

# How California is Coping with Drought

Tanya Trujillo, Colorado River Board of California

*Tanya Trujillo is the executive director of the Colorado River Board of California. The Colorado River Board is designated by California law to represent the State of California on issues relating to the Colorado River System. Tanya previously served as counselor to the Assistant Secretary for Water and Science with the Department of the Interior and counsel to the Senate Energy and Natural Resources Committee's Subcommittee on Water and Power, in Washington, D.C. Tanya also served as general counsel to the New Mexico Interstate Stream Commission, and prior to working for the State of New Mexico, she was a partner at Holland & Hart in Santa Fe, New Mexico with an emphasis on natural resources issues. She received an undergraduate degree from Stanford University and a law degree from the University of Iowa College of Law.*



Figure 1. Introduction.

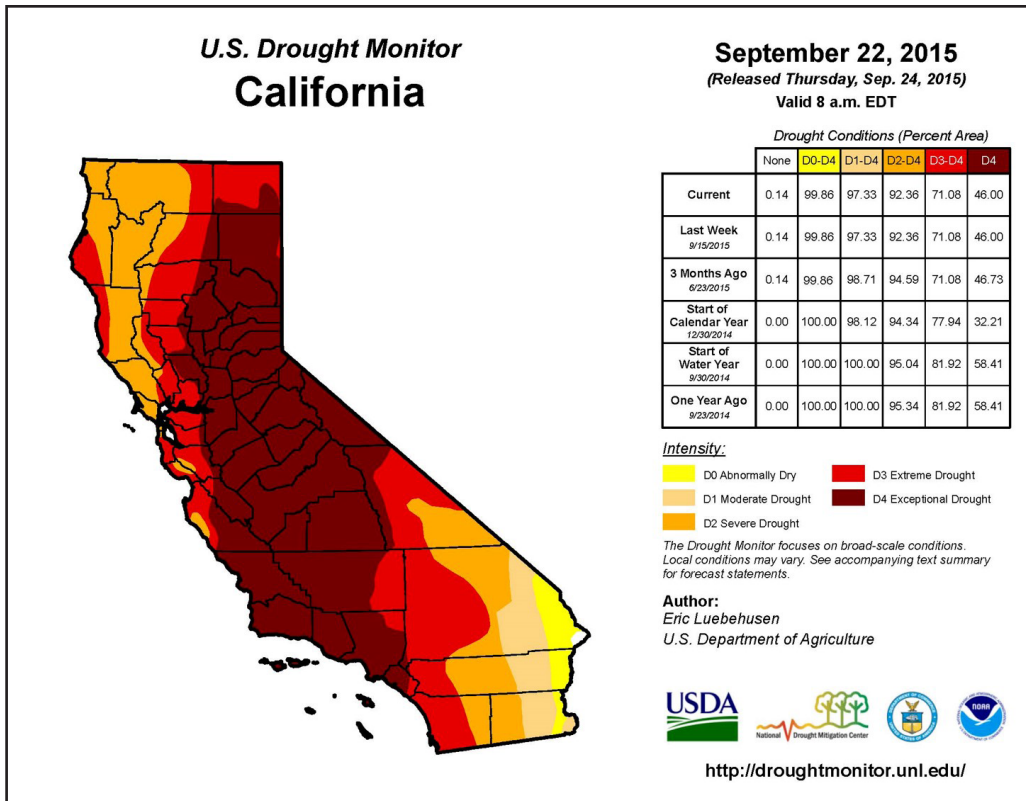


Figure 2. U.S. Drought Monitor for California.

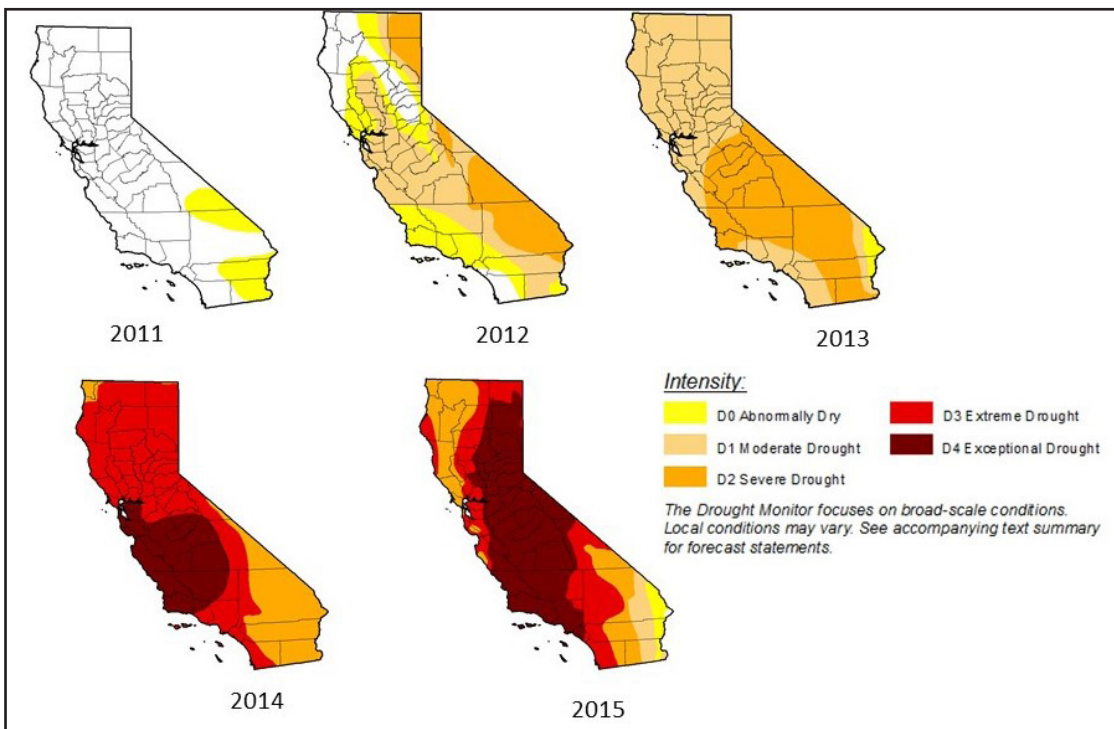


Figure 3. California drought progression from 2011-2015.

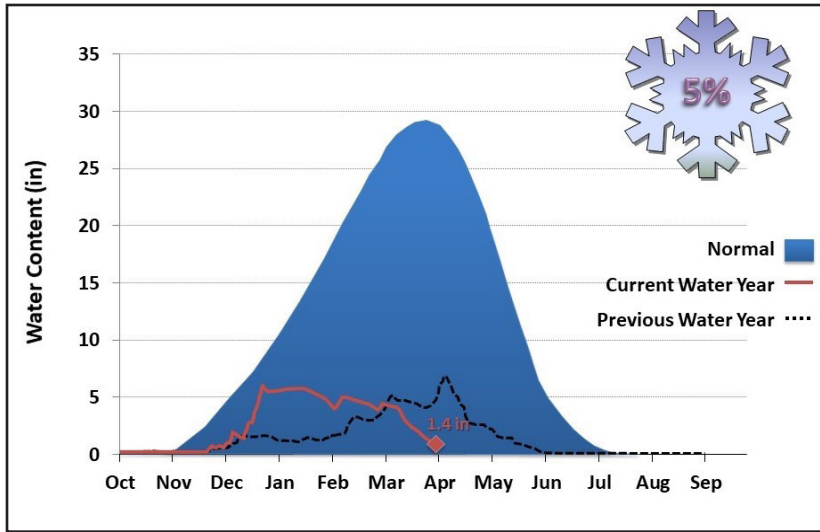


Figure 4. Snowpack water content on April 1, 2015.

Figure 5. Measurement of snowpack on April 1, 2015.

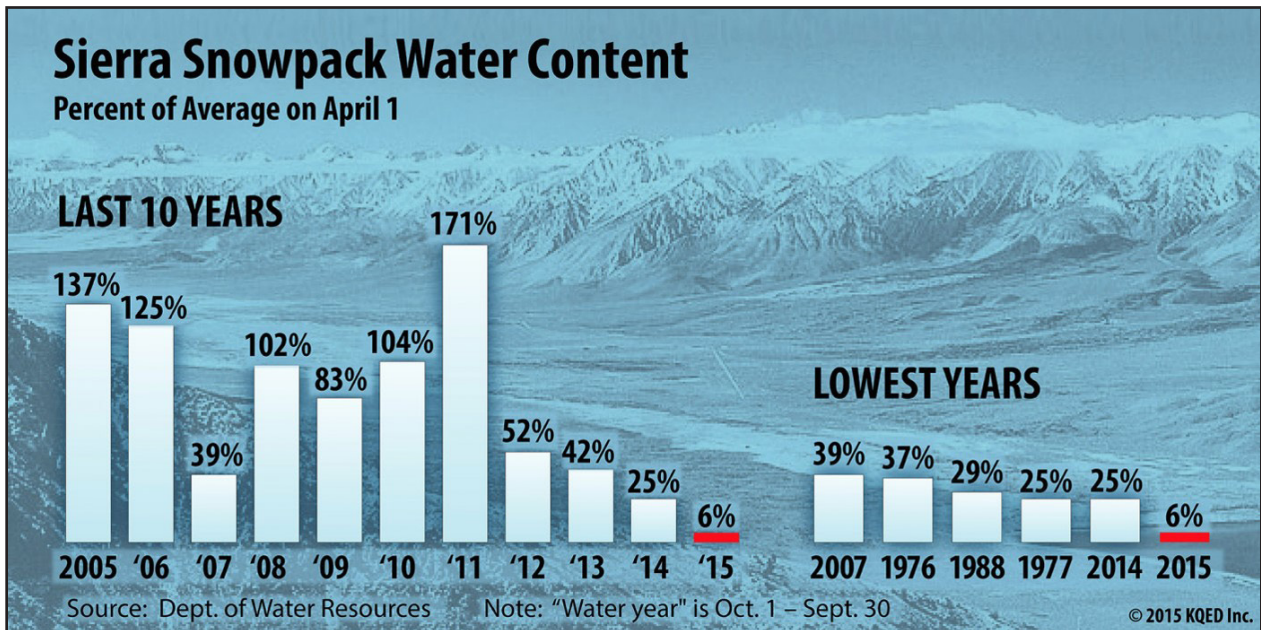


Figure 6. Comparing the April 1, 2015 snowpack to the snowpack of the past ten years.



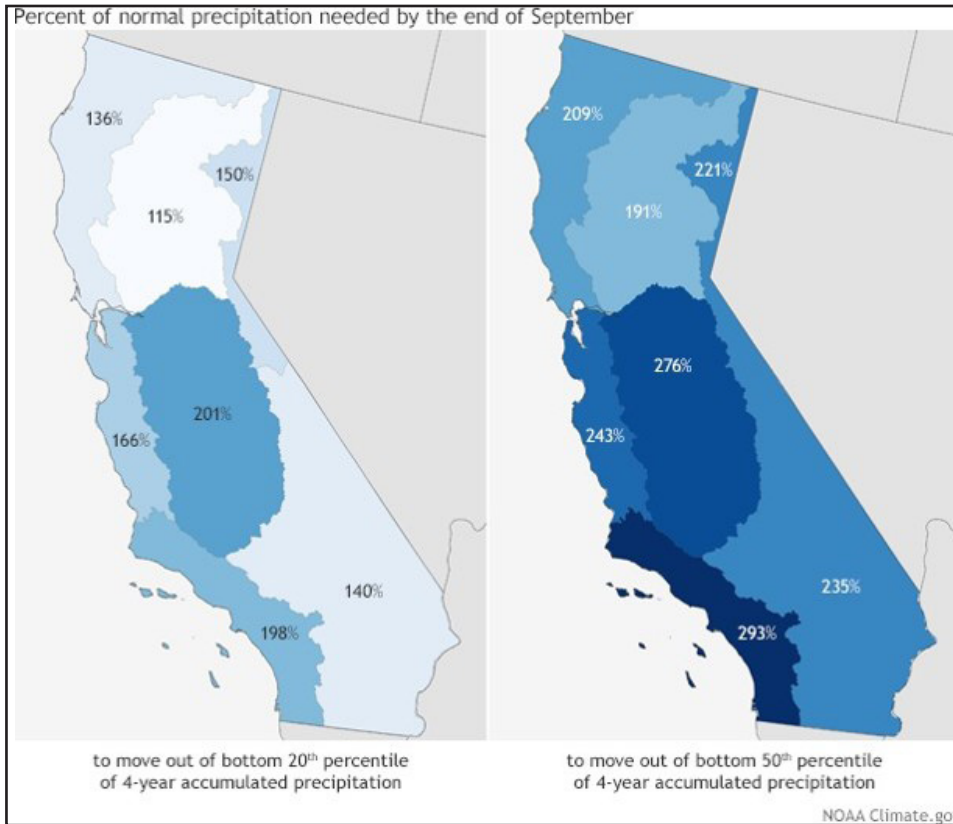


Figure 7. Precipitation deficits.

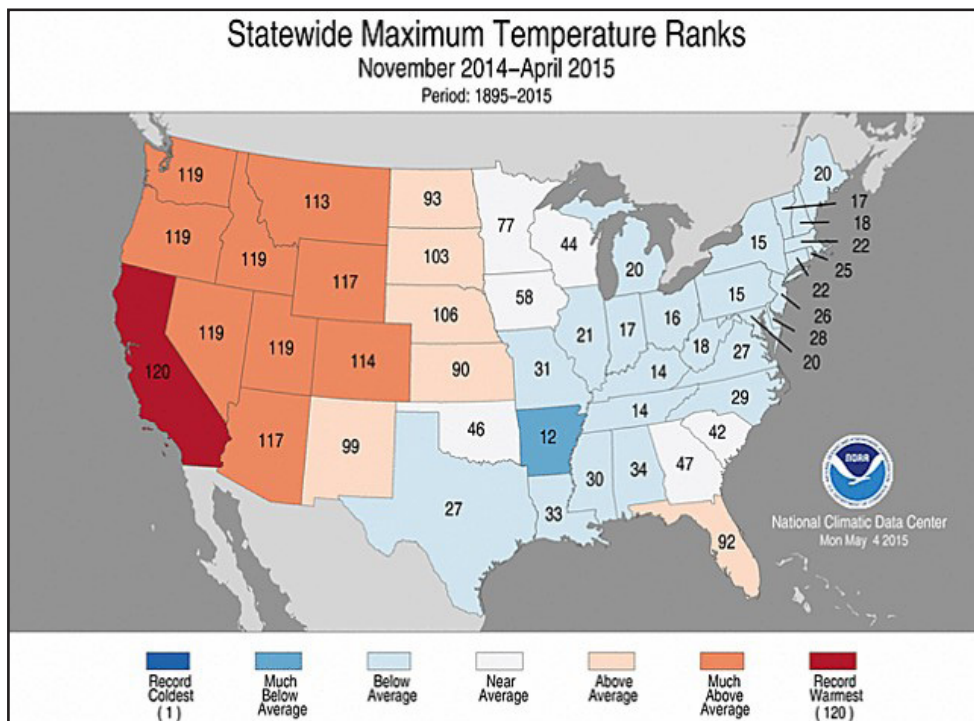


Figure 8. Maximum temperature rankings across the U.S.

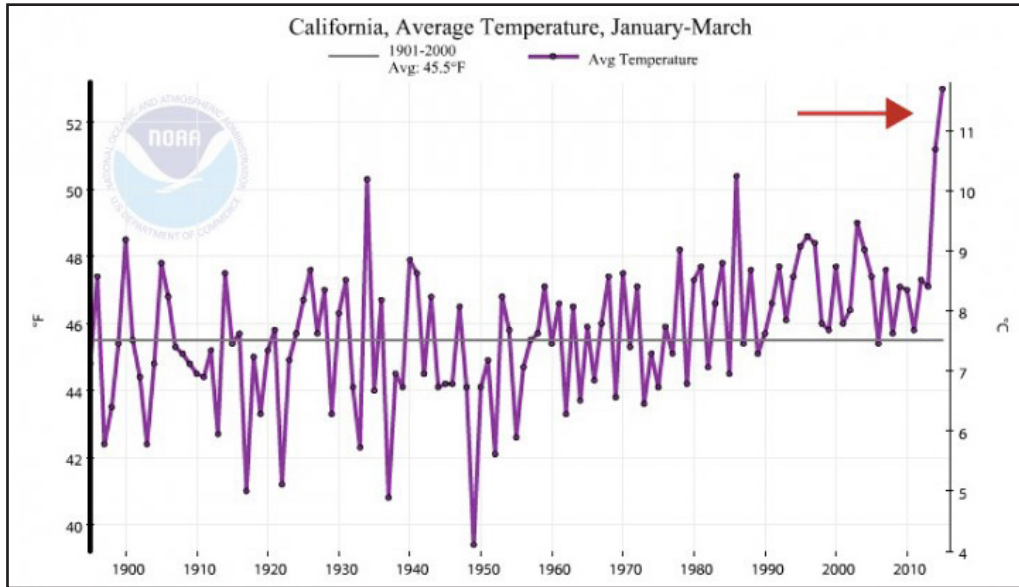


Figure 9. Average temperature from January-March in California from 1901-2000.



Figure 10. Impacts of drought.

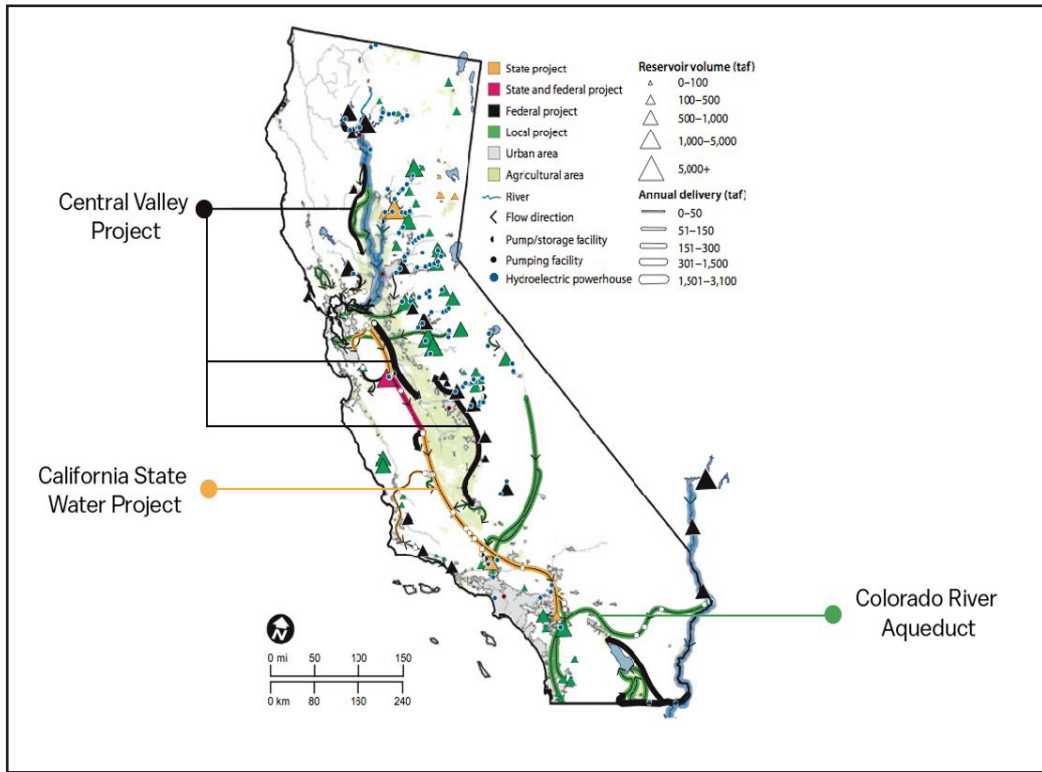


Figure 11. California’s water supply sources.

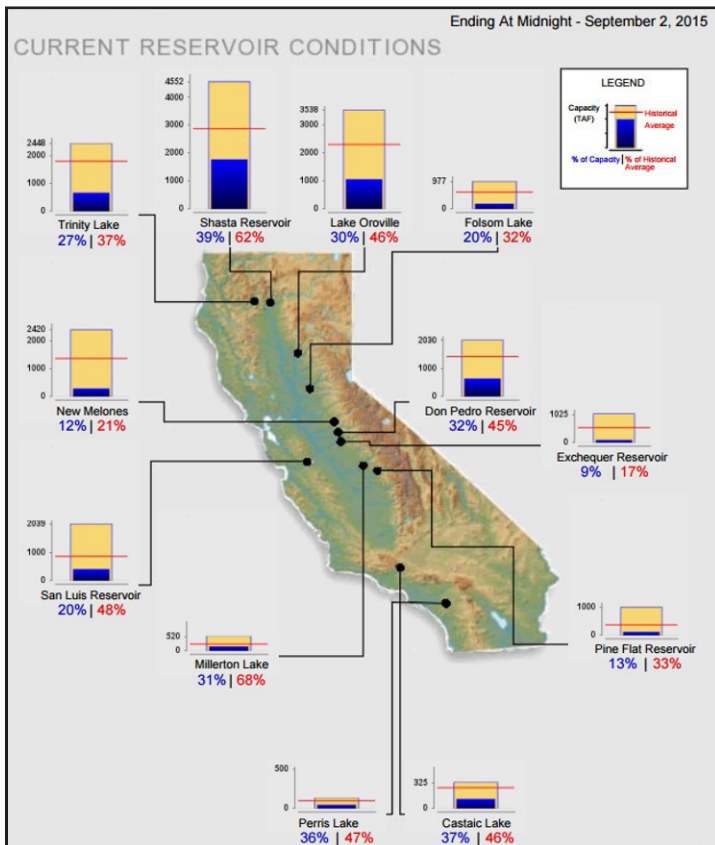


Figure 12. California’s water supply conditions. State reservoirs are all below average capacity. The results for the 2013 SWP showed surface water allocations reduced by 35%. The results for the 2014 SWP showed surface water allocations reduced by 0-5%. The results for the 2015 SWP showed surface water allocations reduced by 20%. Results showed increase use of groundwater and decreased water levels. Also, a reduction in hydropower generation resulting in \$1.4 billion for current drought (34 million MWh).



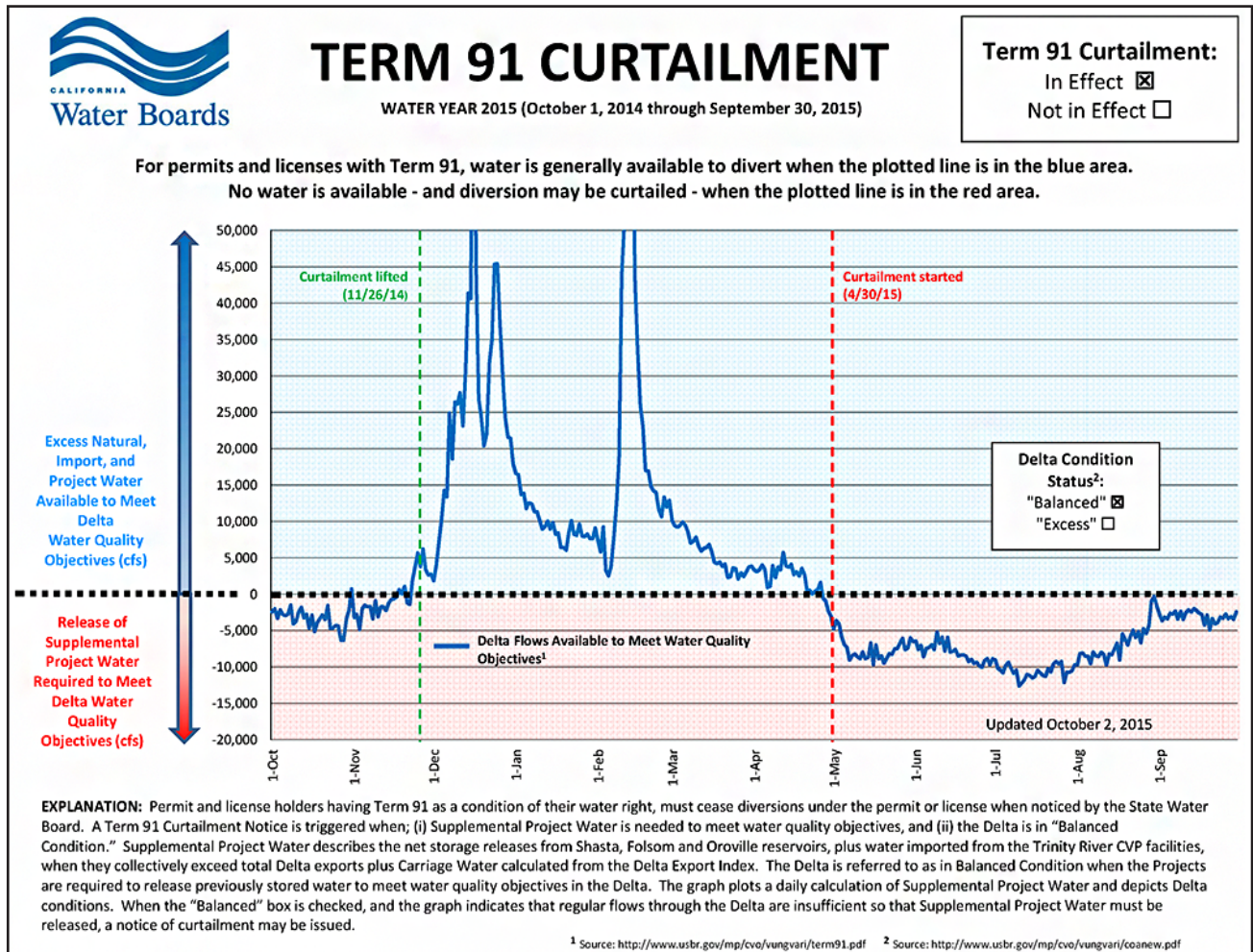


Figure 13. State Water Boards curtail water rights in Sacramento River and Delta on April 30, 2015.

# Additional Drought Impacts

Water Rights News

### Senior Water Rights Curtailed in Delta, San Joaquin & Sacramento Watersheds

**For Immediate Release**  
 June 12, 2015

Contact: Tim Moran  
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 George Kostyrko  
[George.Kostyrko@waterboards.ca.gov](mailto:George.Kostyrko@waterboards.ca.gov)

**SACRAMENTO** – With drought conditions continuing into the summer months, the State Water Resources Control Board (State Water Board) announced today that there is insufficient water available for senior water right holders with a priority date of 1903 or later in the San Joaquin and Sacramento watersheds and the Delta. The need for further curtailment of more senior rights and curtailments in other watersheds is being assessed weekly.

Notices are being sent to water right holders that direct recipients to stop diversions of water to protect more senior water rights and releases of previously stored water, as required by state law. Diversion of water when water is not available under the right holder's date of priority is unauthorized and unlawful. Violations are subject to fines up to \$1,000 per day and \$2,500 per acre-foot of water unlawfully diverted, cease and desist orders, or prosecution in court.

Senior water right holders with priority dates earlier than 1903 in the affected watersheds can continue to divert water in accordance with their water right. In addition, those who have previously stored water under a valid right may continue to hold that water or release it for beneficial use.

While this is the first time during the current drought that senior water right holders have been given notice that water is not available to serve their water right priority, it is not unprecedented. Some senior water right holders were curtailed during the drought of the late 1970s.

**Water Rights Affected by This Notice**  
 Today's curtailment notices affect 276 pre-1914 appropriative water rights held by 114 right holders. Today's notices do not affect any riparian right holders. The water rights affected include:

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
 STATE WATER RESOURCES CONTROL BOARD  
 1001 I Street, Sacramento, CA 95814 • Mailing Address: P.O. Box 190, Sacramento, CA 95812-0190 • [www.waterboards.ca.gov](http://www.waterboards.ca.gov)

Media Release

### Drought Conditions Force Difficult Management Decisions For Sacramento River Temperatures

**For Immediate Release:** (Agency Contact Information at Bottom of Release)  
 June 16, 2015

**SACRAMENTO** – State and federal officials today announced the outlines of a revised plan for managing water flows in the Sacramento River for cities and farms while keeping enough cold water in Shasta Reservoir to avoid high temperatures in the river that could be catastrophic for endangered winter-run Chinook salmon.

The Sacramento River Temperature Management Plan, which is required annually, guides the release of water from Shasta Reservoir to maintain healthy fisheries during the summer and fall, when water temperatures rise. In this fourth year of extended drought, with low reservoir storage levels and higher-than-normal predicted summer temperatures, the plan seeks to prevent another catastrophic loss of this year's class of juvenile salmon. Federal and state fish agencies believe such a loss would have devastating impacts to the long-term viability of this important species of native salmon.

"Changes in Shasta operations will have a system-wide effect on Central Valley Project and State Water Project operations and water supplies," said David Murillo, regional director of the U.S. Bureau of Reclamation (Reclamation), which operates Shasta Reservoir, California's largest reservoir. "Every effort will be made to minimize the water supply effects of the adjusted operations and to ensure that water is provided to meet community needs."

Changing releases from Shasta Reservoir this summer will affect operations of the federal and state water projects and the ability of Reclamation to deliver water to long-time water rights holders, although the extent of these impacts has not yet been quantified. Coordinating with the state and federal fishery agencies, Reclamation and the California Department of Water Resources, which operate the projects, will rely on rigorous real-time management and system flexibility to minimize impacts on water users.

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Figure 14. Additional drought impacts media announcements.



**Domestic water**

- Emergency community water tanks/bottled water

**Emergency Food Aid/Utility Assistance**

- Over 700,000 boxes of food delivered to food banks
- \$10.6 million for help with rent/water bills

**Farm Economy**

- 2015 statewide economic cost = \$2.7 billion
- 563,800 fewer acres irrigated in 2015
- 18,600 fewer jobs in 2015

**Fish and Wildlife Impacts**





Figure 15. Additional drought impacts.

**Fires**

- Greater number of fires with higher intensity burns and post-fire damages (mud slides)
- \$54 million more funding for CALFire and \$1 billion estimated for Forest Service this season
- Since the beginning of the year, CALFIRE and US Forest Service have responded to 7,187 wildfires across the state burning 766,974 acres




Valley Fire, Lake, Napa, & Sonoma County

Butte Fire, Amador & Calaveras County

Figure 16. Drought impacts on fire.





Dec. 2013	Drought Task Force established after driest conditions on record	   
Jan. 2014	Drought State of Emergency - Zero allocations for State and Federal Water Projects	
Mar. 2014	\$829 million in drought relief funding	
July 2014	Mandatory water conservation regulations - targeting outdoor urban use	
Nov. 2014	\$7.5 Billion Bond - Prop 1 Approved	

Figure 17. State drought response timeline of major actions.

Mar. 2015

\$1 Billion emergency drought relief funding

Apr. 2015

Executive Order requires statewide mandatory water reductions of 25%

State Board Regulations to implement the Executive Order

**April 1 Executive Order Emphasized Four Actions:**

- Conserve water (emphasis on outdoor uses)
- Increase enforcement efforts
- Streamline government responses
- Invest in new technologies



Figure 18. State drought response timeline of major actions (cont.).

**Prohibitions for everyone**  
(Most in place since August 2014)

- No potable water on sidewalks or driveways
- No hoses without shutoff nozzles
- No outdoor landscape irrigation within 48 hours following measurable precipitation
- No potable water to irrigate public street medians
- No potable water to irrigate outside of newly constructed homes and buildings without drip or microspray systems
- No water in restaurants without request








Figure 19. State Water Board's actions to implement April 1 executive order.

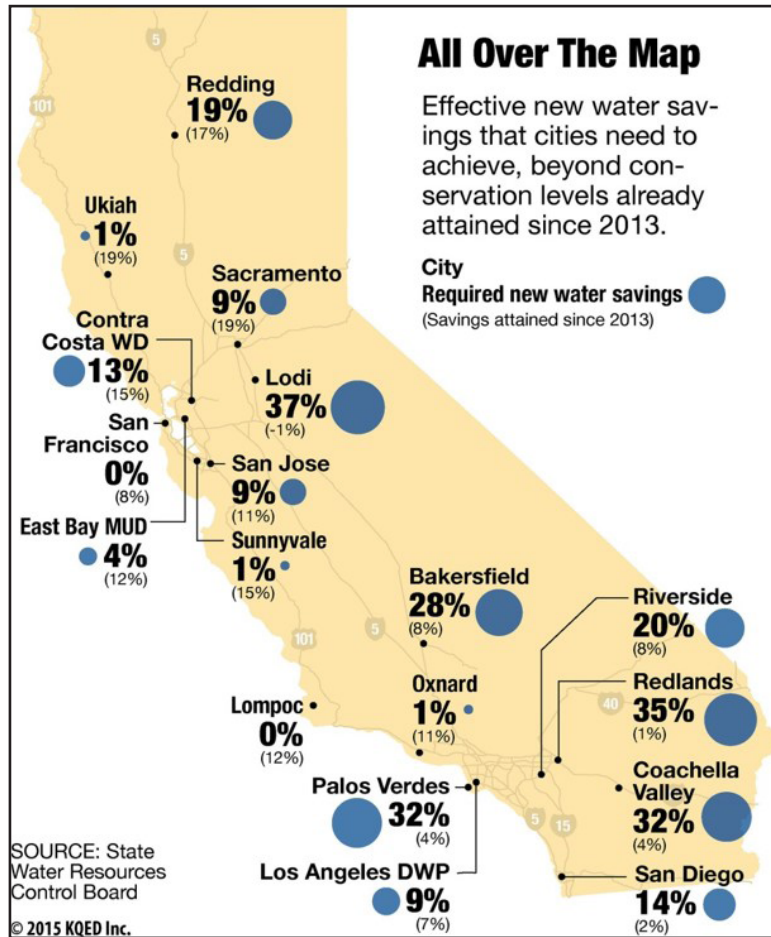


Figure 20. Save our water. Water supply reductions 25% statewide.

- Californians continue to meet Governor’s water conservation mandate
  - Reduced water use by 27% in August, exceeding 25% mandate for a third straight month
  - Cumulative savings rate = 28.7%
  - 611,566 acre-feet conserved from June to August 2015
- 25% water conservation goal by February 2016 = 1.2 million acre-feet of water conserved
- Continued public outreach efforts - “Save our Water” campaign statewide

Figure 21. State drought response progress.

- Level 3 cutbacks starting in July, with a 15% reduction in wholesale water use
- \$450 Million budgeted for conservation programs over two years for turf-removal, conservation, recycling, groundwater recovery, infrastructure improvements
- Outreach and funding initiatives to support drought response activities
- Accelerate recycling, groundwater cleanup, stormwater capture and desalination with member agencies

MWD per capita use has declined 24% since 1980s with population increase of 5 million

Figure 22. Local drought response for the Metropolitan Water District.

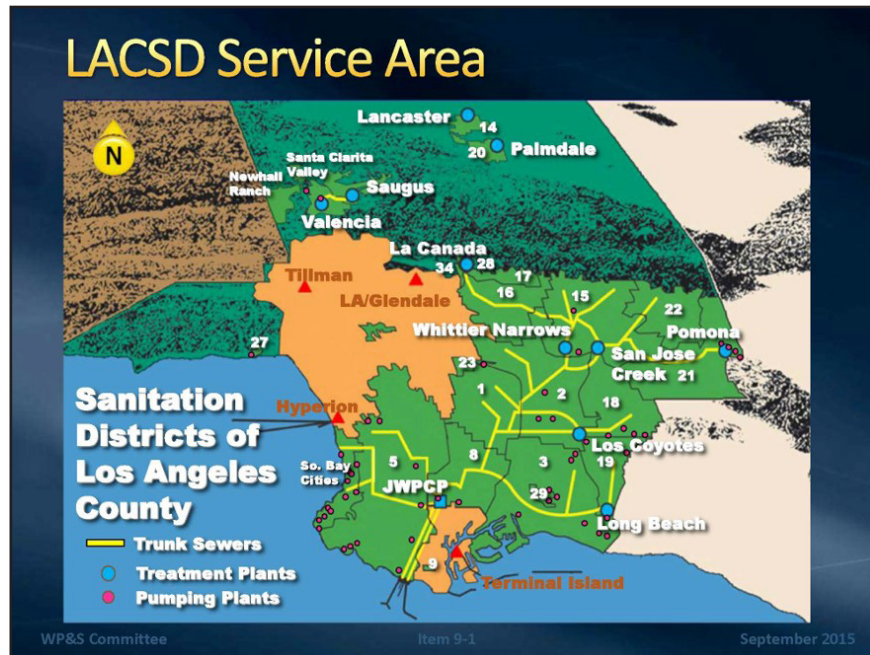


Figure 23. Local drought response for the Metropolitan Water District. Potential recycled water supply program propose purifying and reusing treated waste water within LA County to recharge groundwater basins and augment water supplies in Southern California.

- Water Conservation Response Unit
  - 8-minute watering cycle 2 times/wk
  - No irrigation between 9 - 4
  - Community patrols and conservation education
- Rebates for water conservation devices
  - washers and toilets
  - faucet aerators, showerheads
- California Friendly Landscape Incentive Program
  - Turf replacement rebate program and landscape improvements within the right-of-way





  

  


Figure 24. Local drought response from Los Angeles Department of Water and Power.



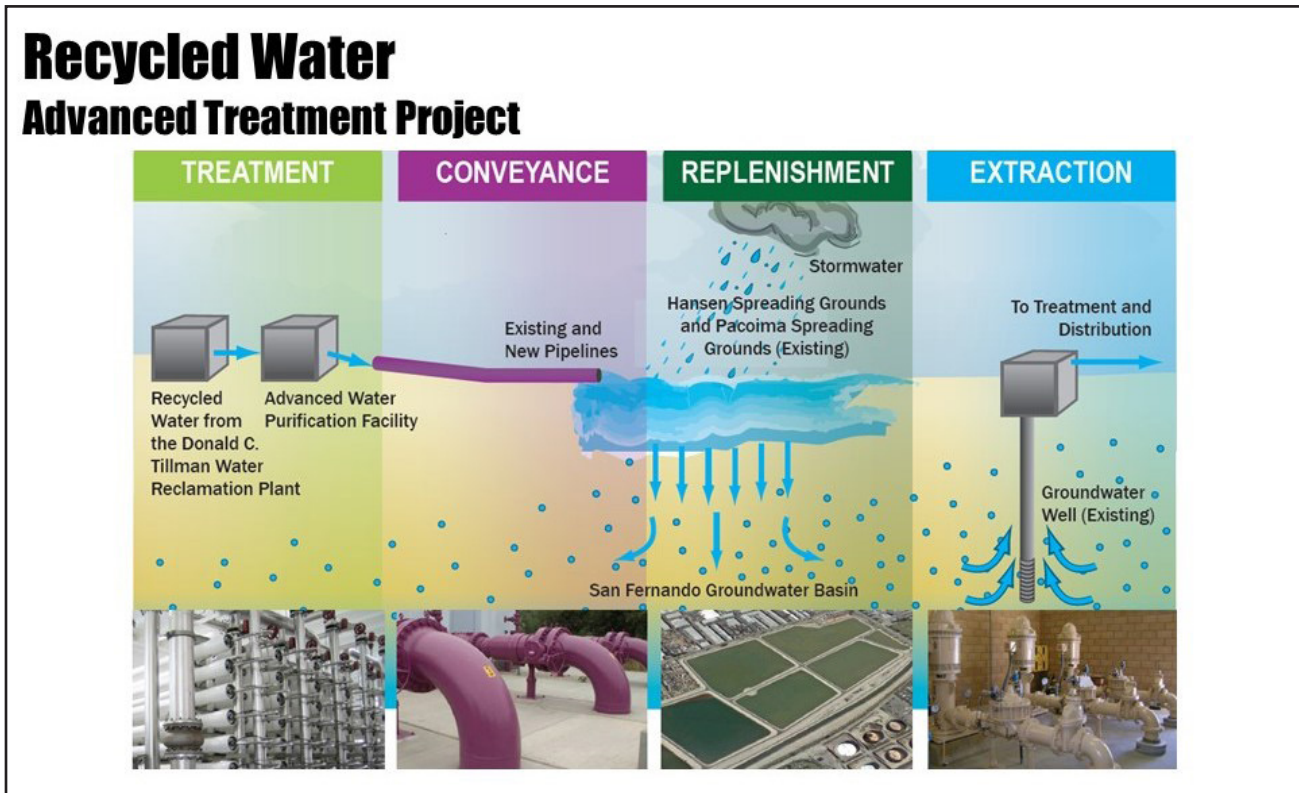
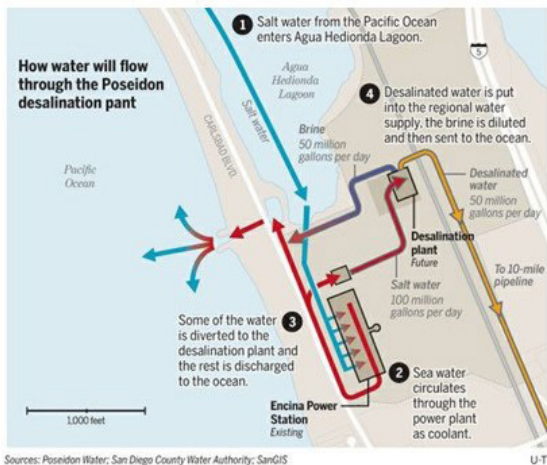
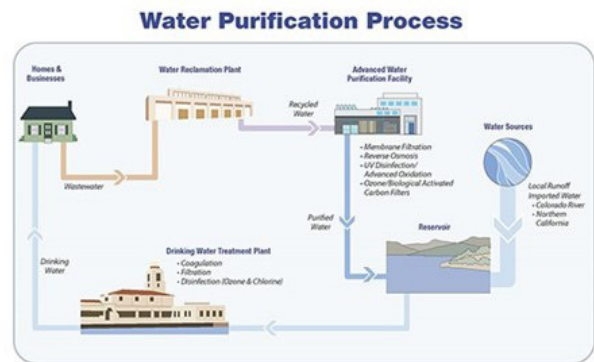


Figure 25. Local drought response from Los Angeles Department of Water and Power (cont.).

- Pure Water San Diego
  - Purify recycled water through membrane filtration, reverse osmosis and advanced oxidation with ultraviolet light



### Carlsbad Desalination Plant

- 50 million gallons of drinking water will be added to regional water supply



Figure 26. Local drought response in San Diego.

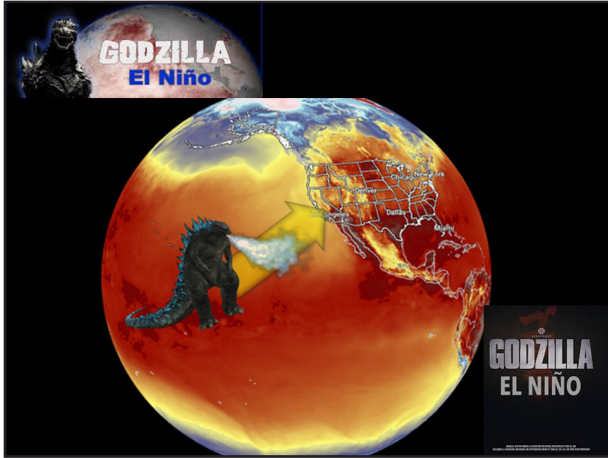


Figure 27. El Nino.



Figure 28. Website for California drought monitoring.

Table 1. Drought funding from state and federal sources (millions of dollars)

	State	Federal
Emergency community assistance	\$200	\$358
Impacted communities, workers (food, housing, training)	\$102	\$78
Safe drinking water systems	\$90	\$17
Technical guidance and planning	\$8	\$14
Feed subsidies for livestock producers*	\$0	\$250
Emergency ecosystem support	\$66	\$67
Emergency fire protection	\$131	\$4
Water system investments**	\$2,609	\$104
<b>Total</b>	<b>\$3,006</b>	<b>\$534</b>

SOURCES: Legislative Analyst's Office and White House fact sheets.  
 NOTES: The table includes funding from fiscal years 2013-14, 2014-15, and 2015-16. For details, see technical appendix tables A2 and A3.  
 \*In 2015, more than \$1 billion was announced to support livestock producers in all western states. We assume California's share will be equal to its 2014 allocation (\$25 million).  
 \*\*Most state water system investment support comes from voter-approved state bond funds. Many of these investments will take some time to implement.

Figure 29. State and federal funding in response to the state drought.