USDA United States Department of Agriculture
Natural Resources Conservation Service

Colorado
Water Supply Outlook Report
March 1, 2019

Snow Surveyors ski in the long approach to the remote North Inlet Grand Lake Snow Course in Rocky Mountain National Park on the last day of February. This snow course was established in 1937 making it a part of the first generation on snowpack monitoring sites established across the West. The site was holding 7.8 inches of snow water equivalent (SWE) which is 113 percent of the normal value.

Photo By: Lexi Landers Date: February 28th, 2019

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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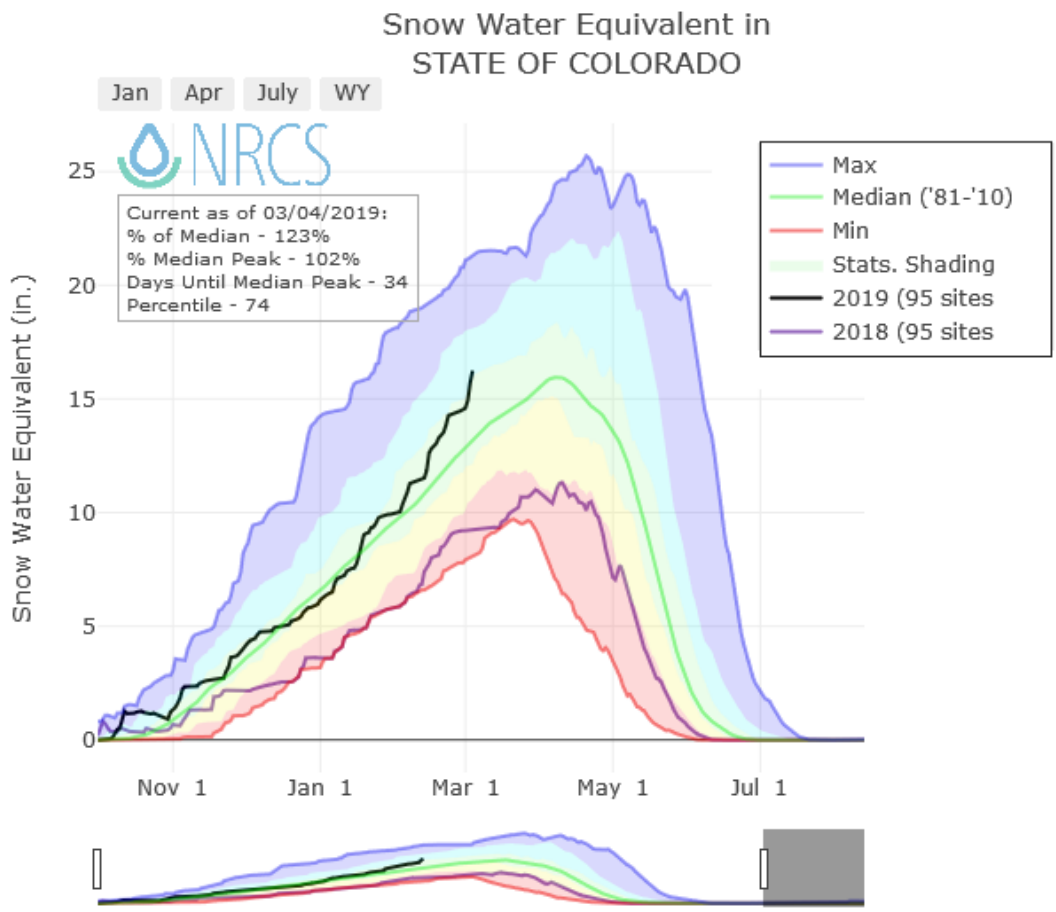
Colorado Statewide Water Supply Conditions

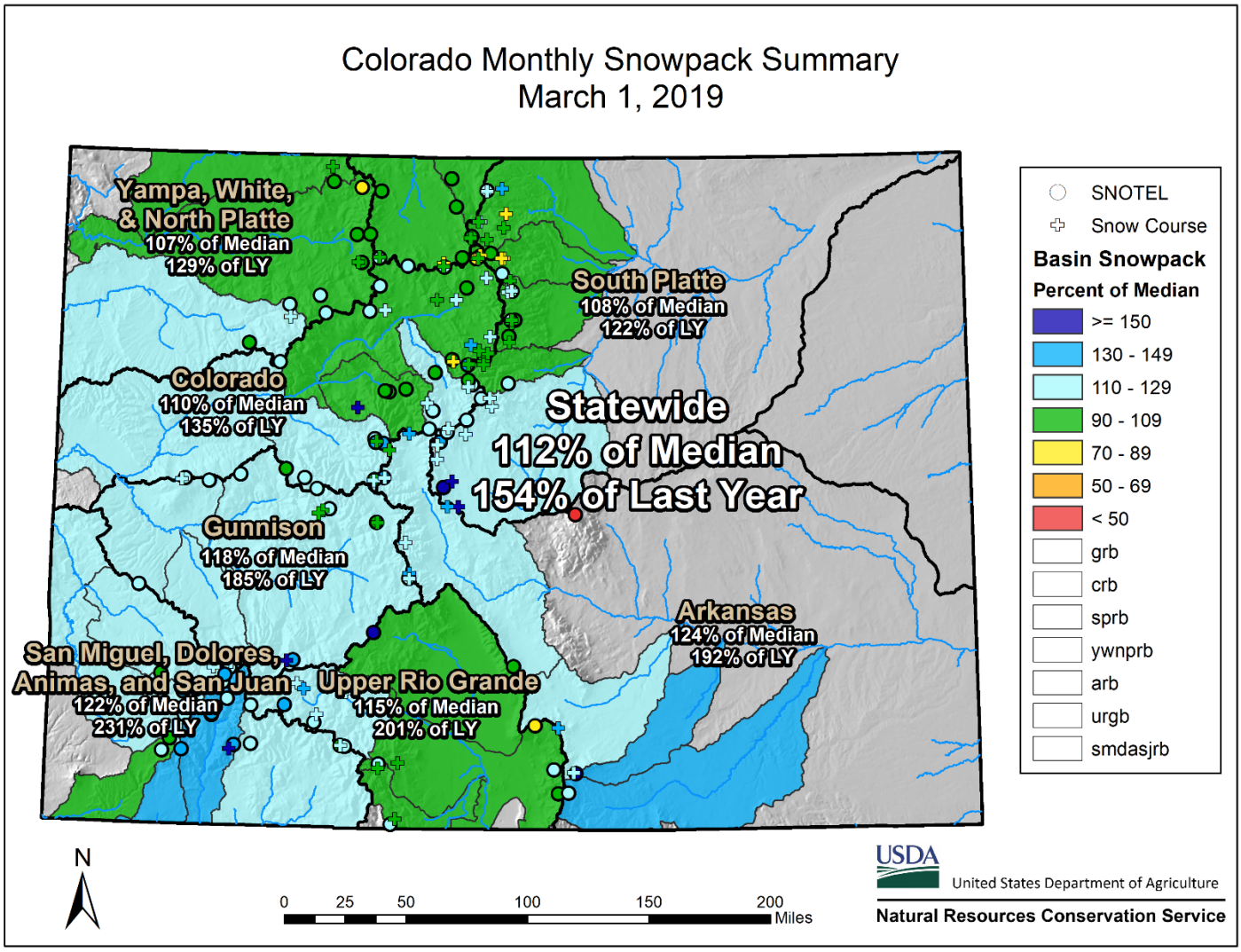
Summary



Check out the new interactive charts available for Colorado's major river basins and individual SNOTEL sites.

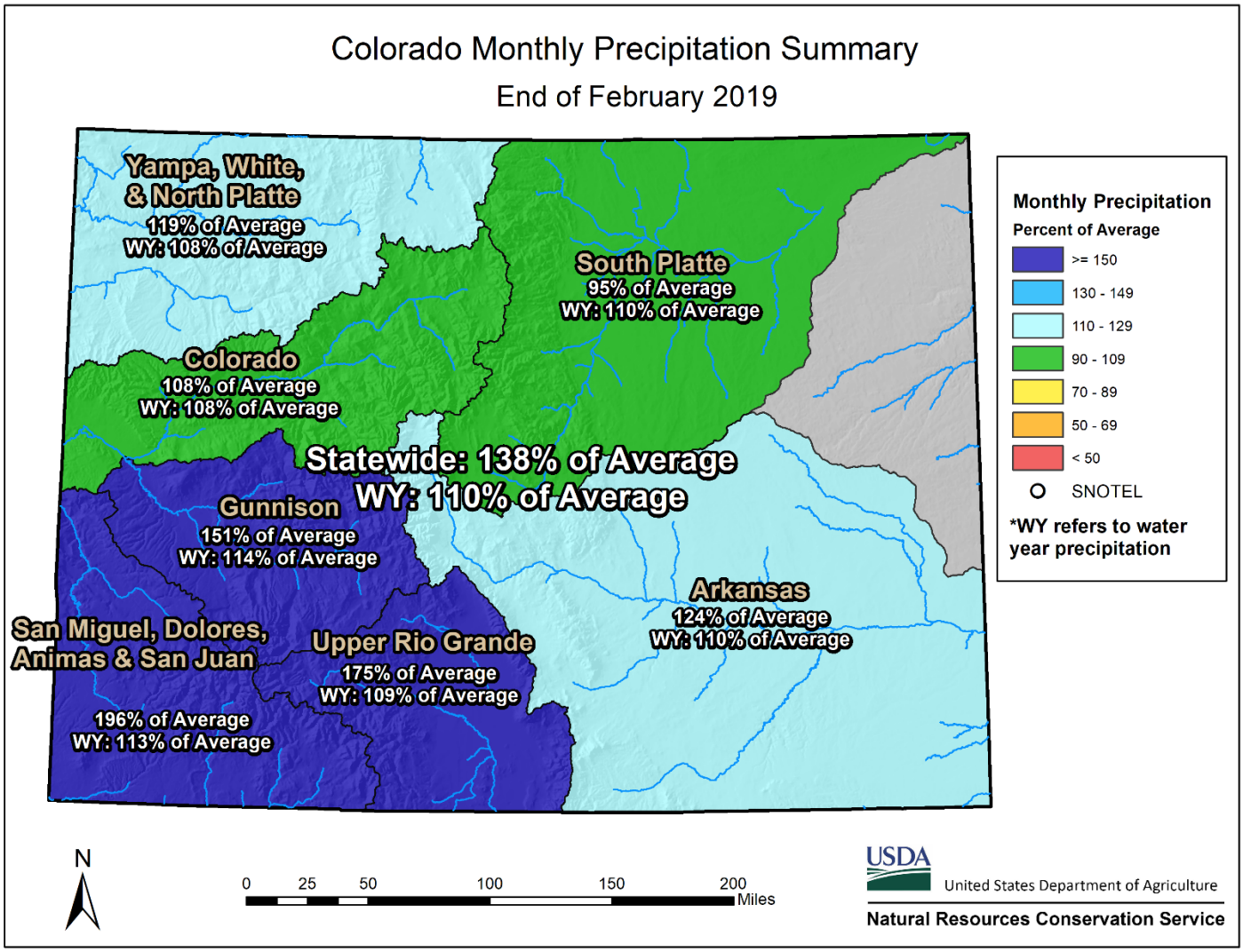
Precipitation throughout the month of February provided a dramatic improvement to the statewide snowpack and particularly in the Southwest corner of the state. The San Juan Mountains in particular received nearly 200 percent of average February precipitation, which was either the highest or second highest amount of February precipitation on record at most SNOTEL sites in the range. These increases have led to every major basin in Colorado currently holding an above normal snowpack and leaving the statewide snowpack at 112 percent of normal. Current forecasts for summer streamflows now follow this trend as well with the vast majority of them being for near to above average volumes. In stark contrast to last year, forecasts across southern Colorado are currently the highest in the state. On average forecasts across the Gunnison basin are for 109 percent of normal followed closely by the Arkansas and combined San Miguel, Dolores, Animas, and San Juan basins, at 106 and 108 percent of normal, respectively. The Upper Colorado and South Platte basins are in the middle of the pack with forecasts averaging 105 and 103 percent of normal flows. The combined Yampa and White river basins and the Upper Rio Grande round out the low end with forecasts averaging out to be 101 and 104 percent of normal. Reservoir storage varies widely across Colorado with notably low levels remaining in the Southwest part of the state. Only the South Platte and Combined Yampa and White River basins are currently holding above average storage and only by a small amount. On the low end the combined basins of Southwest Colorado and the Gunnison are holding a meager 58 and 63 percent of average with the rest of the basins lying in between there and average values.

Snowpack



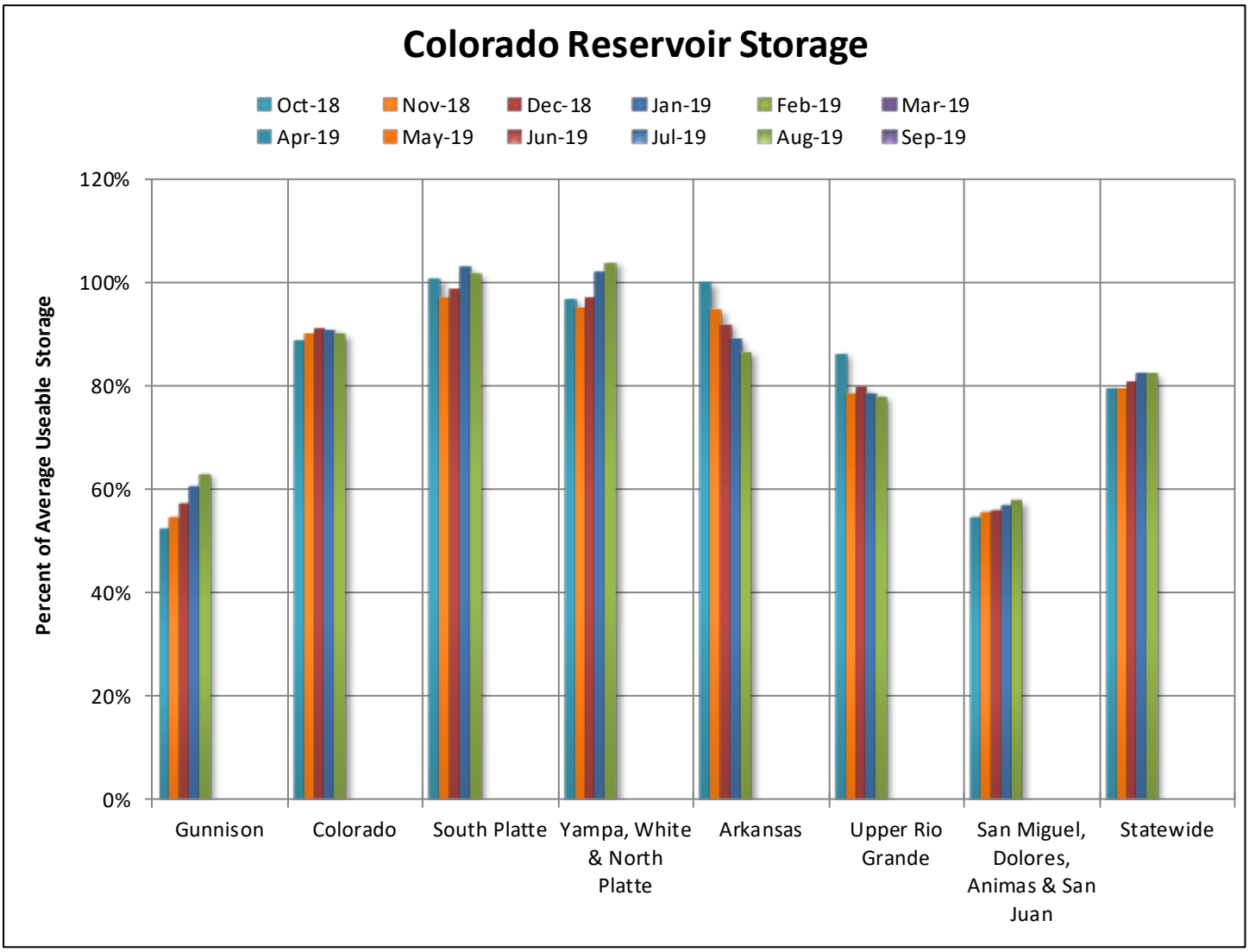
Colorado's snow enthusiasts rejoiced during February when there did not seem to be a lull for more than few days between snow events, particularly in the southern mountains of the state. Many SNOTEL sites in the Rio Grande and combined San Miguel, Animas, Dolores, and San Juan River basins experienced record February snowfall and many more had the second highest to date. Several SNOTEL even reported more than 300 percent of normal February snowfall. This has led to an incredible increase in the percent of normal snowpack in these basins, up more than 30 percent to 115 percent of median in the Rio Grande and 122 percent in the combined southwest basins. Only the Arkansas River basin still has a snowpack at higher levels, with respect to normal, at 124 percent of median. The Gunnison River basin also experienced generous growth to its existing snowpack last month and is now at 118 percent of median. The northern river basins received February snowfall amounts that were closer to, or even slightly below normal, but all major river basins were still above normal on March 1st. The Colorado and South Platte River basins both saw slight decreases in percent of normal over last month, to 110 and 108 percent of median, respectively. The combined Yampa, White, and North Platte River basins are at 107 percent of median, the same as last month, while statewide the snowpack is 112 percent of median. The snowpack has improved further over the conditions depicted in this report after a widespread storm impacted the state the first few days of March. Thanks to the abundant snowfall during February, the mountains across most of Colorado's river basins have already exceeded typical peak snowpack levels, some by a wide margin. Only the South Platte and combined Yampa, White, and North Platte River basins have yet to achieve peak levels, but with more than a month remaining in the normal snow accumulation season, there is still plenty of time for these basins to hit their normal peak levels.

Precipitation



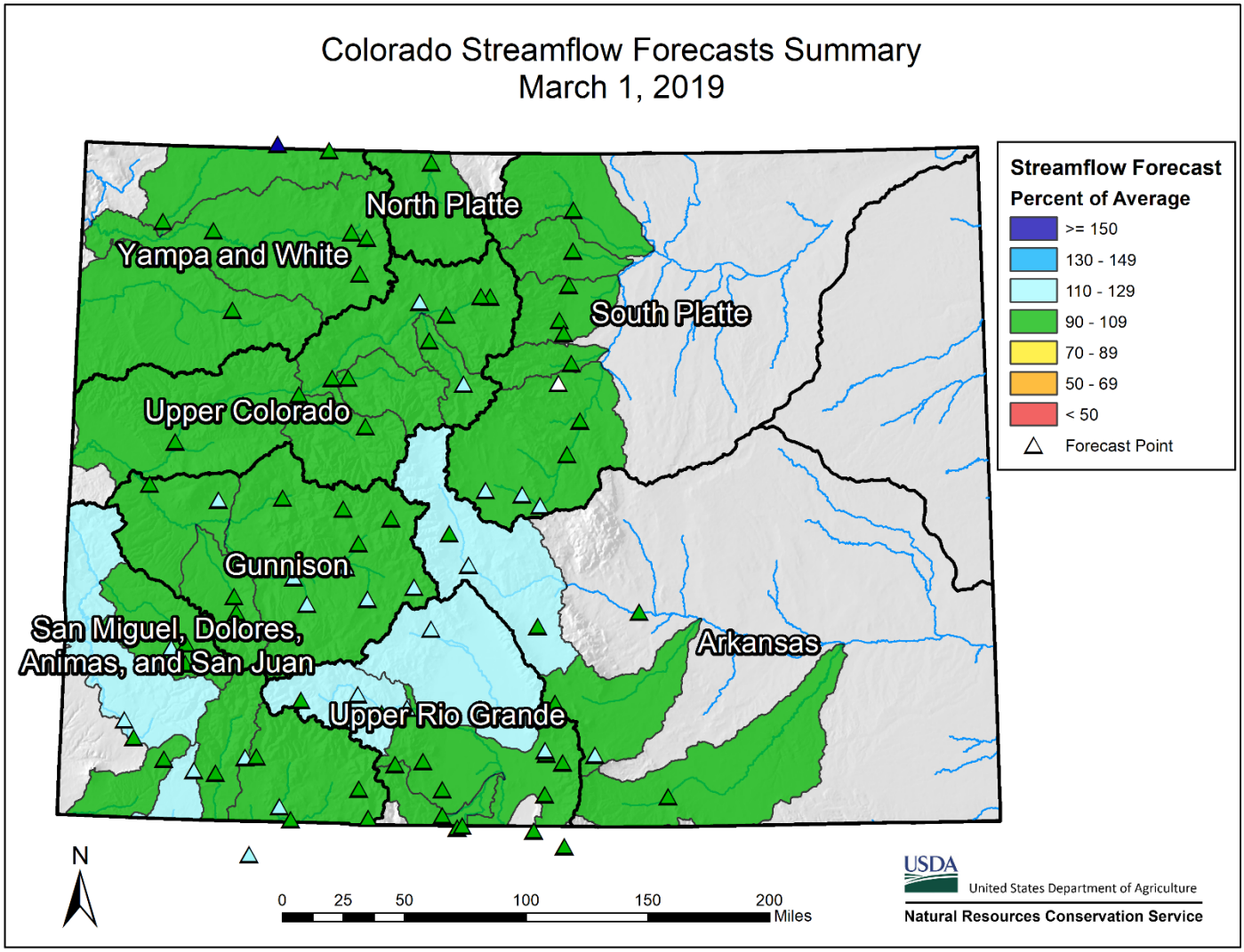
The wetter weather pattern that began in January, persisted through February bringing exceptional moisture to much of Colorado. The central and southern mountains were favored by moisture laden storms that delivered more than double normal February precipitation to some mountain locations. The combined San Miguel, Dolores, Animas, and San Juan River were hammered by copious precipitation, totaling 196 percent of average for the month. The Rio Grande and Gunnison River basins also fared particularly well, receiving February totals that were at 175 and 151 percent of average, respectively. The Arkansas River basin also received above normal precipitation for the month at 124 percent of average, while the combined Yampa, White, and North Platte and Colorado River basins received 119 and 108 percent of average February precipitation, respectively. The South Platte was the only of the major river basins to not benefit from above normal precipitation last month, but was still only slightly below normal at 95 percent of average. This led to a drop in the total water year precipitation for the basin down to 110 percent of average accumulations since October 1st. The other river basins are in a similar range for total water year precipitation. The Gunnison River basin has the best conditions at 114 percent of average precipitation for the water year and the Colorado and combined Yampa, White and North Platte River basins the lowest both at 108 percent of average. Both the Rio Grande and combined southwest river basins experienced considerable increases in their water year precipitation totals and are now above normal for the first time since the end of October at 109 and 113 percent of average, respectively. Collectively, Colorado's mountains are at 110 percent of average for water year-to-date precipitation, increasing the potential to improve drought conditions across the state.

Reservoir Storage



With only minor changes seen in volumes at reservoirs across Colorado, statewide storage levels remain at 83 percent of average, the same as on February 1st. Collective storage for reservoirs within all of the state's major river basins remain very similar to last month. The only two basins with current storage levels above normal are reservoirs in the South Platte, and combined Yampa, White and North Platte River basins, which are at 102 and 104 percent of average respectively. Together, reservoirs in the Colorado and Arkansas River basins, at 90 and 88 percent of average respectively and are anticipated to fill to near normal levels as streams in these basins are expected to produce mostly above normal runoff volumes this spring. Further south, combined reservoir storage drops off dramatically. Reservoirs within the Rio Grande River basin currently contain 78 percent of average volumes, while the Gunnison and combined San Miguel, Dolores, Animas, and San Juan River basins hold only 63 and 58 percent of average, respectively. The reservoirs in these three river basins together contain only about 60 percent of the volumes held last year on March 1st, illustrating the dramatic drawdowns that occurred following the dismal snowpack of 2018. Fortunately, the mountains feeding these reservoirs have experienced phenomenal snowfall in recent weeks and are anticipating even more in coming days, improving the outlook for increasing reservoir levels. In the next month, the state's reservoirs should begin to fill as the first of the low-elevation snow melts with warming spring temperatures and we should begin to see the percent of normal reservoir levels gradually improve.

Streamflow

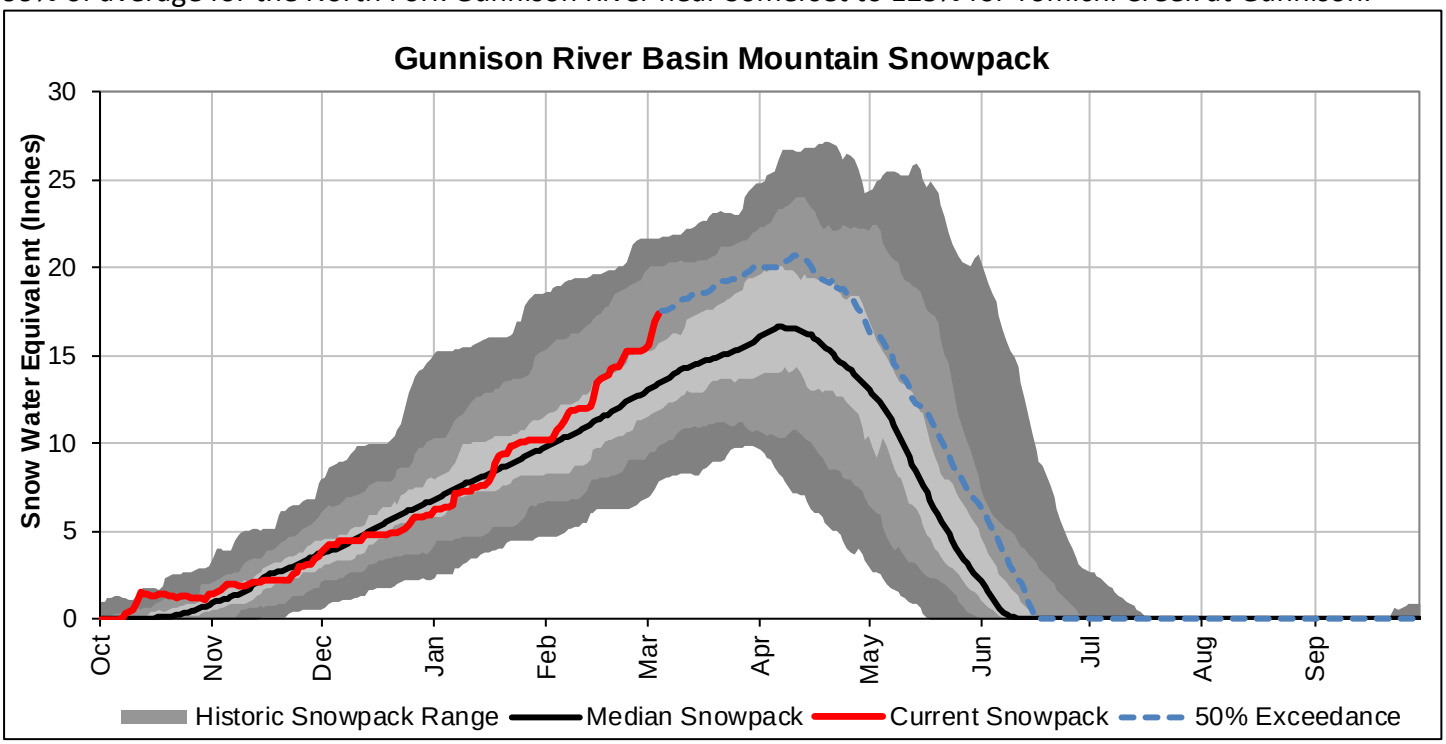


The forecasted volumes for most streams in Colorado have increased since those published on February 1st and given the current snowpack conditions, all forecast points are expected to receive at least near normal streamflow runoff at the 50 percent exceedance level. Most streams across the state are anticipated to see between 95 and 125 percent of normal runoff volumes. Collectively, streams in the Gunnison and combined San Miguel, Dolores, Animas, and San Juan River basins are forecast to experience the highest streamflows with respect to normal. Within these basins, all streamflows are expected to be at or above normal flows, with Tomichi Creek forecast to be the highest in the state at 125 percent of average. Streamflow forecasts in the Arkansas and Rio Grande River basins are also primarily calling for above normal flows, ranging from 95 to 114 percent of average. The streams with some of the highest forecasts in these basins, with respect to normal, flow through the scar of the massive Spring Creek fire, so the rate and timing of runoff should be monitored closely. Streams in northern Colorado should also all produce normal runoff volumes. Within the South Platte, the highest flows range from 105 to 120 percent of normal in the South Platte Headwaters, while the Front Range streams are forecast to be at or slightly below normal flows. Forecasts for flows along the Blue River and Muddy Creek are between 109 and 113 percent of average, while elsewhere in the Colorado River basin snowmelt should produce closer to normal runoff volumes. Streamflow forecasts for the Yampa and Little Snake Rivers are currently calling for normal spring runoff, while forecasts are slightly higher, between 106 and 109 percent of average for the North Platte and White Rivers.

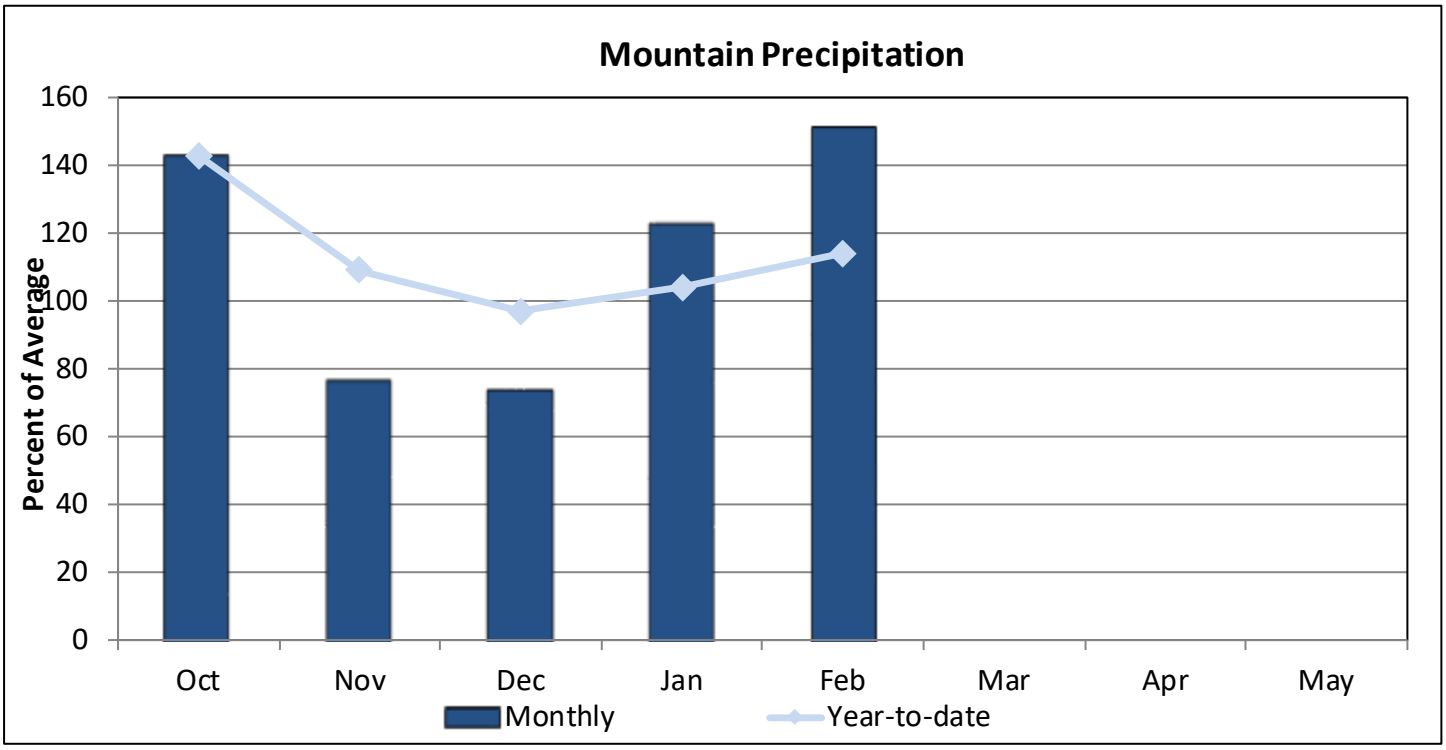
GUNNISON RIVER BASIN

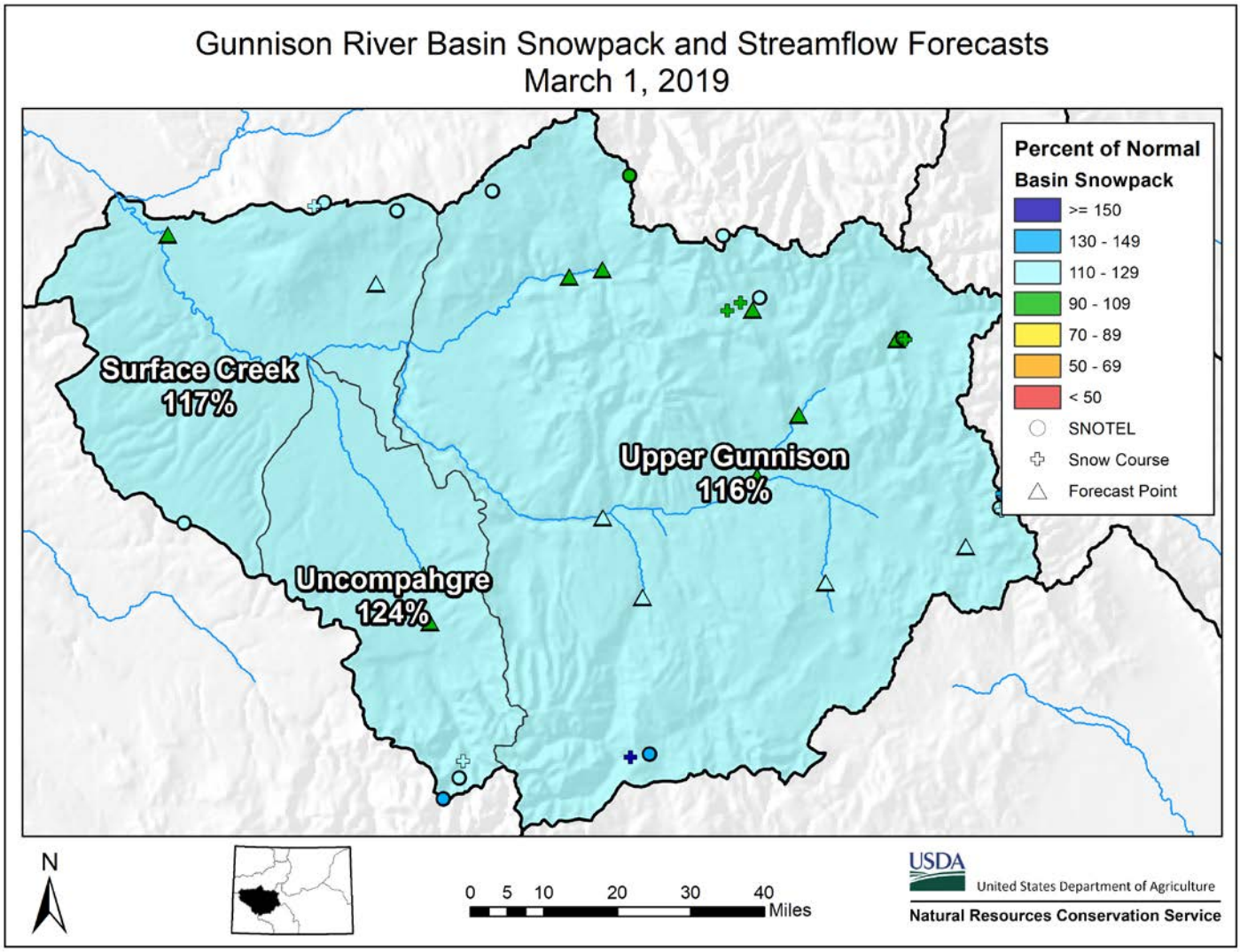
March 1, 2019

Snowpack in the Gunnison River basin is above normal at 118% of the median. Precipitation for February was 151% of average which brings water year-to-date precipitation to 114% of average. Reservoir storage at the end of February was 63% of average compared to 107% last year. Current streamflow forecasts range from 99% of average for the North Fork Gunnison River near Somerset to 125% for Tomichi Creek at Gunnison.



*SWE values calculated using daily SNOTEL data only

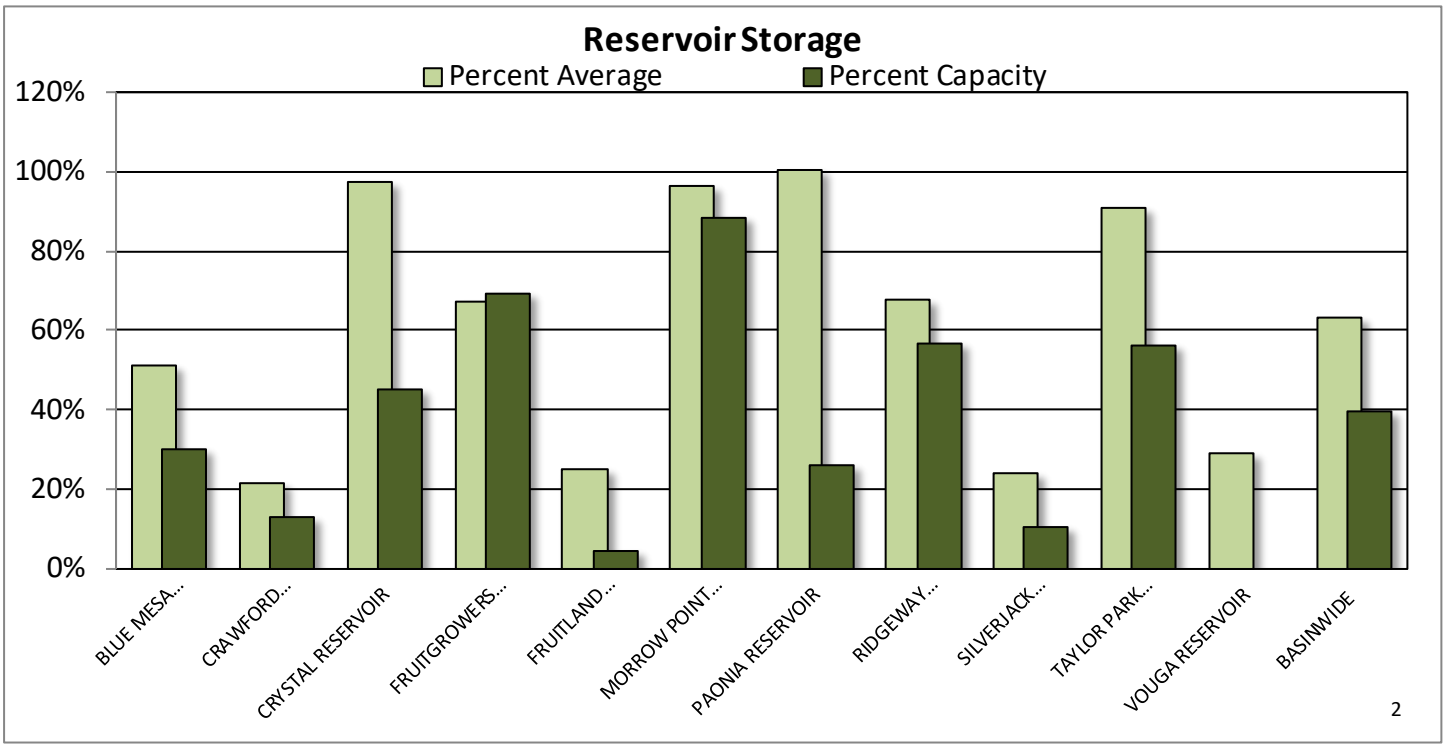




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Upper Gunnison	17	116	63
Surface Creek	3	117	46
Uncompahgre	4	124	62
Basin-Wide Total	21	118	63

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



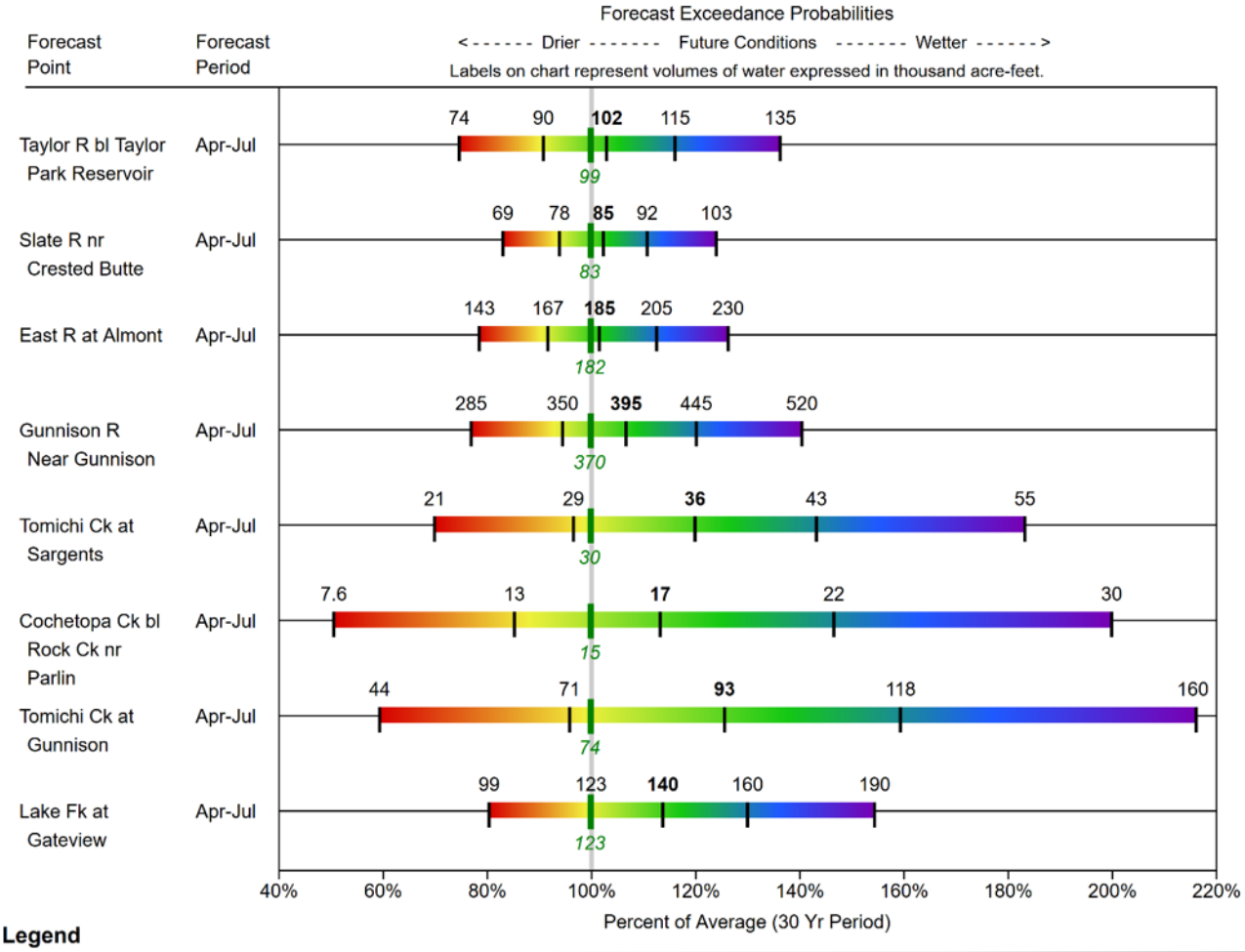
Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
BLUE MESA RESERVOIR	247.7	547.1	482.2	830.0
CRAWFORD RESERVOIR	1.8	5.4	8.5	14.0
CRYSTAL RESERVOIR	7.9	8.4	8.1	17.5
FRUITGROWERS RESERVOIR	2.5	2.8	3.7	3.6
FRUITLAND RESERVOIR	0.4	1.2	1.7	9.2
MORROW POINT RESERVOIR	107.2	108.4	111.1	121.0
PAONIA RESERVOIR	4.0	3.5	4.0	15.4
RIDGEWAY RESERVOIR	46.9	61.6	69.4	83.0
SILVERJACK RESERVOIR	1.3	2.4	5.5	12.8
TAYLOR PARK RESERVOIR	59.6	72.3	65.7	106.0
VOUGA RESERVOIR	0.2	0.8	0.7	0.9
BASINWIDE	479.5	814.0	760.6	1213.4
Number of Reservoirs	11	11	11	11

GUNNISON RIVER BASIN

Water Supply Forecasts

March 1, 2019



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

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

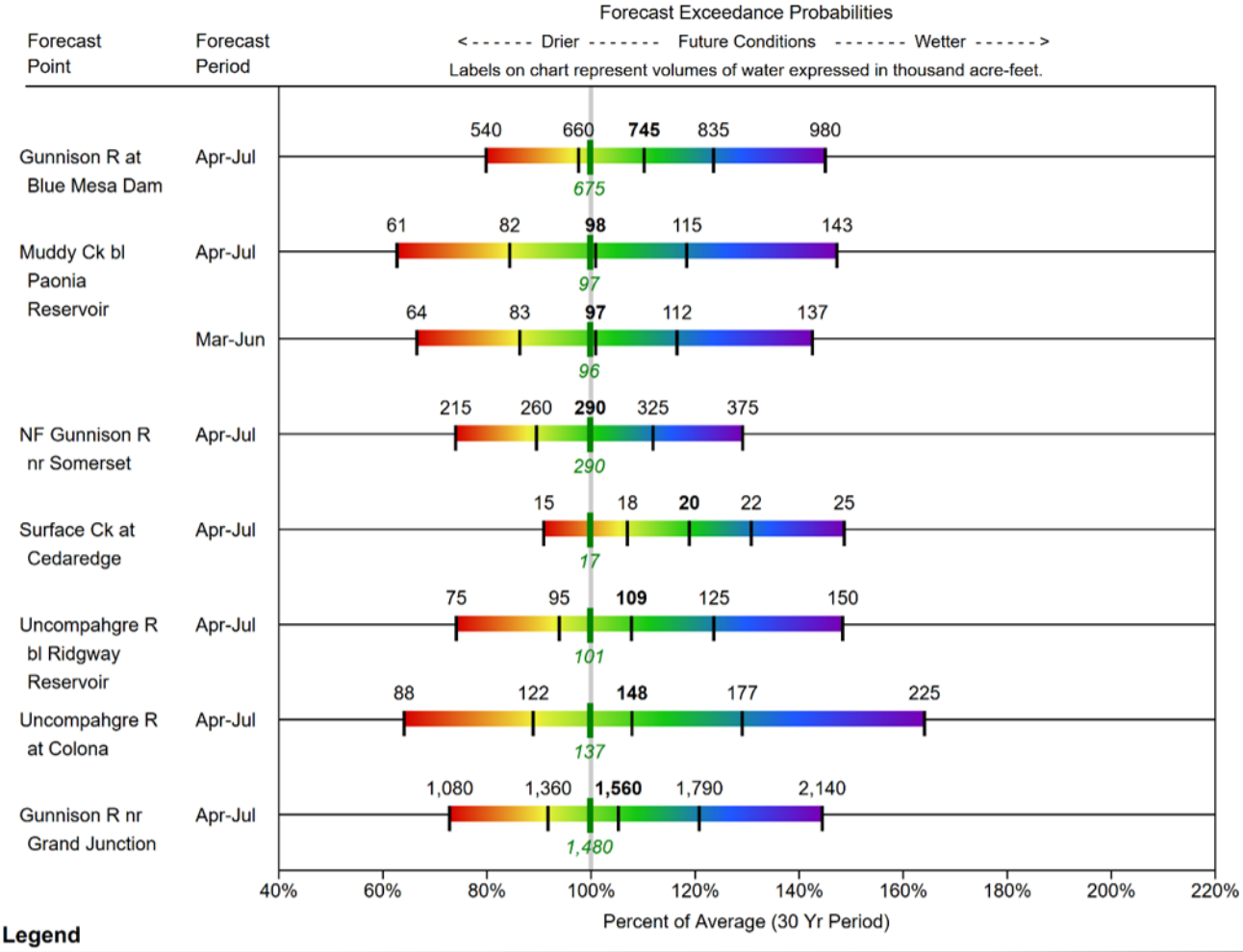
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

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

GUNNISON RIVER BASIN

Water Supply Forecasts

March 1, 2019



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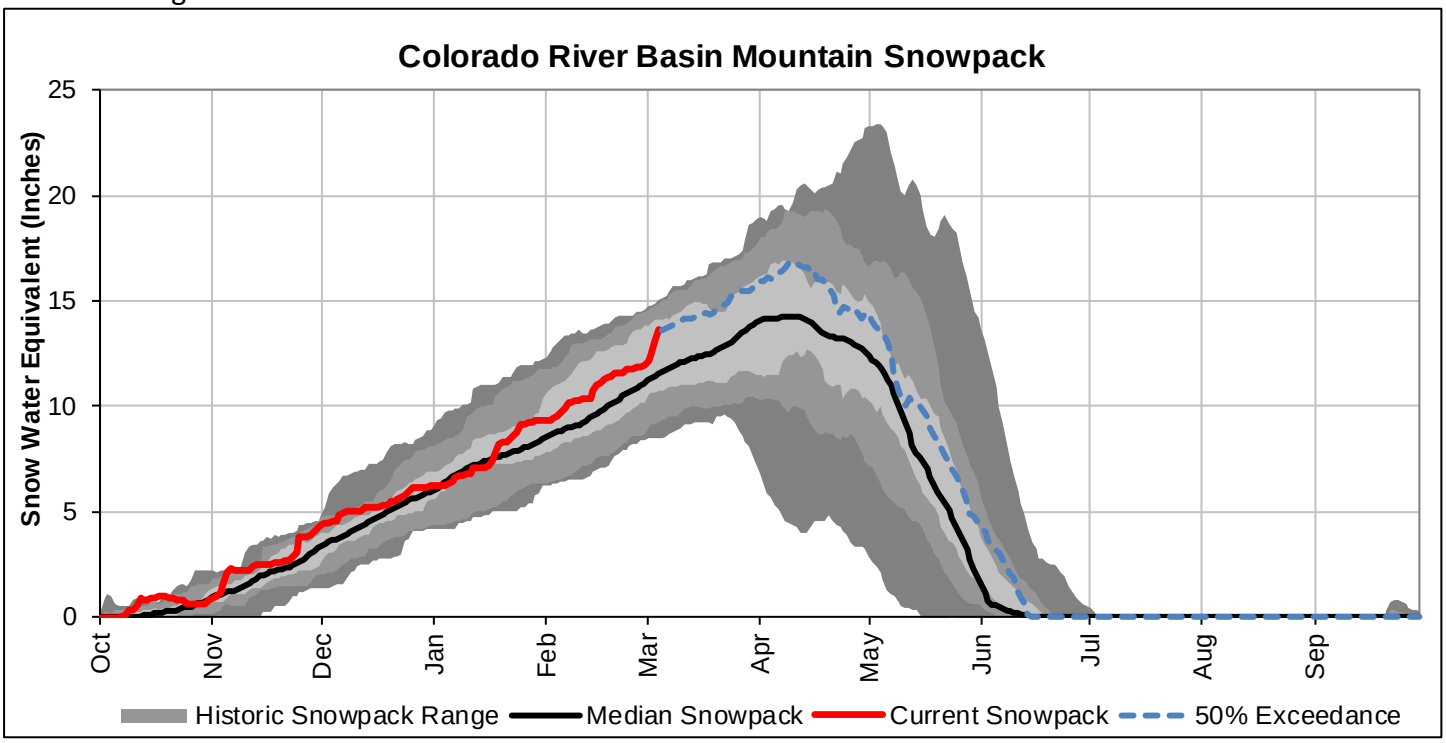
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

UPPER COLORADO RIVER BASIN

March 1, 2019

Snowpack in the Colorado River basin is above normal at 110% of the median. Precipitation for February was 108% of average which brings water year-to-date precipitation to 108% of average. Reservoir storage at the end of February was 90% of average compared to 117% last year. Current streamflow forecasts range from 98% of average for the Williams Fork below Williams Fork Reservoir to 113% for the inflow to Dillon Reservoir.



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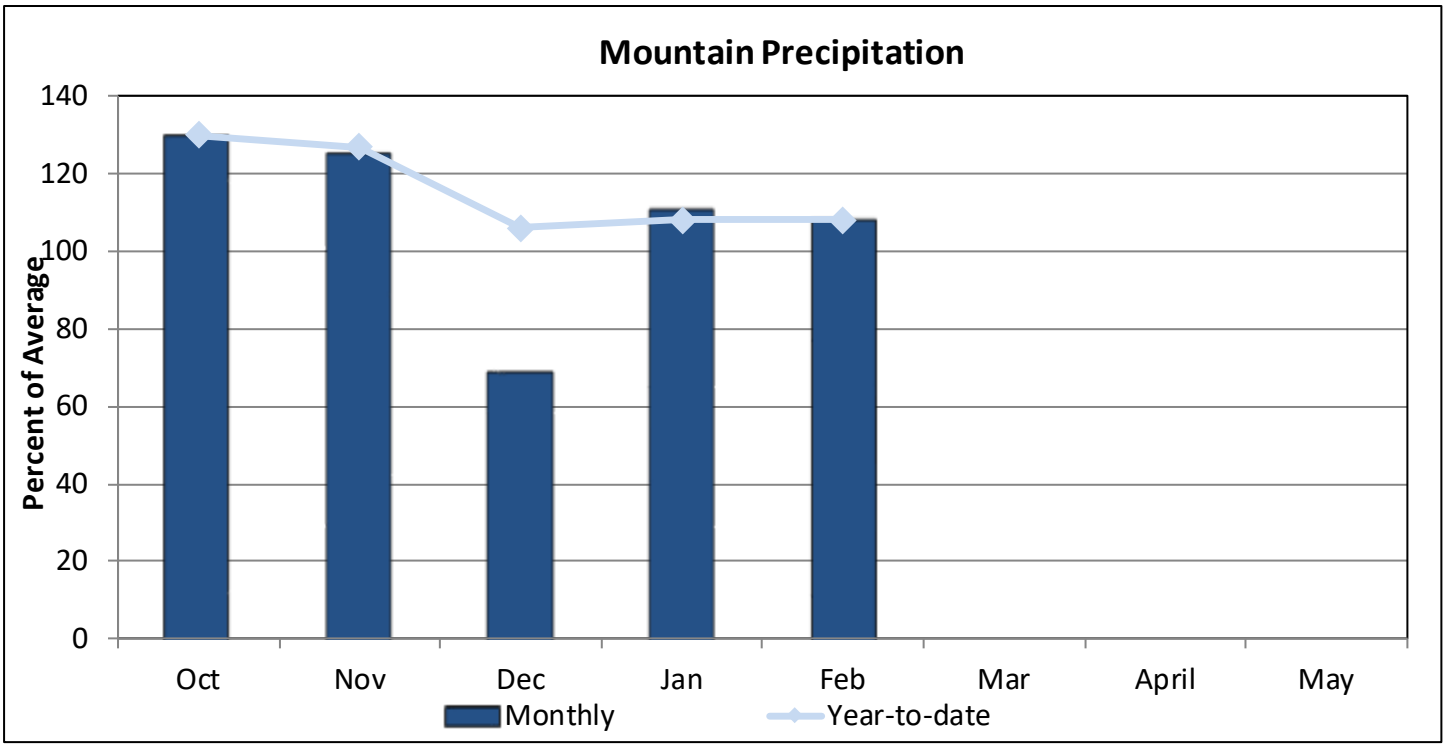
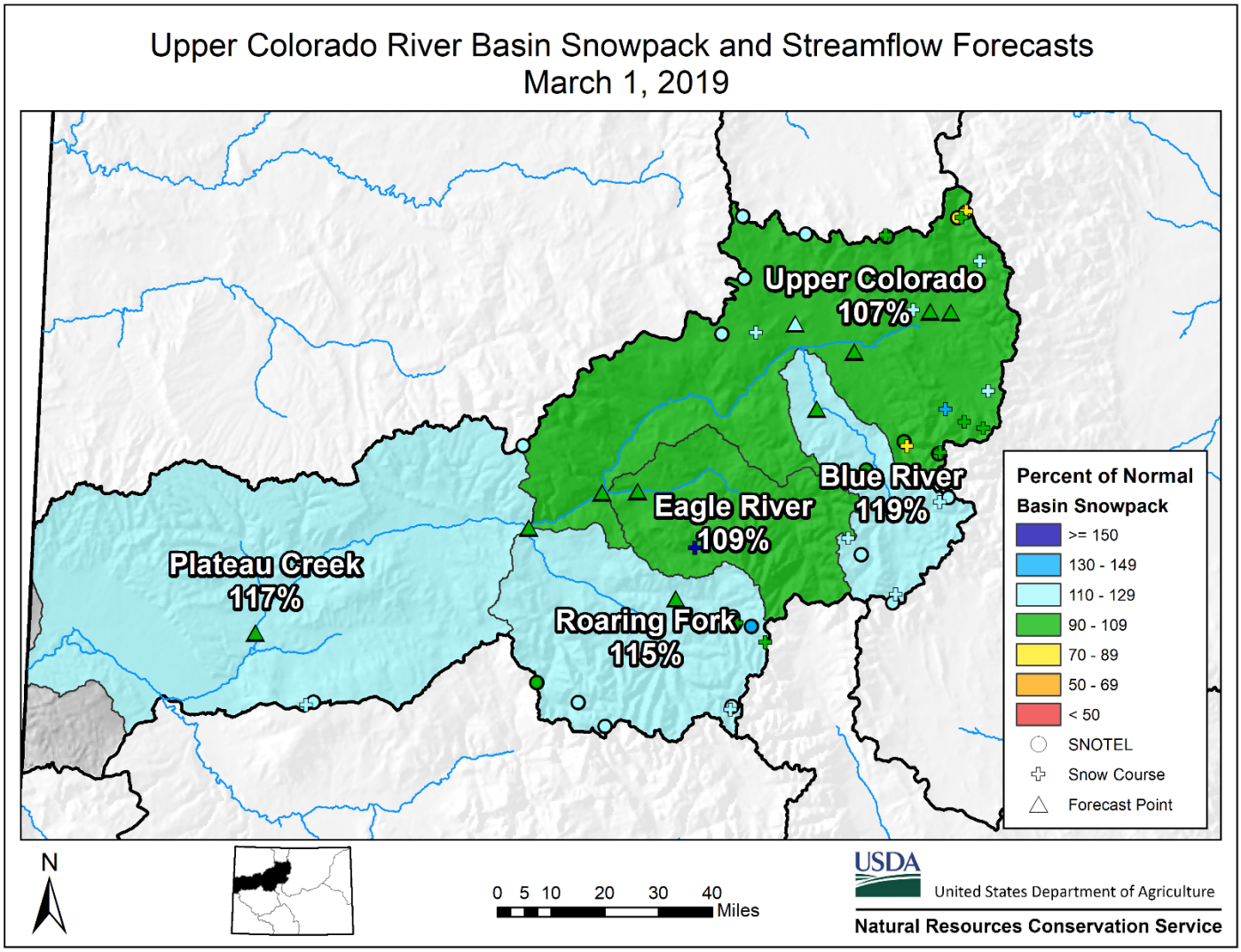
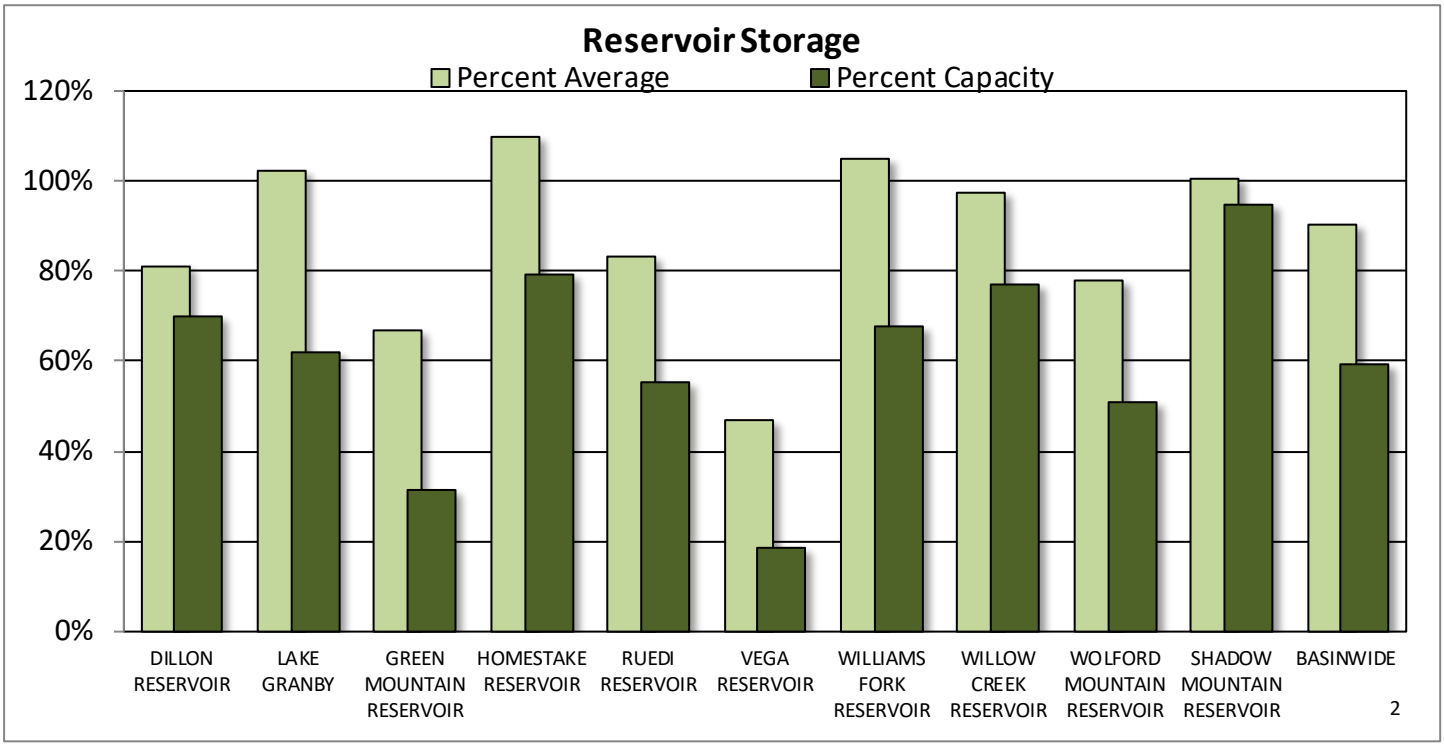




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Blue River	8	119	92
Upper Colorado	36	107	85
Muddy Creek	5	111	98
Eagle River	5	109	72
Plateau Creek	6	117	54
Roaring Fork	10	115	78
Williams Fork	5	101	80
Willow Creek	5	107	93
Basin-Wide Total	49	110	82

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



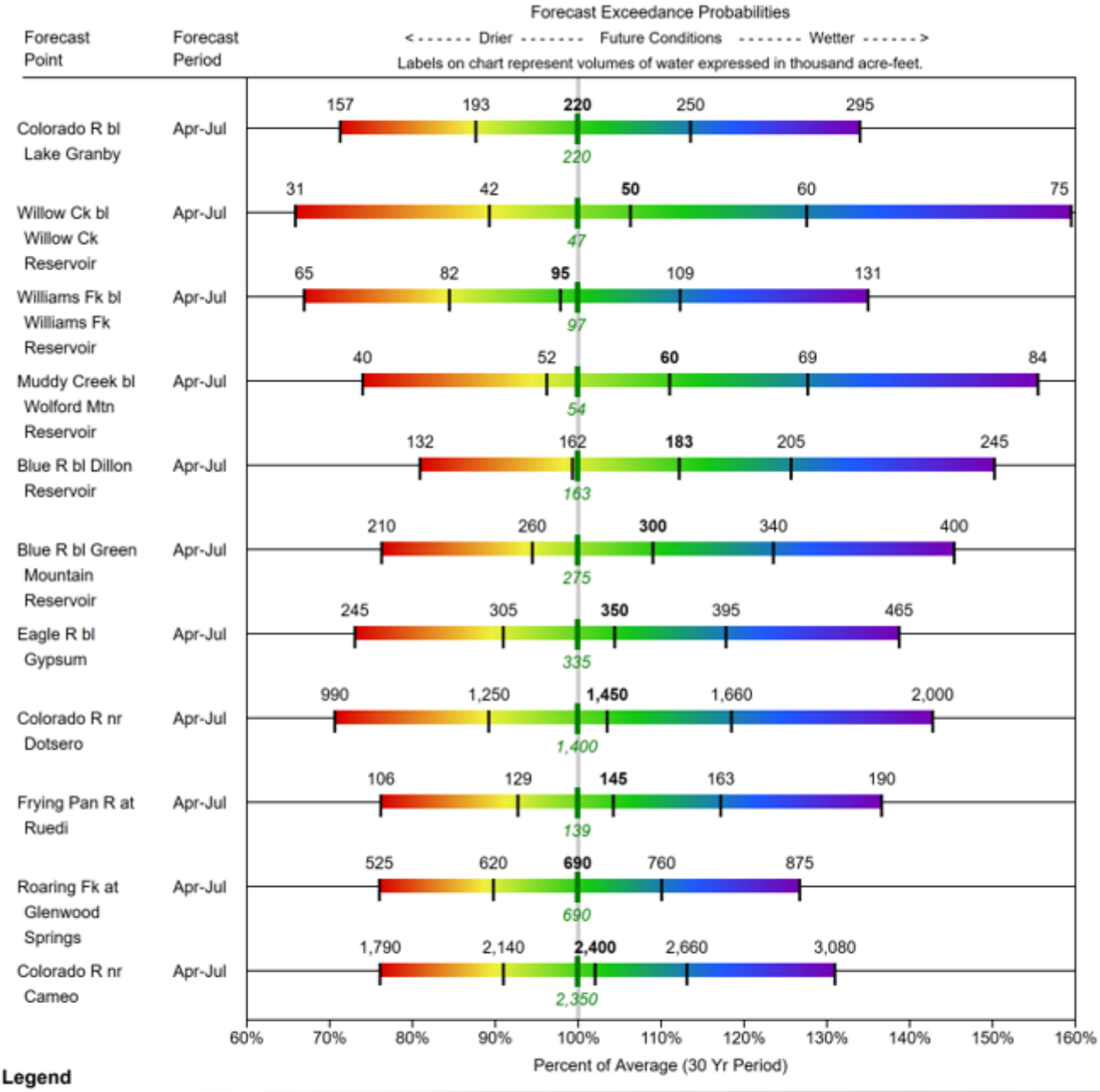
Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
DILLON RESERVOIR	174.1	234.0	214.5	249.1
LAKE GRANBY	289.1	389.6	282.6	465.6
GREEN MOUNTAIN RESERVOIR	45.9	61.5	68.7	146.8
HOMESTAKE RESERVOIR	34.0	41.0	31.0	43.0
RUEDI RESERVOIR	56.4	67.1	67.9	102.0
VEGA RESERVOIR	6.2	10.7	13.1	32.9
WILLIAMS FORK RESERVOIR	65.5	66.3	62.4	97.0
WILLOW CREEK RESERVOIR	7.0	6.7	7.2	9.1
WOLFORD MOUNTAIN RESERVOIR	33.6	54.3	43.2	65.9
SHADOW MOUNTAIN RESERVOIR	17.4	17.4	17.3	18.4
BASINWIDE	729.2	948.5	807.9	1229.8
Number of Reservoirs	10	10	10	10

UPPER COLORADO RIVER BASIN

Water Supply Forecasts

March 1, 2019



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

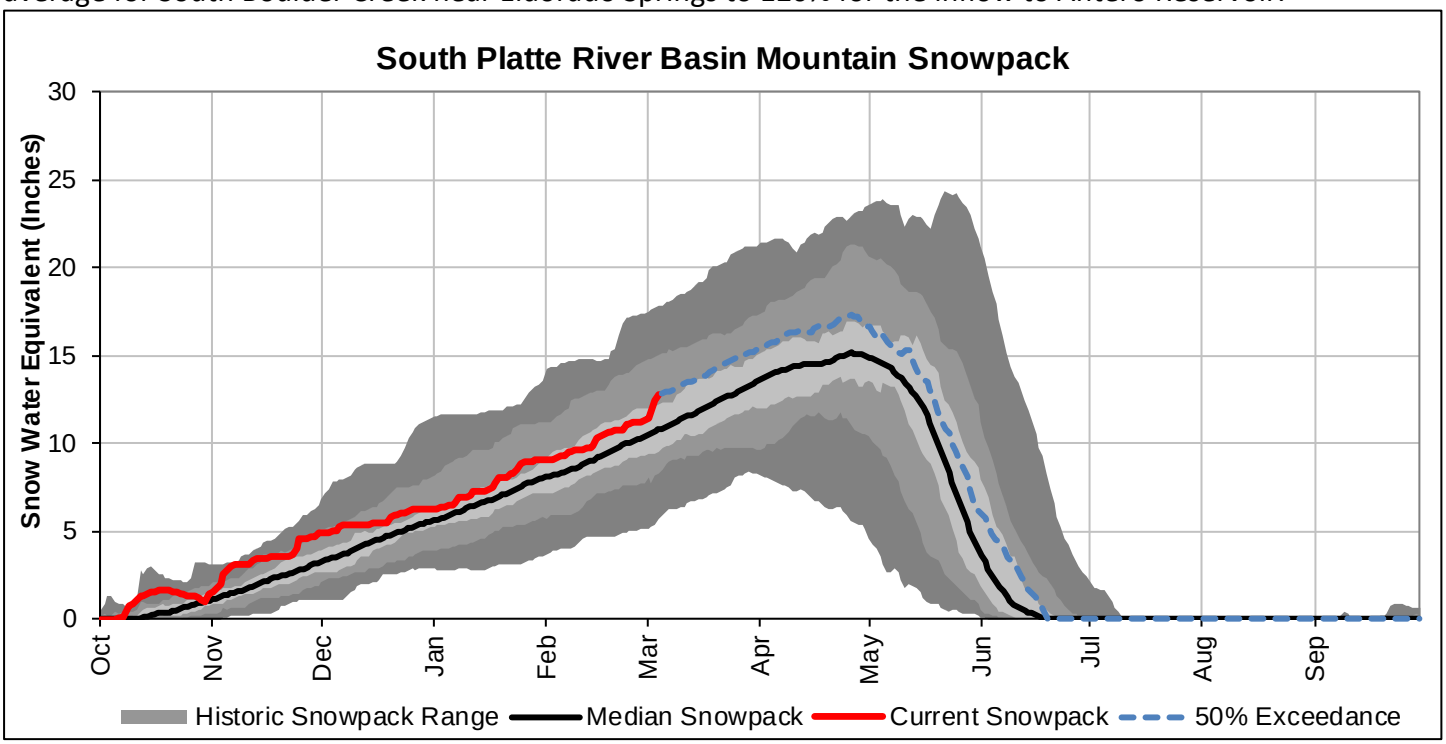
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

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

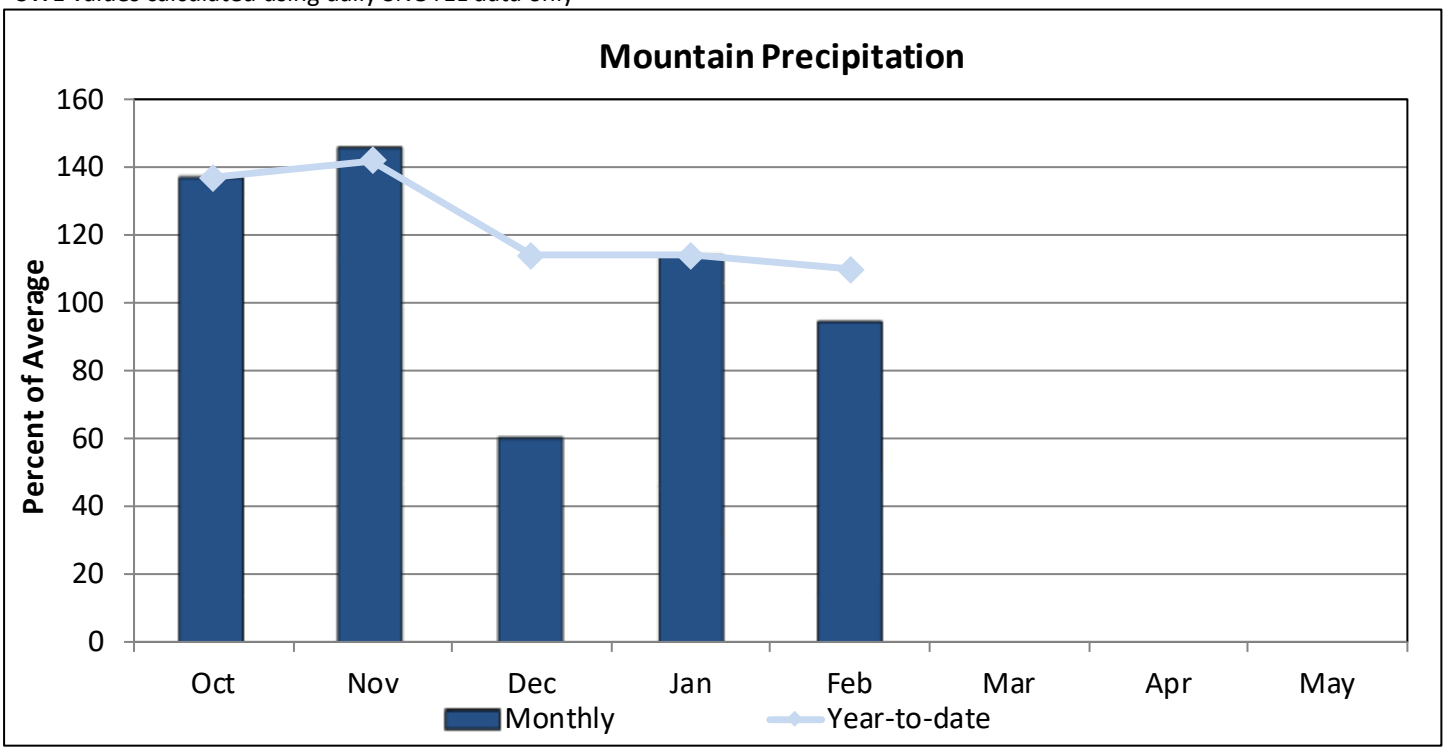
SOUTH PLATTE RIVER BASIN

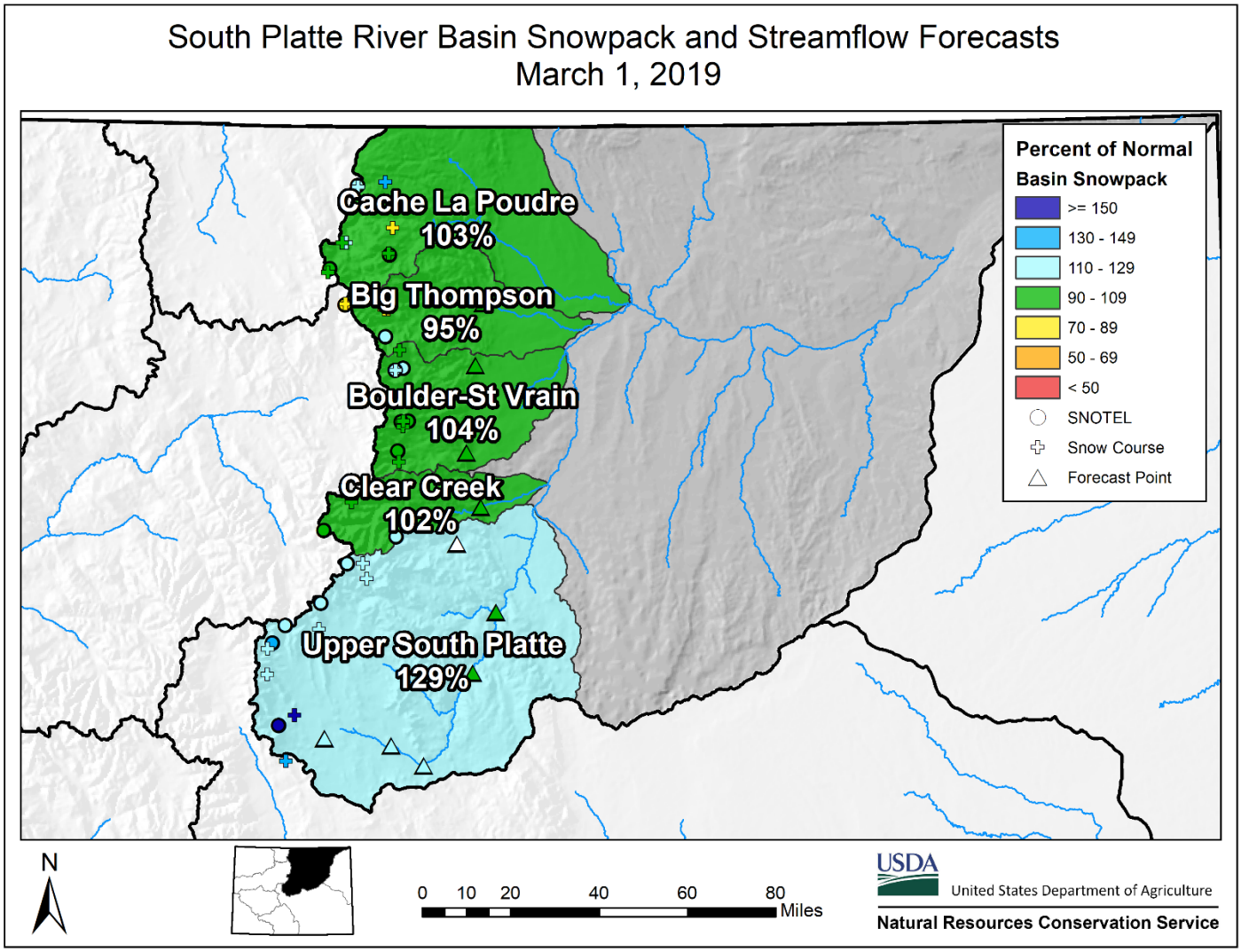
March 1, 2019

Snowpack in the South Platte River basin is above normal at 108% of the median. Precipitation for February was 95% of average which brings water year-to-date precipitation to 110%. Reservoir storage at the end of February was 102% of average compared to 111% last year. Current streamflow forecasts range from 95% of average for South Boulder Creek near Eldorado Springs to 120% for the inflow to Antero Reservoir.



*SWE values calculated using daily SNOTEL data only

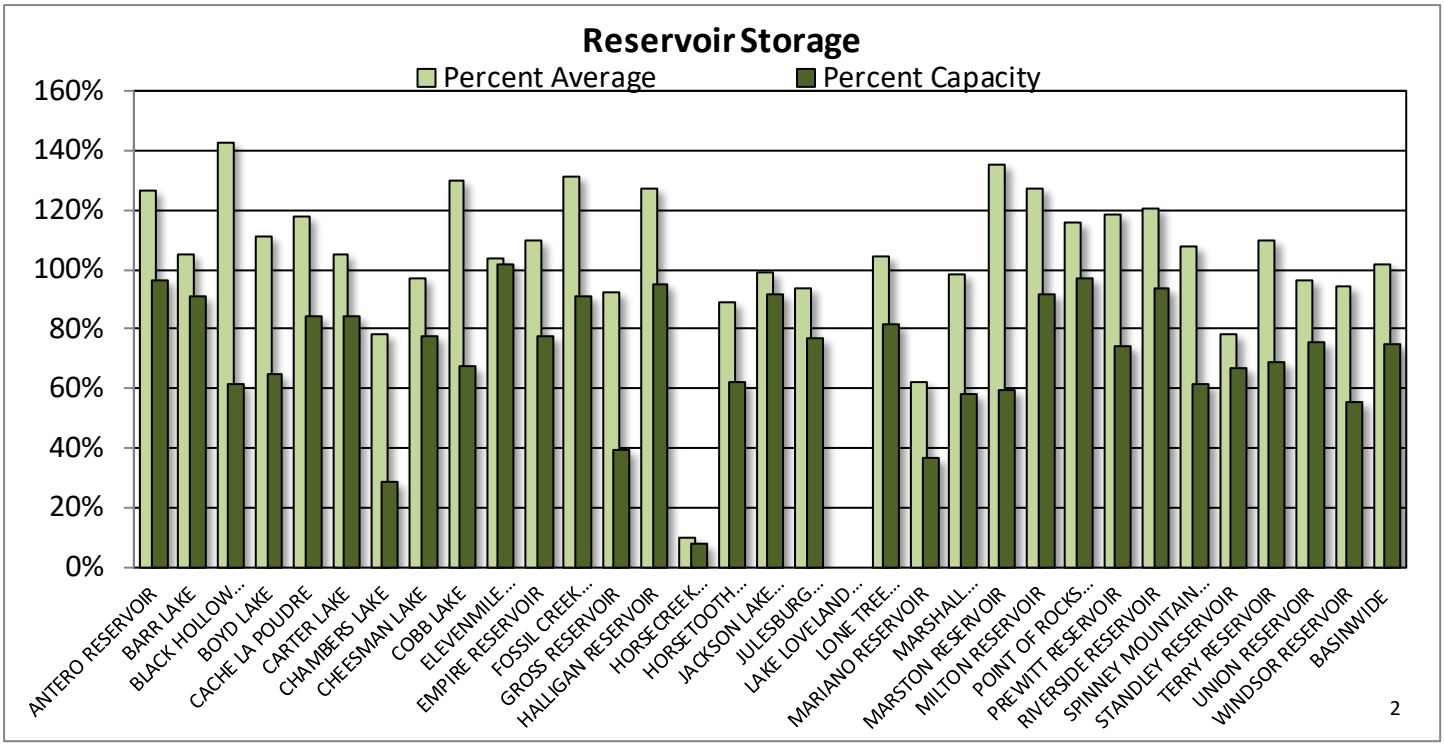




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Big Thompson	7	95	84
Boulder Creek	6	102	94
Cache La Poudre	10	103	98
Clear Creek	4	102	85
Saint Vrain	3	120	71
Upper South Platte	16	129	77
Basin-Wide Total	46	108	87

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



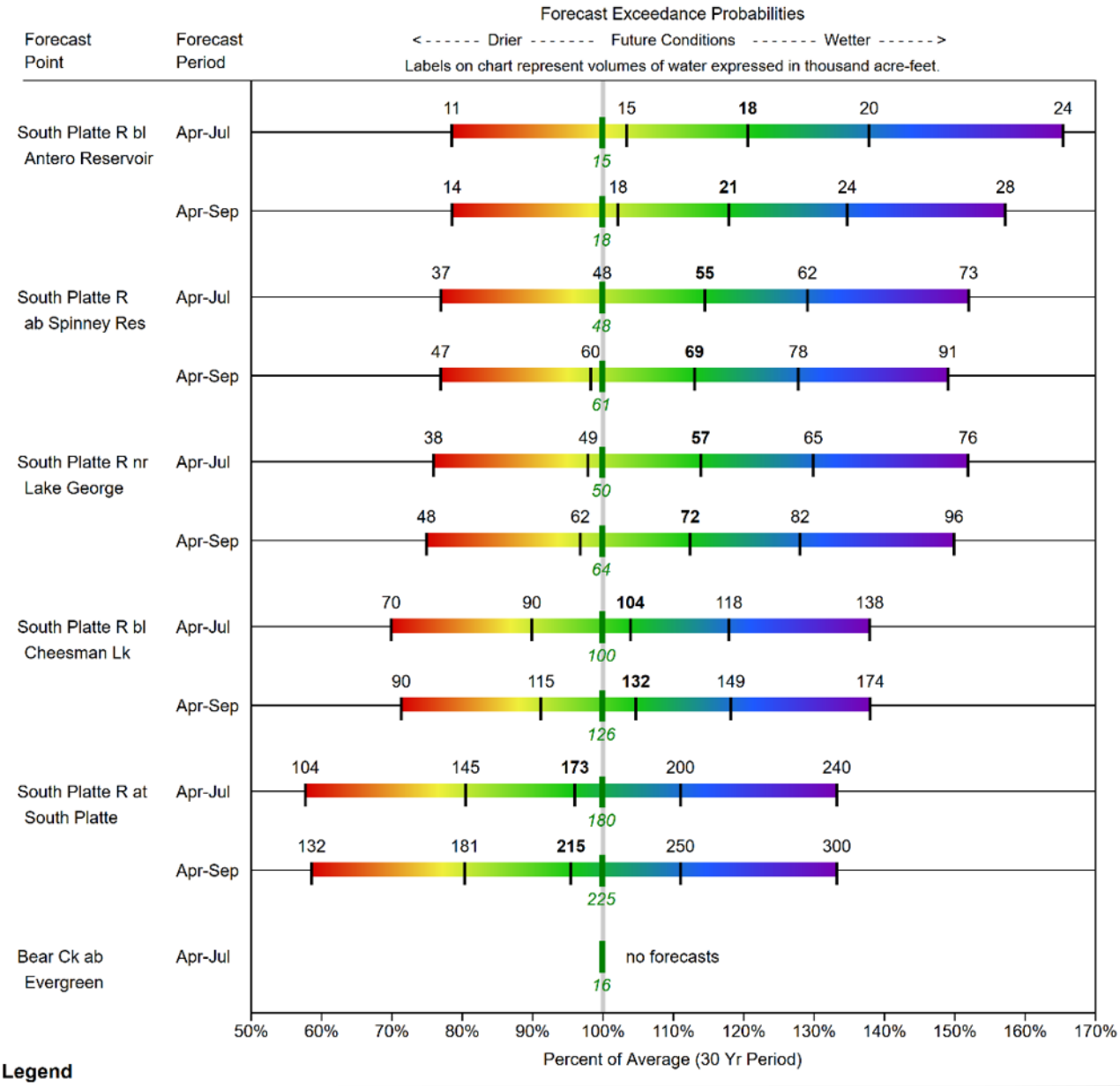
Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ANTERO RESERVOIR	19.2	20.4	15.2	19.9
BARR LAKE	27.3	28.8	26.0	30.1
BLACK HOLLOW RESERVOIR	4.0	3.3	2.8	6.5
BOYD LAKE	31.3	35.5	28.2	48.4
CACHE LA POUDRE	8.5	9.2	7.2	10.1
CARTER LAKE	91.5	70.6	87.0	108.9
CHAMBERS LAKE	2.5	5.2	3.2	8.8
CHEESMAN LAKE	61.4	66.5	63.4	79.0
COBB LAKE	15.1	19.0	11.6	22.3
ELEVENMILE CANYON RESERVOIR	99.4	99.6	95.8	98.0
EMPIRE RESERVOIR	28.4	35.4	25.9	36.5
FOSSIL CREEK RESERVOIR	10.1	9.2	7.7	11.1
GROSS RESERVOIR	11.8	15.3	12.8	29.8
HALLIGAN RESERVOIR	6.1	5.4	4.8	6.4
HORSECREEK RESERVOIR	1.2	11.8	11.7	14.7
HORSETOOTH RESERVOIR	93.5	95.0	104.8	149.7
JACKSON LAKE RESERVOIR	24.0	24.6	24.2	26.1
JULESBURG RESERVOIR	15.8	15.7	16.9	20.5
LAKE LOVELAND RESERVOIR	0.0	6.3	6.8	10.3
LONE TREE RESERVOIR	7.1	6.8	6.8	8.7
MARIANO RESERVOIR	2.0	4.0	3.2	5.4
MARSHALL RESERVOIR	5.8	7.3	5.9	10.0
MARSTON RESERVOIR	7.7	7.1	5.7	13.0
MILTON RESERVOIR	21.6	21.9	17.0	23.5
POINT OF ROCKS RESERVOIR	68.6	68.9	59.2	70.6
PREWITT RESERVOIR	21.0	18.4	17.7	28.2
RIVERSIDE RESERVOIR	52.3	53.9	43.5	55.8
SPINNEY MOUNTAIN RESERVOIR	30.2	37.0	28.1	49.0
STANDLEY RESERVOIR	28.0	42.0	35.7	42.0
TERRY RESERVOIR	5.5	6.4	5.0	8.0
UNION RESERVOIR	9.8	11.9	10.2	13.0
WINDSOR RESERVOIR	8.4	10.4	8.9	15.2
BASINWIDE	819.1	872.8	802.9	1079.5
Number of Reservoirs	32	32	32	32

SOUTH PLATTE RIVER BASIN

Water Supply Forecasts

March 1, 2019



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

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

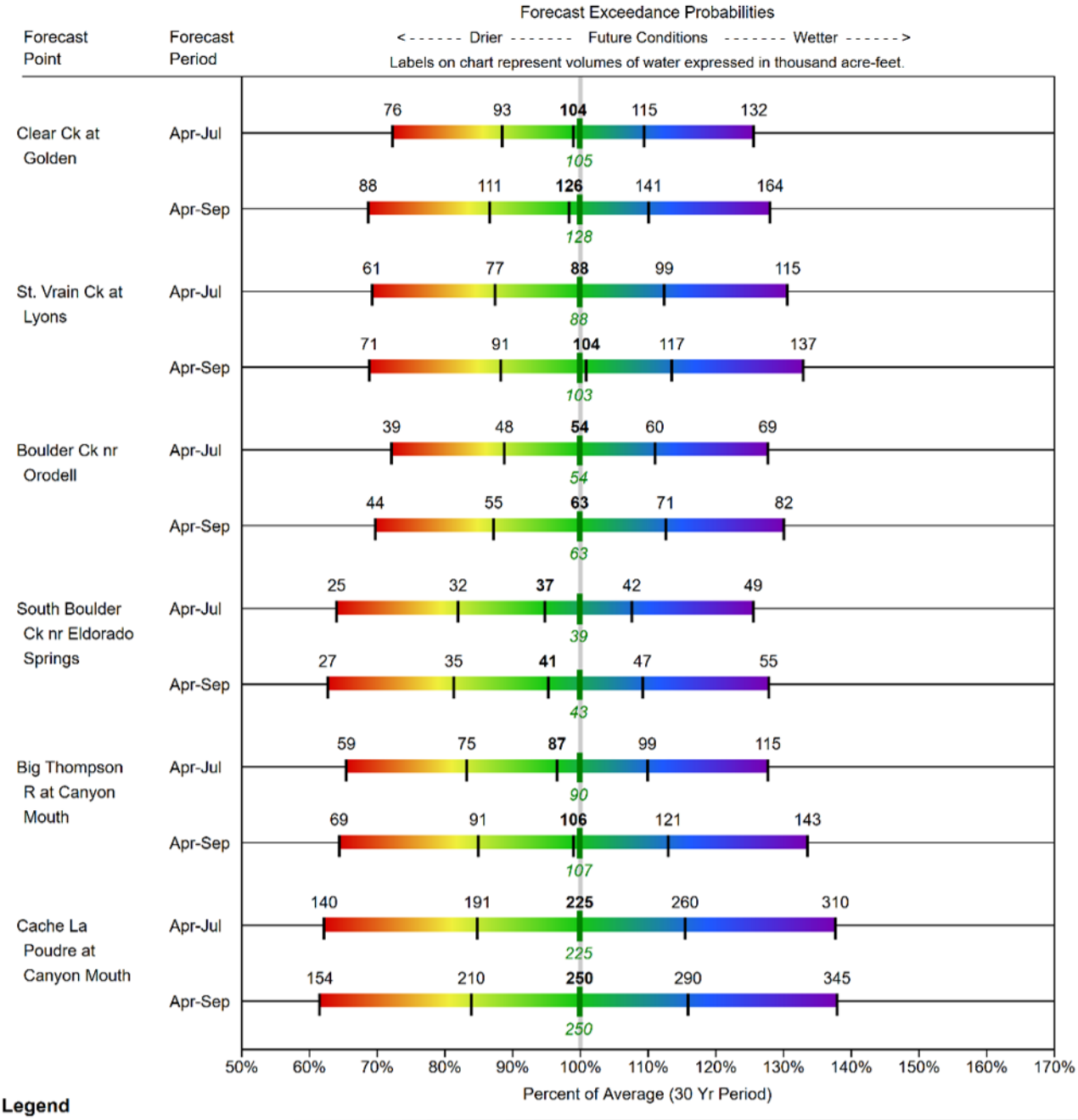
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

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

SOUTH PLATTE RIVER BASIN

Water Supply Forecasts

March 1, 2019



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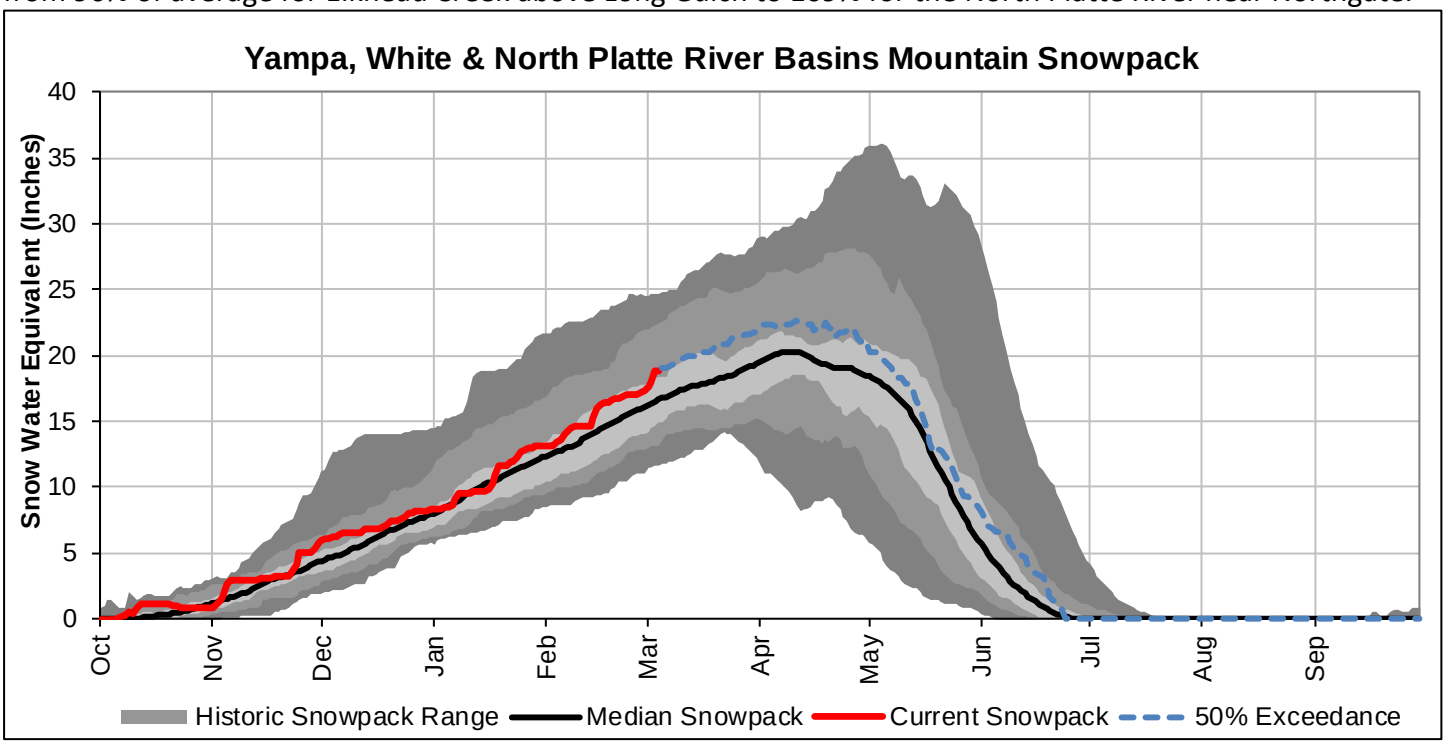
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

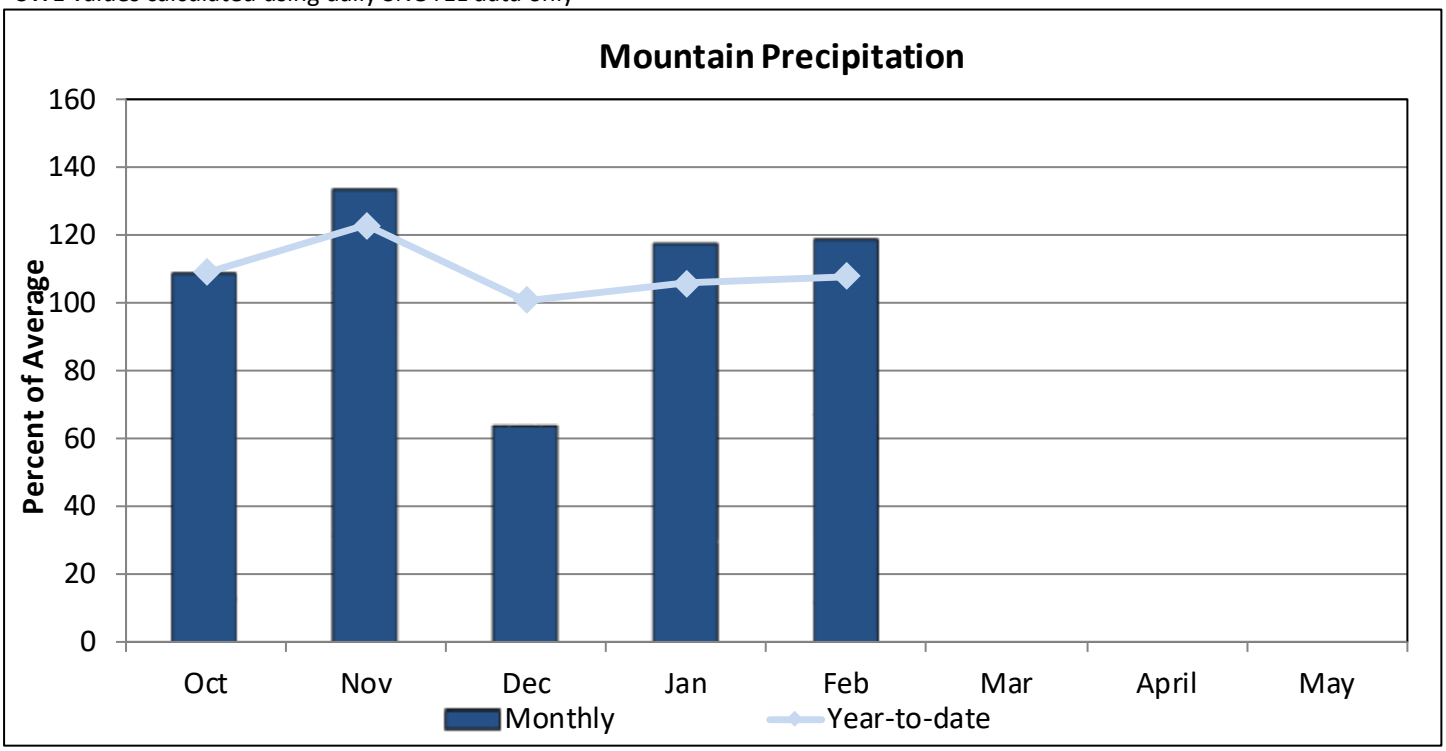
YAMPA, WHITE, NORTH PLATTE, AND LARAMIE RIVER BASINS

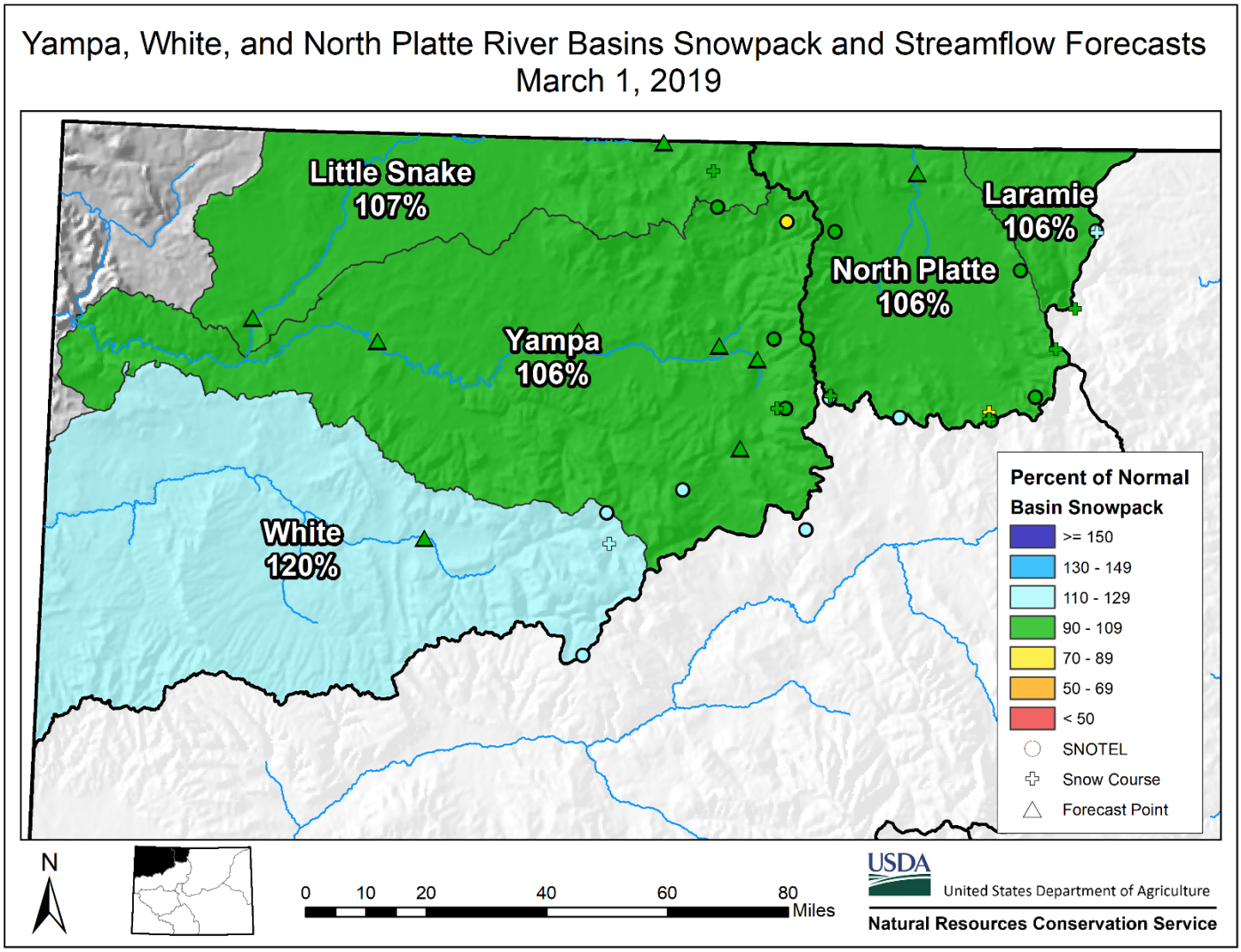
March 1, 2019

Snowpack in the Yampa, White & North Platte basins is above normal at 107% of the median. Precipitation for February was 119% of average and water year-to-date precipitation is 108% of average. Reservoir storage at the end of February was 104% of average compared to 125% last year. Current streamflow forecasts range from 96% of average for Elkhead Creek above Long Gulch to 109% for the North Platte River near Northgate.



*SWE values calculated using daily SNOTEL data only

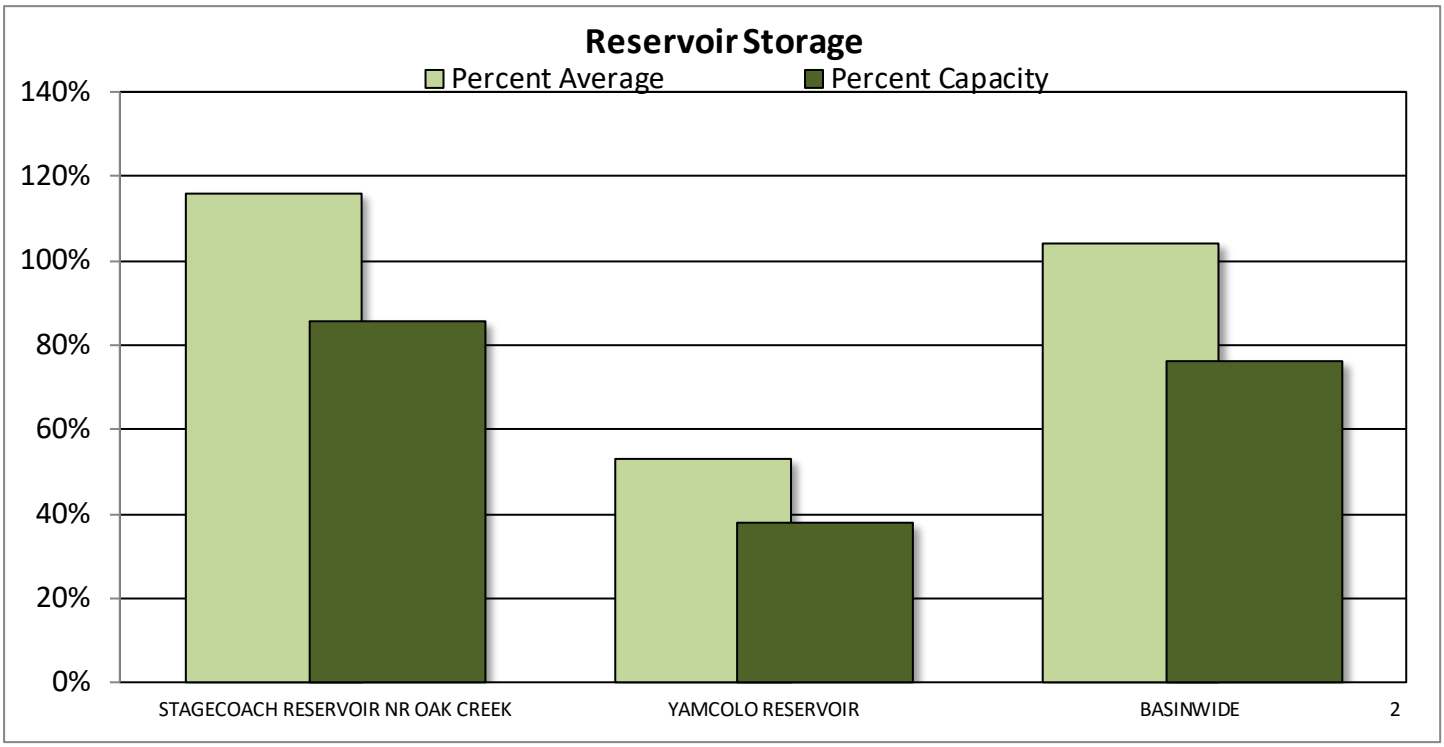




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Laramie	4	106	103
North Platte	12	106	88
Total Laramie & North Platte	16	106	91
Elk	2	91	73
Yampa	11	106	79
White	4	120	77
Total Yampa & White	14	108	78
Little Snake	9	107	79
Basin-Wide Total	35	107	83

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



Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
STAGECOACH RESERVOIR NR OAK C	31.2	33.4	26.9	36.5
YAMCOLO RESERVOIR	3.3	8.1	6.2	8.7
BASINWIDE	34.5	41.5	33.1	45.2
Number of Reservoirs	2	2	2	2

YAMPA-WHITE-NORTH PLATTE RIVER BASINS

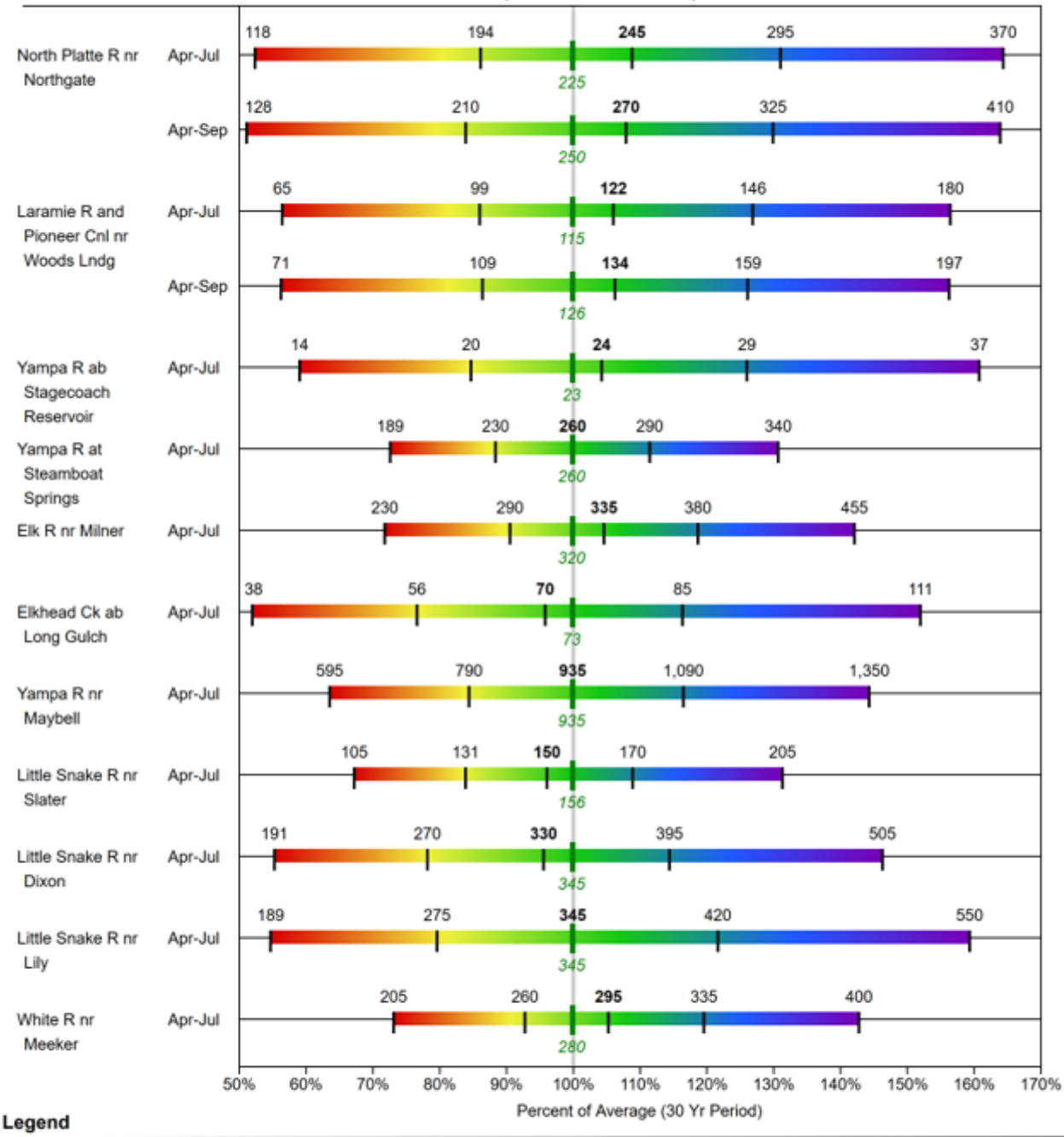
Water Supply Forecasts

March 1, 2019

Forecast Exceedance Probabilities

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

Labels on chart represent volumes of water expressed in thousand acre-feet.



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

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

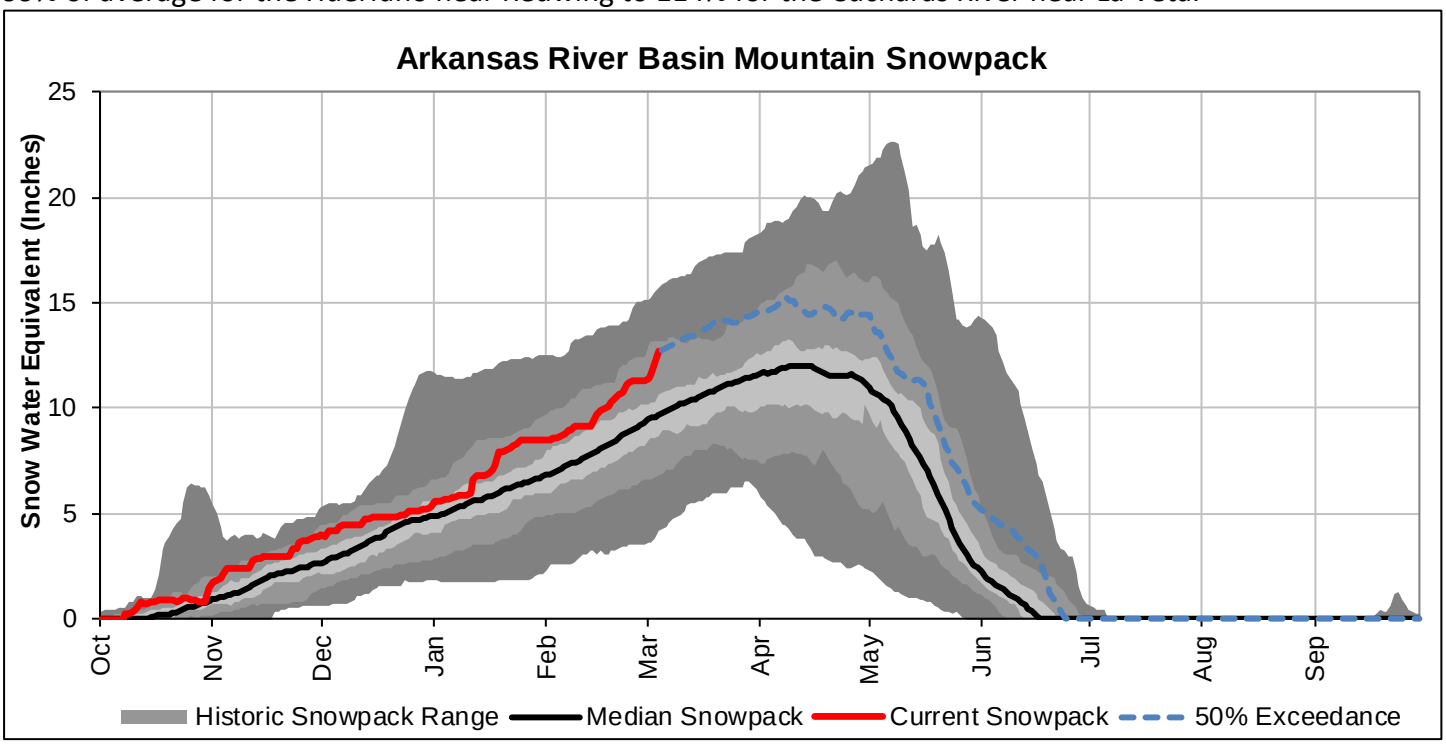
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

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

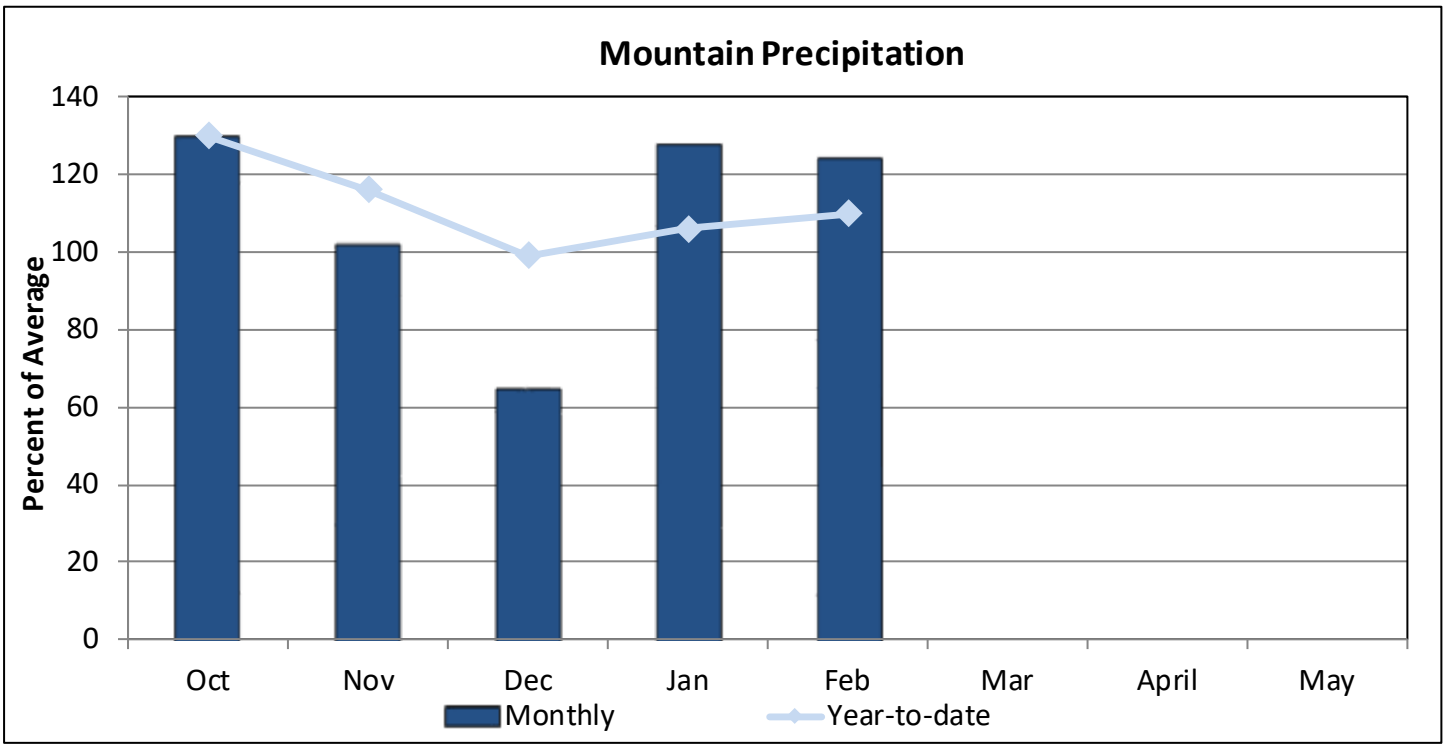
ARKANSAS RIVER BASIN

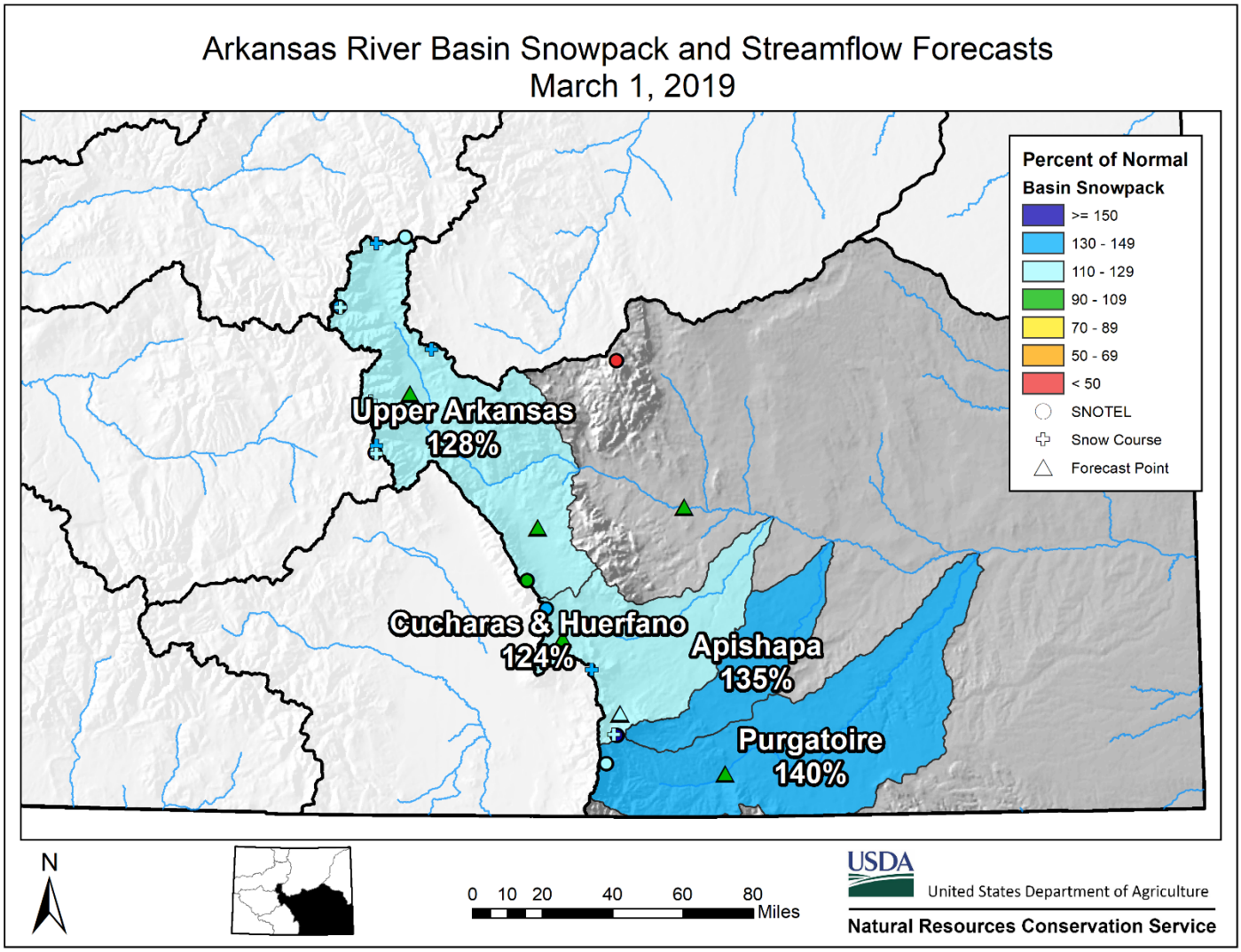
March 1, 2019

Snowpack in the Arkansas River basin is above normal at 124% of the median. Precipitation for February was 124% of average which brings water year-to-date precipitation to 110% of average. Reservoir storage at the end of February was 88% of average compared to 134% last year. Current streamflow forecasts range from 99% of average for the Huerfano near Redwing to 114% for the Cucharas River near La Veta.



*SWE values calculated using daily SNOTEL data only

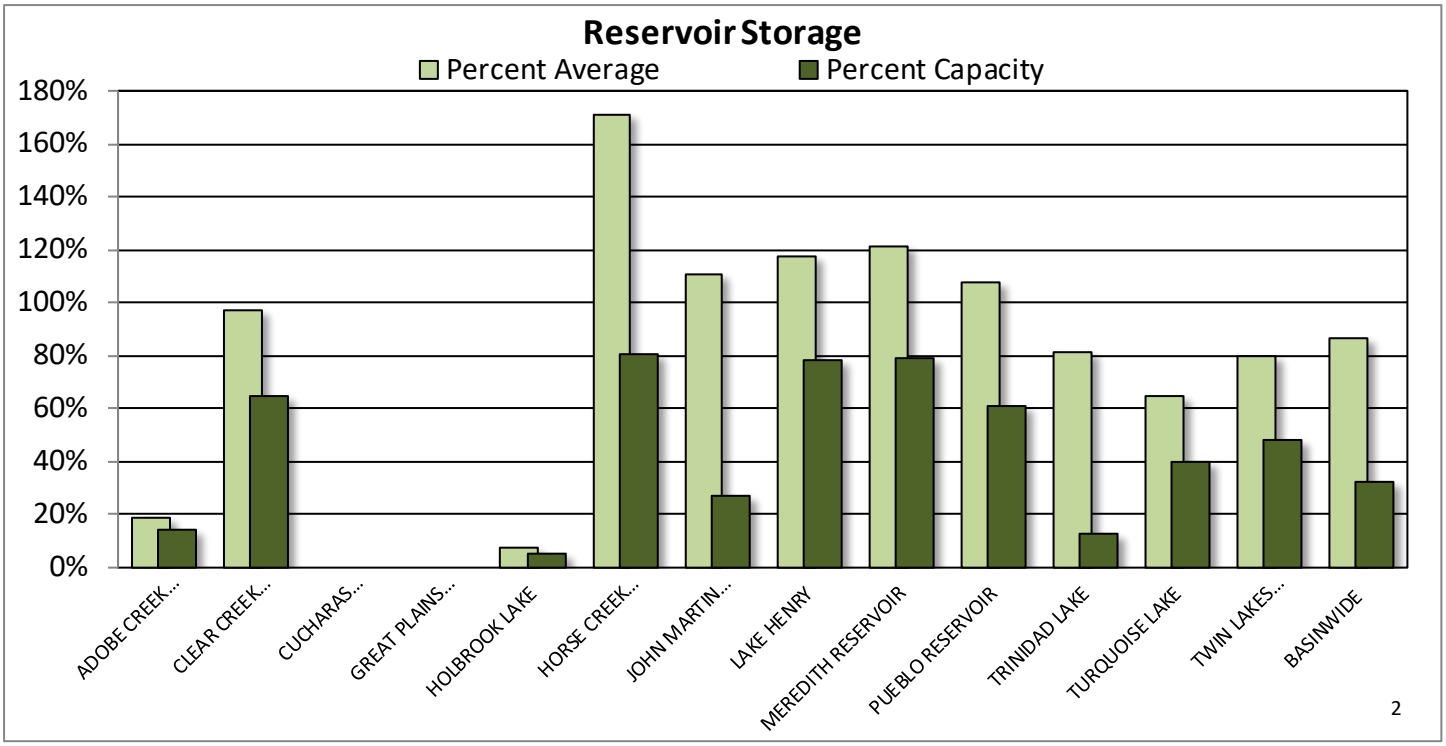




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Upper Arkansas	9	128	84
Cucharas & Huerfano	5	124	37
Purgatoire	2	140	29
Basin-Wide Total	16	124	64

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



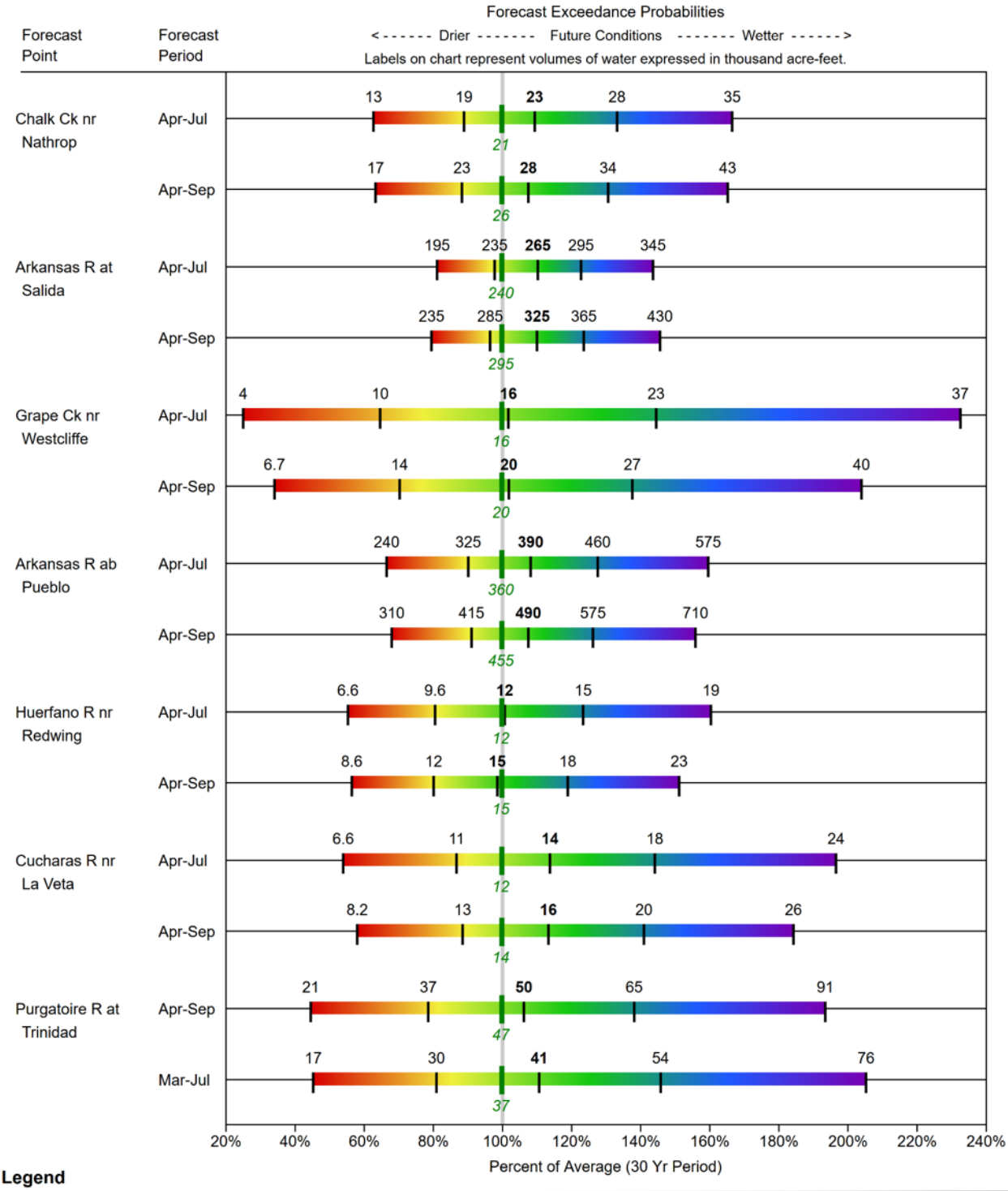
Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
ADOBE CREEK RESERVOIR	9.0	48.7	48.9	62.0
CLEAR CREEK RESERVOIR	7.4	8.1	7.6	11.4
CUCHARAS RESERVOIR				40.0
GREAT PLAINS RESERVOIR				150.0
HOLBROOK LAKE	0.3		4.6	7.0
HORSE CREEK RESERVOIR	21.7		12.7	27.0
JOHN MARTIN RESERVOIR	164.2	311.1	148.2	616.0
LAKE HENRY	7.3	8.8	6.2	9.4
MEREDITH RESERVOIR	33.3	36.1	27.4	42.0
PUEBLO RESERVOIR	215.5	274.1	200.6	354.0
TRINIDAD LAKE	21.8	39.3	26.8	167.0
TURQUOISE LAKE	50.6	92.1	78.5	127.0
TWIN LAKES RESERVOIR	41.1	28.4	51.8	86.0
BASINWIDE	572.2	846.7	613.3	1698.8
Number of Reservoirs	11	9	11	13

ARKANSAS RIVER BASIN

Water Supply Forecasts

March 1, 2019



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

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

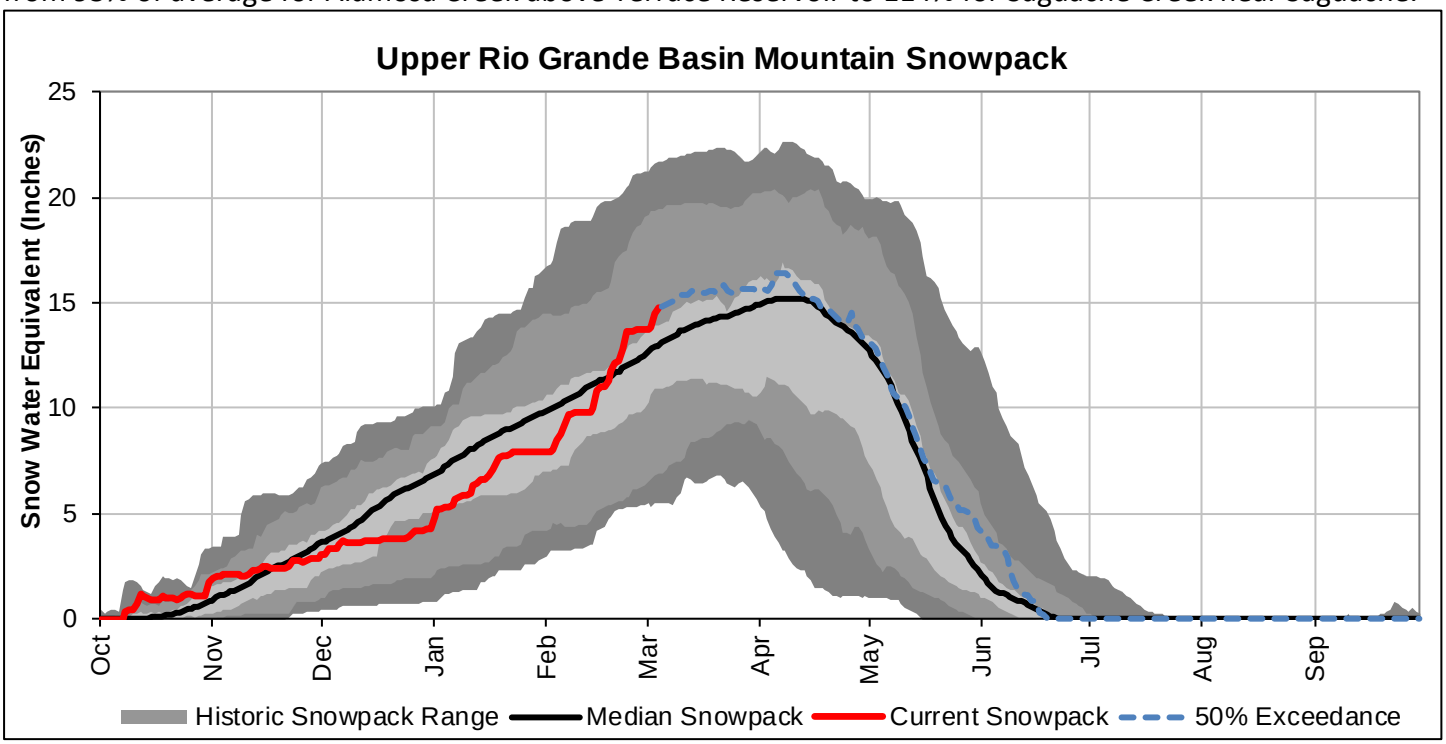
Period of Record Minimum Streamflow KAF (Year)	*1981-2010 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

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

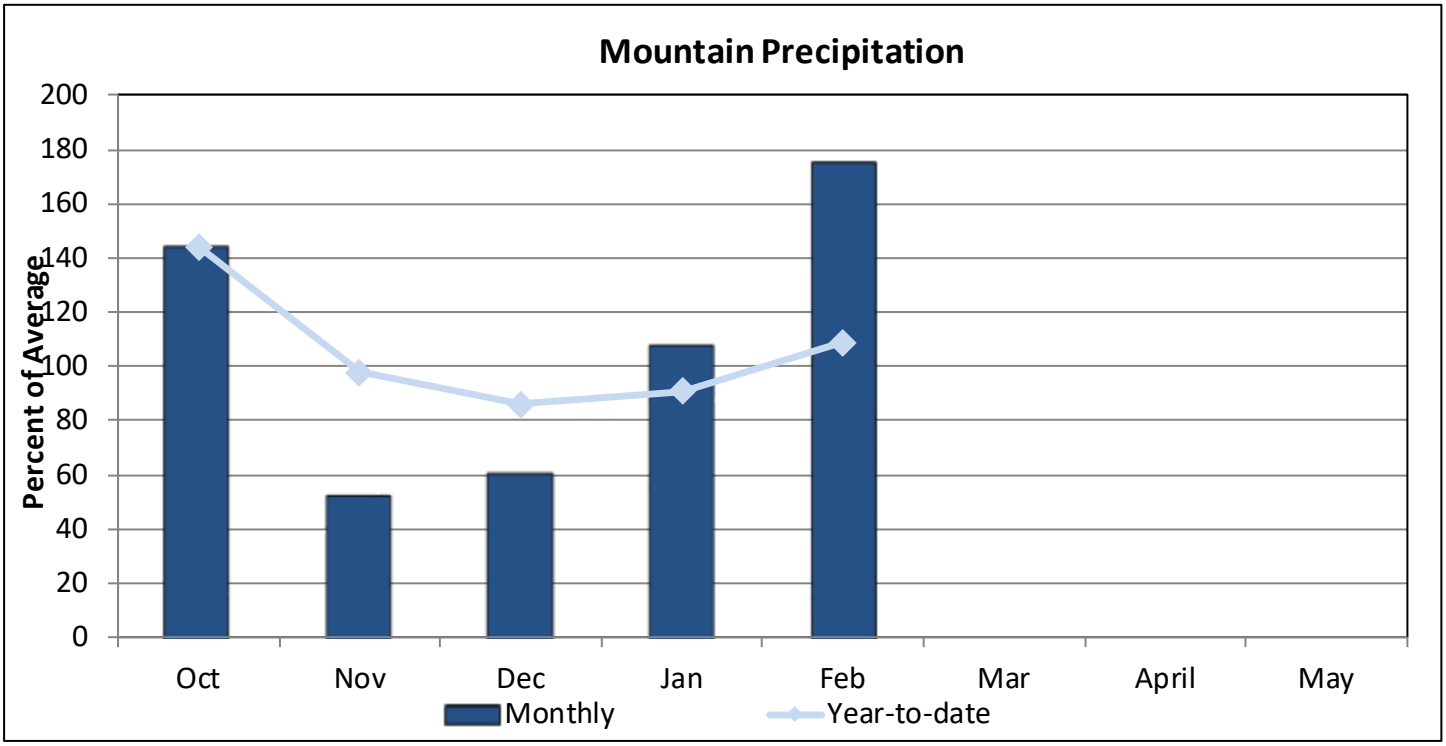
UPPER RIO GRANDE RIVER BASIN

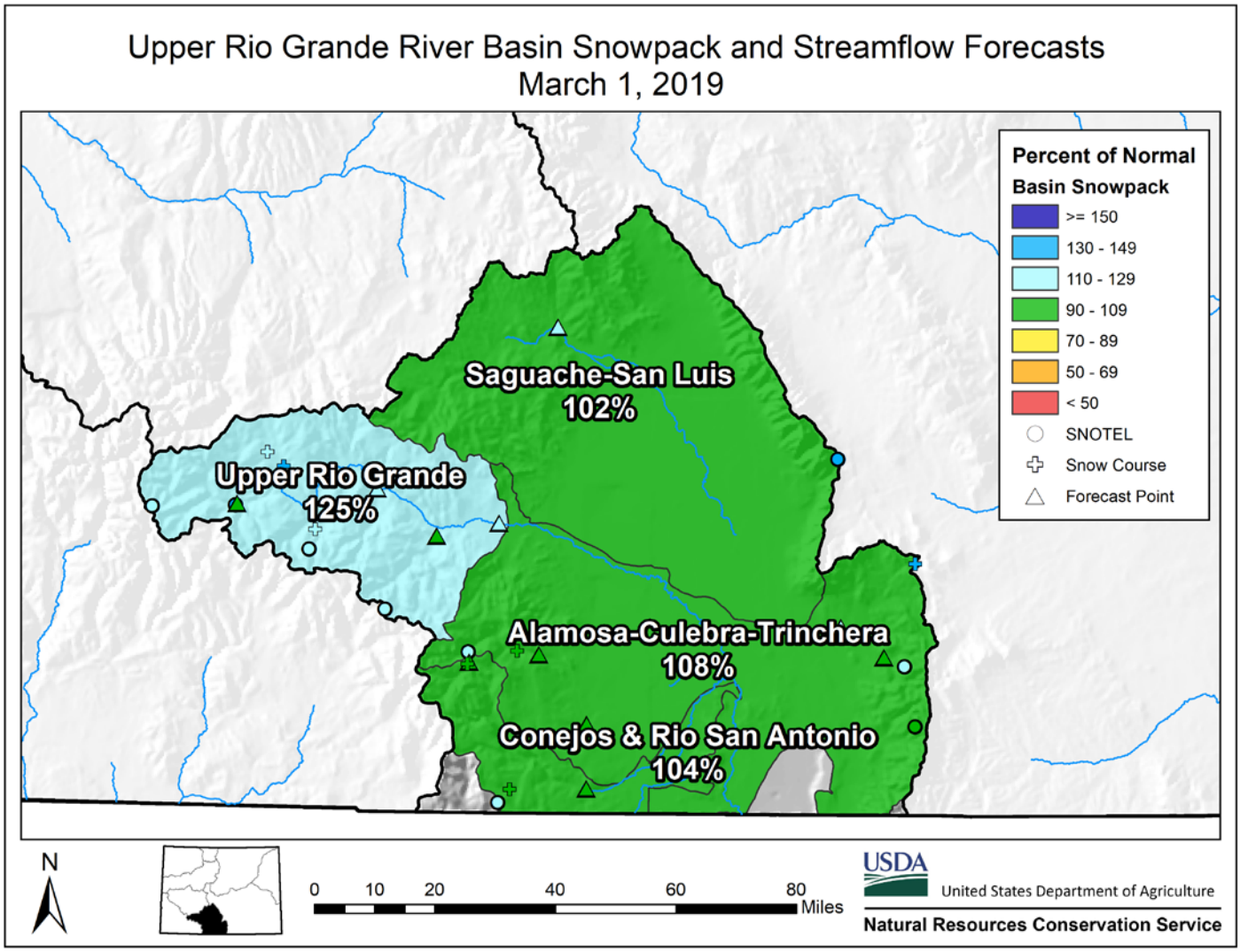
March 1, 2019

Snowpack in the Upper Rio Grande River basin is above normal at 115% of median. Precipitation for February was 175% of average which brings water year-to-date precipitation to 109% of average. Reservoir storage at the end of February was 78% of average compared to 121% last year. Current streamflow forecasts range from 95% of average for Alamosa Creek above Terrace Reservoir to 114% for Saguache Creek near Saguache.



*SWE values calculated using daily SNOTEL data only

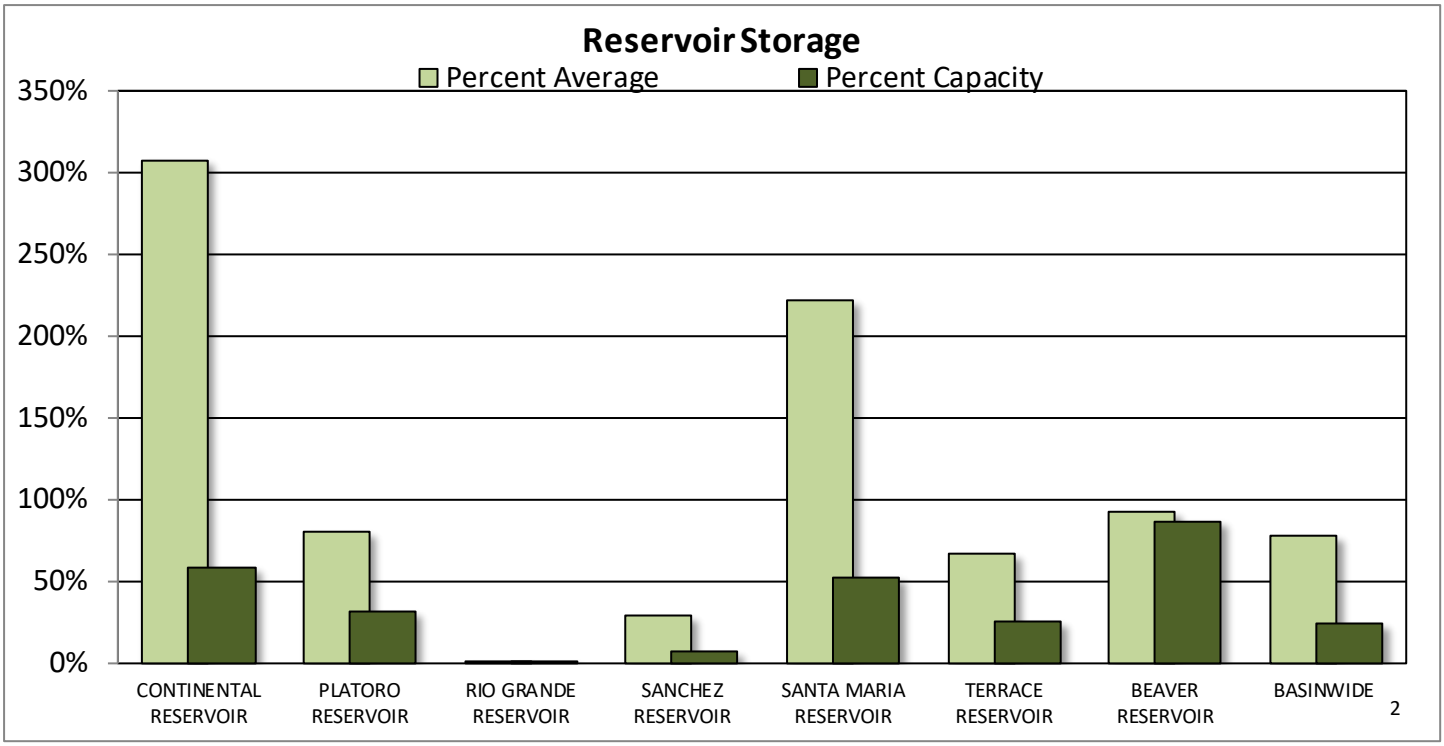




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Alamosa Creek	3	102	67
Conejos & Rio San Antonio	4	104	65
Culebra & Trinchera Creek	4	109	48
Upper Rio Grande	9	125	61
Basin-Wide Total	19	115	59

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



Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
CONTINENTAL RESERVOIR	15.7	11.9	5.1	27.0
PLATORO RESERVOIR	19.2	23.5	23.9	60.0
RIO GRANDE RESERVOIR	0.0	28.1	17.6	51.0
SANCHEZ RESERVOIR	7.9	21.2	27.6	103.0
SANTA MARIA RESERVOIR	23.7	19.0	10.7	45.0
TERRACE RESERVOIR	4.6	9.0	6.9	18.0
BEAVER RESERVOIR	3.9	3.9	4.2	4.5
BASINWIDE	75.0	116.5	96.0	308.5
Number of Reservoirs	7	7	7	7

UPPER RIO GRANDE BASIN

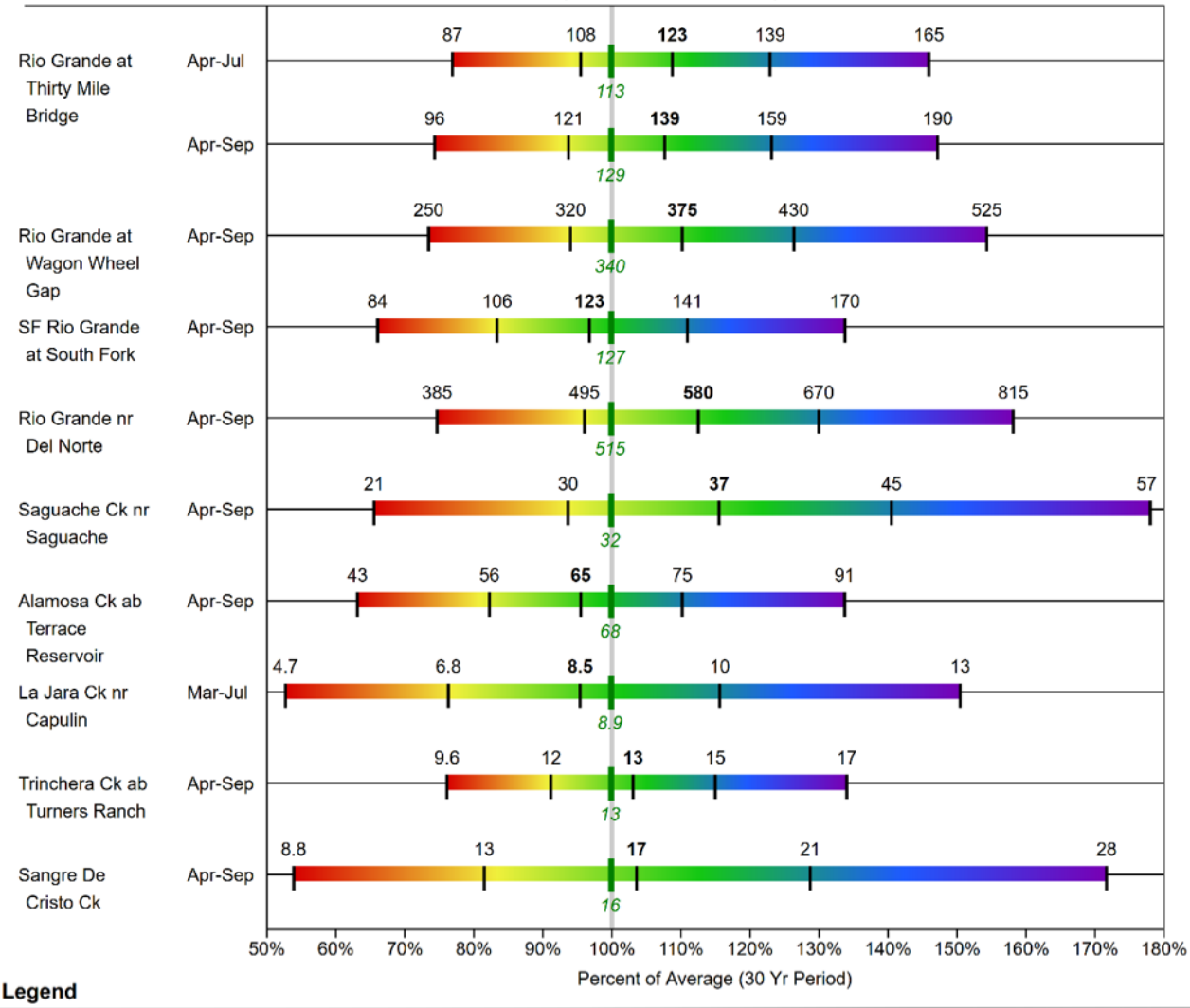
Water Supply Forecasts

March 1, 2019

Forecast Exceedance Probabilities

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

Labels on chart represent volumes of water expressed in thousand acre-feet.



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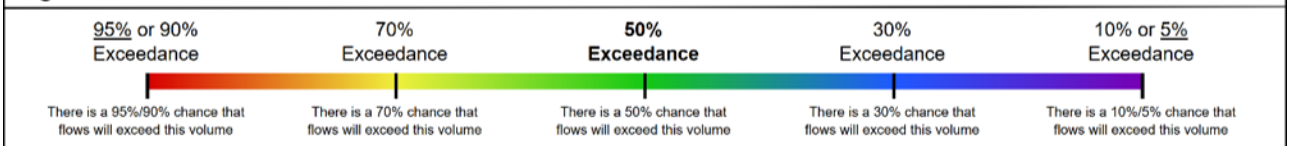

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1981-2010 Normal Streamflow KAF

Observed Streamflow KAF

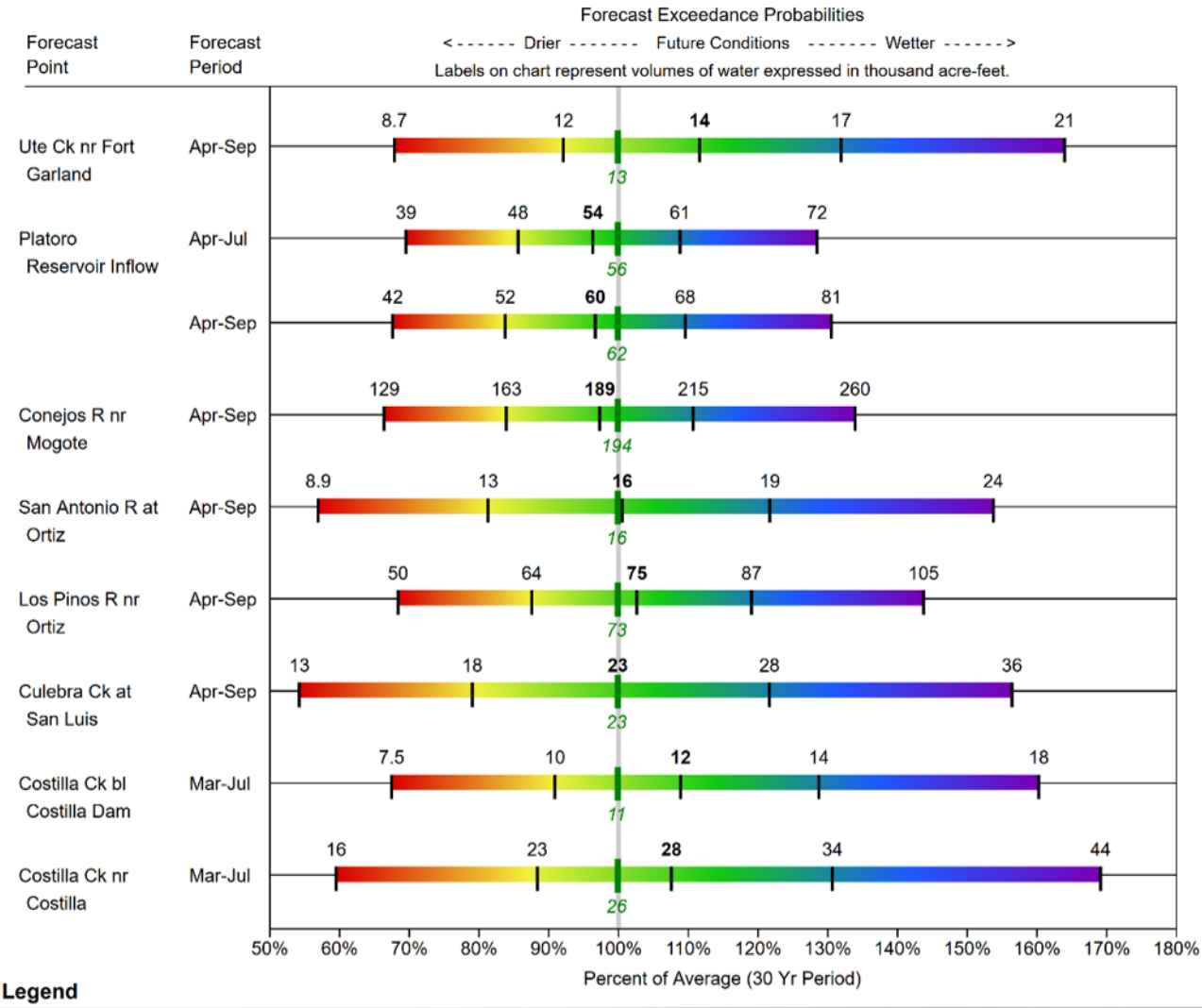
Period of Record Maximum Streamflow KAF (Year)

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

UPPER RIO GRANDE BASIN

Water Supply Forecasts

March 1, 2019



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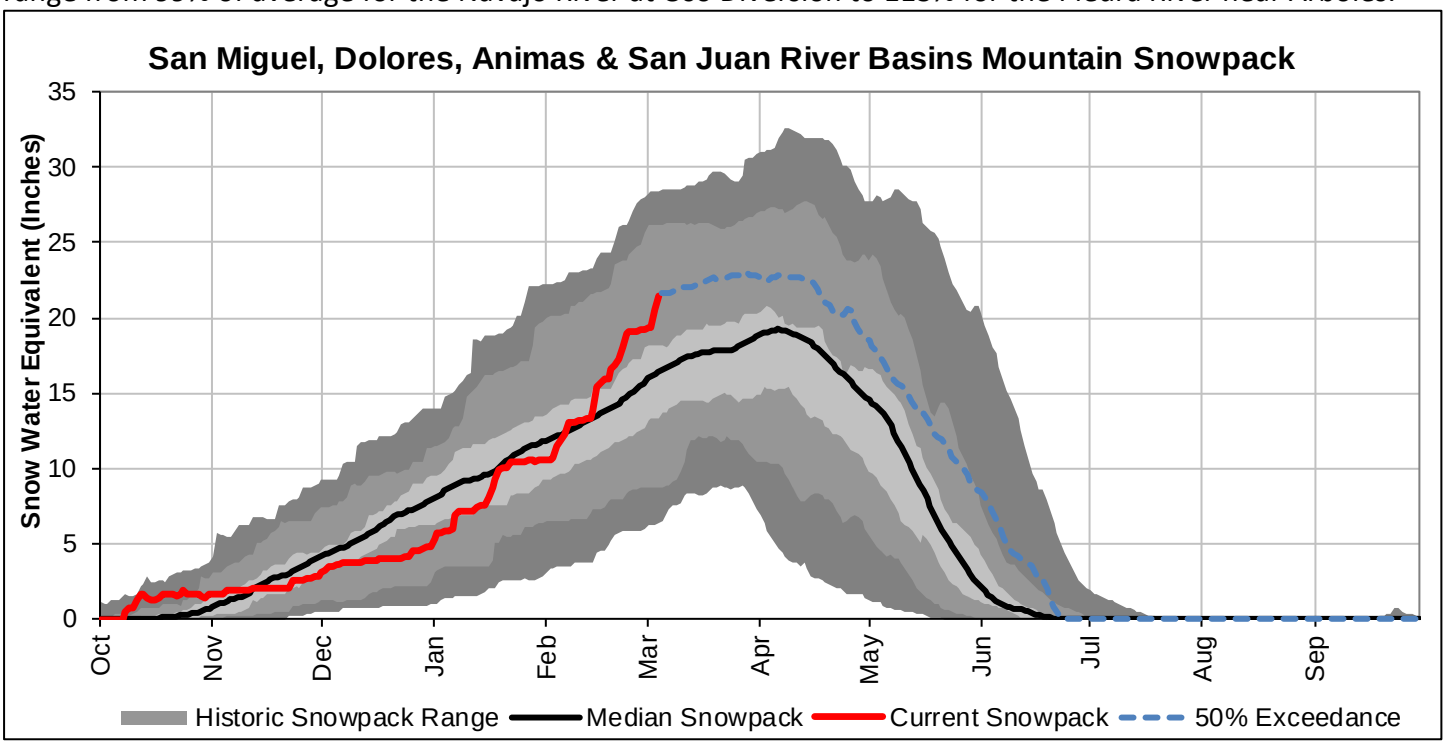
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

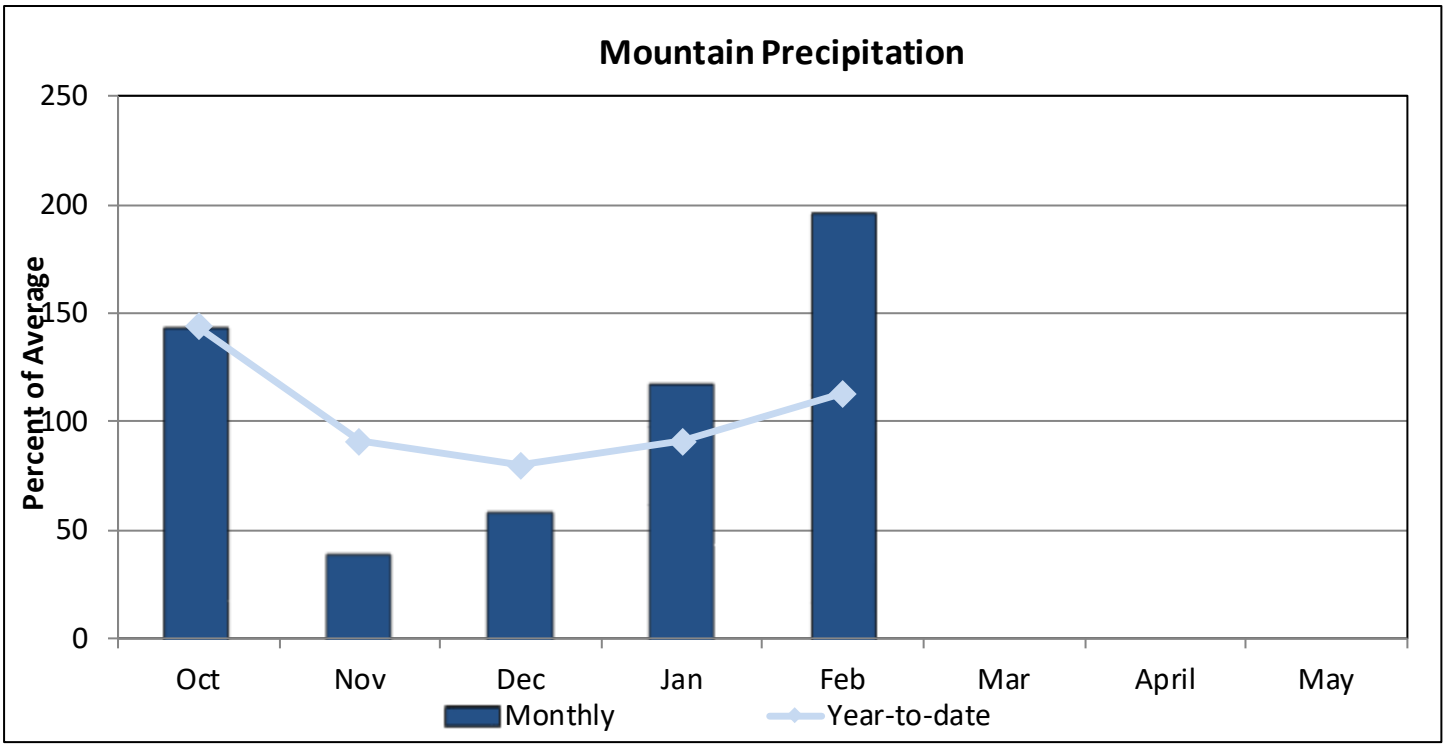
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

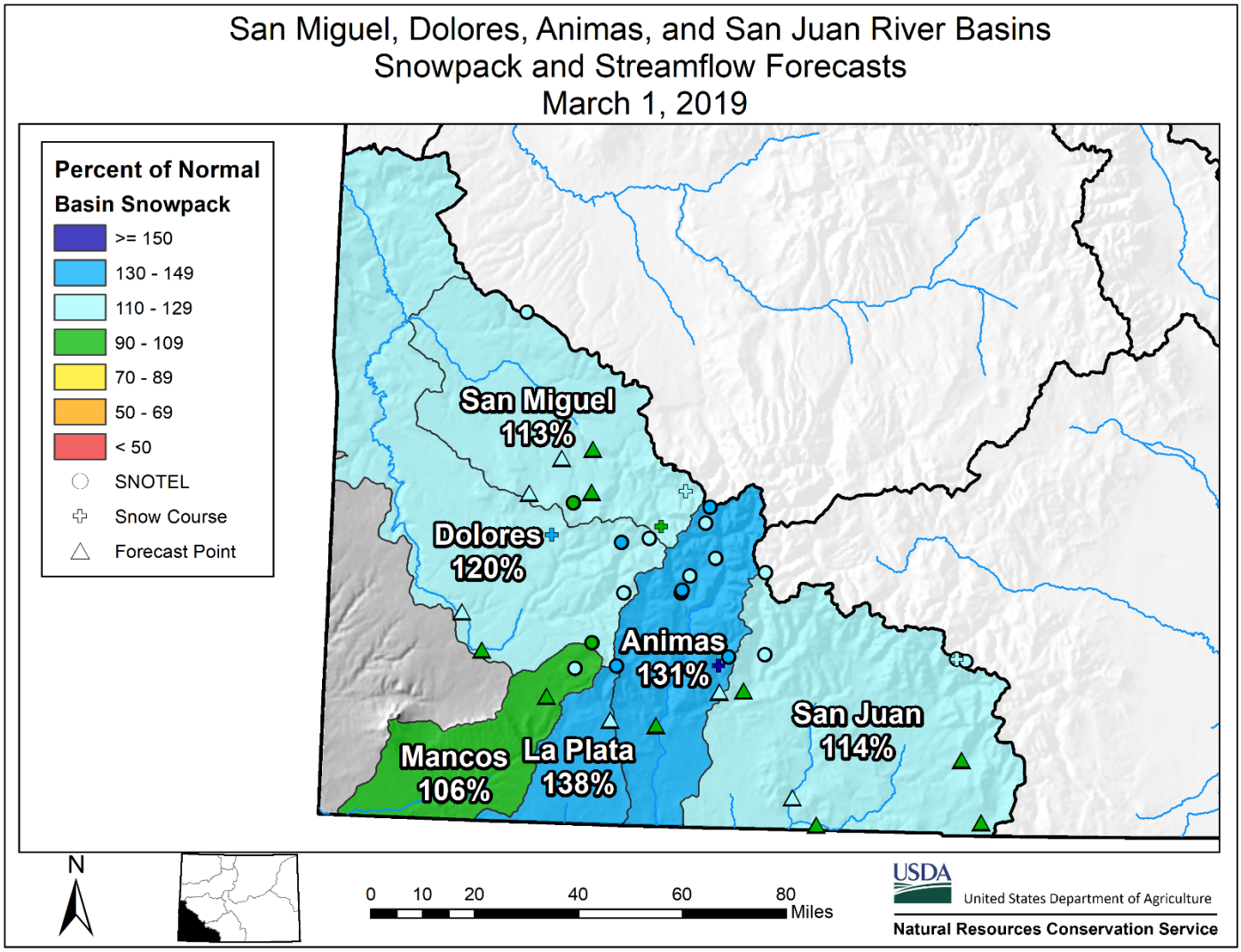
March 1, 2019

Snowpack in the combined southwest river basins is above normal at 122% of median. Precipitation for February was 196% of average which brings water year-to-date precipitation to 113% of average. Reservoir storage at the end of February was 58% of average compared to 105% last year. Current streamflow forecasts range from 99% of average for the Navajo River at Oso Diversion to 113% for the Piedra River near Arboles.



*SWE values calculated using daily SNOTEL data only

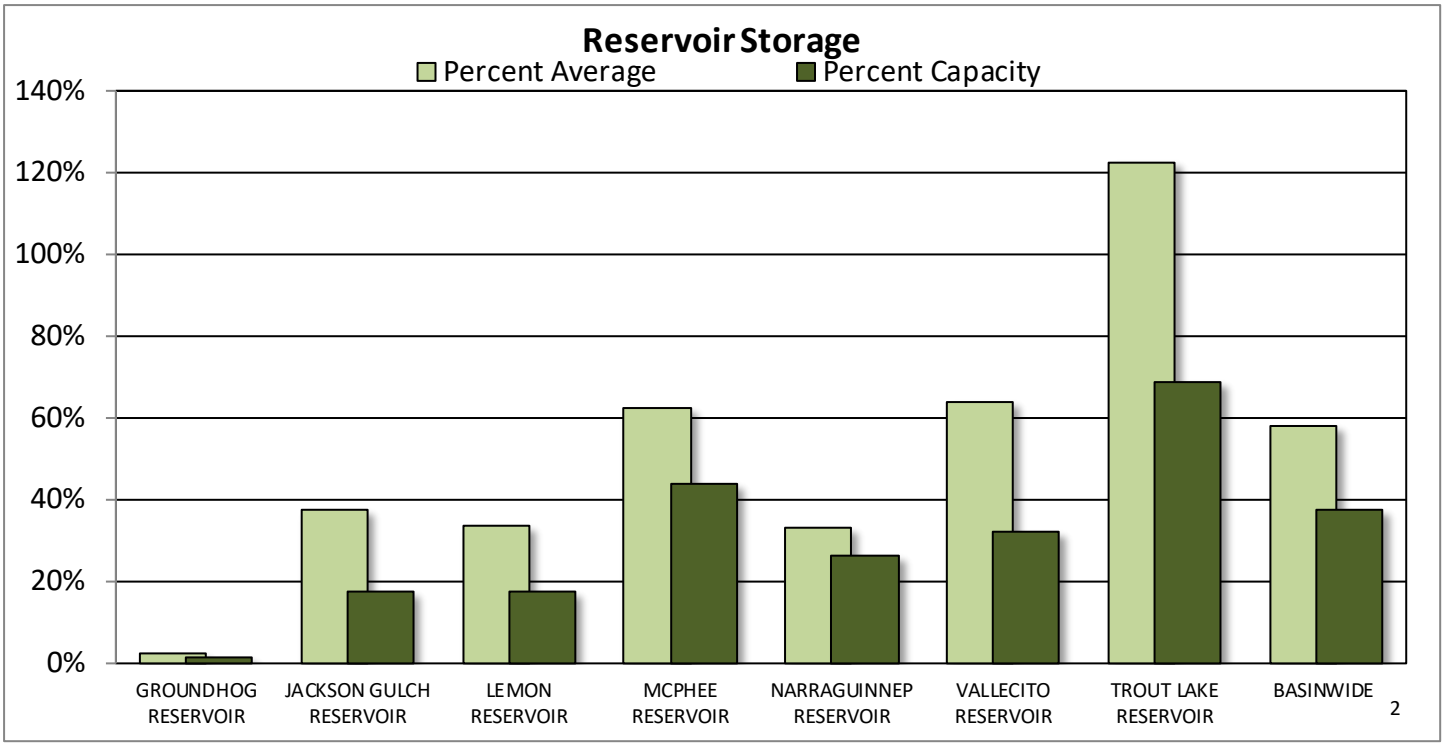




Watershed Snowpack Analysis March 1st, 2019

Sub-Basin	# of Sites	% Median	Last Year % Median
Animas	10	131	53
Dolores	6	120	51
San Miguel	5	113	50
San Juan	4	114	58
Basin-Wide Total	24	122	53

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



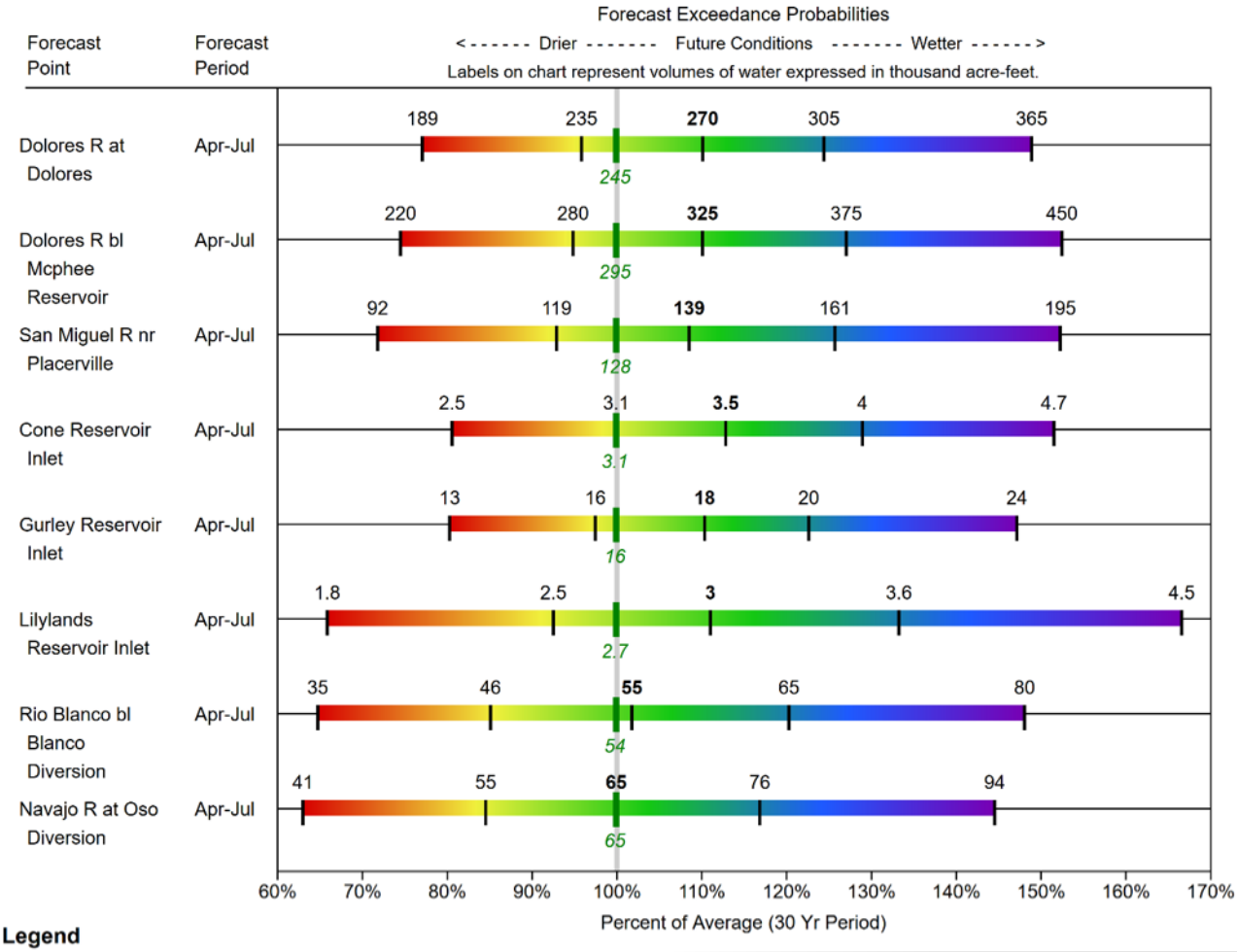
Reservoir Storage End of February 2019

Reservoir	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
GROUNDHOG RESERVOIR	0.3	12.3	12.4	22.0
JACKSON GULCH RESERVOIR	1.7	5.3	4.6	10.0
LEMON RESERVOIR	7.0	18.7	21.0	40.0
MCPHEE RESERVOIR	167.3	284.1	268.0	381.0
NARRAGUINNEP RESERVOIR	5.0	11.6	15.1	19.0
VALLECITO RESERVOIR	40.7	69.8	63.6	126.0
TROUT LAKE RESERVOIR	2.2	2.6	1.8	3.2
BASINWIDE	224.3	404.4	386.5	601.2
Number of Reservoirs	7	7	7	7

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS

Water Supply Forecasts

March 1, 2019



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

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS

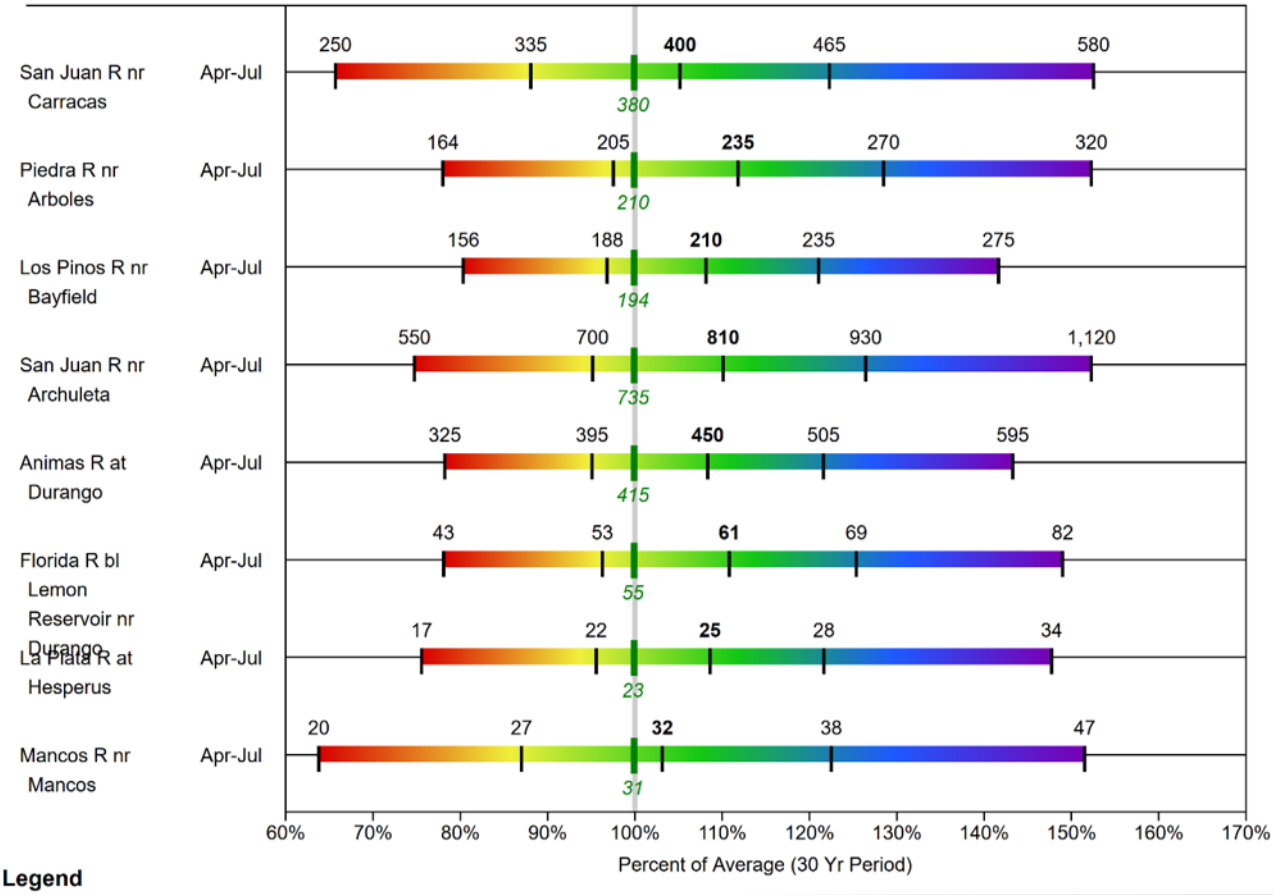
Water Supply Forecasts

March 1, 2019

Forecast Exceedance Probabilities

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

Labels on chart represent volumes of water expressed in thousand acre-feet.



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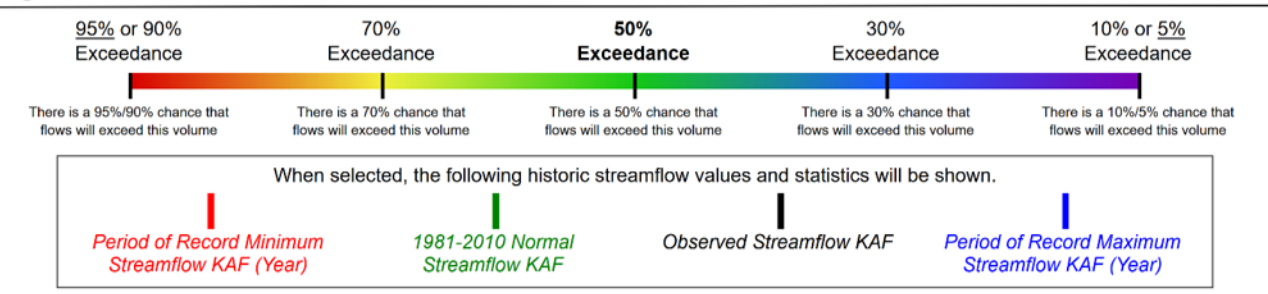


Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

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.

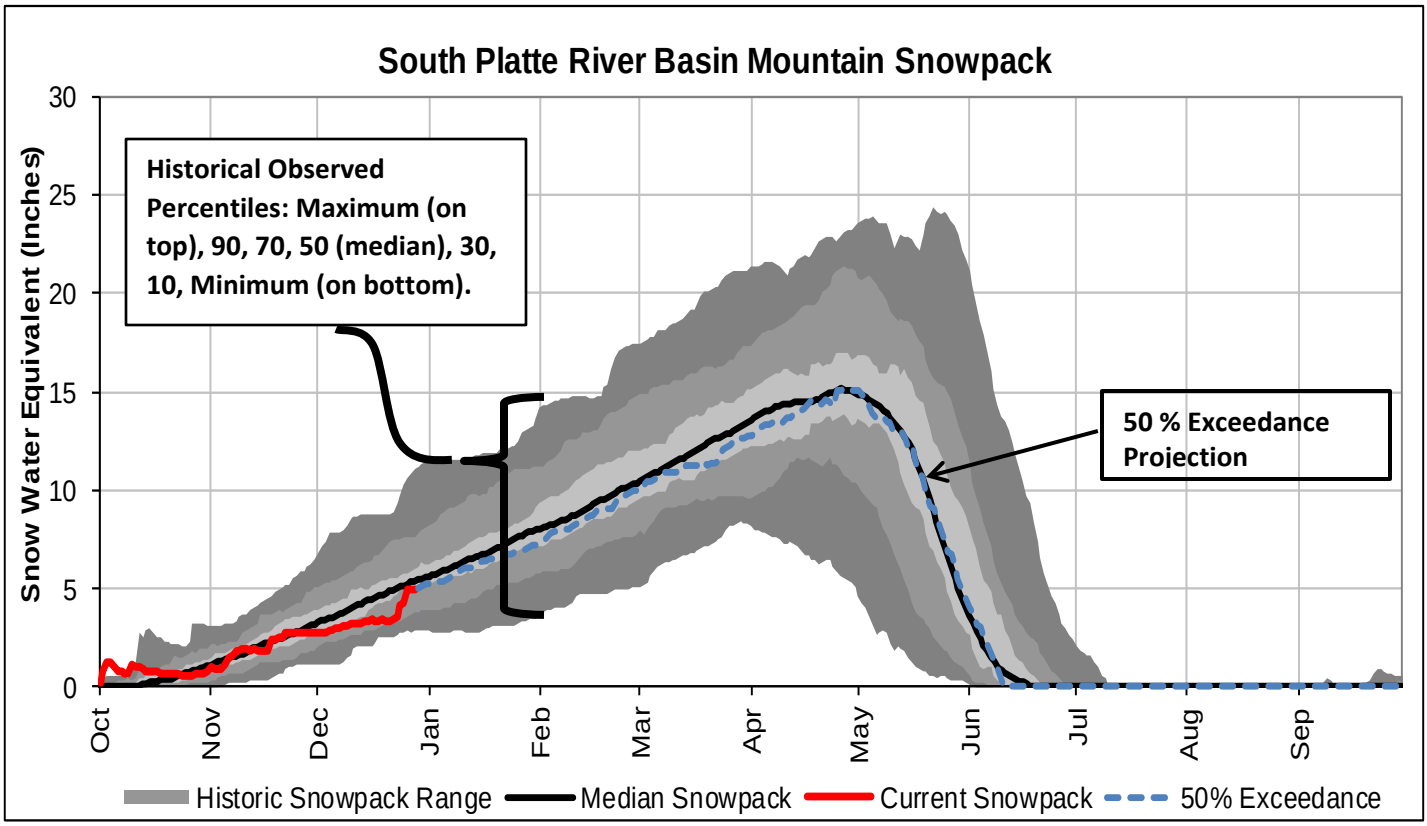
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

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 % 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/

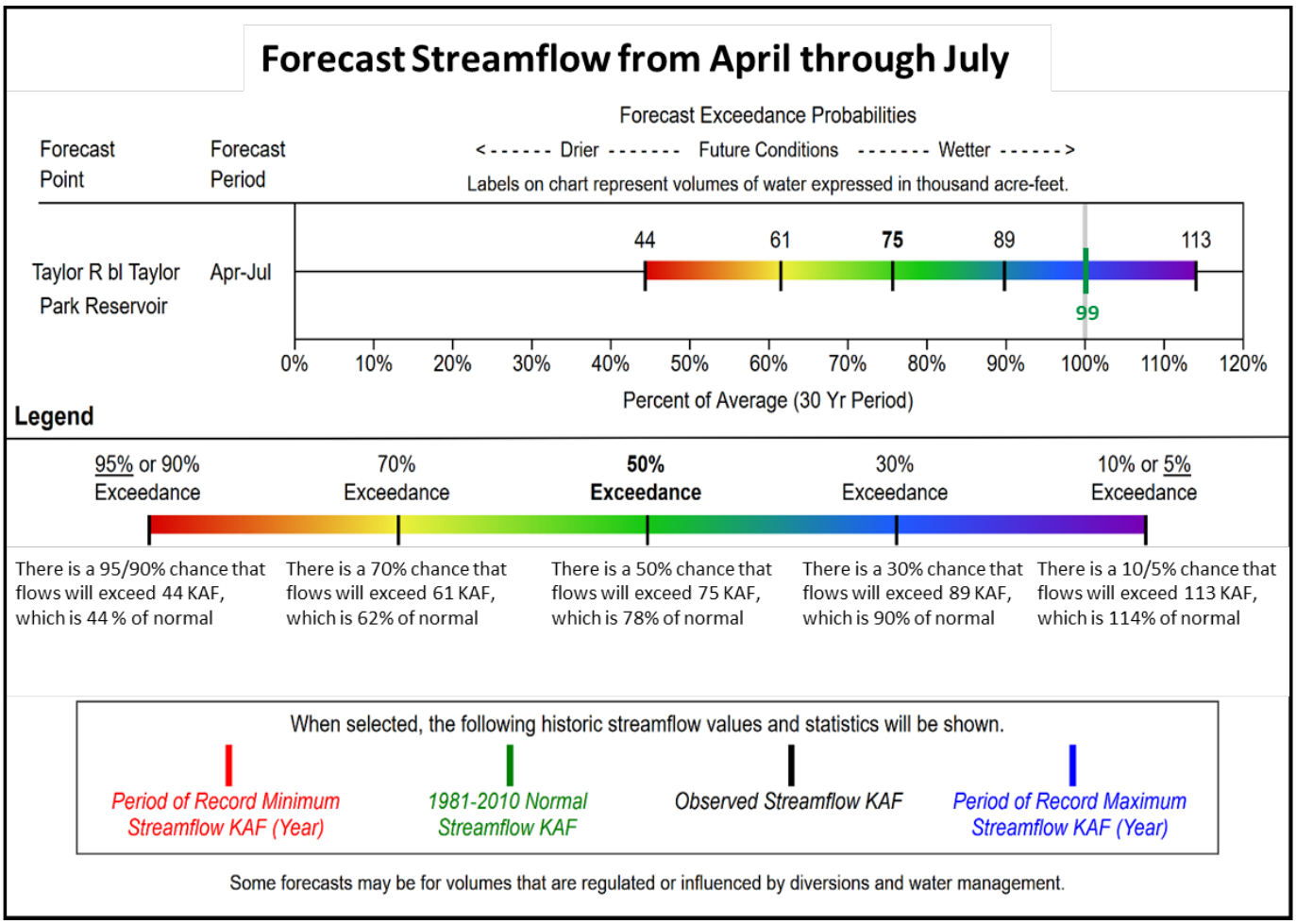
Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual 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 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. These charts are available online here: https://www.nrcs.usda.gov/wps/portal/wcc/home/quickLinks/ForecastCharts/#state=CO&basin=GUNNISON%20RIVER%20BASIN&year=2019&pubDate=1-1&period=all



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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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