

City of Tulsa Using Advanced Level Monitoring to Detect Blockages and Prevent SSOs

The City of Tulsa has an aggressive and proactive history of managing their wastewater collection system. The Water and Sewer Department has maintained a network of permanent flow meters over the last 10 years and this network has provided critical information to ensure capacity in the system to allow for the City's growth. Additionally, the network has been the cornerstone of a very aggressive infiltration/inflow elimination program. Like many cities in the United States, identifying and eliminating Sanitary Sewer Overflows (SSOs) are a major daily effort for the City's Sewer Operations and Maintenance staff. To reduce the risk of SSOs, the City developed and implemented an active sewer cleaning program for the entire system.



Grease Blockage in Sewer Pipe in the City of Tulsa, OK

Within the sewer cleaning program, some pipe segments were placed on a high frequency cleaning schedule as a result of repeated problematic overflows within the collection system. These pipe segments had scheduled cleaning monthly, every three months, every six months, annually, and at 18 months based on historic problems. With the high cost of regular cleaning and the challenge of dedicating employees to addressable problems, the managers within the Sewer Operations and Maintenance Division believed a more cost effective approach was available.

ADS ECHO Level Measurement Accuracy and Reliability... **Problem Solved.**



Eric Murdock, Collection Systems Manager at the City of Tulsa, believed that a real-time monitoring system could be used to identify adverse conditions and dispatch crews to quickly deal with blockages. Mr. Murdock was familiar with the ADS ECHO, a quick and easy-to-deploy solution to continuously monitor depth, and knew it could be a solution to the City's SSO problems. A demonstration project was conducted to determine the viability of the predicting blockage problems and to prove the performance of the ADS ECHO. The local ADS crew mobilized immediately, installed the unit, and maintained the system throughout the demonstration period. City of Tulsa personnel determined within 30 days that the ADS ECHO was the perfect solution to direct their high frequency cleaning program.

"Based on the performance of the first five ECHOs, we purchased another 11 ECHOs to be installed by the end of 2017. We are so pleased with the results that we plan to greatly expand the program in the next budget cycle."

Eric Murdock, Collection Systems Manager
City of Tulsa (November 2017)

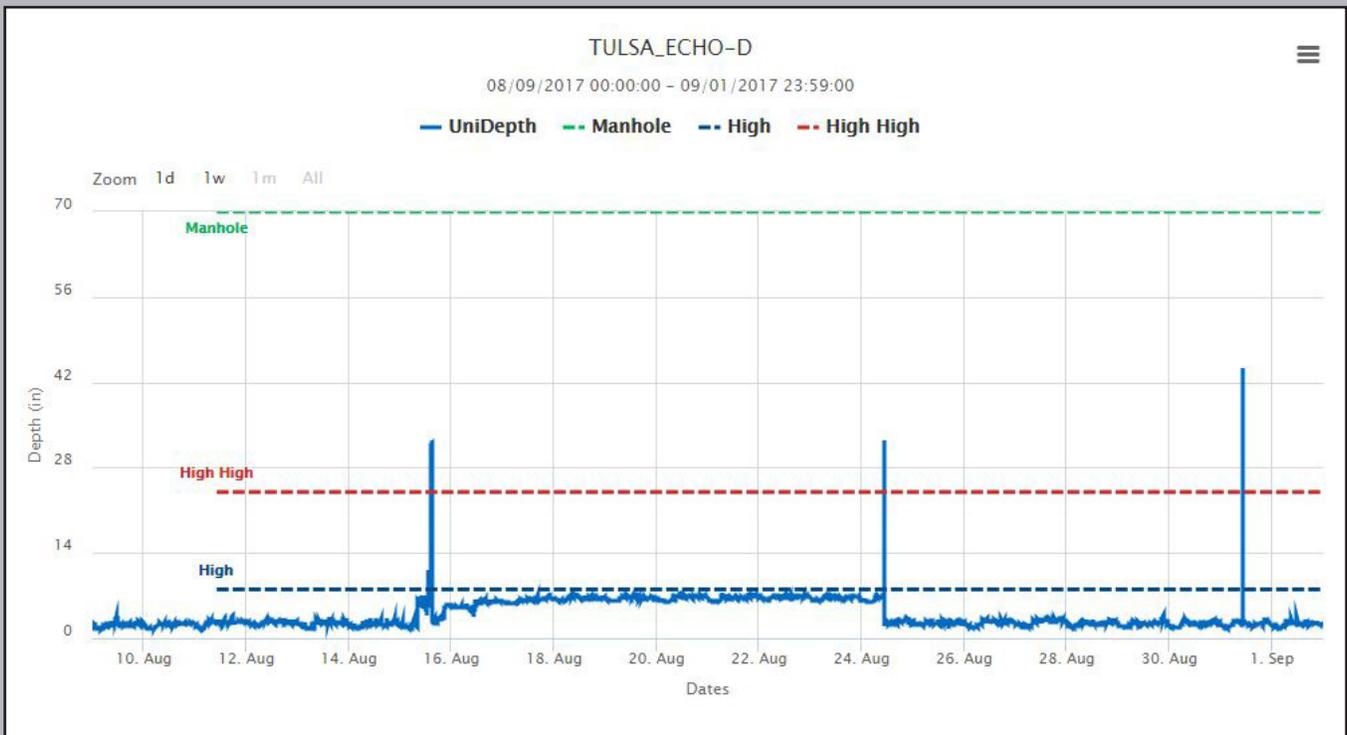


The first of five permanent ADS ECHO units was installed on August 9, 2017. Within less than one week, the City was notified that the location was exceeding critical depth thresholds and a crew was dispatched to the site for verification. Once on-site, the crew discovered a grease blockage and cleaned the pipe, thereby recognizing the intended purpose of preventing an overflow and prioritizing cleaning at the location. After receiving the alarm Rick Warren, Environmental Engineering Aide II, stated “when the water level hit the high alarm mark, we received email and text messages immediately to notify us of the alarm. The ADS ECHO worked perfectly.”

The ability to quickly install the ADS ECHO and provide remote sewer level measurement without a manned entry provided an immediate benefit to the City of Tulsa. According to Debra Carr, Utility Systems Operations Manager, “the ECHO is very stable, with data collected at five minute intervals and transmitted to the ADS FlowView web platform every day.” Several more ADS ECHOs are already planned for purchase to augment the City’s flow and level monitoring network.



The depth plot below shows the information collected by the ADS ECHO in August 2017. The blue dashed line marks the first alarm level at eight inches, which also is the pipe height. The red dashed line marks the critical alarm level at 24 inches. The solid blue line highlights the high degree of variability that occurs during the weekly bypass operations. The frequent interval data showed very high levels occurring weekly, which was enlightening to the City and became an important scenario for continuous monitoring.



The City of Tulsa is always on the lookout for leading edge technology, such as the ADS ECHO, to make their system more reliable and enable their crews to work more efficiently. Real-time SSO monitoring is only one example of how the City is willing to adopt a new technology that fits their needs and provides a quick return on investment.

