Dealing with Climate Uncertainty in Operating a Reliable Water Supply System

Alison Adams, Ph.D., P.E., Tampa Bay Water, 2575 Enterprise Road, Clearwater, Florida 33763

Tampa Bay Water, Florida's largest wholesale water provider, has built a unique and diverse water supply system to ensure that over two million residents in the Tampa Bay region have reliable drinking water under all hydrologic conditions. Since 1999, Tampa Bay Water has migrated from total groundwater reliance to a mix including 33 percent surface water. By 2012 nearly half of the agency's supply will be surface water. River supplies depend on rainfall. Over the past 36 months, the region has experienced below-normal rainfall for 24 of those months, the most critical of these deficits occurring during expected summer wet seasons. The result has been a 75-percent decline in surface water flow capture. Uncertainties in both near-term rain events and longer-term climate shifts require that storage be used to ensure a reliable supply. Tampa Bay Water has two opportunities for storage, an off-stream reservoir to capture high river flows and groundwater (aquifer storage). One of the challenges for Tampa Bay Water and other public supply utilities is balancing the use of these storage components with strong environmental stewardship. One tool that Tampa Bay Water is developing to meet this challenge is its water shortage mitigation plan, which relies upon pre-determined quantitative triggers to guide demand management and supply augmentation to mitigate the effects of climate variability. As water regulators continue to require utilities to develop and use surface water supplies, the challenges of source reliability must be resolved to achieve supply certainty within the framework of climatic variability.

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