

Don't just think 'big' when adding to state's water storage capacity

November 2013

By Randy Fiorini

Delta Stewardship Council Vice Chair

Since the mid-1990s California has been studying major dam expansions or development – “world class” projects, as professional engineers often say. Unfortunately, those studies are yet to be completed and any construction is a very long way off.

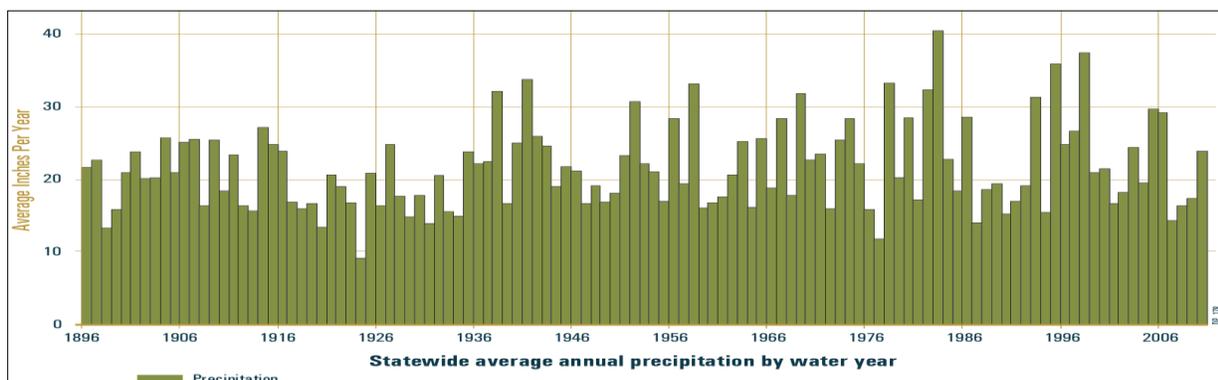
During these same years, local water agencies have added approximately 1.2 million acre feet of additional surface water storage capacity in Northern and Southern California, and have added infrastructure to make accessible nearly 4.2 million acre-feet of additional underground water banking capacity.

What is going on? Why are local and regional water districts able to build storage facilities, but not the state or federal government?

All of this suggests that perhaps it's time to stop waiting for the giant, big 'perfect' water storage solution. There are a lot of smaller projects on drawing boards around the state, and we could actually get many of them built in the near future. The Delta Stewardship Council's recently adopted Delta Plan calls for action on both the large project studies and consideration of the many potentially beneficial local and regional above and below ground water storage projects.

Background

California's history is replete with boom-and-bust cycles, and the state's hydrology is no different. Dry years, wet years, drought years, flood years – the state and federal governments built large storage projects in the early to mid-20th century to capture flood flows and store them for the dry years that would surely follow. But California's big water infrastructure building boom itself went



bust – over the past 40 years neither the state nor the federal government has added to the state’s water storage capacity.

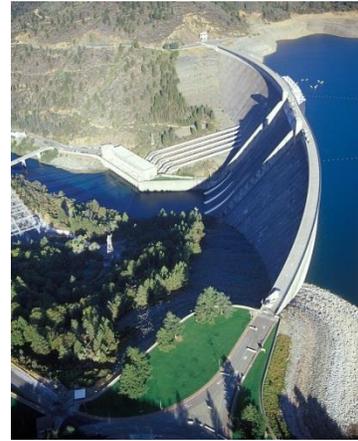
As a result, water storage capacity statewide – both above and below ground – is currently inadequate. This is especially true south of the Sacramento-San Joaquin Delta, where additional storage could facilitate improved operation of the State Water Project (SWP) and federal Central Valley Project (CVP).

Additional stored water would facilitate the exporting of more water at times of surplus and less water in dry years and at other critical times for the Delta’s ecosystem (DWR 2009). For example, in 2010, the SWP and CVP pump operations were slowed even though water was available to be pumped at a time when it would not have conflicted with endangered species act requirements or other water quality requirements. The SWP and CVP could not convey the surplus water through the Delta at that time because storage capacity south of the Delta was full.

During prolonged dry periods, there is an inadequate amount of stored water in some parts of the state to meet reasonable needs of people and the environment. This year, 2013, less than two dry years after a time when reservoirs throughout California were full, surface water storage reservoirs are alarmingly low and groundwater basins, already in a state of “critical overdraft” are being pumped at a rate that significantly exceeds recharge.

Consider, too, the projections that show California’s natural reservoir – the annually variable Sierra snowpack – will be reduced by 48 to 65 percent by 2100 because of climate change (Reference: van Vuuren et al., 2011, Climatic Change v. 109, p. 5-31.) As a result, a chronic storage shortage quickly turns critical, and negative economic impacts undoubtedly follow.

The fact that water is a scarce resource does not mean that California is “running out of water” (NAS 2012). It does mean that California will need to develop plans and implement programs and projects that can adapt to a highly variable and uncertain water future. It bears noting that in addition to new storage, ongoing efforts to conserve, reuse, and recycle water are a critical and a necessary complement to stretch our existing water supply in every region of the state.



Most of the reservoirs in California were constructed more than 40 years ago, and the number of new reservoirs built has steadily declined since the 1960s. Only six new water supply reservoirs were constructed in California in the 1980s and 1990s, and only three have been completed since 2000. (CA Water Plan, 2009 Update)



What is the state doing to increase storage capacity?

CALFED anticipated – and subsequent planning efforts have all agreed – that the combination of additional storage capacity above the Delta and improved conveyance through, around or under the Delta would result in improvements for the Delta ecosystem and increased water supply reliability for the State. In 2000, CALFED identified five potential projects for further study.

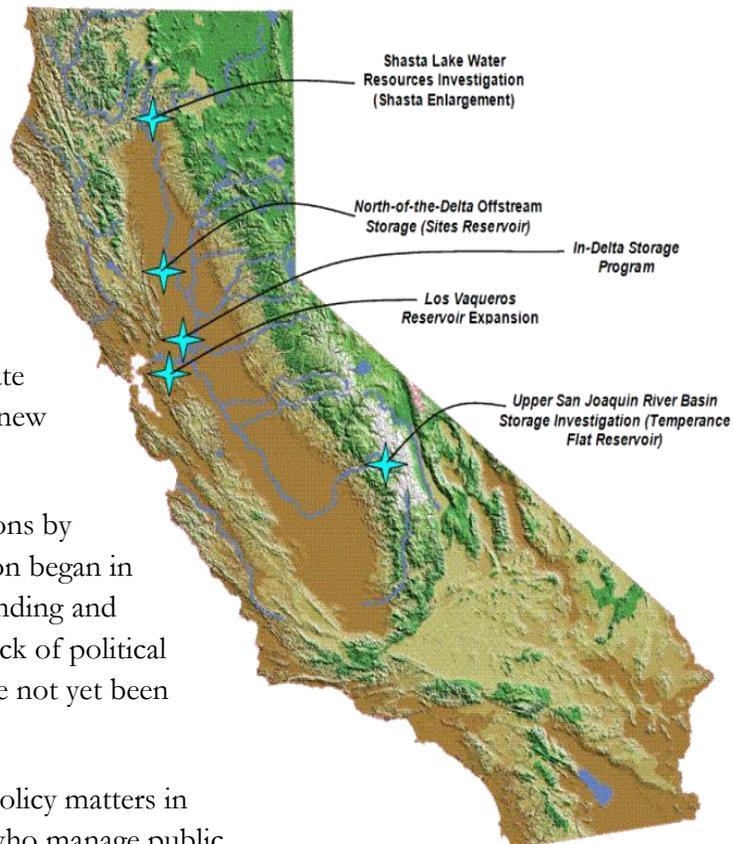
Currently the California Department of Water Resources and the federal Bureau of Reclamation are the respective leads on ongoing environmental study and review processes investigating two of those potential locations: Sites Reservoir in the western foothills of the Sacramento Valley (DWR) and Temperance Flat in the San Joaquin River watershed east of Fresno (Bureau). Both of these projects are considered “above the Delta” because they would supply the state and federal water projects and require export through the current Delta export pumping plants near Tracy.

These two projects are in areas that are potentially well-located to accommodate large above-ground water storage and can beneficially contribute to reoperation of the state and federal water projects to meet new environmental demands.

These CALFED storage investigations by DWR and the Bureau of Reclamation began in August of 2000. For a variety of funding and staffing reasons, combined with a lack of political will, 13 years later those studies have not yet been completed.

For those who follow water policy matters in California, especially those who manage public water agencies and have a responsibility to reliably deliver high quality water, a great deal of frustration exists over the length of time it has taken to evaluate these two potential locations. The frustration level increases when one considers that not since the mid-1970s have the federal or state governments made a significant investment in water storage.

Perhaps it would help if we identified how additional stored water will be used, who benefits and by how much.



The federal government recently released an Environmental Impact Statement on the expansion of the keystone reservoir at Lake Shasta. However, California Public Resources Code 5093.50 essentially bars state agency participation in the project due to concerns over environmental and cultural resources. Furthermore, recently released draft water bond bills in the California Legislature would expressly prohibit the expenditure of funds on the storage enhancement project at Shasta. Given the politics of the project, it seems unlikely that a state-federal partnership will proceed anytime soon.

What have local public water agencies done?

Mentioned earlier, since 1995, more than 1.2 million acre-feet (maf) of additional surface storage has been constructed at the regional level, including the Diamond Valley Reservoir in Riverside County, Olivenhain reservoir, the pending San Vicente expansion in Southern California, and the Los Vaqueros Reservoir in Contra Costa County. In fact Contra Costa Water District completed a 160,000 acre foot expansion of Los Vaqueros Reservoir in 2012 and a feasibility study for an additional 115,000-acre foot expansion is under consideration.



Contra Costa Water District completed a 160,000 acre foot expansion of Los Vaqueros Reservoir in 2012 and a feasibility study for an additional 115,000-acre foot expansion is being considered.

Equally successful, underground water storage projects such as the Kern Water Bank and Semitropic have added more than 4.2 maf of storage capacity during the same period.

The evidence suggests that smaller (compared to the CALFED projects), local and regional projects, where a local water agency (or agencies) serves as the champion to study, permit, finance and construct the project, are more likely to be completed, and done so in a reasonable amount of time. Local and regional projects can make significant contributions to improved flood protection, water supply reliability, hydroelectric generation, ecosystem health, water quality and recreation.

There is an urgent need in nearly all parts of the state to improve water system reliability and the local public water agencies can provide a wealth of knowledge and information about opportunities that exist, potentially providing local as well as statewide benefits. Opportunities for new storage projects, and to enlarge existing facilities, improve conveyance, enhance conjunctive use and transfers need to be identified and pursued with a sense of urgency and purpose.

Water Storage Recommendations

1. Complete the state studies of Temperance Flat and Sites and the federal studies of the enlargement of Shasta Reservoir.

In spite of the lengthy time the studies of Temperance Flat and Sites have taken, these are projects that potentially hold great benefits for California and should be expedited to determine the feasibility of constructing these large projects.

The Governor and the state Legislature should ensure DWR has adequate resources to rapidly complete the EIR/EIS processes, set a deadline for completion and make a “go/no go” decision for permitting and construction.

2. With adequate resources dedicated to completing the studies, there is also a need to identify who the beneficiaries will be for each project.

One drawback to a project study initiated by the state that potentially holds great benefit for California is to determine who pays for construction and for what purposes the stored water be used. It is unreasonable to expect any agency or group to volunteer to underwrite the costs for construction of a large project without certainty of the benefits that they will receive.

As a starting place, to determine if significant interest exists in the state, the yield from each of these projects should be designated prior to construction to provide certainty. 50% of the annual yield should be designated to environmental purposes and paid for with state bond funding. 50% of the annual yield should be designated to water agencies that are willing to pay for their share.

Certainty is the key to success. Without a state commitment to defined benefits and cost sharing it is unlikely local, regional or state water agencies will ever commit resources to any of these important projects.

The Governor and the state Legislature shall support legislation that ensures state funding for 50% of the total cost and operation of each of these projects for the defined public benefits portion supporting ecosystem health for the Delta. At the same time, the state shall provide water agencies that commit to funding 50% of the costs assurances they will receive 50% of the project’s annual yield in support of the state’s goal of water supply reliability for California.

3. Revisit the August 2000 CALFED water storage study based on new information and modern objectives.

In 1999 the state-federal effort CALFED commissioned an investigative study to consider locations in Northern California that could be used as possible new water storage facilities or



current facilities that could be enlarged. This study produced a report that considered 53 different locations. At that time CALFED was primarily searching for large projects and therefore screened out and dismissed many locations of 200,000 acre feet or less.

As a starting place, that list of Northern California locations should be reconsidered today in light of the coequal goals and reduced reliance on the Delta.

4. Conduct a statewide survey of local public water agencies to determine potential locations for new or enlarged water storage projects.

In addition to reconsidering the CALFED 2000 water storage study, the California Water Commission should conduct a statewide survey of public water agencies to determine locations that have been considered locally or regionally for water storage but have not been pursued. There are many locations that local public water agencies have studied that may have value beyond local needs and benefits, including the potential for regional interconnections and state system flexibility. If any of these locations can contribute broad public benefits, a local-state partnership or shared financing could yield several new or enlargement projects that could be completed in 10 years.

The Governor and Legislature should provide the California Water Commission adequate resources to conduct this statewide survey leading to an inventory of potential local and regional water storage locations throughout the state.

The success of this survey will depend largely upon the cooperation of public water agencies throughout the state.

To ensure public water agency participation the California Water Commission should partner with the Association of California Water Agencies to prepare for and conduct the survey. A reasonable deadline for completing this survey and producing the inventory list would be March 31, 2014.

5. Develop funding strategies to assist locals with Water Storage projects.

According to the California Rebuild America Coalition, in the 1960s, public works and infrastructure projects constituted almost 20 percent of state spending. Today, it's closer to three percent despite sensational growth that is placing a tremendous burden on the state's infrastructure. State water storage and delivery facilities improvements have been woefully underfunded for decades. It is time to increase water supply reliability investments.

Once a statewide survey of possible storage locations is complete and a comprehensive list of locations has been identified, DWR and the California Water Commission should evaluate and identify which locations with local support have a public benefit.



Benefits could include ecosystem enhancements, water supply reliability, water quality, flood management, hydroelectric generation, water system reoperation, and recreation.

6. Improvements to Water Storage project permitting are necessary.

The Governor of California will need to clearly articulate why additional storage is critical to both water supply reliability and ecosystem health. To facilitate progress the Governor should issue a directive to all applicable state agencies directing them to cooperate through the creation of a coordinated permitting process for above and below ground water storage projects.

The state Legislature should complement the Governor's directive with appropriate legislation.

Several Federal Agencies potentially have permitting authority over water storage projects in California. Congress should provide clear direction to the appropriate Federal Agencies to create a permitting process that can be coordinated by a designated Federal lead agency to help expedite the permitting and construction of new and enlarged water storage projects.

Conclusion

Admittedly, an expansion of California's water storage capacity alone will not adequately address all of California's water woes. Major state and federal planning efforts such as CALFED, Delta Vision and, most recently, the Delta Stewardship Council's Delta Plan all conclude that we cannot afford to ignore water storage as an integral part of a comprehensive set of water solutions.

Done right, additional storage can add flexibility to our water systems, making efficient water management possible, and better allowing for water use that is wildlife-friendly

The actions outlined above can be taken immediately. If successful, cooperation between the State and local public water agencies will serve to address water supply reliability problems currently experienced in many parts of California, especially during periods of dry weather. These recommended actions should be undertaken with a sense of urgency and can lead to necessary and meaningful improvements within a decade.

These actions will require resolve and leadership at the highest levels of state and federal government. The time for leadership is now.

