



## CUSTOMER CASE STUDY

# Confidence boost: AVEVA™ PI System™ helps White House Utility District meet critical demand and build resilience

White House Utility District - [www.whud.org](http://www.whud.org)  
Industry - Water

## Goals

- Improve efficiency and resilience for rural water utility district
- Capitalize on enhanced monitoring with AVEVA PI System to find pipeline leaks

## Challenges

- Managing more than 600 miles of rural, isolated infrastructure
- Updating long-established procedures and processes

## Results

- Reduced costs by \$2 million and recovered \$30,000 in employee time.
- Deferred a capital expansion of \$15 million to \$20 million for 11 years.
- Demonstrated value of data across utility staff

## Solution

- AVEVA PI System
- ESRI ArcGIS connector

# Introduction

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Tennessee's White House Utility District (WHUD) has a small team that's responsible for more than 600 square miles of infrastructure – many of which are in rural, isolated areas. AVEVA PI System allows WHUD to keep an eye on its critical infrastructure from a distance and find leaks and other problems before customers raise them as issues. Some field operators were skeptical of AVEVA PI System at first, but their confidence in the data has grown over the years and led to procedural changes that have saved millions of dollars and hundreds of millions of gallons of water. WHUD passes those savings and service improvements on to its customers, who benefit from more reliable water pressure, fewer leaks, and a better overall water experience in their homes.

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**“Not only does it help us prevent breaks from happening in public infrastructure, but it also helps protect customers' plumbing by eliminating the dramatic pressure changes and lets us provide more reliable service to them.”**

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**Pat Harrell**

District Engineer, White House Utility District

## Responsive, not reactive

WHUD worked with Matchpoint Water Asset Management (now part of McKim & Creed) to assess its efficiency and both water and financial losses.

It streamed AVEVA PI System's data into Esri's ArcGIS mapping software to precisely pinpoint the location of the leaks. In less than four days, WHUD found a leak spilling about 147 million gallons a year, or enough for 2,239 homes, which was costing WHUD over \$300,000 annually. Over time, finding and identifying these issues allowed WHUD to move away from reactive maintenance and issue response to a more proactive model. The new way of thinking is based on data, rather than casual customer observations that can be difficult to come by in remote areas. “We saw this data; we didn't have to wait on a customer call or someone in a rural area to see it,” said Josh Gregory, water loss analyst at WHUD.

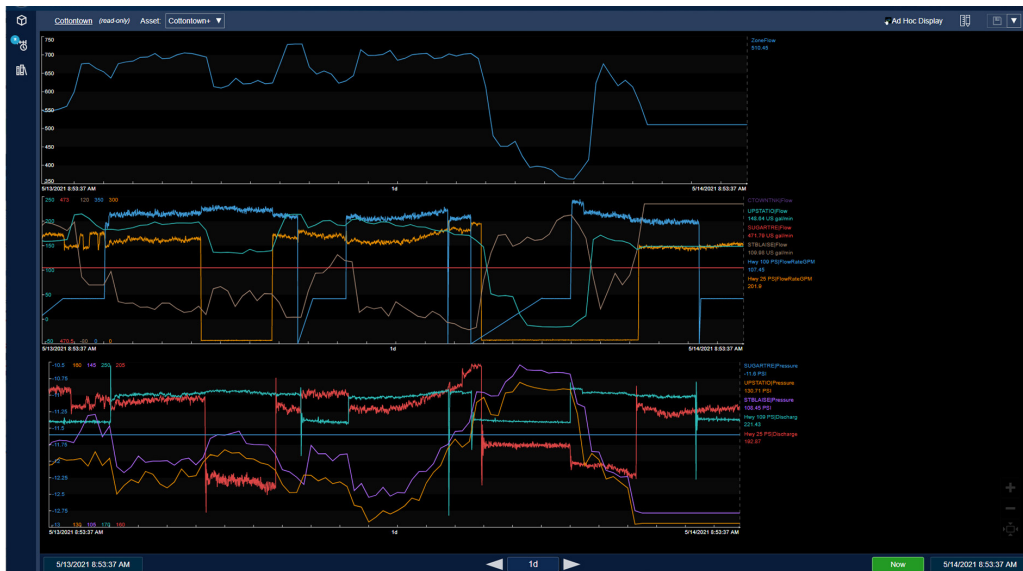
“I see the flows in our DMAs every morning and can react quickly. We're not just waiting on a leak to be reported; we see it in the data.”

WHUD recently began to notice about one break per month on three sections of pipe. The team used AVEVA PI System to collect data from those areas and found that pressure transients around the pump stations increased water pressure and damaged pipes. Armed with a clear idea of the problem, the team made operational changes to reduce pressure transients and used monitors to confirm the transients were eliminated. WHUD District Engineer Pat Harrell said this process cost about \$10,000 but saved about \$2 million in future construction by eliminating the pressure transients and preventing potential damage to the pipes. Although this problem was not identified as a true “customer issue,” WHUD's customers will benefit from the changes. “Not only does it help us prevent breaks from happening in public infrastructure, but it also helps protect customers' plumbing by eliminating the dramatic pressure changes and lets us provide more reliable service to them,” Harrell said.

## What's hiding beneath the driveway?

During routine system checks, Gregory noticed a spike in the data that might indicate a leak. The team began closing off valves to pinpoint the leak and narrowed it down to a 2,000-foot section of pipe that the field operators could inspect. With the help of sub-surface listening devices, they found the problem in a small section of pipe that ran under a residential driveway. “There wasn't a drop of water on the ground anywhere, but when they dug down and found it, it was about a gallon-per-minute leak. We were able to get it back to normal the next day.”

Without AVEVA PI System to flag the issue, it could have easily gone unnoticed for months or years because it was on an individual's property with no signs of visible damage. However, AVEVA PI System brings a new level of visibility to both public and private property. The increased visibility also helps WHUD keep an eye on water pressure and other issues that could impact residential customers. “We can monitor customer pressure and flow data through the portable logging devices at their house and see changes before they get out of hand and cause major problems,” said Harrell.



WHUD staff can quickly see and analyze the leakage, flows, and pressures across all their pumping stations and DMAs in order to make informed decisions.

## Keeping stormwater at bay

While much of WHUD's operation focuses on preventing water from leaking out of its pipes, the wastewater team works to prevent groundwater and stormwater from entering the collection system using some of the same techniques. It's a small team tasked with covering a large area, something that would be impossible to do without help from AVEVA PI System. It provides a holistic overview of the entire region in one place that everyone on the team can see.

The team split the region into zones and then used asset comparison tables to compare flow rates during rain events and dry weather to identify problem areas. "Basically, we're narrowing it down until we get to the neighborhood level or the street level, and we kind of home in on that source," said Kim Klotter, WHUD's wastewater coordinator. "Having this targeted approach is a real improvement over just heading out into the rainstorms and hoping that we get lucky."

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## Building trust and confidence in the data

Some members of WHUD's team were skeptical about AVEVA PI System because it would mean changing the way they'd done things for years, or in some cases, decades. Gregory said that even the most ardent skeptics came around in the end after seeing how reliable data could make their jobs better and keep their customers happy. "We have some employees who have been with the district for 30 and 40 years, and they did things a certain way for so long. At first, they were skeptical, but all have become believers since they've seen the accuracy and power of the data. It was telling us what was actually going on," Gregory said.

"I see the flows in our DMAs every morning and can react quickly. We're not just waiting on a leak to be reported; we see it in the data."

**Josh Gregory**

Water Loss Analyst, White House Utility District

For more information about the White House Utility District and AVEVA PI System, watch the Radio PI interview [here](#).

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