

WATER PRIORITIES NEED A REBOOT

By C. Scott Kirk

California's water laws and infrastructure harken back to the Gold Rush days when water was plentiful and users few. In the early twentieth century the Los Angeles Aqueduct began moving water over hundreds of miles from the Owens Valley to provide for the L.A. multitudes without harming the sparse populations of rural California. Subsequently, through the twentieth century the Central Valley Water Project and the State Water Project were constructed to move even more water much further from North to South.

Times have changed, and presently our water laws and infrastructure lack a sense of the present, not to mention ingenuity and foresight. It remains remarkable that our progressive and innovative State continues to address water issues without regard to present hydrological realities or modern water technology. It is time to reset our thoughts about water use and infrastructure.

The swollen rivers and dams of 2017 provide little assurance that water will be available one, two, or three years hence. Our best estimates of Climate Change, er ... Science indicates that our weather patterns will be even more extreme in the coming years, making it highly unlikely that dams, rivers, aqueducts, and underground aquifers will provide a sustainable water source for California's future needs. Water is a finite resource that is no longer subject to the historic practice of taking as much as you need from any available source. Any declaration that the drought is over is shortsighted. Central and Southern California must plan for consistent water deficits.

Without completely rewriting California Water Law, three major issues must be addressed immediately by Californians to best secure our water future. First, groundwater resources must be protected and secured immediately, not 10 to 20 years hence. Best practices of water conservation and water management must be mandated throughout the state for both agricultural and urban users. And most important, we cannot deliver more water to arid areas of the state. New water users must develop new water resources.

Groundwater

Through the last five years, groundwater basins have been tapped to satisfy the unquenched thirst of California's Central Valley and Southern California's arid regions. For purposes of inefficient agricultural production and the ever-increasing population of the desert, California's underground water banks have been depleted without any clear understanding of how future deposits may replenish those accounts.

State leaders' attempts to address groundwater overdraft have been lethargic. Through various means they have recognized the overdraft, but continue to allow actions certain to cause impending water bankruptcy. Their ineffective efforts leave state water users at great risk of continuing shortages and permanent ecological damage. Recently, the California Water Action Plan 2016 Update states goals and policies, and recognizes that groundwater is being pumped from the earth at rates that are not rechargeable. The Action Plan notes many negative consequences of groundwater overdraft, and references the Sustainable

Groundwater Management Act of 2014 (SGMA) as a solution. Though the SGMA proposes steps to take in managing groundwater basins, it has no teeth. The Action Plan and the SGMA finally address the overdraft of groundwater basins, but these bureaucratic steps tread but lightly on the continuing, unrestricted water use that exacerbates an urgent groundwater crisis. State leaders know the groundwater basins will not be recharged through a single wet winter, but they remain unwilling and unable to restrict groundwater use.

The science behind groundwater recharge is in its nascent stage. How will earth that has collapsed due to groundwater pumping allow for new water storage to occur? How long does it take for the natural flow of surface water to disperse into the earth's banks for future use? And how many months of intentionally flooding overlying fields will it take to recharge depleted ground water basins beneath? These unanswered questions should cause deep concern and act to limit significant groundwater pumping.

California water laws and policies do not address these issues sufficiently. Timelines for sustainable groundwater management must be accelerated.

Conservation and Infrastructure Best Practices

California has made significant strides in addressing water conservation in the last decade, but more needs to be accomplished. It must be emphasized that half of the state is naturally arid, and we are continuing to grow

and develop farms and communities in those desert locales. A water conservation program modeled on Israel's should be adopted and managed consistently in California.

Prognosticators contemplating the effects of potential La Niñas and El Niños no longer make sense. More water is being used than is available, and best practice water conservation must become the norm. Innovative and current best practices for agricultural and urban water use must be mandated and enforced. This will necessarily include greater use of recycled water and drip irrigation.

Israel demonstrates that as much as 40% of water can be saved with drip systems, while crop yields can be doubled. Moreover, purified sewage can be reused for agricultural purposes. Even more recycled water can be used to increase river flow or for urban uses such as firefighting. Modern technology is available to realize these goals. Israel recycles 85 percent of its wastewater for agricultural use, and another 10 percent for various other uses. Only 5 percent remains untreated and washes to the sea. Further, desalination is a process now proven to be effective and affordable. It presently provides water to nearly half the citizens in Israel, and can provide millions of gallons of water for communities close to the ocean.¹

Furthermore, Best Practices must include improvements to infrastructure that will decrease the loss of water through evaporation and increase the water returned to the earth. Rather than investing in new water transfer projects capable of sending more water to users hundreds of miles away, public investment

¹ Tower Magazine, David Hazony, Issue 31, October 2015, How Israel is Solving the Global Water Crisis

must seek to improve existing water storage and transfer facilities. Dams, levies, aqueducts, and pipes must be improved to maximize efficiencies for their intended purposes.

Innovations in Best Practices will require a shift of the public's perceptions of water, as well as a technological reset. A cultural change must include statewide education and public relations projects that recognize the reality of a fresh water shortage. State leaders must install water conservation habits in all citizens at all times, whether the day is dry or wet.

New Water

Even after drought conditions raised the awareness of water instability, communities and farms in the dry regions of the state continue to prosper and grow, demanding increasing access to water supplies. These demands are met primarily through groundwater pumping and massive water transport projects constructed in the last century. The time for watering the deserts is over.

Historically, water was available for transport to drier areas. Today, expanding populations and agriculture in nearly every watershed will use most if not all of the water available. The Los Angeles Aqueduct allowed Los Angeles to grow, but at a cost of more than \$155 million in early twentieth century dollars. The greater cost, though, was the dewatering of the groundwater beneath Owens Valley and

the greater Central Valley. In the 1970s, as environmental awareness grew and the courts recognized the various beneficial uses in today's society, the amount of water transported from the valley to Los Angeles decreased significantly.²

Similarly, the Central Valley Water Project (CVWP) was devised and constructed to deliver more and better regulated water to the rich agricultural soils of the Central Valley. Between 1933 and the 1970s twenty dams and multiple pipelines and aqueducts were constructed to enable intense farming to propagate throughout central California. These facilities caused significant controversy, causing Congress to enact the Central Valley Project Improvement Act in 1992 to change water management practices in the Central Valley. These changes were intended to lessen the ecological impact of the project on the San Joaquin and Sacramento Rivers, but environmental damage continues. Moreover, due to inconsistent weather patterns and controversial farming practices, the project still fails to provide the water necessary to satisfy the demands of both agriculture and the environment.³

The State Water Project (SWP) also seeks to move water from Northern California to the urban centers of San Francisco and Los Angeles, as well as more water to the Central Valley farms and orchards. The competing users lobby extensively in Washington D.C. and

² ["2005 Urban Water Management Report"](#) (PDF). Los Angeles Department of Water and Power. p. ES-8. Retrieved 2013-10-28; ["Complete report on construction of the Los Angeles Aqueduct"](#). *Los Angeles Department of Public Service*.p.14-17; p. 271

³ ["California State Water Project and the Central Valley Project"](#). *California State Water Project*. California Department of Water Resources. 2008-04-29. Re-

trieved 2010-01-18; ["The Central Valley Project"](#). *Bureau of Reclamation History Program*. U.S. Bureau of Reclamation. 1994. Retrieved 2010-01-16; ["Central Valley Project Improvement Act"](#). *Mid-Pacific Region*. U.S Bureau of Reclamation. Retrieved 2010-01-16; ["Central Valley Project Improvement Act"](#), *Comprehensive Assessment and Monitoring Program*. U.S. Fish and Wildlife Service.

Sacramento to force additional infrastructure construction to satisfy all of their needs. Environmental issues, however, continue to plague the SWP. Like the CVWP, SWP's transfer and storage of so much water disrupts the natural environment in many ways detrimental to California business and industry.

Following the billions of dollars spent to move water from Northern California to Central and Southern California, the analysis of water use in the state must change. The amount of available water is increasingly precarious. Increasing the quantity of water transferred between watersheds fails to address the crucial issue: Outdated practices and rules only confirm there is not enough water for the population, the agricultural industry, and the environment.

More water is used throughout the state, and weather patterns are less predictable. Efficiency becomes mandatory, and conservation imperative every year, not just when rainfall is below average. Innovation and new water management priorities must replace water management practices of past centuries.

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