



# Case Studies

## Los Angeles

### Advancing One Water Sustainability

Los Angeles Sanitation and the Los Angeles Department of Water and Power (LADWP) are committed to a sustainable water future that relies more on local water supplies than costly and unreliable purchased imported water. Los Angeles is taking a One Water approach to meeting LA's water challenges—which range from dependence on water sources threatened by ongoing drought, climate change, and legal challenges to traditional issues such as aging infrastructure and limited funding. To help manage these challenges in an efficient and cost-effective manner the City prepared an award-winning Water Integrated Resources Plan (IRP) which manages water supply, reuse, conservation, stormwater management, and wastewater facility planning through a regional watershed approach.



Los Angeles Sanitation treats more than 350 million gallons of wastewater daily, and currently recycles over 100 million gallons per day for irrigation, industrial uses, and groundwater recharge. On the conservation side, the City uses the same amount of water today as 25 years ago, despite population growth of over one million people.

The IRP is helping achieve the ambitious goals of the Mayor's 2014 Executive Directive on Water – including reduced purchased water by 50% by 2024 and increasing local water supply by 50% by 2035. Meeting the goals will require significantly increasing stormwater capture from open space and urban lands for direct use or groundwater storage. LADWP is undertaking a stormwater capture project to increase capture from the 8.8 billion gallons that are already captured each year.

## Metropolitan St. Louis Sewer District

### Building Resiliency In Response To Recent Midwest Flooding

In early 2016 the Metropolitan St. Louis Sewer District (MSD) was put to the test. MSD was in the midst of a 23-year, approximately \$5 billion consent decree capital program to eliminate and reduce overflows when the region rang in the New Year with historic rain events. The rain incapacitated two of MSDs seven wastewater treatment facilities and threatened thousands of homes with flooding and erosion.



Although challenging, MSD's response – including a robust Operation & Maintenance program, early overflow reduction capital projects, strategic flood mitigation, and its green infrastructure program – is seeing early benefits. While recovering, the District still has challenges ahead. These include improving flood mitigation at recently-flooded plants and managing treatment plant operations to maximize flows through the plants. The most significant task ahead is likely securing a funding mechanism to address flooding and erosion issues throughout the District as part of MSD's stormwater responsibilities.

## **Miami-Dade Water & Sewer Department**

### **Integrating A Changing Water Future Into Long-Term Planning**

Preparing for extreme weather events is paramount for Miami-Dade Water and Sewer Department (WASD), the largest water and sewer utility in the Southeastern United States. Its facilities include nine water treatment and three wastewater treatment plants. About 308 million gallons of wastewater are collected, treated, and disposed of daily. About 13 million gallons are reused daily, and the remainder is released through one of 21 deep injection wells or an ocean outfall.



The utility is actively assessing and responding to regional climate change projections including periods of drought; sea level rise; increased saltwater intrusion into wellfields; increased flooding and pipe infiltration and inflow; and storm surges. To help ensure a sustainable water supply, WASD has implemented a 20-year Water Use Efficiency Program. Water demand has dropped 32 million gallons per day compared with a decade ago. WASD also conducted a salt water intrusion assessment using a USGS Integrated Model.

To improve resilience of wastewater treatment facilities and aid in long-term facility planning, WASD employed projections from the U.S. Army Corps of Engineers and the National Oceanic and Atmospheric Administration to develop updated 24-hour projections for precipitation and peak wastewater flow during two-year storm events. The utility has also established Design Elevations for new and existing wastewater treatment plants to help harden these vital water treatment facilities against strong winds, flooding, and sea level rise.

## **Philadelphia Water Department**

### **Climate Change Adaptation Program**

Climate change will challenge the functioning and reliability of Philadelphia's drinking water, wastewater, and stormwater systems. To address this, the Philadelphia Water Department (PWD) recently created a Climate Change Adaptation Program with a goal of developing feasible and effective adaptation strategies that will inform major investments and operational and design standards. The Program is currently conducting a detailed evaluation of the major climate change impacts that the utility will experience.



As part of this assessment, PWD will be analyzing how climate change may impact wet weather resilience. Already, the City of Philadelphia is changing its operational approach to increase resilience to a wetter future climate. The City will spend over \$1 billion on Green City, Clean Waters, a program that plans, designs, and implements geographically-distributed green infrastructure to manage stormwater and reduce combined sewer overflows (CSOs). Philadelphia's stormwater management approach has a green infrastructure focus, and can be more easily modified to accommodate changing climatic conditions than traditional grey infrastructure such as underground storage tanks and tunnels. PWD also will assess the impacts of increasing precipitation and sea level rise on the functioning of the utility's three wastewater treatment plants located along the Delaware River.

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