



# HUP 2021 Wrap Up and 2022 Outlook

## Upper CO River Endangered Fish Recovery Program

### OUTLINE

- Review of 2021 – Targets, Releases, Pros and Cons
- Other Significant Recovery Program Progress
  - Downlisting Humpback Chub
  - Completed 15-Mile Reach PBO Review Document – Process Update
- Preview of 2022

David Graf, March 9, 2022  
David\_graf@fws.gov



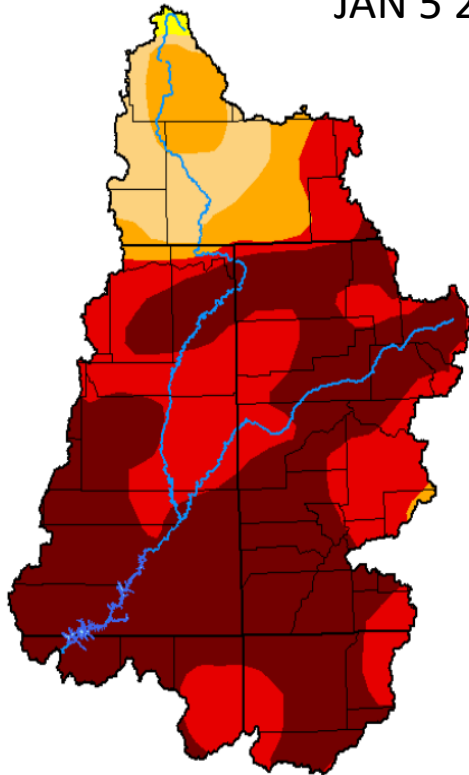




# Water Year 2021 in a Glance

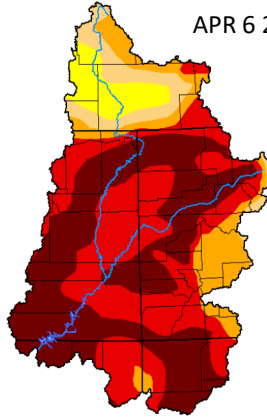
## *U.S. Drought Monitor* Upper Colorado Watershed

JAN 5 2021



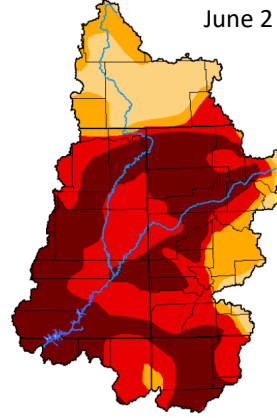
## *U.S. Drought Monitor* Upper Colorado Watershed

APR 6 2021



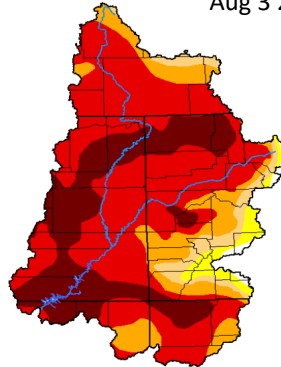
## *U.S. Drought Monitor* Upper Colorado Watershed

June 2 2021



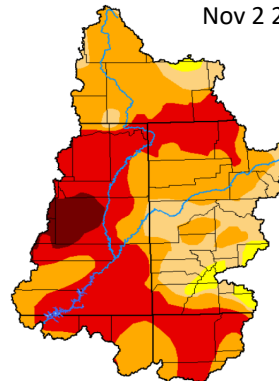
## *U.S. Drought Monitor* Upper Colorado Watershed

Aug 3 2021



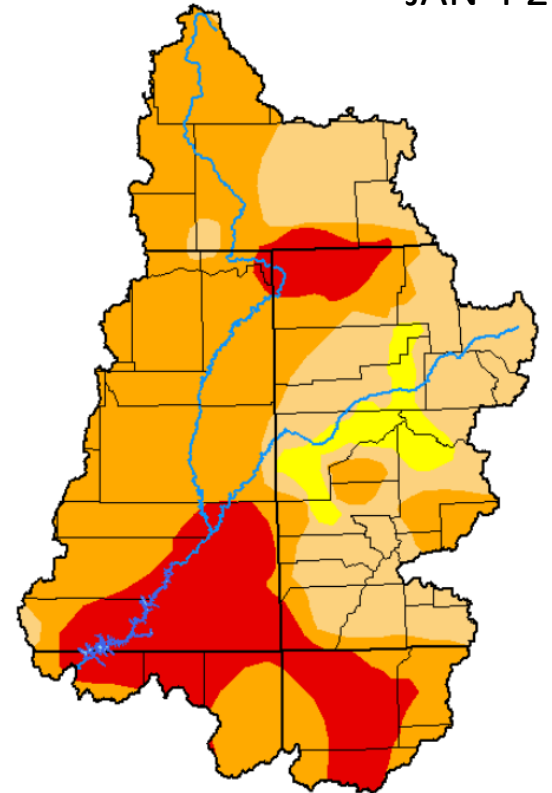
## *U.S. Drought Monitor* Upper Colorado Watershed

Nov 2 2021



## *U.S. Drought Monitor* Upper Colorado Watershed

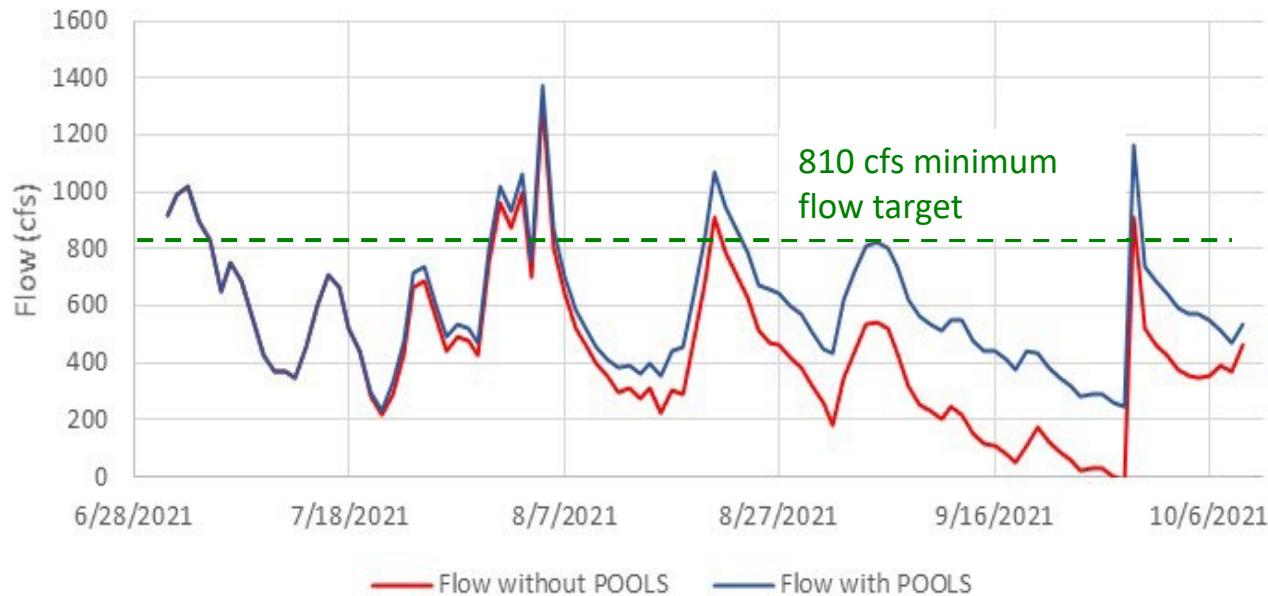
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# 2021 in Review: Program and Partners manage flows throughout the Upper Basin

CO River 15-Mile Reach: With and Without Fishery Pools

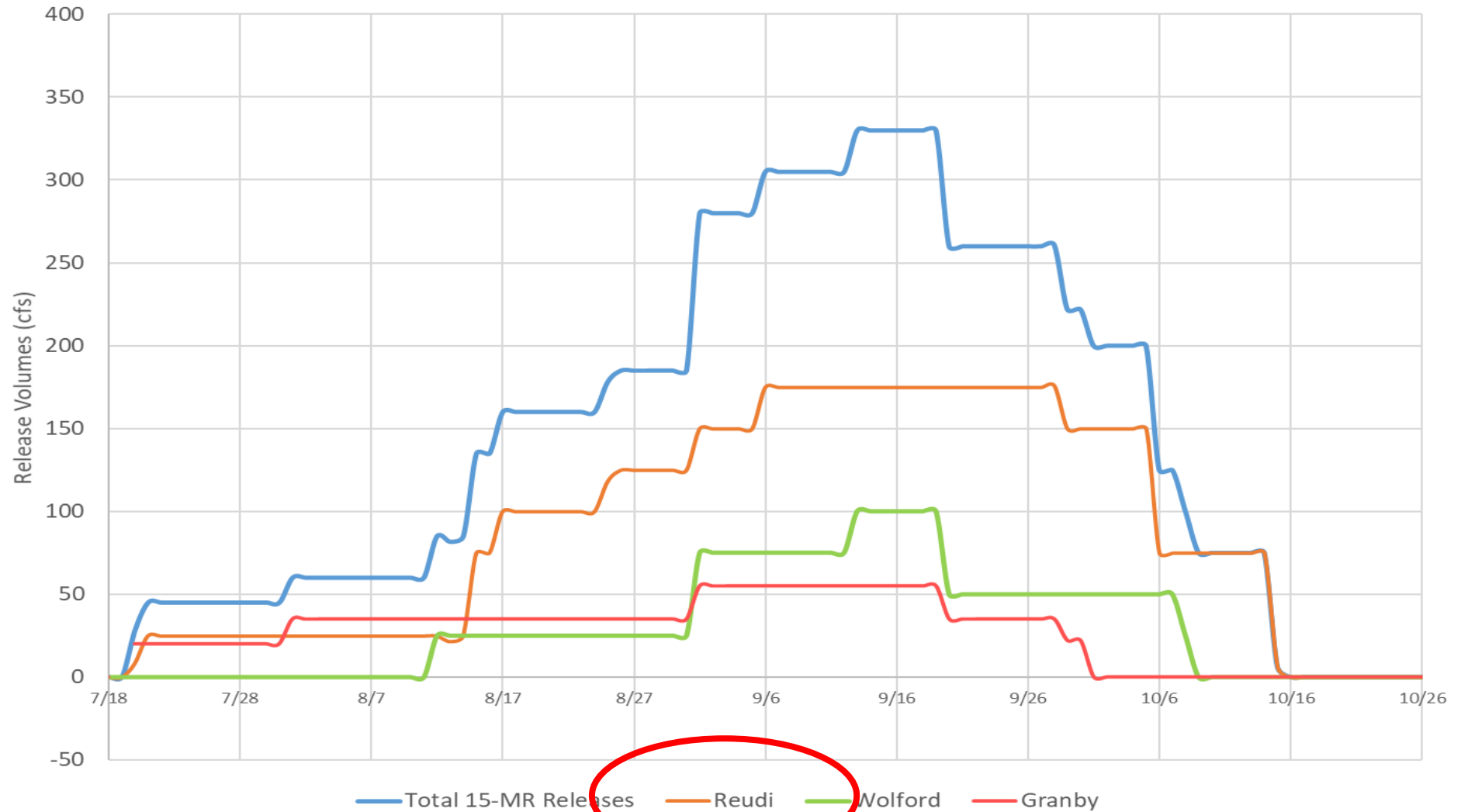


- 29,413 AF of storage released for Base Flow Augmentation 7/22 – 10/16
- HUP Carryover from 2020 added ~ 6800 AF during April 2021
- Partners Leased or Donated 7550 AF of Water for 15-MR Augmentation!!



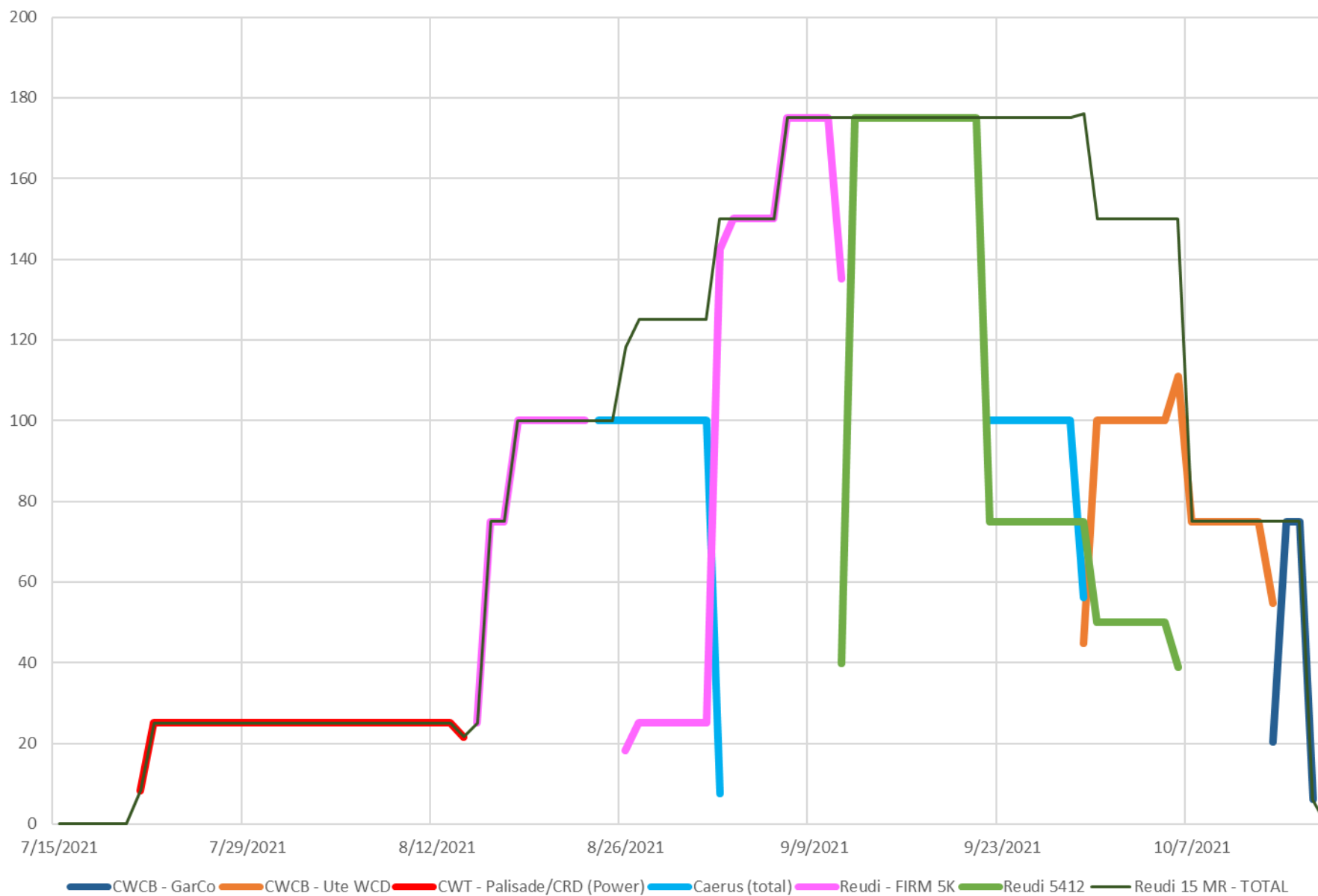
- NO CROS in 2021
- Peak of 5530 cfs 6/6, 31% of Mean Annual Peak
- Q < 810 cfs 124 days
- Q < 500 cfs 56 days
- 233 cfs MIN FLOW July 21

## 2021 - 15 Mile Reach Releases

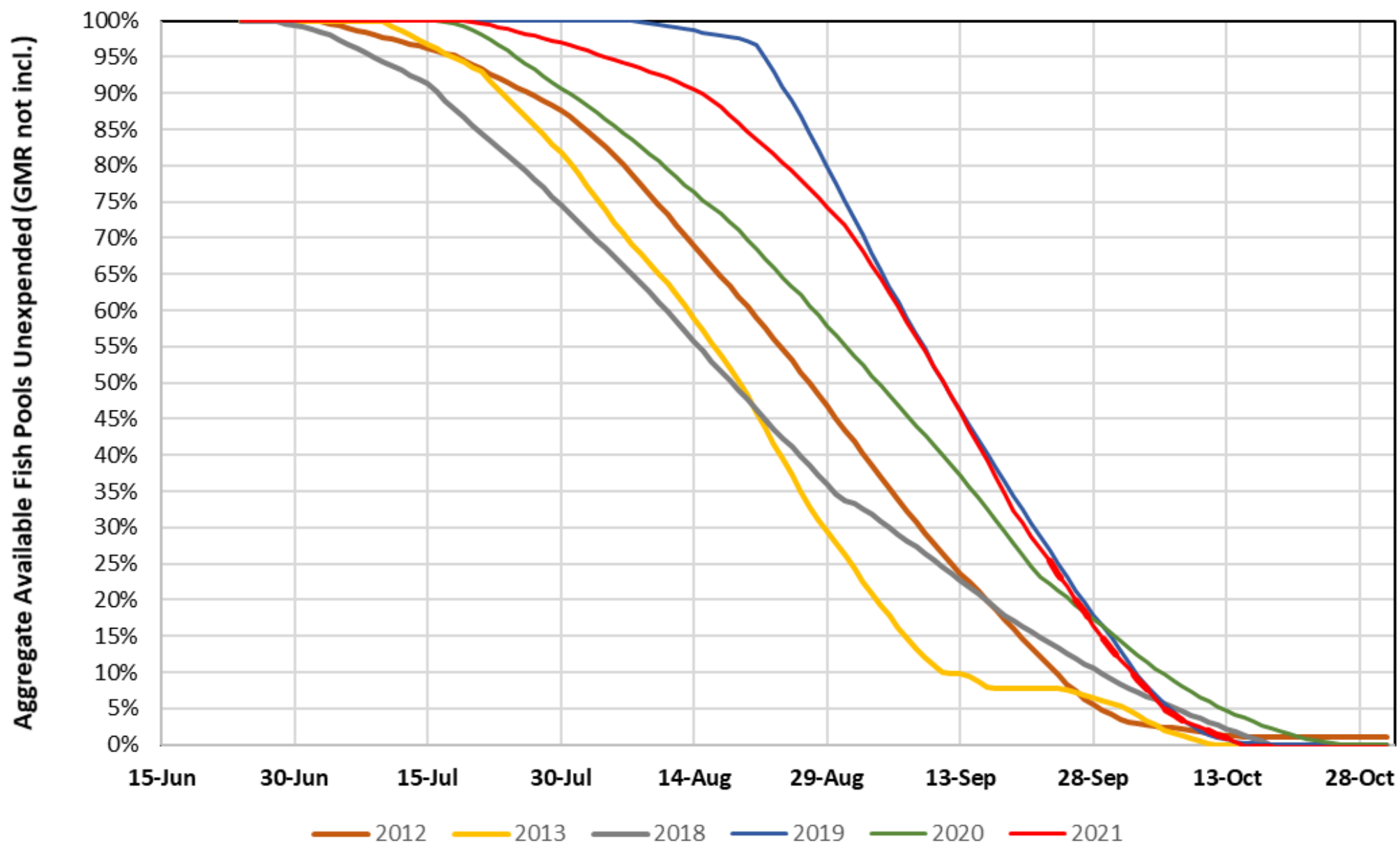




## Reudi Releases - The Colors of 15-MR Water



### Aggregate Fish Pool Accounts Release Curves (not incl Green Mtn HUP Surplus)

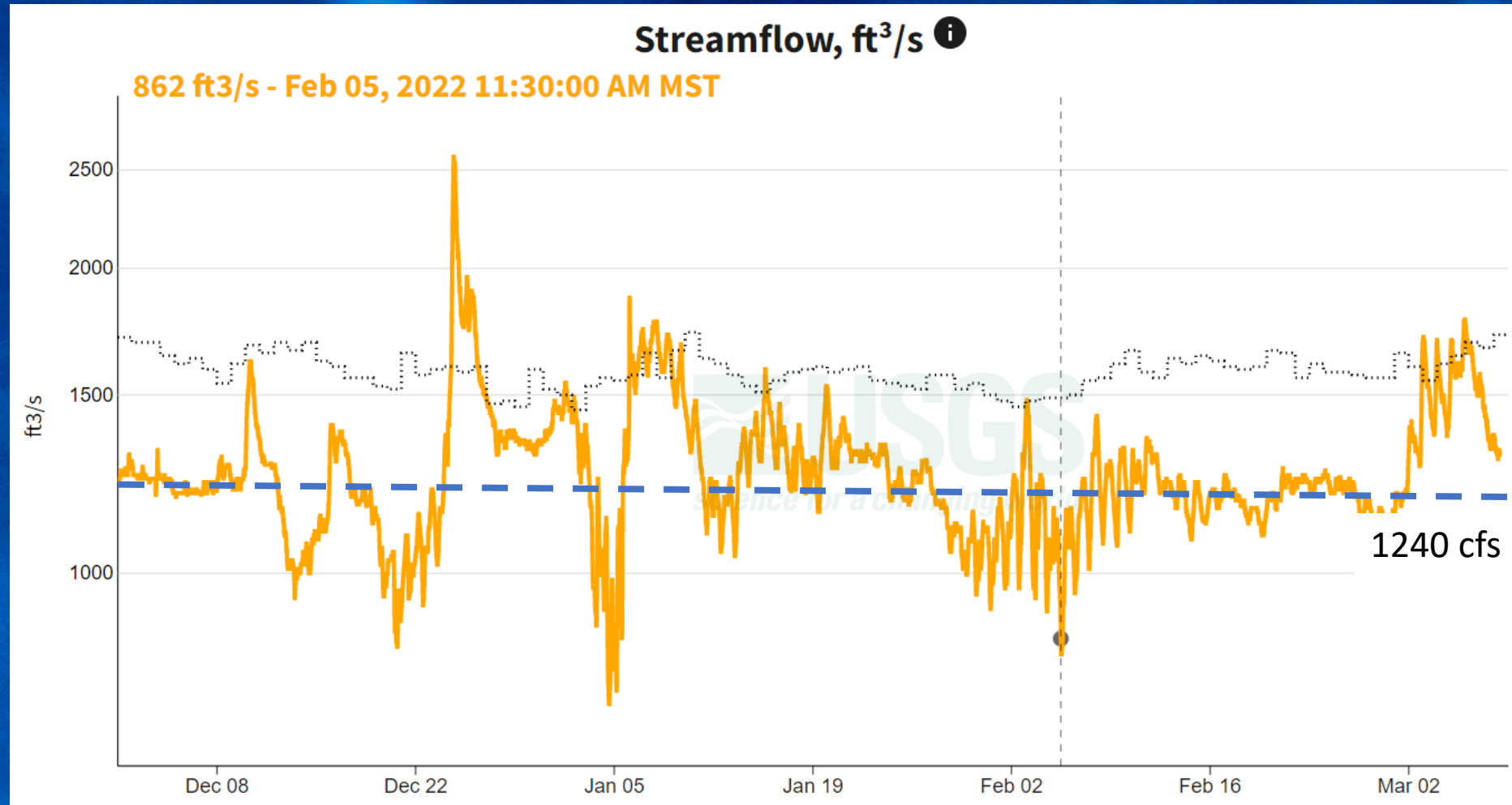






# WINTER FLOW 2021

**15 MR Winter Flows  
November – March  
'100% Exceedence  
Target' = 1240 cfs at  
USGS Blw GVIC gage**







# BRIEF PDO PBO\* UPDATE

\* PDO = Program Director's Office  
PBO = Programmatic Biological Opinion

Colorado Pikeminnow: 15 Mile Reach





# PBO Updates for 2021

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## **REMINDER: WHY DO WE DO THIS?**

**“In summary, the 15-Mile Reach is important for several reasons:**

- 1. The 15-Mile Reach provides valuable spawning habitat for Colorado pikeminnow and razorback sucker.**
- 2. The 15-Mile Reach provides an optimum balance between temperature and food availability for adult Colorado pikeminnow in the Colorado River.**
- 3. The 15-Mile Reach provides an important refuge for endangered fishes should a catastrophic event cause a loss of populations in the Gunnison River or in the Colorado River below the Gunnison River confluence.”**

**1999 15-Mile Reach PBO**

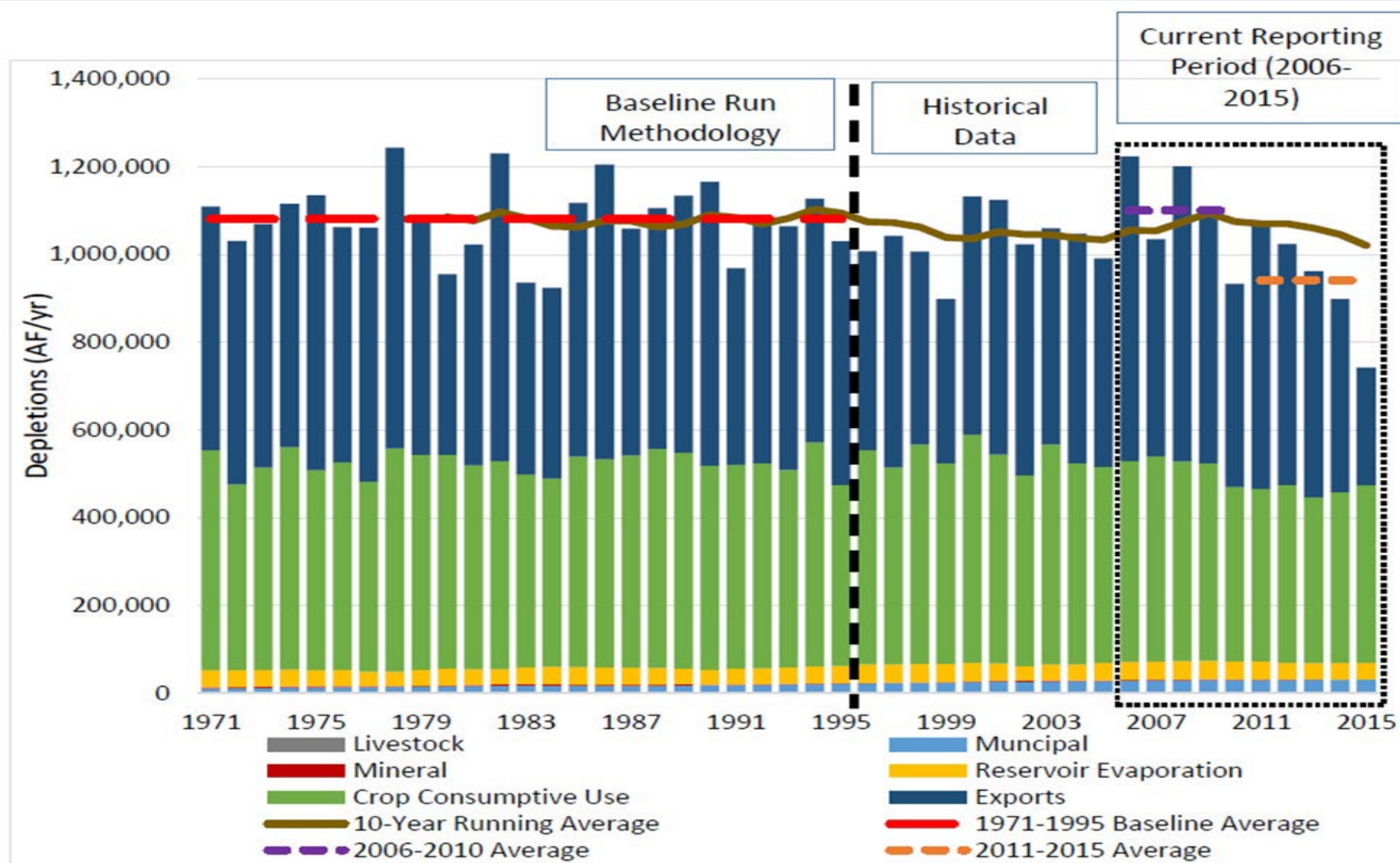
# PBO Updates for 2021

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1. Downlisting of the humpback chub from Endangered to Threatened ([Humpback Chub - Colorado River Recovery Programs](#))
2. Finalized PBO Review (*“This review will begin when actual depletion levels from the first depletion block reach 50,000 acre-feet/year or the year 2015, whichever comes first.”* PBO, p. 75)
3. Completed Biennial ‘Sufficient Progress’ memo
4. Materials presenting case for downlisting of razorback sucker are under review by FWS Ecological Services



# PBO Updates for 2021 – Depletion Summary



## TAKE HOME POINTS

1. Depletions Variable
2. Depletions Stagnant or Decreasing
3. New Depletions since 1999 NOT the driver for unmet flow targets

# PBO Updates for 2021 – CROS\*

**Table 4.** Voluntary CROS contributions from upstream reservoirs, 1997 through 2019, for coordinated peak flow augmentation in the 15-Mile reach (in AF).

Coordinated Reservoir Operations (CROS)					Augmentation of Peak Flows (AF released/bypassed)					
Reservoir	Homestake	Lake Granby	Green Mtn	Ruedi	Williams Fork	Willow Creek	Windy Gap	Wolford Mtn	Moffat Tunnel	Total AF
1997			3,568	693	946			10,635		15,842
1998			12,482	5,106	1,672			4,431		23,691
1999		8,515	11,010	3,602	1,543	6,631		8,555		39,856
2006			6,788	6,297	6,625			9,007		28,717
2008			2,101	4,848						6,949
2009			14,113	5,858	5,044	2,638	2,061	13,069		42,783
2010			34,666	10,050	19,982			9,273		73,971
2015		18,002	11,292	4,599	2,733	8,000	906	4,587		32,117
2016	1,430		8,632	4,007	4,893			8,452	1,960	29,374
2017			14,410	4,502	3,293	7,206		4,245	2,079	35,735
2019	655		21,223	5,998	9,273		2,007			39,156
Sum	2,085	26,517	140,285	55,560	56,004	24,475	4,974	72,254	4,039	368,193

## TAKE HOME POINTS

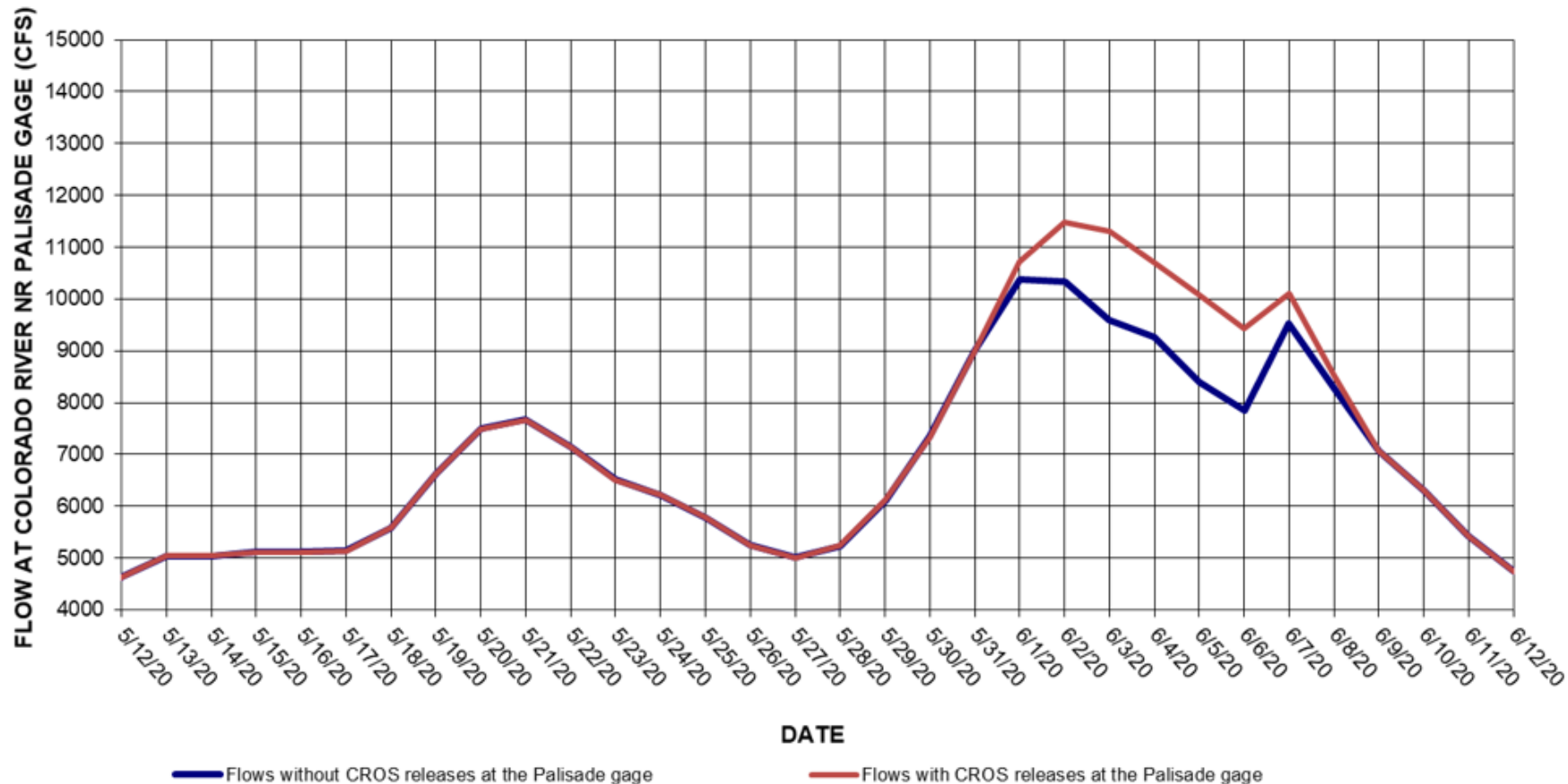
1. CROS implemented 12 times since 1997 including 5 of 6 years 2015 - 2020
2. Total nearly 400,000 AF in 12 years
3. Given hydrologic change, peak flows for habitat purposes critical for habitat quality
4. NO CROS in 2021

\*CROS – Coordinated Reservoir Operations (voluntary peak flow enhancements)



# PBO Updates for 2021

**COORDINATED RESERVOIR OPERATIONS (CROS)  
15-MILE REACH  
(As Measured at the Colorado River near Palisade Gage)  
2020**



- **2020 CROS Operations totaled 19,966 AF**
- **Added ~1500-1700 cfs to peak**



# PBO Updates for 2021

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**Report also provides overview of other Program Element Activities over life of Program:**

- **Habitat Protection through Flow Management**
- **Habitat Development and Maintenance**
- **Native Fish Stocking (razorback sucker & bonytail in 15-MR)**
- **Non-Native Fish Control**
- **Research, Monitoring, and Data Management**
- **Information, Education, and Outreach – e.g., Palisade High School Fish Hatchery!**

**“Based on this history and these substantial accomplishments, and on the demonstrated enhancement to flow conditions, the Recovery Program does not at this time deem it necessary to reinitiate or amend this PBO for purposes of providing habitat improvement and flow management actions in compliance with the 15-Mile Reach PBO. ” – 2021 Final PBO Review Document**

# PBO Updates for 2021

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## **FWS Ecological Services RESPONSE:**

**“...we recommend coordination between the Recovery Program and the Service to evaluate the recommended flow targets in the 15-Mile Reach by the end of the year 2028, ensuring this evaluation is available to the Service before the next PBO re-initiation checkpoint. This evaluation should incorporate climate analyses, examine changes in water supply, and investigate annual flow variation targets.” - DRAFT FWS letter to MC/IC – 2022**

## **Take Home Points:**

- 1. Evaluate Recommended Flow Targets by 2028**
- 2. Incorporate Climate Analyses and Variability**
- 3. Assess Future Supply in River-Basin context**
- 4. Continue Implementation and Development of Recovery Program Management Activities in lieu of Re-initiation of ESA Section 7 Consultation on New Depletions**

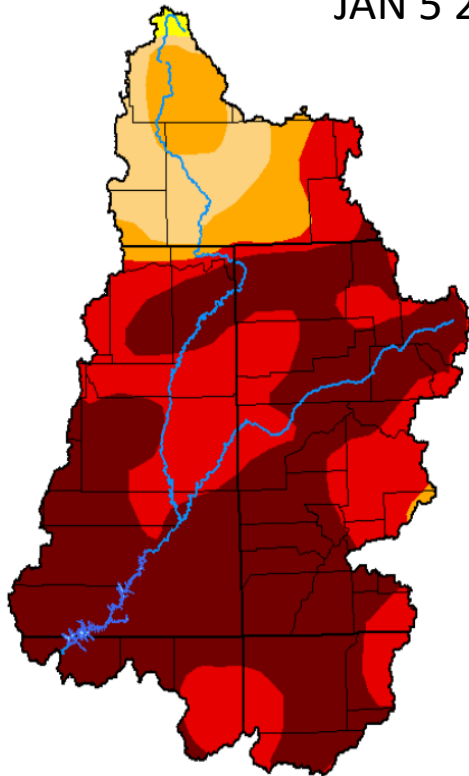


# Water Year 2022 - ???

*U.S. Drought Monitor*

**Upper Colorado Watershed**

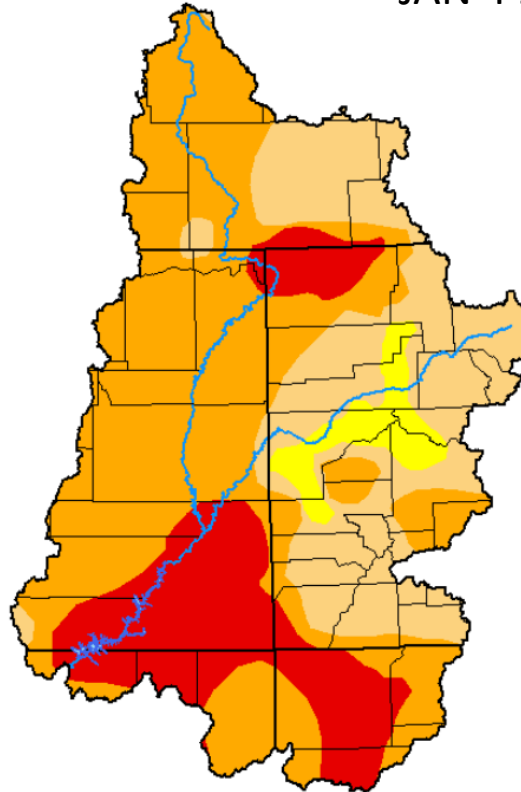
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*U.S. Drought Monitor*

**Upper Colorado Watershed**

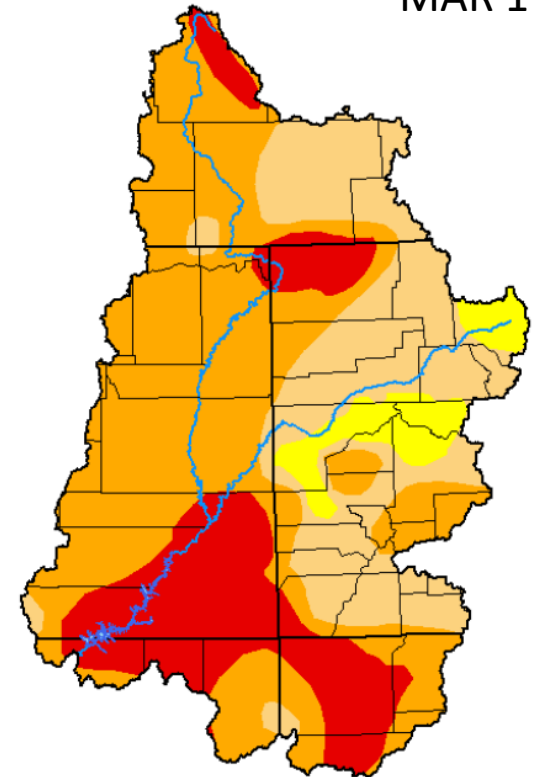
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*U.S. Drought Monitor*

**Upper Colorado Watershed**

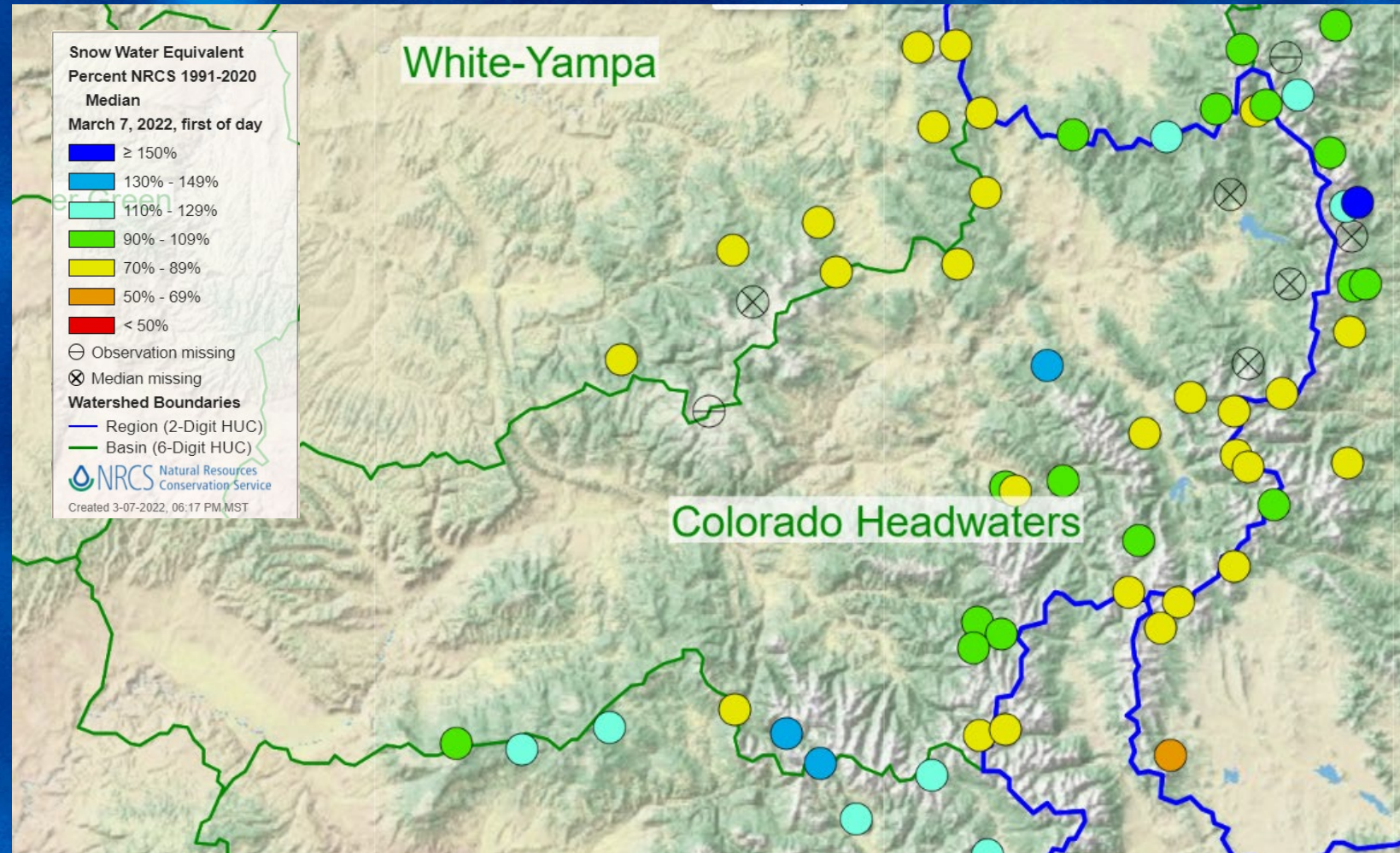
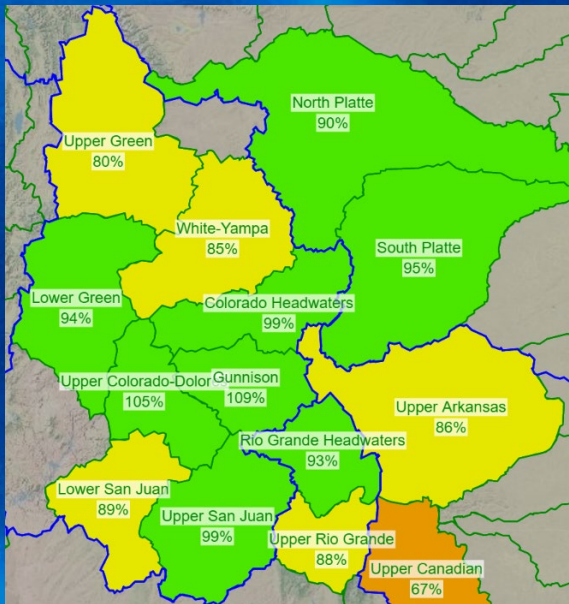
MAR 1 2022







# SNOTEL SWE REVIEW



CO Headwaters = 99% SWE  
Upper CO = 93%  
3/7/2022

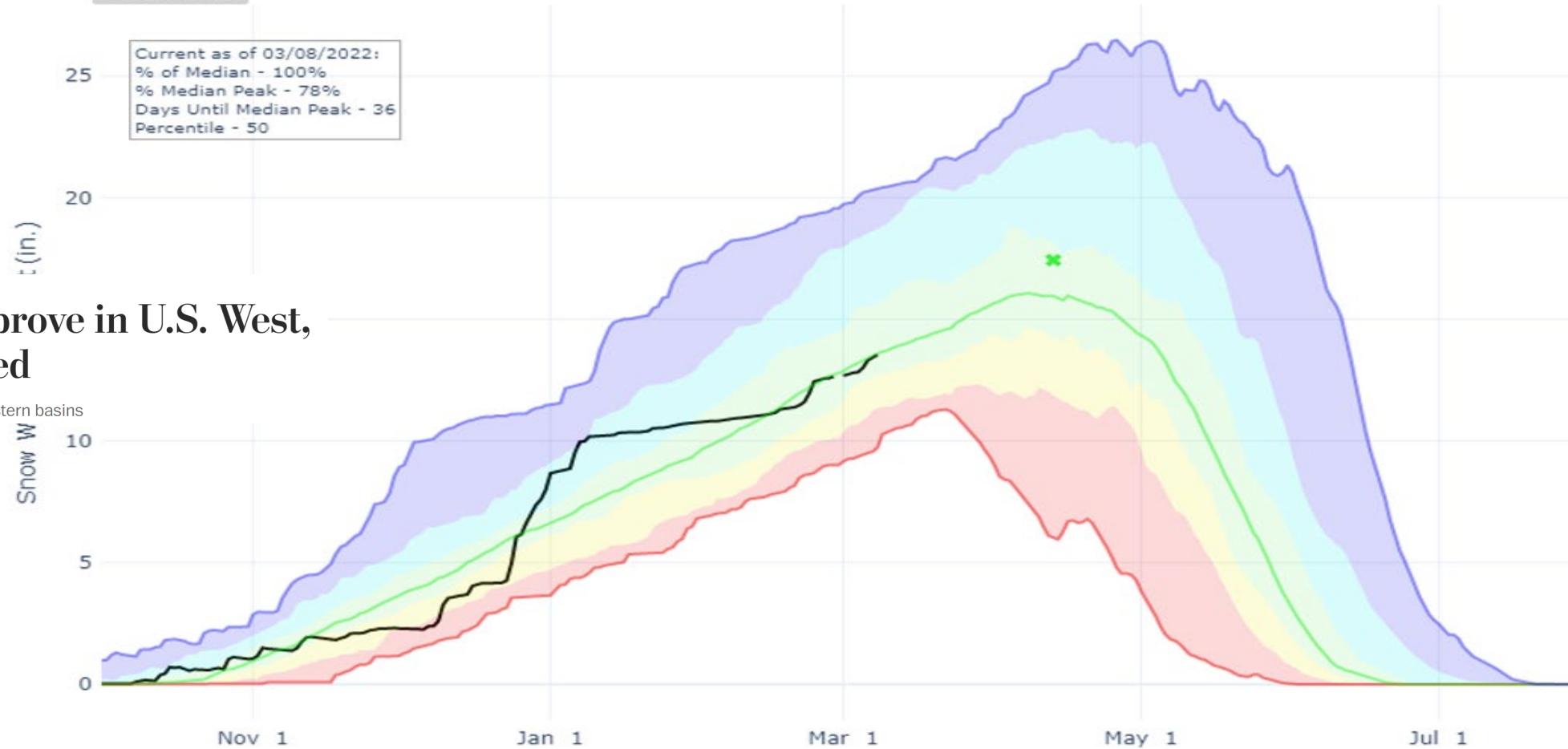




## SNOW WATER EQUIVALENT IN COLORADO HEADWATERS

Reset Range

Current as of 03/08/2022:  
% of Median - 100%  
% Median Peak - 78%  
Days Until Median Peak - 36  
Percentile - 50

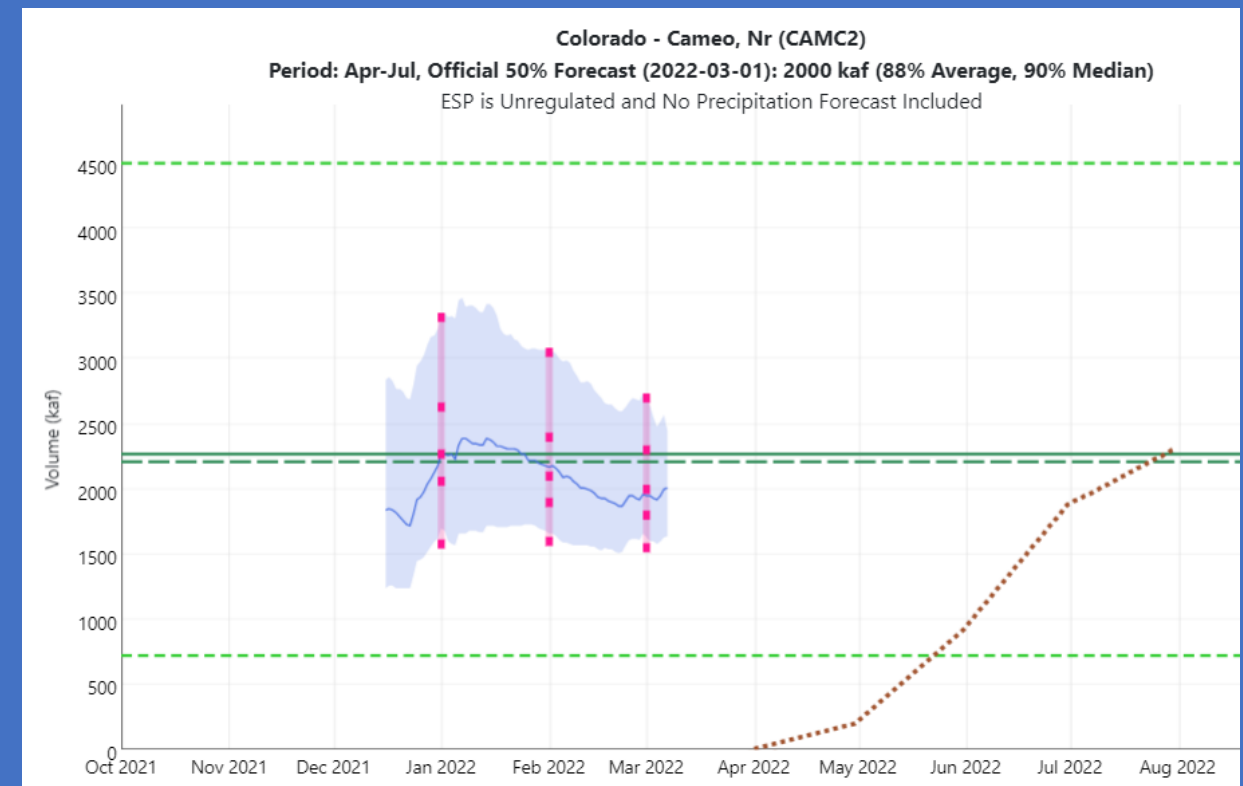
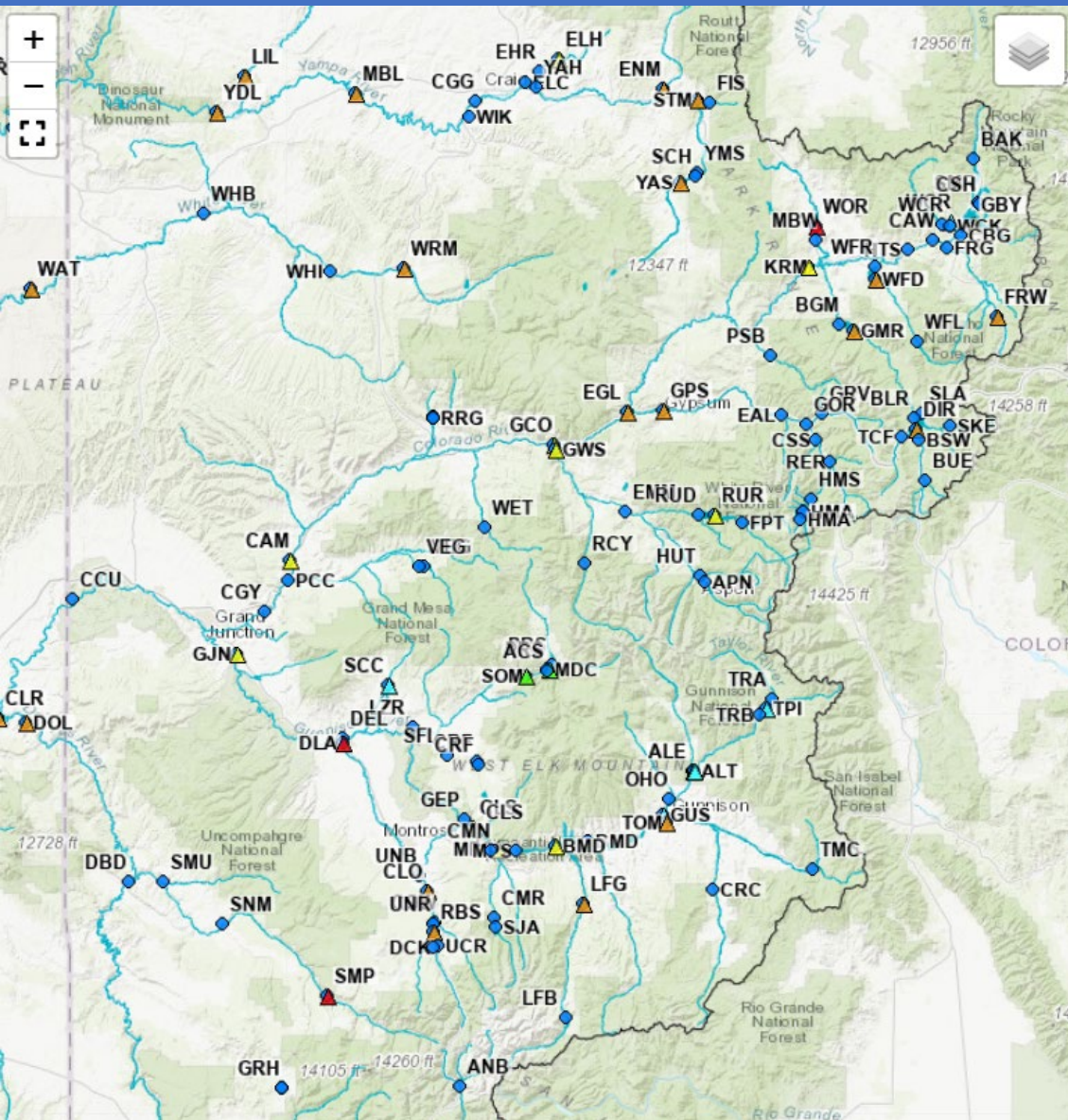


Capital Weather Gang

## Drought conditions improve in U.S. West, but more snow is needed

By January, snowpack was above normal for most Western basins

# RUNOFF FORECASTS – COLORADO BASIN RIVER FORECAST CENTER



## Colorado April – July Runoff Forecasts:

Colorado River blw Glenwood Springs = 88%  
Colorado River nr Cameo = 88%





# HUP 2021 Wrap Up and 2022 Outlook

## Upper CO River Endangered Fish Recovery Program



### 2022 – LOOKING AHEAD

- CROS?
- DROA & Lake Powell?
- HUP Coordination
- 15-MR Flow Release Coordination

Capital Weather Gang

**Drought conditions improve in U.S. West,  
but more snow is needed**

By January, snowpack was above normal for most Western basins

**THANK YOU!**