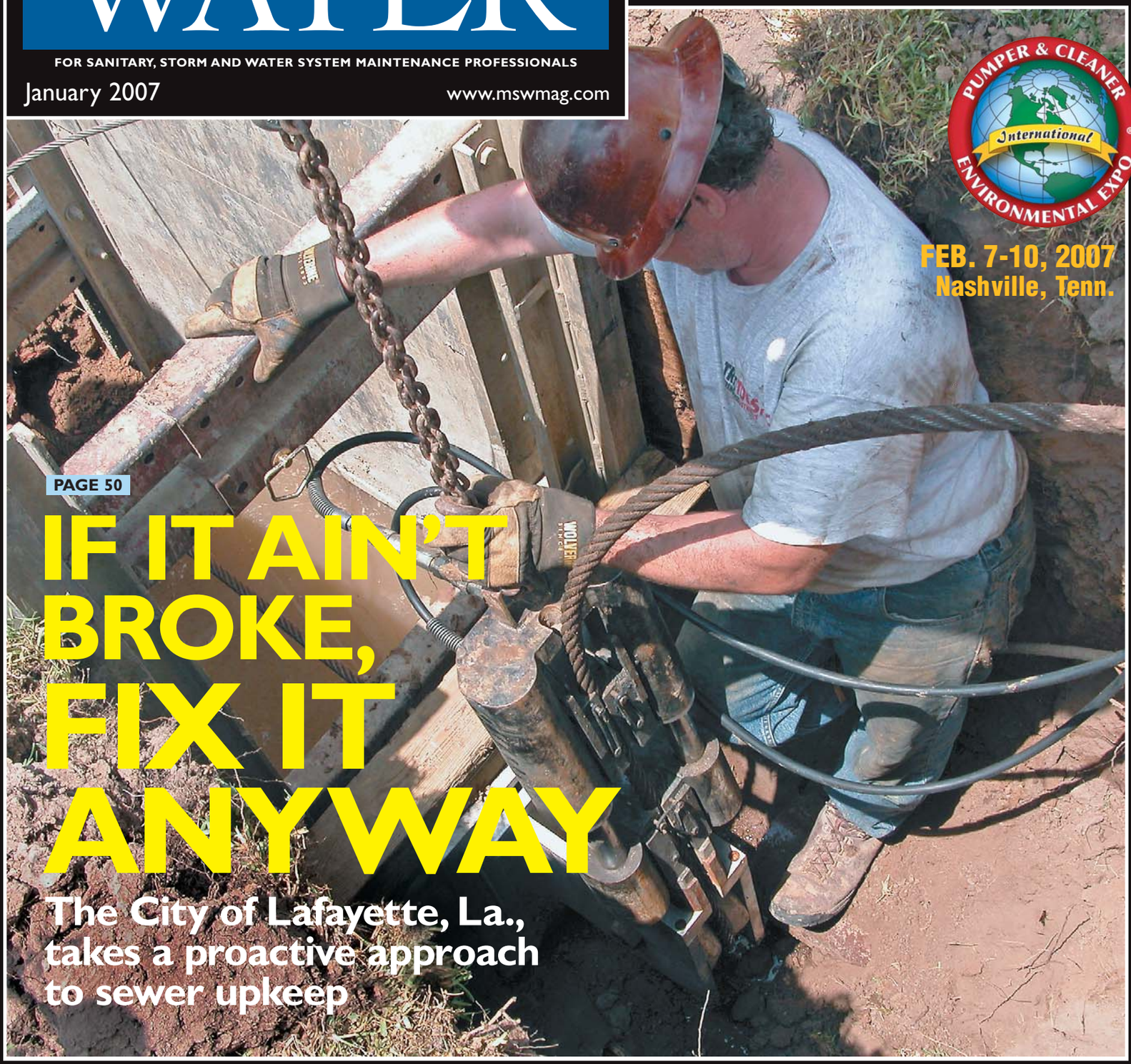
MUNICIPAL
SEWER & WATER™
FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS
January 2007 www.mswmag.com



PAGE 50

IF IT AIN'T BROKE, FIX IT ANYWAY

The City of Lafayette, La., takes a proactive approach to sewer upkeep

IF IT AIN'T BROKE, FIX IT ANYWAY

The City of Lafayette, La., takes a proactive approach to sewer upkeep that includes regular programs in CIPP lining and pipe bursting

By Angus W. Stocking

In 2003, when the Lafayette (La.) Utilities System (LUS) began using CCTV to inspect its 696 miles of sanitary sewer lines and 538 miles of lateral lines, wastewater supervisor Kevin Richard was a little shocked to see how many needed service. He found a lot of accidents waiting to happen.

"I hate midnight calls," says Richard, "and I don't like to just put a Band-Aid on problems. If we're going to fix a line, I want to fix it so I don't have to worry about it again. I want to be retired long before that section of line causes more problems."

To avoid those midnight calls, Richard's department is highly proactive, using CCTV inspection results to schedule and perform mainline and lateral repairs before breakdowns. And to make sure lines stay fixed, Richard relies increasingly on pipe bursting and cured-in-place pipe (CIPP) lining.

These trenchless methods are fast and make it possible to work in neighborhoods without disrupting daily life. That, in turn, makes it easier to get in and fix a line before blockages — or worse — make it obvious that work is needed.

Serious about inspection

LUS functions as a publicly owned department of the City of Lafayette. When CCTV inspection reveals a problem area, it's scheduled for repair, and Richard routinely inspects laterals in the area of the repair. "If there's a problem in the mainline, I definitely assume that service lines will also have a problem," he says. "We try to fix everything from the city's connection (at or near the right-of-way boundary) back to the mainline."

So the TV trucks, together with cleaners, stay busy, looking at all potential trouble spots. Lafayette has made a big investment in CCTV and now operates five service line cameras and two mainline cameras, all from RS Technical Services Inc. The camera units work in tandem with three Camel combination trucks from Super Products LLC.

"We started with one TV unit and

Pipe bursting is an integral part of the City of Lafayette's program of rehabilitation for laterals and small-diameter mainlines.

PROFILE:
Lafayette (La.) Utilities System

FOUNDED:
1897

CITY POPULATION:
105,000

WASTEWATER BUDGET:
$20 million

INFRASTRUCTURE:
696 miles of sanitary sewer

WEB SITE:
www.lus.org

The TRIC WC-22 bursting system is show with bursting head and HDPE pipe attached.

An excavator prepares a pit for a pipe bursting job. The city also rehabilitates pipes with cured-in-place pipe (CIPP) lining.

"I hate midnight calls, and I don't like to just put a Band-Aid on problems. If we're going to fix a line, I want to fix it so I don't have to worry about it again. I want to be retired long before that section of line causes more problems."

Kevin Richard

one vacuum truck," Richard says, "but there was so much need that we just kept adding them. We also have our own flushing unit so we can handle complaints right away and not be dependent on a contractor's schedule."

Video and data generated by camera inspection is managed in RS Technical's POSM software, and resulting reports are entered into Cityworks software from Azteca Systems Inc., which, among other functions, automatically generates work orders and maintenance schedules.

Scheduled work could keep the department busy full time, but of course stoppages take priority. So work on mainlines is typically scheduled automatically, and service lines (LUS maintains nearly 38,000) are inspected and repaired in conjunction with mainline work.

The proactive approach means LUS occasionally dodges bullets in spectacular fashion. For example, one TV inspection revealed a line totally blocked by roots from an oak tree. When the line was cleaned, accumulated pressure shot material three feet into the air. Richard likes to think of that as an emergency that *didn't* happen.

Routine pipe bursting

Lafayette's program of pipe bursting using high-density polyethylene (HDPE) pipe has almost supplanted conventional trenching and replacement for laterals and small-diameter mainlines (up to 10 inches).

Compared foot-for-foot to trenching, pipe bursting doesn't save money on most jobs, according to Richard, but is definitely worthwhile in the long term. One reason is that it enables replacement of long stretches of line instead of spot repairs. This means whole neighborhoods can be taken care of permanently — and Richard can sleep easier.

One example of saving money took place when LUS avoided a $300,000 rerouting of 1,000 feet of undersized mainline by instead bursting the 8-inch

KEEPING TRACK

The Lafayette (La.) Utilities System uses the Cityworks GIS-based asset management system from Azteca Systems Inc., to help manage its wastewater infrastructure maintenance and rehabilitation program.

The software is designed for ease of use in a map-based format for use by maintenance and operations personnel. It can be configured to run without a map view for users who need only to access work order and service request information.

Cityworks includes service request functionality to capture and respond to customer concerns; creation and tracking of work orders; search and ad hoc reporting tools for service requests and work orders; inspections and tests; built in, fully integrated support for GIS; and user level administrator tools. **For information: 801/523-2751; www.azteca.com.**

SERENDIPITY

The Lafayette Utilities System collaboration with TRIC Tools and GeauxTrenchless was pure serendipity: Neither party made formal overtures. TRIC Tools president Ward Carter spends a lot of time in Lafayette, even though his firm is based in Alameda, Calif. His fiancée, a doctor, is based in Lafayette.

At a Christmas party, Carter met Tim Pontiff from LUS, and Pontiff arranged a meeting with wastewater supervisor Kevin Richard within a week. Carter and Richard realized that working together could mutually be beneficial.

Carter formed GeauxTrenchless, intending it to be TRIC Tools' Research and Development division, while Richard worked with GeauxTrenchless to develop tools and techniques appropriate for Lafayette and, by extension, other municipalities. Lafayette now has a top-flight municipal pipe bursting program, and TRIC Tools has a new line of pipe bursting tools for municipalities, field tested under realistic conditions.

"We had a conduit for phone lines that was resting right on top of one of our clay lines, but we were still able to use bursting. We pulled slowly, and the bursting head just bumped the conduit a little."

Kevin Richard

The bursting head emerges in an exit pit on a pipe bursting job; the HDPE pipe is ready to be connected to the existing sewer system.

clay pipe and pulling through 10-inch HDPE. The out-of-pocket cost was less than $50,000, plus $30,000 in labor. Service interruption was limited to a week, rather than an estimated month or more, and the driveways and yards of 26 homeowners were left untouched.

Avoiding trenching also means co-trenched utilities are less likely to be affected, and above-ground infrastructure isn't harmed.

Experienced crew

The sheer amount of bursting done has given the department a staff of operators with an expert, subtle touch. Most burst lines are clay, though metal lines can also be burst. Since the outer diameter of clay is greater than the new, thinner walled pipe, operators don't have to worry too much about co-trenched utilities.

"We had a conduit for phone lines that was resting right on top of one of our clay lines," says Richard, "but we were still able to use bursting. We pulled slowly, and the bursting head just bumped the conduit a little."

GeauxTrenchless, a division of TRIC Tools Inc., has worked closely with Lafayette to develop tools and techniques adapted to the city's needs. Typically, the city provides the labor and GeauxTrenchless supplies equipment and expertise.

Above, a technician checks out the bursting system before initiating a job. At left, a section of HDPE pipe is pulled into place.

The collaboration has been fruitful for both parties: The municipal experience led to TRIC's introduction of the Lafayette line of small-profile, low-pressure hydraulic pullers that fit into a manhole and can be hooked up to low-pressure hydraulic power sources like backhoes. Meanwhile, Lafayette Utilities has developed its own pool of knowledge and custom-designed tools to go with it.

Richard is so pleased with pipe bursting that he is directing investment into a city-owned system. "We're already doing most of the work," he says. "It just makes sense to own the equipment." He chose the TRIC Tools WC-22 system from the Lafayette line. Along with the investment in equipment, a training program will be implemented and some staff will be certified in the pipe fusing process, fusing being one of the trickier parts of the bursting process.

Together with a city backhoe, fusion machine, and the necessary heads, cables and other accessory equipment, this setup will pull 6-inch or 8-inch lines up to 100 feet long, taking care of about 90 percent of Richard's pipe bursting projects. He expects that three to four laterals will be burst and replaced per day. Longer pulls require more power because of increased ground friction, and Richard either lets those jobs out to contractors or completes them with leased equipment.

CIPP when needed

When pipe bursting isn't appropriate (such as for bigger mainlines) Richard calls on LUS engineers, specifically Janet Menard, an engineering aide specialist who has been with the city for 12 years. Menard often orders "structural fixing" of mainlines by CIPP lining. Several methods exist for inserting and curing liners, but after experimentation, Lafayette settled on the inversion process for insertion, followed by water curing. The city typically uses National Liner products.

In this system, a resin impregnated felt liner is transported to the site in a temperature-controlled truck, and water pressure is used to invert the liner into the existing pipe, somewhat like a sock being unrolled.

The water expands the liner, forcing it into cracks and irregularities. After insertion, the water is heated to over 200 degrees F and re-circulated by a boiler truck, curing and hardening the liner. Curing can take up to eight hours. Remotely controlled cutters then reopen laterals as needed. The resulting liner is structurally sound, leak proof, and corrosion resistant. It's also free of seams and joints, making lined pipes more resistant to moisture-seeking roots. Menard has used CIPP on mainline segments as long as 800 feet, which is "about as long as our curves and bends will allow. In straighter pipe, I think 2,000 feet could be done."

Menard reports that in Lafayette, the inversion and water curing system has never failed. Steam is increasingly used to cure liners. "We haven't accepted steam in our specs yet," says Menard. "We'll probably try it though."

Preparation for CIPP includes thorough cleaning, obstruction removal, treatment of any ragged edges, and temporary suspension of effluent flow. Like pipe bursting, CIPP isn't cheaper than trenching and replacement on a per-foot basis, and the city does not use it as extensively as pipe bursting.

High equipment costs mean contractors will always be in the picture. But CIPP is the appropriate method when any of several factors exist, including nearby roads (avoiding road closures is a major motivation), nearby buildings, multiple co-trenched lines or overlapping utilities, and aboveground infrastructure that shouldn't be damaged.

Victim of success

Menard ordered 17,533 feet (3.32 miles) of CIPP lining in 2005. She'd like to do as much, or more, in 2006, but to some extent the program is a victim of its own success. "Managers respond to complaints," she explains, "and they'd rather spend money on the money-making utilities, like electricity. But complaints about wastewater lines are way down, as we replace and repair more and more line. Ironically, more complaints would get us a bigger budget."

With a metro area population of nearly 250,000, Lafayette is Louisiana's fourth-largest city. Louisiana has a laid-back reputation, but wastewater managers everywhere have learned to not relax *too* much; destructive forces like corrosion, tree roots and time itself are always working against them.

With a proactive mindset, and aggressive use of new techniques, Richard and the rest of his department are staying ahead of the game. ✦

MORE INFO:

256 **Azteca Systems Inc.**
801/523-2751
www.azteca.com.

63 **RS Technical Services Inc.**
707/778-1974
www.rstechserv.com

54 **Super Products Corp.**
800/837-9711
www.superproductscorp.com

239 **TRIC Tools Inc.**
800/301-4903
www.trictrenchless.com