Case Study | City of Tavares

MultiSmart Controllers

Dragon Boat at Tavares

City of Tavares

Nestled in central Florida between Lake Eustis and Lake Dora, the City of Tavares is the Lake County Seat and home to about 11,600 people. About 45 minutes northwest of Orlando, Tavares is known for its local areas of natural beauty, recreational boating and fishing, and as a seaplane stopover. Tavares has been on the map since 1882, and has served as a regional tourist destination, a hub of the citrus industry, and a center of local government. The area's scenic, rolling topography creates a network of hills, valleys, and many freshwater lakes.

Existing Wastewater System

When Brad Hayes moved from Massachusetts to Tavares and took over as Director of Utilities, he was surprised by the City's rolling hills, its beautiful trees, numerous lakes, and all 69 of its wastewater lift stations. If you do the math, that comes out to about one lift station per 168 residents, or about one lift station per 68 acres of land area. How could such a small municipality need that many lift stations? Turns out that the scenic, rolling hills make gravity feed into the wastewater treatment plant difficult in most parts of the City. Couple that with the City's relatively low population density (approximately 1600 persons per square mile) and many lakes, and you get 69 wastewater lift stations.

During his first few weeks on the job as Director of Utilities, Brad could tell immediately that something needed to change. The entire wastewater system, including the treatment plant and the lift stations, was monitored and kept in working order by a maintenance staff of six individuals (including a truck driver and construction inspector). But the stations were not monitored effectively. The staff were constantly responding to lift station failures, lift station false alarms, or complaints from residents about sewage backing up. During his first two months on the job, Brad recalls, a lift station failure sent untreated wastewater gurgling into one very unlucky residence. *"We had a residence call, early one morning, and upon arriving to a fairly new house we found ourselves wading through sewage."*

"The main problem," Brad explains, *"was getting a reliable way to oversee this amount of lift stations with 4 staff and 69 stations."* With their old equipment, a downed pump and the resulting sewage backup would trigger an alarm at the affected lift station. But so would a minor equipment error, often a result from frequent lightning storms in the area that can knock out power for a few moments, or some non-critical electronic or mechanical problem. Any of these

problems could trigger the alarm and there was no way to discern the alarm's cause without sending someone to the malfunctioning lift station to investigate. Additionally, when the service technician arrived, there was no way to tell which part of the system was malfunctioning. The technician would have to embark on a time intensive visual and mechanical inspection of the system and perform detailed diagnostics. The result was overburdened staff, complaints from residents, and a managerial mess.

A Call for Change

After a short time with the City, it is not surprising that Brad decided to make a call for change. He had two potential choices: continue business as usual and hire additional maintenance staff to keep on top of the existing system, or add a new system of computerized monitors, controllers, and SCADA interface that would streamline the workload of his existing staff. The system upgrade was his obvious choice.

Brad and his staff then had to wage an uphill battle with the department's existing procured equipment policy before spending money to implement any system upgrades. Some thought that there was no reason to change vendors, since the existing equipment appeared to be functional enough to continue operations. But after writing a short white paper, it was evident that a change was warranted. As a result, Brad and his staff looked into several different SCADA systems before deciding on MultiTrode.


Brad Hayes


Tavares Treatment Plant

Cost was a reasonable factor for the City to consider. Portions of the City are deemed blighted, and the 2000 median household income was about $31,000, or about 33 percent below the US average. However, purchasing, installing, and operating the MultiTrode system ended up being substantially more cost effective, as compared to continuing business as usual and forcing the hire of new staff. So, after a year and a half spent on background research and positioning, Brad and his team finally got the go-ahead to purchase and install the new systems. Brad notes, *"Getting money in an economic downturn is hard. So we are relying on MultiTrode. We have 15 stations covered so far, and our goal is to put in 15 per year until we have all of the lift stations integrated."*

Environmental Regulation

The MultiTrode system has also helped Brad and his staff keep pace with environmental regulations. Like many other states, the State of Florida implements US EPA regulations for wastewater treatment facilities, and also adds its own state statutes and regulations relevant to wastewater collection systems, system design, permitting capacity, spillage overflows, and oversight of stations.

Brad has found that the MultiSmart helps proactively maintain compliance with many of these regulations. *"My goal is to help us implement a preventative maintenance program as opposed to a reactive maintenance program. The MultiSmart does this..., helps us to preserve resources and the environment, eliminates backups into residence homes, and helps comply with environmental regulations."*

Aaron Parkinson from MultiTrode and Jerry Blair

Easy to Learn

Ease of training has also been a big positive for the wastewater treatment operations staff. Generally speaking, the City's workers have been able to get proficient at using the MultiSmart units without very much training. While Jerry and his staff admit that they are still learning about some of the unit's advanced features, he and his workers quickly learned to use the MultiTrode system to operate and collect pump system data, and to report pumping equipment errors. Brad comments that, *"our own men can be trained to install and maintain the MultiTrode system. We don't need an outside vendor or to hire an Integrator to come in and do it for us."*

Brad continues, *"What I really loved was that our men could take out a module, insert a new module, and get it up and running in a short amount of time."*

Easy to Operate and Maintain

Jerry Blair has been in the business of wastewater treatment since the late 1970's. Originally with Clow Water Systems, Jerry spent several years working for US Filter (now a division of Siemens) and Westinghouse. Three years ago he moved into public service and took on his current position with the City of Tavares, as the City's Field Service Supervisor in charge of day-to-day wastewater operations. Jerry oversees a staff of four, who are responsible for maintaining the operation of the City's wastewater treatment system, including the treatment plant and the 69 lift stations.

Jerry has worked with three other pump system controller/monitoring systems, and notes that he likes the MultiSmart's intuitive operator interface. *"It's user-friendly. The unit gives you voltage, amperes, resistance, and flow data accurate to within 2 percent. It makes it easy to track efficiency of the pumps…* and it is *big enough to run 3 pumps; we have a few triplex stations."*

In comparison to their previous system, the MultiSmart's ease of use has substantially reduced the City's reliance on expensive consultants for system installation and maintenance. Jerry comments about the previous system, *"There was nothing wrong with it, but the integrator was hard to use and hard to get support for. were continuously having communication breakdowns*

and the company would not give us help or support to fix the problem without us hiring a consultant to come out and fix it for us. We paid for the system, and felt like we should get adequate tech support. My crew, comprised of Kevin Dixon, Shannon Parrish, Josh Madden, and James Anderson, put in the MultiSmart controllers about two and a half months ago. We have 13 online now and we did our own wiring and installation… We're planning on installing 15 per year until we have one on every lift station."

The MultiSmart's modular, SCADA-interfaced operation also makes it easy for his staff to add new modules, or to control the entire system from a remote location. As Jerry observes, *"The nice thing is this system allows us to totally control the pumps from any office, or from any station. Now we don't have to go to the station to address an alarm and we don't have so many nuisance alarms. Now we can see if it is a real problem or not without having to visit the lift station."*

Saving Effort, Electricity, and $4000 per Installation

Since implementation, MultiTrode's system has helped the City to substantially reduce the amount of time that staff spend chasing down and diagnosing problems. Brad notes that, *"If there is a power outage – we have lots from the lightning – if it trips out a lift station, the MultiSmart sends a signal to SCADA. Operators at the plant, or we have an emergency man, e.g. on call, are notified immediately. We get someone out there fast, and can make an adequate response time to meet regulations."*

The functionality of the MultiSmart system also helps Brad and his staff to effectively monitor the lift stations for signs of worn equipment. In Brad's opinion, a significant *"advantage of MultiTrode is it allows us to collect data for kilowatts per hour. It enables us to keep an eye on our pumps and pumping times to see if the kilowatts are starting to rise. That means a problem with the pumps. An impeller being restricted by, I don't know how else to say it, crap, slows the impeller, increases the kilowatt-hours, decreases the pumping capacity, and runs the pump longer. We can look at electricity and pumping time, identify and fix pumps that need maintenance, and can reduce electricity and conserve energy."* This feature in particular helps to proactively maintain the system in good working order, reducing the incidence of failure or backup.

Brad recalls, *"I looked at all different types of SCADA systems. The MultiSmart's modular units measure flow, gallons per minute, and energy use. MultiTrode's service is reliable, and the units are easy to install and maintain. My own men can be trained to install and maintain the units, and we don't need an outside vendor to maintain the units. And that helps us address problems as they come up, and saves us money… This City is recognizing an approximate cost savings of $4,000 per installation and no need for an integrator to be under contract. This has been a win-win situation for us."*

"Seriously speaking, it's one of the easier systems," Jerry notes. "With all of the cutbacks we're seeing, you can actually install and run this system yourself. And the MultiSmart is one of the few products nowadays I have seen that actually does what they say it does."

Using Outpost2 SCADA

MULTITRODE

www.multitrode.com

MultiTrode Pty Ltd · Australia
Brisbane Technology Park 18 Brandl Street
PO Box 4633 Eight Mile Plains Qld 4113
Tel: +61 7 3340 7000 Fax: +61 7 3340 7077
sales@multitrode.com.au

MultiTrode Inc · USA
Unit 3, 990 South Rogers Circle
Boca Raton Florida 33487
Tel: +1 561 994 8090 Fax: +1 561 994 6282
sales@multitrode.net