Background

The city of Zephyrhills, FL, was renamed in 1910 by the small community of residents who were inspired by the area's warm breezes, called zephyrs, and the rolling hills of Pasco County. In the last two decades Zephyrhills, 30 miles northeast of Tampa, has grown to nearly 18,000 residents. Rapid population growth in the last decade and climate changes have greatly impacted the city's utility services, particularly the water and sewer systems.

In its Water Division, Zephyrhills maintains 300 miles of water pipes, seven water treatment facilities, an elevated water storage tank, a pump station, and more than 14,000 water meters that interconnect with Dade City. The city's wastewater collection system consists of 300 miles of sewer lines, 70 lift stations and a booster pumping station that is interconnected with Dade City, and a wastewater treatment plant that handles up to 3.85 million gallons a day (MGD).

The Challenge

Increasingly severe storms caused capacity issues and overflows. The city has even had to periodically ask residents to temporarily reduce toilet flushing when the sewage system became strained after harsh storms and hurricanes.

The city wanted an automated Supervisory Control and Data Acquisition (SCADA) system that would give early warnings about rising wastewater in its system, intel about inflow and infiltration (I&I), and a way to remotely control pumps at its lift stations. They also needed to reduce overflows the incurred fines and eliminate flooding and backups that caused customer complaints.

Zephyrhills already had a good example of how real-time technology can transform an operation. The city began using Data Flow remote technology units (RTU) in 2005 to monitor its underground water wells and collect data on groundwater levels, flow rates, and quality to help inform operational decisions about water allocation, well field management, and sustainable groundwater use.

A few years after installing the RTUs in the Water Division, Zephyrhills deployed SmartCover's Telemetry Control Units (TCU)

Highlights

- Acquired real-time, remote visibility and access to lift stations
- Reduced lift station backups
- \Improved station down times
- Improved response times
- Optimized cleaning program with prescriptive maintenance schedule
- Reduced fines for environmental infractions cause by I&I and SSOs
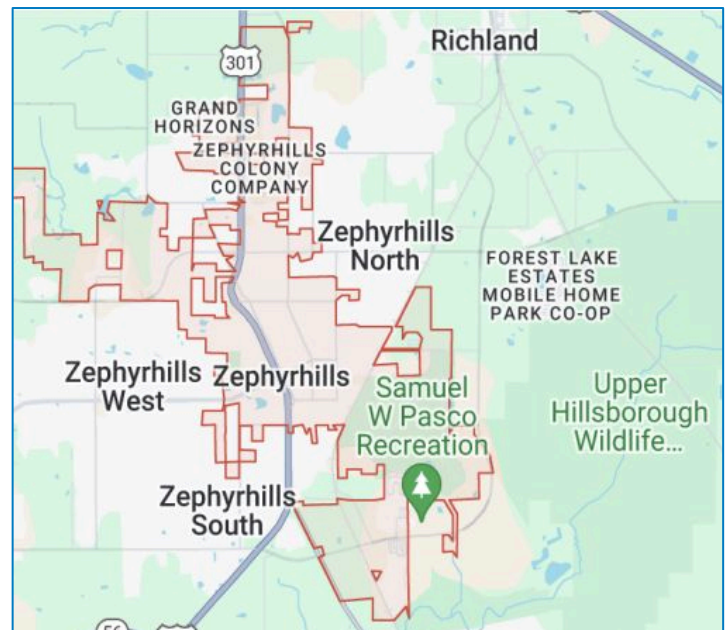- Cost savings in several operational areas

Figure 1: Map of Zephyrhills

for SCADA. The TCU001 systems use cellular radio communications to fully operate and remotely monitor the city's 70 lift stations in real time.

Those monitors allow staff to immediately receive customized alarms and to remotely see what is happening in real time, remotely operate pumps (even from another state), reduce force main pressures, and equalize flow into a wastewater treatment plant.

The integrated radio systems send alarms and other information to a secure Central Terminal Unit (CTU) as well as to cell phones and other mobile communications devices so staff can immediately troubleshoot issues, such as a high well, a pump fault, or see whether a pump ran long or went offline. Most times problems can be solved without staff having to go on site.

The Results

Data gleaned from Data Flow's TCU001s has improved Zephyrhills' efficiency by being a significant resource to help identify and prevent real-time problems in pipes and pumps in both the water and wastewater divisions. They can generate reports, graphs, and data customized for their unique needs.

Conclusion

Zephyrhills Utilities has seen a significant return on investment with streamlined operations and cost savings by reducing fines for environmental infractions caused by I&I and SSOs.

Staff is no longer required to physically watch the systems around the clock; they do it remotely and has time to do more proactive tasks to maintain the system. The TCU technology also helps boost other performance areas and keep staff safe by eliminating frequent trips to investigate unknown issues, often in confined spaces, without any intel. Response times have improved as well as customer relations.

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