

Hillsborough County, FL

Grinder Pump Guardian Aids
Hillsborough County, FL's LPSS and
Equipment


HighTide
TECHNOLOGIES
THE FUTURE OF SCADA

In 1979, the Hillsborough County Public Utilities Department in Florida adopted a plan to reduce potential health hazards from septic tanks in two of its residential areas: Ruskin and Wimauma. The Utility was proactive in dealing with aging septic tank systems.



In 2010, the Florida legislature passed a law requiring that septic tanks be inspected every five years and that they be maintained according to standards. A study done by the Florida Department of Health, noted that over 2.6 million homes in Florida depend on septic tanks, and many of these tanks are over thirty years old. Unfortunately, septic tanks contaminate Florida's springs and other sources.

This mirrors a national concern that aging septic tanks release nitrogen and other contaminants into groundwater. As is the case with many utilities, Hillsborough County needed to modernize, yet keep within budget constraints. Working with USEPA grants, the Utility has been gradually replacing septic tanks with a low pressure sewer system (LPSS). Three decades after its initial push, the utility is nearing its goal to provide a safe LPSS for residents in all neighborhoods.



As with any LPSS, raw wastewater from each business or residence is collected in a pump basin, where the transmission of the wastewater and any solids begins. In the case of Wimauma and Ruskin, there are 1100 such units.

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- Jon Johanson, Project Manager

Though converting to a LPSS brought needed service to Wimauma and Ruskin, the the number of sanitary sewer overflows (SSO's) increased. These were due to heavy rain and floods, and they were complicated by inadequate communication and data collection. The Utility needed to find a cost-effective, efficient way to gather current and historical information, as well as to note trends.

“We wanted to be notified of potential overflows somehow,” says Jon Johanson, Project Manager. “Many of the area's residents didn't know what to do when alarms occurred near their homes. We needed a better handle on communication so that we could prevent future SSO's.”

Robert Knight, Supervisor of Field Maintenance Services and manager of the LPSS operations, agrees. “In the past year, we've been hammered with storms, with a lot of water going into the ground. We were looking for a way to stop the high number of SSO's.”



Johanson notes that the Utility turned first to a SCADA company to implement a solution using individual monitors on each pump, along with collector units. The information was to be transmitted from the monitors to the collectors to the Utility via cellular phone technology.

In May of 2010, the SCADA company installed a 19-unit pilot program. Unfortunately, the technology from the individual units to the collectors failed, and the pilot program was aborted.

It was then that Hillsborough contacted High Tide Technologies, LLC. via High Tide distributor, Water Resource Technologies, of Jacksonville, Florida. High Tide's Grinder Pump Guardian solution offered the SCADA technology that Hillsborough County desired.

High Tide provides both cellular and satellite technology. The Utility decided to initiate a 30 day trial of High Tide's satellite-based solution. The Grinder Pump Guardian (GPG) system includes High Tide's proprietary Grinder Pump Guardians (individual grinder monitors), collectors, High Tide's servers, and Orbcomm's low earth orbit satellite system to collect and transmit data. The GPG solution provides the utility with wireless monitoring of all assets, including remote ones, as well as desired alarm notifications.




The solution is implemented by placing a wireless monitor at each grinder pump. These monitors transmit data through neighborhood collectors, which, in turn, communicate with High Tide's servers via satellite. Since each monitor functions as a radio repeater, it does not matter if individual pump stations are far from the collector module.

The solution is highly scalable. It can be installed one point at a time, or it can quickly be deployed over a large number of assets.

Utility-designated personnel receive access to a secure web interface on High Tide's servers. They can access this page from any Internet-connected computer anywhere and at any time. On the secure web page, they can view current and historical data. They can also see notifications, such as high water alerts and excessive starts and runtimes. Personnel can input service history and manage alarms through the server.

Additionally, personnel are notified via text, phone call, or pager of any alarms or warnings. Units in alarm are identified by name and street address. A mapping feature on the web page guides utility personnel to units in stress or alarm. A High Tide employee is available to answer questions day or night.



The pilot program was installed in December of 2010. Later, the Utility awarded High Tide Technologies as the sole provider. In April of 2011, the Utility ordered 530 Guardians and 7 collectors. By July 2011, all 550 Guardian units and the collectors were installed. Eventually, the utility plans to finish the system by adding 650 more Grinder Pump Guardian units.

The Grinder Pump Guardian SCADA solution helped the Utility prevent damage to its LPSS during recent floods. During one storm, seven inches of rain moved rapidly across the area. The Grinder Pump Guardian system notified Utility personnel that some pumps were experiencing excessive runtimes. The Utility used this information to change their installations to prevent inflow and infiltration (I/I). For example, they sealed the grinder basins to prevent leaking into the system. Thus, the GPG saved the Utility's grinder pumps from running too long and, thus, from overheating.

In today's economic climate, utilities like Hillsborough County must balance three factors: cost, public safety, and environmental concerns. Affordable and effective SCADA solutions answer these needs. Scalable solutions, such as High Tide's Grinder Pump Guardian, fit easily within most utility budgets. The GPG solution helps utilities reduce man-hours, modernize older systems, protect equipment, and manage operations.

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