

# I&I

INFLOW & INFILTRATION SOLUTIONS AND EQUIPMENT

Supplement to:  
MUNICIPAL  
SEWER  
&  
WATER

## Water Finds a Way

Trenchless veteran attacks I&I at its sources

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Rather than committing to clean out sewer lines whether it's needed or not, the Little Rock (Arkansas) Water Reclamation Authority is using acoustic monitoring to identify pipelines that need attention. Here a worker uses the Sewer Line Rapid Assessment Tool, or SL-RAT, by InfoSense on an inspection.

## PUTTING A STOP TO STOPGAPS

Little Rock's award-winning sewer rehab program nixes temporary fixes

By Traci Browne

**T**wenty years ago, Little Rock, Arkansas, had a significant overflow problem — significant enough to trigger a lawsuit by the Sierra Club and an Administrative Order on Consent. Back then, there could be as many as 350 overflows during a rain event, some lasting for hours.

Today, the Little Rock Water Reclamation Authority has lowered that number to just 50 combined sewer overflows during a two-year rain event, and it intends to eliminate 30 more by the end of this year. It's accomplishing this with two significant programs: the Sewer Service Line Replacement Program on the private side and Project RENEW, which is the utility-facing program.

Before those programs took shape, the authority was reacting to the Administrative Order on Consent and an agreement with the Sierra Club, attempting to solve its problems. To capture excess stormwater, the authority installed attenuation facilities that could hold 45 million gallons.

### RENEWING FOR FUTURE GENERATIONS

In 2014 when Greg Ramon took the job as CEO of the authority, he didn't think capturing excess water was a complete solution. He compares it to a hole in a roof. You can put a bucket under a leak, but it doesn't solve the ongoing problem.

It was at that point that the utility concentrated on renewing its system in earnest and Project RENEW took shape. In 2015, the authority managed

**"I think rodding pipes every day for the sake of rodding is the old way of doing things ... Not only is acoustic monitoring cost-effective, but it's environmentally responsible as well. Do we really want an additional 15 trucks out there, spewing smoke and causing congestion?"**

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to negotiate an extension from the Sierra Club and the Arkansas Department of Environmental Quality to give the authority until 2023 to fix the leak.

"We're not only rehabilitating the system to keep water out, but we're also renewing the system for generations to come," Ramon says.

Deciding what to work on first required a methodical approach, as Little Rock is spread out across 122 square miles. Ramon says first they considered what they would need to do in the different basins to reduce the amount of flow to prevent overflows. So, they began with flow modeling.

As you can imagine in a service area of that size, when it's raining in one part of the city, it can be sunny in another. The utility settled on placing 14 gauges throughout Little Rock.





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Once it identified the basins causing the most significant problems, the authority started moving upstream, identifying illegal sewer connections via smoke testing with Hurco Technologies' Power Smoker and the 30-L Man-hole Liquid Smoke Blower by Superior Signal. Meanwhile, flow monitors were able to track down sump pumps connected to the system. The authority uses the Hach FL900 Series Flow Logger, along with the Triton+ and FlowShark monitors by ADS Environmental Services.

When needed, the utility also conducted CCTV inspections using three CCTV trucks set up with RapidView IBAK North America equipment and another truck set up with CUES equipment.

Another part of Project RENEW was upgrading the treatment plants and setting up a parallel treatment system at one of the biggest plants to alleviate hydraulic pressure on the system. That parallel plant allows the utility to use mechanical versus biological cleaning during a rain event, and ultimately it increases capacity. Another significant piece of the project was a new trunk line to move water from one basin to another.

On top of this, the authority is consistently rehabilitating pipelines, with 350 miles of pipeline restored or replaced already. To do this work, it uses an array of techniques including CIPP, open cut and pipe bursting. It all depends on the situation.

### DRY-WEATHER OVERFLOWS

What Ramon really likes to talk about is what the utility is doing to mitigate dry-weather overflows due to grease in the lines, or just general maintenance issues.

Part of the Little Rock (Arkansas) Water Reclamation Authority's system renewal effort is the Sewer Service Line Replacement Program, which reimburses property owners up to \$2,500 toward the replacement cost of their sewer lateral.





Ramon says that eliminating the dry-weather component relies on maintaining the system. However, cleaning the 1,400 miles of pipe would take up to five years to complete or it would take an additional seven crews and equipment to clean every pipe in the system in one year.

“The average citizen never rods their sewer line unless they have a problem. So, why do we [municipal sewer departments] rod our sewer lines consistently whether they need it or not?” Ramon asks.

Instead, the authority is using the Sewer Line Rapid Assessment Tool, or SL-RAT, acoustic monitoring by InfoSense to identify pipe-lines that need cleaning. Once cleaned, the line gets tested again, and if it still doesn’t meet the threshold, then the authority brings out the CCTV equipment to see what the problem is. This way, it focuses efforts on areas that need attention.

Ramon’s theory is that sewer lines are designed to be self-scouring. Of course, it doesn’t always work that way; but if 60% to 80% of a system can self-scour, you only need to clean the 40% to 20% that can’t. Ramon says they could survey their entire network and complete the cleaning necessary in just one year. Not only that, but he says their dry-weather overflows are a fraction of what they were.

“At this point, I think rodding pipes every day for the sake of rodding is the old way of doing things. It’s not the way of the future. Not only is acoustic monitoring cost-effective, but it’s environmentally responsible as well. Do we really want an additional 15 trucks out there, spewing smoke and causing congestion?”

Funding for Project RENEW comes mostly from the state revolving funds. So far, the authority has spent close to half a billion dollars. It has paid off a few of the loans from the storage tank days, and it still has about \$150 million more to spend before the 2023 deadline.

## ADDRESSING THE PRIVATE SIDE

The Sewer Service Line Replacement Program is the other half of the authority’s renewal endeavors — the public-facing program. The authority launched the program in 2013 in response to a severe infiltration problem.

The program reimburses residential property owners up to \$2,500 toward the replacement cost of their sewer lateral. It may seem like an extreme move, but Ramon thinks it makes perfect sense.

“The industry as a whole has always stayed away from getting involved in sewer laterals, but when you study it, they have a huge impact on any agency,” Ramon says.

For instance, the authority has 1,400 miles of pipe in its collections system. “If you take every sewer lateral and add them up, we’re probably at close to 2,800 to 3,000 miles. It almost doubles our system, yet we’re only spending money on half because the other half doesn’t belong to us, but it’s still our problem.”

By only concentrating on the public system, Ramon says, a utility is fixing the most expensive pipes while perhaps only reducing I&I into the sys-



Property owners are charged an additional \$1 on their monthly bills to help fund the Sewer Service Line Replacement Program. That small surcharge gives the program an additional \$650,000 a year to help homeowners replace sewer laterals and alleviate the effects of inflow and infiltration on the city’s wastewater system.

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Greg Ramon

tem by 50%. “The smaller private pipes, which are cheaper to fix, continue to leak.”

The Sewer Service Line Replacement Program needed funding, so the authority first went to the City Council for approval of a \$1 charge to be added to property owners’ monthly bills. That small change would give the program about \$650,000 a year to fund the project.

The authority set up the program so both the utility and the residents have skin in the game. That’s where the \$2,500 maximum reimbursement comes in. On average, it costs about \$3,500 to replace an entire sewer lateral. Homeowners only have to pay \$1,000 to \$2,000 for something they will eventually have to replace, given most laterals were installed as many as 50 to 60 years ago.

Of course, some requirements must be met to qualify for the reimbursement. The entire pipe must be replaced: Homeowners cannot just do point repairs. Only certain materials can be used, clean-out requirements were set and the new pipe cannot leak.

## A POPULAR PROGRAM

The Sewer Service Line Replacement Program, according to Ramon, has been a huge success. Almost too successful. Demand was exceeding the amount of money the authority had set aside, and it found itself with a six-month backlog of residents wanting their sewer laterals replaced.

In 2015, the authority went back to the city and received approval for a series of rate increases over five consecutive years to raise the money needed not just for the program, but to also meet its commitments in general for the Administrative Order on Consent from the Arkansas Department of Environmental Quality. At the same time, the authority also met with the Arkansas Natural Resources Com-

mission, which manages the state’s revolving loan program, to help out with the program.

Ramon says it took some doing to get the commission to embrace this new idea. “But boy, when the commission did, it really embraced it.” Starting in 2016, ANRC gave the authority an extra \$500,000 a year for the next five years, allowing it to double the number of lateral replacements it funds. “This program is truly a win-win for the community.”

But the commission’s money came with a catch. Replacements have to be made in the same location and American-made products have to be used, so the authority has juggled the money. If it makes more sense to move the lateral to a new location, it used its own money. If it could just go in the same place, it uses the revolving loan fund.

Since the program’s inception, the authority has helped fund the replacement of 2,700 laterals. The authority not only has less infiltration into its system, but it has made a lot of homeowners and plumbers happy as well.

Homeowners are not the only group that is impressed. The authority was awarded the Environmental Protection Agency’s Performance and Innovation in the SRF Creating Environmental Success award for its innovative thinking and approach to ratepayer care with the Sewer Service Line Replacement Program. **I&I**