

# Agency predicts woes for Calif. supplies under climate change

Debra Kahn, Environment & Energy Publishing, 3-16-16

Climate change will hurt water deliveries to California farmers by the end of the century, according to a new study by the U.S. Bureau of Reclamation.

The study finds effects both from changes in precipitation patterns and from rising sea levels, which will push salt water into the freshwater supplies of the Sacramento-San Joaquin River Delta, the state's main source of water deliveries.

The report describes an overlapping set of effects that will hurt both farmers and endangered fish -- populations are already in conflict over the state's limited water resources. It details expected changes in the San Joaquin and Sacramento river basins, as well as the Tulare Lake and upper Trinity River basins, which also flow into the delta.

"These basins are at the center of discussions about the availability of water in California, not only for agriculture, but for municipal and environmental needs as well," said Reclamation Commissioner Estevan López.

"Because of the collaborative efforts put forth in this basin study, we now have more information on how climate change will impact this region and a better understanding of what will be needed to ensure a sustainable water supply for today and for the future," he said.

The report finds "profound" effects from sea-level rise. It cites the National Research Council's median estimate of 36 inches of sea-level rise by 2100, which would increase saltwater intrusion, damaging water quality for both fish and farmers.

"Factors such as tidal and storm surge, combined with sea level rise, could result in Delta island levee failures and more sea water intrusion into the Delta," the report says.

More precipitation falling as rain rather than snow also is expected to fill reservoirs earlier in the year, which in turn will require reservoir managers to empty them earlier in order to prevent flooding. The report suggests that the U.S. Army Corps of Engineers change its rules governing flood control releases so Reclamation can keep more water in storage to allow for "increased flexibility under future conditions."

Fish populations in the delta will also suffer from reduced reservoir storage. Reduced storage limits supplies of cold water, which federal water managers release during key spawning periods in the summer and fall. Shasta Lake, in Northern California, is already having trouble maintaining a cold-water pool for endangered chinook salmon (*Greenwire*, Nov. 5, 2015).

The report projects that cold-water storage in Shasta by the end of May will fall by 9 percent.

In turn, agricultural customers will see decreased deliveries as the fishes' requirements cut into their supplies. All told, increased salinity and shifting precipitation patterns are expected to decrease deliveries from the state and federal water projects in the delta by 3 percent.

The report was funded by the Department of the Interior's WaterSMART program, aimed at planning for climate change's effects on water supplies. Other funders were the California Department of Water Resources, El Dorado County Water Agency, Stockton East Water District, California Partnership for the San Joaquin Valley and Madera County Resource Management Agency.