

Deepening water crisis in California driven by drought, wildfires and infrastructure

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California is continuing to experience its worst-ever ongoing drought, fueling wildfires, and costing thousands of jobs. The state's decaying infrastructure is completely incapable of meeting the challenges as exemplified by the burst water main that flooded the University of California Los Angeles campus with 20 million gallons of water.

2014 is the third-driest year on record in California. The current drought has seen the largest reduction in surface water in the state's history. Water from rivers and lakes in the agricultural Central Valley is expected to drop by one-third as compared to a normal year.

Researchers at the University of California Davis (UCD) updated their estimates of the drought's economic impact earlier this month. Total job losses due to drought conditions are now expected to total 17,100 and 428,000 acres of farmland are expected to lie fallow. The total agricultural economic loss is estimated at \$2.2 billion.

Drought conditions are expected to continue for several years even if an El Niño event in the Pacific significantly increases rainfall. According to Mark Schwarz, director of the UC Davis John Muir Institute of Environmental Studies, California has experienced a "protracted period of time when we've had several short droughts, it may really require a protracted period of several El Niños in a row or several wet years in a row to really make a difference."

Even if the drought becomes less severe in the next few years, many of its effects will be compounded without exceptional levels of rainfall.

Normally, Central Valley agriculture uses about 26 million acre-feet (MAF) a year in water with 18 MAF coming from surface water and 8 MAF from groundwater pumping. Because of the drought, surface water use will drop 6.5 MAF while pumping will increase by 5 MAF to compensate. This 62 percent increase in groundwater pumping will make the state less resistant to future droughts.

Over-pumping will lower the water table of some aquifers by tens of feet, causing a host of problems. Shallower wells will run dry, the capacity of the aquifer will diminish through subsidence, and overall pumping costs will increase.

California is currently the only Western state that does not regulate or even monitor groundwater use. Instead, wells are maintained on a private ad-hoc basis.

Another significant effect of the drought has been a more severe fire season. Since the start of this year there have been 3,400 wildfires burning more than 51,000 acres of land. This has been driven by an unusually warm winter, with most of the state recording record high temperatures in the first six months of 2014. By comparison, under average conditions 2,500 fires would burn around 30,000 acres in an entire year.

Currently, two large fires in the state are being brought under control. The Sand Fire in the Sierra Nevada foothills, east of Sacramento, is now 85 percent contained after burning over 4,000 acres and destroying 19 homes. At its peak, it occupied nearly 2,000 firefighters.

A second fire, which began last Saturday near Yosemite National Park, was only 34 percent contained after burning through 3,500 acres and forcing the evacuation of 100 homes.

The director of the Office of Wildland Fire told the *Christian Science Monitor*: "The amount and intensity of forest fires tends to increase every year. This year we expect to spend as much as \$1.8 billion—nearly \$500 million more than available to the Forest Service and the Interior Department."

While fires have been growing more intense, the budget for firefighting at the city, county, and state level has been cut. Cities facing budget deficits have, in cases like Vallejo, halved their fire departments.

The state Department of Forestry and Fire Prevention (Cal Fire) meanwhile, relies heavily on prison labor to

keep its expenses down. By paying 4,300 convicts \$1 an hour while fighting fires and \$2 a day during the off-season, the state estimates it saves \$80 million a year. As part of Governor Brown's budget measures, though, Cal Fire expects to lose 1,500 of these near-slaves as more non-violent offenders are shifted to county jails.

The state infrastructure is woefully outdated and incapable of providing water to cities and farms on a rational basis.

While the state legislature has passed a bill authorizing \$500-a-day fines for people who waste water by washing their cars without a nozzle or overwater their lawns, a 100-year-old water main in Los Angeles broke, spilling 20 million gallons of water and flooding much of the UCLA campus.

The rupture occurred at a juncture of a 30-inch pipe installed in 1921 and a 36-inch pipe installed in 1956. The break left a 25-foot wide sinkhole in the middle of Sunset Blvd. and flooded six buildings and two parking structures on the college campus. Nearly 900 cars were stuck in the garages, almost half of them entirely submerged.

The leak began at 3:30 p.m. and was only shut off at 7:00. Repair crews got stuck in rush-hour traffic and needed time to research which valves to close.

There are currently no overall damage estimates available as repairs can't be completed until the water subsides.

The antiquated water infrastructure in LA is not fundamentally different from the statewide water system based off a patchwork series of dams and aqueducts and private water rights. Major projects like the Los Angeles Aqueduct, built in 1907, are showing their age and private claims based off of Spanish land grants and turn-of-the-century robber barons prevent any scientific water management.

Researchers at UC Davis concluded that in an average year, legal claims on water in California are five times larger than the actual flows available.



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