

## SmartCover Systems Provide a Cost-Effective Way to Expand Monitoring of Inflow and Infiltration (I&I)

**Who:** Klamath Falls, OR South Suburban Sanitary District (SSSD)

**Problem:** The Klamath Falls SSSD encompasses roughly 10 square miles and serves a population of approximately 25,000 people in more than 7,500 households and businesses. The District owns and maintains more than 100 miles of sewer pipe and more than 1,000 manholes.



Most of the sewer mains were installed in the 1960's and 1970's and are comprised of asbestos cement (AC) pipe. The District sewer pipe size varies based on how much wastewater needs to be conveyed. Currently, the District has sewer pipe between 6-inches and 36-inches in diameter. A majority of the larger pipe is reinforced concrete pipe (RCP). Because of age and usage, sewer pipes require constant maintenance and replacement. Proper maintenance of the sewer system ensures potential spills are avoided and sewer back-ups are reduced. Additionally, proper maintenance of the sewer system will increase the longevity of the District investment.

One of the key focus areas for SSSD is management of Inflow and Infiltration (I&I), which occurs when groundwater and/or storm water flows into the wastewater collection system, through cracked sewer pipes, leaky manholes or undesired connections of down spouts and sump pumps. Excessive I&I can overwhelm a collection system's capacity creating overflows. I&I increases wastewater treatment plant flows, thereby unnecessarily increasing treatment plant processing costs.

According to Mike Fritschi, District Manager, "Monitoring of remote locations is an important part of our on-going efforts to identify and combat I&I. We started monitoring in 2012 by installing four initial flow monitoring units for a cost of \$50,000 but, when the need arose for expanding our efforts to more locations, we required a more flexible, easy-to-install and cost-effective solution. That's how we came to use SmartCover."

**Details:** To address the I&I monitoring expansion plan, SSSD turned to the use of the SmartCover sewer monitoring system for several reasons. First, the cost per unit was significantly lower than previous solutions and the deployment flexibility was less invasive because SmartCover does not require any confined space entry for installation.

Also, based on calibration against the installed flow systems, the SmartCover units proved to be as accurate as needed. In addition, the integrated SmartTrend software supported in-depth trend analysis and modeling to hone in on specific I&I issues.



**Results:** With a relatively small staff at SSSD, the SmartCover units helped with targeting of available resources on addressing real issues of concern regarding I&I.

As Mr. Fritschi says, “By leveraging SmartCover’s advantages, we have been able to both expand our monitoring and enhance the granularity and detail of information that we receive.”

Figure 1 shows the previous arrangement with only four flow monitoring locations, representing major quadrants in the SSSD sewer system.

Figure 2 shows the expanded monitoring configuration, which defines a sub-basin that focuses on the South Sewershed and provides more granular information to spot emerging I&I issues before they can become problems.

Mr. Fritschi summarizes the project as follows, “Using SmartCover Systems allowed us to quickly expand and improve our I&I monitoring processes at a much lower cost than the alternatives. Deployment was quick and easy because no confined entry was required, which allowed us to get up and running fast without a lot of wasted staff time. Also, we get the side-benefit of real time monitoring and alerts in more locations. In addition, the SmartCover tech support staff even tailored special software that allows us to aggregate flow information from multiple locations, thereby enabling more flexibility to analyze relationships between sites and to better understand the dynamics within the sub-basin.”

Looking forward, it is anticipated that ROI on the first round of SmartCover Systems deployment will yield better information on I&I and provide a more refined capital improvement decision making process, while also controlling costs and enhancing usage of valuable staff and resources. As SSSD continues to monitor the results, the deployment flexibility of SmartCover Systems will also allow a smooth transition to support both reallocation of existing units and/or expansion of the overall footprint to define additional sub-basins.

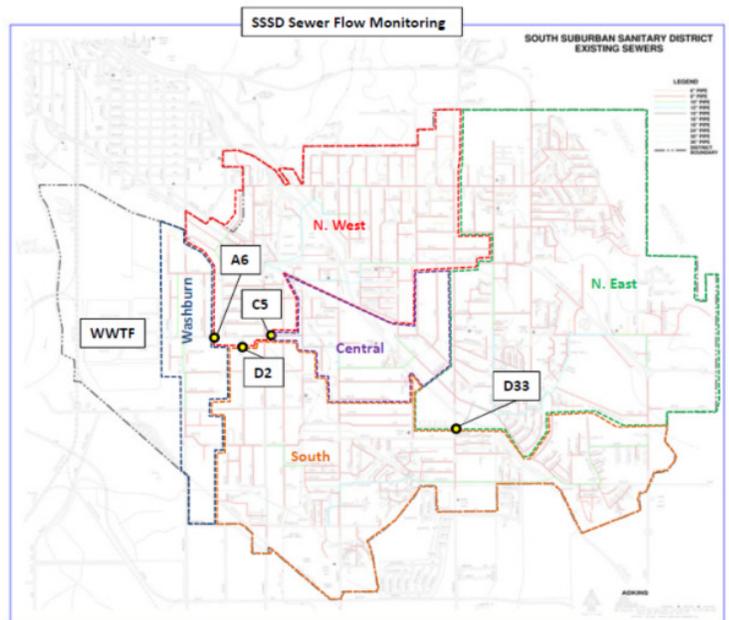


Figure 1 - Previous Flow Monitoring Configuration

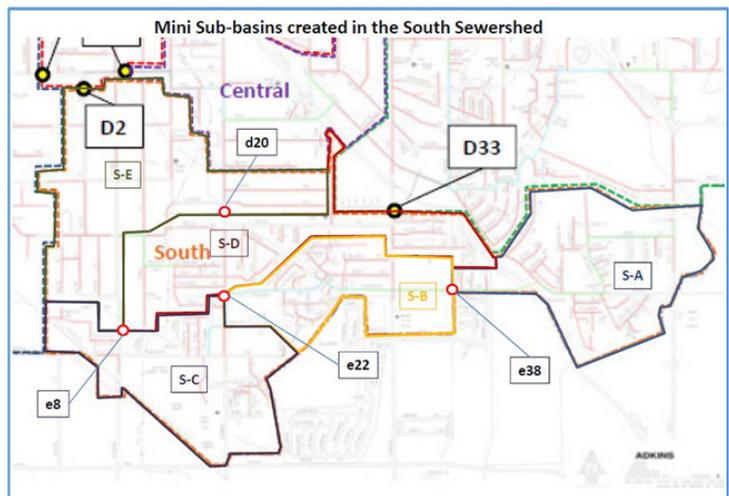


Figure 2 - Expanded Monitoring with SmartCover Systems