Solving the Colorado River's Problems

John Fleck, University of New Mexico, Water Resources Program

John Fleck is the newly appointed director of the University of New Mexico Water Resources Program. He previously served as the program's writer-in-residence, where he wrote Water is for Fighting Over: and Other Myths about Water in the West, published in 2016 by Island Press. A former journalist, he has written about the science, politics, and policy of water management for nearly three decades.

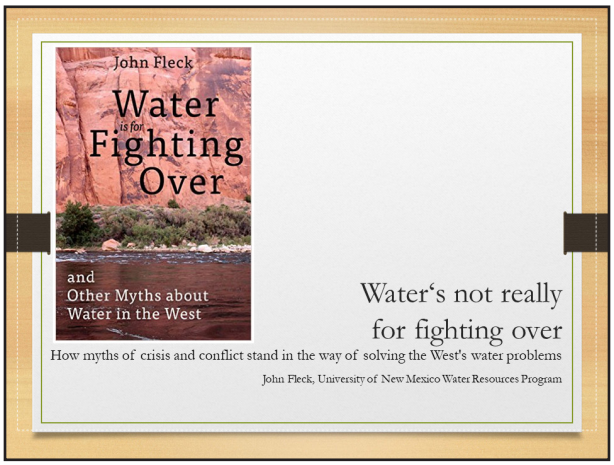

Figure 1. Water's not really for fighting over.

Figure 2. Greetings from Albuquerque in the "Upper Colorado River Basin."

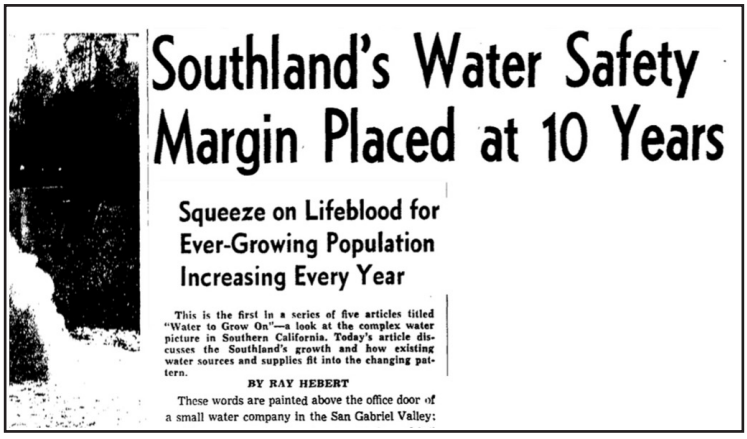

Figure 3. Myth number one: we're running out of water (Los Angeles Times, Jan. 24, 1960).

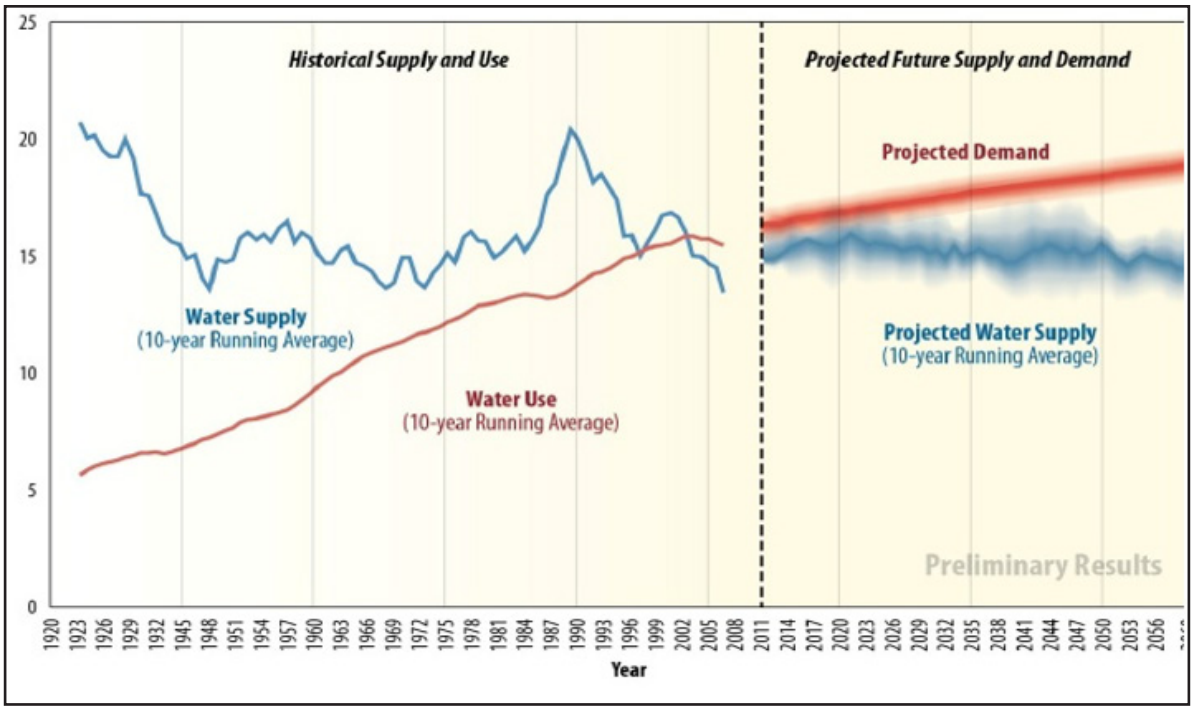

Figure 4. Myth number one: we're running out of water. Graph shows historical supply, use, and projected future Colorado River Basin supply and demand (USBR Basin Study, December 2012).

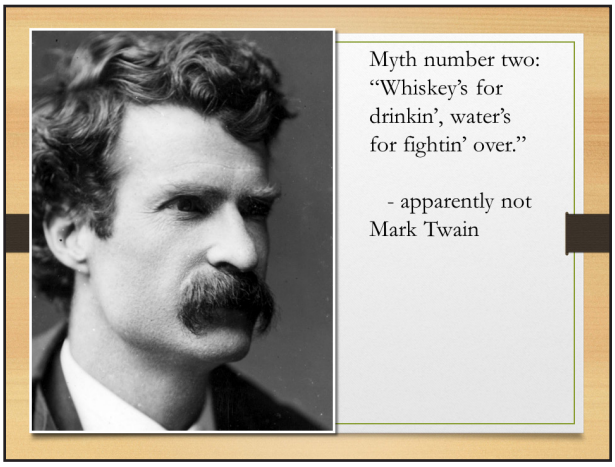

Figure 5. Aaron Wolf, Oregon State, has found that in transboundary water management situations of scarcity, cooperation is far more common than conflict.

Figure 6. Myth 2a: "Water flows uphill toward money."

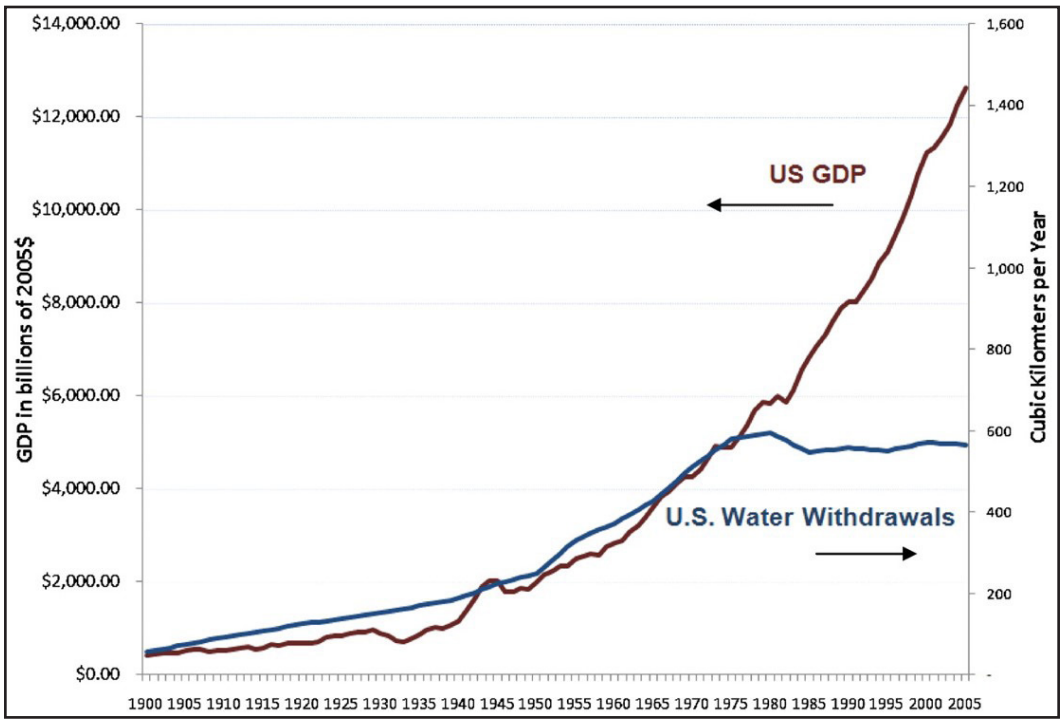

Figure 7. Decoupling: population and the economy go up, water use does not. U.S. gross domestic product (GDP) in 2005 dollars from 1900 to 2005 (left axis) plotted with total water withdrawals for all purposes in cubic kilometers per year (right axis). Data on GDP come from the US Bureau of Economic Analysis; data on water use comes from the US Geological Survey (31).

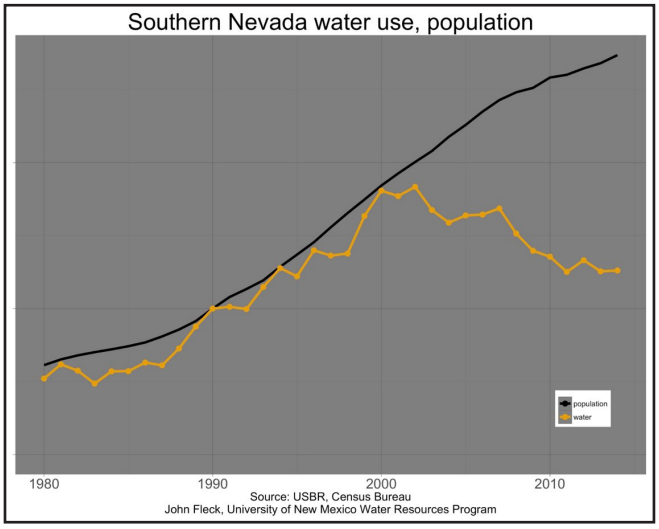

Figure 8. Decoupling, Las Vegas style. In 1980, the population in Southern Nevada was 460k, and by 2014 the population increased to 2 million. In the early 2000s, as Lake Mead dropped, Southern Nevada topped its 300kaf per year Colorado River allocation. The population was continuing to grow, a plan to pump groundwater from rural Nevada was looking increasingly iffy, so Las Vegas began lawn removal incentive, regulation on new development, and community awareness.

Figure 9. Las Vegas, NV offered incentives, implemented new regulations, and encouraged community awareness as population grew in the 2000s.

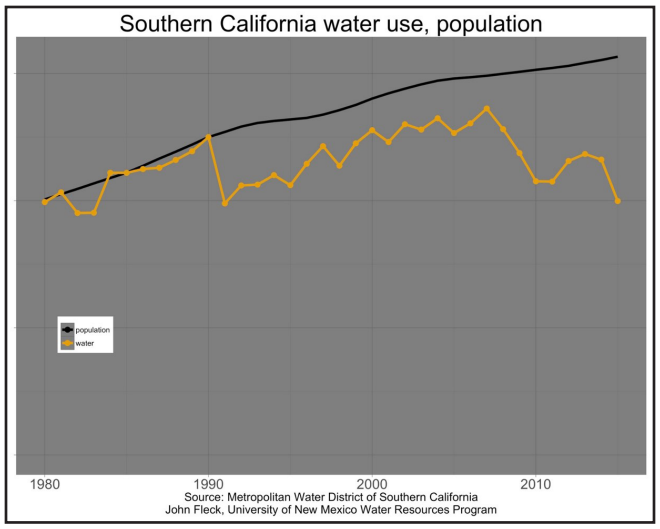

Figure 10. Southern California water use, population. The population in Southern California has risen from 12 million in 1980 to 19 million in 2015; whereas, water use has only increased from 3.2 maf to 3.4 maf in 2015.

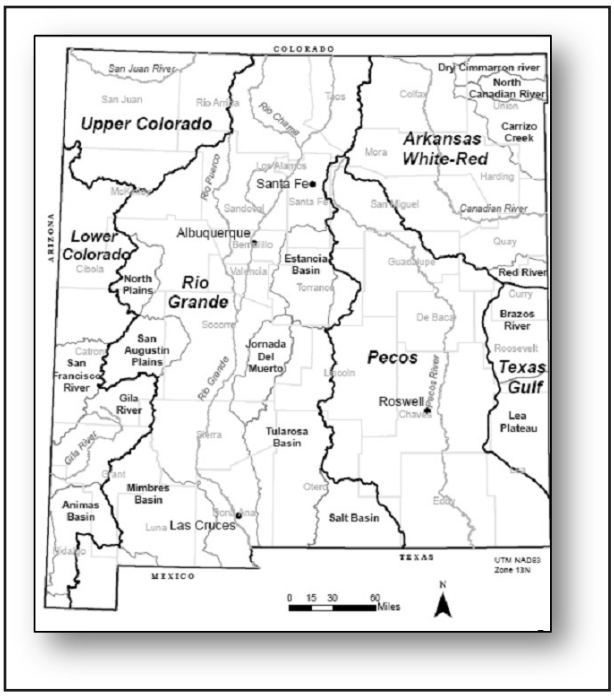

Figure 11. New Mexico's Middle Rio Grande.

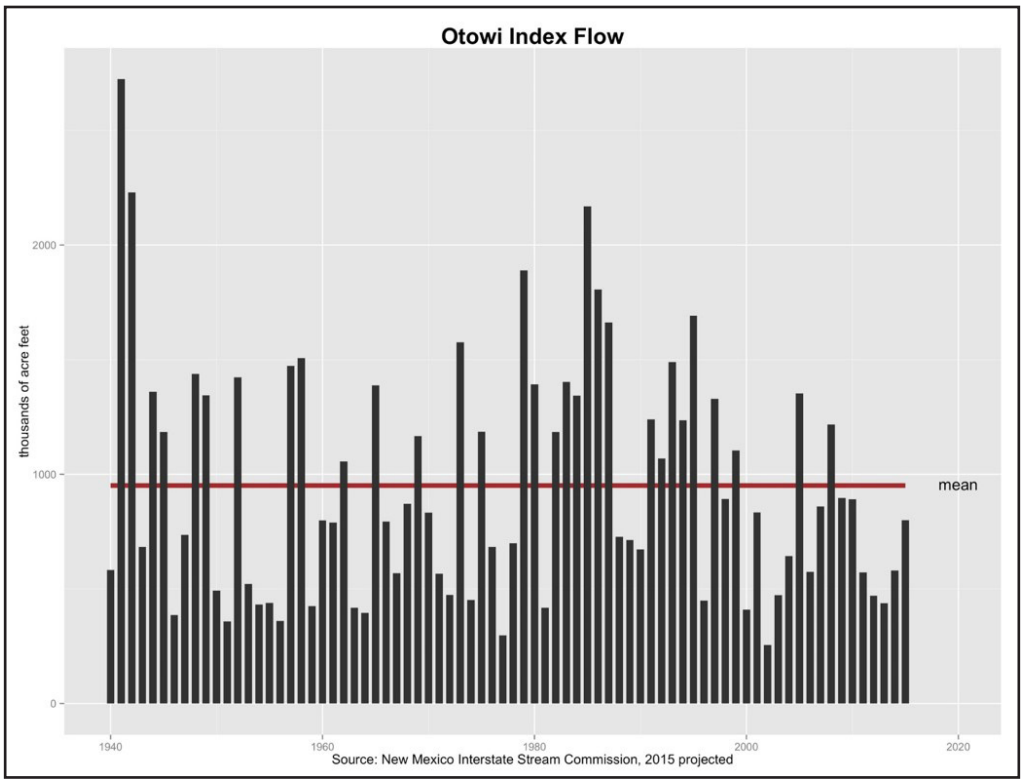

Figure 12. Otowi Index Flow for New Mexico's Middle Rio Grande. Since 2000, we have had two years with above average flows on the Rio Grande.

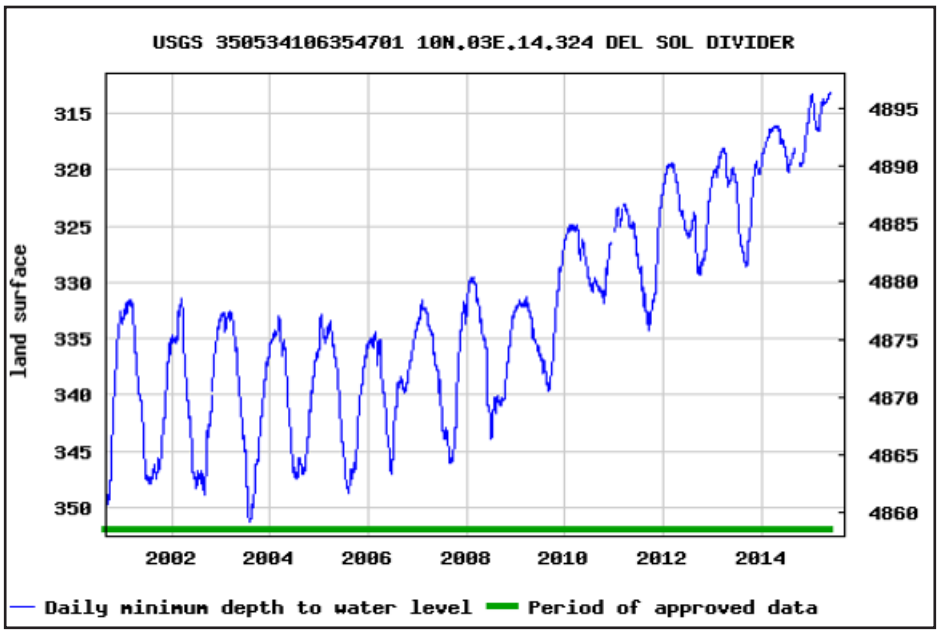

Figure 13. Del Sol Divider, groundwater monitoring well a couple of blocks from my house, aquifer has risen 20 feet.

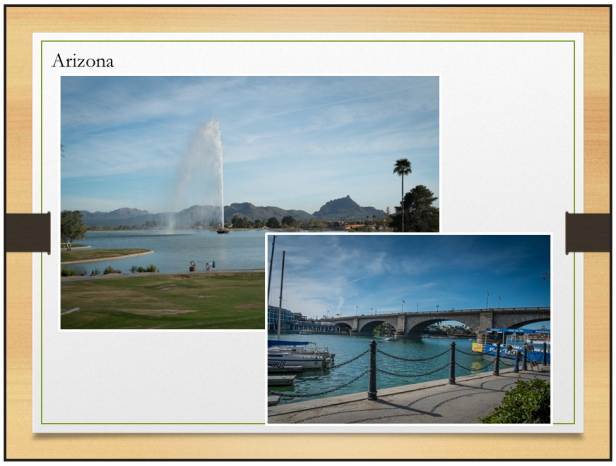

Figure 14. Robert McCulloch, chainsaw fame, built Fountain Hills fountain and Lake Havasu community, complete with London Bridge, in the 1970s.

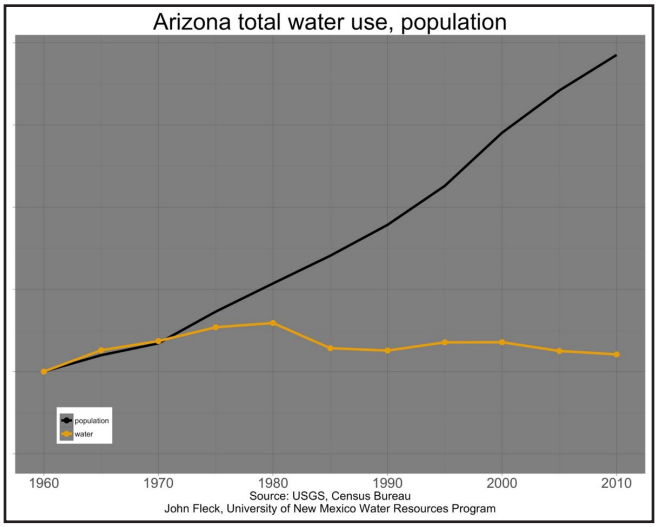

Figure 15. Arizona total water use, population. Water use peaked in 1980 and then groundwater pumping declined substantially; however, the population has more than doubled since then. This was accomplished through the Groundwater Management Act.

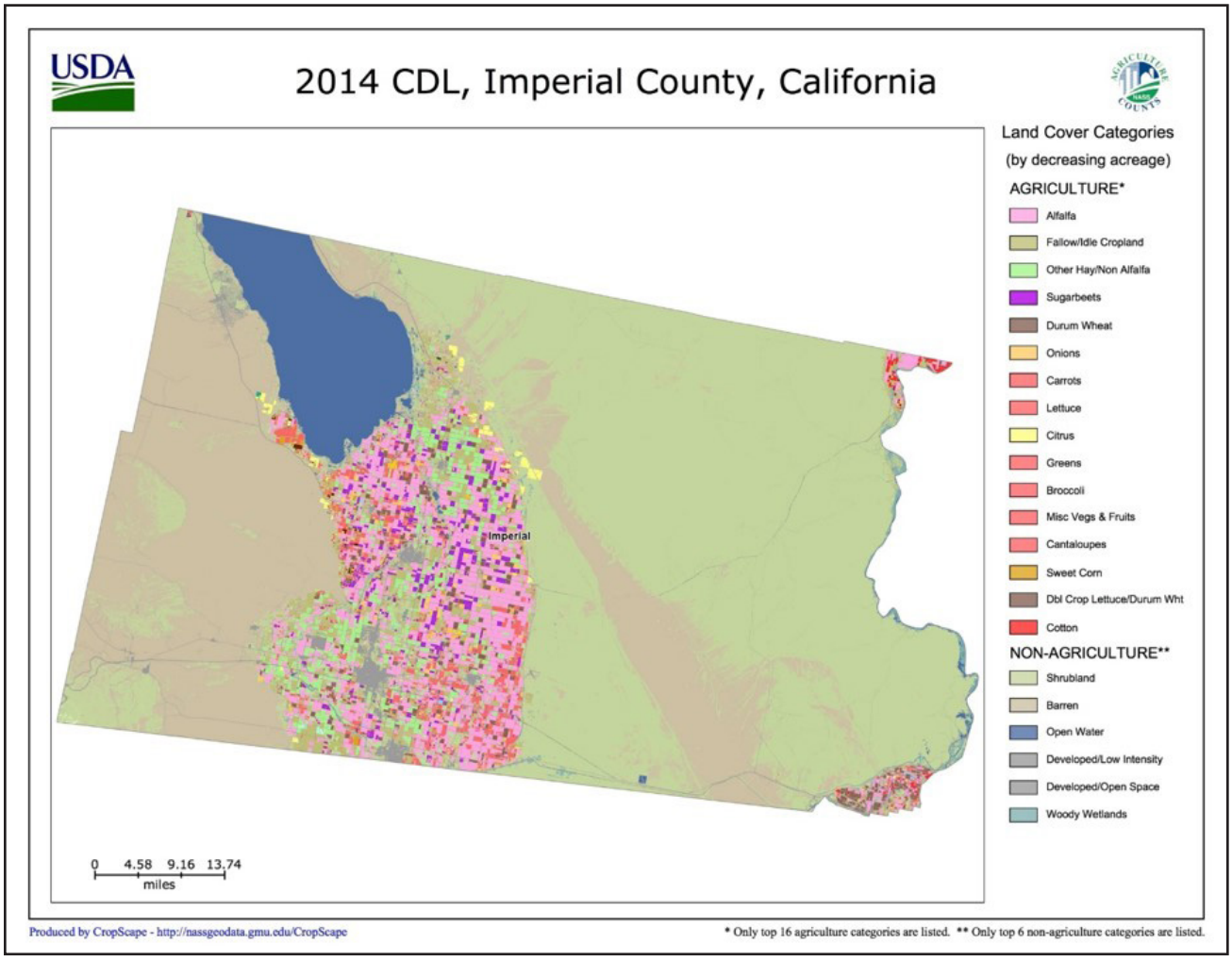

Figure 16. Imperial County, California 2014 CDL (Credit: Sara Gerlitz, UNM WRP).

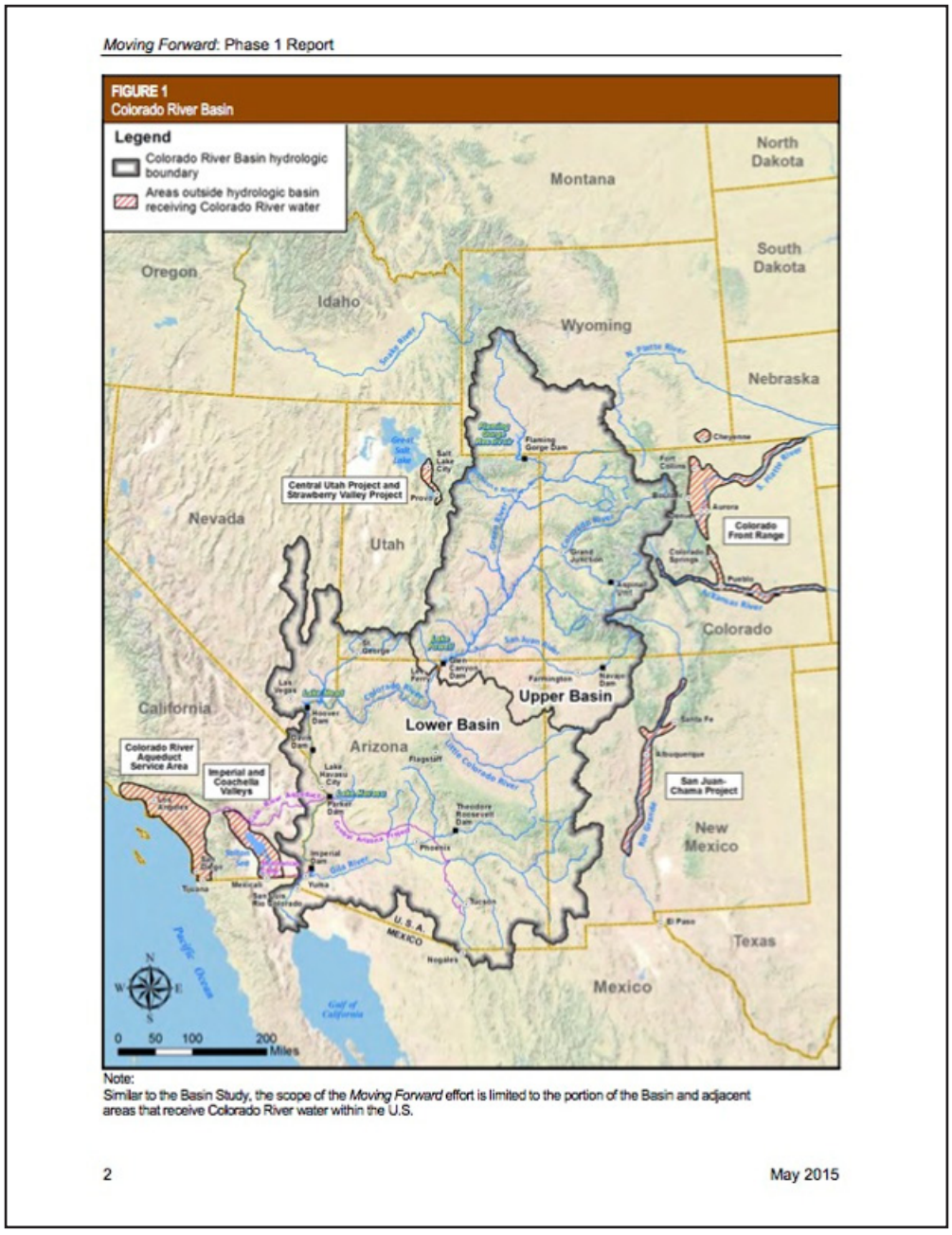

Figure 17. Colorado River Basin.

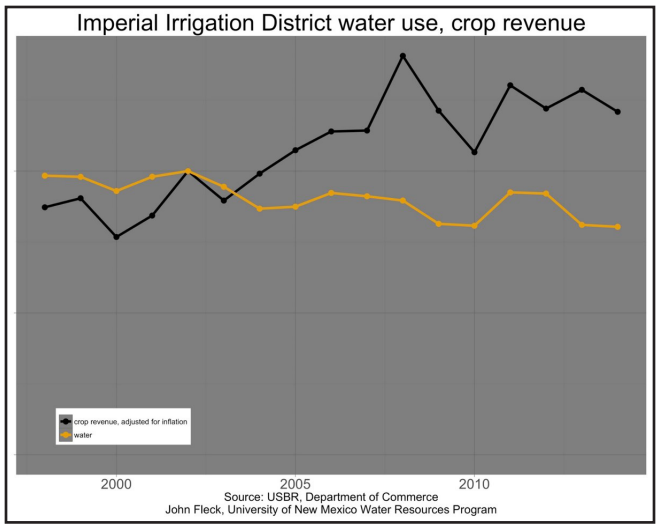

Figure 18. Imperial decoupling graph.

Figure 19. Onions, Imperial Valley, spring 2014.

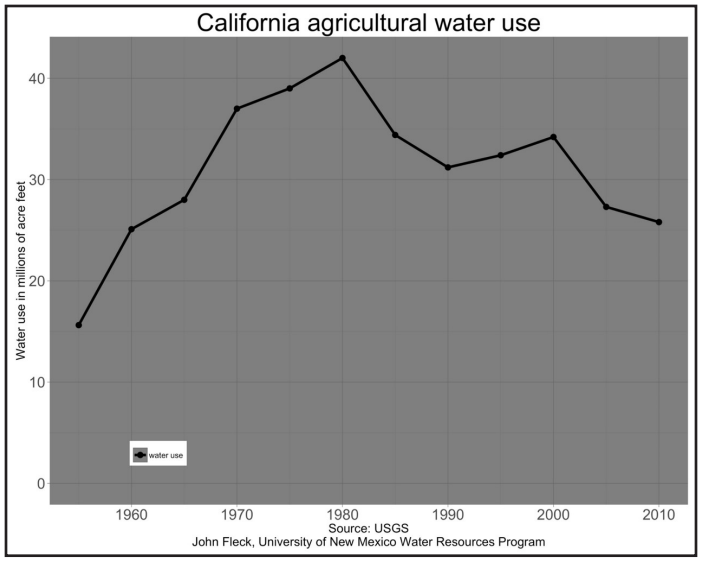

Figure 20. California agricultural water use.

Figure 21. California irrigation use per acre.

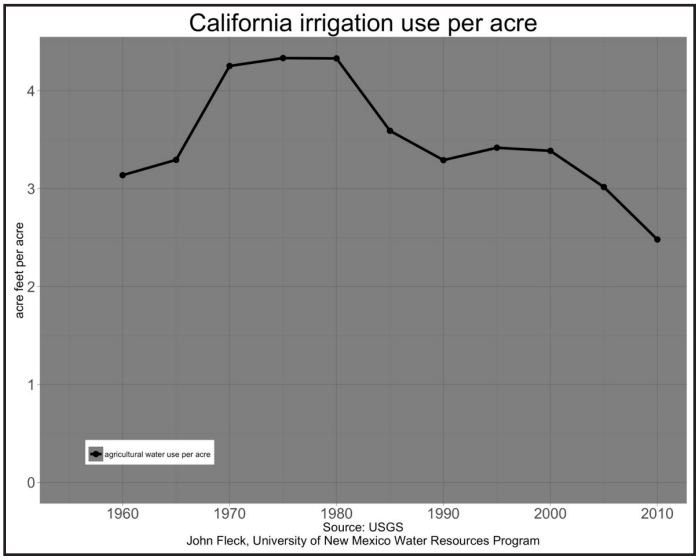

Figure 22. That's all great, John, but Lake Mead's still dropping, right?

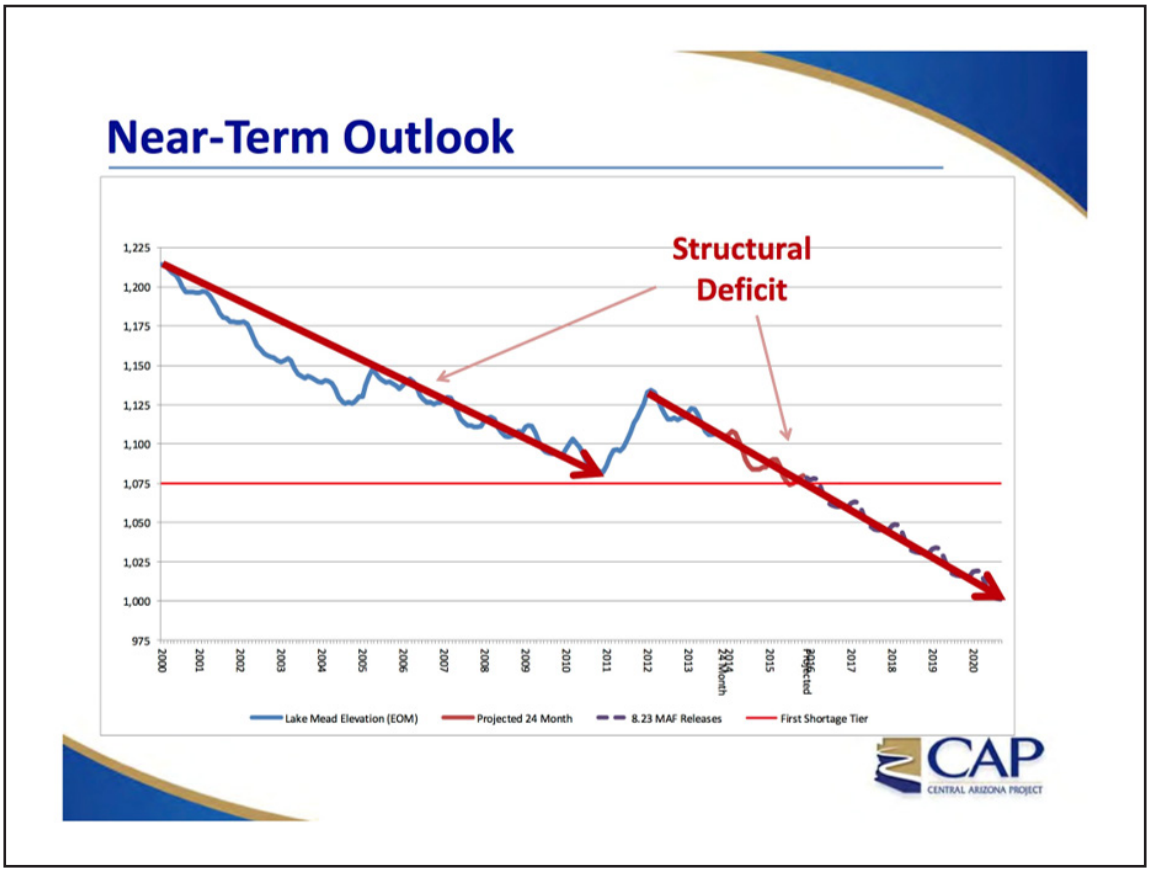

Figure 23. The greatest shrinkage of Lake Mead.

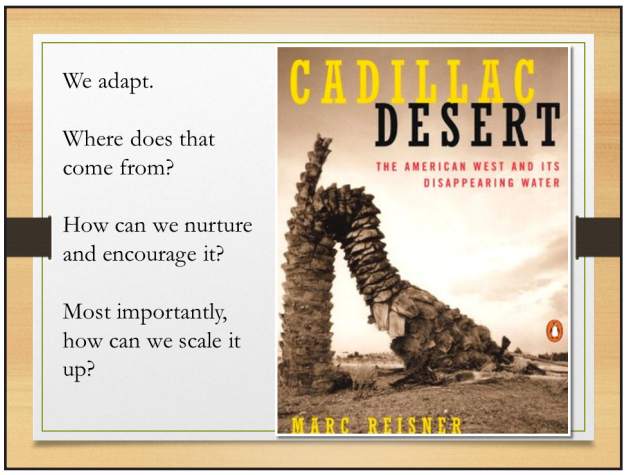

Figure 24. Cadillac Desert.

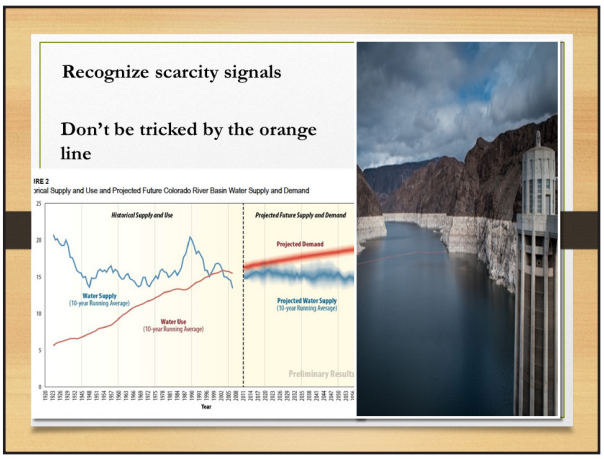

Figure 25. Recognize scarcity signals.

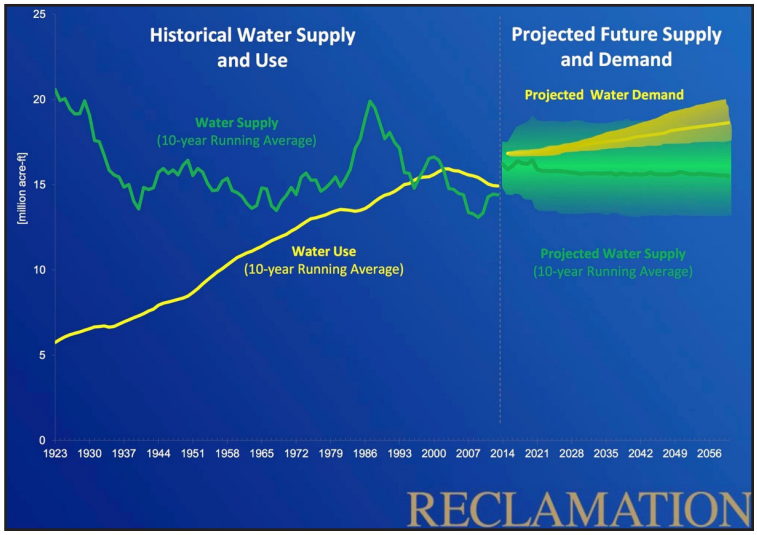

Figure 26. Historical water supply and use compared to future projection of supply and demand.

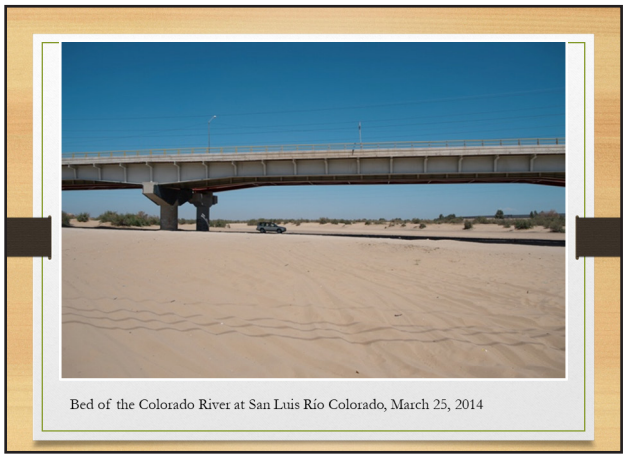

Figure 27. Bed of the Colorado River at San Luis Rio Colorado.

Figure 28. Recreation at San Luis Bridge.