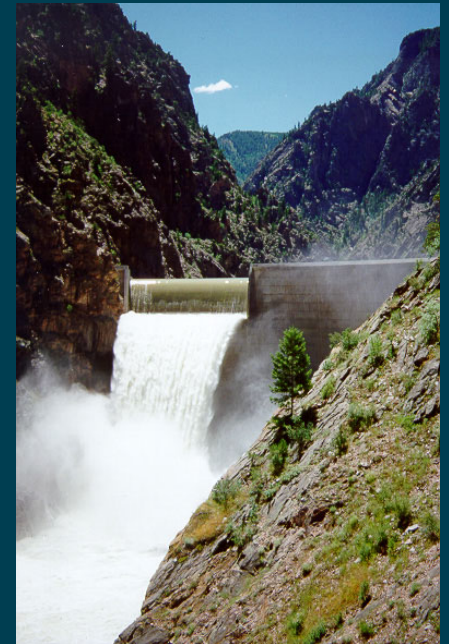




— BUREAU OF —  
RECLAMATION

# Aspinall Operations Meeting

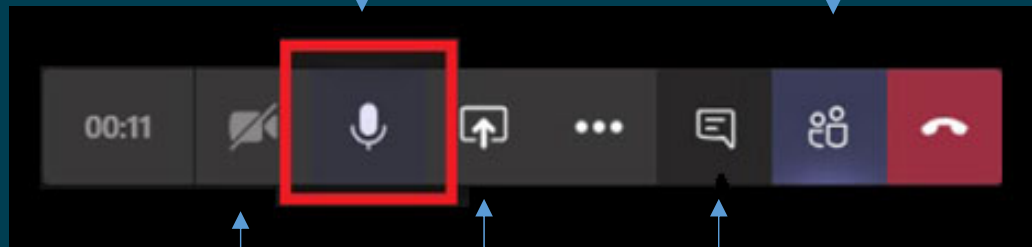
## January 19, 2023



# Microsoft Teams Video Conferencing

Mute/Unmute Yourself

View Participant List



Turn on/off your camera

Share your screen:  
Should be disabled

Chat: Ask questions,  
make comments  
(everyone can see this)

Depending on your device/browser, these buttons may be in a different location

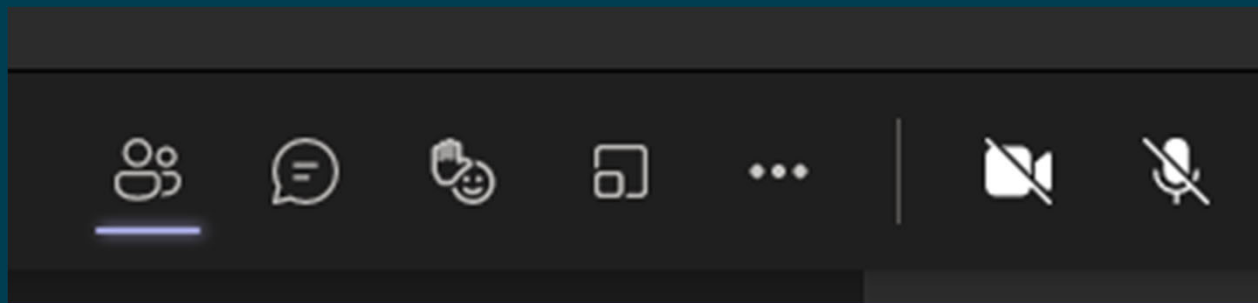


# Microsoft Teams Video Conferencing

Participants List

Raise Hand

Video on/off



Chat

Microphone on/off



Introductions and Purpose of Meeting

Gunnison Basin Water Supply Outlook – Ashley Nielson (CBRFC)

Aspinall Unit Operations – Erik Knight (Reclamation)

Special Flow Requests and Discussion

Reports of Agencies and Organizations – All

Conclusions (Next meeting date – April 20<sup>th</sup>)



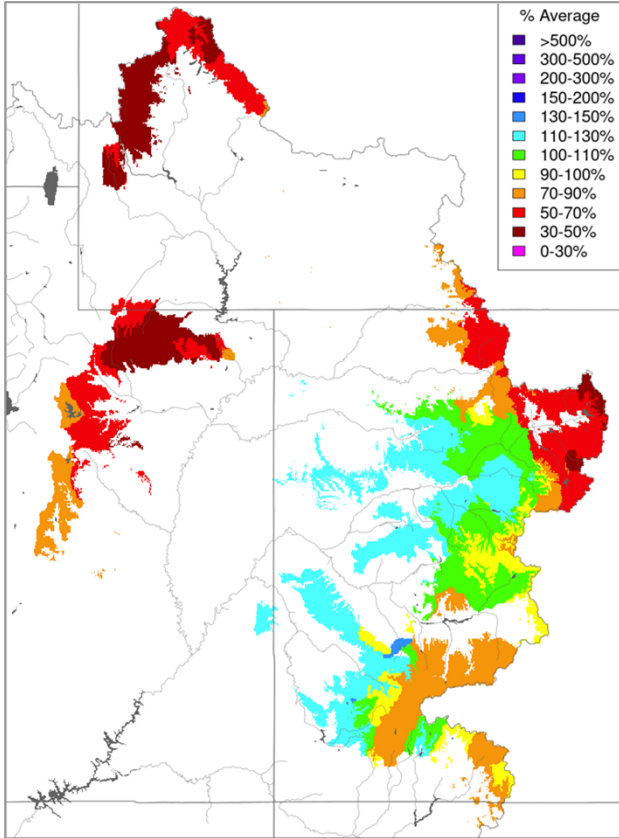
# Aspinall Operations Meeting Water Supply Outlook January 2023

Ashley Nielson  
Senior Hydrologist  
Colorado Basin River Forecast Center  
National Weather Service/NOAA



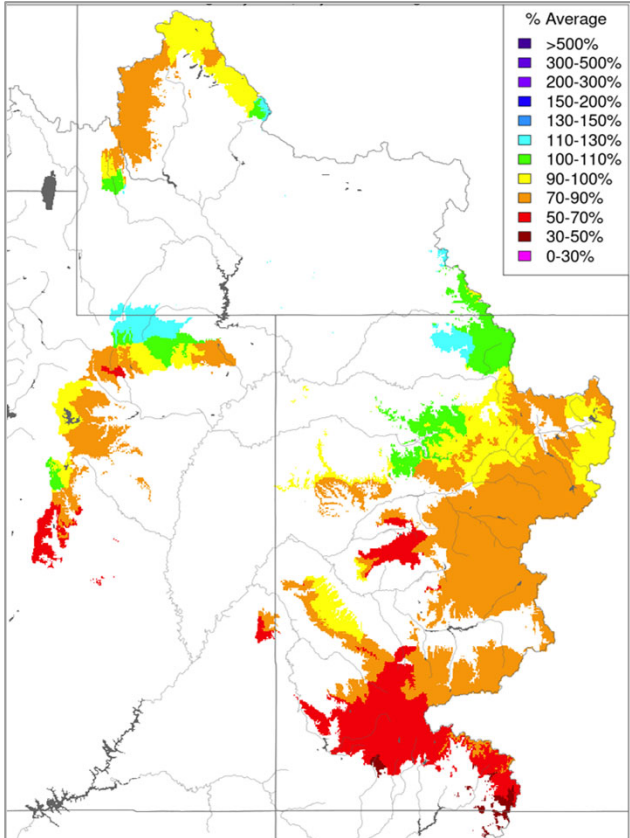
# Water Year 2023: Upper Colorado River Observed Precipitation

October



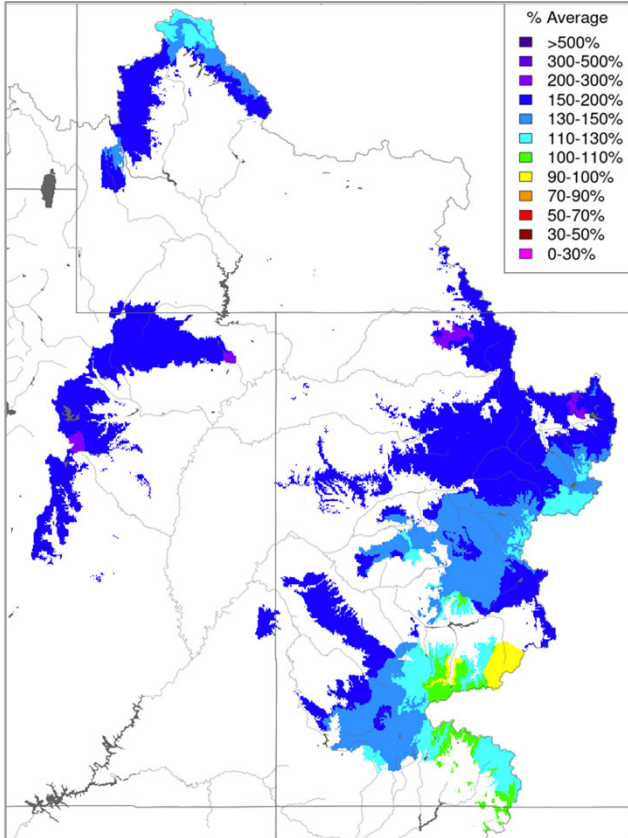
Above Blue Mesa Reservoir: 95%  
 Gunnison River Basin: 100%

November



Above Blue Mesa Reservoir: 75%  
 Gunnison River Basin: 75%

December



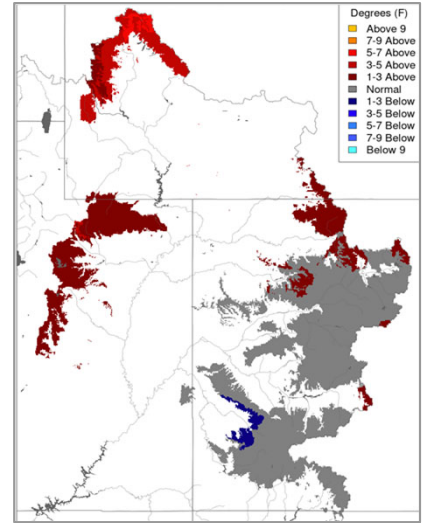
Above Blue Mesa Reservoir: 140%  
 Gunnison River Basin: 135%

*Observed precipitation is averaged by major contributing area within a basin.*

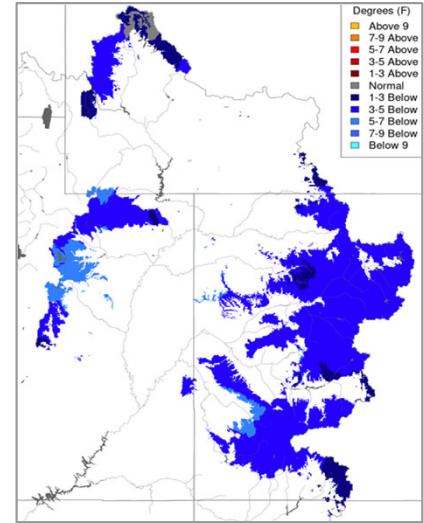
# Water Year 2023: Upper Colorado River Temperature Departure

MAX

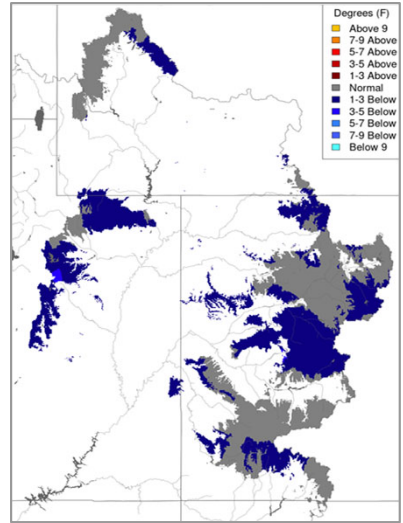
October



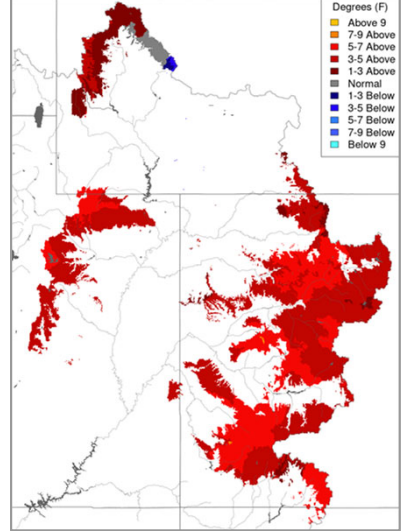
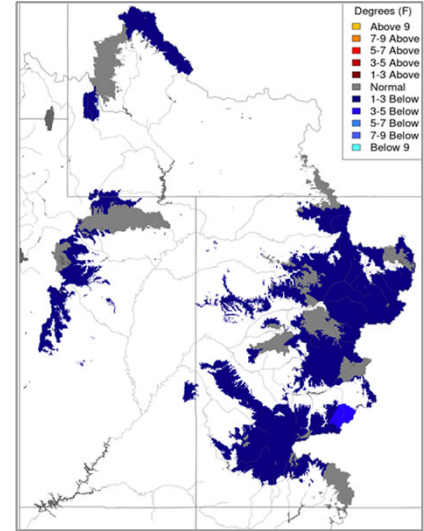
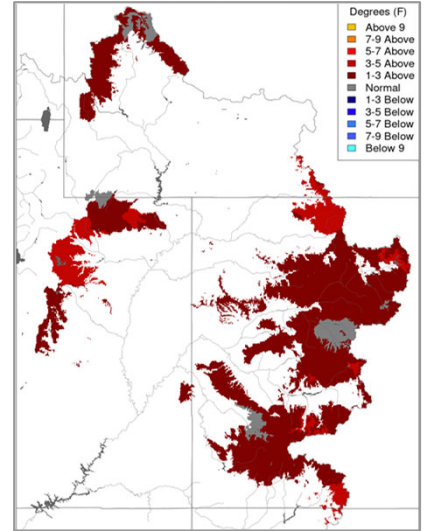
November



December

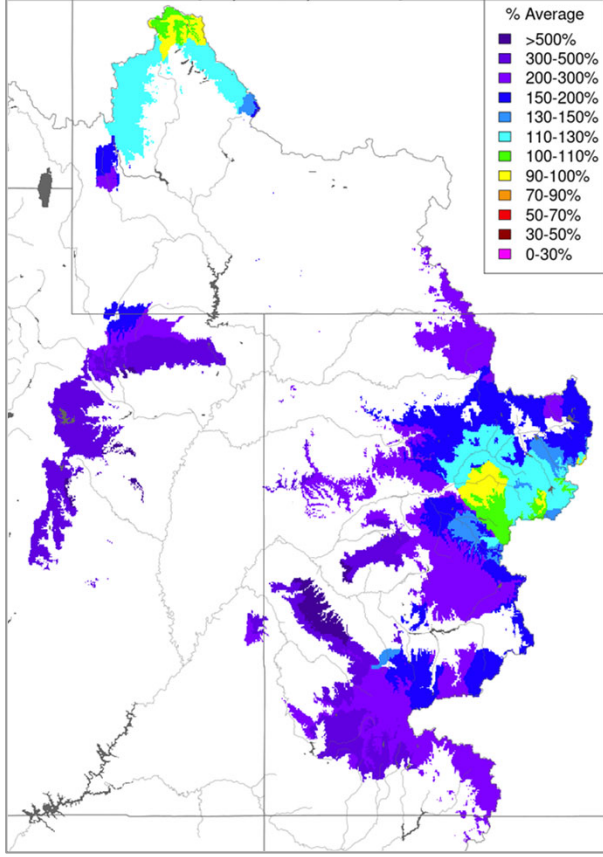


MIN



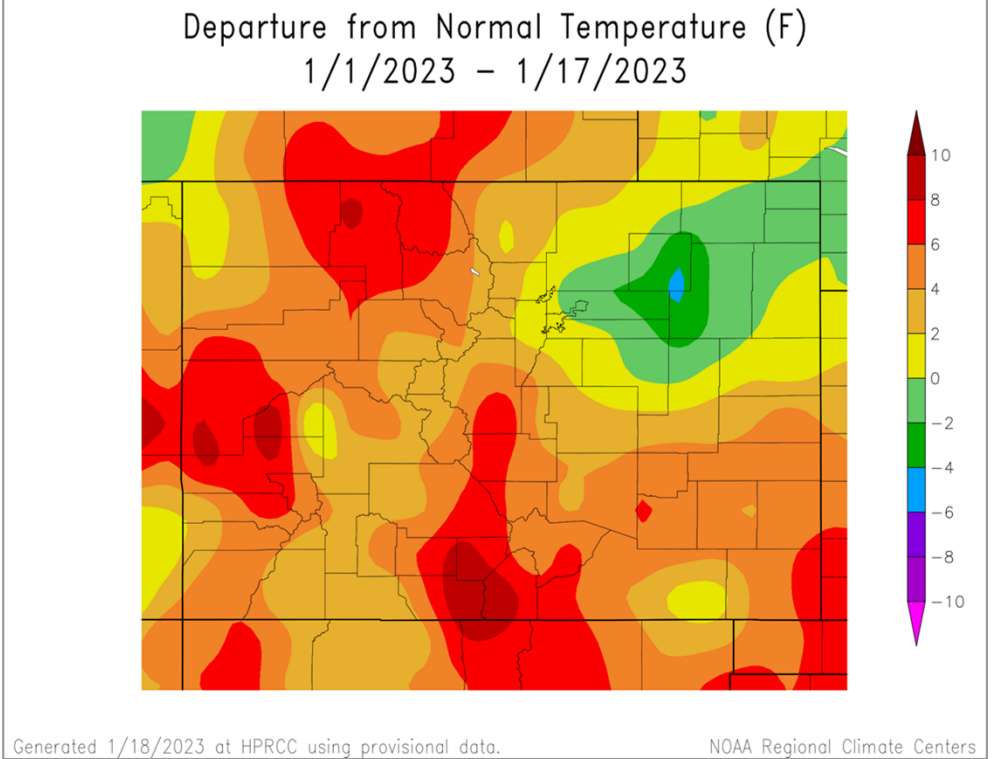
# Water Year 2023: January Precipitation and Temperature

January 1-18



Above Blue Mesa Reservoir: 190%  
Gunnison River Basin: 220%

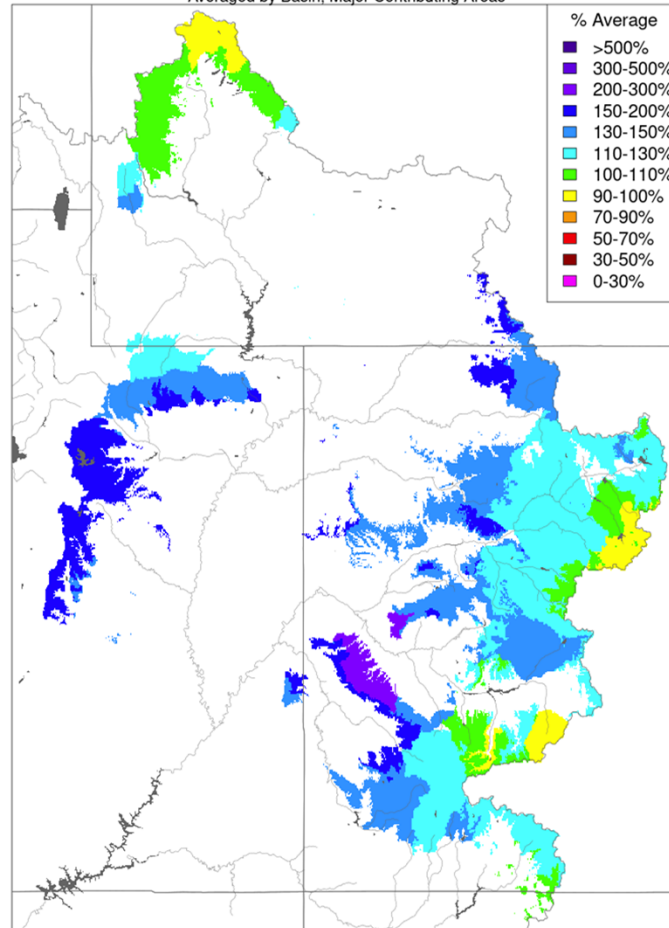
Departure from Normal Temperature (F)  
1/1/2023 - 1/17/2023





# Water Year 2023: Water Year Precipitation to Date

Water Year to Date Precipitation, October 01 - January 18 2023  
Averaged by Basin, Major Contributing Areas

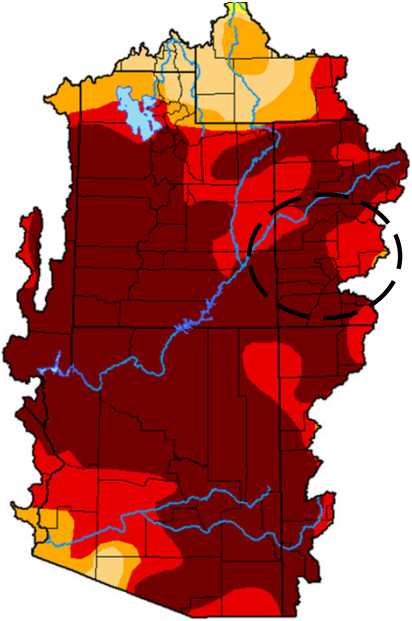


Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

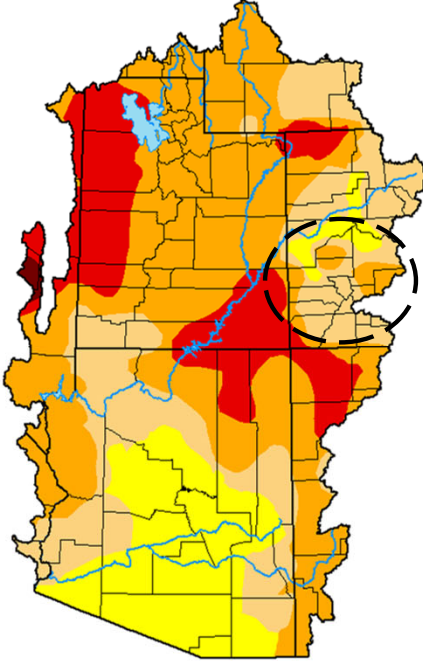
*Observed precipitation is averaged by CBRFC basin defined elevation zones of major contributing areas.*

# Drought Conditions: U.S Drought Monitor

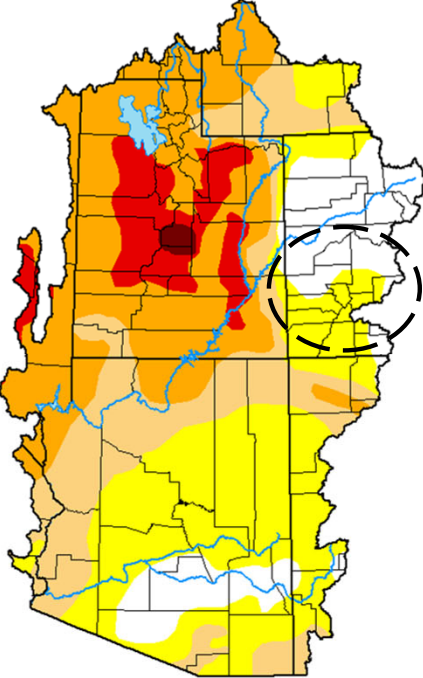
January 5, 2021



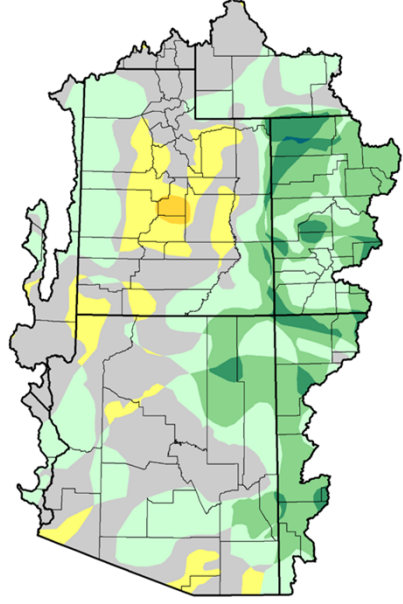
January 4, 2022



January 3, 2023



U.S. Drought Monitor Class Change - Colorado Basin RFC  
52 Week



January 3, 2023  
compared to  
January 4, 2022



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

droughtmonitor.unl.edu

Intensity

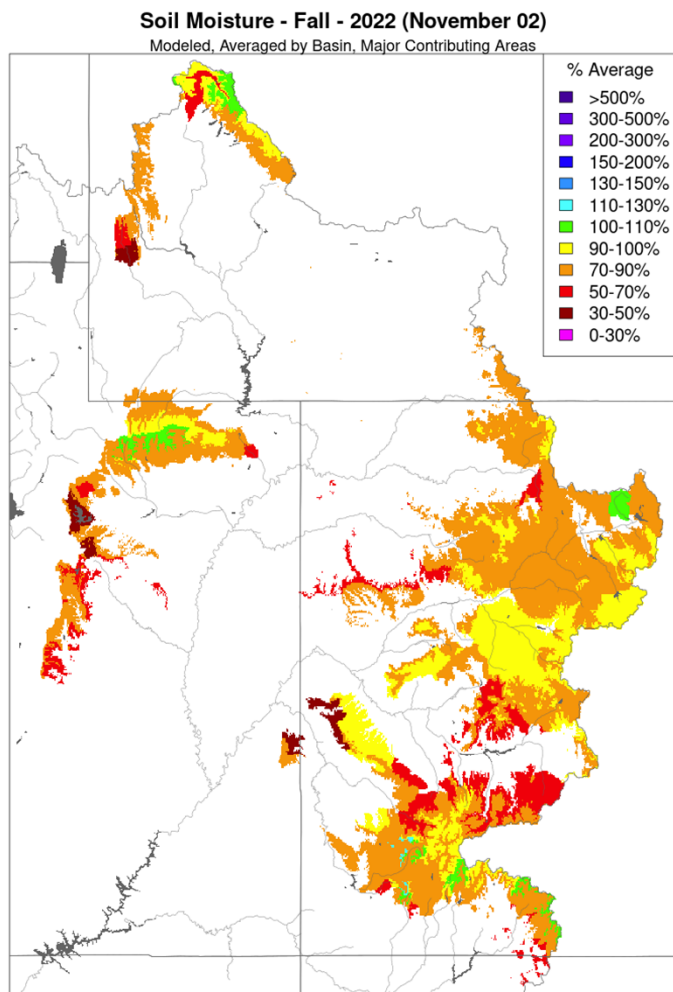
None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



droughtmonitor.unl.edu

# Upper Colorado River: Fall 2022 Model Soil Moisture Conditions



The map shows the model soil moisture conditions from the lower soil zone in CBRFC's hydrologic model. This zone represents the source of longer-term (weeks-to-years streamflow).

Modeled lower zone soil water content is a result of past hydrologic conditions including but not limited to:

- previous year(s) runoff
- summer/fall precipitation

Soil moisture content is adjusted every fall during a dry period after irrigation season has ended and before winter. Forecasters use the following data to make adjustments:

- Early November streamflow observations (baseflow)
- Reservoir inflows
- July-October precipitation
- Past season(s) runoff conditions

**CBRFC model soil moisture conditions are near to below normal across many of the major runoff producing areas.**

# Gunnison River Basin: Fall 2022 Model Soil Moisture Conditions

Soil moisture conditions are near to below normal over the Gunnison River Basin. Soil moisture deficits still exist.

Conditions are similar to last fall with the exception of a few headwater basins that have improved conditions and some southern basins that have worse conditions than last year.

### Soil Moisture Impacts:

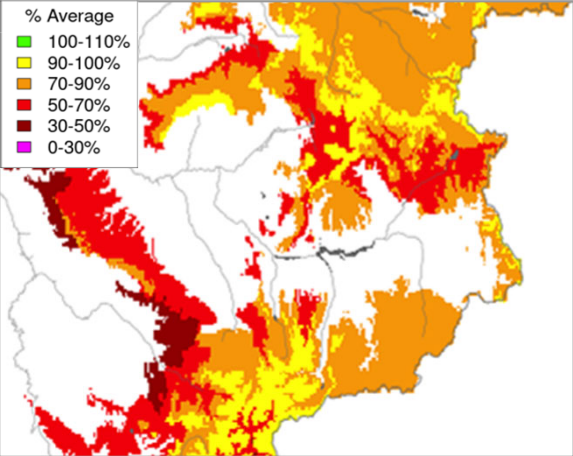
#### 1. Water Supply Forecasts

- Below average conditions= lower forecasts
- Above average conditions= higher forecasts

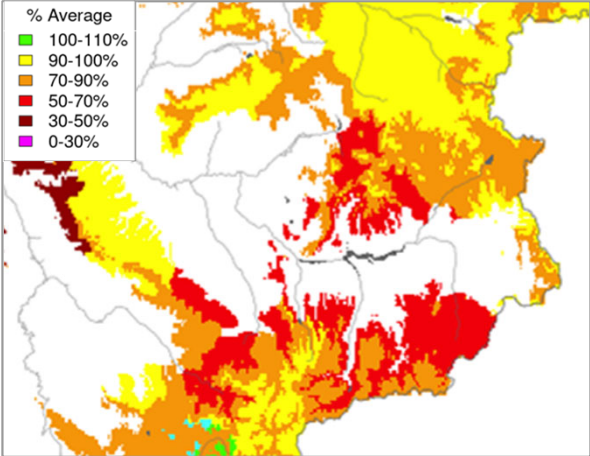
#### 2. Spring Runoff Efficiency

- Soil moisture deficit must be fulfilled before runoff can occur.
- Degree of impact is uncertain in every year.
- Timing/magnitude of runoff is ultimately a result of:
  - Spring Weather (precipitation/temperature)
  - Snow Conditions
  - Soil Moisture Conditions

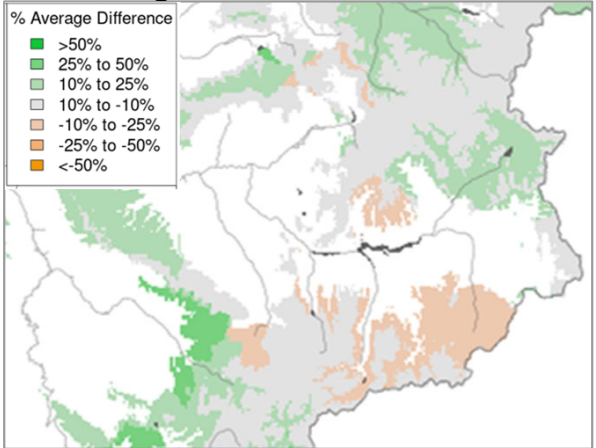
Fall 2021



Fall 2022



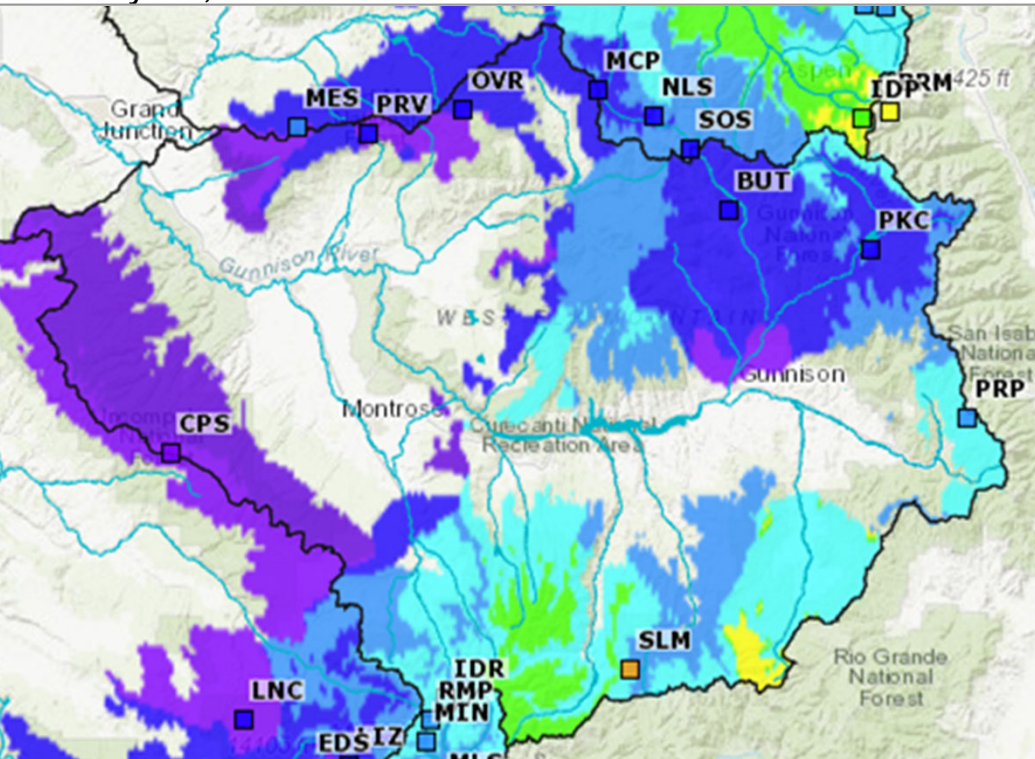
% Change: 2021-2022



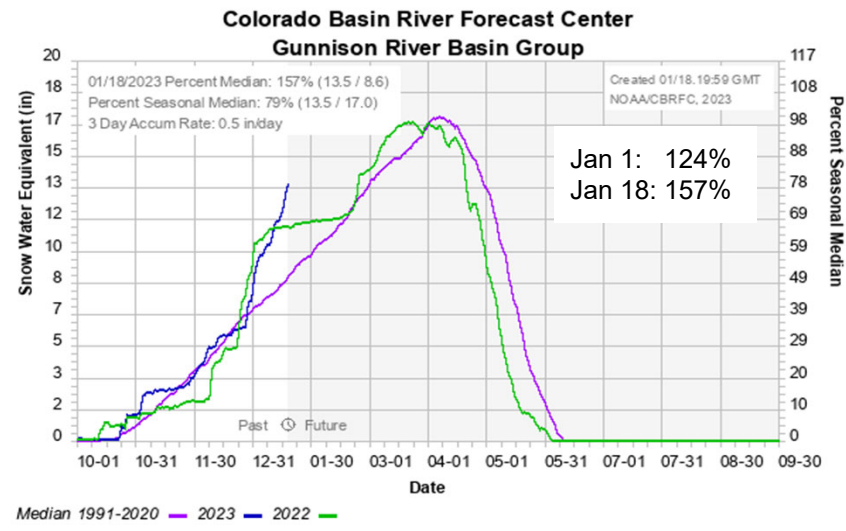
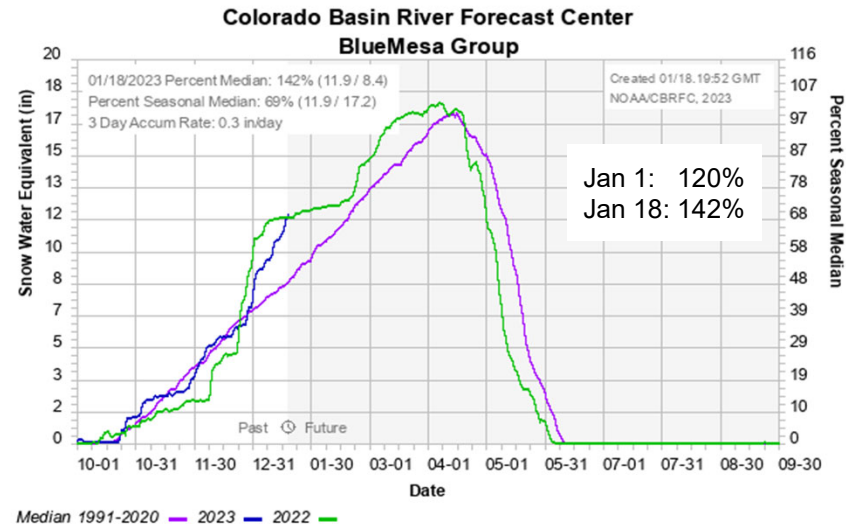
Model soil moisture is averaged by major contributing area within a basin.

# Snow Conditions: SNOTELS and CBRFC Model Snow Water Equivalent

January 18, 2023

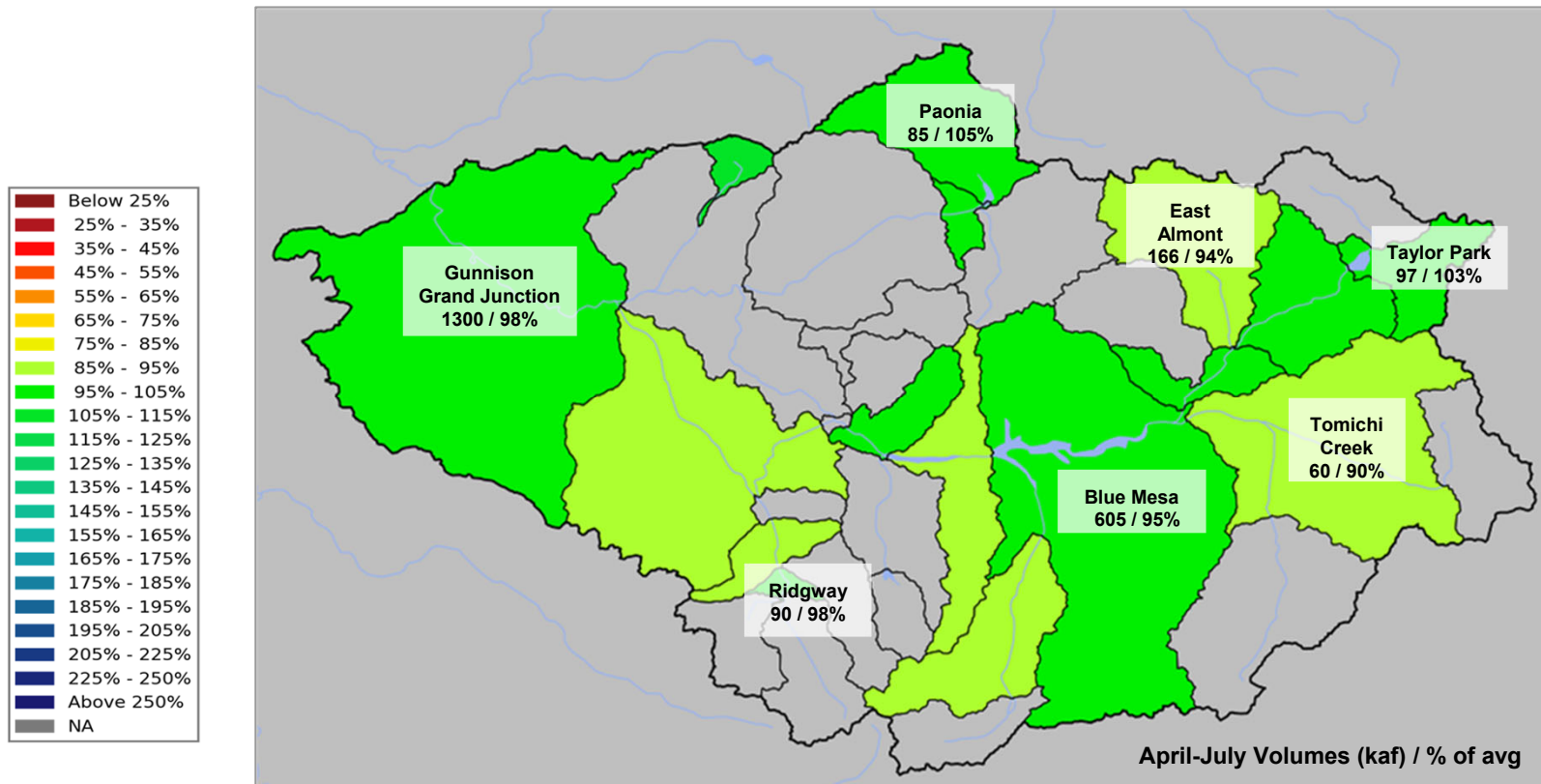


- Model snow includes areas above and below SNOTEL sites.
- SNOTEL locations range from ~9,000-11,500'
  - Some modeled basins extend to over 14,000'



# January 2023 Water Supply Forecasts: Gunnison River Basin

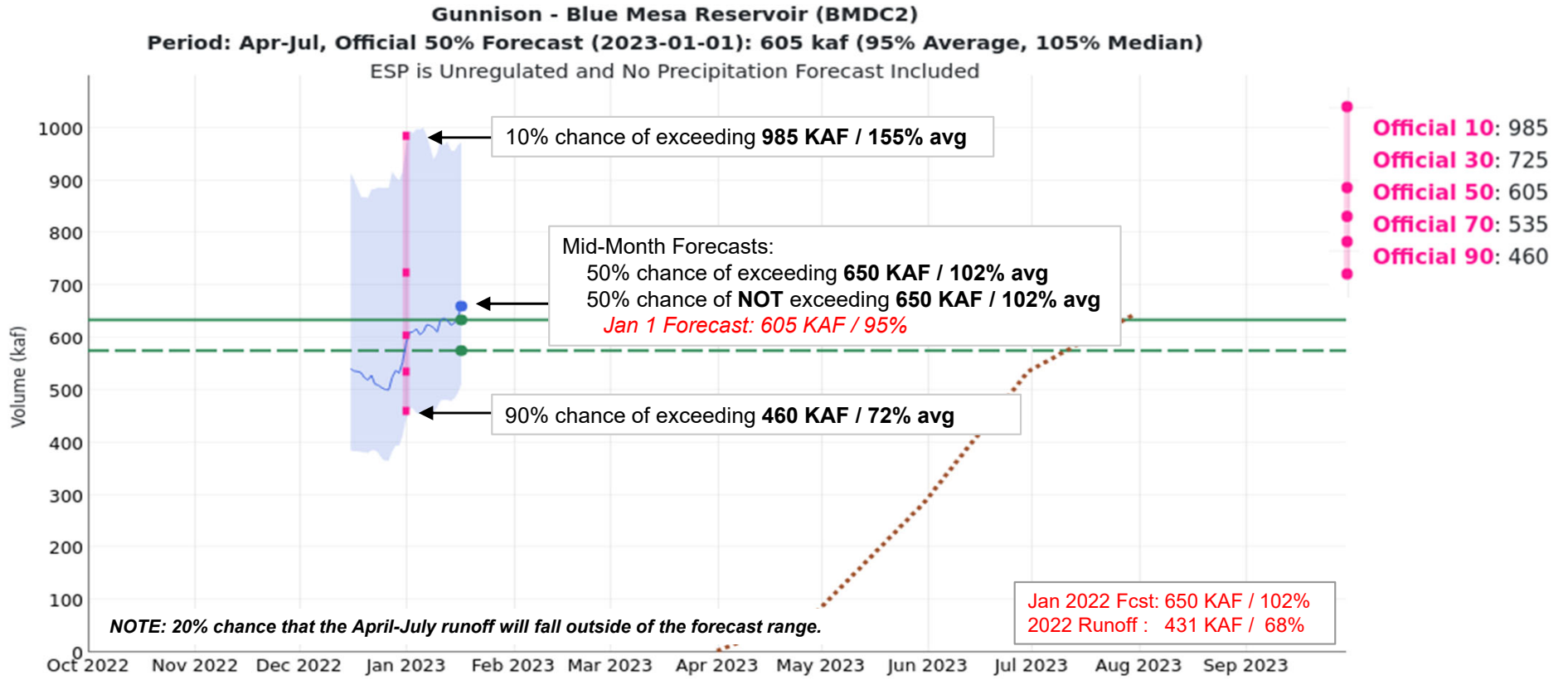
April-July Forecasts  
Volume in 1000's acre-feet / Percent of 1991-2020 average



Forecast Range is 90-110% of average

Mid-January Model Guidance Forecast Range: 90-155% of average

# Forecast Evolution: Blue Reservoir Inflow:



Blue shading: Daily Raw Model Guidance 90% - 10% exceedance range  
 Blue line: Daily Raw Model Guidance 50% exceedance  
 Pink line: Official forecast 90%, 70%, 50%, 30%, 10% exceedance

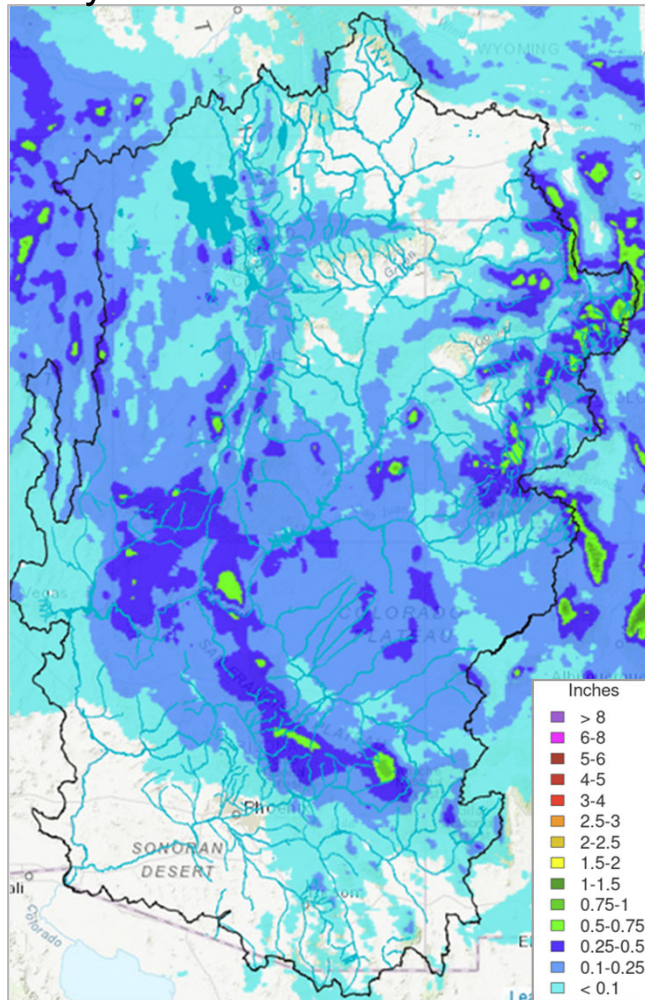
Green solid: 1991-2020 average April-July volume  
 Green dotted: 1991-2020 median April-July volume

Brown dotted: Average observed

[Blue Mesa Inflow Forecast Plot Link](#)

# Future Weather: January 18-25 Forecast Precipitation

Days 1-7

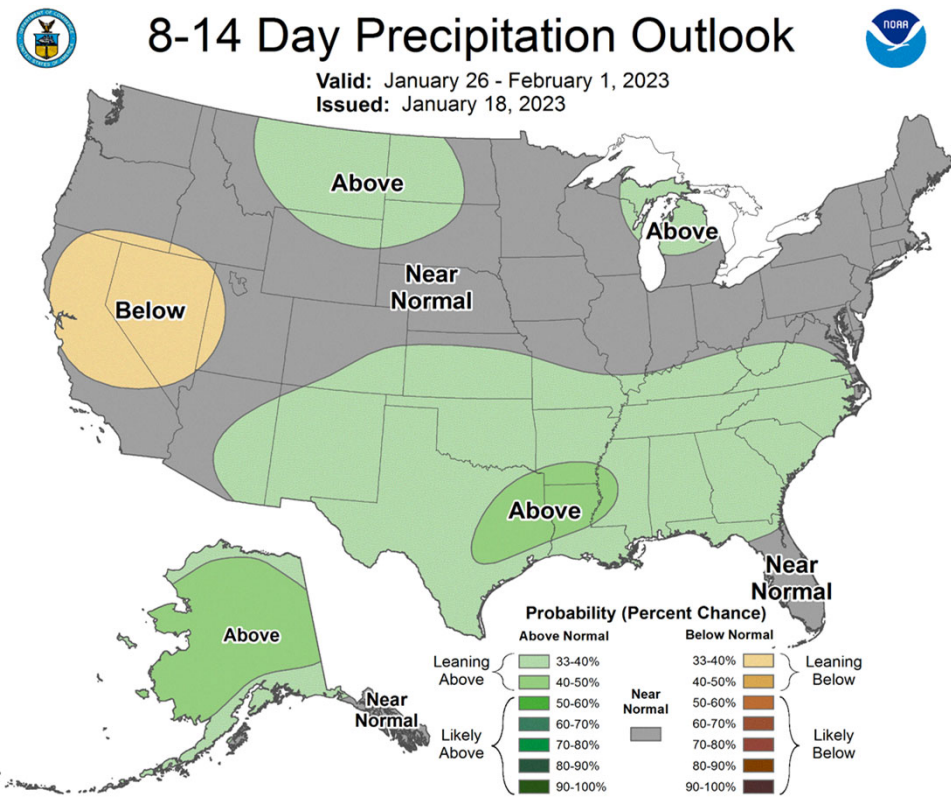
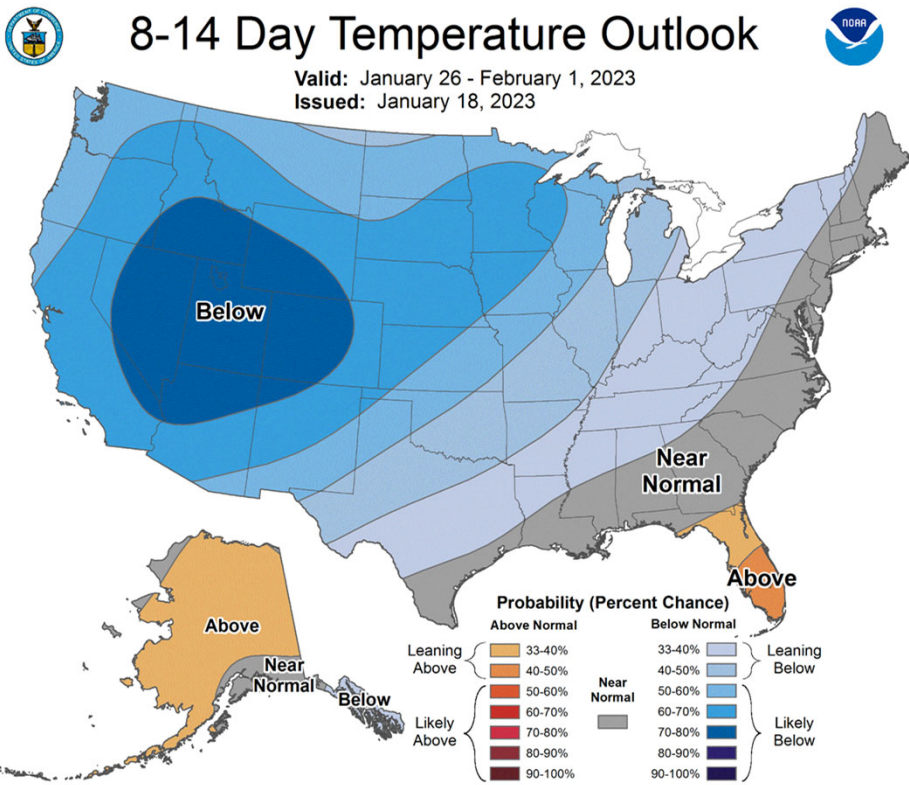


High pressure will temporarily build across the area through Thursday followed by another storm system Friday-Saturday.

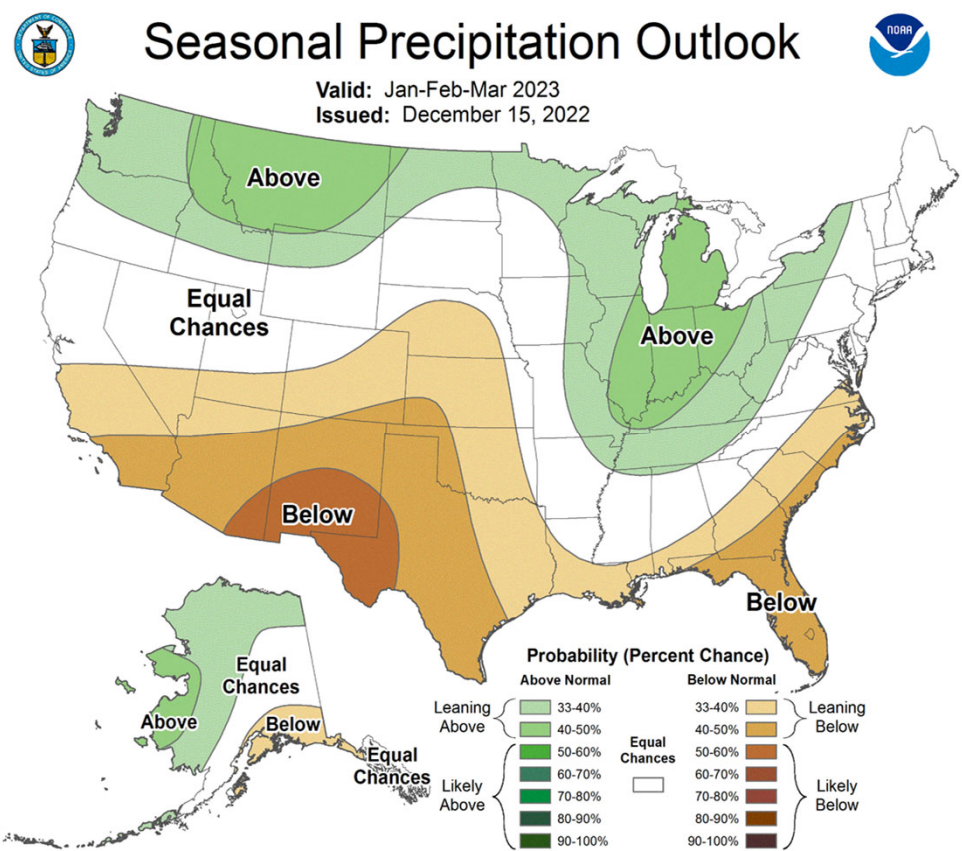
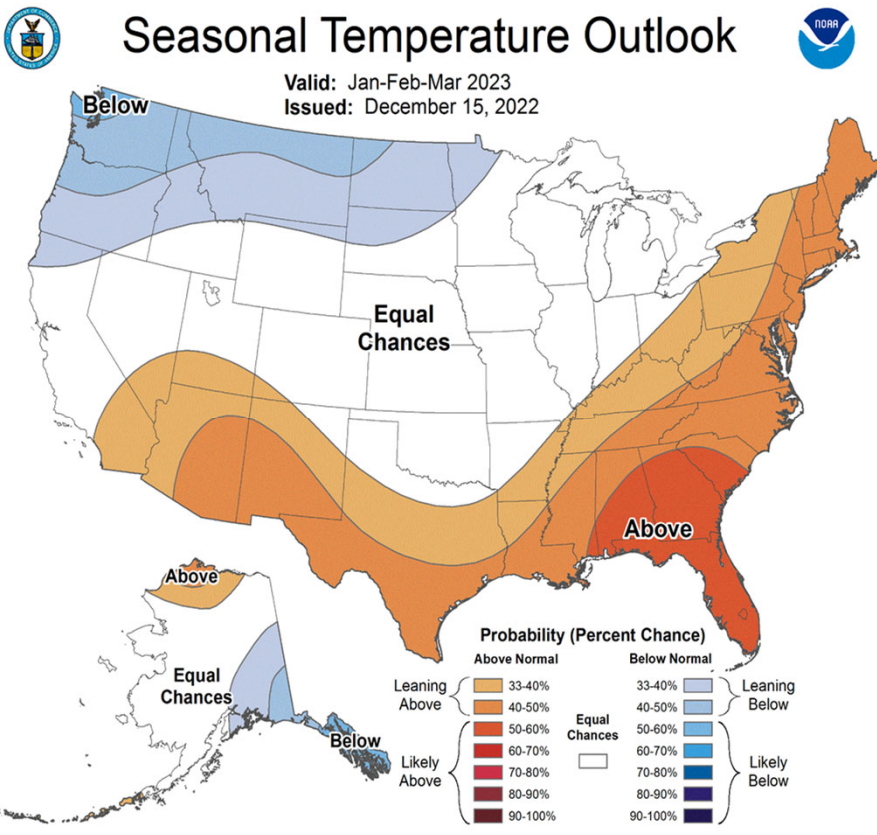
An active weather pattern is expected to continue into next week with another storm possible early next week. There is disagreement among weather models as to the exact track of the storm, but agreement is generally good that another upper low will move through the region next week.



# Future Weather: January 26 -February 1



# Climate Prediction Center: Seasonal (JFM) Outlook



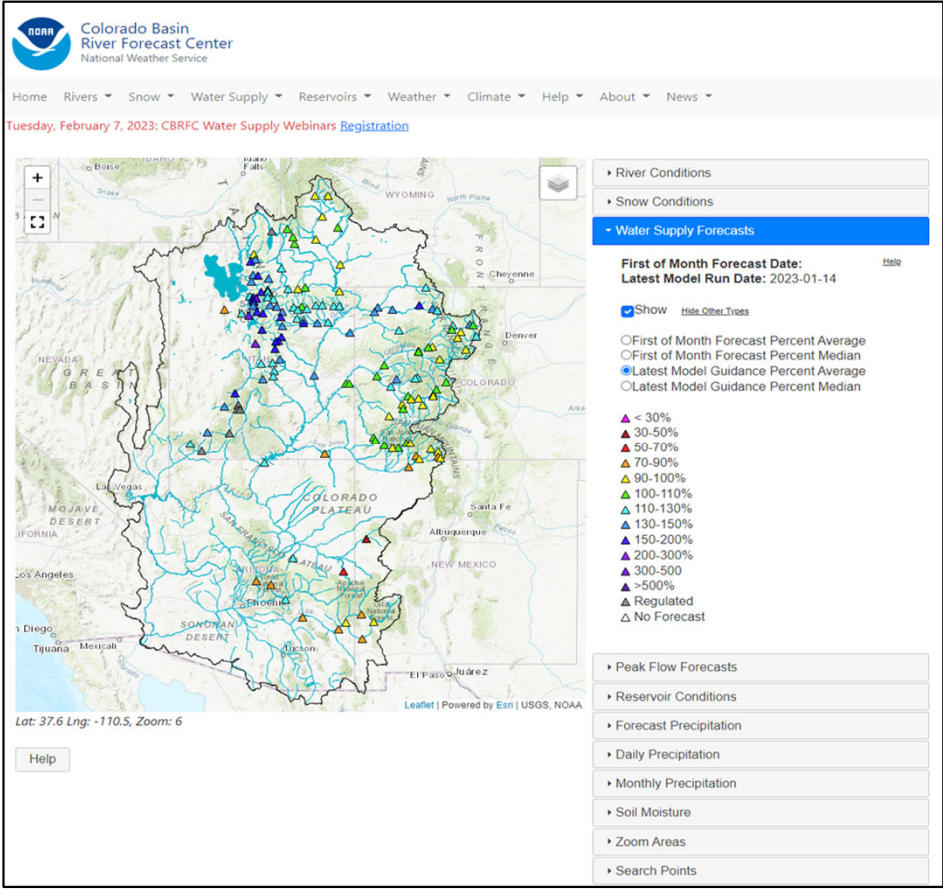
# Summary

- **Soil moisture**
  - Conditions are below to near normal.
  - Soil moisture deficits still exist; must be overcome before runoff can occur.
  - Impact on runoff uncertain and will depend on spring weather and snow conditions.
- **Snow**
  - Snow conditions have improved since early January due to a favorable weather pattern.
  - Above median conditions as of mid-January
  - Mid-January is a little less than halfway (~40-50%) through the snow accumulation season
    - Still early in the snow season
- **January Water Supply Forecasts**
  - Forecasts range from:
    - Early-January: 90-110% of average
    - Mid-January: 90-155% of average
  - Forecast guidance has increased since early January.
  - Expect an increase in February forecasts.
- **Upcoming Weather**
  - Active weather pattern looks to continue through the end of the month.
  - Shift in pattern to colder storm systems with less moisture.

# Contact Info:

## Contact Information

- Ashley Nielson - Gunnison River Forecaster
  - [ashley.nielson@noaa.gov](mailto:ashley.nielson@noaa.gov)
  - 801-524-5130 x333
- Operational Hydrologist: in office
  - 801-524-4004
  - [cbrfc.operations@noaa.gov](mailto:cbrfc.operations@noaa.gov)



## CBRFC Webpage

<https://www.cbrfc.noaa.gov/>

## CBRFC Water Supply Presentations

<https://www.cbrfc.noaa.gov/present/present.php>

Introductions and Purpose of Meeting

Gunnison Basin Water Supply Outlook – Ashley Nielson (CBRFC)

Aspinall Unit Operations – Erik Knight (Reclamation)

Special Flow Requests and Discussion

Reports of Agencies and Organizations – All

Conclusions (Next meeting date – April 20<sup>th</sup>)



# RESERVOIR AND RIVER STATUS

Blue Mesa Reservoir ended 2022 at an elevation of 7446.5 ft, 44 feet below the winter target elevation of 7490 ft

Blue Mesa Reservoir content is currently at 293,000 acre-feet at an elevation of 7447 feet.

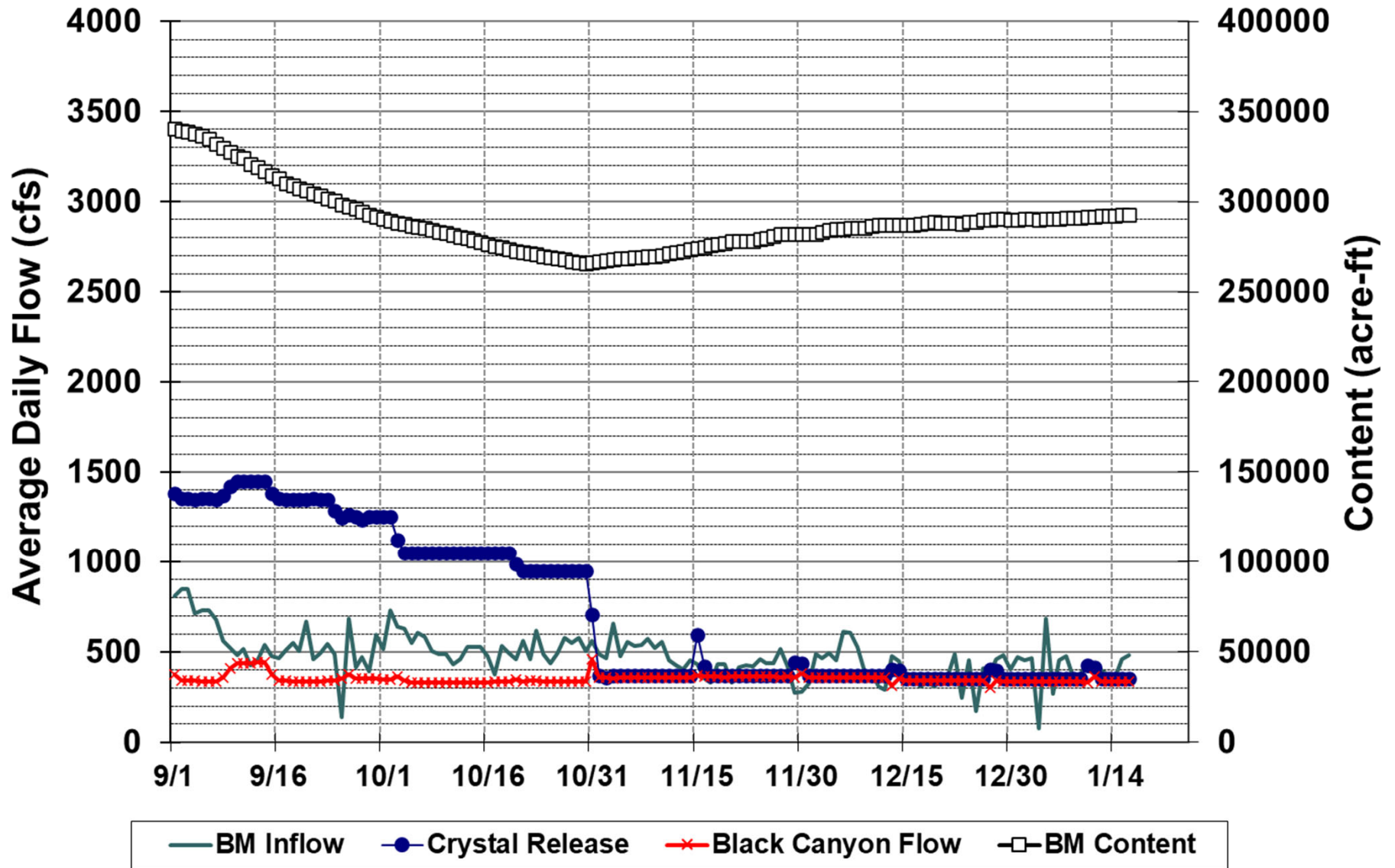
Crystal Dam is releasing 350 cfs and flows in the Gunnison River through the Black Canyon are 350 cfs

Releases/river flows will likely remain unchanged until the start of runoff

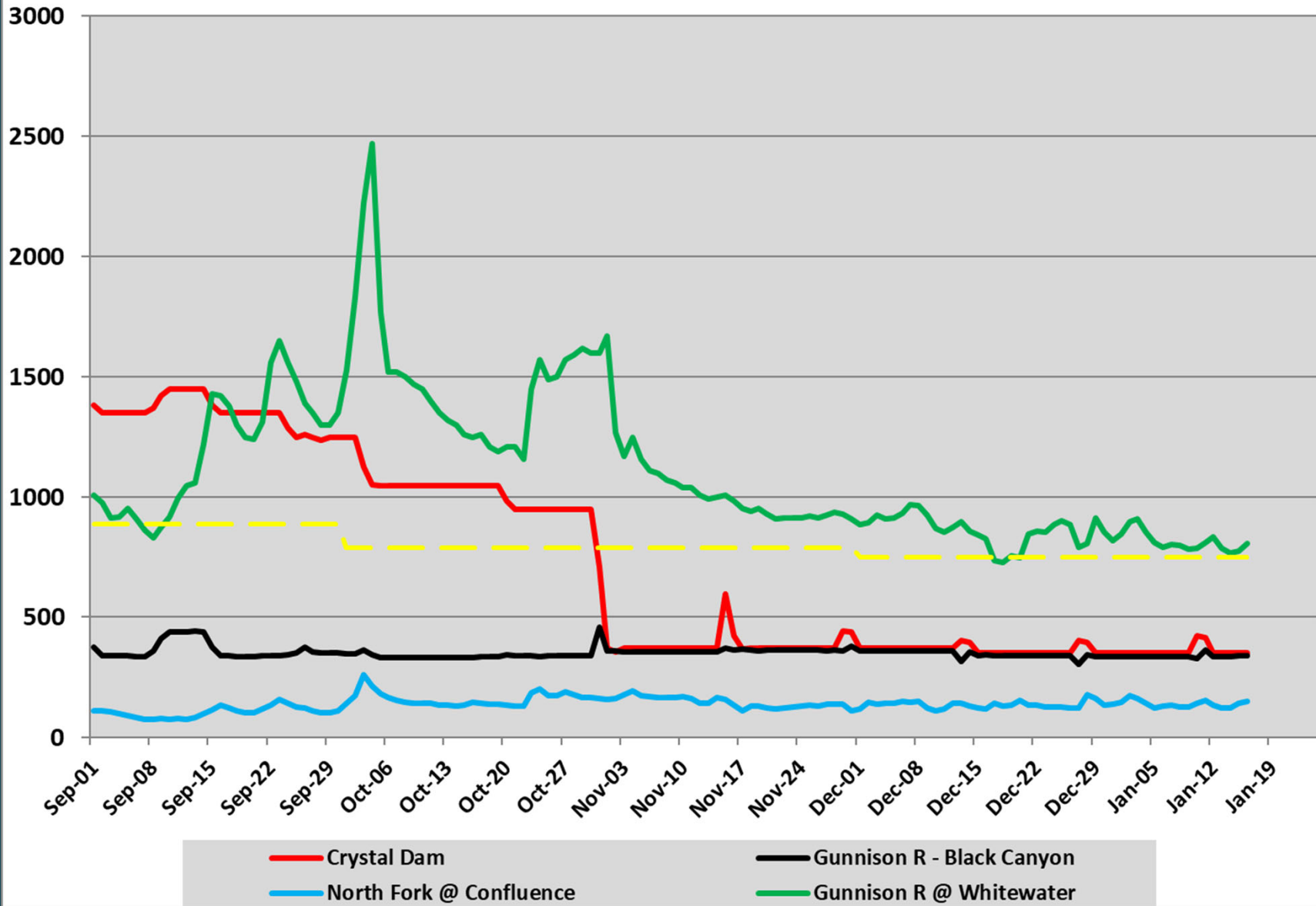
Flows in the lower Gunnison River at the Whitewater gage are estimated to be above the baseflow target of 750 cfs



# September 2022 - January 2023



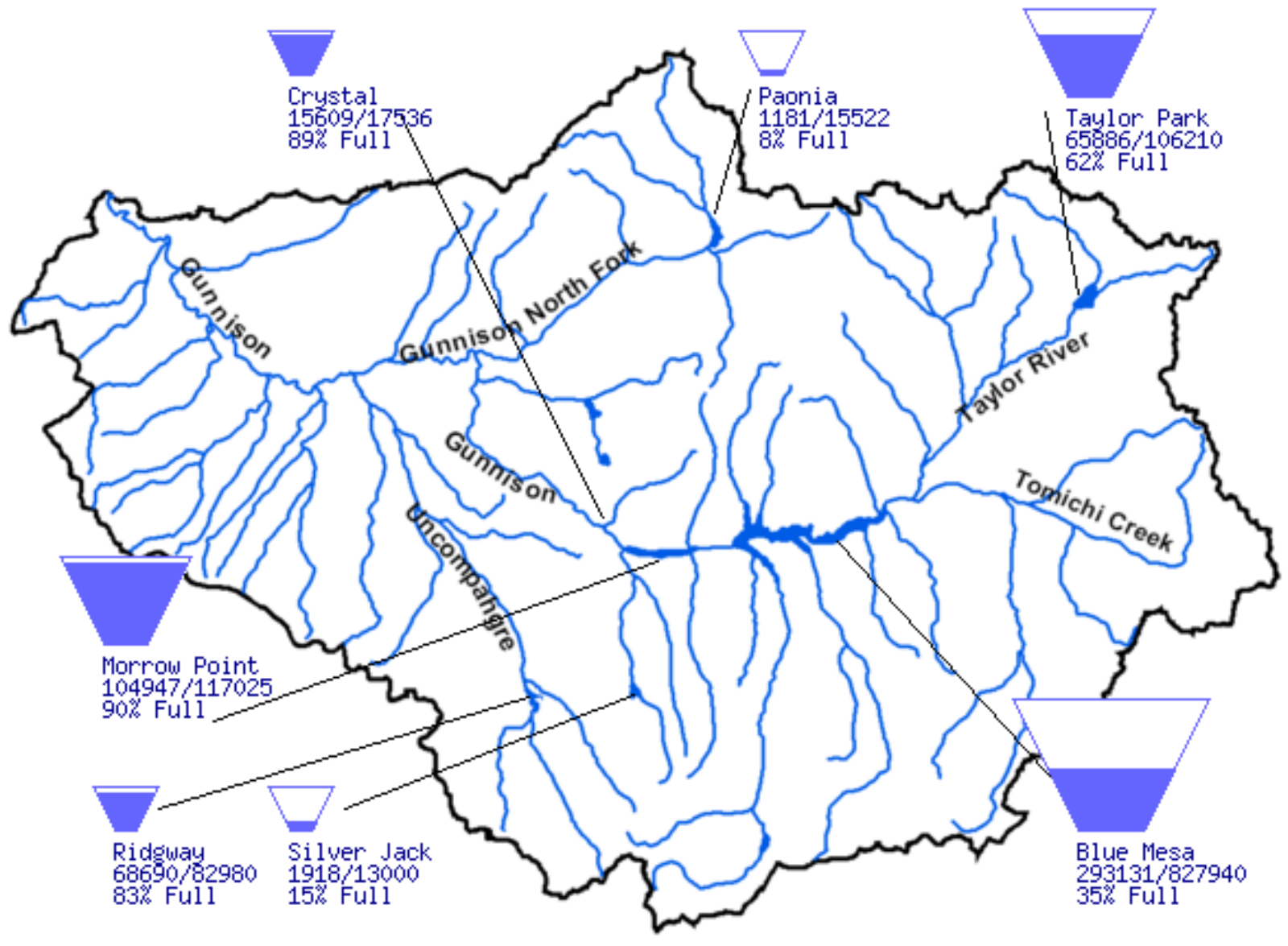
# Gunnison River Flows





Data Current as of:  
01/17/2023

## Gunnison River Basin, CO



# SNOW CONDITIONS

Snow accumulation in the Upper Gunnison Basin:

Oct = 90% of average

Nov = 67% of average

Dec = 115% of average

Jan = 200% of average (so far)

January snow accumulation has already exceeded normal accumulation for the entire month



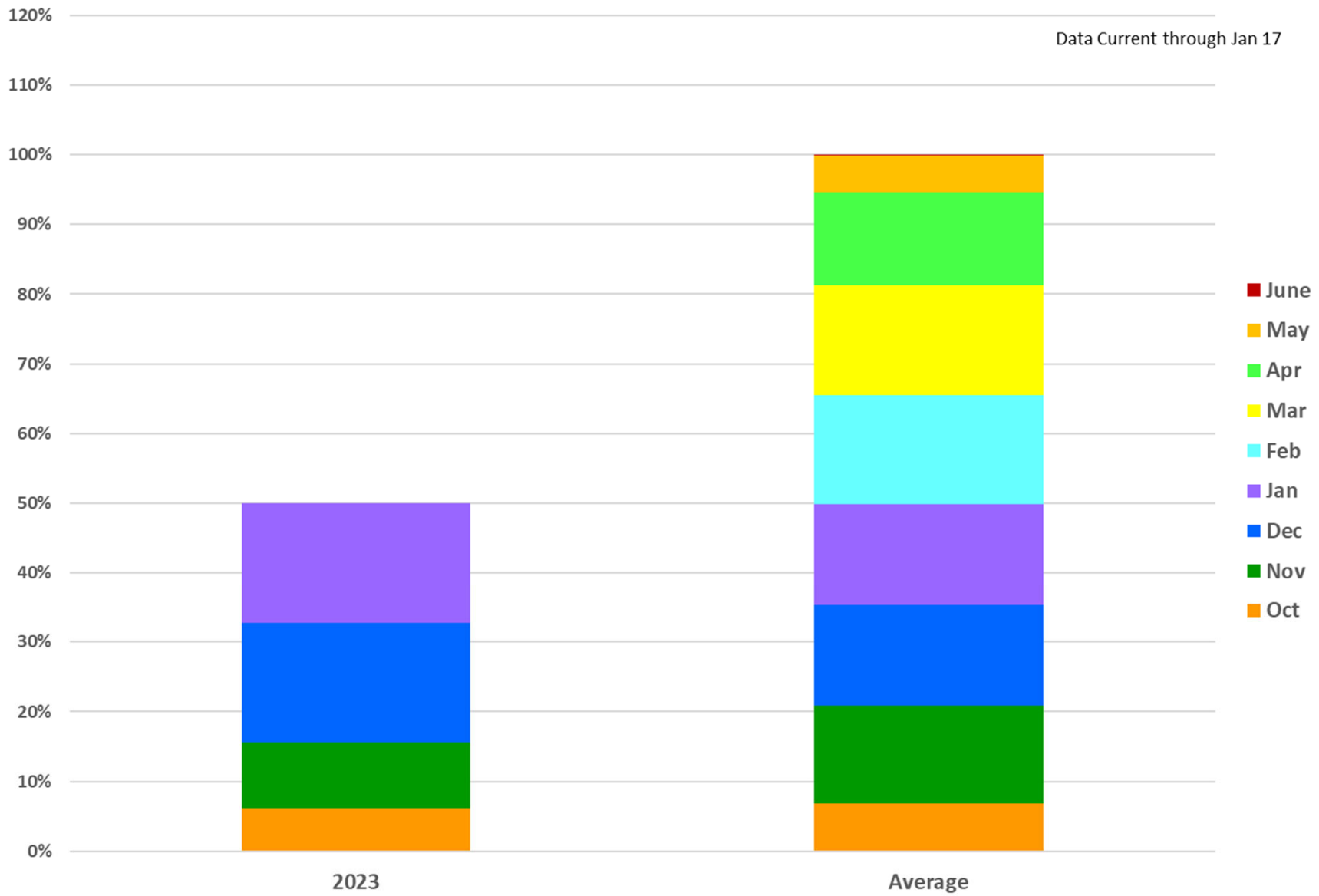
# January Snowpack Conditions

	Jan SWE To date	Avg Jan SWE To Date	Avg Total Jan SWE
Butte	4.9"	1.8"	2.9"
Schofield	9.7"	3.8"	6.7"
Porphyry	3.2"	1.8"	3.4"
Slumgullion	2.4"	1.2"	2.4"
Park Cone	2.9"	1.3"	2.1"
Independence	2.7"	1.7"	3.0"

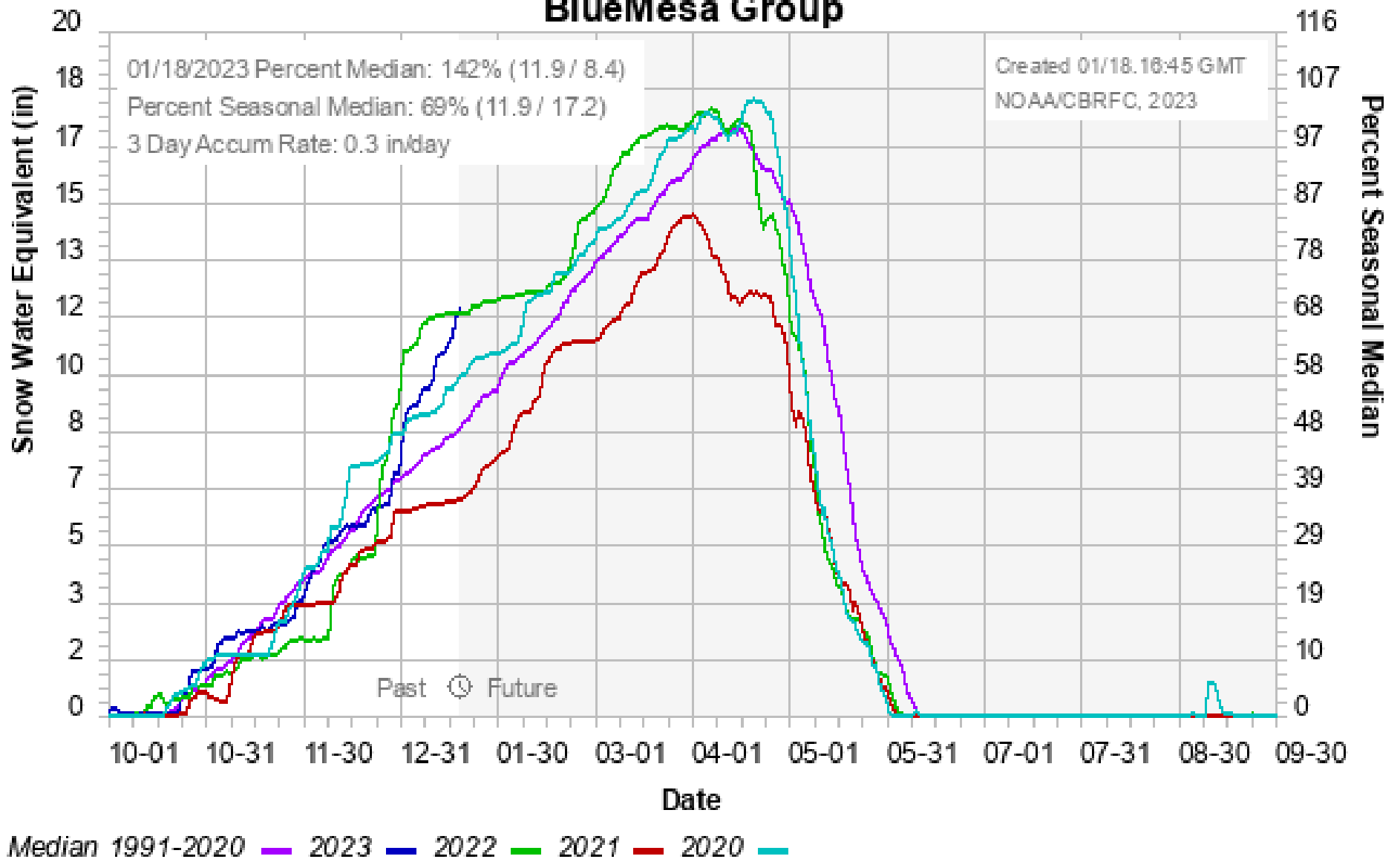


# Upper Gunnison Basin Snow Accumulation

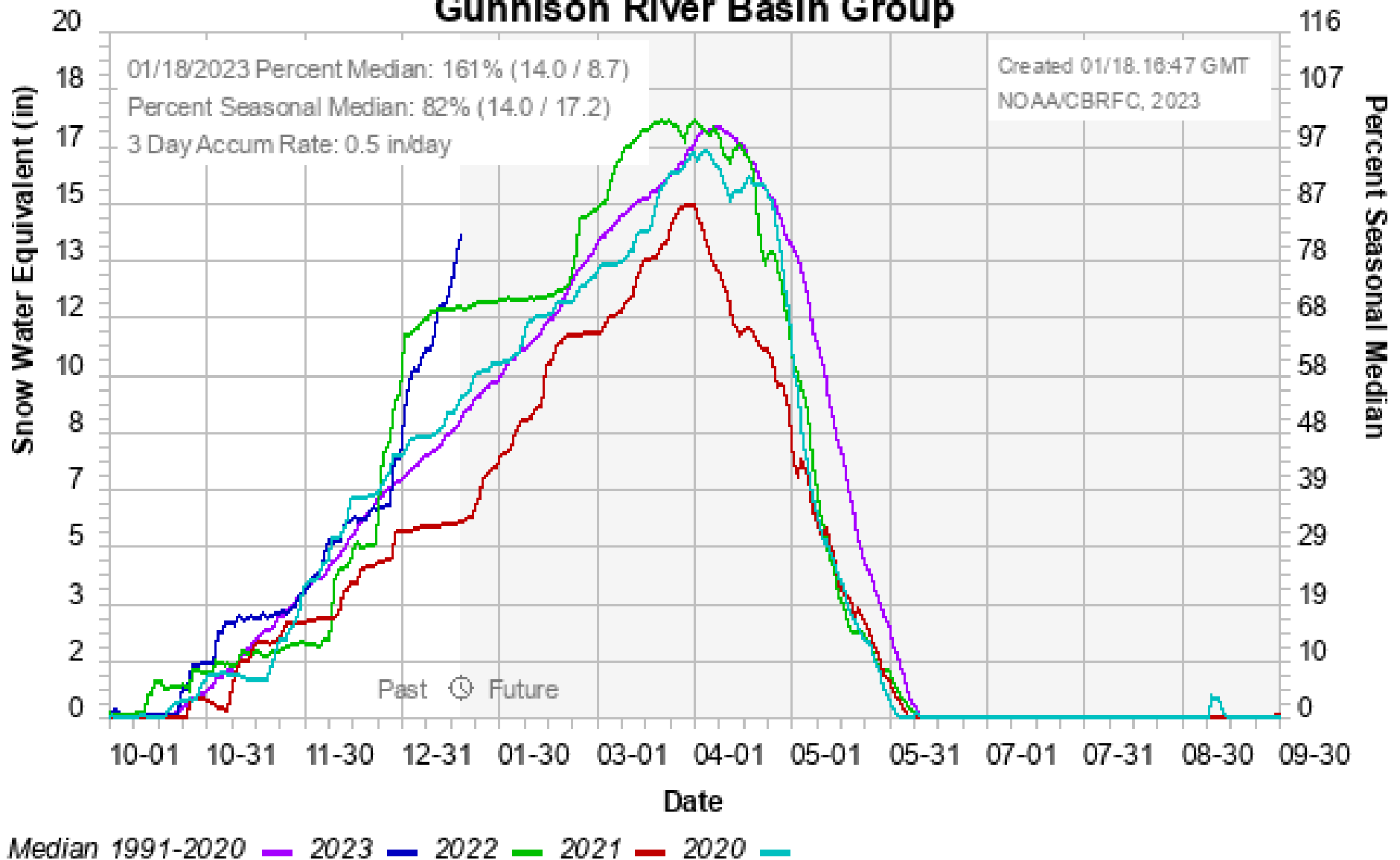
Data Current through Jan 17



# Colorado Basin River Forecast Center BlueMesa Group



# Colorado Basin River Forecast Center Gunnison River Basin Group

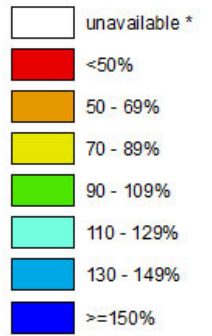


**Colorado**  
**SNOTEL Current Snow Water Equivalent (SWE) % of Normal**

**Jan 17, 2023**

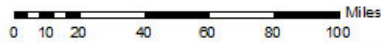
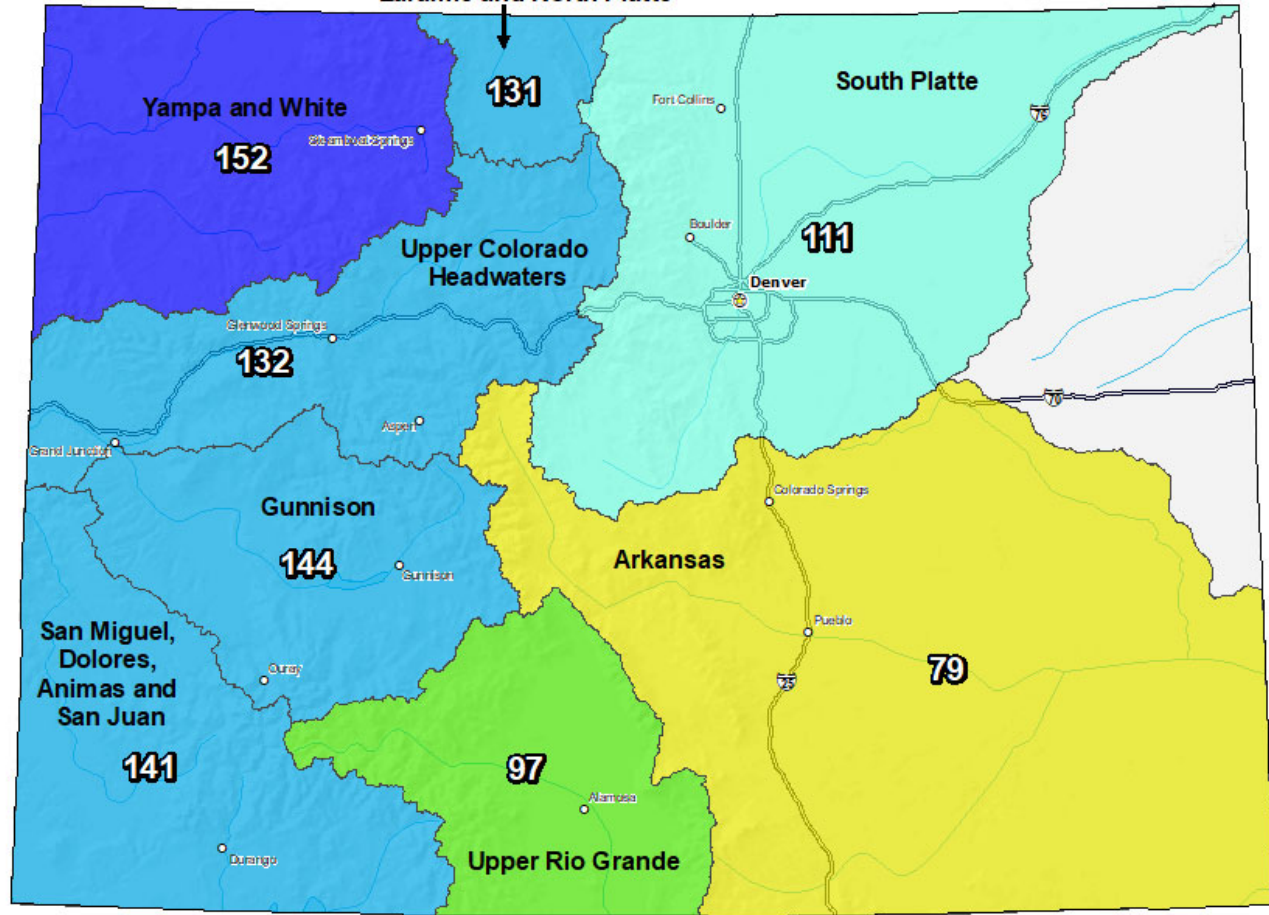
Laramie and North Platte

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1991-2020 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year

*Provisional Data  
 Subject to Revision*



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:  
 USDA/NRCS National Water and Climate Center  
 Portland, Oregon  
<https://www.nrcs.usda.gov/wps/portal/wcc/home/>



# SPRING RUNOFF FORECASTS AND TARGETS

Early season runoff forecasts for major rivers in the Gunnison Basin are in the 90-105% of average range

The Jan 15<sup>th</sup> runoff forecast for Blue Mesa Reservoir puts 2023 into the Average Dry hydrologic category

The ROD targets in the Average Dry category call for a peak flow of 8,070 cfs at Whitewater. This is the half bankfull flow and the duration at this flow should be 10 days.

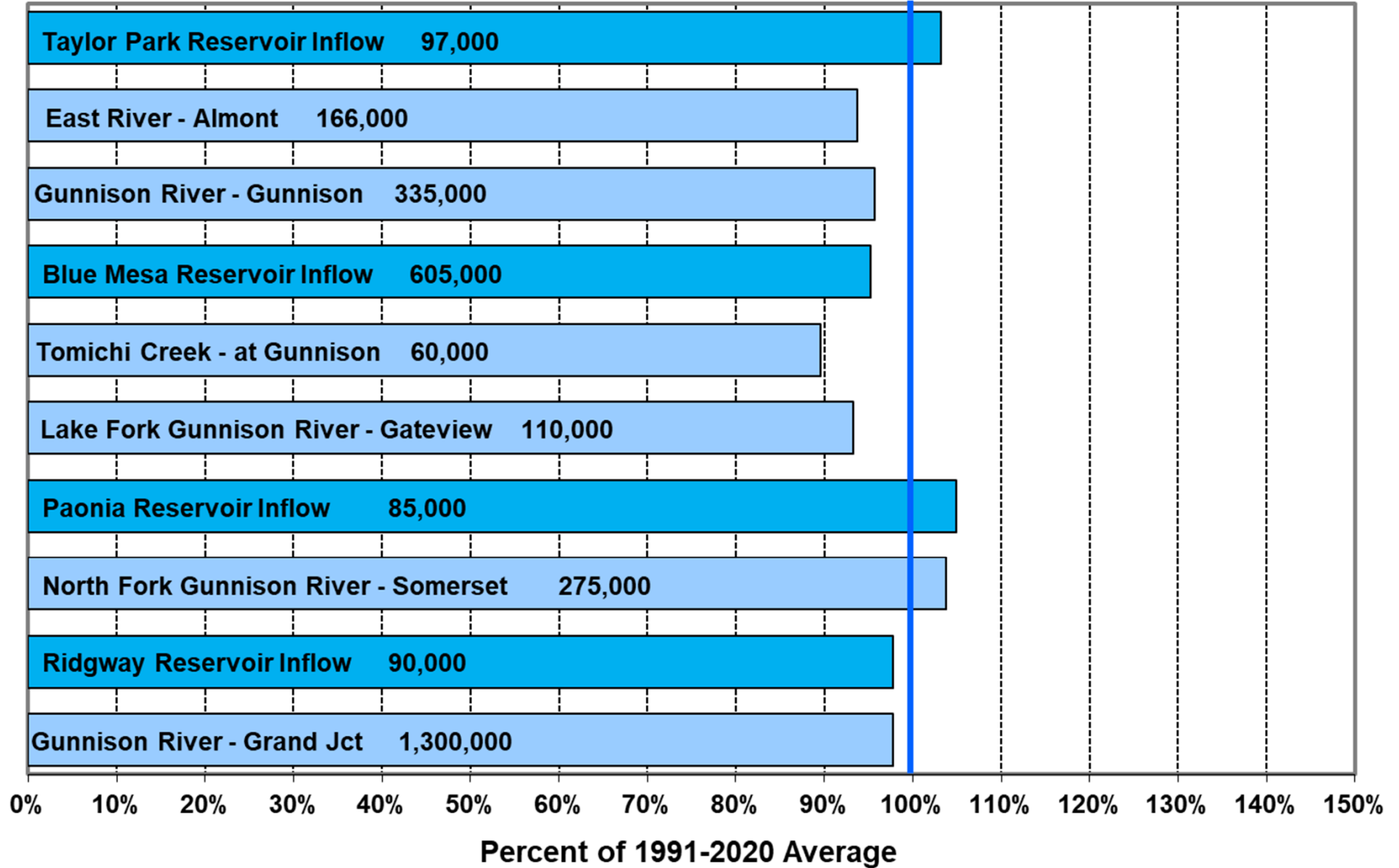
The Black Canyon water right peak flow target is ~3720 cfs.

Shoulder flow targets in the Black Canyon are 420 cfs for May 1 – July 25



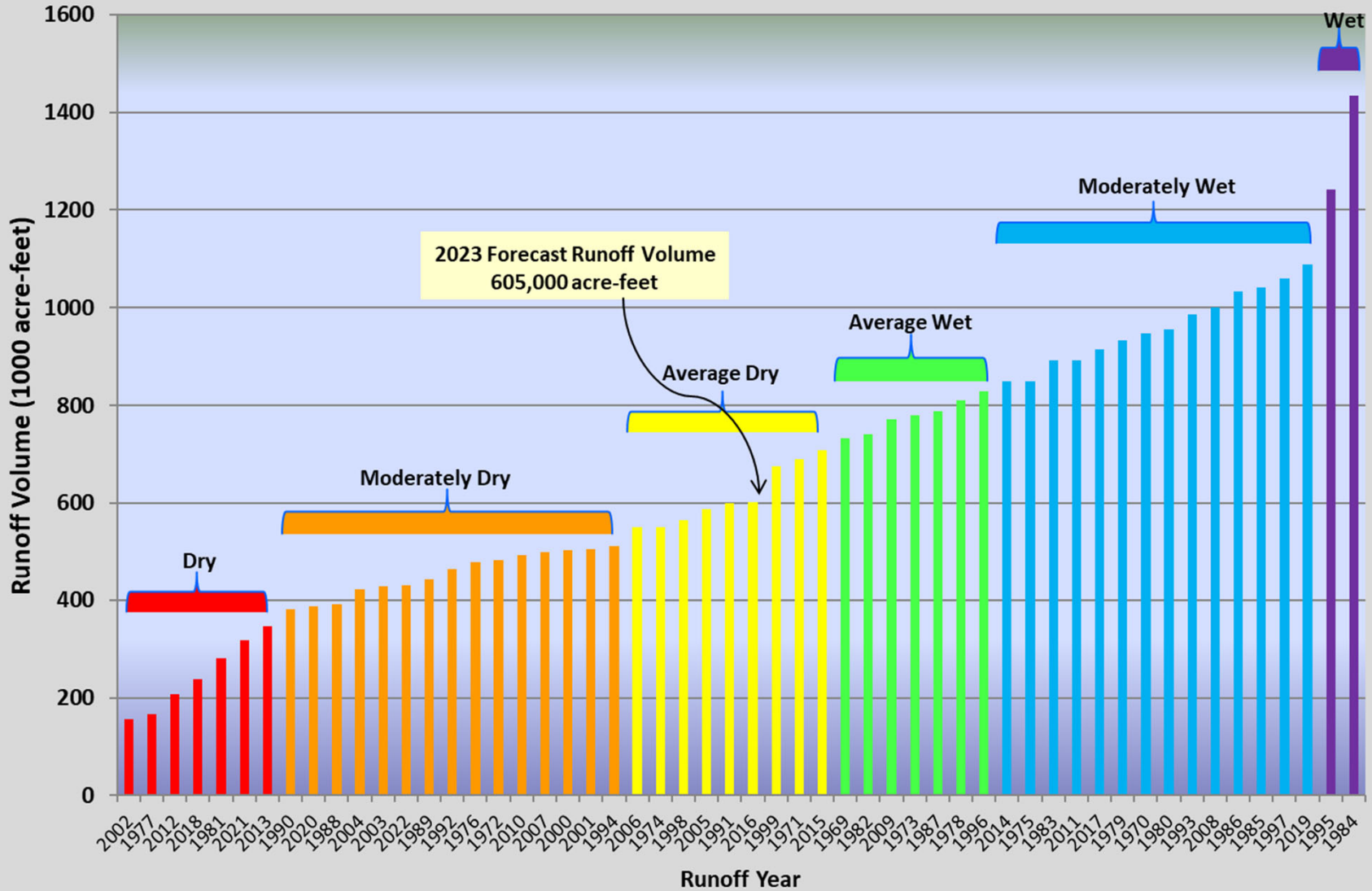


# Forecasted April-July Runoff As of January 1st



# Blue Mesa Reservoir

## Historic Apr-July Unregulated Inflow Volume Ranking (1969-2022)



# Spring Peak & Duration Targets Based on Hydrologic Year Type

Year Type	Blue Mesa Forecasted	Desired Peak at Whitewater	Duration of Half Bank (8,070 cfs)	Duration of Peak Flow (up to 14,350 cfs)
	April-July Inflow Af	cfs	Days	Days
<b>DRY</b>	< 381,000	900	0	0
<b>MOD DRY</b>	381,000 to 516,000	2,600 to 8,070	0	0
<b>AVG DRY</b>	516,001 to 709,000	8,070	10	0
<b>AVG WET</b>	709,001 to 831,000	8,070 to 14,350	20	2
<b>MOD WET</b>	831,001 to 1,123,000	14,350	40	10
<b>WET</b>	>1,123,000	14,350	60	15

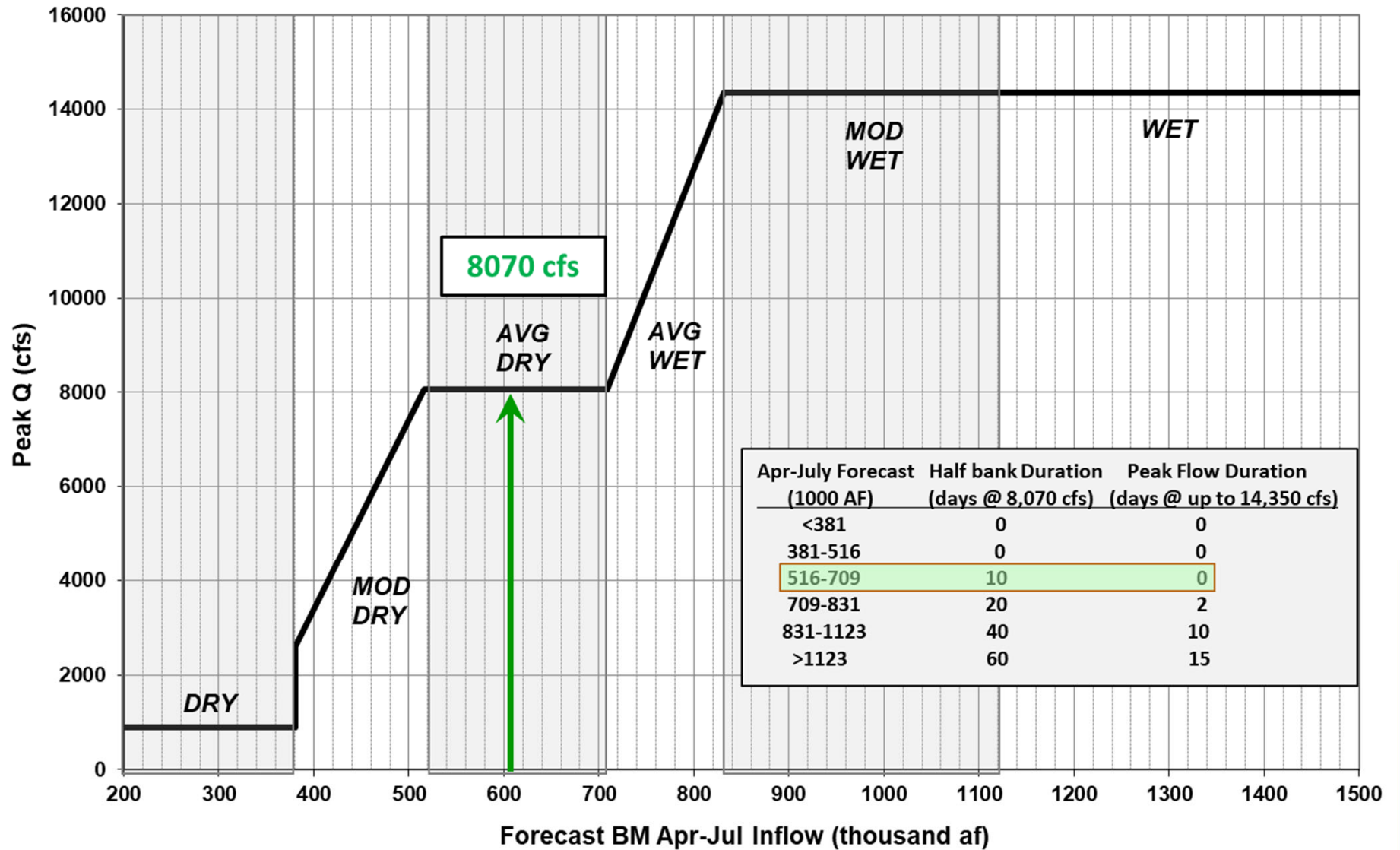
Min Prob  
460,000

Most Prob  
605,000

Max Prob  
985,000



# Peak Flow and Duration Day Targets at Whitewater



# Black Canyon Peak Flow Determination

based on Blue Mesa May 1 forecast

1. 100 - 372 K ;  $y = 482.95 + 1.44x$
2. 373 - 715 K ;  $y = -4651.66 + 15.24x$
3. 716 - 925 K ;  $y = 5449.13 + 1.15x$
4. 926 - 1001K ;  $y = -6975.28 + 14.57x$
5. 1002-1050K ;  $y = -62886.00 + 70.40x$
6. > 1050 K ;  $y = -180.00 + 10.68x$

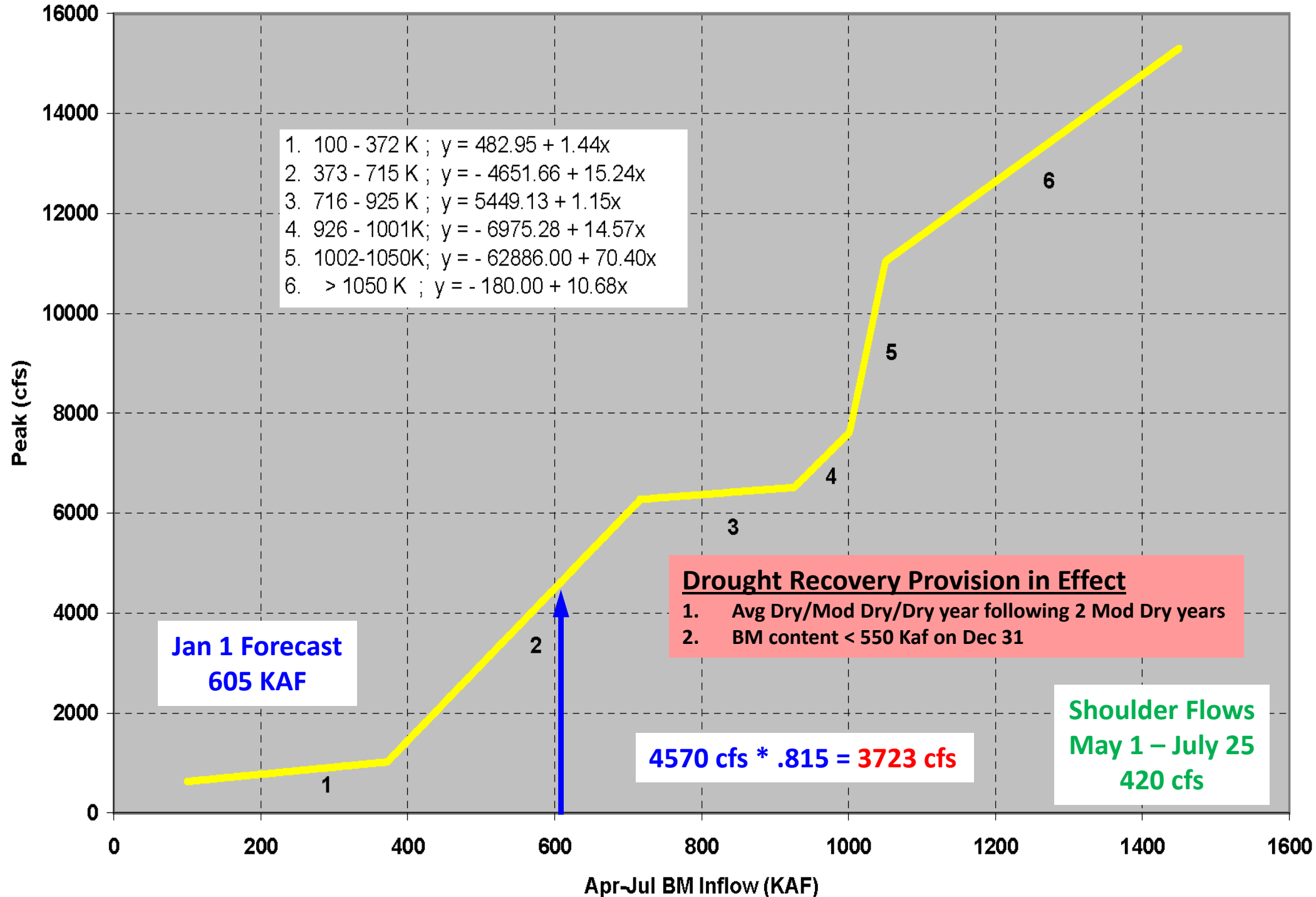
**Jan 1 Forecast**  
**605 KAF**

**Drought Recovery Provision in Effect**

1. Avg Dry/Mod Dry/Dry year following 2 Mod Dry years
2. BM content < 550 Kaf on Dec 31

**4570 cfs \* .815 = 3723 cfs**

**Shoulder Flows**  
**May 1 – July 25**  
**420 cfs**



# Baseflow Targets

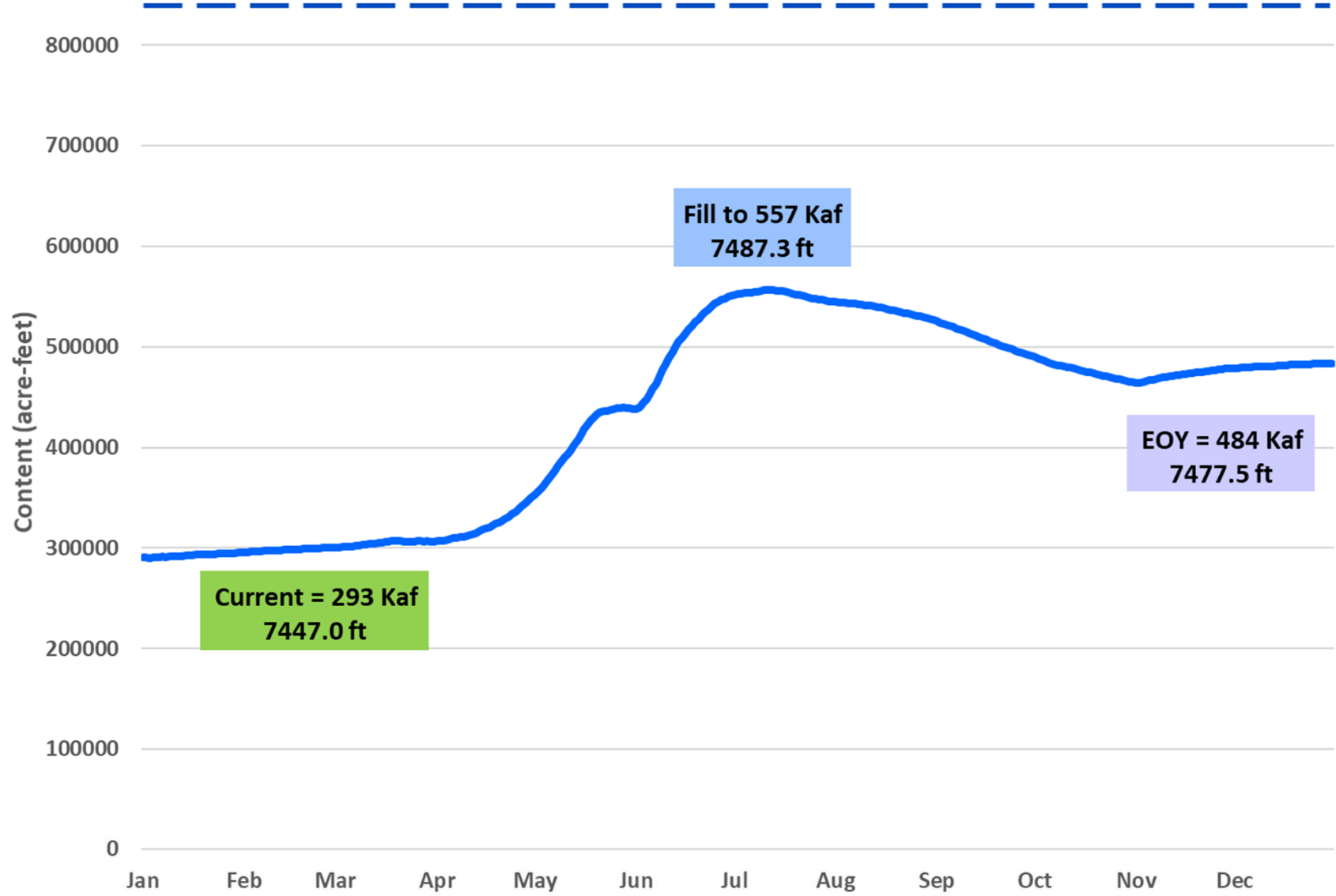
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Wet</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1500</b>	<b>1500</b>	<b>1500</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>
<b>Mod Wet</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1500</b>	<b>1500</b>	<b>1500</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>
<b>Avg Wet</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1500</b>	<b>1500</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>
<b>Avg Dry</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1500</b>	<b>1500</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>
<b>Mod Dry*</b>	<b>750</b>	<b>750</b>	<b>750/790</b>	<b>750/890</b>	<b>750/890</b>	<b>1050</b>	<b>1050</b>	<b>1050</b>	<b>750/890</b>	<b>750/790</b>	<b>750/790</b>	<b>750</b>
<b>Dry*</b>	<b>750</b>	<b>750</b>	<b>750/790</b>	<b>750/890</b>	<b>750/890</b>	<b>1050</b>	<b>1050</b>	<b>750/890</b>	<b>750/890</b>	<b>750/790</b>	<b>750/790</b>	<b>750</b>

\*During March through November in Moderately Dry and Dry type years, additional releases will be made as necessary to provide flows above the 750 cfs anticipated to be diverted by the Redlands Water and Power Company, for the fish ladder and fish screen as shown.



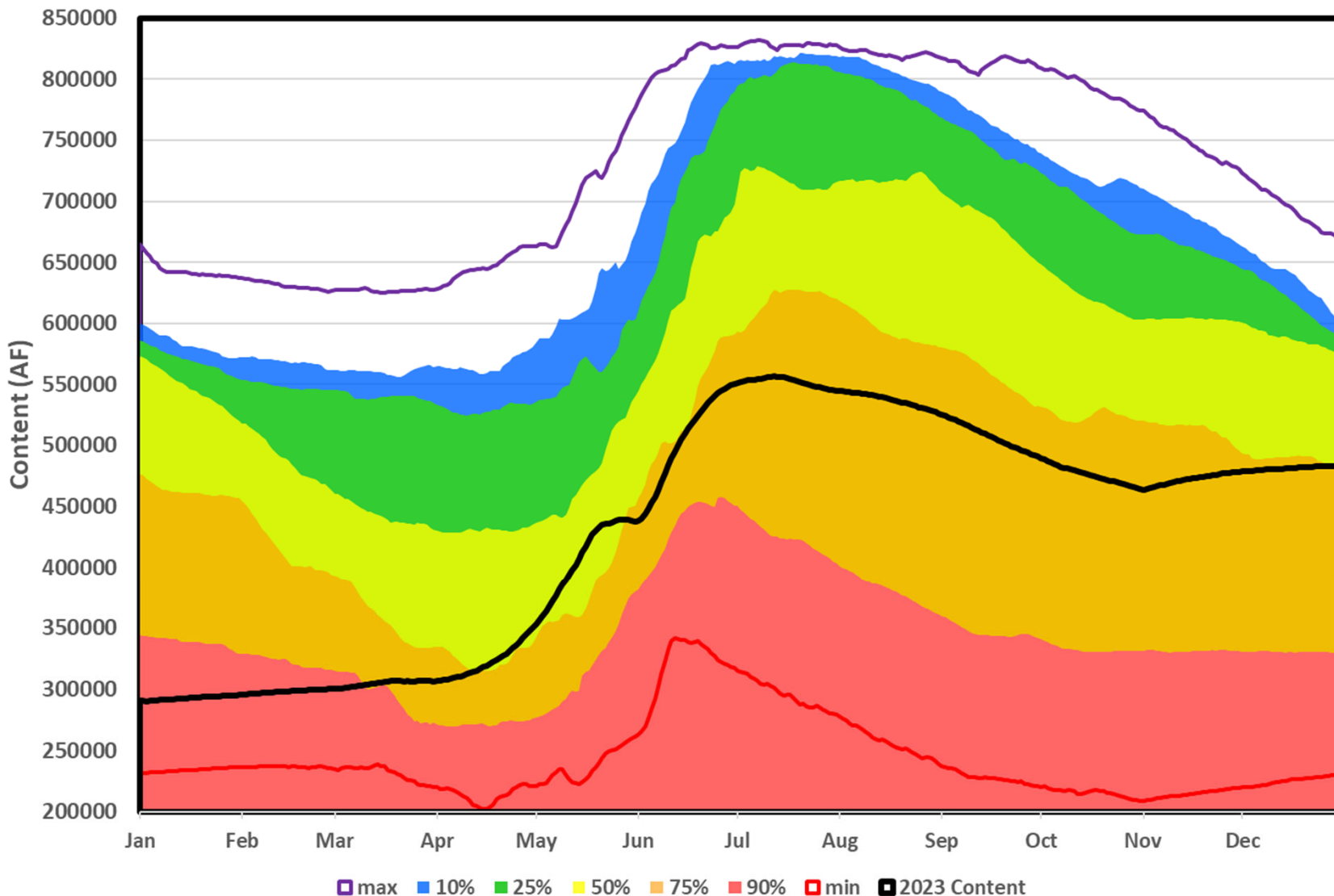
# BLUE MESA RESERVOIR

Full Reservoir  
829,500 AF 7519.4 Ft



# Blue Mesa Content

% Exceedence - Historical Content





# Projected Operations WY 2023

- Drought Response Operations Plan (DROA) – releases from Initial Units to Lake Powell
- No decisions have been made yet regarding releases
- Meetings and discussions are ongoing regarding any potential DROA releases, accounting and recovery
- Will have more information by the April meeting



# Questions...??



Introductions and Purpose of Meeting

Gunnison Basin Water Supply Outlook – Ashley Nielson (CBRFC)

Aspinall Unit Operations – Erik Knight (Reclamation)

Special Flow Requests and Discussion

Reports of Agencies and Organizations – All

Conclusions (Next meeting date – April 20<sup>th</sup>)

