CALIFORNIA

WATER

ORANGE COUNTY 2024

TOP PRIORITY:

Climate RESILIENCY

Municipal Water District of Orange County:
Managing Abundance

Orange County Sanitation District:
Treating Wastewater for 70 Years

Irvine Ranch Water District:
Prioritizing Infrastructure

South Coast Water District:
Serving the Needs of Coastal Community

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This supplement did not involve the editorial staff of the Orange County Register.
Printed with recycled paper.

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Data-Driven Waterscapes:

Harnessing Insights for Water Loss Control in Orange County

We may face periodic water shortages here in Orange County, but there is no shortage of water data. The Municipal Water District of Orange County (MWDOC) has been working with Orange County retail water agencies to help them leverage this data to learn about water loss in their systems and ultimately comply with State Water Resources Control Board water loss standards. Through this work, MWDOC has assisted agencies with customer meter accuracy testing, distribution system leak detection, and sophisticated analysis of the data collected through these programs.

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Water Loss is divided into two categories: Real Loss, which is comprised of leakage, and Apparent Loss, which is water successfully delivered to an end user but not captured in the data collected. Apparent Losses can be due to data handling practices during the meter read, issues with the query of total consumption, metering inaccuracies, and even water theft. All California urban water retailer suppliers must use the American Water Works Association (AWWA) Free Water Audit Software, which divides water losses into these two categories based mainly on assumptions. Given the uncertainty with some of these assumptions, some utilities will choose to firm up their confidence in the division between apparent and real losses by engaging in customer meter testing to better understand apparent losses in their system and/or engaging in acoustic leak detection to better understand real losses in their system. Through MWDOC's shared services program, agencies can proactively engage in both at a reduced cost.

Agencies who choose to perform customer meter testing realize that customer metering inaccuracy is typically the most significant component of apparent losses, and one of the most accurate ways to calculate it is through customer meter testing. To date, MWDOC has assisted nine retail agencies in testing over 2,100 meters, allowing them to better understand the losses in their system. Indeed, an essential step to lowering water losses is understanding where it's occurring (is it leakage or customer metering inaccuracy?) and at what magnitude.

Systems engaging in proactive leak detection recognize that they can immediately reduce leakage while also collecting valuable data to inform future decisions. Since 2019, MWDOC has partnered with 24 Orange County water retailers to detect hidden leaks on their water distribution mains, meter connections, and other fixtures. The acoustic leak detection equipment used by MWDOC technicians can locate leaks before they surface (hidden leakage), shortening their runtime, avoiding collateral property damage, and saving hundreds of acre-feet (AF) of water per year. MWDOC has surveyed

4,078 miles of water mains, located 1,609 leaks, and saved 627.3 AF a year, or roughly enough water to serve 1,800 OC households. Local water retailers have repaired these leaks, increased the efficiency of their systems, and strengthened water supply resiliency. The program has also located 589 leaks on customer property, helping residents and businesses save approximately 57.5 AF annually and $83,091 annually.

The impact of these programs is twofold: they improve water loss performance and collect data that can be very powerful. Leveraging this data to inform decision-making for capital improvement projects, maintenance programs, and goal setting at the retail agency level is an essential piece of this work. Being able to interpret, analyze, and act based on this data has been a significant focus of MWDOC's Water Loss Control Technical Assistance Program. The work done by E Source Companies LLC through this program has enabled agencies to apply for favorable adjustments to their Water Loss targets, optimize their meter replacement and maintenance schedules, and more accurately report their water loss to the state. MWDOC and E Source staff have presented case studies from this program at over 20 national conferences and regional meetings.

In addition, based on the 2023 AWWA Water Audit Software submissions, nine of the 29 systems required to submit an audit reported leakage less than the modeled technical minimum. The technical minimum volume modeled in the water audit software acknowledges the fact that it is impossible to eliminate all leakage from a distribution system – all systems, regardless of how new or well-maintained the system is, experience some degree of leakage. However, through compiling water audits and working toward the collection and analysis of accurate data, these agencies have demonstrated time and time again that it is possible to achieve levels of leakage below the modeled technical minimum. To continue achieving these low levels of leakage and maintain distribution system efficiency, these agencies will likely need to continue engaging in programs such as leak detection, customer meter testing, collection and analysis of accurate data, and other water loss control activities.

All 30 Orange County Water retailer agencies have participated in at least one Water Loss Control Shared Service or Technical Assistance activity. The program continues to grow to meet the needs of the agencies and is vital to helping agencies prepare for the first water loss standards compliance deadline in 2028. The data collected, analyzed, and leveraged through this program will continue to support and inform Water Loss Control programs across Orange County and serve as a model of the power of field interventions coupled with data analysis. m