

It Could Happen Here Too: Water Managers Across the West are Scrambling as Mega-Drought Persists and Expands



A photograph of an approaching dust storm likely in southwest Kansas. Dust storms, such as this one, rolled over the southern Great Plains from 1932-1936, removing top soil from agricultural lands. (Photo by Frank Durnell Conrad, Kansas Historical Society)

While KRWA’s weekly E-Mail newsletter (KRWA E-News) focuses primarily on water issues in rural Kansas and nearby states, it’s impossible for me not to include a few stories now and then to highlight the extreme impacts that are also happening to water systems elsewhere around the country and around the world. Of particular note are the effects on public water suppliers being impacted by the emerging mega-drought across the Western United States. A mega-drought is generally considered to be a prolonged and severe dry period persisting for decades or longer. Tree ring data indicate that mega-droughts have happened regularly throughout Earth’s history and in extreme cases they can last from several decades to well over a century. One Southwestern U.S. Mega-drought discovered in tree ring data that occurred during the 13th century is thought to have lasted more than 90 years. That’s a scenario that keeps water managers awake at night. While most of us may only remember our elders talk about the Dust Bowl years, paleoclimatic data collected for western Kansas indicate a drought as severe as the Dust Bowl occurs in Southwest Kansas, on average, three to four times a century, some of which may last for more than a decade. Eastern Kansas averages about one drought a century. The longest mega-drought in Kansas is believed to have occurred in the north-central part of the state for an estimated 110 years, from 1317 to 1427.¹

In a sign of how bad things have gotten in the West, officials with the U.S. Bureau of Reclamation in August declared the first-ever water shortage for the Colorado River and its reservoir system, which serves 40 million people, triggering water cuts throughout the western states amid the gripping drought. In the hardest hit state of Arizona, cities and public water suppliers will so far be protected because they enjoy the highest priority for water delivered through the Central Arizona Project, a 330-mile canal diverting water from the Colorado River. But eventually, some city and industrial water users across the West are expected to be affected if the situation does not improve soon. (And it’s not expected to.) “This is a wake-up call for what lies ahead,” Deven Upadhyay, Chief Operating Officer for the Metropolitan Water District of Southern California, which supplies water to 19 million Californians, told the L.A. Times. “We cannot overstate the seriousness of this drought,” he said. “Conditions are getting worse, and more importantly, we don’t know how long it will last.”² Water levels at the largest reservoir on the Colorado River – Lake Mead formed behind Hoover Dam — have fallen to record lows. Along its perimeter, a white “bathtub ring” of minerals

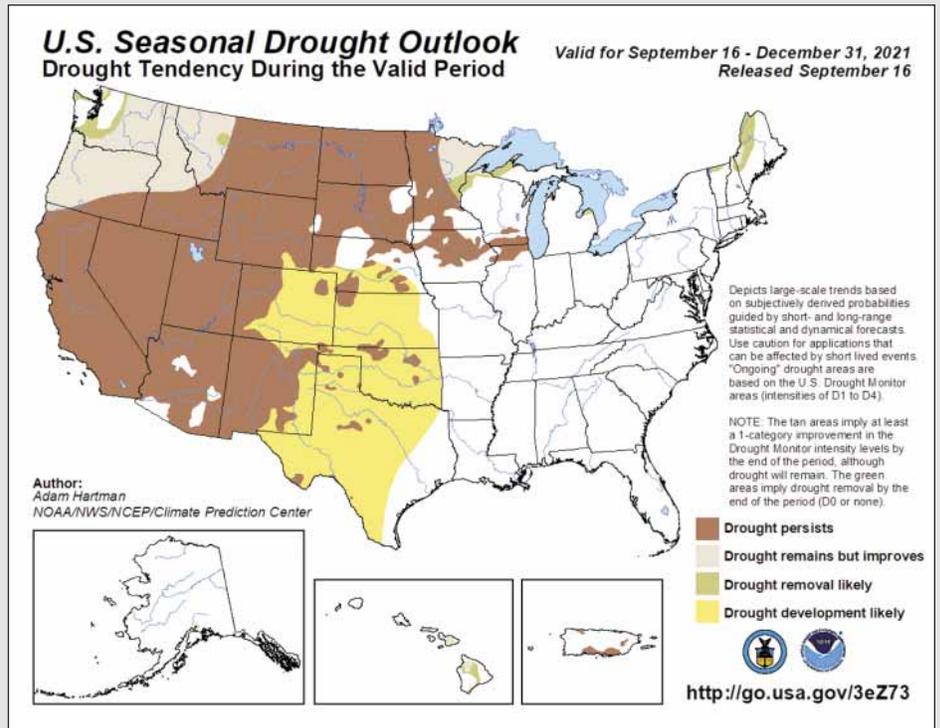
¹ Anthony L. Layzell and Catherine S. Evans, “Kansas Droughts: Climatic Trends Over 1,000 Years,” Kansas Geological Survey Public Information Circular 35, Aug. 2013.

² Hayley Smith and Julia Wick, “Southern California water officials declare supply alert amid worsening drought,” Los Angeles Times, Aug. 17, 2021.

outlines where the high-water line once stood, underscoring the acute water challenges for a region facing a growing population and a mega-drought. Water levels in Lake Powell, the river's other large reservoir have also been falling for years and both reservoirs' water levels have been dropping faster than experts predicted. Scorching temperatures and less melting snow in the spring have reduced the amount of water flowing from the Rocky Mountains, where the river originates before it snakes 1,450 miles (2,334 kilometers) southwest and into the Gulf of California. Arizona will be hardest hit and lose 18 % of its share from the river next year, or 512,000 acre-feet of water. That's around 8% of the state's total water use. Nevada will lose about 7% of its allocation, or 21,000 acre-feet of water. But it will not yet feel the shortages largely because of conservation efforts.

While the situation with Lake Powell and Lake Mead is not expected to recover soon, the situation is exacerbated by an ever-increasing population in the South and West. New census figures released earlier this year show that population growth continues unabated, even as temperatures rise and droughts become more common, leaving city leaders to wonder where their water will come from. "We have disconnected people from their water source so much that they don't even think where their water is coming from," Newsha Ajami, the director of Urban Water Policy with Stanford University's Water in the West recently told the San Francisco Gate. "They don't know what it takes to bring the water to them, they don't know what happens after they use it. We are so disconnected from the system that it's very difficult for an individual to think about themselves as part of this chain, except as a consumer, rather than someone who can impact the chain."³ How many of us can relate to that comment?

California officials also say that although water theft has been a long running-issue, the intensifying drought has driven water thefts to record levels as reservoirs dry up and bandits make off with stolen water, often to cultivate the growth of illegal marijuana crops.⁴ Thieves are getting their hands on water by breaking into secure water stations, drilling into water lines, tapping into fire hydrants and using violence and threats against farmers, making off with truckloads of water for their crops under cover of darkness. The issue has become so severe that some communities have



The latest U.S. Seasonal Drought Outlook indicates drought conditions will persist in the West and expand across the Central Plains.

been forced to place locks on fire hydrants or remove them altogether. Officials say they are doing all they can to combat the issue. The California Department of Fish and Wildlife's Marijuana Enforcement Team has made more than 900 felony arrests of illegal cannabis growers and removed over 400 miles of pipelines diverting water from natural streams to man-made dams.

Tough times . . .

Other states across the west are also facing harsh decisions. During the summer, the entire state of Utah was in extreme or exceptional drought as Utah's two largest reservoirs hit their lowest water levels ever. Utah's mountain town of Oakley pressed pause on any new building permits this summer in a six-month moratorium to ensure current residents have enough water.⁵ Other cities in Utah have been forced to turn to their neighbors to purchase enough water to meet their needs. Flint Utah's water district is delivering water to the tiny community of Echo after its single-sourced water supply dried up. Hyde Park in Cache County also ran out of water this summer and is getting help from other providers. Another small Utah community's water tank in Scofield went dry this summer leaving the Utah Division of Drinking Water to issue an emergency permit for the town to haul water for residents as a short-term solution until it can develop other longer-term management strategies.

³ Michelle Robertson, "What does it mean when a community runs out of water? Many in California are finding out," San Francisco Gate, Aug. 16, 2021.

⁴ Rachel Pannett, "Illegal cannabis growers are stealing water amid California's drought, officials say," The Washington Post, Jul. 28, 2021.

⁵ Amy Joi O'Donoghue, "Anatomy of a drought: How the West may change for decades to come," Deseret News, Aug. 9, 2021.

**Kansas Drought Declarations
September 2, 2021**



At the beginning of September 2021, Governor Kelly approved an updated Drought Declaration for Kansas counties with Executive Order #21-26. The declaration includes 87 out of 105 counties either in a warning or watch status. The Kansas Water Office notes that Kansas has experienced a wide range of precipitation this year. Some areas have seen equal to or more than its normal rainfall while others, such as northwest, central and south-central counties have received less than 60, 70 or 80 % of the area’s normal precipitation.

An early warning forecast issued by the National Oceanic and Atmospheric Administration’s National Integrated Drought Information System (NIDIS) in September suggests that drought development is likely for most of the Southern Plains region during the coming season. The forecast notes that dry conditions have developed rapidly over Kansas, Oklahoma, and the Texas panhandle. The August NOAA/NDIS north-central region drought status update also contained some daunting statistics: More than half – 52% – of the central U.S. is in drought; 24% of the central U.S. is in either extreme (D3) or exceptional (D4) drought; and it has been nearly ten years, since 2012, since drought has covered this extensive an area of the central United States. Drought remains widespread across much of the Upper Missouri River Basin (Montana, North Dakota, South Dakota, Wyoming), and across Minnesota and northern Iowa. Montana and North Dakota are 100% in drought condition, as well as 97% of Minnesota, 95% of Wyoming, 94% of South Dakota, and 57% of Iowa. The drought conditions have affected livestock producers in Montana, North Dakota, South Dakota, and Wyoming, that have been struggling all summer to find adequate feed and water for their livestock. The entire summer was also plagued by fires out west. Beyond California, wildfires occurred this summer in Montana, North Dakota, Wyoming, and northern Minnesota, which in turn impacted air quality here in Kansas, pushing the air quality index (AQI) above 150 (unhealthy) for a period of time this summer. Outside of the emerging mega-drought, some states have seen a recent expansion of drought and abnormally dry conditions. This includes eastern Colorado, Nebraska, eastern Iowa, northern Wisconsin, northern Michigan, and Indiana. While the conditions in Kansas have not yet been as severe as those experienced in 2011 and 2012, expansion of drought conditions appears likely to migrate our direction with a double-dip La Nina poised to potentially make conditions worse over the winter.

The conditions affecting those already being impacted by the emerging Western Mega-Drought should be a wake-up call for Kansas. The same forces of nature impacting flows in the Colorado river are also occurring in the headwaters of the Arkansas River, Republican



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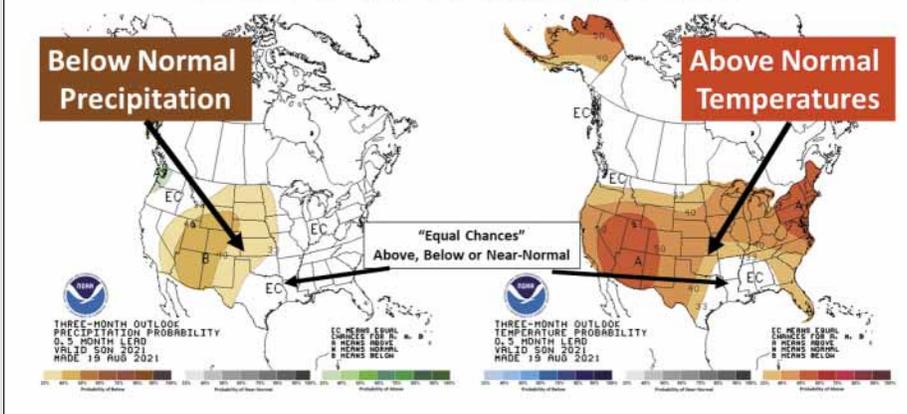


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FALL 2021 OUTLOOK



NOAA's Fall 2021 Outlooks indicate Kansas is likely to continue to experience warmer and drier than normal conditions. (Credit NOAA/NWS Climate Prediction Center via the Oklahoma Mesonet Ticker)

River and Missouri River. While we don't rely as heavily on snowmelt from the Rocky Mountains, declining water levels in the Ogallala Aquifer and sedimentation of our key water supply reservoirs should be just as concerning. According to the Kansas Water Office, a sustained period of drought could lead to unprecedented water shortages. Kansas officials have been ringing the alarm bells on both of these issues for decades. A series of meetings held in August in Garden City focused on the need to take action in order to slow the

⁶ Andrew Bahl, "Can Kansas find a way to maintain its water supply? Lawmakers are searching for answers amid drought in western US," *Topeka Capital-Journal*, Aug. 18, 2021.

decline of the Ogallala Aquifer in western Kansas. In part, those meetings were held to consider draft changes to the Kansas Water Plan, which is currently being updated. "It is not an overstatement to say that the future of habitability in much of western Kansas is at stake," the plan reads. If current pumping trends continue, the updated state water plan warns, "projections in some areas show no more than 20 years of water remaining" and some parts of the region have already "passed the point of no return." Legislators and stakeholders broadly agree that there is a need to supply more funding to tackle the problem. The question, however, is where it comes from.

Funding water management efforts has long been a challenge. The state's water plan hasn't been adequately funded since 2008, Rep. Lindsay Vaughn, told the *Topeka Capital Journal* ⁶, resulting in a \$70 million shortfall.

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