

# Colorado

# Water Supply Outlook Report

## April 1st, 2024



**NRCS Surveyor, Patrick Saylor, returning from a snow survey of the Sundance Snow Course in the Upper South Platte region near Mt. Bierstadt. The Sundance Snow Course measured 10.2 inches of SWE, which is 104 percent of normal for April 1<sup>st</sup>.**

**Photo By: Zack Wilson**

**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.

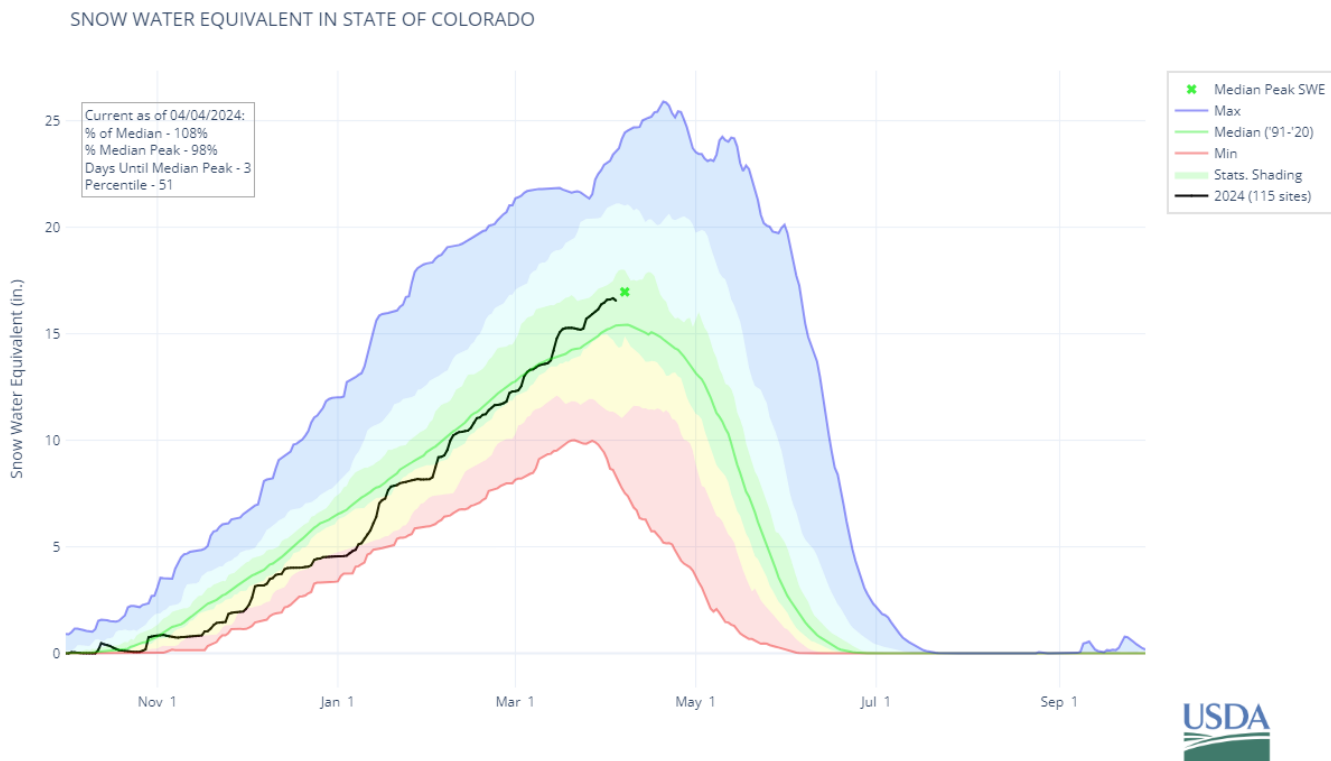
# Contents

Colorado Statewide Water Supply Conditions for March 1st.....	3
Summary .....	3
Snowpack .....	4
Precipitation.....	5
Streamflow.....	7
GUNNISON RIVER BASIN .....	8
COLORADO HEADWATERS RIVER BASIN .....	12
YAMPA-WHITE-LITTLE SNAKE AND LARAMIE-NORTH PLATTE RIVER BASINS .....	20
ARKANSAS RIVER BASIN.....	25
UPPER RIO GRANDE RIVER BASIN .....	29
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN COMBINED RIVER BASIN.....	33
New 1991-2020 Statistical Normals.....	37
How to Read Snowpack Graphs .....	38
How Forecasts Are Made .....	39
Interpreting the Forecast Graphics.....	40

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# Colorado Statewide Water Supply Conditions for April 1st

## Summary

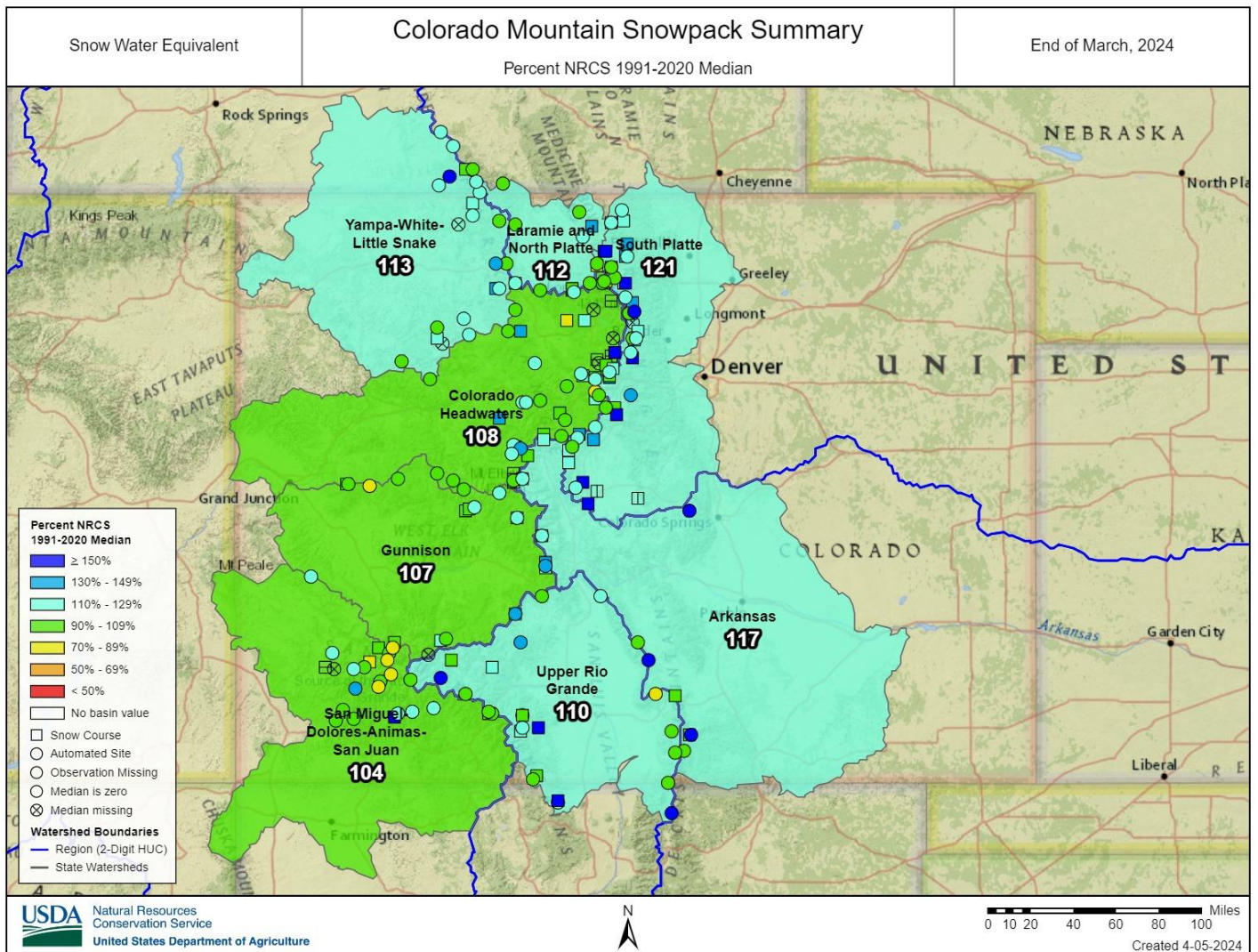


\*For the above graph, snow water equivalent (SWE) values are calculated using daily SNOTEL data only. SWE numbers presented in the text are values from the first of the month and include manual Snow Course measurements along with SNOTEL data.

March was an exceptionally wet month, with several significant storms delivering above normal precipitation to all major basins across the state, boosting snowpack and streamflow forecasts for the upcoming snowmelt-runoff season. The storm track in early March largely favored the northern and central mountains, bringing substantial snowfall to those basins but left the southern basins mostly warm and dry. On March 13<sup>th</sup>, a powerful system moved across the southern portion of the state, delivering significant precipitation for multiple days to the San Juan, Sangre de Cristo, and Front Range Mountains. After this storm system, warm and dry conditions returned to large portions of the state, leading to some lower elevations SNOTEL stations to begin melt-out, but cooler temperatures and storm activity returned during the final week of March, leading to further snowpack gains across most basins. All major basins received above normal precipitation for the month of March, ranging from 138 percent of median in the combined Yampa-White-Little Snake River basin to 186 percent of median in the Arkansas River basin. The above median precipitation helped boost snowpack across the state, with statewide snowpack on April 1<sup>st</sup> above normal at 112 percent of median. All major basins have above normal snowpacks and current snowpack conditions range from 104 percent of median in the combined San Miguel-Dolores-Animas-San Juan River basin to 121 percent of median in the South Platte River basin. Streamflow forecasts have improved since March 1<sup>st</sup> and most basins are currently forecasted to have near normal or above normal runoff volumes this summer. The combined San Miguel-Dolores-Animas-San Juan River basin has the lowest streamflow forecasts compared to normal at 82 percent of median because of a dry fall and early winter. Statewide reservoir storage is currently 99 percent of median and has been near normal for much of the winter. With snowmelt-runoff season quickly approaching, all current conditions point to mostly normal streamflow conditions this summer. It's important to continue monitoring changing conditions over the next month as future precipitation and temperatures can still have an impact on snowmelt timing and possible impacts on streamflow volumes.

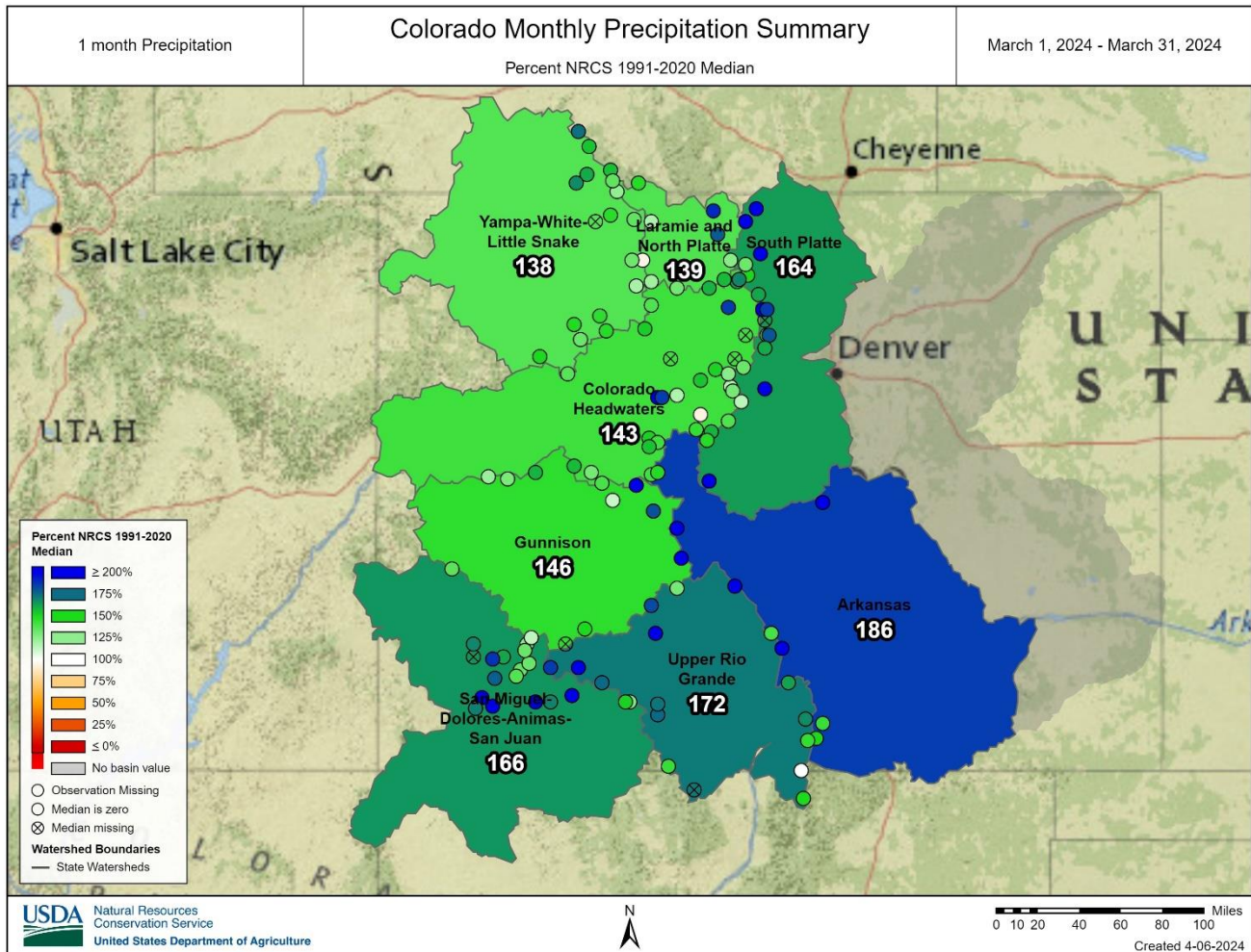


# Snowpack



Colorado’s snowpack saw a continual upward trend during March, continuing the steady increase consistent with last month, resulting in a statewide increase to above-normal snow water equivalent. A trend persists from January with northern and eastern river basins maintaining higher snowpack totals compared to river basins in the southwest. The South Platte River basin boasts the highest snowpack conditions in the state compared to normal, ending March with 121 percent of median. The Gunnison and combined San Miguel-Dolores-Animas-San Juan River basins, have the lowest snowpack conditions in the state at 104 and 107 percent of median, respectively. The Arkansas River basin is above normal at 117 percent of median, with a notable contribution from the Northern San Luis Valley sub-basin representing 153 percent of median snowpack for April 1st. Many of the gains in snowpack were received in mid-March due to a significant [storm event](#) that impacted much of the state but especially the Front Range, southern, and central portions of the state from March 13-15th. In this storm, some areas of the South Platte, Colorado Headwaters and combined Laramie-North Platte river basins received over two feet of snow depth accumulation, in excess of two inches of snow water equivalent. For example, Lake Eldora SNOTEL station received 32 inches of snow accumulation with a water equivalent of 2.4 inches during the storm. Overall, Colorado experienced increased snowpack across the state with most river basins favored by the March 13-15<sup>th</sup> storm event, leaving the state with above-normal snowpack as we approach peak snow water equivalent before the melt season.

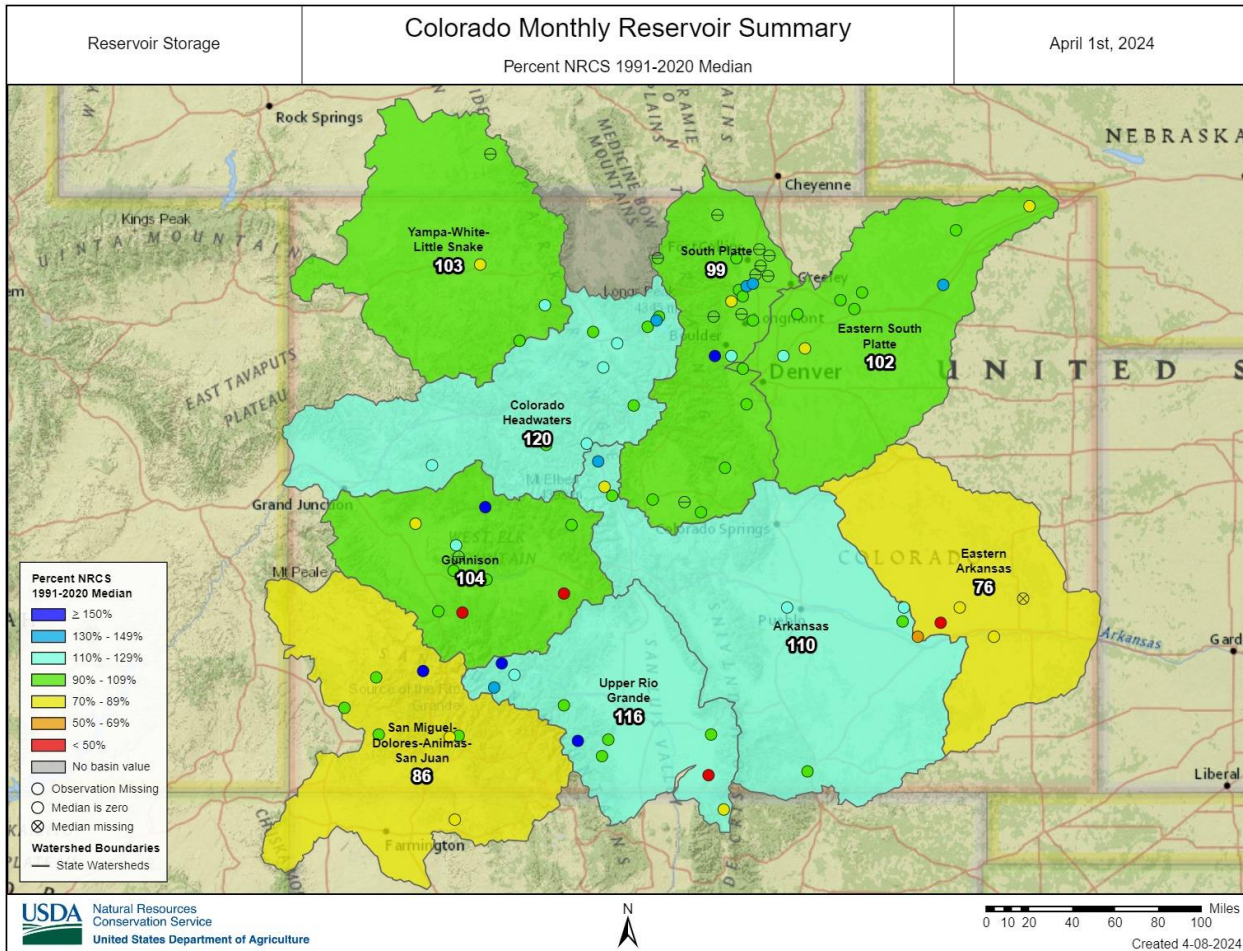
# Precipitation



As of April 1<sup>st</sup>, water-year-to-date precipitation is 103 percent of median statewide, which is higher compared to March 1<sup>st</sup>, when precipitation was at 95 percent of median. Early March precipitation events contributed slightly to this increase in monthly precipitation but the March 13<sup>th</sup> through 15<sup>th</sup> [storm cycle](#) brought an even greater increase in precipitation across the state, with some areas of the front range and southern mountains receiving three to five feet of snowfall. Due to these March storm events, all major river basins received above normal precipitation for the month of March and range from 138 to 186 percent of median, with the southern basins receiving higher precipitation totals. The combined San Miguel-Dolores-Animas-San Juan, the Upper Rio Grande, and the Arkansas River basins received 166, 172, and 186 percent of median March precipitation, respectively. The South Platte River basin also received significant amounts of precipitation during March at 164 percent of median. Lastly the basins in the central and northern mountains received some of the lowest March precipitation totals but were still above normal. The combined Yampa-White-Little Snake, the combined Laramine and North Platte, the Colorado Headwaters, and the Gunnison River basins all received above normal precipitation at 138, 139, 142, and 146 percent of median, respectively. Notably, nineteen SNOTEL sites saw their highest or second highest March precipitation totals over the past 30-year period of record. Some of the SNOTEL sites that tied or set new records this month received up to three times the normal amount of precipitation in some areas. The SNOTEL stations with the highest records are mostly in the front range and southern mountains and include: Saint Elmo, McCoy Park, Hourglass Lake, Glen Cove, Echo Lake, Wild Basin, Rough and Tumble, Moon Pass, Medano Pass, and Hayden Pass. Other record setting SNOTEL sites in the central and northern mountains include: Bear River, Chapman Tunnel, Hoosier Pass, Sage Creek Basin, Cochetopa Pass, Beaver Ck Village, and Copeland Lake.

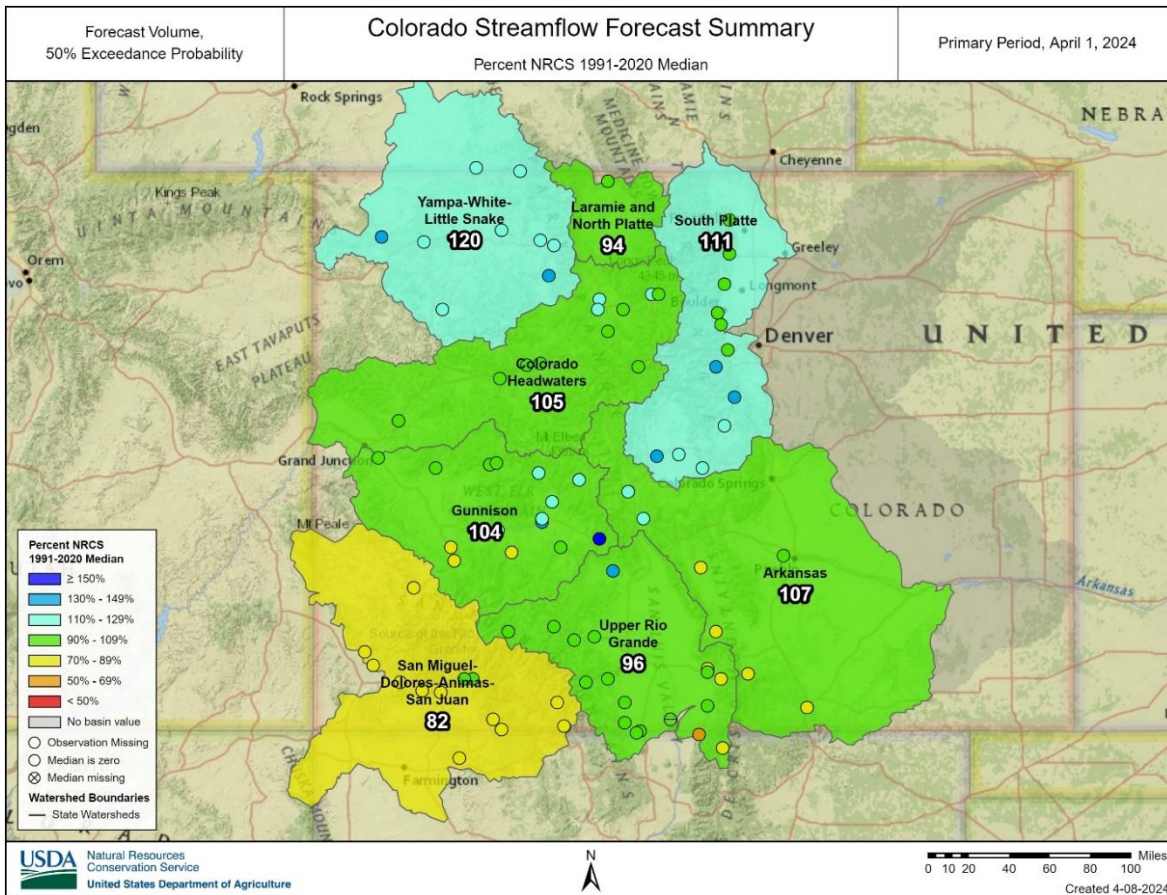


# Reservoir Storage



Statewide reservoir storage as of April 1<sup>st</sup> is 99 percent of median, with most basins remaining relatively similar as last month. Overall, river basins in the northern part of the state saw slight increases compared to last month and river basins in the southern portion of the state saw slight decreases compared to last month. The South Platte, Eastern South Platte, the combined Yampa-White-Little Snake, and Gunnison River basin are near normal at 99, 102, 103, and 104 percent of median, respectively. The Arkansas, Upper Rio Grande, and Colorado Headwaters basins ended March with above normal storage at 110, 116, and 120 percent of median, respectively. Both the Eastern Arkansas and the combined San Miguel-Dolores-Animas-San Juan River basins are below median at 76 and 86 percent, respectively. There are many components, natural and artificial, that dictate a reservoir’s storage volume and therefore also factor into the median values calculated for each basin. Compared to last year all river basins have improved, with the largest improvement being 33 percent in the Gunnison; this time last year it was 71 percent of median. Storage in the Upper Rio Grande River basin is highly variable, ranging from 35 percent of median at Sanchez Reservoir to 248 percent of median at Continental Reservoir. Despite not having the same snowpack as last year, significant precipitation in March contributed to Lake Granby being at 146 percent of its median. It ranked 3rd highest in its period of record, and while the percent of median is not as high last year, it's still substantially above normal. As temperatures increase and snowmelt season begins, reservoir storage will change, and the changes will depend on specific water supply forecasts and the differing water management needs of a region.

# Streamflow

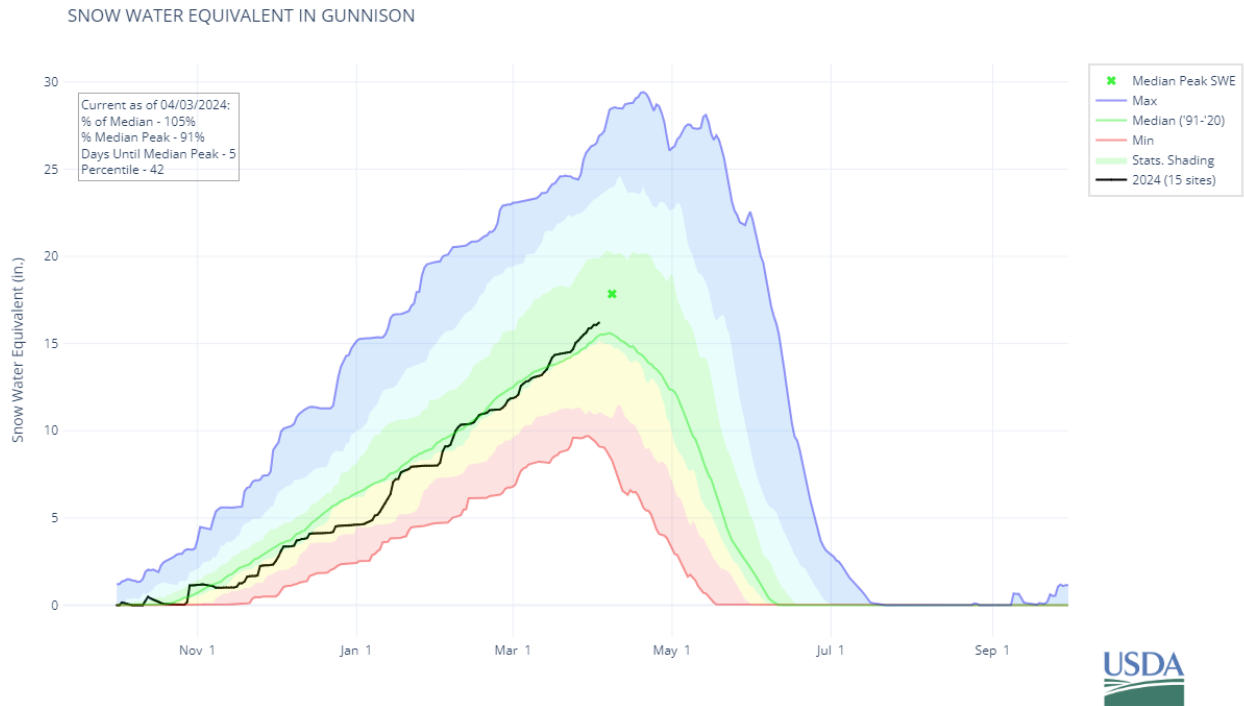


Entering April, the updated volumetric forecasts for Colorado delineate a scenario where late season precipitation events and above average snowpack accumulation have collectively contributed to enhanced streamflow runoff across the state. As of April 1, the statewide 50 percent exceedance streamflow volume forecasts are at 103 percent of median. 43 out of 87 streamflow monitoring stations report forecasted volumes surpassing the median. Despite above median March precipitation received across the basin, the combined San Miguel-Dolores-Animas-San Juan River basin is forecasting 82 percent of median streamflow volumes. The water year-to-date precipitation for the combined San Miguel-Dolores-Animas-San Juan River basin ended March at 92 percent of median, signaling that while recent conditions have been favorable, they have not been sufficient to overcome the deficit accrued earlier in the water year. The Animas River at Durango forecasts a lower than median runoff volume at 290 kaf (thousand-acre feet), which is 77 percent of the historical median. Conversely, the combined Yampa-White-Little Snake River basin has nine monitoring stations with forecasted above median runoff volumes. In the South Platte River basin, upslope storms in March contributed to above median precipitation, boosting streamflow volume forecasts with all 12 stations near or above normal. The Cache La Poudre River at Canyon Mouth forecasts 230 kaf and the South Platte River at South Platte forecasts 191 kaf and are 105 and 136 percent of the median, respectively. For the Upper Rio Grande River basin, forecasts are overall improved with 14 of 18 stations having forecasts near or above median. The Rio Grande near Del Norte is forecasted slightly below normal at 445 kaf and is 93 percent of median. In the Colorado Headwaters River basin 11 out of 12 stations forecasts are above median. The Colorado River near Cameo forecasts 2,250 kaf and the Colorado River near Dotsero at 1,420 kaf. As we pivot towards the primary runoff period, the current forecasts show an overall picture of optimism as the runoff season begins.

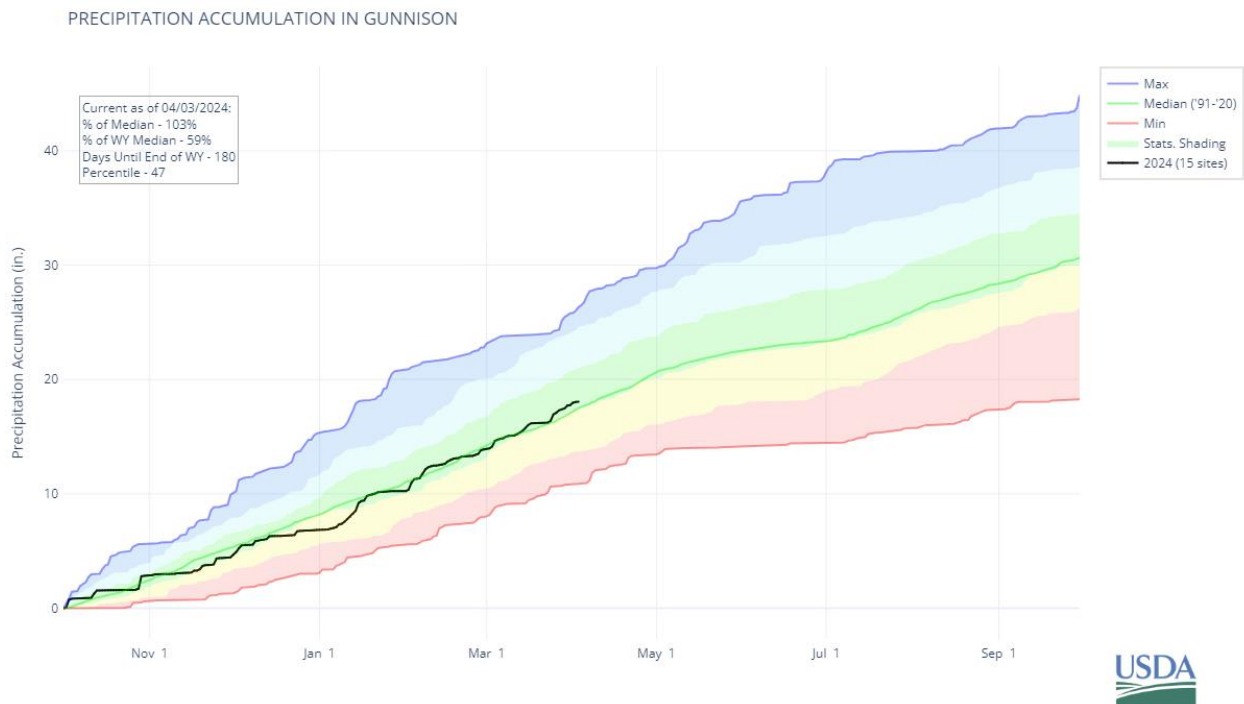
# GUNNISON RIVER BASIN

April 1st, 2024

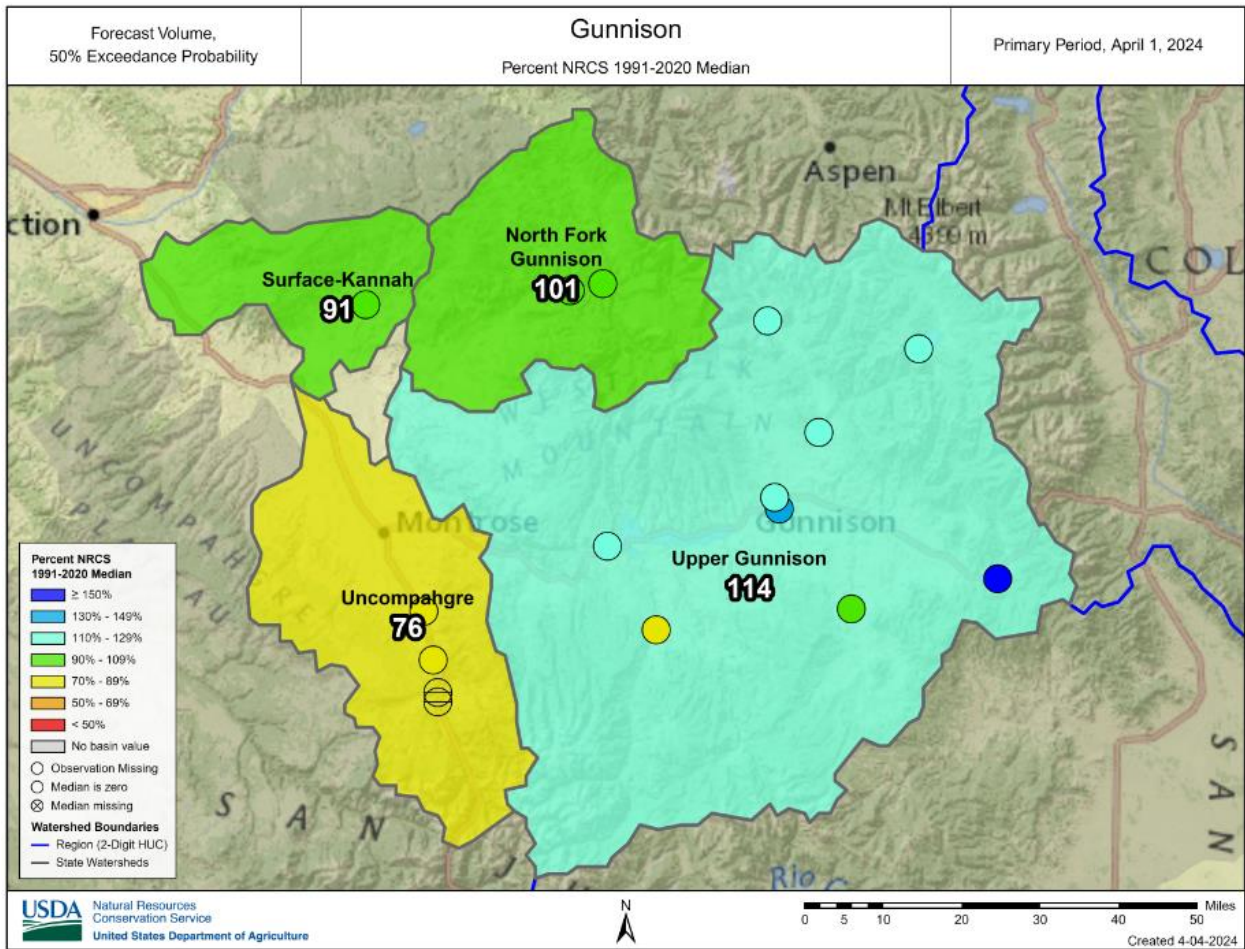
Snowpack in the Gunnison River basin is just above normal at 107% of median. Precipitation for March was 146% of median which brings water year-to-date precipitation to 105% of median. Reservoir storage at the end of March was 104% of median compared to 71% last year. Current streamflow forecasts range from 74% of median at Uncompahgre River at Colona to 168% of median at Tomichi Creek at Sargents.



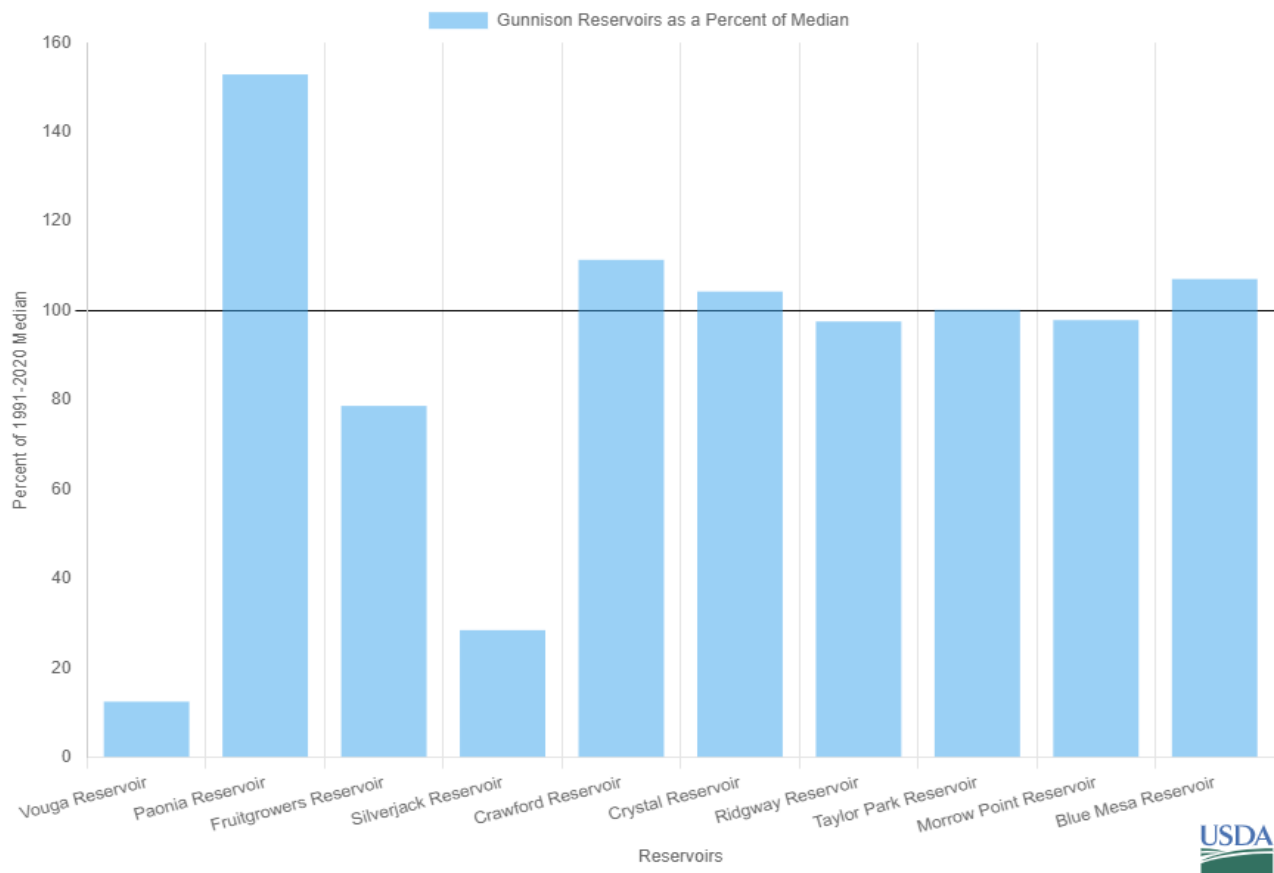
\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.







**Gunnison Reservoir Storage Summary for April 1st 2024**



## Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

Gunnison Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Upper Gunnison	15.0	115.4	141.1
North Fork Gunnison	3.0	101.1	174.5
Uncompahgre Plateau	1.0	126.7	279.5
Uncompahgre	3.0	90.6	138.6
Surface-Kannah	3.0	95.4	172.2

## Reservoir Storage End of March 2024

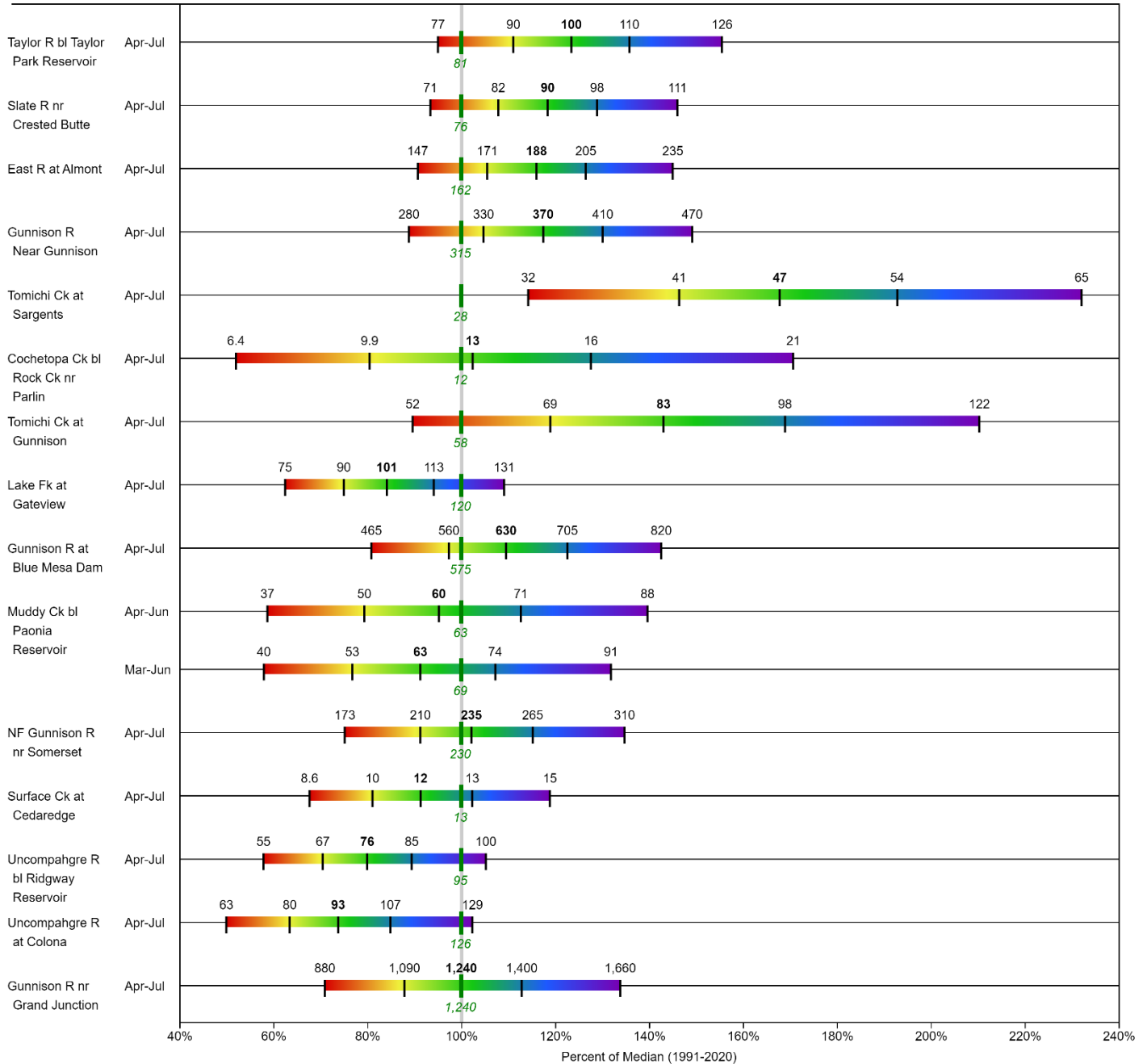
Gunnison Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Crystal Reservoir	8.97	8.72	8.6	104.3
Fruitland Reservoir	nan	1.33	2.2	nan
Morrow Point Reservoir	107.47	109.0	109.8	97.9
Vouga Reservoir	0.1	0.38	0.76	13.2
Crawford Reservoir	8.35	3.66	7.5	111.3
Blue Mesa Reservoir	551.17	302.71	514.8	107.1
Taylor Park Reservoir	68.76	62.98	68.6	100.2
Paonia Reservoir	3.82	1.14	2.5	152.8
Fruitgrowers Reservoir	2.99	3.14	3.8	78.7
Silverjack Reservoir	1.37	1.1	4.8	28.5
Ridgway Reservoir	66.68	66.37	68.3	97.6

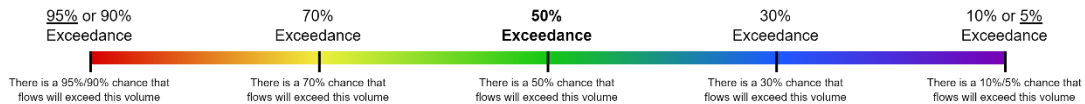
**GUNNISON**  
Water Supply Forecasts  
April 1, 2024

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)*     
 █ *1991-2020 Normal Streamflow KAF*     
 █ *Observed Streamflow KAF*     
 █ *Period of Record Maximum Streamflow KAF (Year)*

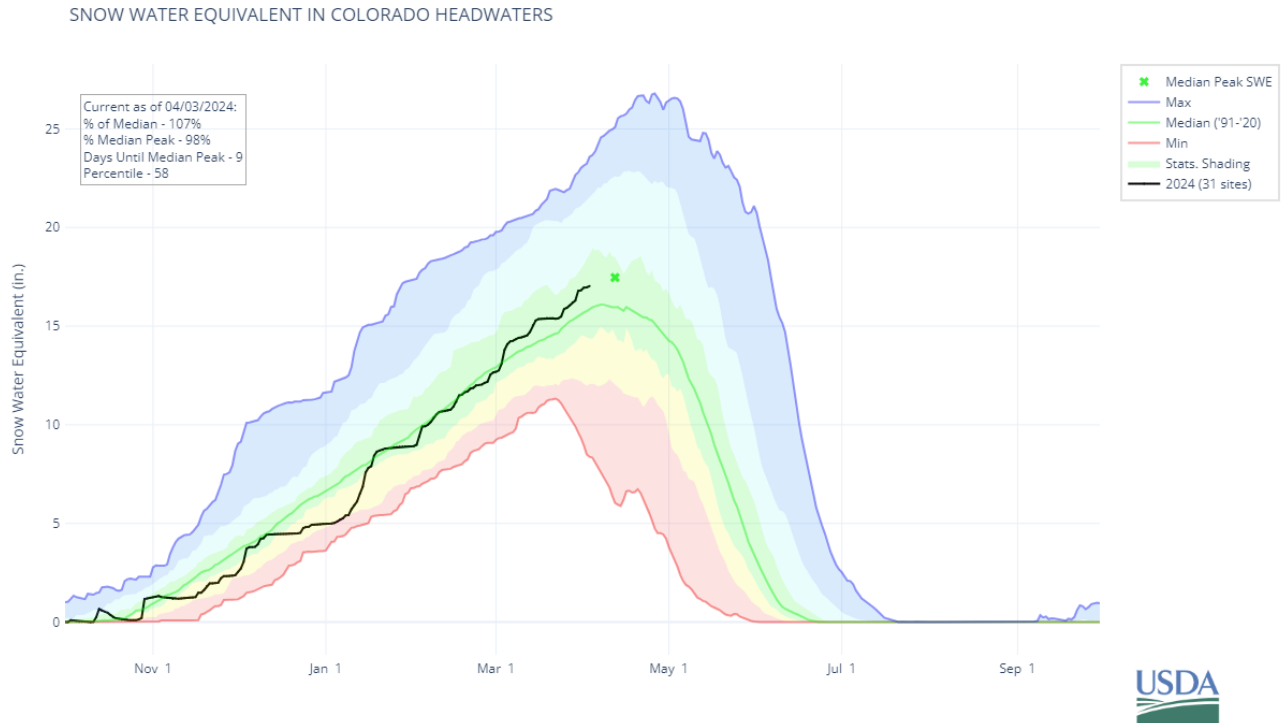
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.



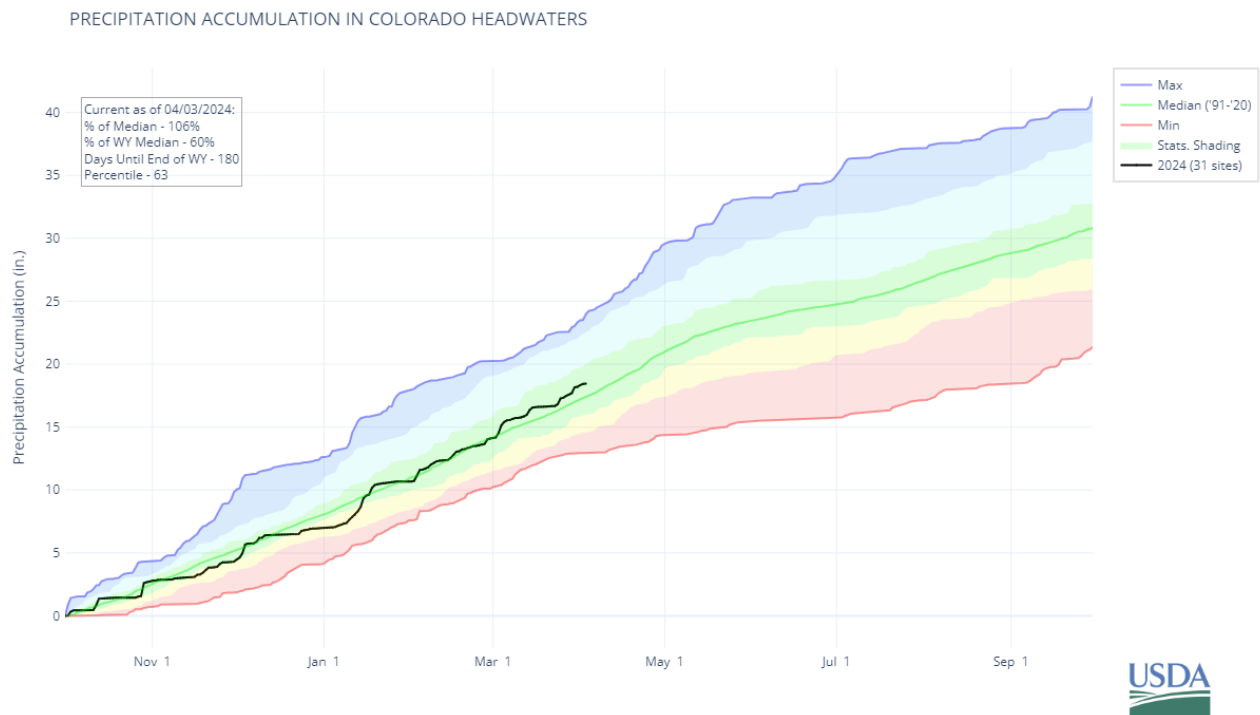
# COLORADO HEADWATERS RIVER BASIN

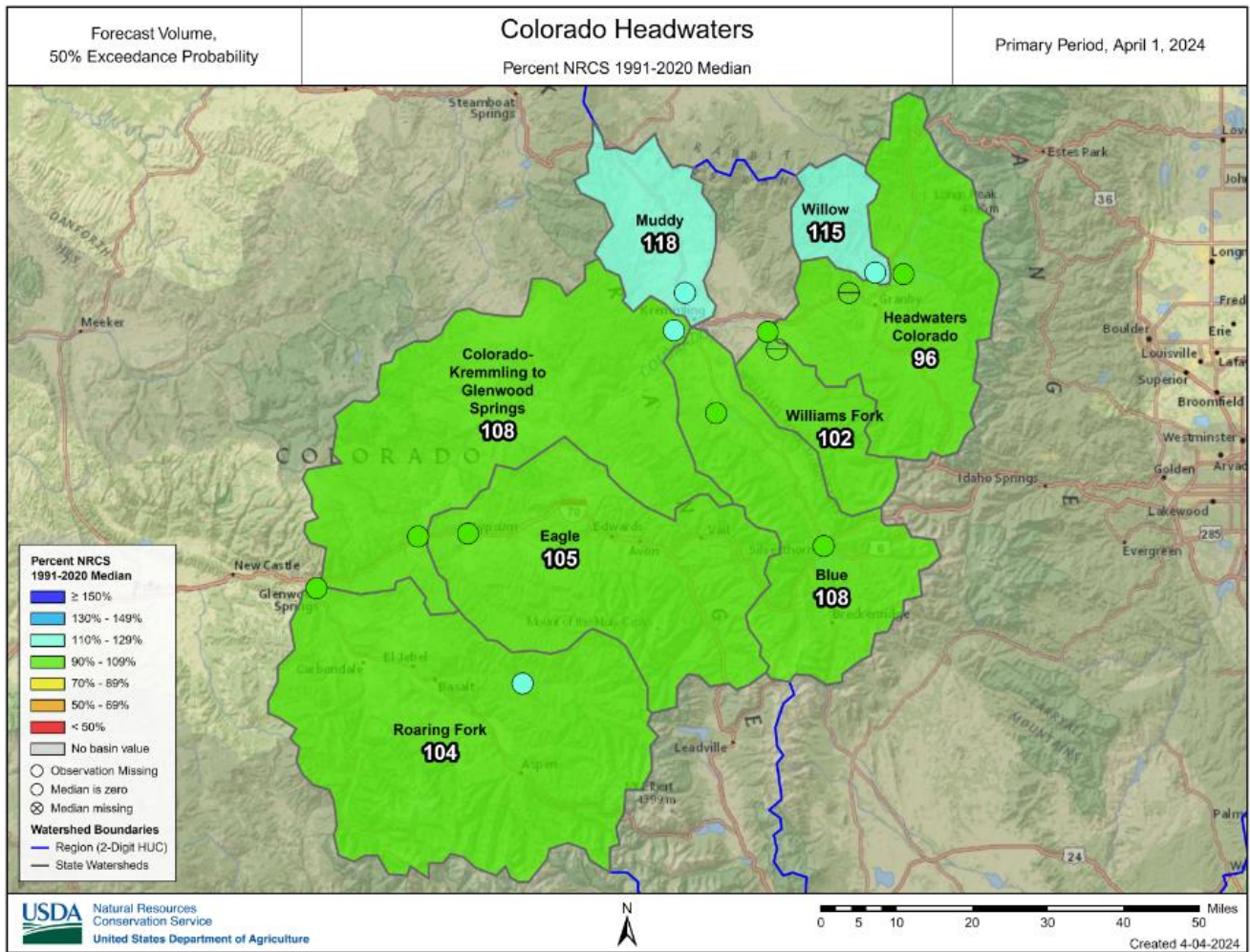
April 1st, 2024

Snowpack in the Colorado River basin is above normal at 108% of median. Precipitation for March was 143% of median which brings water year-to-date precipitation to 107% of median. Reservoir storage at the end of March was 120% of median compared to 98% last year. Current streamflow forecasts range from 96% of median at the Colorado River below Lake Granby to 118% of median at Frying Pan River at Ruedi.

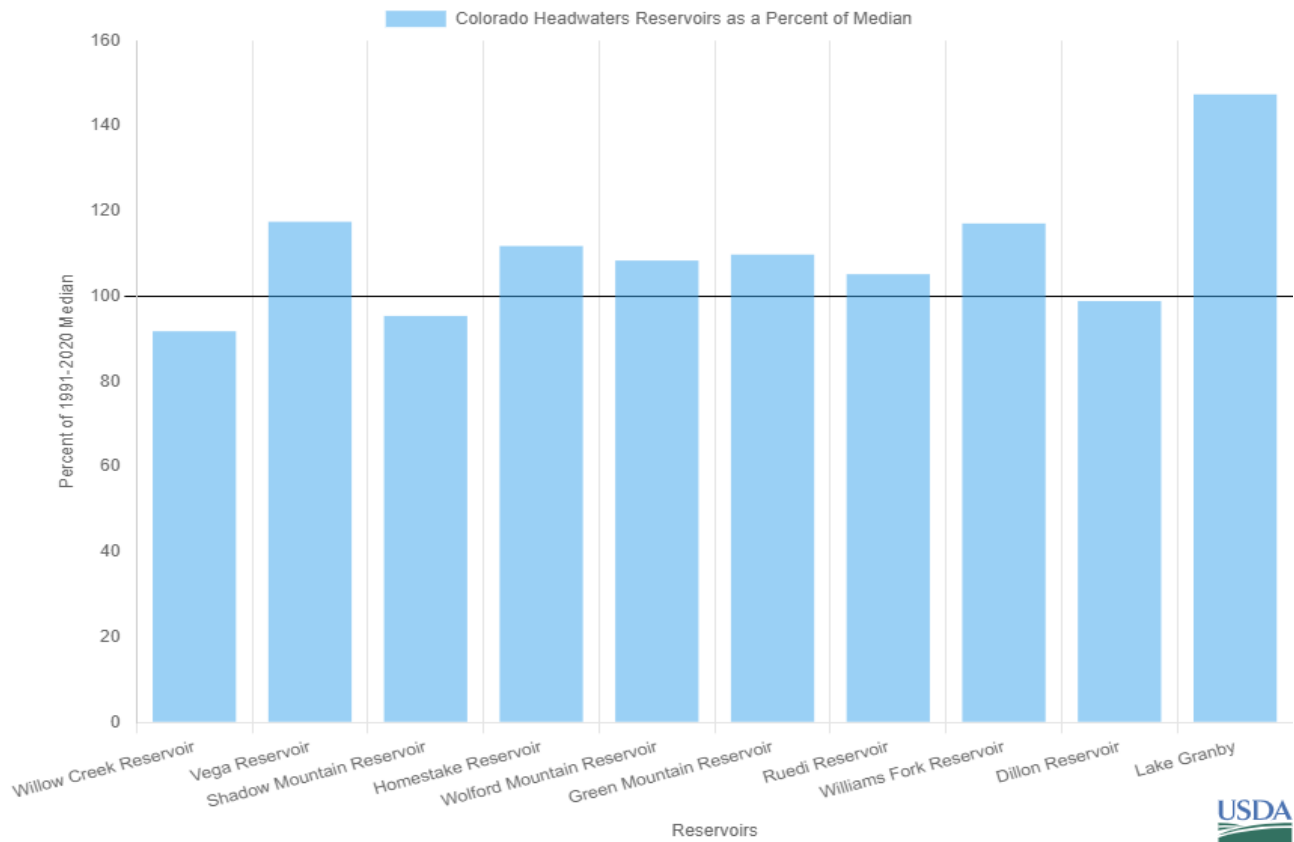


\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.





**Colorado Headwaters Reservoir Storage Summary for April 1st 2024**



## Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

Colorado Headwaters Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Headwaters Colorado	8.0	108.2	121.7
Roaring Fork	10.0	112.5	134.8
Colorado-Kremmling to Glenwood Springs	5.0	112.7	152.5
Eagle	8.0	106.7	115.7
Blue	8.0	108.6	113.8
Plateau	4.0	95.5	179.8
Williams Fork	4.0	112.8	109.3
Muddy	4.0	117.5	138.4
Willow	4.0	100.4	152.2
Troublesome	2.0	92.6	121.0

## Reservoir Storage End of March 2024

Colorado Headwaters Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Wolford Mountain Reservoir	52.77	38.9	48.7	108.4
Williams Fork Reservoir	80.32	41.58	68.6	117.1
Lake Granby	396.4	319.02	268.9	147.4
Shadow Mountain Reservoir	16.51	16.46	17.3	95.4
Dillon Reservoir	209.13	198.24	211.4	98.9
Vega Reservoir	16.1	10.43	13.7	117.5
Willow Creek Reservoir	6.52	7.47	7.1	91.8
Ruedi Reservoir	69.02	61.78	65.6	105.2
Homestake Reservoir	28.74	14.46	25.7	111.8
Green Mountain Reservoir	67.72	68.07	61.7	109.8



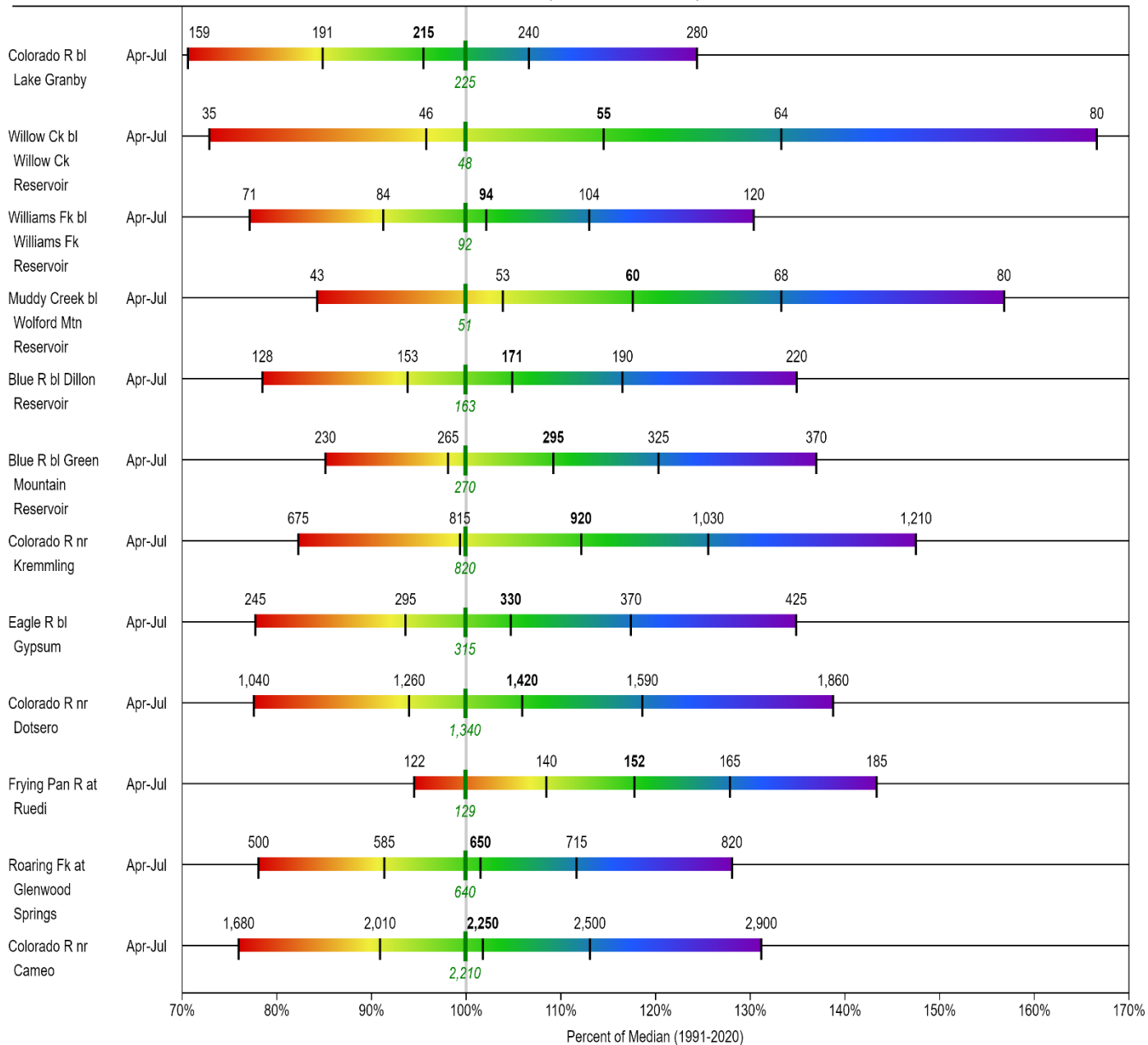
### COLORADO HEADWATERS

#### Water Supply Forecasts

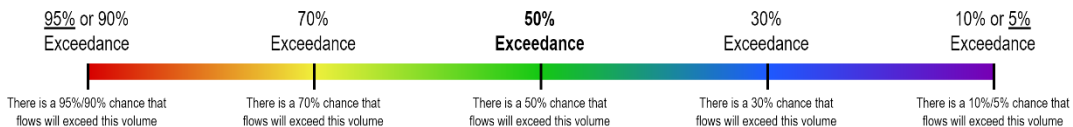
April 1, 2024

#### 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.

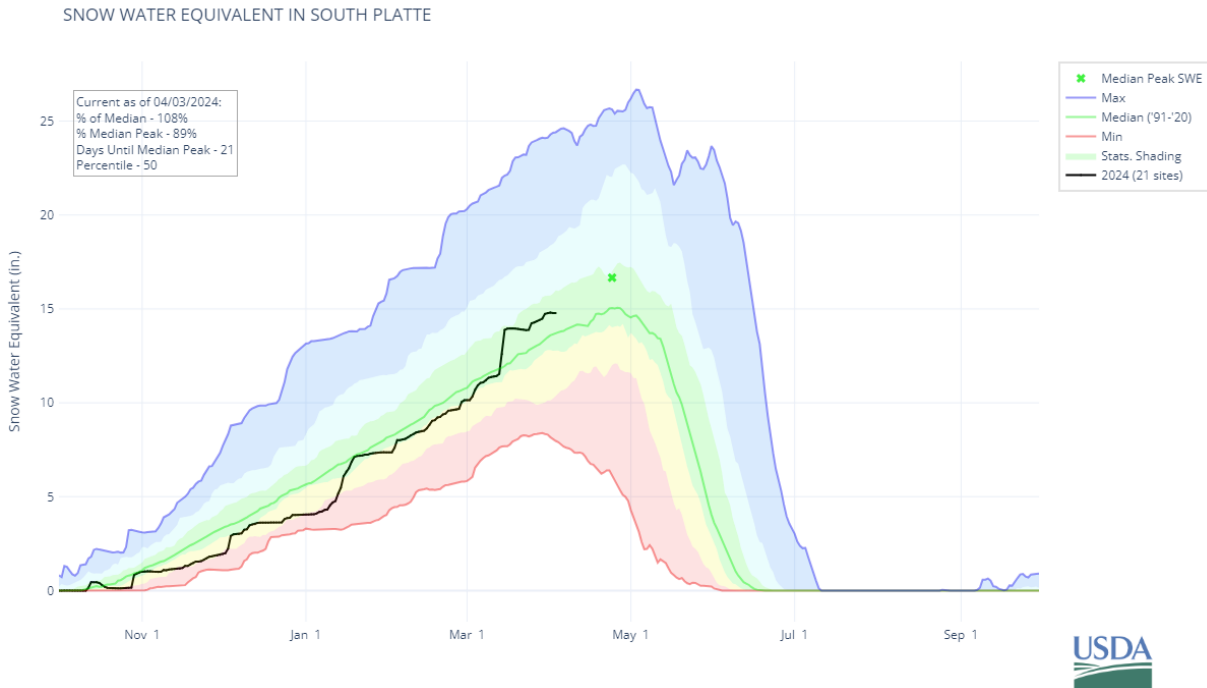
█ *Period of Record Minimum Streamflow KAF (Year)*     
 █ *1991-2020 Normal Streamflow KAF*     
 █ *Observed Streamflow KAF*     
 █ *Period of Record Maximum Streamflow KAF (Year)*

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

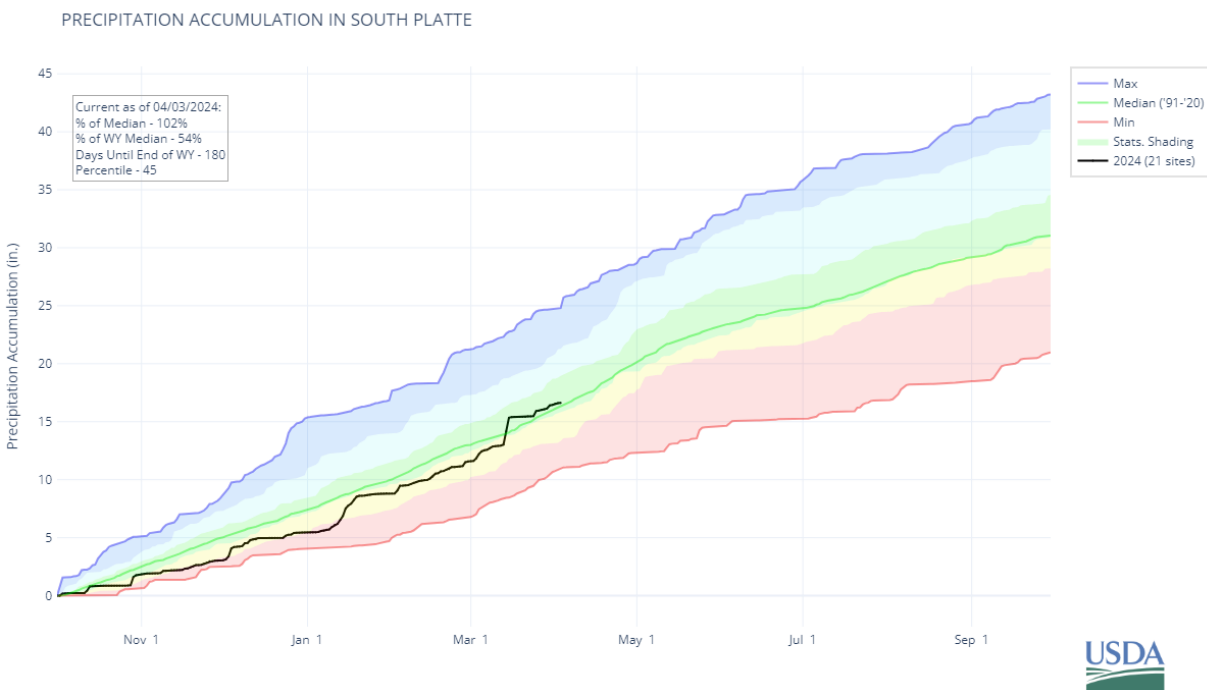
# SOUTH PLATTE RIVER BASIN

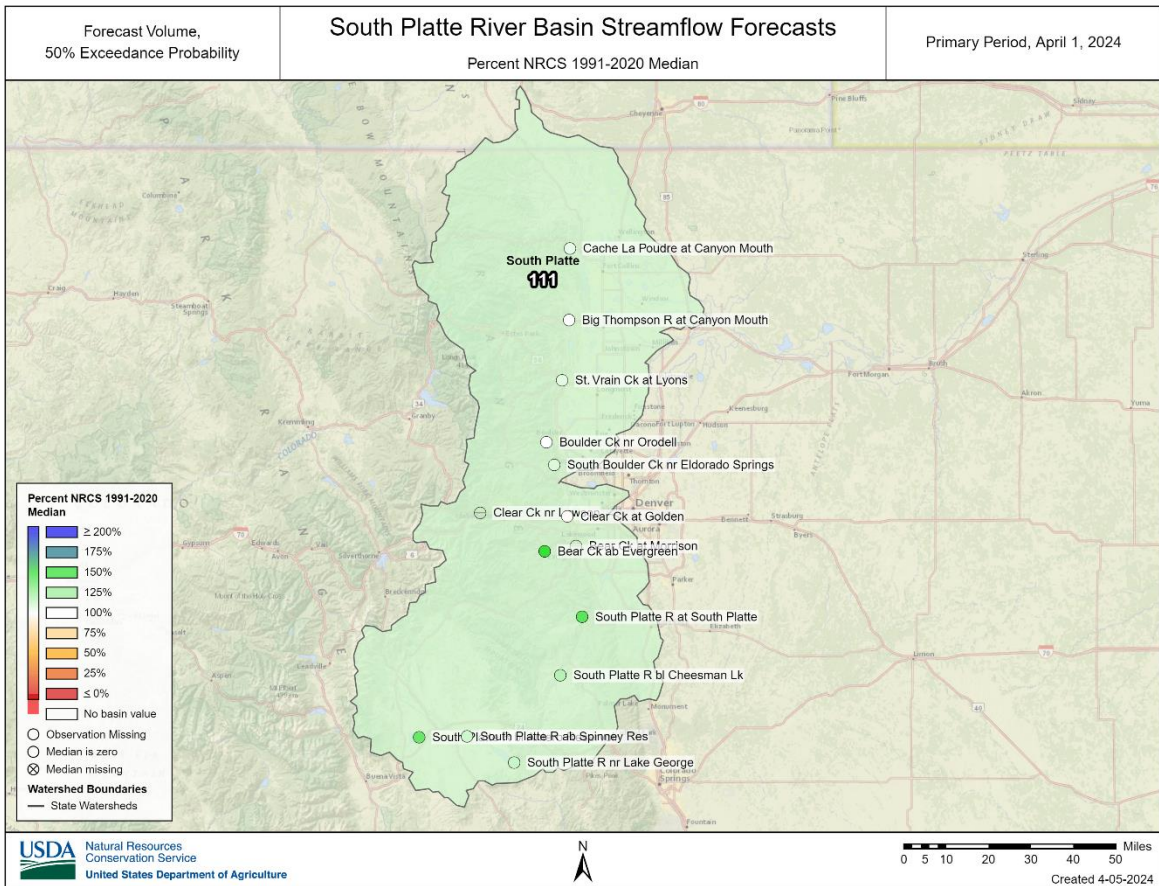
April 1st, 2024

Snowpack in the South Platte River basin is above normal at 121% of median. Precipitation for March was 164% of median which brings water year-to-date precipitation to 103% of median. Reservoir storage at the end of March was 99% of median compared to 91% last year. Current streamflow forecasts are at 111 percent of median and range from 99% of median at Clear Creek at Golden to 144% of median for Bear Creek above Evergreen.

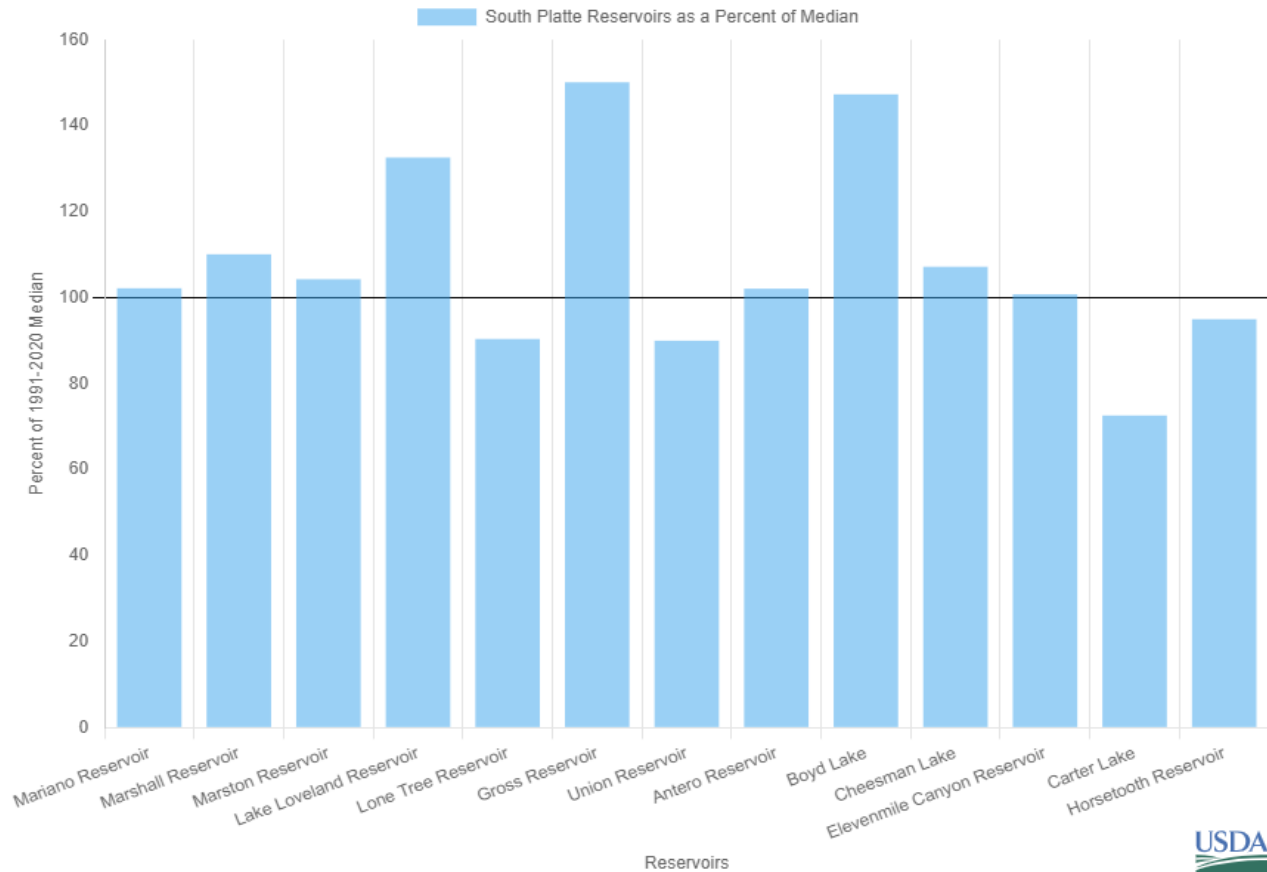


\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.





**South Platte Reservoir Storage Summary for April 1st 2024**



\* As of March 8th, we are still missing data from Northern Water Reservoirs. Please see website for updates.





## Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

South Platte Sub-Basin Snow Data

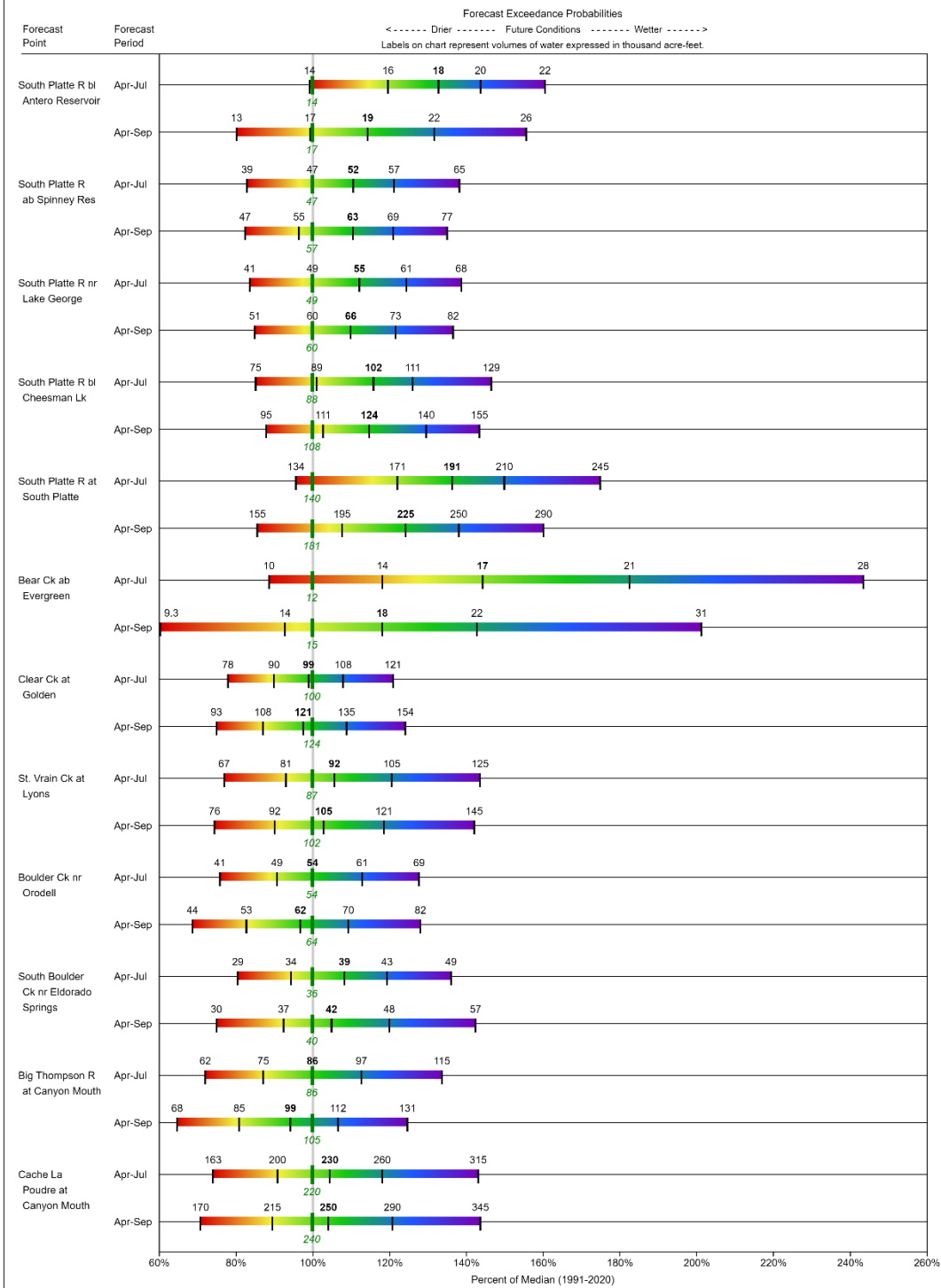
	# of Sites	% Median	Last Year % Median
Upper South Platte	15.0	127.1	89.0
North Fork Cache La Poudre	4.0	117.6	123.8
Cache La Poudre	12.0	124.2	118.2
Big Thompson	7.0	108.7	131.5
Clear	5.0	110.7	94.2
Boulder	6.0	114.4	104.5
Saint Vrain	5.0	129.2	142.2

## Reservoir Storage End of March 2024

South Platte Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Marshall Reservoir	7.6	6.68	6.9	110.1
Union Reservoir	9.99	9.72	11.1	90.0
Chambers Lake	nan	2.89	3.6	nan
Black Hollow Reservoir	nan	3.59	3.0	nan
Lone Tree Reservoir	6.87	5.58	7.6	90.4
Fossil Creek Reservoir	nan	9.04	9.5	nan
Boyd Lake	46.25	21.84	31.4	147.3
Marston Reservoir	7.72	6.91	7.4	104.3
Gross Reservoir	15.16	7.1	10.1	150.1
Windsor Reservoir	nan	13.95	12.9	nan
Lake Loveland Reservoir	9.81	1.3	7.4	132.6
Cobb Lake	nan	14.88	14.3	nan
Antero Reservoir	20.11	20.34	19.7	102.1
Spinney Mountain Reservoir	nan	24.78	30.9	nan
Horsetooth Reservoir	113.78	100.11	119.8	95.0
Ralph Price Reservoir	nan	13.87	12.7	nan
Cache La Poudre	nan	5.31	9.4	nan
Mariano Reservoir	3.99	4.28	3.9	102.3
Terry Reservoir	nan	4.24	5.3	nan
Elevenmile Canyon Reservoir	100.28	99.73	99.5	100.8
Cheesman Lake	69.02	64.3	64.4	107.2
Halligan Reservoir	nan	6.12	4.6	nan
Carter Lake	73.79	98.63	101.6	72.6

**SOUTH PLATTE**  
**Water Supply Forecasts**  
 April 1, 2024



**Legend**

95% or 90% Exceedance: There is a 95%/90% chance that flows will exceed this volume.

70% Exceedance: There is a 70% chance that flows will exceed this volume.

50% Exceedance: There is a 50% chance that flows will exceed this volume.

30% Exceedance: There is a 30% chance that flows will exceed this volume.

10% or 5% Exceedance: There is a 10%/5% chance that flows will exceed this volume.

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

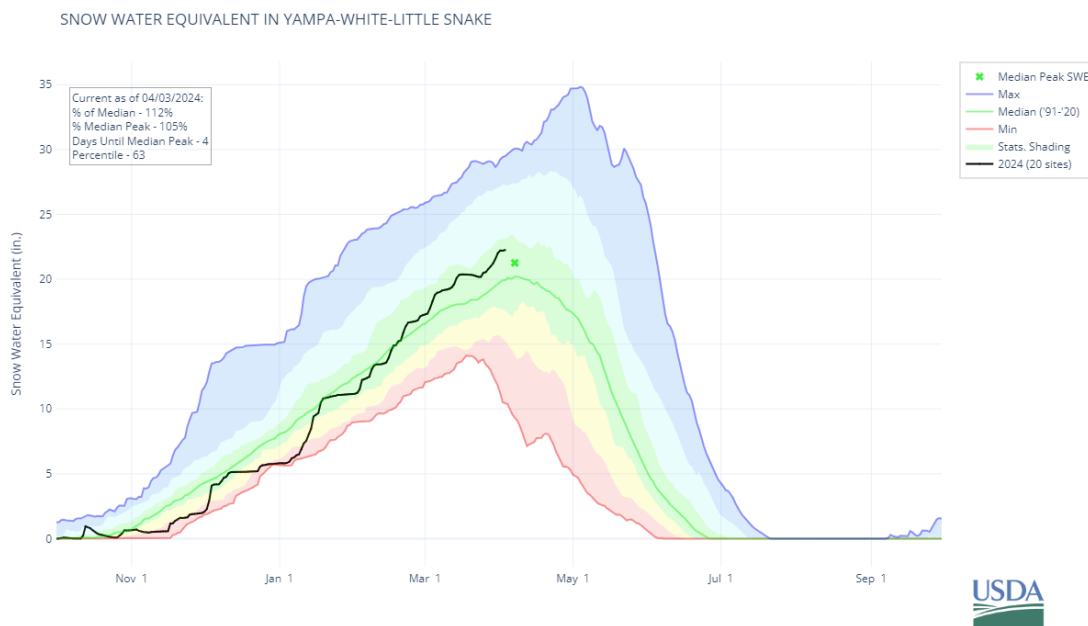
- Period of Record Minimum Streamflow KAF (Year)
- 1991-2020 Normal Streamflow KAF
- Observed Streamflow KAF
- Period of Record Maximum Streamflow KAF (Year)

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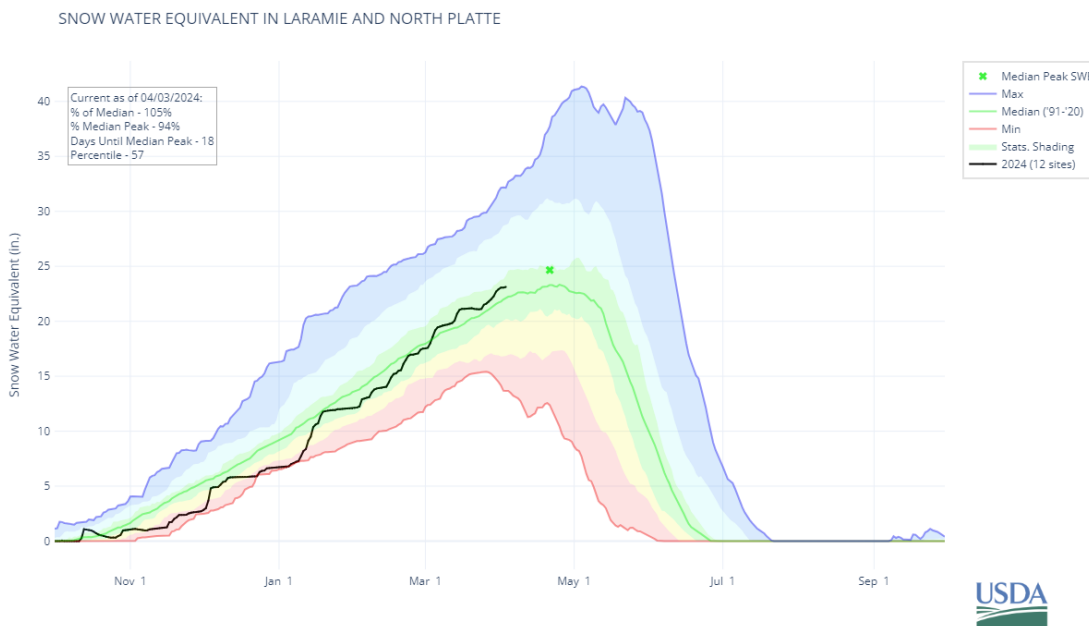
# YAMPA-WHITE-LITTLE SNAKE AND LARAMIE-NORTH PLATTE RIVER BASINS

April 1st, 2024

Snowpack in the Yampa-White-Little Snake is slightly above normal at 113% and the Laramie-North Platte River basins are also above normal at 112% of the median. Precipitation for March was 138% and 139% of median and water year-to-date precipitation is 111% and 102% of median, for each basin respectively. Reservoir storage at the end of March for the Yampa-White-Little Snake was 103% of median, compared to 84% last year. Current streamflow forecasts range from 110% at White River near Meeker to 139% of median at Yampa River above Stagecoach Reservoir.

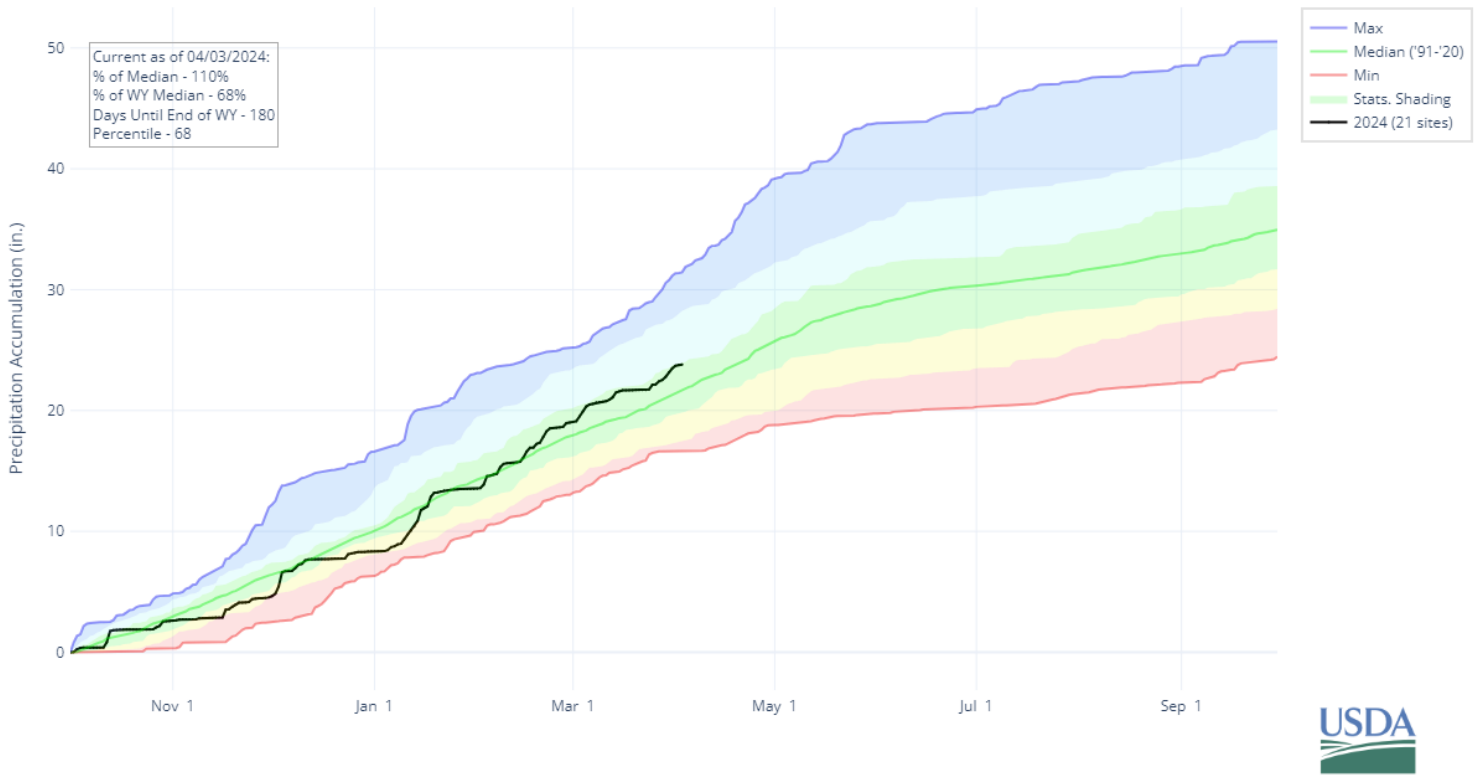


\*SWE values calculated using daily SNOTEL data only

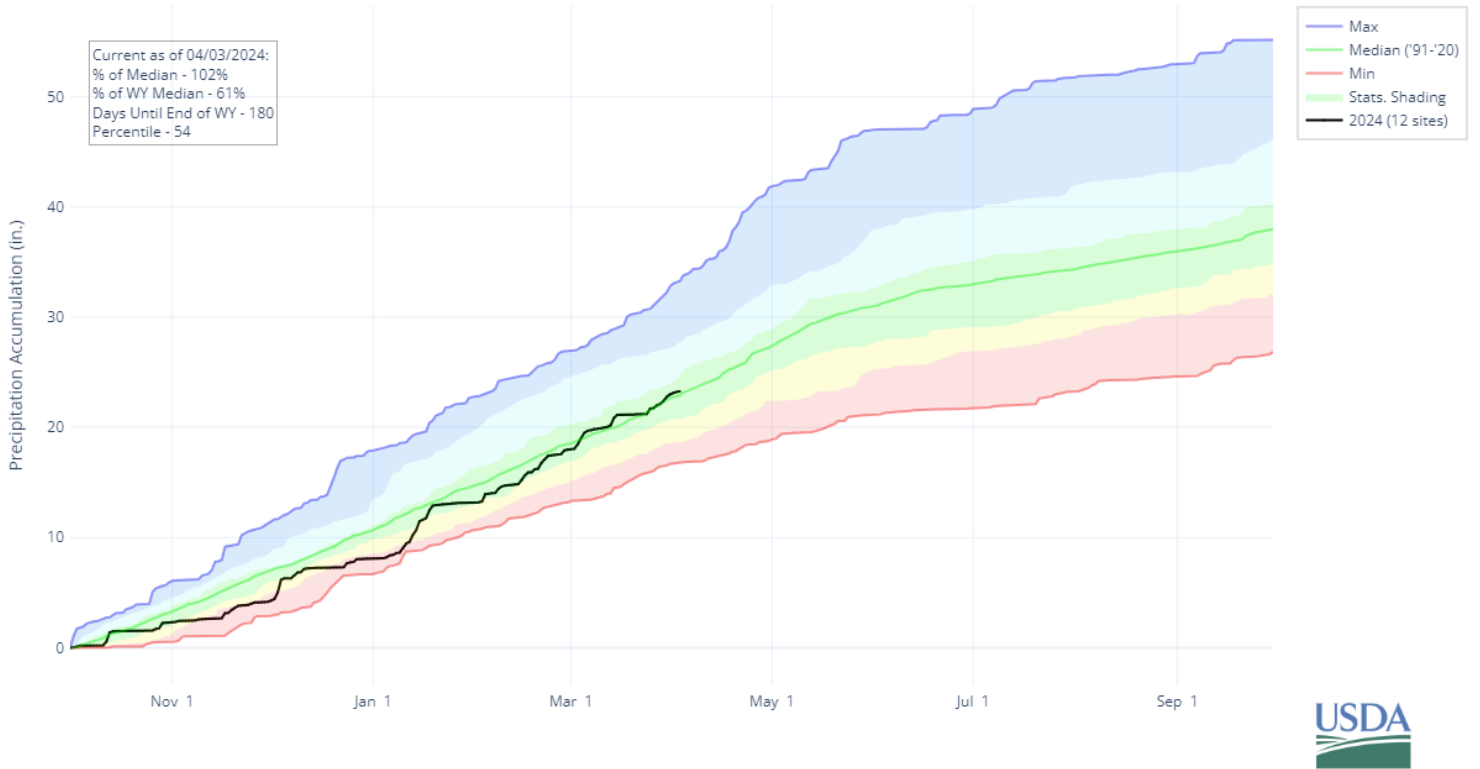


\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.

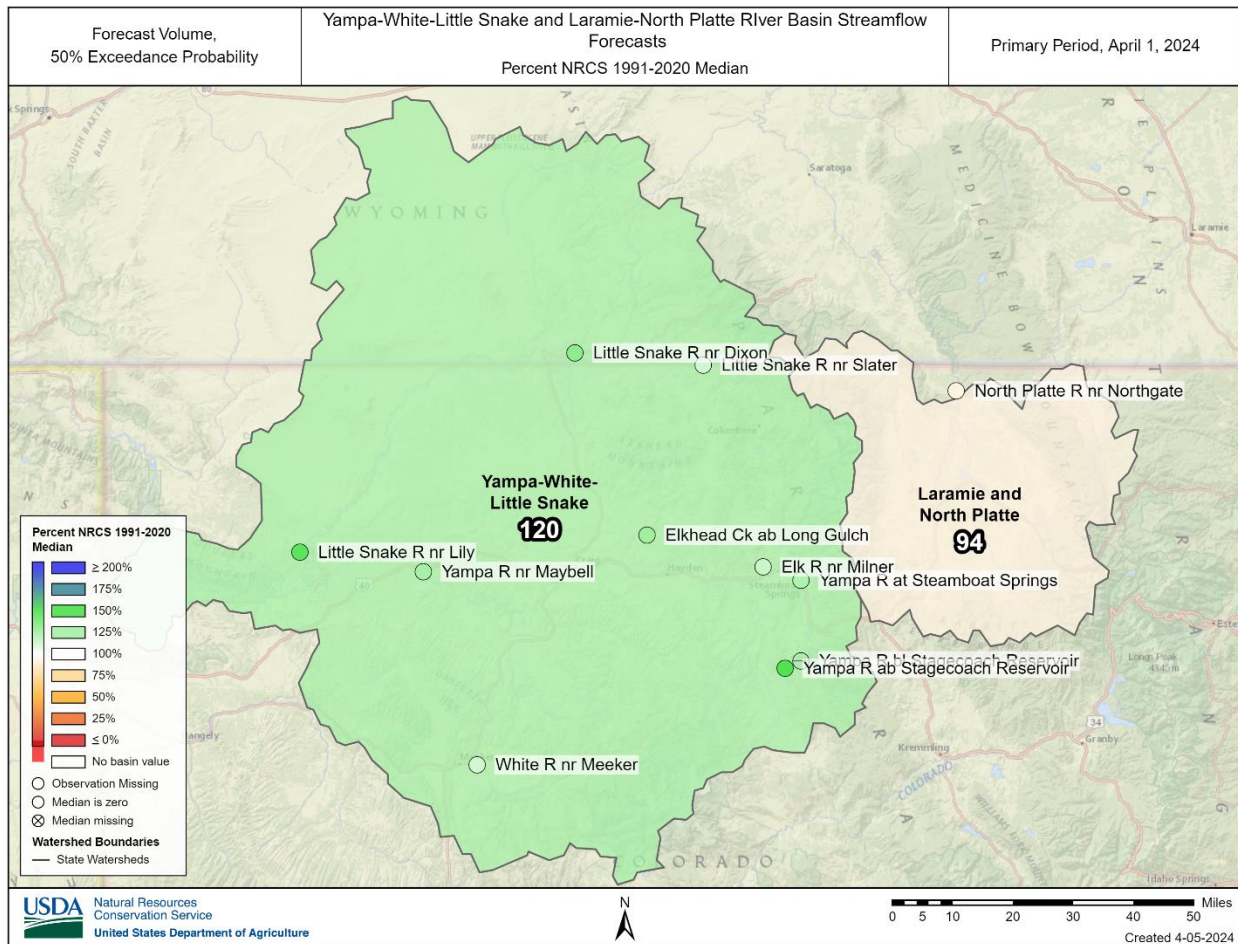
PRECIPITATION ACCUMULATION IN YAMPA-WHITE-LITTLE SNAKE



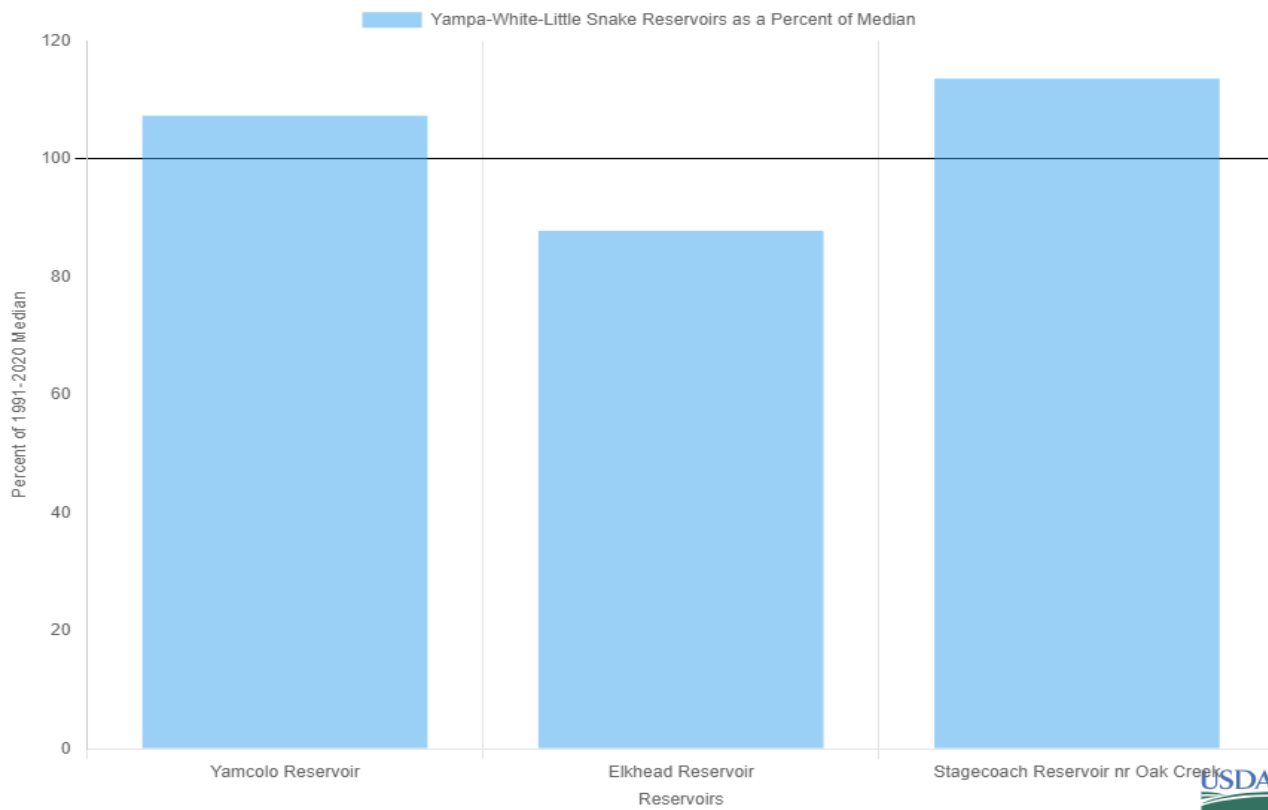
PRECIPITATION ACCUMULATION IN LARAMIE AND NORTH PLATTE







### Yampa-White-Little Snake Reservoir Storage Summary for April 1st 2024



\*No reservoirs are currently monitored in the Laramie-North Platte combined basin.

# Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

Yampa-White-Little Snake Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Yampa	10.0	113.3	134.6
Little Snake	10.0	116.5	159.6
White	4.0	104.4	155.1
Williams Fork of the Yampa	1.0	103.1	140.1
Elk	2.0	110.0	155.7

Laramie and North Platte Sub-Basin Snow Data

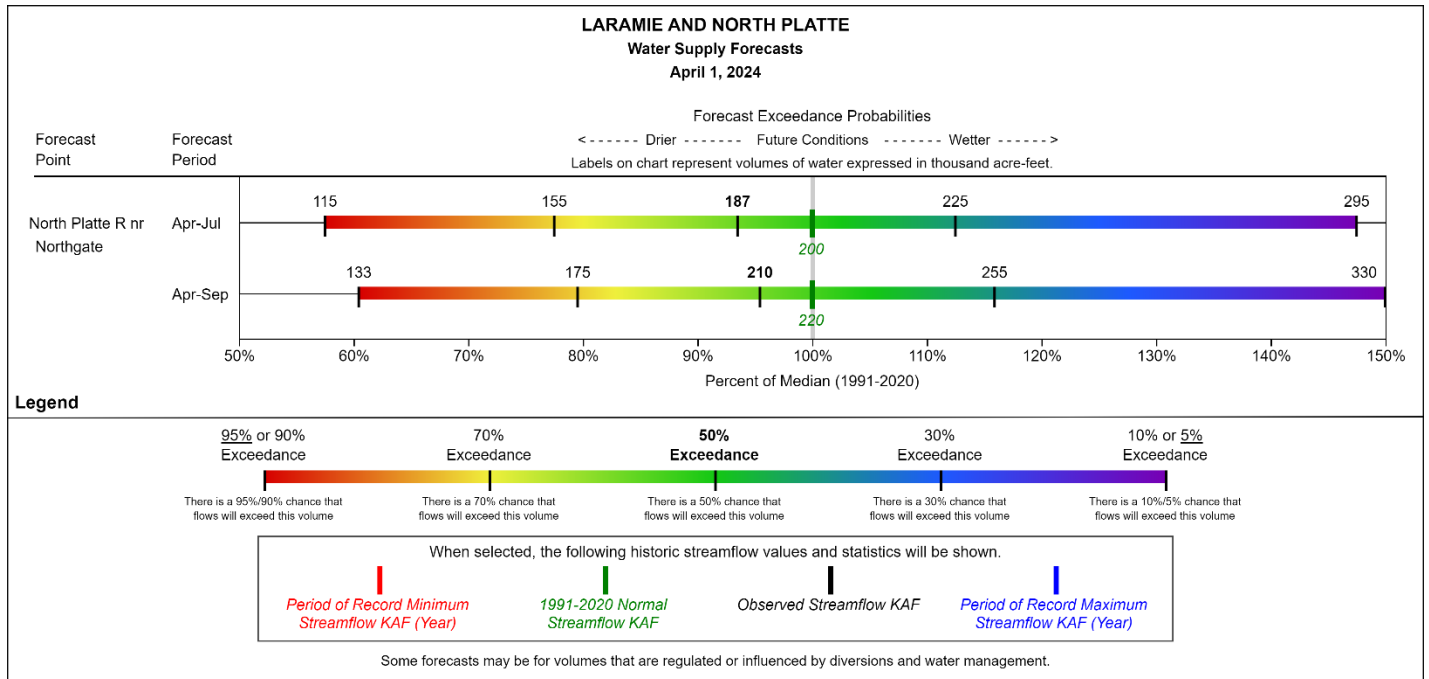
	# of Sites	% Median	Last Year % Median
North Platte Headwaters	14.0	104.2	131.8
Laramie	6.0	145.3	129.8

## Reservoir Storage End of March 2024

Yampa-White-Little Snake Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Elkhead Reservoir	17.92	17.64	20.4	87.8
High Savery Reservoir	nan	7.19	11.7	nan
Stagecoach Reservoir nr Oak Creek	31.92	27.1	28.1	113.6
Yamcolo Reservoir	8.48	4.96	7.9	107.3

\*No reservoirs are currently monitored in our database for the Laramie-North Platte combined basin.



### YAMPA-WHITE-LITTLE SNAKE

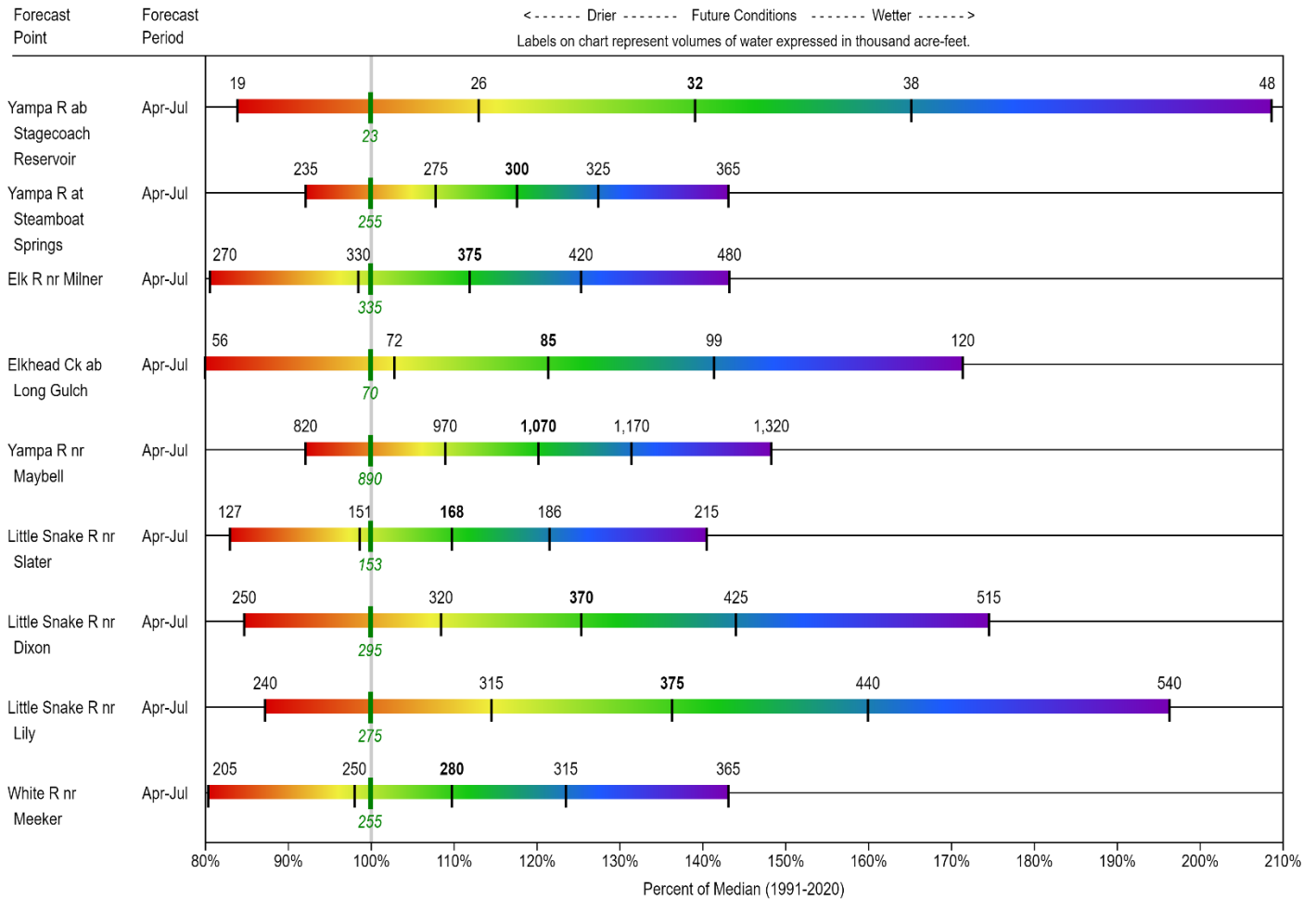
#### Water Supply Forecasts

April 1, 2024

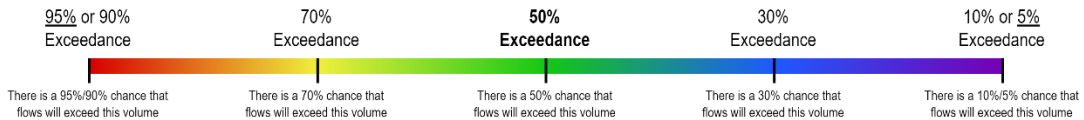
#### Forecast Exceedance Probabilities

<----- 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)*     
 █ *1991-2020 Normal Streamflow KAF*     
 █ *Observed Streamflow KAF*     
 █ *Period of Record Maximum Streamflow KAF (Year)*

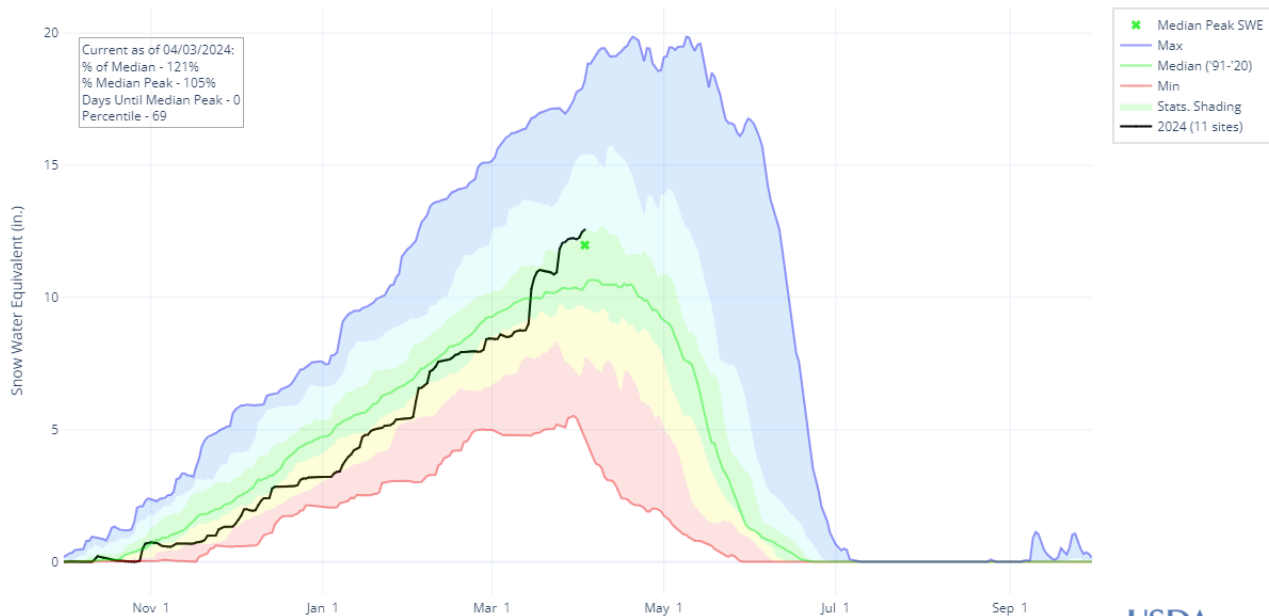
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

# ARKANSAS RIVER BASIN

April 1st, 2024

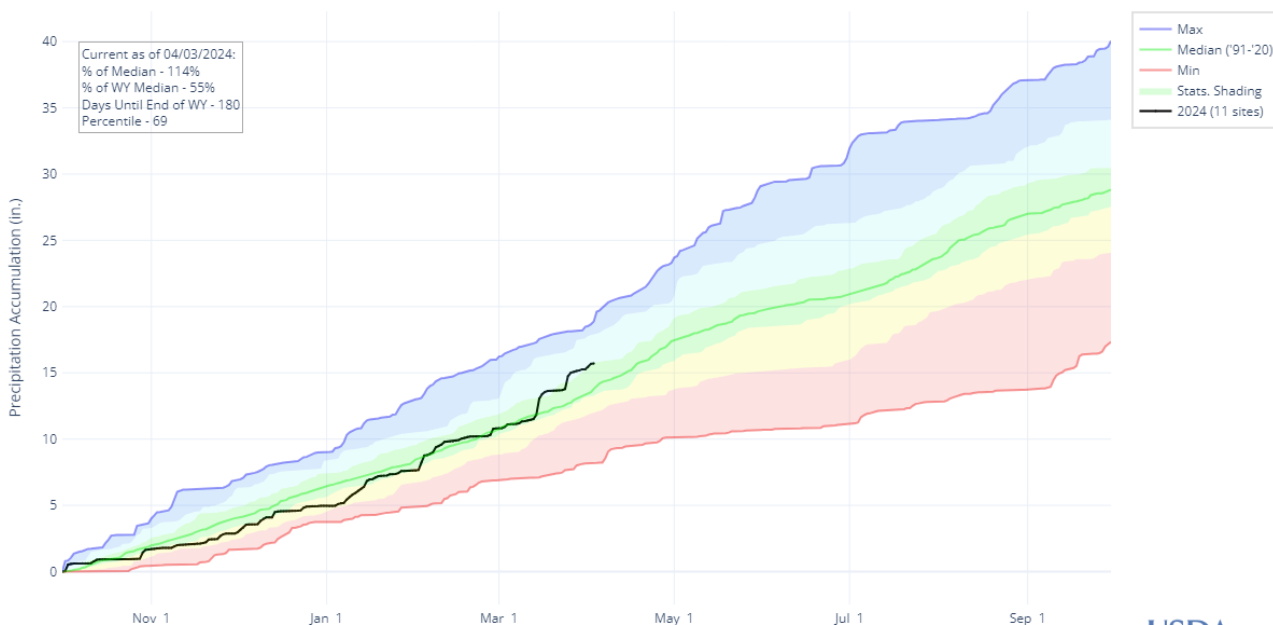
Snowpack in the Arkansas River basin is above normal at 117% of median. Precipitation for March was 186% of median which brings water year-to-date precipitation to 115% of median. Reservoir storage at the end of March was 110% of median compared to 90% last year. Current streamflow forecasts range from 72% of median at Huerfano River near Redwing to 120% of median at Chalk Creek near Nathrop.

SNOW WATER EQUIVALENT IN ARKANSAS

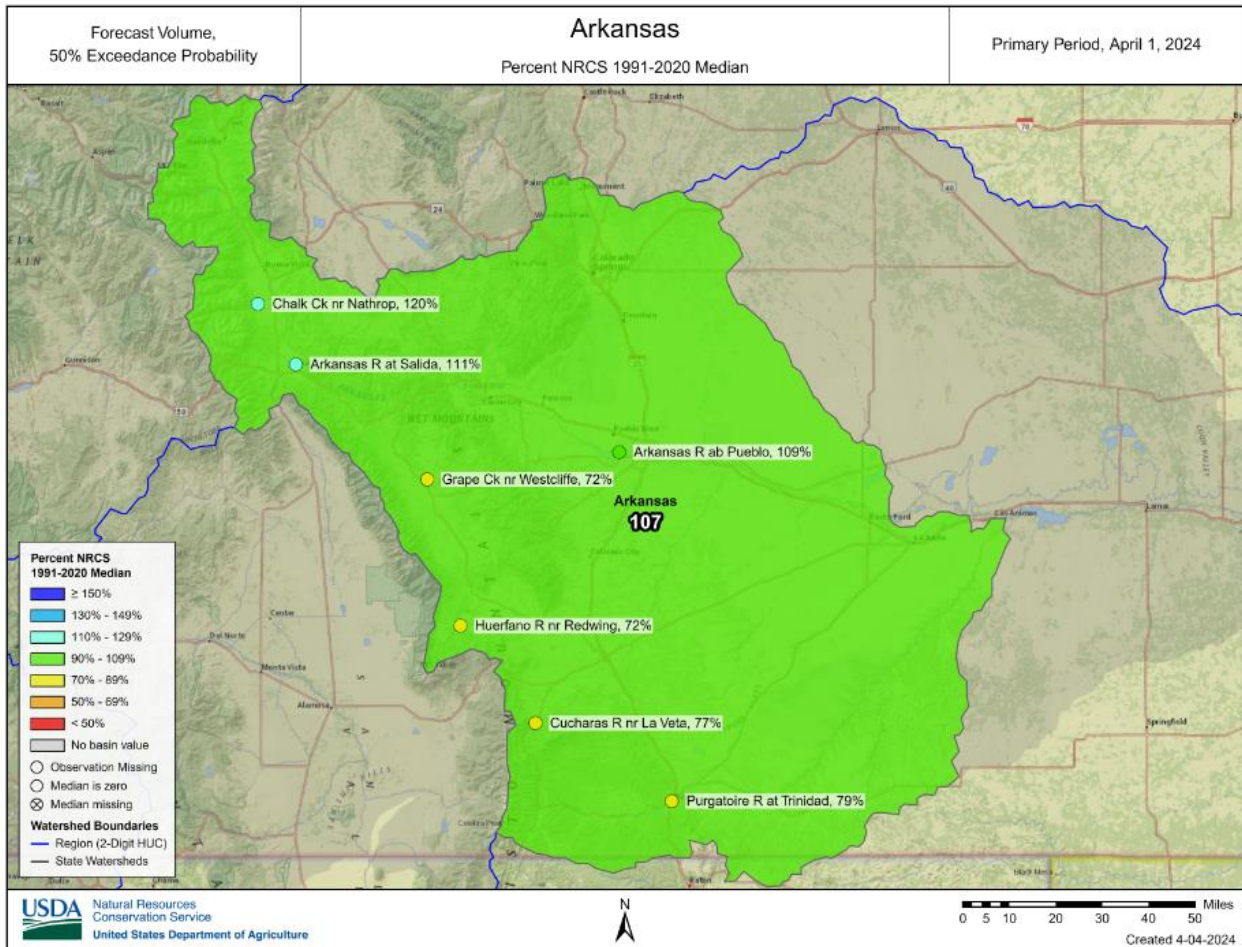


\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.

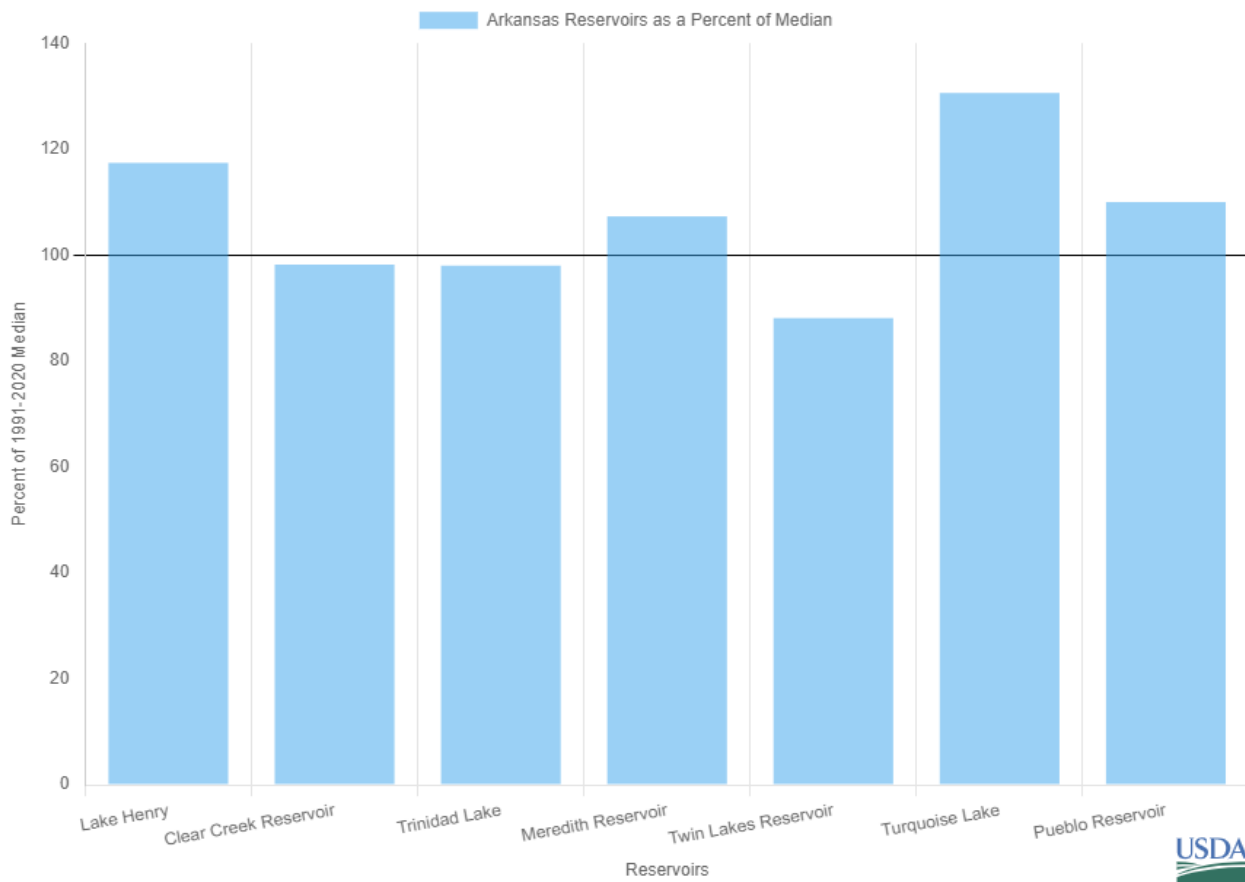
PRECIPITATION ACCUMULATION IN ARKANSAS







Arkansas Reservoir Storage Summary for April 1st 2024



## Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

Arkansas Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Cucharas & Huerfano	5.0	121.0	94.0
Upper Arkansas Headwaters	9.0	116.7	112.0
Lower Arkansas Headwaters	3.0	121.6	80.5
Purgatoire	3.0	114.5	76.6
Apishapa	2.0	128.1	63.2

## Reservoir Storage End of March 2024

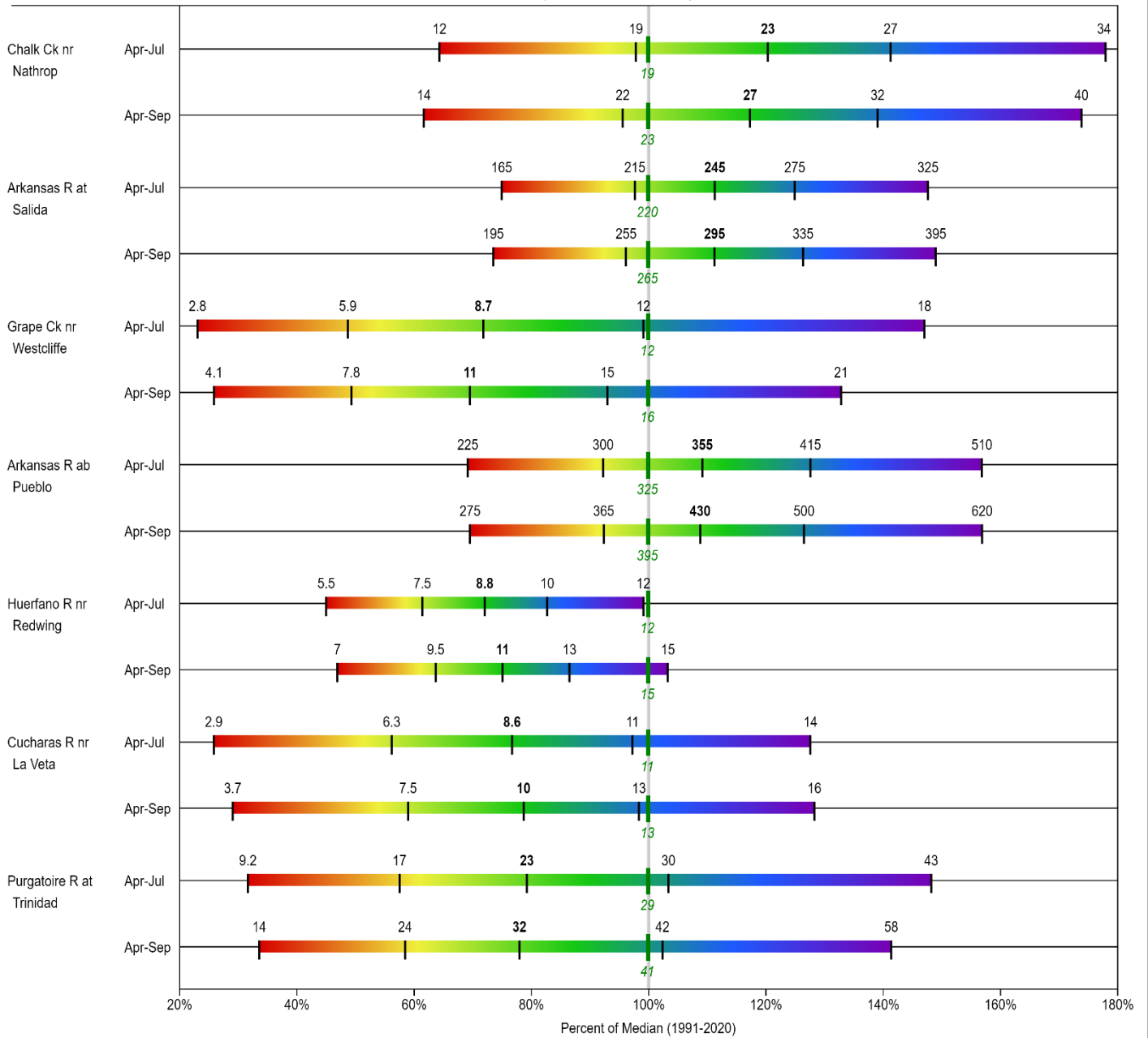
Arkansas Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Meredith Reservoir	39.8	8.9	37.1	107.3
Lake Henry	9.27	4.49	7.9	117.3
Clear Creek Reservoir	7.96	8.58	8.1	98.3
Turquoise Lake	78.38	60.63	60.0	130.6
Trinidad Lake	22.16	23.64	22.6	98.1
Twin Lakes Reservoir	33.58	36.58	38.1	88.1
Pueblo Reservoir	252.88	218.98	230.0	109.9

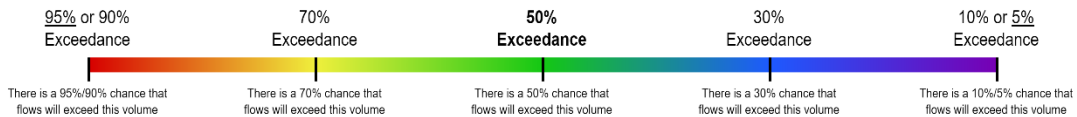
**ARKANSAS**  
**Water Supply Forecasts**  
 April 1, 2024

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.

<i>Period of Record Minimum Streamflow KAF (Year)</i>	<i>1991-2020 Normal Streamflow KAF</i>	<i>Observed Streamflow KAF</i>	<i>Period of Record Maximum Streamflow KAF (Year)</i>

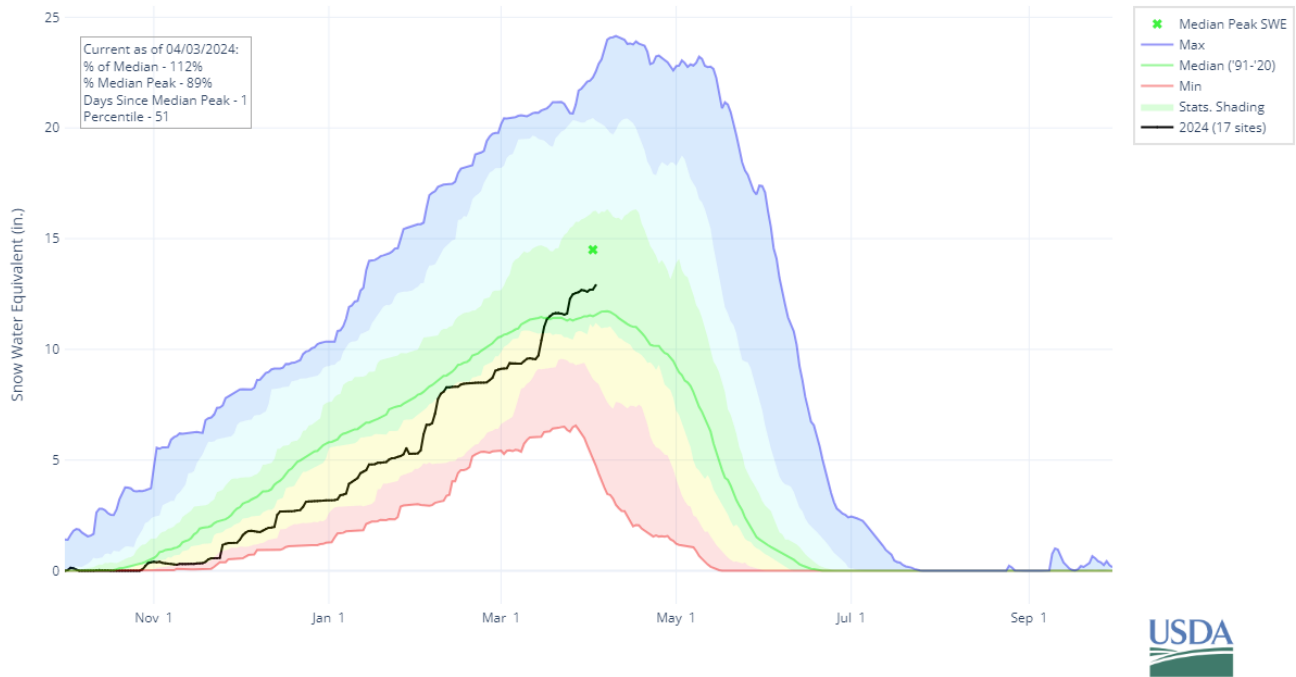
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

# UPPER RIO GRANDE RIVER BASIN

April 1st, 2024

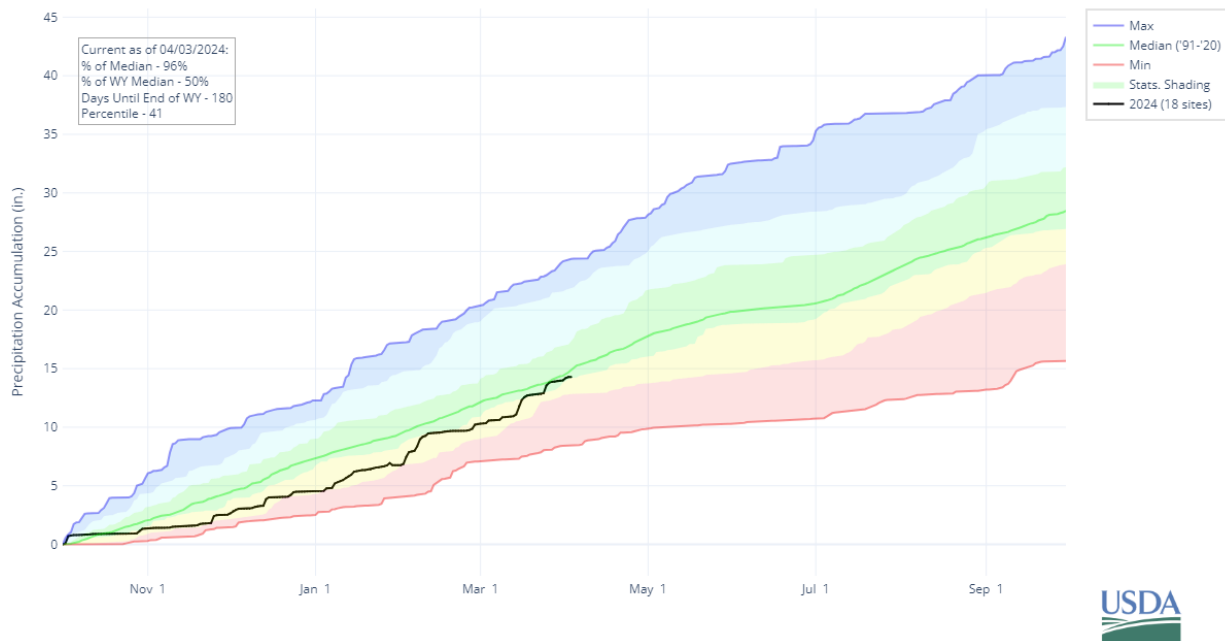
Snowpack in the Upper Rio Grande River basin is above normal at 110% of median. Precipitation for March was 172% of median which brings water year-to-date precipitation to 98% of median. Reservoir storage at the end of March was 116% of median compared to 105% last year. Current streamflow forecasts range from 67% of median at Costilla Creek near Costilla to 146% of median at Saguache Creek near Saguache.

SNOW WATER EQUIVALENT IN UPPER RIO GRANDE

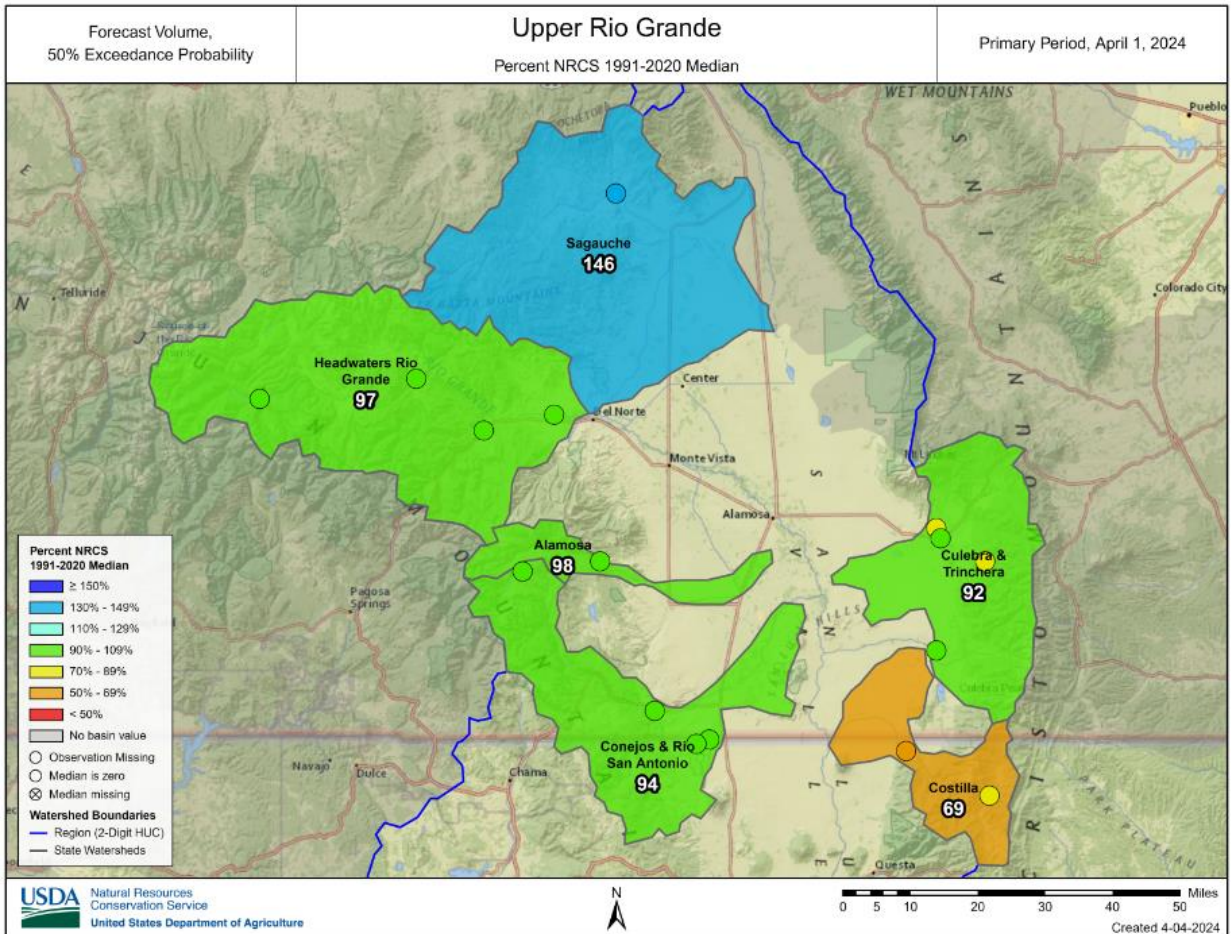


\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.

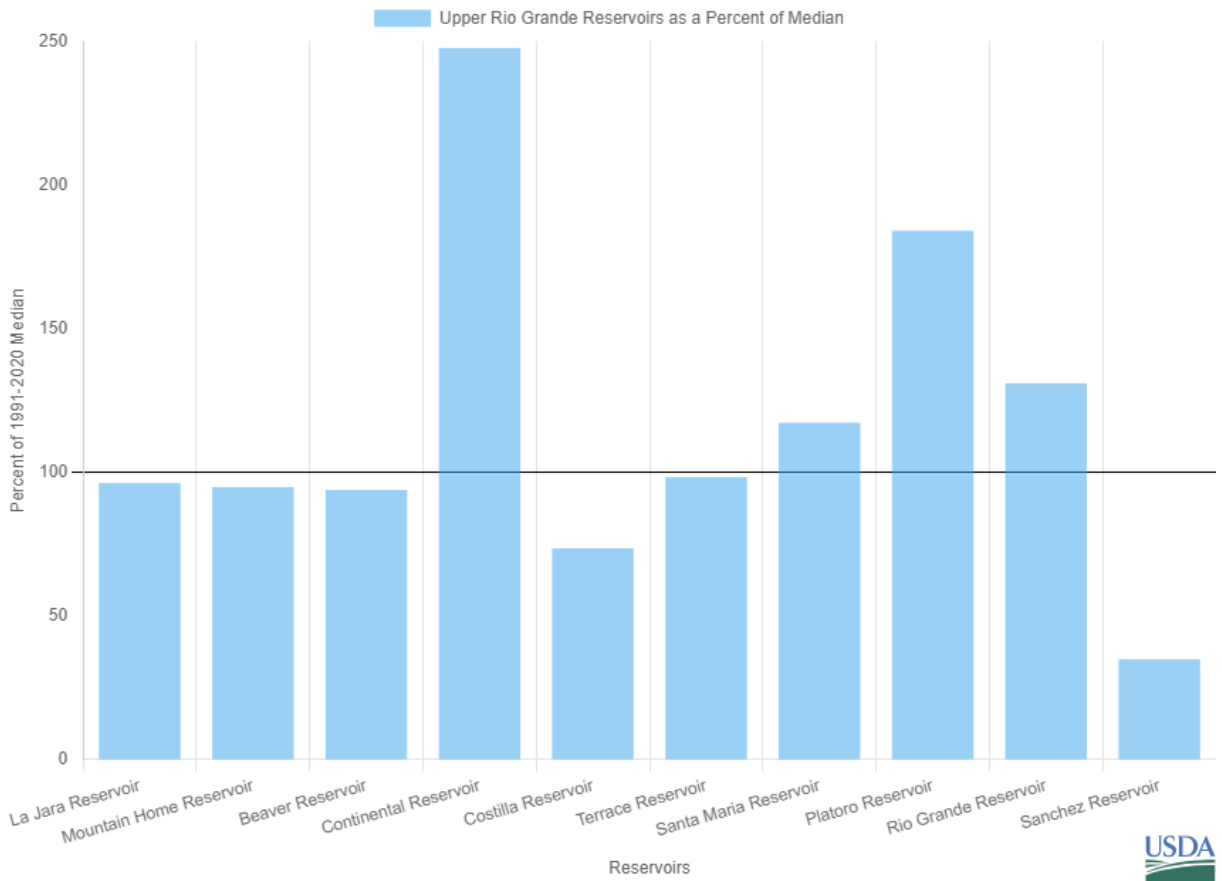
PRECIPITATION ACCUMULATION IN UPPER RIO GRANDE







Upper Rio Grande Reservoir Storage Summary for April 1st 2024



## Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

Upper Rio Grande Sub-Basin Snow Data

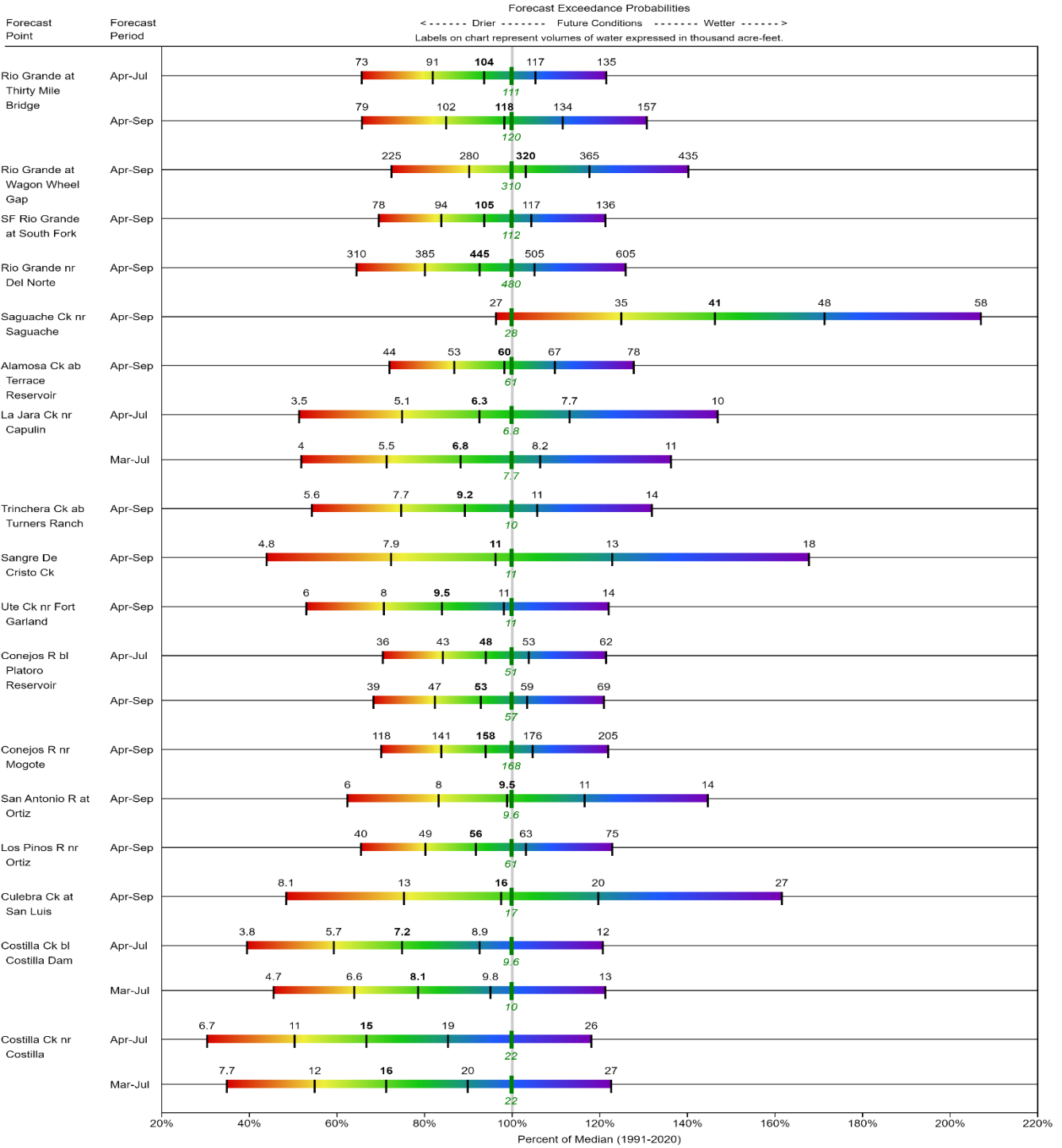
	# of Sites	% Median	Last Year % Median
Sagauche	4.0	120.3	106.9
Costilla	2.0	155.6	185.7
Headwaters Rio Grande	8.0	102.9	146.6
Northern San Luis Valley	2.0	152.6	100.0
Conejos & Rio San Antonio	5.0	106.7	165.6
Culebra & Trinchera	4.0	98.6	97.2
Alamosa	4.0	113.9	166.3

## Reservoir Storage End of March 2024

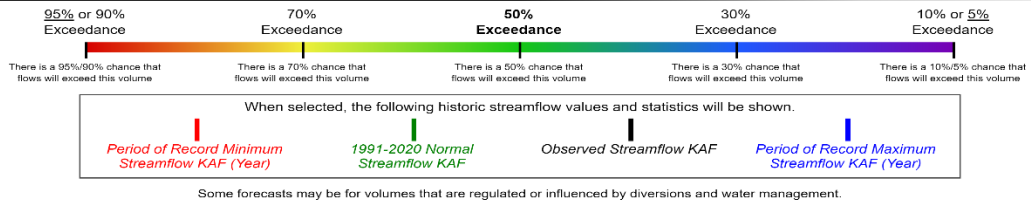
Upper Rio Grande Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Continental Reservoir	13.86	12.06	5.6	247.5
La Jara Reservoir	2.12	0.88	2.2	96.4
Terrace Reservoir	7.28	8.51	7.4	98.4
Sanchez Reservoir	7.15	8.99	20.4	35.0
Rio Grande Reservoir	25.54	29.45	19.5	131.0
Beaver Reservoir	4.04	4.05	4.3	94.0
Mountain Home Reservoir	2.75	4.7	2.9	94.8
Costilla Reservoir	5.3	7.37	7.2	73.6
Santa Maria Reservoir	9.97	9.98	8.5	117.3
Platoro Reservoir	32.59	14.13	17.7	184.1

**UPPER RIO GRANDE  
Water Supply Forecasts  
April 1, 2024**



**Legend**

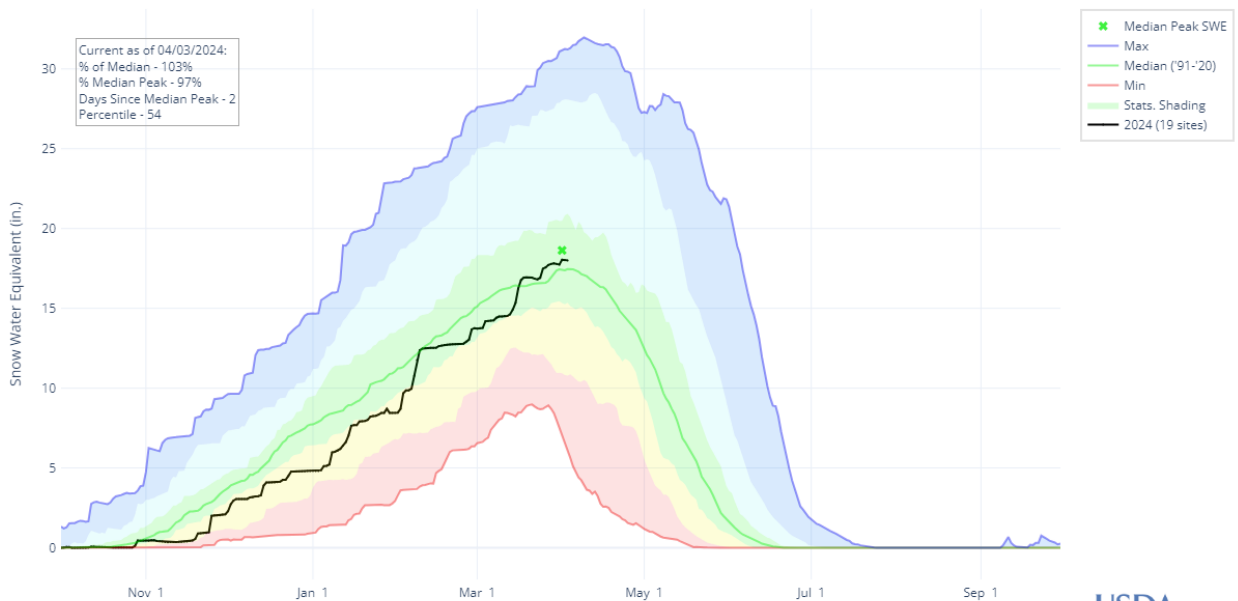


# SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN COMBINED RIVER BASIN

April 1st, 2024

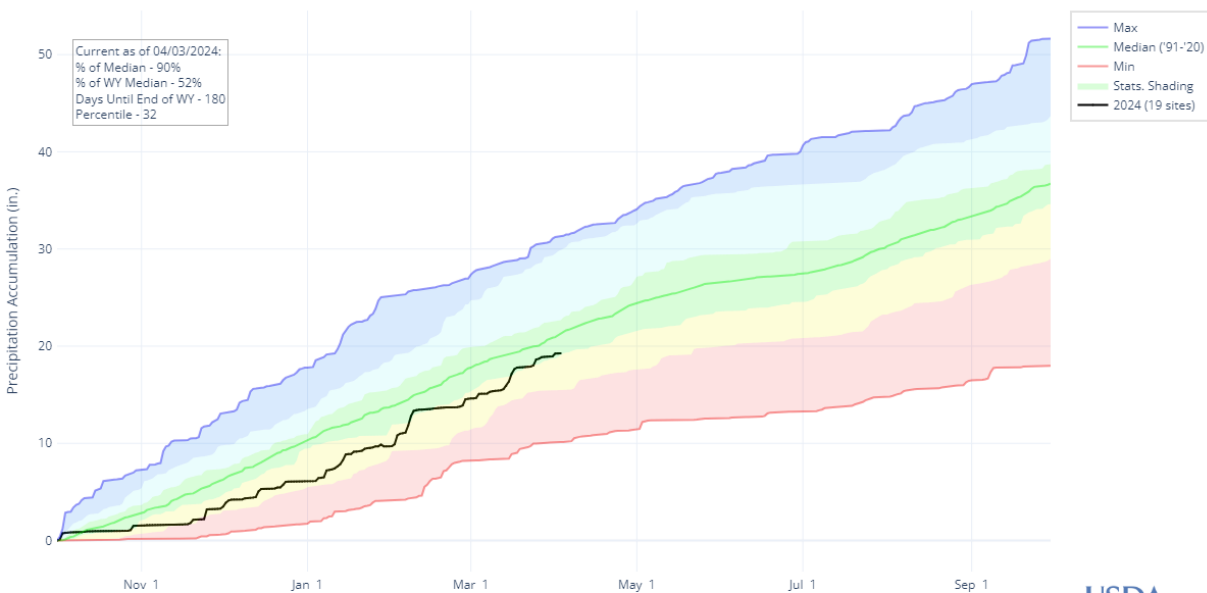
Snowpack in the combined southwest river basins is near normal at 104% of median. Precipitation for March was 166% of median which brings water year-to-date precipitation to 92% of median. Reservoir storage at the end of March was 86% of median compared to 69% last year. Current streamflow forecasts range from 73% of median at San Miguel River near Placerville to 98% of median at Florida River below Lemon Reservoir near Durango.

SNOW WATER EQUIVALENT IN SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN

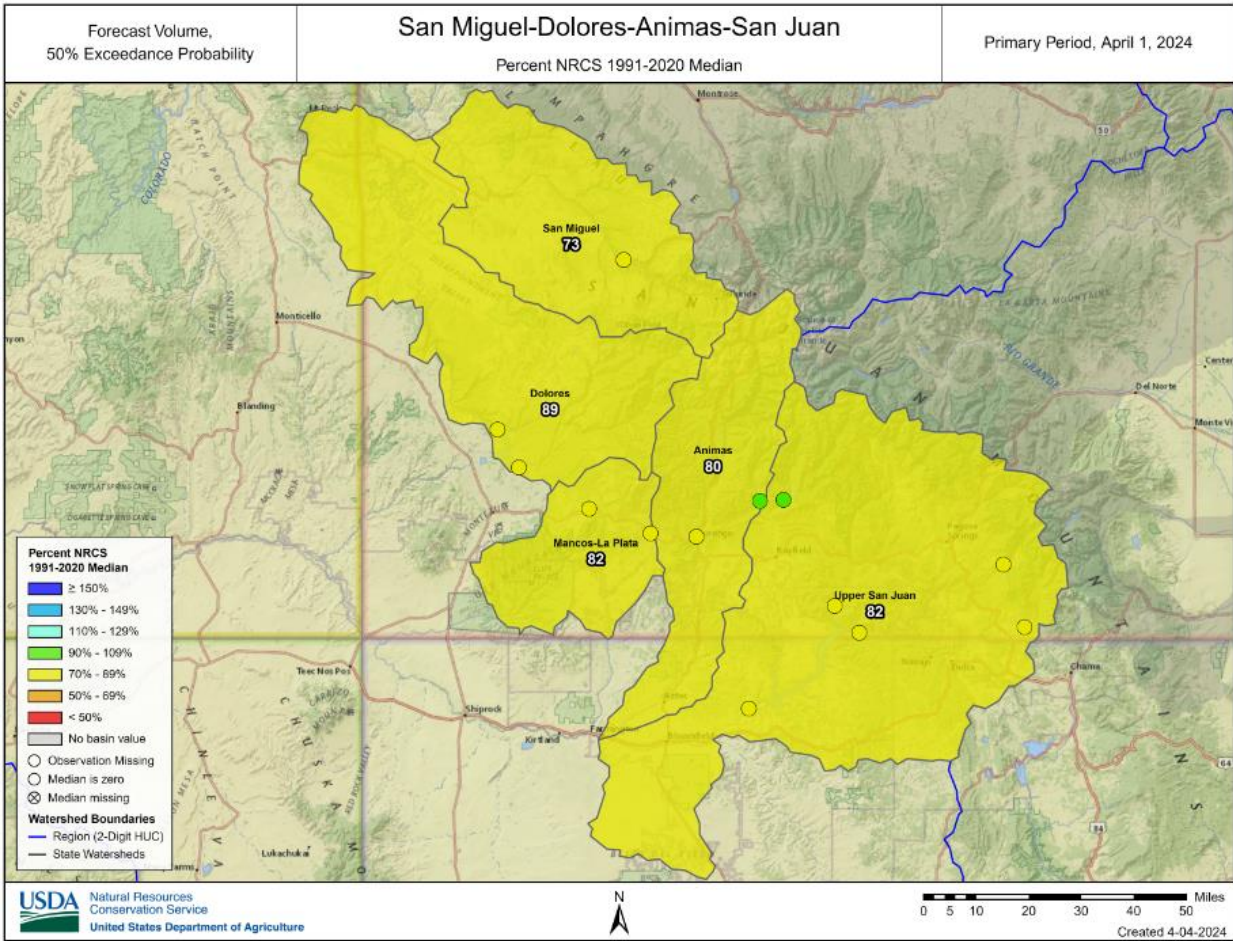


\*Snow water equivalent (SWE) values are calculated using daily SNOTEL data only for the above graph. In the paragraph SWE is calculated for the first of the month using both SNOTEL and Snow Course data.

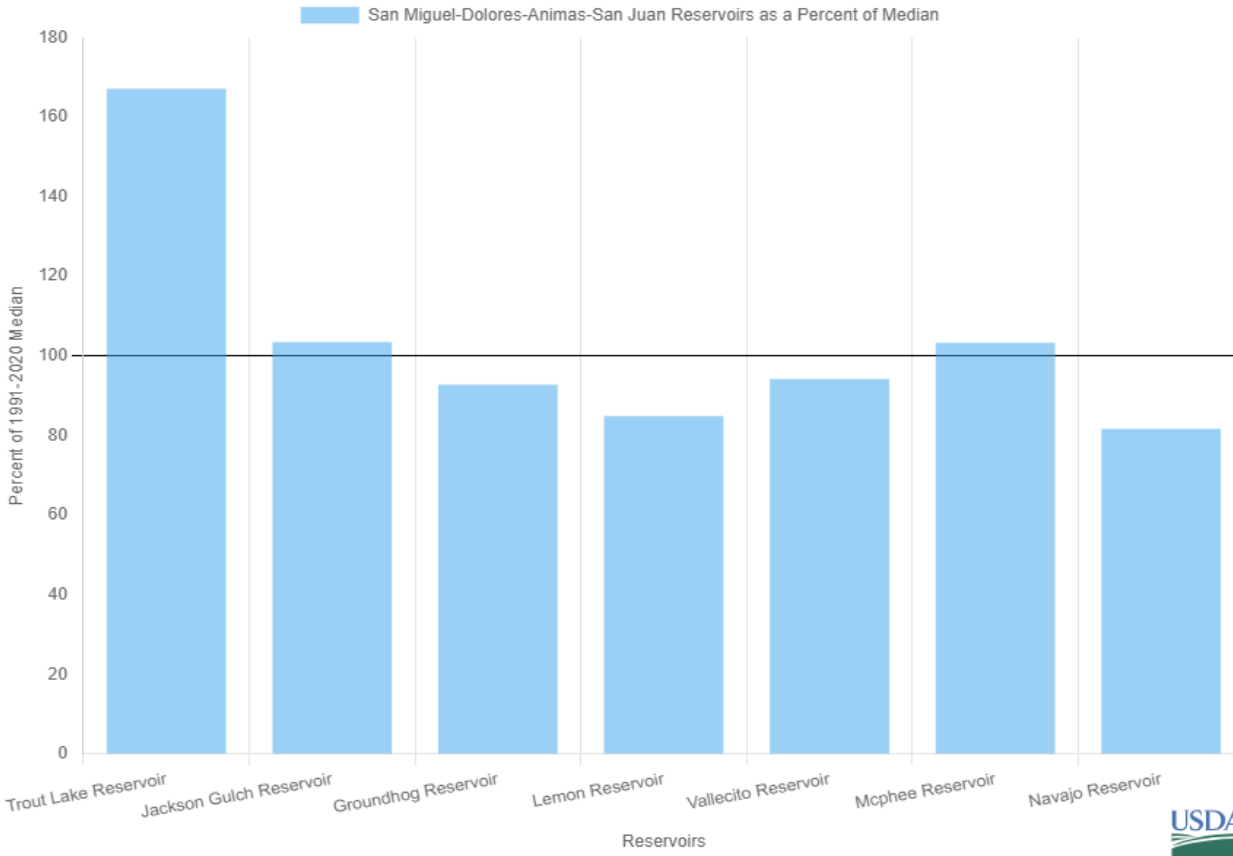
PRECIPITATION ACCUMULATION IN SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN







**San Miguel-Dolores-Animas-San Juan Reservoir Storage Summary for April 1st 2024**



## Watershed Snowpack Analysis April 1<sup>st</sup>, 2024

San Miguel-Dolores-Animas-San Juan Sub-Basin Snow Data

	# of Sites	% Median	Last Year % Median
Animas	9.0	97.9	169.8
Upper San Juan	6.0	107.9	167.5
San Miguel	6.0	104.3	173.7
Dolores	4.0	112.3	196.3
Mancos-La Plata	3.0	100.2	169.5

## Reservoir Storage End of March 2024

San Miguel-Dolores-Animas-San Juan Reservoir Data

	Current Storage (KAF)	LY Storage (KAF)	Median (KAF)	Percent of Median
Trout Lake Reservoir	2.44	2.45	1.46	167.1
Jackson Gulch Reservoir	4.76	5.81	4.6	103.5
Groundhog Reservoir	13.18	0.0	14.2	92.8
Mcphee Reservoir	289.71	190.18	280.5	103.3
Navajo Reservoir	1075.0	919.95	1315.0	81.7
Lemon Reservoir	16.14	17.41	19.0	84.9
Vallecito Reservoir	70.22	45.55	74.5	94.3

### SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN

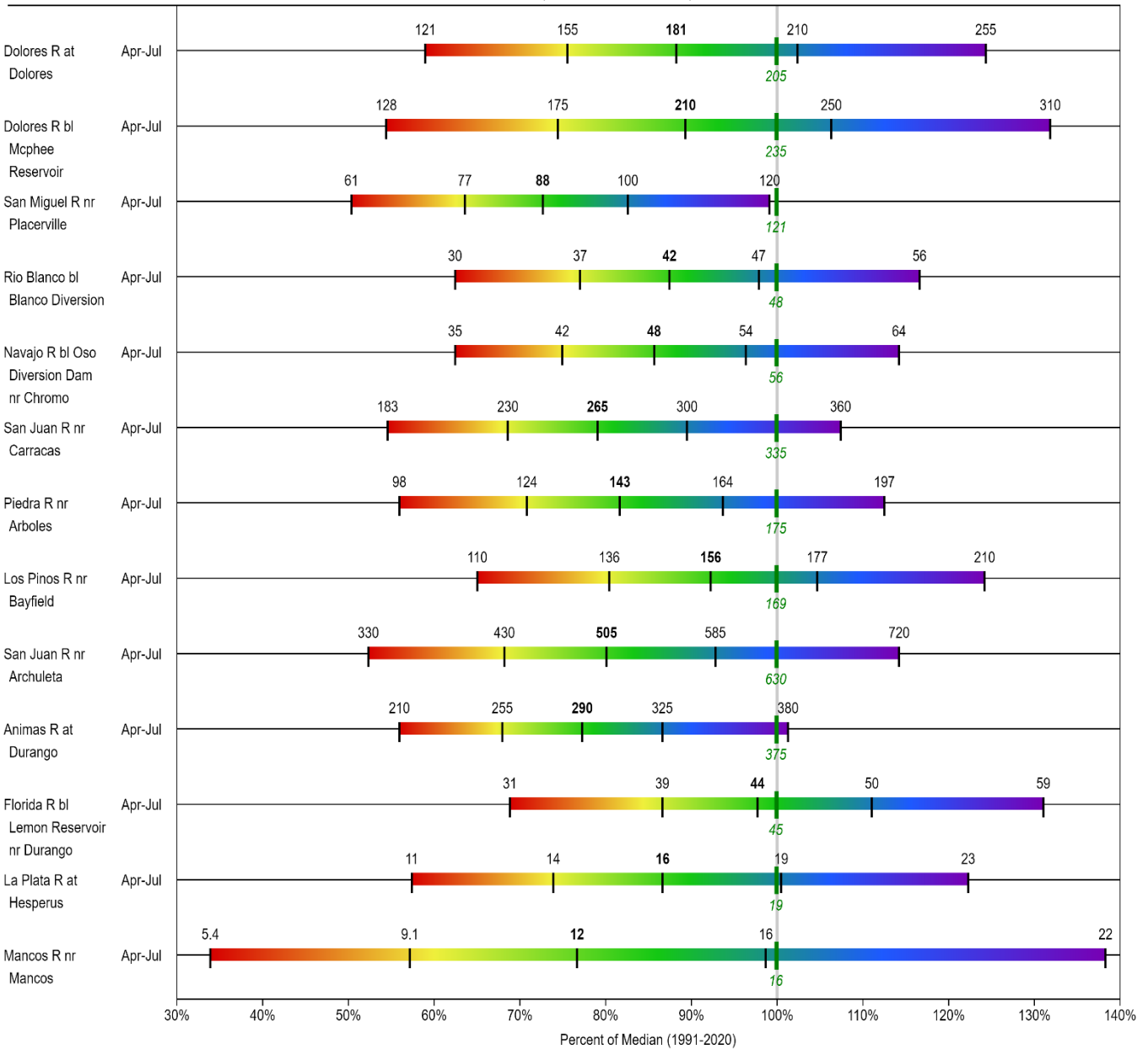
#### Water Supply Forecasts

April 1, 2024

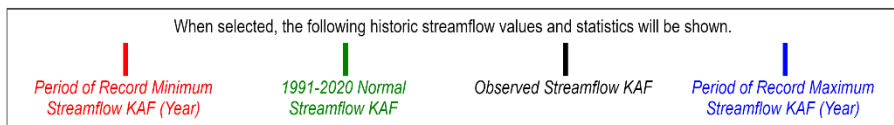
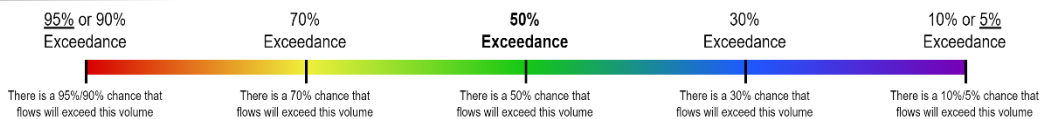
Forecast Exceedance Probabilities

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

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



#### Legend



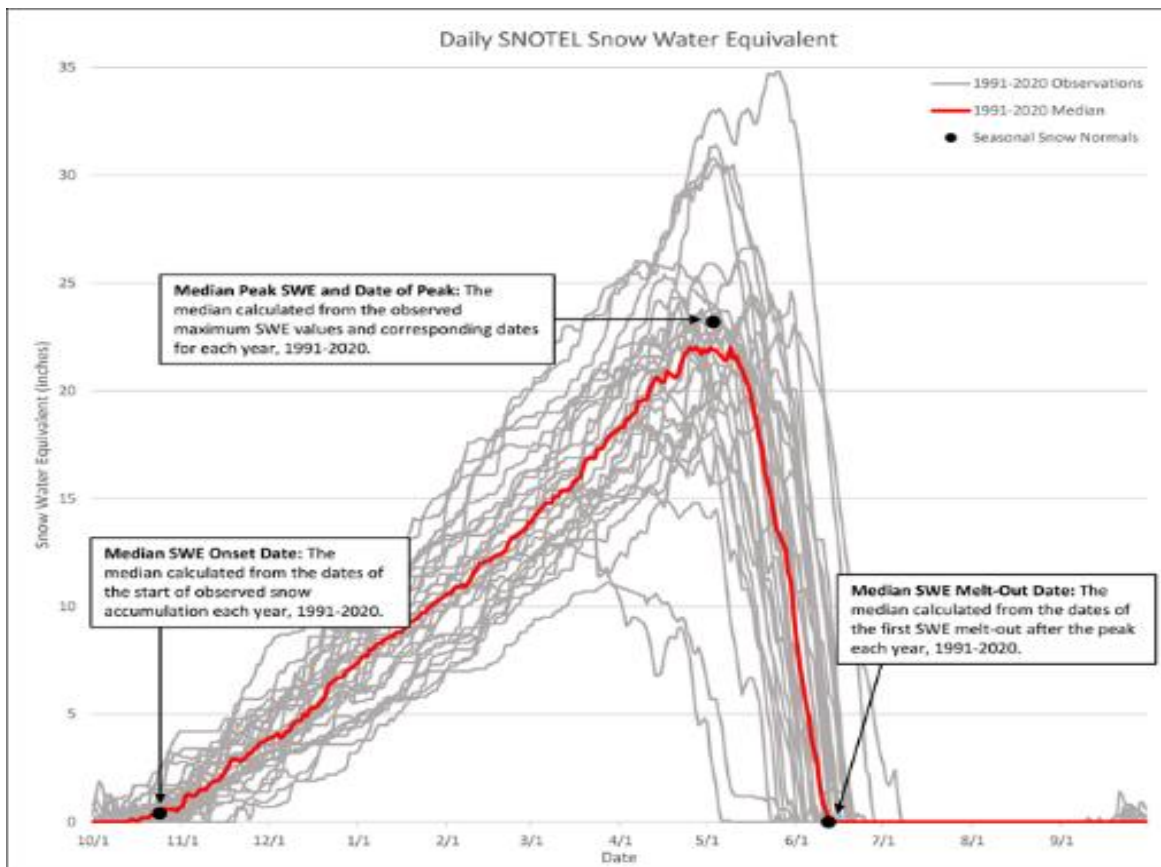
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

# New 1991-2020 Statistical Normals

The NRCS Snow Survey and Water Supply Forecasting (SSWSF) Program recently published new statistical normals (medians or averages) to describe the central tendency of a data record over a 30-year period. Data normals are key in helping water users compare current conditions to past conditions using the metric “% of normal.” Every 10 years, the SSWSF Program updates the 30-year normals reference period to stay consistent with World Meteorological Organization standards that account for changing climatic conditions over time. As such, this year the SSWSF Program transitioned from using 1981-2010 data normals to using 1991-2020 data normals.

For the 1991-2020 reference period, the median is the official NRCS normal when conveying information about current snowpack, precipitation, and water supply conditions. The median was previously used as the official 1981-2010 normal for SWE and some streamflow forecast points, but the average was used for other data types. Setting the official normal to the median provides consistency across data types and stations. Viewing the 30-year average December be preferable over the median in some instances, therefore, both the average and the median are available in most NRCS reports and products. See Median vs. Average for more information about the median.

A new suite of statistics for automated snow monitoring stations are available to provide information about normal seasonal snowpack characteristics. These new seasonal statistics include medians and averages for the SWE onset date and melt-out date, as well as the median and average maximum seasonal SWE value (Peak SWE) and date of Peak SWE. More detailed information on the updated normals can be found on the Water and Climate Center’s [30-year normals page](#).



# 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.

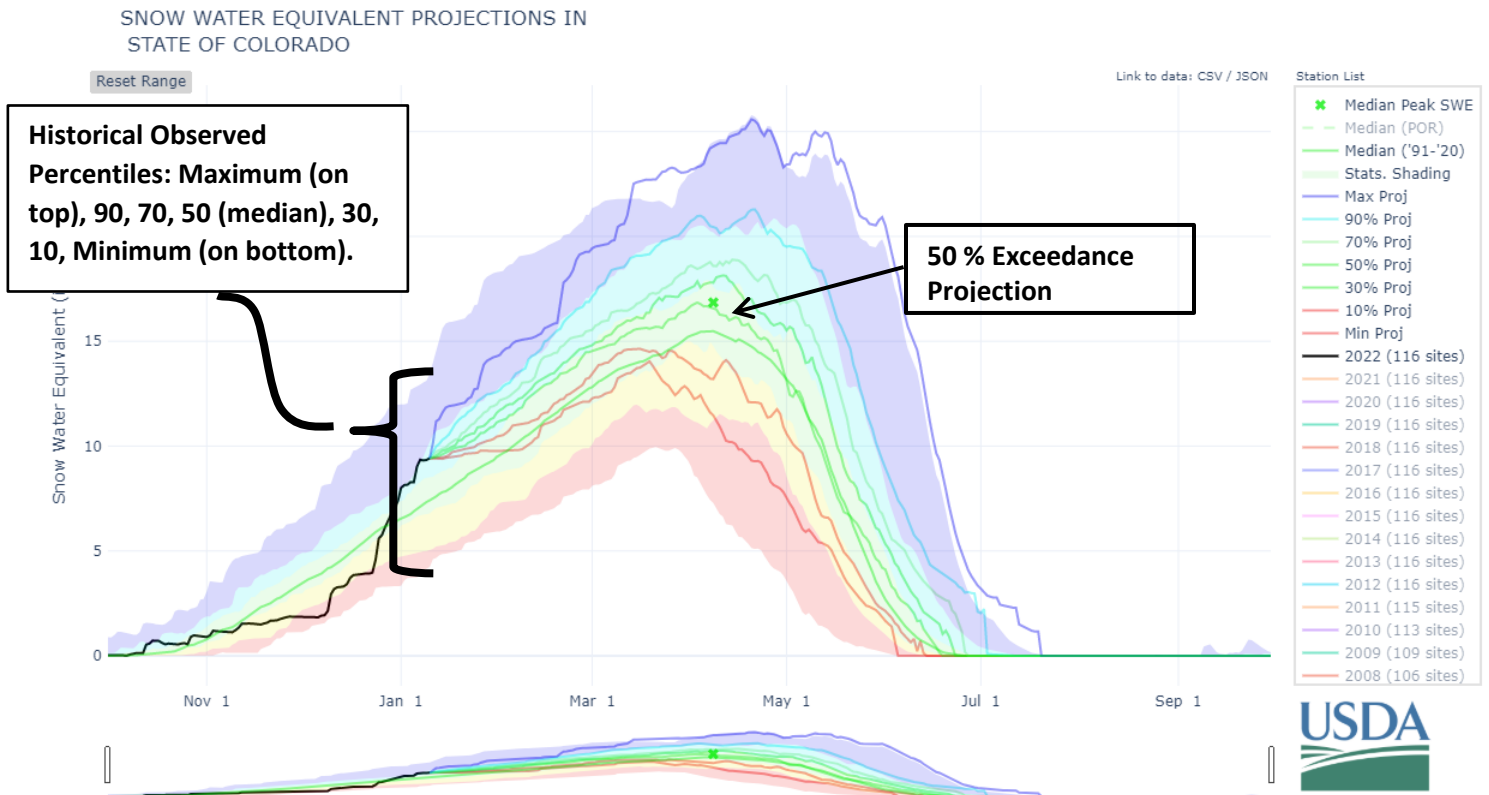
**Current** water year is represented by the heavy red line terminating on the last day the graphic was updated.

**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.

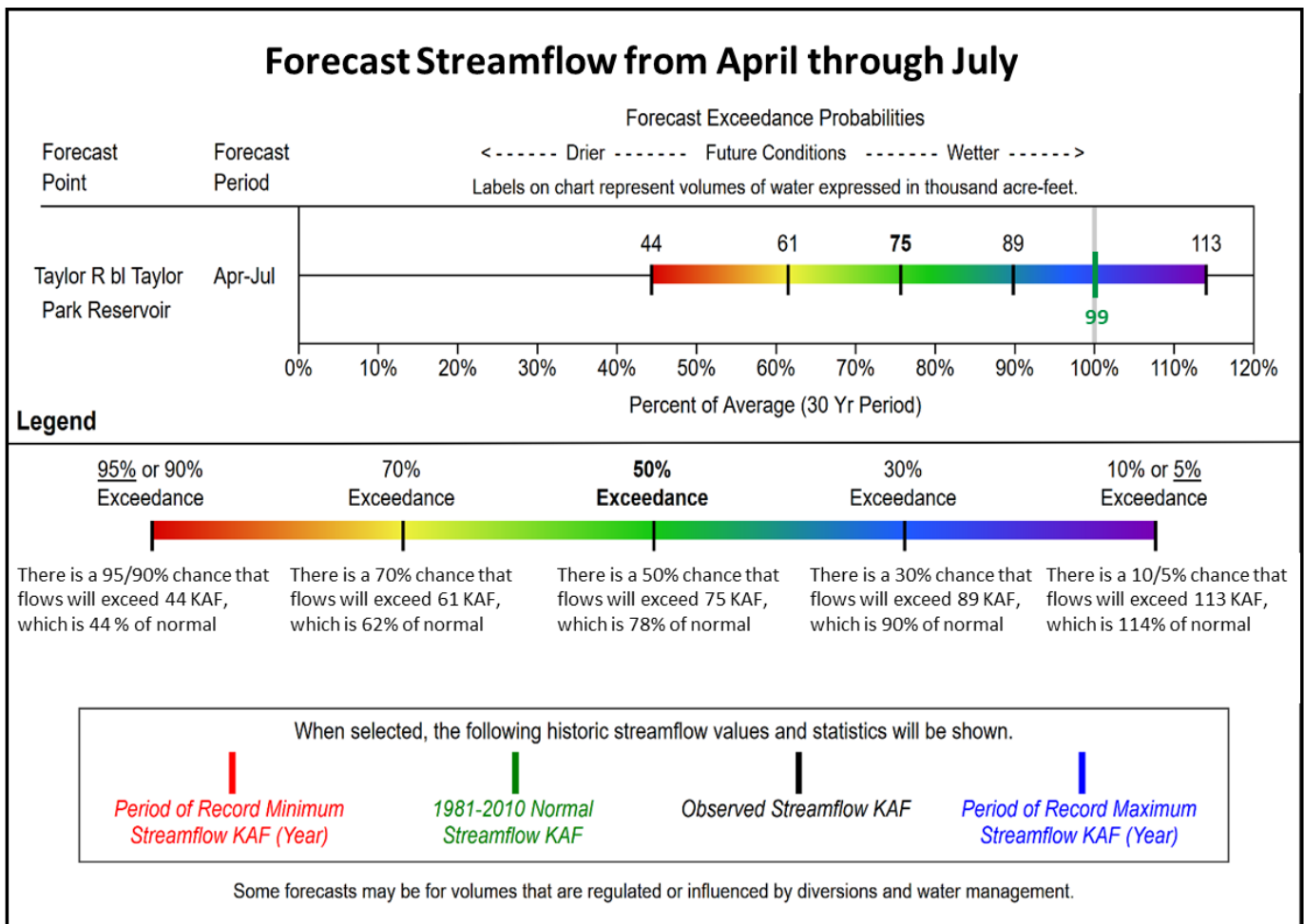
Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single 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 December 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 December 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 median represented by each forecast and the gray line centered above 100% represents the 1981-2010 historical median 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 median streamflow volumes during the provided forecast period. Conversely, if the majority of the color bar is to the left of the median mark, below median 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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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, February through June. The information December 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*

**Terry J. Cosby**  
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