

## FOCUS: SEWER

# ROOTING FOR THE FUTURE

The City of Fairfield (Ohio) takes a proactive approach to blockages and employs long-term strategies to ensure lasting system performance

By Angus W. Stocking, L.S.

**W**hat does a city wastewater department do when there are no crises to address?

“The city council is focused on quality of life,” says Dave Crouch, public utilities director in Fairfield, Ohio, a city of 43,000.

“That’s reflected in our public utilities,” he says. “Fairfield has some of the lowest rates for municipal services in southwest Ohio, and we want to keep providing good service for a reasonable rate for generations.”

For Fairfield, that means a sound operating budget, judicious investment in maintenance programs like root control, and a long-range view that includes planning for projected growth.

That kind of thinking contributes more than just efficient waste collection. “We’re contributing to the life of the community,” says Drew Young, superintendent of public utilities. “We think about things like blighted properties,

which tear down neighborhoods and can be a result of poor infrastructure decisions. With good infrastructure, and by helping people with private line issues, we’re actually helping Fairfield to thrive.”

### Focus on maintenance

Fairfield has a strong industrial base, but no producers of highly toxic waste, Crouch observes. Most sewer lines were laid in glacial silt, a non-aggressive soil that doesn’t attack the pipes. Thanks to an aggressive pipe-lining program that started in the 1980s, the city has virtually no pipes in critical condition.

The city’s wastewater collection system includes 175 miles of 8- to 48-inch sewer line (mostly concrete with some vitreous clay) and 4,600 manholes. The lines are all also fairly new. “Our collection agency is only about 54 years old,” says Crouch. “Our sewer infrastructure didn’t even include a treatment plant until 1967. The majority of our system is 30 to 40 years



City of Fairfield maintenance operator Kim Campbell, left, and collections laborer Chris Croucher add RootX root treatment to a sewer line. The material, which foams on contact with water, is designed to kill roots in municipal and residential lines. (Photography by Carrie Cochran)



**PROFILE:**  
City of Fairfield,  
Ohio

**FOUNDED:**  
1787

**POPULATION:**  
42,097

**AREA:**  
21 square miles

**INFRASTRUCTURE:**  
175 miles sanitary sewer,  
4,600 manholes

**ANNUAL BUDGET:**  
\$3.2 million  
(wastewater operations)

**WEB SITE:**  
[www.fairfield-city.org](http://www.fairfield-city.org)

old, but lots of it is just 10 to 15 years old.”

So the challenge is not repair but to maintain. “How do we sustain continuity of service for a long time?” Crouch says. “We’re looking at a city that is nearing build-out, and with only 300 to 400 new homes projected, and less than 1,000 acres of industrial growth area, we’re not going to have a lot of new development money coming in.

“So, how can we be sure that we’re still going to provide the



**Top left: A map generated by Geomedia GIS software in the a city TV truck shows a neighborhood in which a crew is doing root control work using. Bottom left: A foaming pipeline root control formulation kills roots in the City of Fairfield's sewers. Right: Assistant foreman Jason Turner controls a remote camera as he views live video of sewer lines from the TV truck.**

## HOW LONG WILL VIDEOTAPES LAST?

According to the National Film and Sound Archives of Australia, videotapes can deteriorate in as little as three years if stored in poor conditions. In good conditions, the upper limit is not known, but the Archives have had tapes in storage for more than 30 years, and they are still playable.

Another factor to consider is the life of the playback equipment. Will a working VCR still be available in 30 years? Heat and humidity are the greatest enemies of videotape, according to the Archives. The recommended storage conditions for videotape are 18 to 24 degrees C with relative humidity between 35 and 45 percent.

Users of videotapes should avoid storing them on concrete floors, in attics or basements, and next to boilers, bathrooms or other sources of humidity.

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**Drew Young**

same level of service in 50 years? We want our capital investments to be truly needed. We need to plan our upgrades, and we need to maintain assets consistently.”

### Attacking roots

With relatively few issues to consider, root control has been an area of interest. The city fights the battle on two fronts: reactively, by cutting and cleaning in response to blockages and complaints, and proactively, by systematically relining problem areas with HDPE pipe and using chemical foams to stop invasive root growth.

“You’re always going to need to do some cutting, because you’ll always need to clean in a hurry when things get blocked, unless you

want houses full of sewage,” says collection foreman Jeff Zimmerman.

Young adds, “Even though we inspect every five years or so, we don’t see the pipes often enough to head off everything. A lot can happen in a five-year window.” Crouch points out that grease and broken-off roots can cause unpredictable blockages well downstream from the source of the problems.

Of course, some root issues are generated from private lines. “I’d say 20 percent of the time we’re cutting out roots that have broken off from within private lines,” says Young. “If you think about it, we have 175 miles of line that we maintain, but we also have about 156 miles of private 6-inch lateral. That’s

about 40 percent of our system.”

And it might be the most problematic 40 percent. The point of connection between private and city lines is often a source of root intrusion. Homeowners often plant maples, which, according to Young, “seem to hunt out water like a willow.”

### Long-term strategy

Still, cutting roots every four to six months was deemed unacceptable, and the department embarked on an asset management program aimed at long-term reduction of root issues. To cut down on root problems arising from private lines, Fairfield employs several strategies.

One important technique is to get a look at the laterals and share the insight with homeowners. The city’s newest TV truck is equipped with a lateral launcher, the LAMP system from CUES Inc.

“It can actually send a camera 75 feet up a lateral, which is really cool,” says Young. “In Fairfield, the homeowner is required to maintain the system, so what we do when we see issues is make a print of the screen showing the problem or potential problem. We can do that right in the truck, using Granite XP software from CUES and a regular printer, and give it to the homeowner right then, along with a form letter.”

Alerting homeowners to poten-

tial problems helps reduce blockages and middle-of-the-night phone calls. To further help residents, the city Web site gives specific advice about chemical root control, including suggestions to avoid copper sulfate or metam sodium, and

One motivation for lining is to avoid disrupting neighborhoods. “We like to keep people happy,” says Young. “When we line, not only are we solving the problem fairly permanently, but we’re not disrupting backyards with a lot of

reline when we see warning signs.”

Eight staff members are involved in root control, and most attended formal training. Since then, training has been on the job or by informal mentorship. Fairfield uses RootX chemical treatments

longevity of the systems. “We have a 1987 truck that we use extensively, and it is still in very good shape,” says Crouch. One ongoing goal is to inspect a high percentage of private laterals.

Most video footage is still stored on videotape, but the department is evolving. “We’re running on digital now, so we can store footage on the server, but so far we’re only digitizing problem areas due to memory issues,” Crouch says. To index footage, TV inspection sheets are catalogued in the GBA Master Series system. If the desired footage falls in a problem area, users can link directly to a .mov file and see the pipe immediately.

### Not in it for glory

Although Fairfield’s wastewater management department has won the Ohio Water Environment Association’s Golden Manhole award, the department does not usually seek awards or recognition. “We like to fly under the radar here,” says Young. “It takes a lot of time to apply for awards, and we really like to be left alone to do our jobs.”

Speaking of Crouch, Zimmerman and himself, Young says, “Between the three of us, we have 75 years’ experience, and we really like doing our jobs.”

Crouch adds, “We’re lucky we have the money to do a good job here. The city council has always supported us. The council wants to make sure we’re providing the same high-quality service 50 years from now, so we’re working to keep everything in place for the future.” ♦



Maintenance operator Kim Campbell, left, and collections laborer Chris Croucher disassemble equipment after applying a root treatment.

to look for products that foam with the addition of water. A quarterly newsletter includes articles relating to private lines, such as tips on reducing grease buildup. Other public outreach comes via annual attendance at a local home expo.

trenching or equipment. Plus, it’s cost-effective. Twenty-eight dollars a foot for lining 8-inch pipe is pretty cheap compared to what we spent in the 1980s, and it usually makes sense for us to address root intrusion problems that way.”

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### Lining the pipes

The city also addresses root issues with aggressive cured-in-place pipe lining, using hot water for curing. This work is let out to contractors using various technologies, but hot-water curing is stipulated because the city feels that the pressure creates better adhesion. “Once we’ve lined a pipe, it’s a done deal, no more roots,” says Young.

Young divides pipe into three tiers. Tier One is pipe that is often blocked and causes infiltration problems. “We’ve been doing this for a while, and I’d say that took care of most of our Tier One pipe,” says Young. “Now we’re on to Tier Two, which is pipe with leaks, pipe in high-water areas, or other red flags for infiltration problems. To us it makes sense to go ahead and

in-house, and has contracted with Duke’s Root Control, Inc. In-house work is done with a RootX foaming unit on a Vactor combination truck.

GBA Master Series Maintenance Management Software, linked to a GIS, is used to track and schedule root maintenance. Zimmerman notes, “We’re also reactive. We still find roots and cut as needed, then maybe put that area on a list for annual maintenance.”

### Systematic inspection

As part of its proactive approach, Fairfield has been progressive in its use of CCTV equipment. “We had everything inspected by 1992, and now we’re going back for another run,” says Young.

“We have dedicated staff and two trucks. One of the trucks is equipped with a grouter. Eventually, we hope to cover the entire system every five years.” The city uses standard panel vans from CUES Inc. with OZII cameras on mini-tractors. Crouch is happy with the

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