# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

January 22, 2013

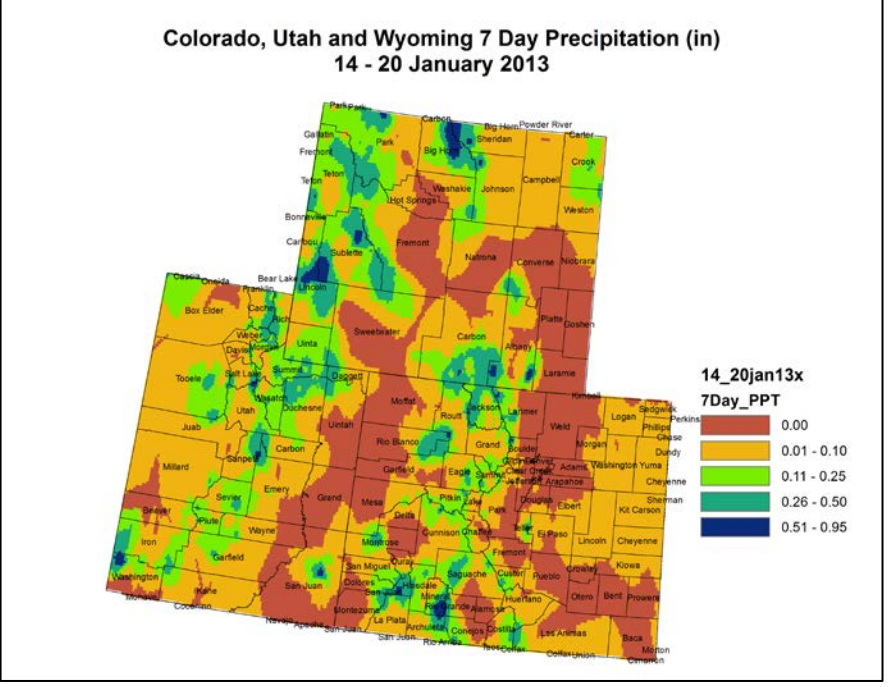



Fig. 1: January 14 – 20 precipitation in inches.

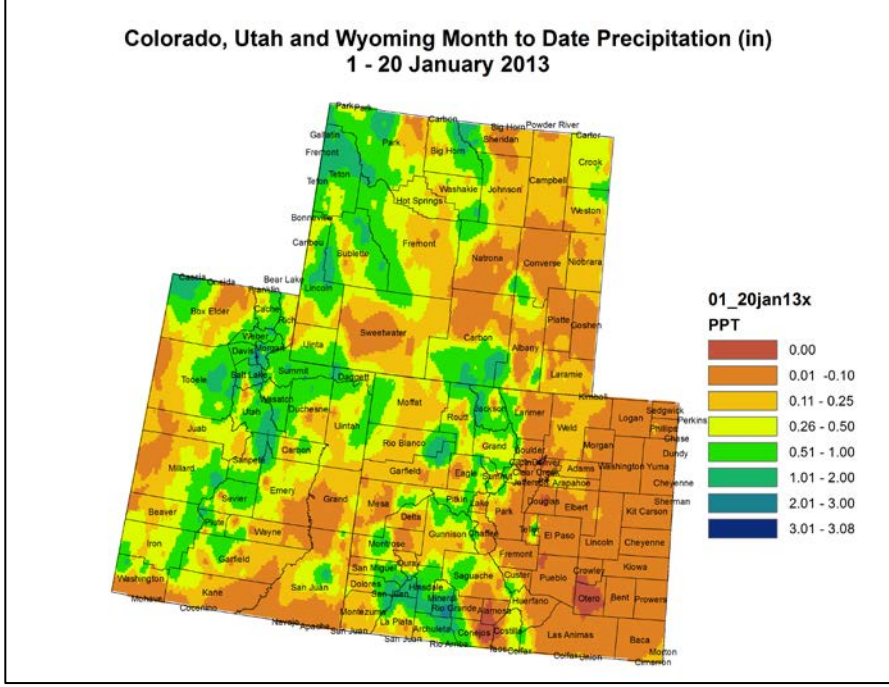



Fig. 2: January 2013 Month to Date Precipitation in inches.

# Precipitation

Last week, most of the Upper Colorado River Basin (UCRB), was dry receiving less than 0.10 inches of precipitation. (Fig. 1). Some higher elevations received up to 0.50 inches. Eastern and central Utah also received up to 0.50 inches of precipitation for the week. East of the basin, eastern CO was dry receiving less than 0.10 inches.

Since the beginning of January, most of the higher elevations of the UCRB have received between 0.25 and 1 inch of precipitation (Fig. 2). Lower elevations in the basin have received less than 0.25 inches for the month. Parts of the San Juan Mountains (southern CO) and the Wasatch range (in UT) have seen up to 3 inches of moisture. East of the basin, eastern CO has received less than 0.25 inches of precipitation for most areas in January. This is below average for this time of year.

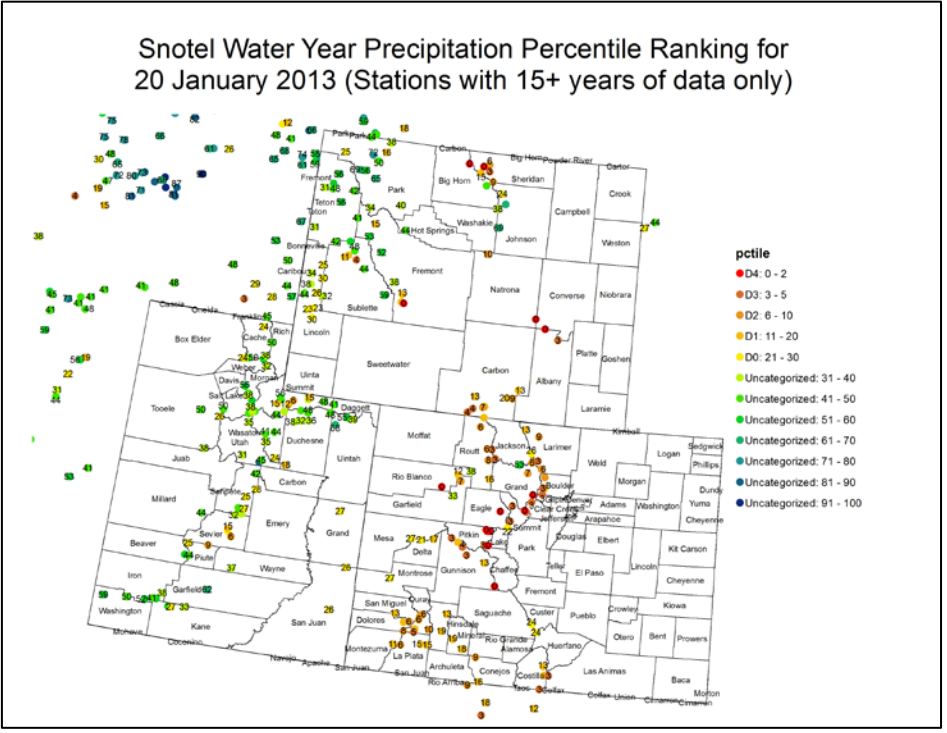



Fig 3: WYTD SNOTEL precipitation percentiles (50th percentile is median, 30th percentile is D0 drought category) as of January 20th.

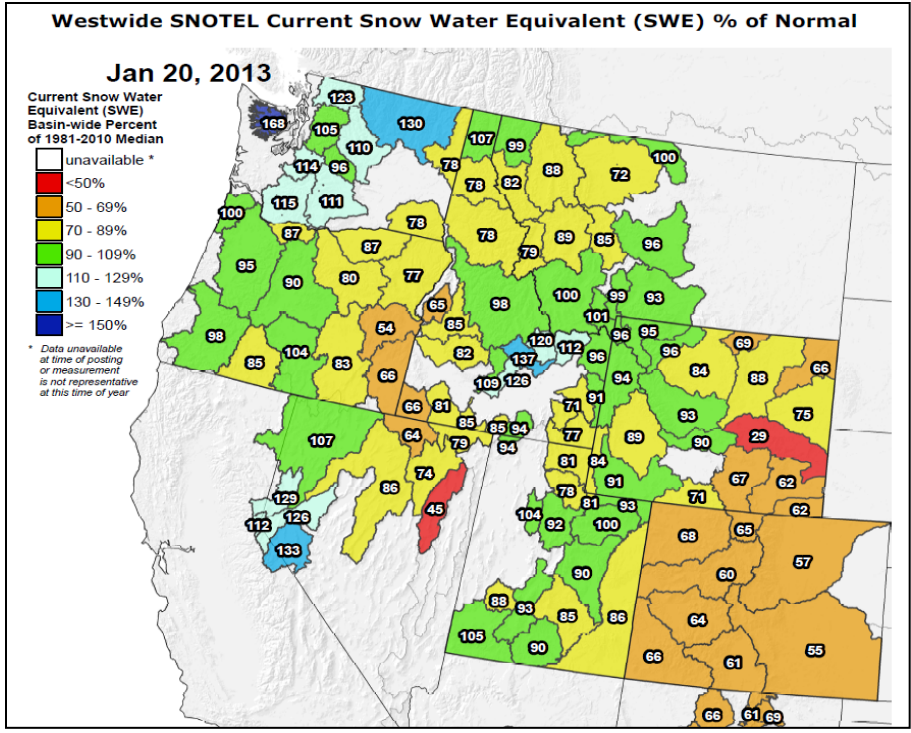



Fig 4: Basin-averaged snow water equivalent as a percent of normal (median), as of January 20th.

# Snowpack

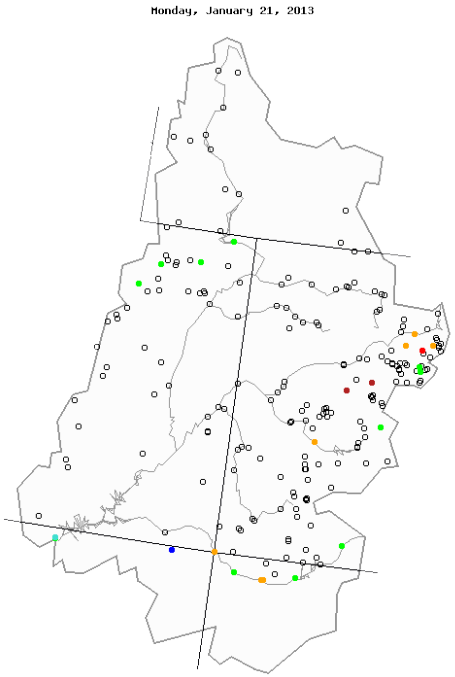
Water-year-to-date SNOTEL precipitation percentiles in the UCRB are lower on the east side of the basin in CO than on the west side of the basin in UT (Fig 3). Along the Wasatch and Uintah ranges in UT, percentiles are in the 40s and 50s, with slightly lower percentiles in the Upper Green River basin in southwest WY. The northern and central CO mountains are showing precipitation below the 10th percentile at most locations with several sites now recording below the 5th percentile. There are several more 0 percentiles (driest on record) showing up this week compared to last week. Percentile rankings in southwest CO in the San Juan Mountains are mostly between the 5th and 15th percentile.

Snow water equivalent is currently less than normal on the east side of the UCRB and near normal on the west side of the basin (Fig. 4). Sub-basins in western CO are all between 60% and 70% of normal snowpack. Northeast UT and southwest WY basins are near normal snowpack, with northern UT lower between 75% and 85%. All sub-basins have seen decreases in snowpack percent of normal the past week.

# Streamflow

As of January 21st, about 45% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) 7-day average streamflows (Fig. 5). About 19% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, and 9% of the gages are recording above normal flows. Many of the gages throughout the basin are under frozen conditions, and the number of reporting sites has decreased from 45 gages a month ago to 22 gages now.

The three key gages across the basin are all currently ice affected (Fig. 6). The Colorado River near the CO-UT state line have been ice affected since late December. The Green River at Green River, UT had increased to near normal conditions at the end of the year, it is now under frozen conditions, which also happened this time last year. The San Juan River near Bluff, UT became ice affected after experiencing below normal flows the previous weeks.



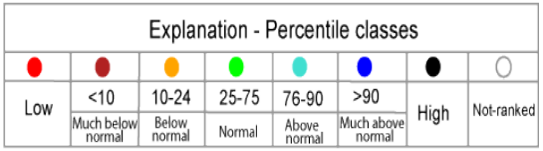




Fig. 5: 7-day average discharge compared to historical discharge for January 21st.

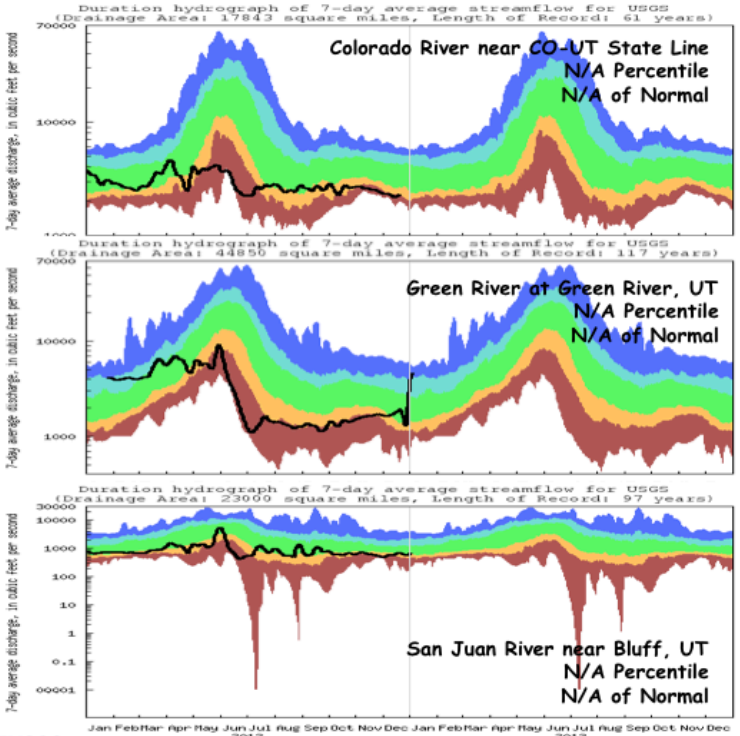



Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

# Water Supply and Demand

The UCRB saw temperatures 5 to 20 degrees below normal last week. East of the basin, the rest of CO experienced near normal temperatures for the week. The VIC soil moisture model continues to show dry soils through most of the UCRB (Fig. 7). Soil dryness is below the 20$^{th}$ percentile in eastern UT and much of western CO, with areas now below the 5$^{th}$ percentiles. Drier soils (less than the 10$^{th}$ percentile) are now showing up over southwest CO, but are less pronounced when SWE is included (Fig. 7). Southwest WY now shows soil dryness less than the 2$^{nd}$ percentile. Dry soils also snow up in southeast CO and far eastern CO with near normal soil moisture in north-central CO and around the Rio Grande Basin in southern CO.

For the month of December, most of the major reservoirs in the UCRB saw minor volume decrease, though Blue Mesa Reservoir saw a very slight increase since the beginning of the month. Volume decreases are normal for this time of year, and most of the reservoirs decreased less than what is normal. Lake Granby has seen larger volume decreases so far this month. Flaming Gorge volume is near its January average, while the rest of the reservoirs are between 65% and 80% of average for January.

# Precipitation Forecast

The upper ridge that has brought unseasonably warm and dry conditions to the UCRB will gradually begin to weaken and shift east throughout the work week and give way to brisk northwest flow. A limited amount of moisture embedded in this flow will help generate a few areas of light snow across north-central Colorado on Thursday. A brief period of drying will occur through the day on Friday before moisture begins to overspread the region in advance of the next Pacific storm system. Expect to see precipitation begin to break out across southwestern portions of the basin on Saturday as the first push of energy moves through the basin. Amounts will generally remain below 0.25 inches of liquid through Sunday, with the San Juans and southwestern portions receiving the brunt of precipitation (Fig. 8). Forecast models currently remain optimistic on a healthy flow of moisture into the UCRB moving into early next week ahead of yet another trough dropping in from the northwest, with the potential for widespread accumulations of 0.25 inches of liquid through Tuesday.

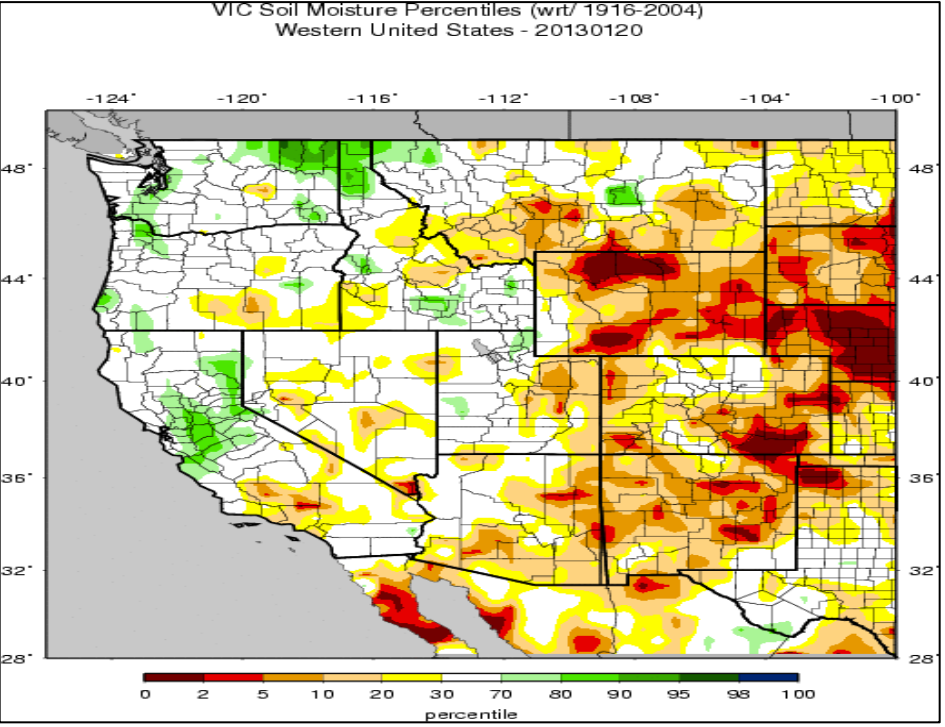
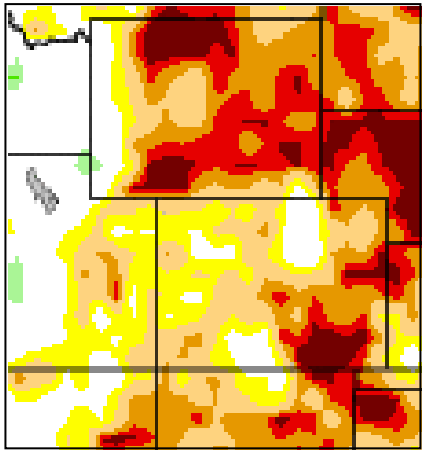



Fig. 7: VIC modeled soil moisture percentiles for the western U.S. as of January 20th. The map below combines soil moisture and SWE.



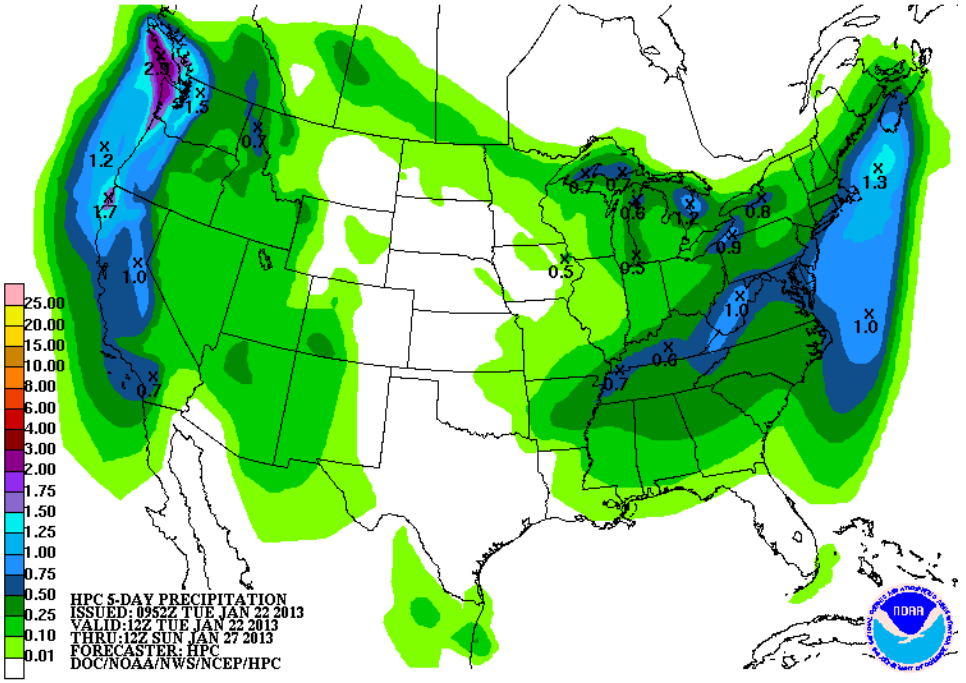



Fig. 8: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday, January 27th.

# Drought and Water Discussion

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|---|---|
| Drought – Exceptional | 0 to 2 (D4) |
| Drought – Extreme | 2 to 5 (D3) |
| Drought – Severe | 5 to 10 (D2) |
| Drought – Moderate | 10 to 20 (D1) |
| Abnormally Dry | 20 to 30 (D0) |

Drought categories and
their associated percentiles

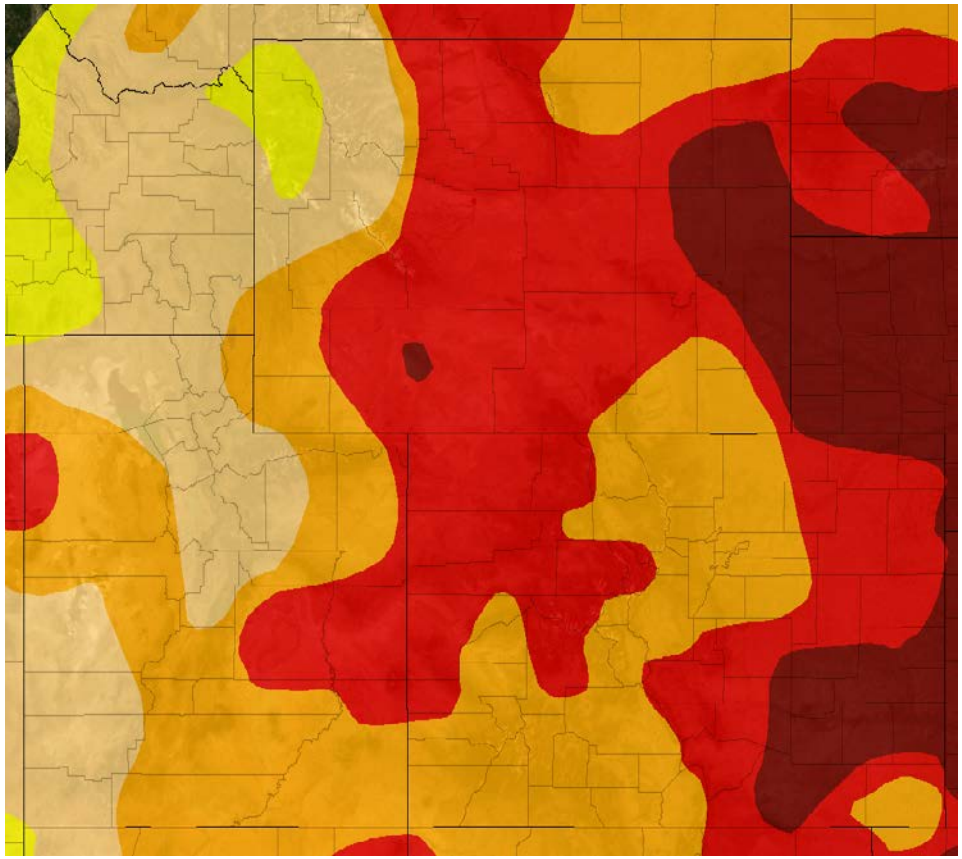

Fig. 9: January 15th release of U.S. Drought Monitor for the UCRB with recommendations.

**UCRB:** Last week D3 was expanded into Pitkin, Eagle and Summit counties. With this expansion last week, this week, status quo is recommended for the UCRB.

**Eastern CO:** With changes last week, status quo is recommended for eastern CO. Conditions have been dry, and though the winter wheat has not been dire, it is still struggling, so the D3 and D4 are still representative at this time. Baca County in southeastern CO has started to dry out, however it is still better than the surrounding area, so the D2 is there to stay for now.