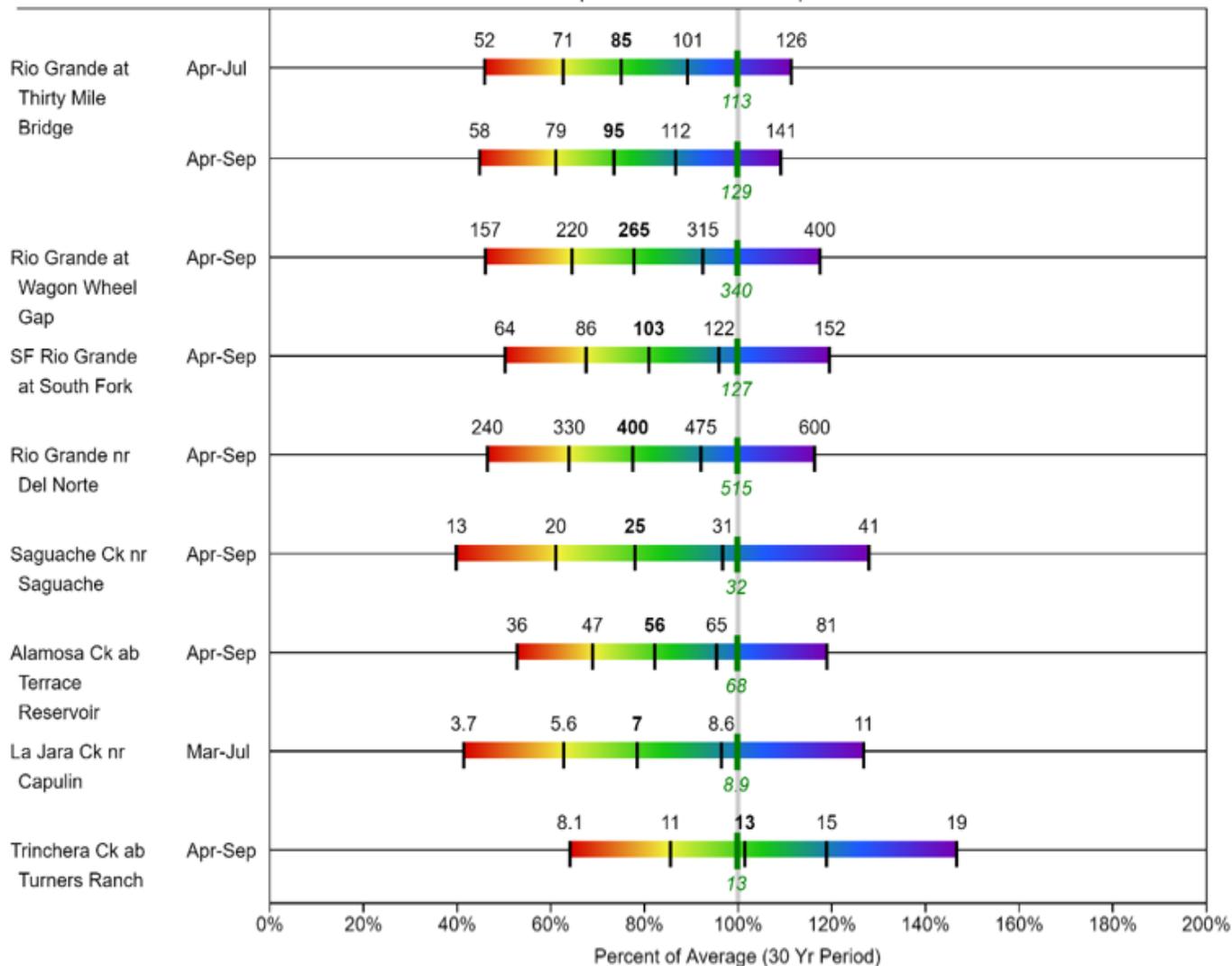
## UPPER RIO GRANDE BASIN

### Water Supply Forecasts

January 1, 2021

#### Forecast Exceedance Probabilities

<----- Drier ----- Future Conditions ----- Wetter ----->  
 Labels on chart represent volumes of water expressed in thousand acre-feet.



### Legend



When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum  
Streamflow KAF (Year)

1981-2010 Normal  
Streamflow KAF

Observed Streamflow KAF

Period of Record Maximum  
Streamflow KAF (Year)

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

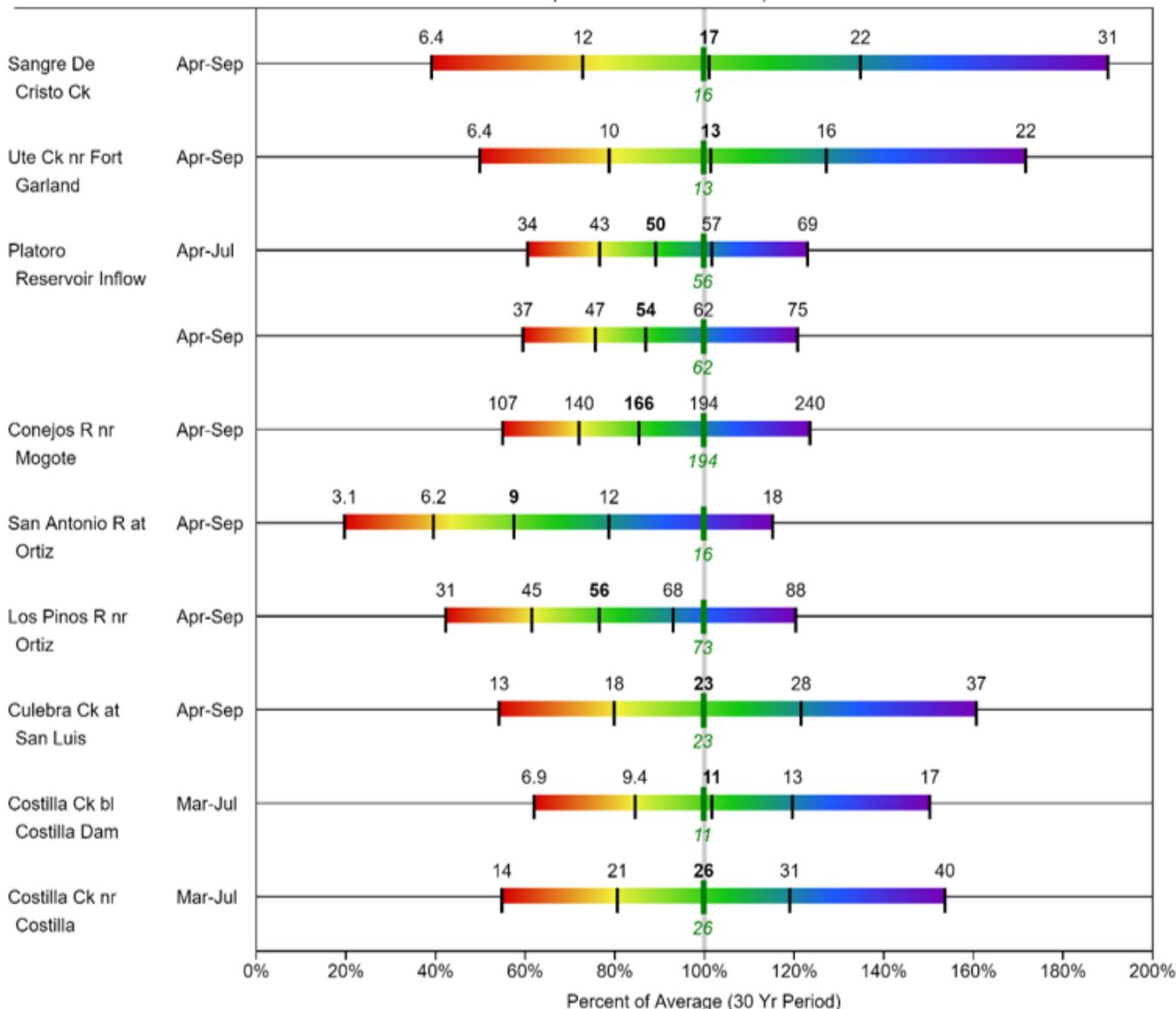
# UPPER RIO GRANDE BASIN

## Water Supply Forecasts

January 1, 2021

### Forecast Exceedance Probabilities

<----- Drier ----- Future Conditions ----- Wetter ----->  
 Labels on chart represent volumes of water expressed in thousand acre-feet.



### Legend



When selected, the following historic streamflow values and statistics will be shown.

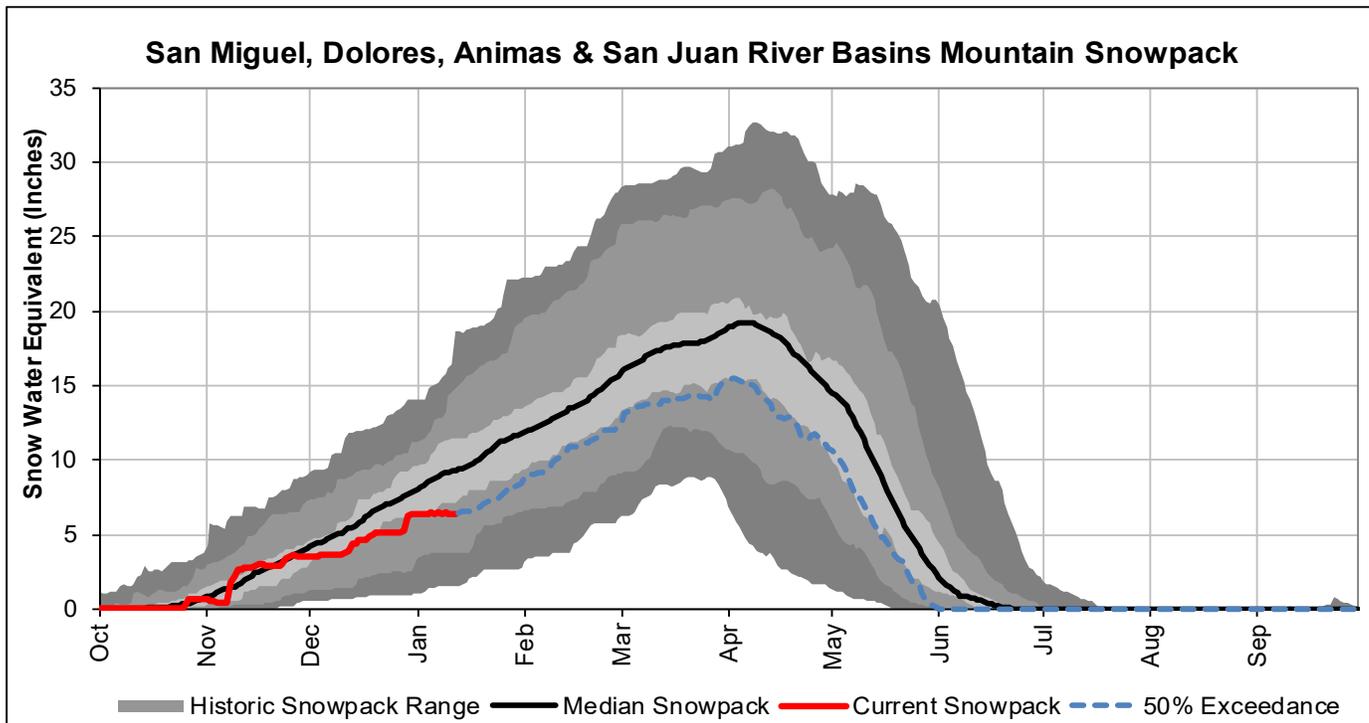
█ *Period of Record Minimum Streamflow KAF (Year)*     
 █ *1981-2010 Normal Streamflow KAF*     
 █ *Observed Streamflow KAF*     
 █ *Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

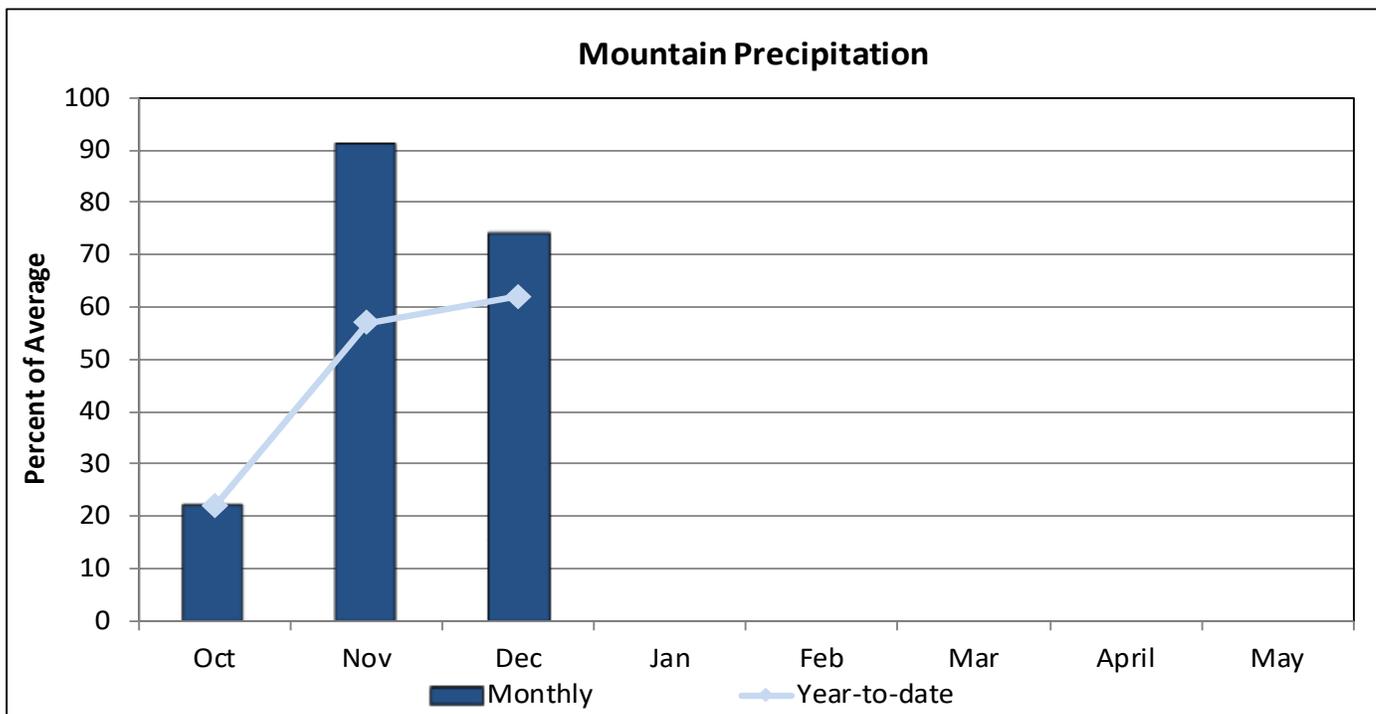
# SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

February 1, 2020

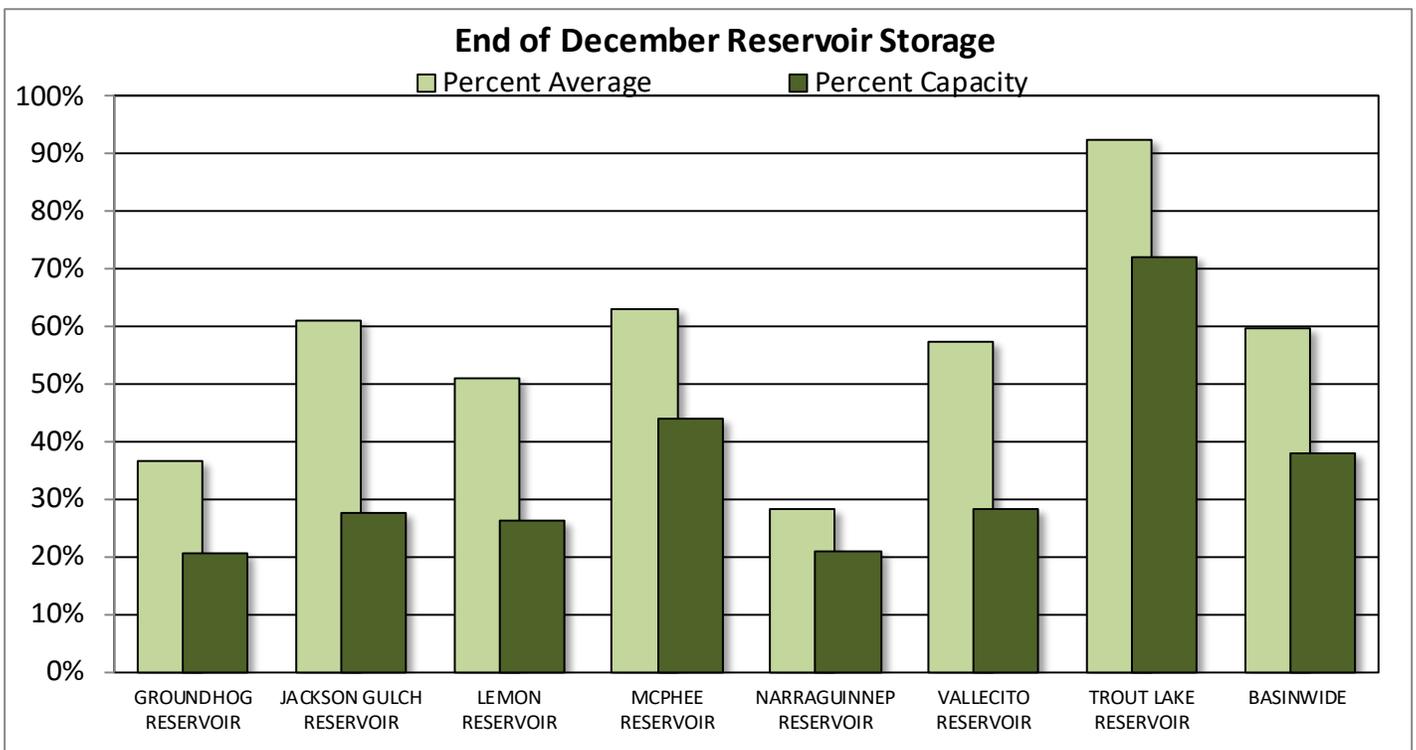
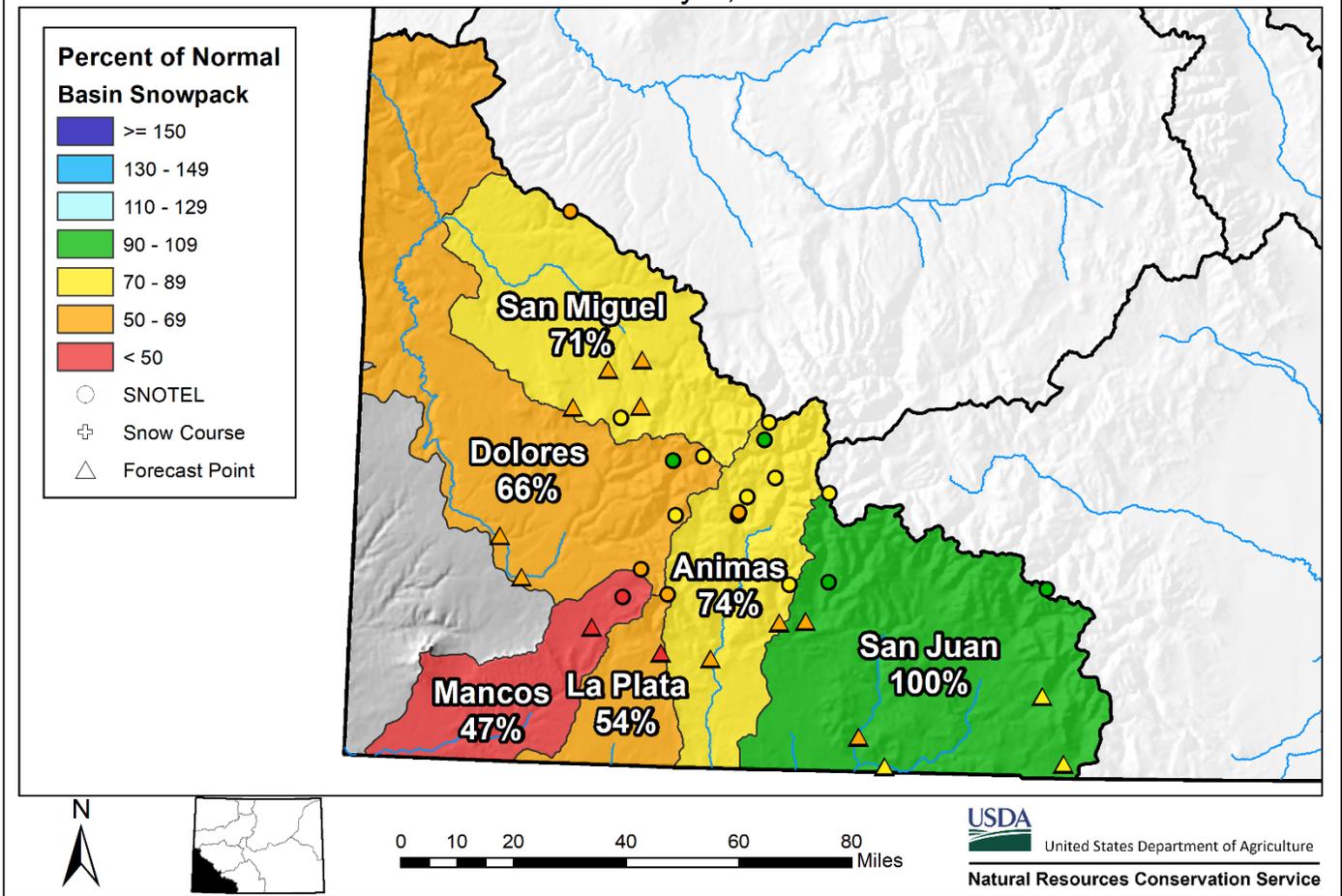
Snowpack in the combined southwest river basins is below normal at 78% of median. Precipitation for December was 74% of average which brings water year-to-date precipitation to 62% of average. Reservoir storage at the end of December was 60% of average compared to 107% last year. Current streamflow forecasts range from 45% of average for the Mancos River near Mancos to 80% of average for the Navajo River below Oso Diversion Dam near Chromo.



\*SWE values calculated using daily SNOTEL data only



## San Miguel, Dolores, Animas, and San Juan River Basins Snowpack and Streamflow Forecasts January 1, 2021



### Watershed Snowpack Analysis January 1st, 2021

Sub-Basin	# of Sites	% Median	Last Year %	
			Median	Median
Animas	9	74		129
Dolores	5	66		145
San Miguel	3	71		117
San Juan	3	100		125
<b>Basin-Wide Total</b>	19	78		129

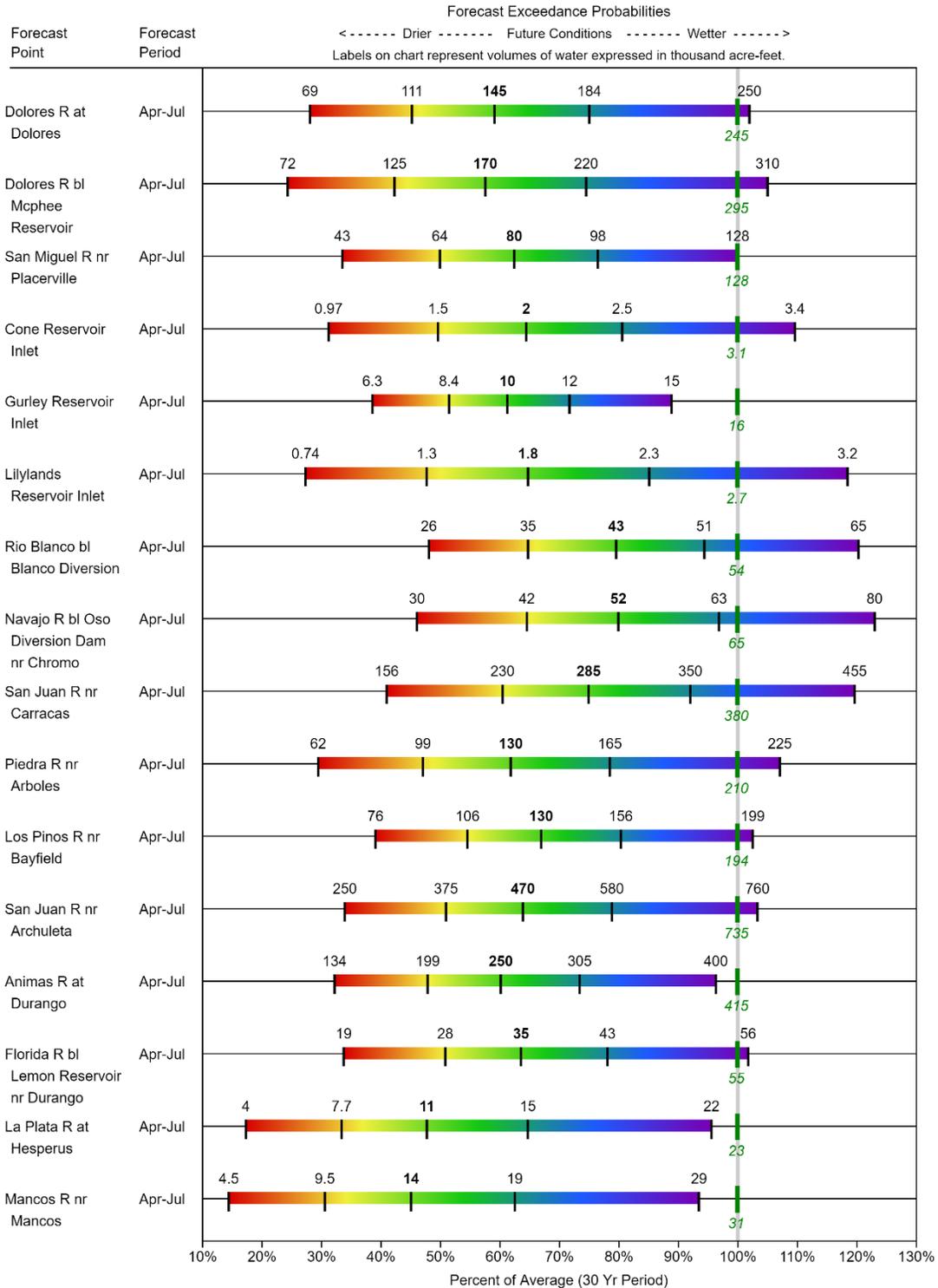
### Reservoir Storage End of December 2020

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
GROUNDHOG RESERVOIR	4.5	16.0	12.3	22.0
JACKSON GULCH RESERVOIR	2.7	3.7	4.5	10.0
LEMON RESERVOIR	10.6	17.6	20.7	40.0
MCPHEE RESERVOIR	167.8	288.8	265.6	381.0
NARRAGUINNEP RESERVOIR	4.0	5.0	14.1	19.0
VALLECITO RESERVOIR	35.8	75.4	62.4	126.0
TROUT LAKE RESERVOIR	2.3	2.7	2.5	3.2
<b>BASINWIDE</b>	227.7	409.4	382.1	601.2
Number of Reservoirs	7	7	7	7

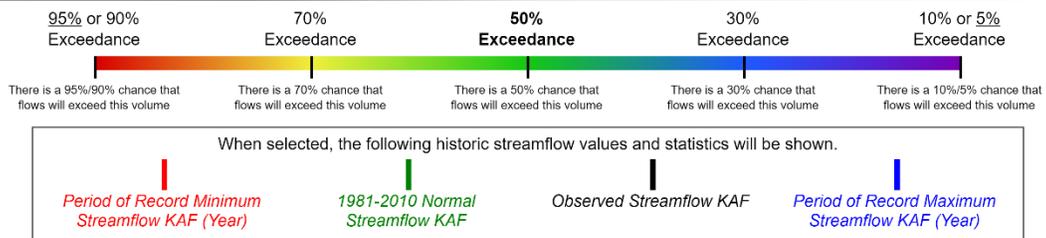
### SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS

#### Water Supply Forecasts

January 1, 2021



**Legend**



Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

# 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.

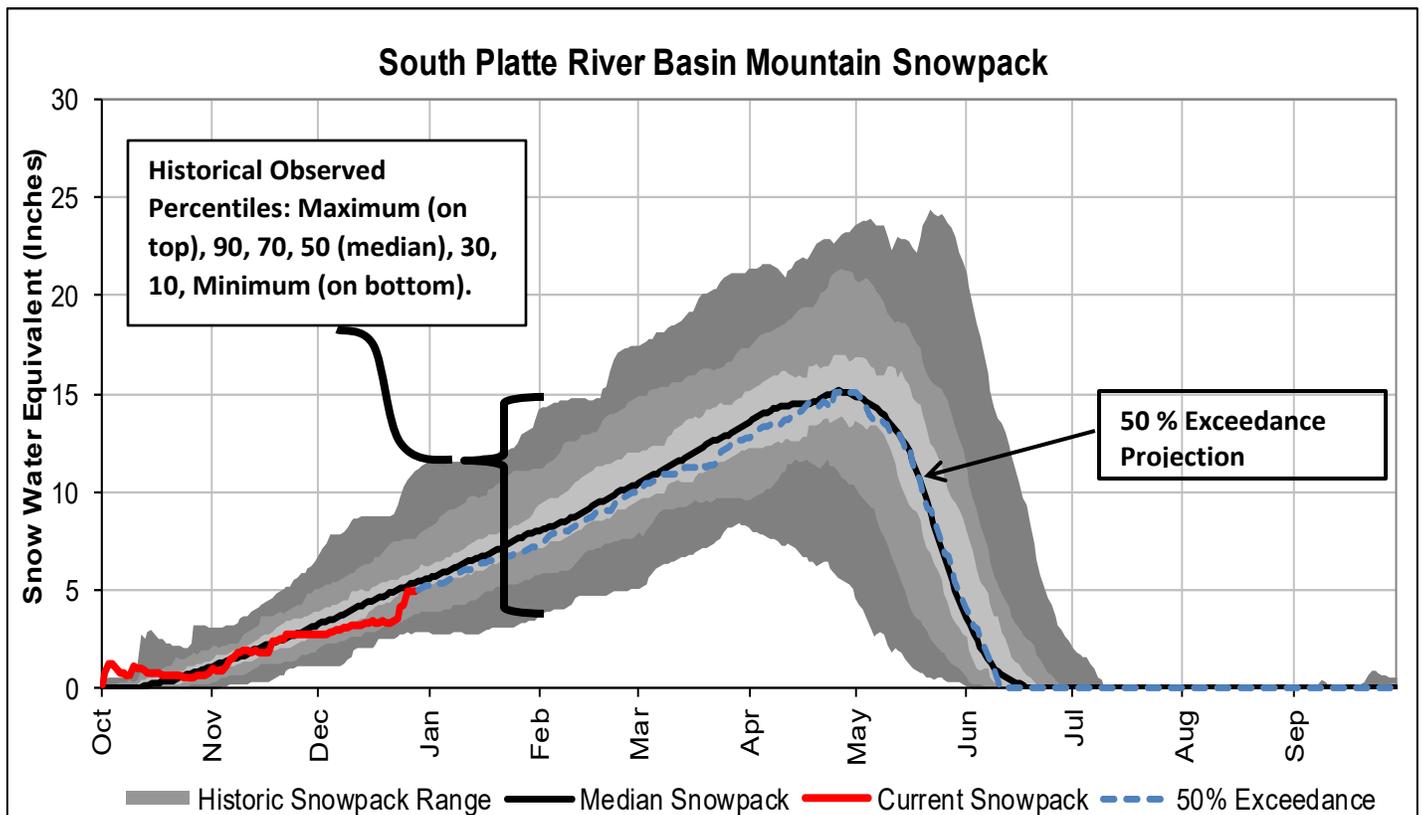
**Current** water year is represented by the heavy red line terminating on the last day the graphic was updated.

**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 % Exceedance 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](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/>**

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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.

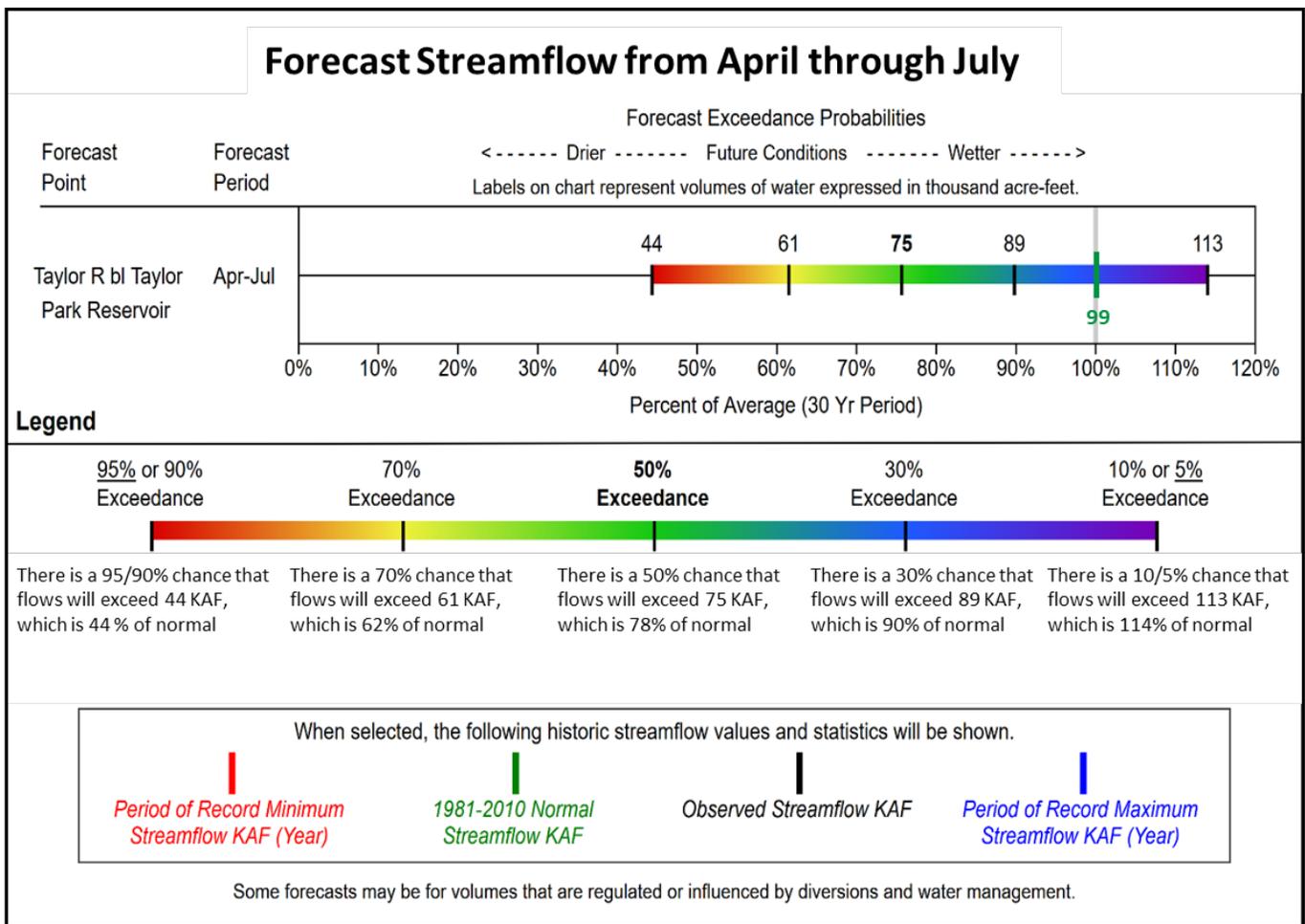
Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single 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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# Interpreting the Forecast Graphics

These graphics provide a new way to visualize the range of streamflows represented by the forecast exceedance probabilities for each forecast period. The colors in the bar for each forecast point indicate the exceedance probability of the forecasts and the vertical lines on the bar signify the five published forecast exceedance probabilities. The numbers displayed above the color scale represent the actual forecasted streamflow volume (in KAF) for the given exceedance probability. The horizontal axis provides the percent of average represented by each forecast and the gray line centered above 100% represents the 1981-2010 historical average streamflow. The position of the gray line relative to the color scale provides a benchmark for considering future streamflows. If the majority of the forecast range is to the right of the gray line, there is a higher likelihood of above average streamflow volumes during the provided forecast period. Conversely, if the majority of the color bar is to the left of the average mark, below average volumes are more likely. The horizontal span of the forecasts offers an indication of the uncertainty in a given forecast: when the bar spans a large horizontal range, the forecast skill is low and uncertainty is high; when the bar is narrow in width, the forecast skill is higher and uncertainty lower.





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Denver, CO 80225-0426

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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*Issued by*

**Matthew J. Lohr**  
Chief, Natural Resources Conservation Service  
Farm Production and Conservation Mission Area  
U.S. Department of Agriculture

*Released by*

**Clint Evans**  
State Conservationist  
Natural Resources Conservation Service  
Lakewood, Colorado

# Colorado

## Water Supply Outlook Report

Natural Resources Conservation Service  
Lakewood, CO