Fort Worth Saves up to 1,700 Hours and $150,000 on Inspections

Water Department Sees Quick ROI after Deploying Inspections Solution

By Darrell Gadberry, Regulatory and Environmental Coordinator, and Mark Shell, IT Business Systems Coordinator

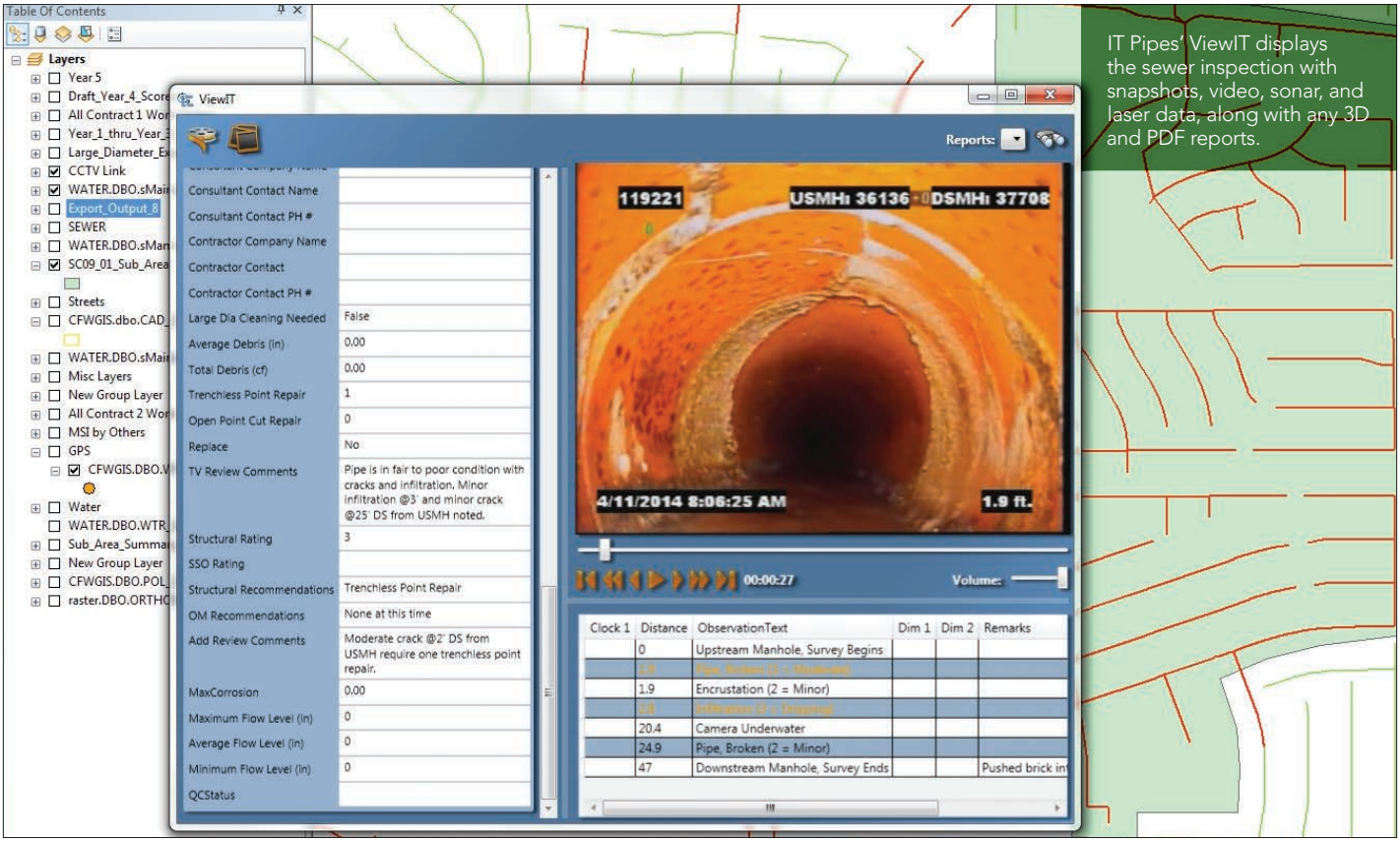
With more than 3,050 miles of sewer and eight closed-circuit television (CCTV) crews, Fort Worth Water Department (FTWWD) maintains two comprehensive sewer inspection programs. These programs—the Sanitary Sewer Condition Assessment (SSCA) Program and Interceptor Condition Assessment Program (ICAP)—include internal and external resources. With SSCA and ICAP, the utility inspects 284 miles of small-diameter pipe and 36 miles of larger pipe, respectively, per year.

Finding a Break in Asset Inspections

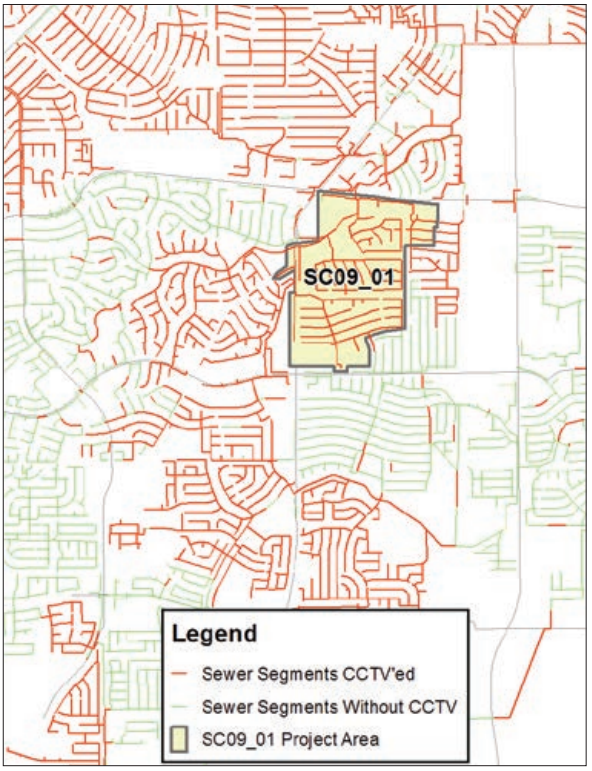
Each year, we produce 30 to 40 SSCA and ICAP reports. With all this data, we needed a robust system for inspection management and inventory. In 2008, our spatial model had break nodes at changes in diameter, material, alignment, and other items. This posed a major challenge with CCTV, which is generally tracked asset to asset or manhole to manhole. Due to our break-node spatial model, we could have several assets within one break or several breaks within one asset. This made it difficult to integrate inspection data with industry-standard applications. We also found it hard to have a clear understanding of how inspections, operations, and maintenance being performed related back to the GIS.

In order to take full advantage of our spatial data, we would spend hours clipping out projects and editing each one. Producing those SSCA and ICAP reports translated to 700–900 of labor hours annually.

In addition, our supervisor and assistant supervisor would have to invest significant time each week in transferring data to the office from inspection vehicles. Since projects were coming in at various stages of completion, this process also allowed errors and omissions. We estimate that



IT Pipes' ViewIT displays the sewer inspection with snapshots, video, sonar, and laser data, along with any 3D and PDF reports.



↑ Visualizing assets in ArcGIS allows a quick check on the status on the overall project to inspect the sewer system.

we dedicated 600–800 labor hours to this process annually.

With help from Esri's team, we made a major move in our GIS from "trunk" sewer lines, which were only distinguishable by referencing stationing numbers along points ranging from grade breaks to manholes, to manhole-to-manhole segments with independent names. We no longer require the cumbersome tasks associated with the stationing of upstream and downstream footage measurements.

Adaptable Programs, Configurable Design

In 2009, FTWWD moved to Esri's model for water and wastewater geodatabase design and a variation of the Local Government Information Model (LGIM). This design allowed us to begin interfacing with Esri partners' off-the-shelf integration models. We generally avoid customization in programs, but we do need highly configurable, adaptable programs that fit into and streamline our business processes.

In 2009, we migrated our vehicles and office to ITpipes inspection software from Esri partner Infrastructure Technologies. This software was much simpler and more contemporary from an equipment standpoint and also allowed us to integrate data beyond just CCTV. Our inspection data is all SQL, and we also dedicate a four-terabyte server to media.

On our new, industry-standard GIS model with ITpipes, we have more integration options. Today, our supervisors use GIS to assign asset inspections to a field unit and send all related information from the office. The field crews can update the GIS without any data entry issues, which expedited inspections.

Our model is also now asset to asset, so the field information easily ties back into the GIS. When inspections are complete and synced back to the central repository, any user can access them—immediately!

In addition, we use ITpipes' ViewIT, so our users can select a line and launch a desktop- or browser-based version of ViewIT software that displays the inspection with snapshots, video, sonar, and laser data, along with any 3D data and PDF reports. We can even review multiple inspections side by side with ViewIT, and this didn't require any extra training with our staff. It takes literally minutes to learn how to use this viewer.

Now 53 percent of our system has an actual condition score, and we can visualize on the Esri map what still needs to be done. By 2019, approximately 100 percent of the system will have an actual condition score! With the new ability to tie assets in inspection management to assets in GIS, we can now check the status on this overall project, or we can drill down to specific areas—in seconds. The old school method of pulling up maps, having long meetings, and so forth, pales by comparison.

What's Next?

We also set up ArcGIS Online on iPhone, so any FTWWD employee can pull up sewer and water lines data—with imagery—in minutes. Employees can display attribute data and even pull up our old PDFs while in the field. In addition, we built an app that lets us review any open or active work orders from the field.

Ongoing projects include setting up hardware to have our inspection units automatically sync data to a centralized inspection database. Relatedly, we're evaluating cloud storage options. We estimate this syncing will save 700 labor hours annually by eliminating hard drive transfers, manual merging of data, and more.

Direct Return on Investment

Implementing the Esri model for water and wastewater geodatabase design was quick. But perhaps even better, we were able to document our return on investment (ROI).

FTWWD estimates that moving to the industry standard and integrating with partner solutions ITpipes GIS SendIT, ViewIT, and Sync applications will save approximately 1,300 to 1,700 labor hours annually.

In addition, by displaying infrastructure and associated documents on any smart device through ArcGIS Online, we are saving a minimum of $150,000 in printing and distribution annually.

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