Drought 2021- How bad is it? Part I

By Jan Hovey / The Valley Springs News / July 7, 2021

We all know Calaveras County, the Sierra Nevada Foothills, the State of California and many of the states in the southwest are in a drought. But, just how bad is it and what might we expect this summer?

The different stages of drought are: D-0 – Abnormally Dry, D-1 – Moderate Drought, D-2 – Severe Drought, D-3 – Extreme Drought and D-4 v- Exceptional Drought. While counties northeast and southwest of Calaveras County are classified in the D-4 category, Calaveras, for the most part, remains in the D-3 extreme drought category.

According to the California Department of Water Resources, "As we approach summer, California is experiencing a heatwave that will set new temperature records in some areas. Warm temperatures are affecting drought impacts. Runoff this year in key mountain watersheds remains on a par with that of 2014 and 2015, the two warmest and driest years of California's last drought, despite this year's statewide April 1 snowpack being at 59 percent. The decrease in runoff efficiency is a troubling yet expected outcome of a warming climate."

"Outcomes of this shift in conditions were seen earlier in the spring when forecasted Sierra Nevada runoff failed to materialize, triggering the May 10 expansion of the governor's drought emergency proclamation to cover Central Valley watersheds in response to needs for water rights administration actions to preserve reservoir storage."

Somehow much of the water from melted snow that California was relying on to break the drought never made it to the reservoirs. So where did the snow go?

"I really think this is largely to do with the role of the unprecedented, record-breaking heat," said Daniel Swain, University of California drought and bushfire scientist. "Extreme heat essentially means there is more evaporation than there would be in the absence of extreme heat."

In addition to the high evaporation rate, back-to-back dry winters left the soil so dry and the plant-life so thirsty that most of the snowmelt went into saturating the soil instead of running off into streams and reservoirs.

"Water Year 2020 was California's 13th driest based on statewide precipitation and 5th driest based on statewide runoff," Swain said. "It is likely that the present water year will end up being drier, possibly coming in at second driest for runoff (behind 1977) for some parts of the state.. Above-average precipitation would be needed to achieve average runoff."

Currently the water level at New Melones Lake is 976 feet and dropping at a rate of about six inches per day. At this time last year the lake level was 1,025 feet and 1,075 the year before.

Even at the end of March, the state's drought situation was severe and widespread, but only a small area was rated as being in exceptional drought. Then in April something very strange happened that caught water experts by surprise.

"This year on April 1 for California we were anywhere from 60 to 80 percent of normal (snow levels)" US Desert Research Institute climatologist Daniel McEvoy said. "We were concerned, but it didn't look as bad as 2015, when there was no snow on April 1."

"Within a month we went from around 70 percent of normal down to around 30 or 40 percent of normal," he added. "What was interesting was just how fast it happened after April 1."

By mid-June, most of the state was declared to be in extreme drought, up from less than a third in late March. A third of California was declared to be in the worst category, exceptional.

"The extreme temperatures have played a big role in just really sucking the moisture out of the soil – but it's not the only thing that contributes to snowmelt," Dr. McEvoy said. "Solar radiation is a big one, and where you have bare soils, it's going to dry those soils out faster and it's going to stress the vegetation more."

The sudden escalation of drought in California has parallels with so-called "flash droughts," according to Ailie Gallant from Monash University.

"A flash drought is where evaporation plays much more of a prominent role than it usually does in a drought, and because of that, you descend into drought quite quickly," she said. "So, areas can go from being a bit dry to really severe drought in a matter of weeks or months."

Water officials across California have watched the dry weather nervously and have begun to plan for water conservation, and in some cases, possible mandatory water restrictions.

According to the Center for Climate and Energy Solutions, across the globe, hot days are getting hotter and more frequent, while we're experiencing fewer cold days. Over the past decade, daily record temperatures have occurred twice as often as record lows across the continental United States. Heat waves are becoming more common, and intense heatwaves are more frequent in the U.S. West, although in many parts of the country the 1930s still holds the record for number of heatwaves (caused by the Dust Bowl and other factors).

Although we just hit summer, we should be planning ahead for responding to continued dry conditions. In Part II of Drought 2021, we'll explore what county officials have to say.