



August 19, 2015

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NASA Report: Drought Causing Valley Land to Sink

SACRAMENTO, CA — As Californians continue pumping groundwater in response to the historic drought, the Department of Water Resources today released a new NASA report showing land in the San Joaquin Valley is sinking faster than ever before, nearly two inches per month in some locations.

“Because of increased pumping, groundwater levels are reaching record lows—up to 100 feet lower than previous records,” said Department of Water Resources Director Mark Cowin. “As extensive groundwater pumping continues, the land is sinking more rapidly and this puts nearby infrastructure at greater risk of costly damage.”

Sinking land, known as subsidence, has occurred for decades in California because of excessive groundwater pumping during drought conditions, but the new NASA data shows the sinking is happening faster, putting infrastructure on the surface at growing risk of damage. NASA obtained the subsidence data by comparing satellite images of the Earth’s surface over time.

Land near Corcoran in the Tulare basin sank 13 inches in just eight months—about 1.6 inches per month. One area in the Sacramento Valley was sinking approximately half-an-inch per month, faster than previous measurements. NASA also found areas near the California Aqueduct sank up to 12.5 inches, with eight inches of that occurring in just four months of 2014.

The increased subsidence rates have the potential to damage local, state, and federal infrastructure, including aqueducts, bridges, roads, and flood control structures. Long-term subsidence has already destroyed thousands of public and private groundwater well casings in

the San Joaquin Valley. Over time, subsidence can permanently reduce the underground aquifer's water storage capacity.



The land sank so much at this location at the Delta-Mendota Canal, that now this bridge nearly touches the water.

In response to the new findings, and as part of an ongoing effort to respond to the effects of California's historic drought, the Governor's Drought Task Force has committed to working with affected communities to develop near-term and long-term recommendations to reduce the rate of sinking and address risks to infrastructure. This action builds on the historic Sustainable Groundwater Management Act, enacted by Governor Edmund G. Brown Jr. in September 2014, which requires local governments to form sustainable groundwater agencies that will regulate pumping and recharge to better manage groundwater supplies.

"Groundwater acts as a savings account to provide supplies during drought, but the NASA report shows the consequences of excessive withdrawals as we head into the fifth year of historic drought," Director Cowin said. "We will work together with counties, local water districts, and affected communities to identify ways to slow the rate of subsidence and protect vital infrastructure such as canals, pumping stations, bridges, and wells."

The Department of Water Resources is also launching a \$10 million program to help counties with stressed groundwater basins to develop or strengthen local ordinances and conservation plans. This funding comes from the statewide Water Bond passed last year, and applications for funding will be posted in the coming days. This year's budget passed in July also enables

streamlined environmental review for any county ordinance that reduces groundwater pumping.

NASA will also continue its subsidence monitoring, using data from the European Space Agency's recently launched Sentinel-1 mission to cover a broader area and identify more vulnerable locations.

DWR also completed a recent land survey along the Aqueduct--which found 70-plus miles in Fresno, Kings, and Kern counties sank more than 1.25 feet in two years--and will now conduct a system-wide evaluation of subsidence along the California Aqueduct and the condition of State Water Project facilities. The evaluation will help the department develop a capital improvement program to repair damage from subsidence. Past evaluations found that segments of the Aqueduct from Los Banos to Lost Hills sank more than five feet since construction.

The report, Progress Report: Subsidence in the Central Valley, California, prepared for DWR by researchers at the National Aeronautics and Space Administration's (NASA's) Jet Propulsion Laboratory, is available here:

<http://www.water.ca.gov/waterconditions/index.cfm>

California has been dealing with the effects of drought for four years. To learn about all the actions the state has taken to manage our water system and cope with the impacts of the drought, visit Drought.CA.Gov. Every Californian should take steps to conserve water. Find out how at SaveOurWater.com.

