

Experts warn that Calif.'s groundwater supply is being pushed toward rock bottom

Elizabeth Harball, *Environment & Energy Publishing*, 2-14-14

President Obama is making a stop today in Fresno, Calif., where he is expected to address the state's historic drought, which has given the entire nation cause for alarm.

Ahead of his visit, water experts warned that as current conditions show no signs of improvement, California's groundwater is being pushed to limits it may never recover from.

Jay Famiglietti, who directs of the UC Center for Hydrologic Modeling at the University of California, Irvine, has been tracking California's groundwater conditions using a satellite program called the NASA Gravity Recovery and Climate Experiment (GRACE), used to measure groundwater depletion around the globe.

During a conference call yesterday organized by nonprofit news organization Circle of Blue, Famiglietti described California's rate of groundwater depletion as "disturbing."

"While there's some replenishment of groundwater during wet years, groundwater levels decline precipitously during drought, when farmers have little choice but to rely more heavily on groundwater," Famiglietti said.

This year, California's farmers will be pumping groundwater at exceptional rates to compensate for surface water restrictions. At the end of January, the California Department of Water Resources for the first time announced that this year's State Water Project allocation -- relied on by 700,000 acres of farmland -- would be cut to zero (*E&ENews PM*, Jan. 31).

Groundwater regulations in California are notoriously lax, and the issue of groundwater depletion is nothing new in California's Central Valley, where earlier this year, the U.S. Geological Survey reported that land by the San Joaquin River sank about a foot per year from 2008 to 2010 (*Greenwire*, Jan. 3).

Recent rains not enough to foster hope

Famiglietti is not hopeful that this trend will be reversed anytime soon, saying that since the early 1960s, the Central Valley has lost more than 80 cubic kilometers of groundwater -- 2.5 times the volume of Nevada's Lake Mead.

In a report issued last week, the UC Center for Hydrologic Modeling stated that water storage levels in the Sacramento and San Joaquin river basins are at their lowest since the GRACE satellite mission was launched in 2002 with the sharpest decline taking place between November 2011 and November 2013.

"When we track the storage stages over time, we see a little bit of replenishment, a little upward tick in groundwater levels, and then a big downward decrease," Famiglietti said. "Historically, the downs have been way bigger than the ups, which means that the groundwater levels are essentially on a one-way trip to the very depths of the bottom of the Central Valley aquifer system."

"If the drought continues, we will see valleywide groundwater reach historic lows, and reach it pretty quickly," Famiglietti added.

Unfortunately, this scenario is looking all but certain, despite the recent 6 to 12 inches of precipitation that finally fell on Central and Northern California this week. According to this week's U.S. Drought Monitor, three to four more "copious storms" will need to hit the state's Central Sierra region to make up for current water supply deficits, which have been building steadily since 2011.

Wells begin to dry up

Water and climate expert Peter Gleick, president of the Oakland, Calif.-based Pacific Institute, said during yesterday's briefing that he doubted that much-needed storms would arrive in time for California's growing season.

"It's dry measured by almost any way you can think: the amount of precipitation we've gotten, the amount of snow that's in the mountains, the amount of water that's in our soil moisture; by all of those measures, it's dry," Gleick said. "It's extremely unlikely that we're going to get enough additional storms between now and the end of the wet season ... to fill the deficit."

Some wells needed by California's most vulnerable populations are already going dry, according to Laurel Firestone, co-executive director and attorney at the Community Water Center in Sacramento, a group that advocates for clean and affordable water access for rural and low-income communities.

"Just in the past month or so, we've been hearing a lot from individual well owners. There's a number of communities that don't have a centralized water system ... whose wells have gone dry," Firestone said during yesterday's call.

According to Firestone, more than 2,000 California communities, many of which are low-income, rely entirely on groundwater.

"Because they're low-income, they aren't able to get loans to get new wells; federal funding and state funding aren't traditionally available to individuals," Firestone said. "We expect to see a lot more of this this summer and as the drought continues."

"There's a huge amount of vulnerability," Firestone added.