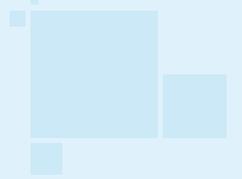


REDUCE WATER LOSS

SOLVE WATER SYSTEMS CHALLENGES
AND SAVE MONEY WITH ARCGIS®



Alleviate Water Loss

A Proven Strategy for Saving Water and Increasing the Infrastructure Life Cycle

Modern utilities constantly grapple with chronic issues like aging infrastructure and water loss. Utilities around the world have turned to an enterprise location strategy to save millions of dollars through stronger capital improvement decisions and dramatically reduced water loss. With the Esri® ArcGIS® platform, you can ensure that staff do the right work and do it right.

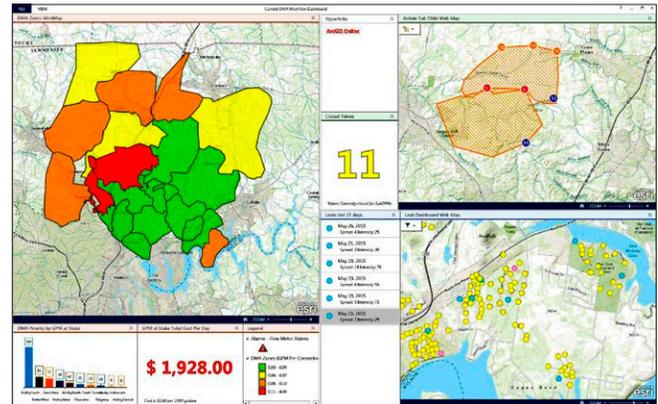
Doing the Right Work

Data-Driven Capital Improvements Save Millions

Aging infrastructure is prone to main breaks and chronic leaks. Spatial analytics helps utilities around the world prioritize capital spending with a defensible, evidence-based approach.

Case Study: Saving Millions

At White House Utility District (WHUD) in Tennessee, staff consolidated asset information into a single, authoritative geographic information system (GIS). By displaying asset information on interactive web maps, decision makers prioritized projects based on data-driven interpretations of the spatially enabled data. WHUD dramatically reduced unnecessary spending in the first year alone. By implementing an enterprise GIS, staff bolstered decision making and ultimately deferred the issuing of a bond, saving WHUD customers \$32 million.



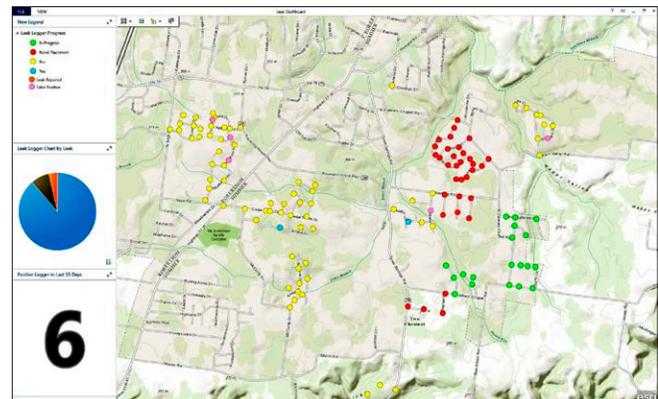
Doing the Work Right

Real-Time Leak Detection Saves Time, Money, Water

Undetected leaks cause major resource loss. The ArcGIS platform offers a suite of water-loss detection and response solutions. By using advanced technology to isolate and repair leaks, utilities avert costly acoustic surveys and step testing as well as the even costlier consequences of long-term undetected leaks.

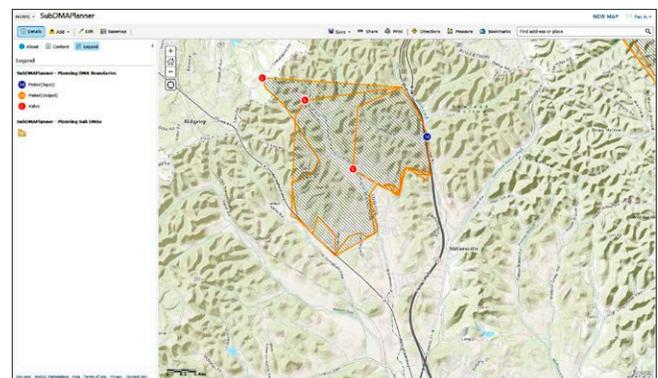
Case Study: Detecting Leaks

WHUD deployed ArcGIS leak-detection solutions included with ArcGIS for Water Utilities. In the first year, WHUD estimates, it saved as much as \$37,000 per leak. Overall, the utility estimates a total annual savings of up to \$219,000.



"Because of the investment in ArcGIS, we've seen a great return. Because of the easy access, we are able to redirect work to other areas, such as leak detection, to help eliminate the amount of water that's being needlessly put on the ground, saving hundreds of thousands of dollars each year."

Amy Meadows, Human Resources Manager,
White House Utility District



In Their Own Words: Proactive Leak Detection for a Single Incident Saves More than \$100,000

By Pat Harrell

At WHUD, we worked with Esri to develop new tools and workflows to identify underground water leaks. One such tool is a nighttime flow analysis application that identifies unusual flow during lowest-demand hours, which typically occur in the early morning. This application also lets us divide our entire service area into more manageable pieces called District Metered Areas (DMAs), which we can then monitor to compare expected flow to actual flows. If we detect significantly higher flows in a DMA, we can further investigate and identify unusual flow areas on web maps. Once these areas are identified, we can isolate them and repair the leaks.

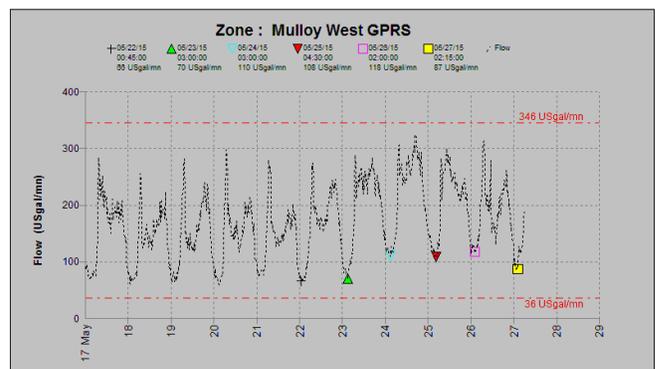
In May 2015, we noticed what appeared to be a fairly small leak in our Mulloy West DMA. This area typically showed nighttime flows of about 59 gallons per minute (GPM) and was reporting at a moderately increased rate. One of my colleagues went into the field and identified a small leak. He flagged the area for repair as a low priority, since there were no reports of service disruptions or other problems. Over the ensuing holiday weekend, the numbers jumped dramatically. Flows rose to 115 GPM, nearly double the expected, normal nighttime flow rate.

My colleague returned to the leak and confirmed that it had opened up further. The leak was quickly prioritized and repaired. But after the repair, the Mulloy West DMA still reported in at 87 GPM, about 20 GPM higher than it should have. We had found one leak, but we were still losing water somewhere else in the area.

With over 57 miles of water mains in the DMA, we knew we couldn't manually survey the entire area. We used the nighttime flow application to further divide the Mulloy West DMA into a north SubDMA and a south SubDMA. ArcGIS immediately calculated expected flow rates of 23 GPM for the northern SubDMA and 36 GPM for the southern SubDMA. The next day, the app reported 23 GPM for the northern SubDMA, but showed 66 GPM for the southern SubDMA. Armed with a better sense of where to investigate, our crews uncovered a broken water service line in the south SubDMA.

This leak could have easily gone undetected for months or even years without ArcGIS. The Mulloy West DMA is extremely rural, and there are only 1,100 customers, none of which had reported any service disruption. In this single incident, we estimate that the leaks were costing us about \$288 per day in water production. By identifying and repairing these leaks so quickly, we were able to save about \$105,000 in potentially lost water over a year.

Since we've implemented ArcGIS, WHUD has identified and repaired dozens of similar leaks. This not only saves us the cost of leaked water but also saves us the cost of having to purchase supplemental water to meet demands. ArcGIS has also helped us prevent wear and tear on production and transmission assets. All told, ArcGIS is easily saving WHUD hundreds of thousands of dollars each year.



"We estimate [that] a 35 gallon-per-minute leak repaired yesterday had cost us about \$300 in nonrevenue water over the course of the three days. By deploying ArcGIS, we fixed the leak. But had that leak run for a year—between manual step testing or manual acoustic survey cycles—it would have cost us approximately \$37,000 even if it had not gotten worse over that time period. With DMA management, we were able to respond quickly."

—Pat Harrell, PE, District Engineer, WHUD



Learn more at
esri.com/water.



Esri inspires and enables people to positively impact their future through a deeper, geographic understanding of the changing world around them.

Governments, industry leaders, academics, and nongovernmental organizations trust us to connect them with the analytic knowledge they need to make the critical decisions that shape the planet. For more than 40 years, Esri has cultivated collaborative relationships with partners who share our commitment to solving earth's most pressing challenges with geographic expertise and rational resolve. Today, we believe that geography is at the heart of a more resilient and sustainable future. Creating responsible products and solutions drives our passion for improving quality of life everywhere.



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