Committee on Natural Resources
Subcommittee on Water, Oceans, and Wildlife Oversight Hearing
1324 Longworth House Office Building
February 26, 2019
10:00 am

Oversight Hearing on

The State of Water Supply Reliability in the 21st Century

Questions from Rep. Joe Cunningham for Tony Willardson, Executive Director of the Western States Water Council

This is an issue that is particularly relevant to the folks of South Carolina's 1st district. Down in my district you've got the Ashley River and the Cooper River coming together to form the Charleston Harbor before discharging into the Atlantic Ocean. My district is among the East Coast's most vulnerable areas when it comes to rising sea levels. The lack of infrastructure and drainage systems to handle the uncompromising sea level rise often puts our community under water. It also leads to habitat loss, seawater encroachment, flooding, and a loss of water quality. Scientists expect climate change to increase the frequency of very heavy precipitation events. In my home state of South Carolina, they say that "When it rains, it floods in Charleston." A recent study showed that Charleston is one of the most at-risk cities in the United States, and they predict that Charleston could be underwater in 80 years. This is a very important issue that doesn't just affect Colorado or the Western United States, it affects all of us.

1. What emerging technologies and management approaches can communities implement that will help them manage increasingly unpredictable precipitation and flood conditions?

Response from Mr. Willardson:

Thank you for the question Rep. Cunningham.

Each individual state is unique, and South Carolina faces its own particular challenges. While as a region, the West is generally more concerned with scarcity, drought and water supply availability, we are also vulnerable to flooding and other unpredictable climate extremes. Sea level rise and its impact on coastal communities is obviously an issue for our West Coast States, and Texas on the Gulf of Mexico. In order to improve our resiliency to climate variations, there are both short and long-term actions that the Council supports focused on an integrate, collaborative and grassroots approach that will require stronger collaboration and cooperation that transcends political and geographic boundaries between states, federal agencies, tribes, and local communities.

First, we need to invest more to maintain, restore, modernize and upgrade water, weather and climate observation networks. We need to be able to better define the problems, which requires placing a high priority on funding vital water data monitoring and visualization programs, and related geospatial applications for climate adaptation planning. Critical federal on-the-ground and remote sensing programs include the U.S. Geological Survey's Streamflow Information Program and the National Land Imaging Program (and Landsat). The National Oceanic and Atmospheric Administration (NOAA) uses Light Detection and Ranging (LiDAR), often from aircraft, to gather topographical data supporting activities such as inundation and storm surge modeling, hydrodynamic modeling, sediment transport modeling, shoreline and habitat mapping, emergency response, hydrographic surveying and coastal

vulnerability analysis. NOAA has also developed and is refining its National Water Model, which is primarily designed to predict flooding. Better data and science will lead to better decisions, and hopefully allow public and private decisionmakers to take more informed actions to avoid and/or mitigate adverse consequences.

Second, the Council supports state and federal applied research programs that would assist water and emergency management agencies at all levels of government in adapting to climate variability and making sound scientific decisions. More informed decisionmaking depends on our ability to understand, monitor, predict, and adapt to climate variability. The West and the Nation experience great sub-seasonal, seasonal and annual precipitation variability. Decisionmakers need more skilled dynamical and probabilistic modeling to better understand hydroclimate processes and improve forecasts of rainfall and runoff. This involves a greater investment in atmospheric and other sciences, as well as high-capacity computing resources for timely and multiple runs of very complex models.

Third, the West and the Nation depend on an intricate and aging water infrastructure system. Greater investment is needed to maintain its reliability and our ability to store, manage, conserve, control, protect and treat our water supplies. As our ability to predict precipitation events improves, particularly extreme events, opportunities will become apparent to implement forecast informed reservoir operations (FIRO) with more confidence to more efficiently operate projects and time reservoir releases to maximize storage for both water supply and flood protection.

Many water projects have exceeded their design life, and others have deteriorated due to underfunded and deferred maintenance, repair and replacement. Inadequate, inconsistent, and untimely federal funding increases construction, maintenance and financing costs. Often the lack of a dedicated revenue stream raises costs. Moreover, federal budget scoring assesses the full cost of investments upfront, while disproportionately discounting long-term benefits.

Existing federal, state and local programs to publicly finance water infrastructure are crucial, but insufficient. The federal government will continue to play a significant role in cost sharing and financing projects with national benefits. Further, opportunities also exist to leverage federal, non-federal and private capital through grants, loans and credit enhancements.

Long-term difficult decisions and expensive investments may be necessary to adapt to climate variability and extreme events related to sea level rise. Speaking from personal experience, my home State of Utah is obviously not susceptible to sea level rise, but much of our population is located along the Wasatch Front, adjacent to the Great Salt Lake. A terminal lake, its levels have dropped to the point that it isn't so great – as a result of multiple years of drought! However, in the 1980's the lake rose unrelentingly due to unusually wet weather patterns. I remember volunteering to fill sand bags on a Sunday night at midnight, and for days water ran in a makeshift channel through downtown Salt Lake City. That year there was also significant damage to the spillway outlets at the federal Glen Canyon Dam as Upper Basin flows on the Colorado River peaked.

In response to the flooding and rising lake levels, communities around the lake seriously considered the need to dike around their sewage treatment plants. Salt Lake City improved its storm drain system. The State of Utah with federal funding raised I-80 near the lake, not once, but twice. The State also built a pumping plant to move lake water into our West Desert to evaporate. The Corps of Engineers completed a long-delayed flood control reservoir above the city, Mountain Dell. The Bureau of Reclamation redesigned and rebuilt the outlets at Glen Canyon. Similar measures are likely to be needed across the country as we adapt to changing climate conditions and increasing variability.