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Dry Years: Political and Other Effects on the California Delta

Gerald Meral*

"The problem with droughts is that we don't take them seriously until the second year. Then, it is too late."

— Jerry Meral

The State of California is experiencing an extreme drought as a result of very low precipitation in water year 2013–2014. The continuing drought in California offers several lessons for those interested in management of the San Francisco Bay and Sacramento–San Joaquin Delta.

BAY DELTA CONSERVATION PLAN

Perhaps the most important lesson is how easy it is, in the face of a real crisis, to lose sight of the long-term needs of the Sacramento–San Joaquin Delta (Delta) with respect to ecosystem values and water supply. Regardless of whether one is a proponent or opponent of the Bay Delta Conservation Plan (BDCP, plan), it is in everyone's best interest to see the plan completed, and either accepted or rejected by the biological agencies (U.S. Fish and Wildlife Service [USFWS], the National Marine Fisheries Service [NMFS], and the California Department of Fish and Wildlife [CDFW]). (The plan is the state's attempt to comply with the federal and state endangered species acts by protecting habitat important to listed species and other species of concern, and by proposing new operating criteria for the state and federal water projects.)

* Director, California Water Program, Natural Heritage Institute San Francisco, CA USA; *jerrymeral@gmail.com*

The intensive effort needed for drought management by state and federal agencies, and by organizations who export water from the Delta, has diverted attention away from the need to complete the BDCP. Fortunately, the draft plan, Environmental Impact Report, and Environmental Impact Statement (EIR/S) were released for public comment beginning December 2013 and ending July 2014. This allows the agencies some respite, which is now being taken up by drought management planning. Once comments are received, it will be necessary to complete several important steps:

- Develop a complete financing plan, including cost allocation,
- Come to agreement between state and federal fish and water agencies about how any new facilities are operated, and
- Negotiate a complete Delta agreement among conservation and water groups and Delta counties, which will include the BDCP.

It is not clear that such a complex set of agreements can be successfully negotiated, but it is certain that the large amount of attention the drought requires will make all these negotiations more difficult. Since it is likely that these negotiations will culminate in the spring of 2015, things will become even more complicated and difficult if the drought continues into next year.

Another effect the drought may have will be to weaken the resolve of the agricultural water users to participate in a Delta solution. This year's drought will cause great economic damage in the San Joaquin Valley. If the drought continues into next year, things will be even worse. While most farmers have a long-term view of the need to change the way water is exported from the Delta, it is always harder to commit to expensive programs during times of economic stress. On the other hand, the drought has brought the importance of a sustainable Delta water supply into sharper focus. For example, because of very low flow on the San Joaquin River and required fish flows, for the first time it is impossible to deliver desired amounts of water to both the Friant Division of the Central Valley Project and the San Joaquin River Exchange Contractors. This emphasizes the importance of that Delta water supply, especially to Friant farmers.

SALINITY

On the biological front, the drought is bringing higher levels of salinity into the Delta. It will be very interesting to see the effects on invasive and native species. Increasing data collection during the drought would provide useful insights into how to manage low flow conditions for a wide variety of species.

EARTHQUAKE RISK

The drought also exposes about 20% of the California water supply (which comes from the Delta) to an even more serious catastrophe: an earthquake which may breach several Delta islands at once. Because many islands are below sea level, the empty space must be filled from the sea or the rivers if the levees fail. If an earthquake happened at a time when fresh-water flows through the Delta are high, there would be less seawater intrusion into the Delta from San Francisco Bay. At least part of that space could be filled by flows in the Sacramento and San Joaquin rivers.

At least if the earthquake happened when upstream reservoirs were full, water could be released to help repel sea water and maintain exports. This is what happened when a levee protecting Andrus and Brannan islands failed in June 1972.

If an earthquake caused multiple levee failures this year, water project operators would be faced with a very difficult choice: allow the Delta to become salty and hope that exports could resume after large winter flows next year, or use precious remaining water in reservoirs to flush the Delta and expose the system to devastating salinity if next year is dry.

POLITICAL CONFLICT

The drought has another deleterious effect in the Delta. The various camps in the water debate are intensifying their demands and rhetoric. Water exporters are desperate for water to keep trees and vines alive in the San Joaquin Valley. Every time there is a freshet in the Delta, they demand to have fish regulations relaxed so more water can be exported. Conversely, environmental groups point to extremely low population levels of some native fish species, and urge that all the inflow be used to create greater Delta outflow. They also ask that more water be stored (and not released for export) from upstream reservoirs, so that flows for fish can be met next year. These groups are joined by the USFWS, NMFS, and CDFW that manage the long-term carryover of cold water needed for salmon in Shasta and Oroville reservoirs.

This conflict is intensifying as members of Congress introduce legislation to modify the requirements of the Endangered Species Act, and to build storage reservoirs that might help in future droughts decades from now. Some conservationists strongly oppose these reservoirs and are concerned about their effect on high Delta outflows and rivers.

Overheated rhetoric caused by drought conditions will make it harder for the people debating differing viewpoints to negotiate an overall solution to Delta problems. Instead of working together collaboratively,

they generate a stream of press releases, letters to legislators, press tours, and other appeals to legislators and the media, which replaces constructive dialogue. The strong focus on resolving issues in the BDCP has been diluted, and somewhat replaced by mutual public hostility. It is largely up to the various parties to get back into a more productive discussion, since in the end they are the ones who will have to agree on a solution.

PUBLIC AWARENESS AND BONDS

The drought is focusing attention on the importance of the Delta in the service areas of water exporters. Two effects are especially serious: First, the quality of exported water will decline this year. This will make wastewater recycling more difficult and expensive, and may even change the taste of the exported water in the parts of the bay area and southern California that consume Delta drinking water.

Another effect may be rationing or very strongly promoted voluntary conservation programs in areas reliant on the Delta. This will direct attention to the importance of the Delta as a water supply, and increase interest in the BDCP.

There is no question that public awareness of the drought, combined with improving economic conditions, are increasing the public's willingness to pay for improvements to the state's water system. Polling indicates that public support for a water bond is increasing. Should a water bond pass, it will almost certainly include at least hundreds of millions—if not billions—of dollars for Delta ecological restoration, Delta levee programs, water supply projects in areas reliant on Delta water, and other programs with direct and indirect effects on the ecology and water supply of the Delta. Whether public support for a water bond becomes high enough to leave the current water bond on the ballot or replace it with a similar measure remains to be seen.

POTENTIAL WATER SALES

The drought may have another unforeseen effect on agriculture in the Delta. The water rights of Delta farmers are quite senior, and therefore very valuable. But crops in the primary zone of the Delta, where the threat of flooding is high, still are not of high value compared to other agricultural areas in the San Joaquin Valley.

Delta farmers, seeing water sales in 2014 for irrigation water at extraordinarily high prices (well over $1,000 per acre-foot), may decide that the return on water used for Delta irrigation is not as high as it would be if the water were sold or leased to those in the San Joaquin Valley. Of course whoever owned the land would have to pay levee assessments, so that Delta levees could be maintained.

LONG-TERM DROUGHT

What would a long-term drought mean? If the drought continued for 10 years or more, several things would probably happen that would affect the Delta.

- California's coastal cities, like those in Australia during their decade-long drought at the beginning of this century, would probably turn to desalting seawater to ensure a secure water supply. Unlike in Australia, where gravity-fed water supplies compete strongly with desalinated water supplies, once desalination facilities are built in central and southern California, they will probably continue to be operated even in times of no drought, because modern desalinators do not use much more energy than is required to pump Delta water supplies over the Tehachapis and coastal mountains.
- If Delta water demands from central and southern California urban areas diminishes substantially, political resolve to deal with the Delta's ecological crisis would weaken. There would also be less interest in state investment in maintaining Delta levees, which could lead to conversion of the most deeply subsided islands to

open water conditions.

- If the Santa Clara and Livermore Valley water agencies thought this was a likely scenario, they would probably also turn to desalination as a more reliable water supply management tool. Northern Contra Costa County would have to do the same. They would also probably greatly enlarge Los Vaqueros Reservoir so that when the Delta was fresh because of occasional winter storms, they could divert and store more fresh water.
- If urban demand on the Delta diminishes substantially and Delta supplies become even more unreliable, San Joaquin Valley agricultural users would be forced to build substantial new storage facilities, such as a larger San Luis Reservoir, Los Banos Grandes Reservoir, and perhaps Temperance Flat Reservoir. This would allow them to capture high winter flows in the San Joaquin Valley and Delta, even if central Delta islands were permanently flooded.

Under this scenario, which is, in fact, predicted by Medellín–Azuara et al (2012), the Delta would be a very different place. Flooded islands would cause Delta salinity to become very high during the summer and fall. Islands which could no longer be used for agriculture because of poor channel water quality might be abandoned or converted to wetland or open-water habitat.

The long drought of 1928 to 1934 did not have these dire effects, but things were much different then. Upstream demand was not as high, allowing more fresh water to reach the Delta. There were no export projects drawing salinity into the Delta. Delta islands were not deeply subsided, reducing the cost of maintaining the levees. This likely made it possible for Delta farmers to continue to operate, although in the driest of the drought years things must have been difficult.

One thing we have learned from the current and previous droughts (e.g., 1976–1977, 1987–1992, and 2012–2014) is that the contract between the North Delta Water Agency and the California Department of Water Resources is of tremendous value to the farmers of the North Delta, protecting their water quality and providing usable water at times when it otherwise might not have been there.

FLOODS

No musings about drought are complete without some consideration of floods. If the drought raises public awareness of the Delta and its water supply, and the voters approve a bond that includes funds for Delta levees, then the drought will result in better flood protection in the Delta.

Inevitably, people don't think about floods during a drought—as is the case today—especially if one has not occurred for a while. But with climate change, some thinking about floods in the Delta is in order. If much of the snow in the Delta catchment becomes rain, both droughts and floods will become more frequent. Climate change should cause even greater attention to the value of the Delta as a water supply and provider of ecological benefits.

IN CLOSING

The main benefit of the drought may be increased public awareness of the complexity in California's water management, and, in particular, the limitations of the Delta water supply. This may lead to voter approval of new funding to improve Delta ecology, water supply, and levee safety.

The main detriment of the drought has been to take attention away from long-term solutions, and increase rancor between the water and environmental interest groups, which may be difficult to repair and recover from.

REFERENCES

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