PPP model 1

Facing Climate Change: Investing in Stormwater Capture

The California Water Crisis

Regardless of the current El Niño year, the reality of California’s drought is that there is no definitive end in sight, only an inevitable future of more droughts. The combination of climate change with El Niño cycles is projected to bring severe droughts and flooding to California in addition to decreased and earlier snowmelt in the Sierras (Yoon et al. 2015; Mulkern, 2015). However, it is not merely climatic conditions we have to blame for the drought, but also our state’s inefficiencies in water use, management and outdated infrastructure. The problem is California has 19th century policy and 20th century infrastructure to deal with 21st century issues. A crucial inefficiency in our system today is the 1.5 million acre-feet of wastewater and storm runoff we allow to pollute and drain into the Pacific Ocean each year (Morrison, 2014). Through investments in the proper infrastructure and fiscal support, there is opportunity to capture this runoff to improve California’s water supply and even recharge groundwater basins. Water storage is a crucial component in preparation for future droughts; we urgently need to invest in opportunities to increase storage capacity in California, both above and below ground (Maven, 2015). A promising solution is stormwater management.

Funding from California’s Water Bond

Recently, California voters approved Proposition 1: Water Quality, Supply, and Infrastructure Improvement Act of 2014, a $7.5 billion water bond that supports investments in California’s water management systems. With the California Water Commission in charge of allocating funds, the bond dedicates $2.7 billion specifically to investments in water storage projects (CA Water Commission, n.d.). Improving water storage infrastructure does not have to mean simply building more dams or reservoirs. Instead, the Water Storage Investment Program funds should support creative and adaptive projects that prepare us for climate change—one of which is stormwater management and capture.

Why Stormwater Capture?

Los Angeles County is setting the example of what could be a statewide model for stormwater management. The State Water Resources Control Board has approved a Stormwater Capture Master Plan by the Los Angeles Department of Water and Power (LADWP) that decreases the amount of runoff lost to the Pacific Ocean (Los Angeles Department of Water and Power [LADWP], n.d.). The goal is to capture precious rainfall and stormwater that runs off concrete and non-permeable surfaces for either direct use or groundwater basin recharge (LADWP, n.d.; Morin, 2015). The project includes redirecting runoff to large-scale spreading grounds and implementing smaller-scale “green streets,” permeable pavements, cisterns and rain gardens. According to the National Resources Defense Council, this stormwater system could potentially provide more than 253,000 acre-feet of water for Los Angeles County after every inch of rainfall, nearly 40% of the city’s annual water use (Morin, 2015). Through a low-impact development (LID) approach using green infrastructure (GI), the benefits are multiple—flood control, water supply, water quality, groundwater recharge, reduced pollution to ocean and less reliance on imported water (Steffen et al., 2013; Morin, 2015; LADWP, n.d.).

Conclusion

The California Water Storage Investment Program, projected to begin in 2017, should invest in stormwater capture projects statewide. California residents and water management agencies can look to Los Angeles to recognize the innovative opportunities and multiple benefits of stormwater capture. Pressure needs to be put on authorities at local, state and federal levels to implement the new generation of water projects needed for a sustainable life in the 21st century.

References:

OPP Model 1 (Corresponds to PPP Model 1)

Problems with Stormwater Capture in California

Introduction

With the $2.7 billion allocation from the California Water Commission for water storage projects across the state, there is debate around how these funds should be distributed. The notion that California’s Proposition 1 is capable of funding stormwater management and capture systems on a statewide scale is ambitious and unlikely. This paper does not refute the evident and multiple benefits of stormwater capture as a sustainable source for regional water supply, groundwater recharge and decreased pollutant runoff. Rather, the idea that stormwater capture systems can be implemented statewide through Proposition 1 funding is unrealistic due to complex and costly infrastructure, operation and management needs.

Stormwater Infrastructure

Stormwater runoff carries with it non-point pollution including bacteria, fecal coliform heavy metals, nitrogen and other pollutants (Park, 2009; Ahn, 2005). Storm runoff therefore has to be collected and diverted to large-scale catch basins and spreading grounds through complex “green infrastructure” projects (Morin, 2015; Villarreal, 2013). For example, the implementation of Los Angeles’ Stormwater Capture Master Plan has been projected to cost the county $60 million- $200 million depending on the aggressiveness of the plan (Morin, 2015). The question is not whether stormwater capture is beneficial, but rather whether regional municipalities across the state have the financial capacity and technological resources to adopt stormwater capture infrastructure as Los Angeles has done.

The Water Bond Falls Short

Adopting stormwater capture to combat climate change and drought in California is going to take a paradigm shift and more long-term investment than the 2014 water bond can provide. Beginning in 2017, the California Water Commission will start allocating $2.7 billion to pay for “public benefits” associated with water storage projects that improve the state water system, are cost-effective, and provide a net improvement in the ecosystem and water quality (CA Water Commission, n.d.). It is a competitive process that ranks potential projects based on their measured public benefit and ecosystem improvements. Smaller, less wealthy California districts may not have the resources to compete against larger-scale projects.

Stormwater capture projects are especially unrealistic for disadvantaged communities in California who still have basic needs for access to clean, safe, reliable drinking water (Cooley et al. 2014). Proposition 1 dedicates nine percent of the bond money ($696 million) to these disadvantaged communities for basic improvements in their water supply and management. Poor communities often do not have the financial or technological capacity to operate complex, expensive water systems like Los Angeles’ stormwater capture. Stormwater capture systems take significant infrastructure and require ongoing management expenses, which some communities cannot afford to operate and maintain long-term (Cooley et al. 2014). The bond does not provide the long-term funding needed. Instead, the Pacific Institute has called the 2014 water bond at best, a mere “down payment on our water future” (Cooley et al. 2014).

Conclusion

Advocates for statewide stormwater management systems cannot assume that Proposition 1 can provide all the necessary funding, policy and agency to accomplish such projects. The ability to implement stormwater capture varies across each hydrologic region and a municipality’s funding capacities. California needs to develop ongoing, long-term investment programs if we hope for innovative, adaptive and sustainable water storage projects such as stormwater capture.

References: