

## SmartClean™: Providing “System Visibility”, Operational Savings and Superior SSO Protection for Cleaning Maintenance

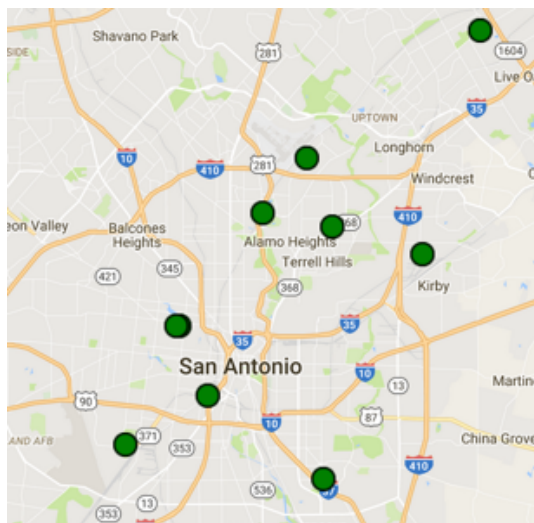
The usual prescription for sites plagued by a history of progressive, relatively fast-occurring build-ups and blockages is to create a rigorous program of cleaning to avoid sanitary sewer overflows (SSOs). This process, termed high frequency cleaning (HFC), requires continuous application of equipment and people to stay “ahead of the system.” While HFC is usually successful at lowering instances of SSOs, HFC also carries a substantial and continuous operational cost. HFC also promotes over-cleaning, increasing pipeline wear and shortening the lifetime of expensive underground assets. In spite of this, spills still occur between cleanings because there is no real-time visibility to the trouble site.



Collection systems are “blind spots” for most wastewater utilities. This creates the need to clean at specific sites with a history and/or perceived risk of spills. A conservative and well-intentioned wastewater manager will naturally increase cleaning frequency because not only does cleaning reduce near-term risk, but more frequent visits to troubled sites gives more frequent information about the sites.

**With continuous SmartCover® monitoring creating visibility into the collection system, utilities can take a pro-active approach to cleaning maintenance, resulting in savings, risk-reduction and a more complete understanding of collection system’s behavior.**

SmartCover® technology provides operators with feedback and precise knowledge of when to issue a cleanout work order. Equally, they are assured that between cleanouts, water levels are monitored and visible. With any unusual changes in water level, a notification of a potential problem is sent. This process frees personnel and equipment for more vital tasks. Savings is achieved, risk associated with cleaning in traffic is lowered, assets, such as pipes, suffer less wear and assurance for SSO prevention is achieved.

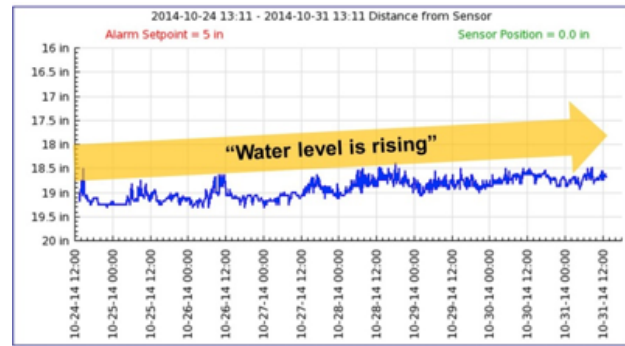


### Pilot Proves Benefits

In a recent, one-year study to determine if a fast and consistent return on investment could be achieved with the SmartClean™ process, the San Antonio Water System (SAWS) participated in the use of monitoring to drive their cleaning maintenance programs.

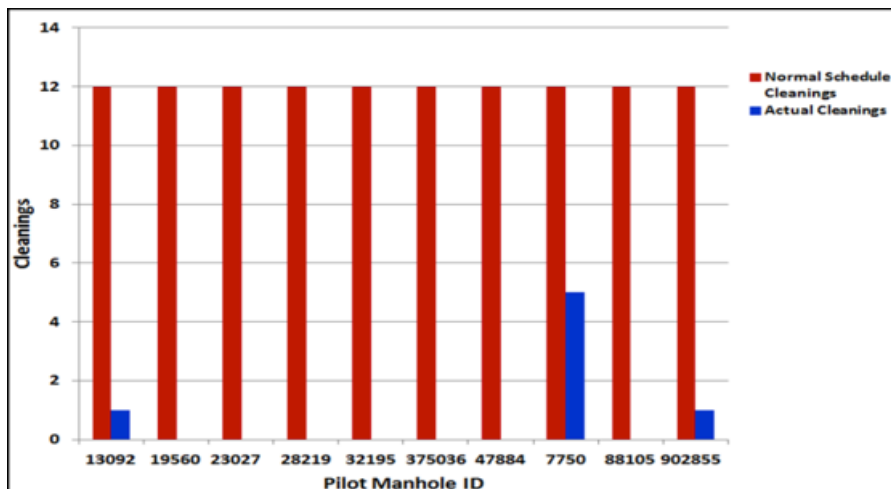
SAWS selected 10 high frequency cleanout sites. SmartCover® remote field monitoring units were installed at each site. SAWS had successful monthly HFC programs already in place and used cleaning feedback to continually adjust cleaning frequencies. For this demonstration project, SAWS shifted their protocol from regular cleaning to cleaning only when the SmartCover® monitors indicated that it was necessary.

An analytical software tool called SmartTrend®, included with each SmartCover®, allowed SAWS to monitor day-over-day level trend changes and receive messages for trend anomalies. This analysis of the real-time monitoring data detected small but potentially important changes in water levels. It showed systematic variances from “normal” diurnal fluctuations. A rising trend indicated a potential downstream build-up, whereas a falling trend indicated a potential upstream build-up. This data enabled users to consider action such as a site inspection or cleaning. SmartTrend® provided powerful, predictive insights into the behavior of the collection system enabling users to have visibility of a potential problem days or even weeks ahead while concurrently providing continuous protection from overflows.



## The Results:

**San Antonio Water System:** During the 12-month test period, SAWS performed only seven cleanings based upon the monitoring and trend analysis (five at a single problematic site). This compares with the 120 cleanings that would have been called for under normal HFC scheduling, which represents a 94% reduction in scheduled cleanings. Other than during a short period in May/June 2016 when nearly 16 inches of rain overwhelmed the SAWS system, there were zero SSOs at the pilot locations during the non-flood months of the test period.



The chart here shows a comparison between the number of HFC cleanings that would have been required per location vs. the actual number of cleanings performed by using the real time data monitoring and trend analysis.

As shown by these pilot tests, the number of times maintenance trucks are mobilized to clean HFC sites can be dropped by up to 90%. One utility reports that for each eliminated cleanout they saved \$500 per cleaning, and based on the results above, for example, this provides a [payback time of less than one year](#) for the SmartCover® system. Additionally, high value human and equipment resources were freed for more pressing needs

## Conclusion

The use of SmartCover® monitors provide exceptional ability to gain collection system visibility and drive maintenance programs with data. Users benefit with predictive trend tools that transform work practices, favoring planning versus reacting. These practices lower costs, reduce in-traffic risks, eliminate SSOs and preserve assets.