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July 2019

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OF ASSERTIVENESS

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FOR CCTV SUCCESS

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RINGS MAKE THE GRADE

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# LEADING THE CURVE

New York utility  
builds system efficiency  
by constantly working  
toward the future

PAGE 20

Norman Jones and Patrick O'Connor  
Rochester Bureau of Water  
Rochester, New York

## PRODUCT FOCUS: CHEMICAL & MECHANICAL ROOT CONTROL





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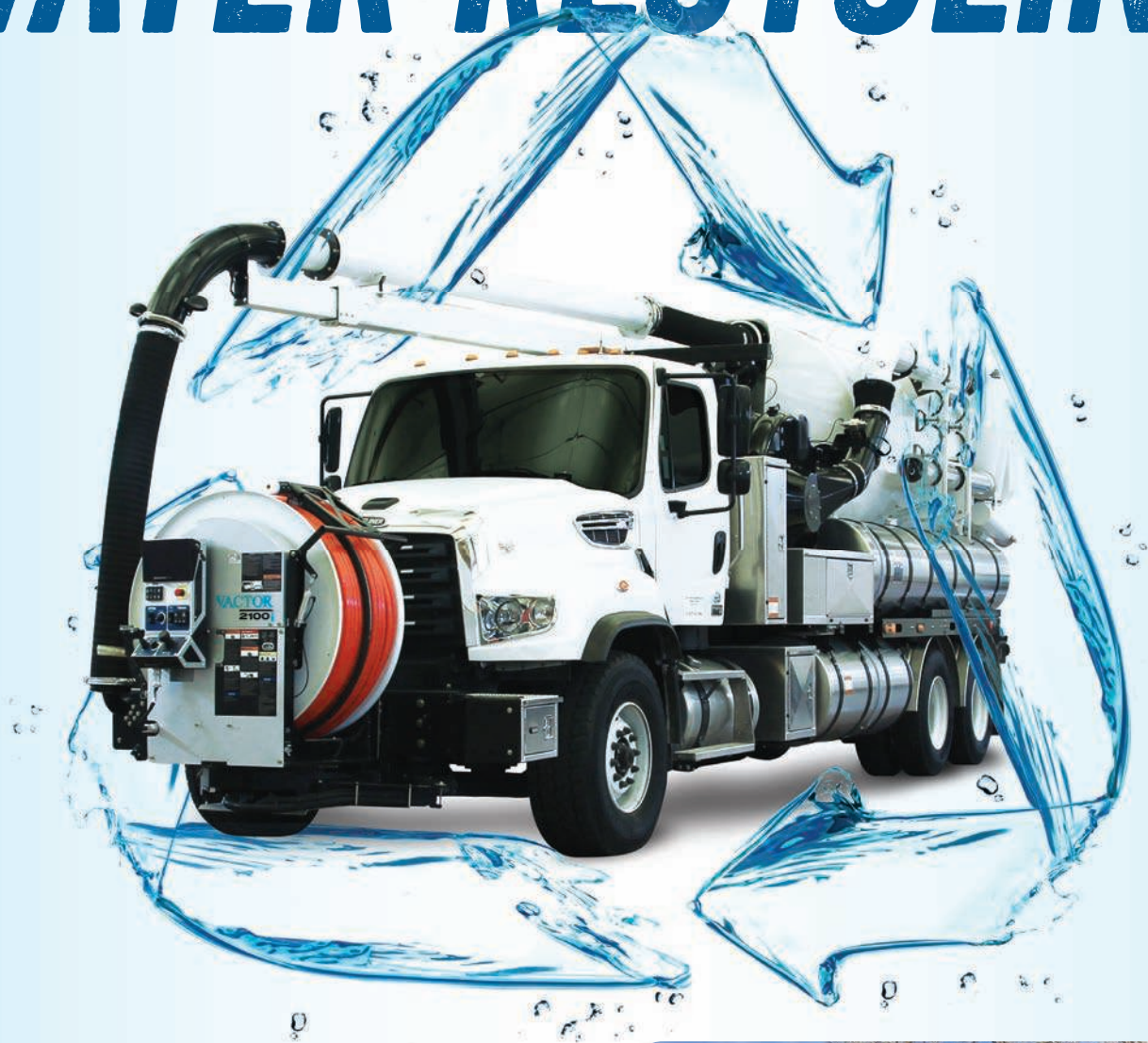
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# INSIDE:

CHEMICAL AND MECHANICAL ROOT CONTROL



ON THE COVER: Norman Jones, commissioner of Environmental Services, and Bureau of Water Director Patrick O'Connor (right) at Cobbs Hill Reservoir in Rochester, New York. The duo have guided the utility with a forward-thinking approach that has it well positioned for the future. (Photography by Mark Webster)



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


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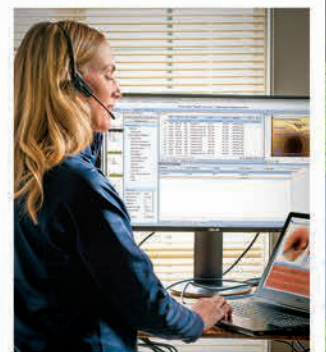




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# CLEANING UP

A healthy future is dependent on the health of our water resources

Water is important to me.

That may seem like an obvious statement with no real meaning, given that water is a necessity for our survival. But it's a resource many take for granted, as you well know.

I live and work in northern Wisconsin. Lake Michigan is a couple-hour drive to the east, and Lake Superior a couple hours to the north. My house is on a 455-acre lake that's so clear I can see fish swimming from my deck high up the hill from the water. My office looks out over a small corner of the largest freshwater chain of lakes in the world.

The connection goes back further than that. I grew up in Rhinelander, a town surrounded by lakes and split by the Wisconsin River. The river is dammed where it flows into town and through a paper mill that was once the largest employer in town, and still plays a major role in the local economy. Another river, the Pelican, flows just past the end of the block where I grew

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## FROM THE EDITOR

*Luke Laggis*

up. My mom grew up on Boom Lake, and my grandpa's shop was right next to the house. He was one of the first and the longest-operating Evinrude outboard dealer in the state.

Last winter I spent two weeks working remotely from my ice shack on Boom Lake, writing stories about the lake's ice-fishing culture. I have always been connected to the water. Hell, I'm even a Pisces, if you're into that sort of thing.

I spent last Friday night on a Lake Superior beach with friends, filling coolers and 5-gallon buckets with smelt during their annual spring spawning run. It was beautiful, but I couldn't help but notice the trash washed up on the rocks and stuck in the brush a few yards back, from fishing tackle to bottle caps and beer cans.

If you're at all familiar with smelt, you know A) they're delicious and B) they're incredibly laborious and tedious to clean. I won't get into the details, but later in the weekend, after a couple hours of work and at least a couple more to go, I took a little break and went outside.

Down by my own shore I found an old bucket washed up. I picked it up and then soon enough threw an old can inside. Then another. And then some other random things, and by the time I was done, the bucket was full. Sure, it's spring, and there are always things to clean up in spring, but that's only because we leave garbage lying around in the first place. It felt good picking it up, but I wish I didn't have to. I wish there was more respect for our resources.

We'll never eliminate litter and pollution. We'll never bring all our waterways back to their pristine state, but we can do our part. As managers of water, waste and stormwater systems, I respect what you do. And as stewards of our resources, I hope you take every opportunity to share how important that is with the next generation. It might not get the appreciation it deserves, but I can't think of anything more important.

Enjoy this month's issue.

Oh, and if you want to read about those two weeks I spent on the ice, visit [www.grandviewoutdoors.com](http://www.grandviewoutdoors.com) and search Boom Lake. ♦



The editor remotely working from his ice-fishing shelter.

Comments on this column or about any article in this publication may be directed to editor Luke Laggis, 800-257-7222; [editor@mswmag.com](mailto:editor@mswmag.com).



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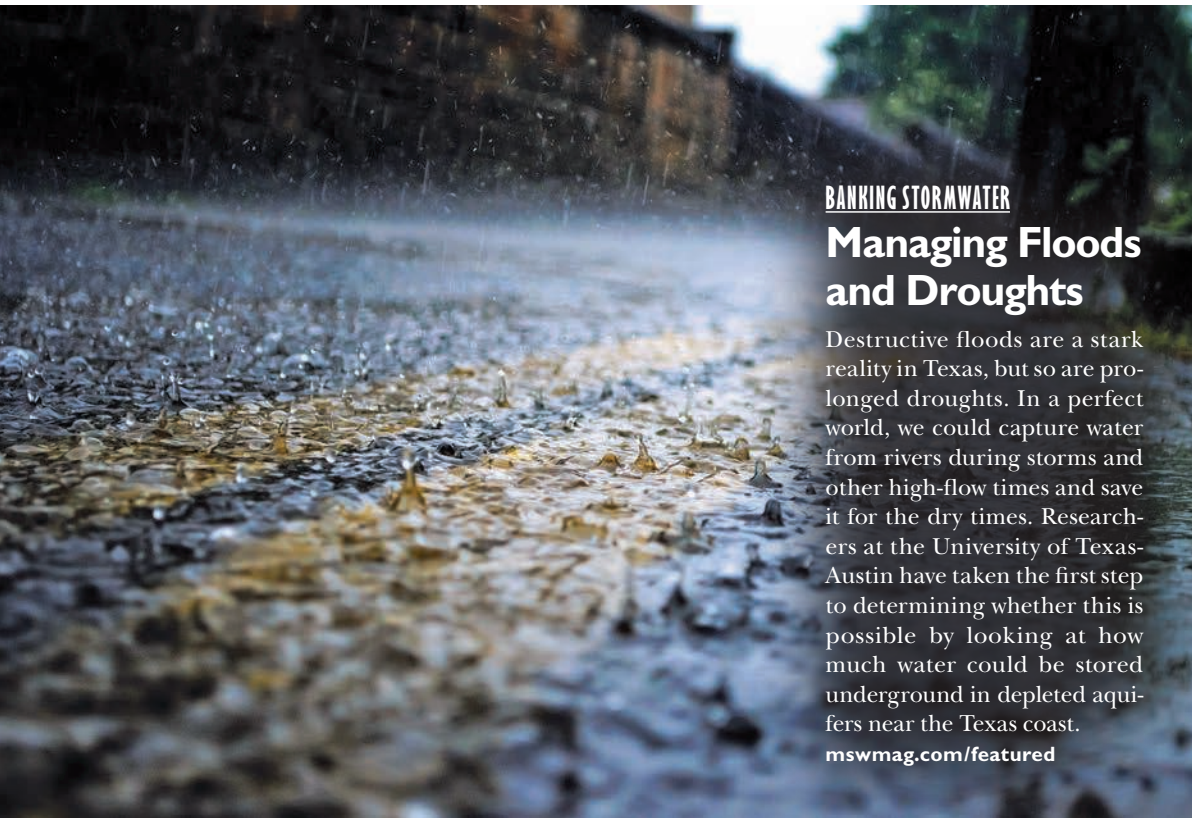
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## BANKING STORMWATER

### Managing Floods and Droughts

Destructive floods are a stark reality in Texas, but so are prolonged droughts. In a perfect world, we could capture water from rivers during storms and other high-flow times and save it for the dry times. Researchers at the University of Texas-Austin have taken the first step to determining whether this is possible by looking at how much water could be stored underground in depleted aquifers near the Texas coast.

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## OVERHEARD ONLINE

“ This research confirms what those of us in the industry already knew — that single-use wipes, including cleansing and diaper wipes — cannot be safely flushed. ”

— **New Study Confirms ‘Flushable’ Wipes Don’t Disperse in Sewer Systems**  
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## A DIFFICULT POSITION

### Main Break Under a Runway

On a cold December day, Madison (Wisconsin) Water Utility got a call reporting water bubbling up next to the Dane County Regional Airport’s taxiway. A crew determined shortly after that a 10-inch water main that runs under two taxiways and the main runway had broken. The pipe is a crucial part of the city’s distribution system and couldn’t be abandoned. Read about how workers used CIPP technology to make the fix. [mswmag.com/featured](http://mswmag.com/featured)



## WORKER RETIREMENTS

### Utilities Can Ride the Wave

Forty years ago, a surge of resources and new recruits flooded the water and wastewater industry due to the Clean Water Act amendment. Now, that generation of utility workers is rapidly nearing retirement age, which will leave behind a major vacuum in the industry workforce. Some utilities, like Lancaster Area (Pennsylvania) Sewer Authority, are none too worried, however, due to the steps they’ve taken to secure new workers. [mswmag.com/featured](http://mswmag.com/featured)



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# A MOUNTAIN OF MIGHT

Its minuscule size doesn't diminish Arrowbear Park's impressive record of system upgrades and accomplishments

By Erik Gunn

Arrowbear Park County Water District crew members Jason Weber, Norman Huff and Shane Nickles (in excavator) place shoring for a main replacement project. (Photography by Aron Eisenberg)

Call it the Little Utility That Could.

In the hills of Southern California, the Arrowbear Park County Water District might be among the smallest agencies of its kind anywhere. With about 12 miles each of water and sewer mains, the district has just seven employees and serves a year-round population just shy of 1,400 people — residents of the community of Arrowbear Lake.

Its small size hasn't kept the operation down. The water district is about a quarter of the way through a major infrastructure project replacing the last 4 miles of old 2-inch steel waterlines with 6- and 8-inch C900 PVC. It has also found a way to cut manhole repair costs without cutting corners.

And it's done all this using its own crews instead of contracting out the work — saving money in the process while expanding the skills of its employees.

"I would say we just have a can-do attitude," says Norman Huff, general manager for the water district. "We're not afraid to tackle a project. We like to figure out a better way to do things or a more frugal way to do things."

And did we mention fire protection? The Arrowbear Park County Water District doesn't just supply area residents with clean water and collect their wastewater. It also operates a volunteer fire department serving the community.

## Early growth

Snowmelt-fed Arrowbear Lake is in the San Bernardino Mountains, about 100 miles due east of Los Angeles. The Arrowbear Park County Water District was founded in 1953. "It grew out of two or three people who had some wells here and shared their well water with neighbors," Huff explains. "As the area was growing, they felt there was a need to be something more structured to provide services for the community."



The initial system consisted of the water wells and a distribution system of 2-inch steel water mains. As the system grew in the 1970s, some of those mains were replaced with asbestos cement pipe. In the 1990s, major supply mains were replaced with 8-inch C900 PVC.

The sewer collections system was installed in 1977 to replace individual, private septic systems. The district's dual-pump lift station then sends the wastewater to the regional 1.0 mgd wastewater treatment plant operated by the neighboring Running Springs Water District.

Last year, the district was recognized by the American Water Works Association for 50 years' service to the water industry — an award, Huff says, that mainly recognized the utility's longevity.

The water supply continues to rely on five wells in the system. The district also was an early adopter of ion-exchange technology to remove groundwater uranium found after testing in the early 1970s.

Groundwater uranium — a common byproduct of decomposing granite — was at levels ranging from 54 to 118 pCi/L (picocuries per liter), which is well below immediately harmful levels but still several times higher than Environmental Protection Agency and the California Department of Water Resources limits, leading to the ion-exchange remediation. After a recent rehabilitation of one



#### PROFILE:

**Arrowbear Park  
County Water District,  
Arrowbear Lake, California**

#### CUSTOMERS:

966 water and 965 sewer connections;  
year-round population, 1,396; weekend  
and holiday population, 3,000-plus

#### SERVICE AREA:

Arrowbear Lake (6-square-mile  
mountain resort community)

#### WATER VOLUME:

1 mgd capacity, 0.134 mgd average

#### NUMBER OF EMPLOYEES:

7

#### INFRASTRUCTURE:

5 wells 170 to 240 feet deep; 12 miles  
of water mains; 90 hydrants; 12 miles  
of sewer mains and 1 sewer lift station

#### ANNUAL OPERATING BUDGET:

Fiscal year 2018-19, \$1,063,360

#### WEBSITE:

[www.arrowbearwater.org](http://www.arrowbearwater.org)

**"I would say we just have a can-do attitude.**

**We're not afraid to tackle a project.**

**We like to figure out a better way to do  
things or a more frugal way to do things."**

**Norman Huff**



**An Arrowbear crew member bolts  
a 6-inch valve to a tapping sleeve  
for a main replacement tie-in.**



**“The problem was that just putting in 200 or 300 feet around a fire hydrant doesn’t help if that 4- or 6-inch pipe is fed by a 2-inch pipe.”**

**Norman Huff**



**General Manager Norman Huff hands a crew member a wrench while working on a main replacement tie-in.**

of its wells, it installed another pair of vessels using newer electronic-control technology.

Producing 48 million gallons per year, Arrowbear Park County Water District’s wells are so prolific that last year the district sold 16 million gallons — one-third of its output — to the neighboring Running Springs Water District, Huff says.

### **Replacement project**

Not long after Huff started at the water district in 2013, he learned about a 3,800-foot stretch of 2-inch steel mains slated to be converted to larger PVC pipe that had lingered for years on the master plan.

“Every time they would update the engineer’s estimate on it, it would jump up another \$10,000 to \$20,000,” Huff says. The district “was kind of paralyzed with sticker shock, and the board would put it off for another year.”

On top of that, some of the most frequently repaired line segments of 2-inch steel weren’t even part of that section. He called for a step back to reassess the rest of the steel pipe in the system.

“It came out to about 22,000 feet, or about 4 miles,” Huff says. “We used several criteria to prioritize which ones we would want to do first.”

Priority No. 1 were lines repaired most often. Right behind were lines that fed fire hydrants and needed to increase water flow — a critical feature in the wildfire-prone mountain communities.

Previously, Huff says, the district had upgraded pipe serving fire hydrants to 4- and 6-inch material. “The problem was that just putting in 200 or 300 feet around a fire hydrant doesn’t help if that 4- or 6-inch pipe is fed by a 2-inch pipe.”

### **Self-reliance**

Four miles of pipe replacement might not

challenge a medium-size or larger city. But that was nearly six times the length of the original stretch that had prompted the survey — a stretch less than a mile long that had flummoxed the community on how to pay for its replacement.

“If we brought in a contractor to do the work, we were looking at anywhere from \$250 a foot to all the way up to \$400 a foot,” Huff points out — \$5.5 million to nearly \$9 million to get it all finished, or anywhere from five to nearly 10 times the district’s annual operating budget.

Before coming to Arrowbear Park County Water District, Huff had already managed pipeline installation projects. With that experience, “I proposed doing it in-house using our full-time employees.”

He knew he could manage the project. But could the district’s own crew of three full-time water and sewer technicians do the work? And how were they going to juggle it with their other



day-to-day responsibilities — everything from fixing leaks to reading meters?

“We knew it wouldn’t be something like the contractor would do — go in and get something done in a relatively short period of time,” Huff says. Instead, it would require chipping away, bit by bit, while making sure crews could keep up with their day-to-day demands.

### Rising to the occasion

Huff and his team started with a pilot project — one of the worst streets as measured by the track record of previous leak repairs.

Some of those lines had already been repeat customers for repairs over the past few years: “We would go down to fix a leak and we would find a 6-inch stainless steel clamp just 6 inches away,” he recalls.

Despite “a bit of a learning curve” as he puts it, the water district crews readily took to their new duties and the skills needed to carry them out.

They already had learned a lot on the job, he points out, such as operating excavation equipment to dig trenches where repairs were needed. They had learned how to use mechanical joint couplers for section repairs and were experienced at valve replacement.

“So they didn’t need a lot of training,” Huff says. “They just had to have someone show them: Here’s how we lay it out, here’s how we install the mechanical couplings for tees and valves and things like that. Installing something new is actually a little easier sometimes than replacing old stuff.”

They took care to learn how to navigate the web of underground utilities — like buried sewer and natural gas lines — on the narrow streets of the mountain community. And they learned the protocol of laying new water pipe while keeping the old pipe active to minimize service disruption.

The district also acquired a HammerHead Trenchless boring machine, and crew members were trained to use it. And the district stocked up on road plates.

### Bit by bit

“Our typical goal is to lay two 20-foot sticks a day of the new pipeline, or 40 feet per day,” Huff explains. That means digging a trench, connecting new pipeline to where the previous installation left off, then doing backfill and compacting the soil in which the new pipe rests. The road plates go on top to cover the open trench. “And then they come back the next day, start from that point and keep going.”

So far the district has completed about 1 mile of the 4 miles of pipeline scheduled for replacement. The targeted deadline calls for finishing the job about nine years from now.

Incremental? Yes — but it allows the district’s crew to slowly and steadily advance the project without ignoring the daily emergency calls from around the community.

In the summer, the district supplements its three field technicians with temporary interns from a county agency to introduce new high school graduates to trades. “We provide them training and work experience that they can then put on a résumé,” Huff says.

It also helps move along pipeline replacement

**“If we brought in a contractor to do the work, we were looking at anywhere from \$250 a foot to all the way up to \$400 a foot. ... I proposed doing it in-house using our full-time employees.”**

**Norman Huff**



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more smoothly. “Then it’s possible to have two of our three guys work with a temp on the pipeline project. And if there’s a leak or something else that needs to be handled that just comes up, we can have one of our guys take the temps and go work on that.”

### Pros and cons

If there’s one reason Huff envies his big-city counterparts, it’s for their ability to spread expenses over a large base of ratepayers. “If we were bigger, if every little thing wouldn’t impact our ratepayers as much, the cost would be spread out,” he says.

For instance, it’s unavoidable for the district to assess minimum fees on its customers to offset fixed costs. Not surprisingly, vacation homeowners who swell the population for about half the year question why they have to pay when

they aren’t around. In a much larger community, there’s not a significant drop in revenue when part-time residents leave and shut off their service: “You’ve got thousands of other connections to absorb that loss.”

But on a personal level, he likes the flexibility such a small department demands. It keeps him close to the work itself.

“I enjoy wearing a lot of hats,” admits Huff, who steps in on tasks like preparing CAD drawings for excavation permits.

“It would be nice if we had an engineering department or something to take care of all that, but I consider that a perk of my job,” he says. “I can go out and grab a shovel and work on the pipeline with the guys. It gives me some exercise, a little sunshine, and gets me out from behind the desk.”

It’s all part of a culture in which, however

small, the Arrowbear Park County Water District has figured out how to pull together and do what’s needed to see that local residents get reliable water service.

“I just think we have a really good mindset here,” Huff says. “Necessity, as they say, is the mother of invention. We really take that to heart, and we just figure out how to get it done.” ♦

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## PENNY-PINCHING



A crew member levels fresh concrete around a manhole riser.

Frugality is a watchword for the Arrowbear Park County Water District, as Norman Huff, general manager, points out.

Manhole repairs are a case in point.

To keep the community’s roads in tiptop shape for travelers, paving projects are frequent. That requires regularly raising manholes to grade level after roads are paved over. That means jackhammering out the top ring, replacing it with a new one and installing prefab concrete or plastic filler rings to bring the lid to the proper height.

But filler rings “are a little pricey,” Huff says, “and if you get the concrete ones, they’re really heavy.” If their preset thicknesses don’t exactly match the new height for the road, that can make it hard to set the manhole lid flush with the new surface. And if the road is off plumb from the manhole shaft, spacer rings that are on a bias are needed to correct for the angle.

“If you brought a contractor in to raise the manholes, they’d be right around \$2,000 to \$2,500 a manhole.”

That could add up quickly. The district conducts video inspection and cleans about one-fifth of its sewers every year, and it typically raises 20 to 25 manholes a year to prepare for the procedure.

Arrowbear Park County Water District’s solution combines a special jig the employees designed and built: flexible fiberglass sheeting and an industrial-size tire inner tube.

“Once we break out the manhole, then we mount the steel ring [at the top of the manhole shaft] in our jig” to support it, Huff explains. The repair crew wraps the inside of the opening with a fiberglass sheet and uses the inner tube to hold it in place, creating a form for the concrete.

“Then we just pour concrete in. Once the concrete is set, we take the jig out and our manhole is perfectly level with the new road grade,” he says.

And it’s a lot less costly than \$2,000 a pop.

“With this, depending on how high we have to raise it, it’s eight or 12 bags of concrete and our manpower.”



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Pressure:	2,000 - 4,000 PSI
Battery Runtime:	8+ Hours
Video Memory:	8+ Hours

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- Wireless Video Downloading
- Rugged Tablet with GPS
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# KNOW HOW TO SAY 'NO'

Learning the fine art of workplace assertiveness can lead to a happier and healthier you

By Ken Wysocky

**A**re you the resident doormat on your team — the one who, for whatever reason, just can't seem to speak up for yourself? Do you always get saddled with extra work because "no" doesn't exist in your vocabulary?

If so, it's time to learn how to be assertive, a valuable workplace skill. People who can confidently and effectively express their points of view while at the same time respecting the viewpoints of others tend to flourish. Those who can't, don't — and the ripple effects can cripple both their careers and their health.

For example, people who just can't say no to extra work or don't speak up when they're undermined by colleagues often suffer from stress caused by pent-up frustration and simmering humiliation. The same is true for employees who consistently get passed over for promotions because they

**Experts note that being assertive means you're honest about your needs and feelings, but at the same time, you're also conscious and empathetic of others' needs and feelings.**

lack either the confidence to apply for new positions or ruin their chances by coming across in interviews as pushovers who'd make poor leaders.

In short, appearing indecisive, weak, resentful and victimized is not a recipe for workplace success. The key message you send with passivity is that colleagues' needs and feelings are more important than yours. That, in turn, openly invites colleagues to disregard those needs and feelings.

But even if you're shy and reserved, you don't have to resign yourself to being the doormat on your team. Not by a long shot. While some people are naturally assertive and have no problem asking for a raise, requesting more responsibilities or taking credit for projects, those who aren't blessed with the assertiveness gene can still learn how to stand up for themselves.

## Finding a balance

The benefits from doing so are many. Assertive people exude self-assurance and express themselves firmly and clearly, yet also still remain empathetic. They're well liked and respected and are good at negotiating the proverbial "win-win" situations.

In addition, they're also less stressed out and anxious because they're usually not bullied into doing things they simply don't have time to do.

As such, they're viewed as great potential managers because colleagues enjoy working with them, experts note.

Speaking of bullies, there's a thin line between assertive and aggressive. Experts note that being assertive means you're honest about your needs and feelings, but at the same time, you're also conscious and empathetic of others' needs and feelings. Aggressiveness is defined as doing whatever's necessary to fulfill your own interests, without any regard to what others may feel or need.

One word of warning, however: Research shows that men often are more likely to be rewarded for assertiveness than women. So before you begin working on your personal assertiveness-make-over project, it pays to take into account your workplace culture and values and act accordingly. Some companies truly value when employees are forthright and forceful, while others reward a less confrontational, more persuasive approach.

## Taking action

Learning how to become more assertive is a long-term process. To get started, experts suggest taking a step back to assess your

**We invite readers** to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets for building and maintaining a cohesive, productive team. Or ask a question about a specific issue on which you would like advice. Call editor Luke Laggis at 800-257-7222, or email [editor@mswmag.com](mailto:editor@mswmag.com).





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workplace behaviors to determine where to start. For example, is it hard to say no when someone asks you to take on more work, even if you're up to your neck in projects? Or do you find it difficult to stand up for yourself when someone on your team takes credit for your work or steps over you to get a plum assignment?

After some self-assessment about your response patterns, it's time to think about ways you could tactfully, fairly and effectively respond differently to these situations. Along the way, it's important to pay attention to the words you use to express yourself. Using "I" statements, for instance, is a good way to assert your thoughts or feelings in a nonaccusatory way.

For instance, "I don't have enough time to take on another project at this time and do it effectively" conveys something entirely different than "You're giving me way too much work to do." Moreover, keep in mind that words matter, too. For example, choosing a verb like "will" instead of "could" makes your message more clear and concise — as opposed to soft-pedaling a request, which makes it easier to refuse.

Consider this request, for instance: "I will definitely need help in order to complete this assignment on time." It clearly sends a more definite message than something along the lines of, "Do you think I could get some help in order to complete this assignment?"

If you honestly assess yourself, you may discover you also habitually use words that devalue what you're about to say. For example, when you use the word "just" — as in, "This is just a thought, but..." it may suggest that what you have to say isn't all that important or relevant. The same is true for phrases such as "Maybe I'm looking at this the wrong way, but..."

The bottom line: words matter. As such, use them carefully to firmly state your position, without creating ambiguities that can lead to misinterpretation or undermine your intent.

Also keep in mind that body language should sync up with your verbal messages. Experts suggest maintaining an upright posture and keeping eye

contact, perhaps while leaning forward slightly. Crossed arms and legs are a no-no. And don't let your emotions get in the way, no matter how volatile things might get; try to keep talking evenly and firmly while using appropriate gestures to drive your point home.

### Walk before running

It's important to acknowledge that none of this will happen overnight. Remember that you're trying to relearn and undo years of behavioral patterns. So like the proverb about how to eat an elephant — one bite at a time — it helps to start with small steps and build from there.

Some experts recommend first writing out what you want to say in a difficult conversation with a manager or colleague, then rehearsing out loud. Others suggest practicing your new skills with a friend or spouse before trying them in the workplace. Like with any other skill, practice makes perfect. Some advise setting a goal, such as having two difficult conversations with colleagues within the next two weeks.

As you get better at asserting yourself, it's also important to use negotiating skills to reach common ground. For example, if you have to say no to a request to take on more work, at the same time offer to find a win-win solution. This will prevent people from taking advantage of you while at the same time positioning yourself as someone who's still a team player.

Moreover, if you're just not prepared to handle a situation where you're being bullied into doing more than you can, it's perfectly fine to ask for a timeout to collect your thoughts. Then revisit the issue awhile later with a clearer head and a game plan in mind.

In the end, developing new behaviors takes time and mental discipline. Nothing good comes easily. But after you learn how to speak up and firmly stop people from taking advantage of your goodwill, you'll be a happier, healthier and more productive employee. ♦



# LEADING THE CURVE

New York utility builds system efficiency by constantly working toward the future

By Jim Force



“We take every opportunity to reduce our carbon footprint, by adopting the most effective best practices out there in the industry.”

That’s Norman Jones, Environmental Services commissioner, describing the mission of the Rochester, New York, Bureau of Water, which serves 210,000 people through 58,000 accounts in this city on the shores of Lake Ontario.

He backs up this statement by ticking off a number of forward-looking initiatives:

- Electric vehicles

- An entirely gravity-fed water transmission and distribution system
- Low volume of nonrevenue water
- LEED Gold building for the water operations center
- Consideration of solar panels on the water treatment plant.

“Even though our system was designed to serve customers over 140 years ago, it continues to operate efficiently and sustainably today,” he says.

Some of this results from the natural configuration of the landscape; source water from

Hemlock Lake flows by gravity to and through the city’s transmission and distribution lines — about 675 miles in all.

At the same time, staff diligence and dedication have led to other efficiencies, especially leak detection and control. “We are now averaging about 10 breaks per 100 miles of water main,” Jones says. “That’s well below the industry standard for optimized systems.”

## Infrastructure

The clean, clear source water comes from





A Rochester (New York) Bureau of Water crew installs a new curb box for one of the utility's 58,000 accounts. (Photography by Mark Webster)

Canadice and Hemlock lakes in a protected upland forest area. It is treated at Rochester's water filtration plant, located on the shore of Hemlock Lake, about 30 miles southeast of the city. The plant is rated at 48 mgd and averages about 37 mgd. Water is treated with conventional flocculation, sedimentation, filtration and disinfection before being fed to the transmission lines that take it to three storage reservoirs near the city. Reservoir storage capacity is approximately 250 million gallons.

From there, the water is disinfected again, then

flows through the distribution mains to customers. Some of the piping dates back to the 1870s and is largely cast iron or ductile iron. Rochester has been rehabilitating water mains by cement-lining them since the mid-1940s as a way to protect and preserve the older pipes.

"All of the transmission lines from the filtration plant to the reservoirs are cement-lined to prevent internal corrosion," says Patrick O'Connor, Bureau of Water director. "We're lining the distribution system at a rate of 5 to 6 miles every year, focusing on the older cast iron pipes."

**"Even though our system was designed to serve customers over 140 years ago, it continues to operate efficiently and sustainably today."**

**Norman Jones**

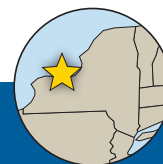
The city also has 7,500 fire hydrants. In a unique arrangement, the Fire Department annually inspects all hydrants, while the Bureau of Water makes required repairs. In the downtown central business district, there is a separate, high-pressure fire protection system called the Holly system, named for the original 1870s pump manufacturer.

"It's a unique system that now uses modern, energy-efficient, electric and diesel-powered pumps, with approximately 20 miles of 6- to 20-inch-diameter water mains consisting primarily of cast iron pipe," O'Connor says. "We are one of only two or three cities in North America to use this type of system."

### Best practices

Rochester prides itself on a wide range of initiatives in recent years to improve the cost-effectiveness and reliability of its water system.

"We were an early adopter of geographic infor-



### PROFILE:

**Rochester,  
New York,  
Bureau of Water**

**FOUNDED:**  
1872

**NUMBER OF ACCOUNTS SERVED:**  
58,000

**AREA SERVED:**  
City of Rochester, plus several small wholesale accounts

**WATER SYSTEM:**  
Source water — Hemlock Lake;  
treatment — flocculation,  
sedimentation, filtration, disinfection;  
gravity flow through 75 miles  
of transmission mains and 600 miles  
of distribution mains; 7,500 hydrants

**STAFF:**  
Norman Jones, commissioner,  
Department of Environmental Services;  
Patrick O'Connor, director,  
Bureau of Water; Anne Spaulding,  
manager of Environmental Quality

**ANNUAL OPERATIONS BUDGET:**  
\$43 million

**WEBSITE:**  
[www.cityofrochester.gov](http://www.cityofrochester.gov)





Technician Kevin Matzan listens for leaks in a waterline after a recent repair job.

## LEED GOLD BUILDING

Rochester's water operations center was the first municipal structure in the state of New York to achieve LEED Gold status.

According to Anne Spaulding, manager of Environmental Quality for the city, the building was completed in 2006 and houses the Bureau of Water's administration, engineering and distribution groups. About 90 employees report there.

"It was constructed on an old brownfield site," she says. "It was the location of the old Public Works Department garage. The old building was demolished, and the site had to be remediated."

The new center incorporates LED lighting throughout, as well as extra insulation to prevent heat loss.

It's just one of the initiatives that have helped Rochester achieve a Certified Climate Smart Community. Other efforts include a green roof on City Hall, solar arrays at a municipal brownfield site, electric vehicles and an expanding bicycle infrastructure.

LEED stands for Leadership in Energy and Environmental Design and aims to create efficient, cost-saving green buildings, as well as other sustainable developments. It is the largest green building rating system in the world.

**"We look at the main break history. If it's significant, we'll use CIPP or completely replace the pipe. We use asset management and our GIS to prioritize system improvements."**

**Patrick O'Connor**

mation systems," Jones points out. He says the utility developed an in-house system to identify and monitor assets back in the 1990s and then was one of the first water providers in the region to use an Esri system in the early 2000s.

"It's a big benefit for us," Jones says. "We can track the history of main breaks back to the 1980s. Using GIS, we can analyze the situation, prioritize system improvements, and identify hydraulic needs and which mains need to be addressed first. It is also used to develop and update the hydraulic model of our water system."

While the Rochester water system is fully metered, the utility is engaged in a multiyear program to transition from manual to radio-read readers. "We are about 65% complete," O'Connor says. Before, readers used touchpads but had to walk the routes. Radio-read meters (Neptune Technology Group) are being installed on a route-by-route basis and when service calls are made. O'Connor says reading now takes fewer people and a fraction of the time it used to take to walk a route.

Rochester is also piloting an advanced metering infrastructure project that allows the utility to not only read meters, but also collect detailed customer-use and leak data via a receiver on a fixed antenna.

"We're studying it on one of our fully converted meter routes, with the antenna located at our operations center," O'Connor says. "We wanted to look at that technology knowing that it's the way the industry is going. It looks promising, but we won't take full advantage of it until we modernize our billing system."

### Rehabs and replacements

To address breaks and other pipe-related issues, Rochester uses a variety of methods to repair and replace its transmission and distribution lines.

Cement lining has been the utility's "go-to" fix for nearly 75 years. Jones says essentially all of the transmission conduits from the treatment plant to the storage reservoirs have been lined, while the distribution mains are being lined in an ongoing program focusing on older, larger-diameter cast iron pipes.

"We find the cost of lining is about \$50 to \$70 a foot, compared to \$300 to \$400 a foot for pipe replacement," Jones says.

Current contractors include Michels and Mainlining America.

*(continued)*



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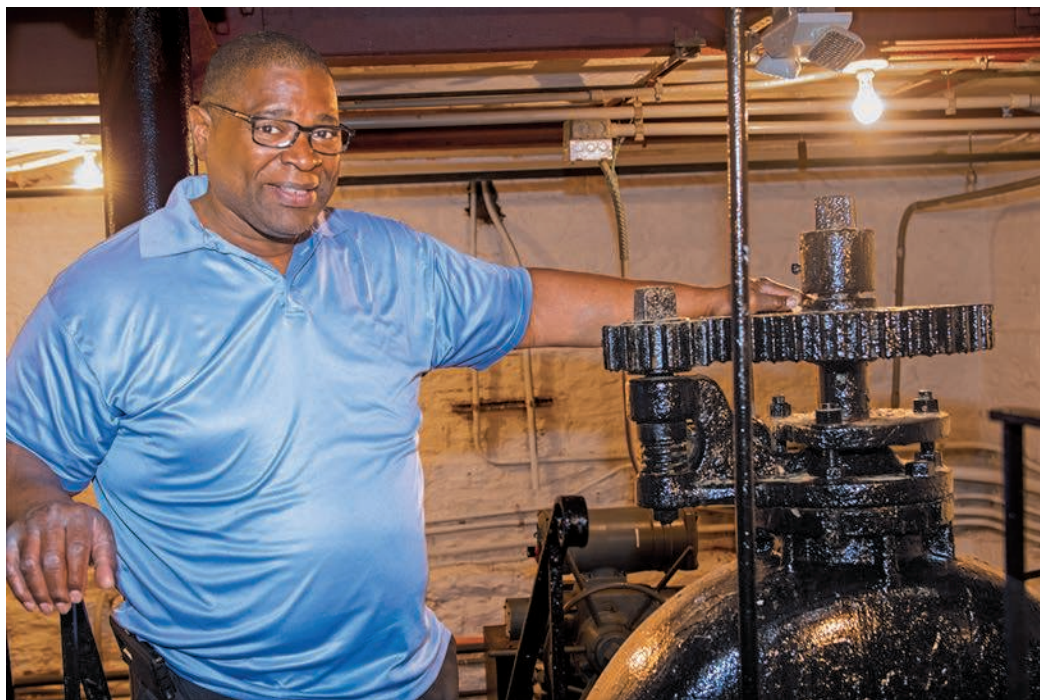
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**“It’s a case study. We were around 28% (nonrevenue water), and we’ve been as low as 13%.”**

**Norman Jones**

### **Cathodic protection**

Diligent corrosion protection is another reason the Rochester system has held up so well.

Since the 1960s, the utility has applied cathodic protection to mitigate corrosion in older, cast iron and ductile iron portions of its transmission lines — about 30% of the pipe. “When we excavate to do repairs, we incorporate cathodic protection to that section,” O’Connor says. “We also apply the protection on new mains as they are being installed.”

The success of the program is evidenced by the relatively low number of water breaks per year, which Jones says averages 10 per 100 miles of water main — well below the Partnership for Safe Water goal for optimized water systems of 15 per 100 miles of main. “That’s even more significant because the median age of our system is 98 years,” he adds. He attributes the good results to asset management and the use of GIS.

Reduced water loss is another positive result. “Our nonrevenue water volume is significantly lower than that of other regional urban water suppliers,” O’Connor says, “despite our extreme weather and freeze-thaw conditions.”

Jones adds that the improvements are due to training, technology and motivated employees.

“We went to different conferences and trained all our staff,” he says. “We sent teams to Atlanta, Pennsylvania, all over the country, looking at best practices. We tested the best equipment and looked at how we could build a better mousetrap and take ownership of this problem.”

“It’s a case study. We were around 28% (non-revenue water), and we’ve been as low as 13%.”

“Every day when we shut off and change a meter, we take the opportunity to sound the system and listen for leaks,” O’Connor says. “We want to discover leaks when they’re small enough to repair with a sleeve — before they lead to big breaks.”

“We’re very proud of what we’ve accomplished. It’s been a great team effort.” ♦



**Kevin Johnson checks a gate valve inside Gate House No. 2 at the Highland Park Reservoir.**

**Supervising technician Rick Kessler compares a new RFID meter (left) and the utility’s old manual-read meters in the meter repair and test shop.**

in-house analysis of pipeline breaks, which were on the rise.

“Today we replace or rehabilitate over 6 miles of water mains in the distribution system every year. We started using the molecular PVC pipe after extensive research by our engineering division showed it would hold up better in our predominantly corrosive soils. We also now use plastic (polyethylene) water services for homes and businesses.

“In some specific cases we have used HDPE water mains.”

O’Connor says the utility has completed three CIPP projects since 2013 — about a mile each. “We look at the main break history. If it’s significant, we’ll use CIPP or completely replace the pipe. We use asset management and our GIS to prioritize system improvements.”

Overall, Rochester has been able to extend the useful life of nearly 100% of the piping in the transmission system and over 40% of the mains in the distribution system through the use of field-applied cement lining.

Where replacement is called for, Rochester installs new molecular-oriented PVC pipe, and in some cases uses CIPP lining technology.

“We have about 68% cast iron pipe in our distribution system and 27% ductile iron,” O’Connor says. “Fourteen years ago we did an

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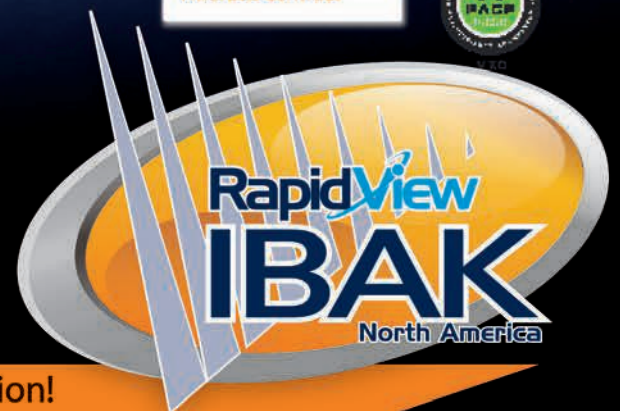
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# READY FOR INSPECTION

A good CCTV operator requires common sense, self-motivation and thorough training

By Traci Browne

A couple hallmarks of good CCTV inspection operators are resourcefulness and an abundance of common sense when it comes to solving safety issues and problems with equipment. But how do you find — or rather, develop — workers with this skill set? What does it take to become a CCTV operator?

Initiative is one of the key traits to look for in an operator, says Matt Timberlake, regional vice president of Ted Berry Co. “You

**“We don’t want to overwhelm them with the fancy stuff until they are capable of handling the basics.”**

**Steve Sebastian**

not only have to be savvy with technology, but you need to be savvy enough to adapt. You need to be a continual learner. That’s at the core of the really good CCTV operators out there.”

While a good salary and the promise of working with robotics may attract people to sewer and water systems, CCTV inspection operator is by no means an entry-level job. “You shouldn’t be a CCTV operator unless you know how sewer systems function and how manholes work and don’t work,” Timberlake says. Once those basics are covered, CCTV inspection training can begin.

Michael Kerr, NASSCO training director, says a good CCTV inspection operator has a desire and ability to learn and is a self-motivated individual. He says that today’s inspection operators not only need to be skilled at manipulating the robot, but they must also interpret what they are seeing.



Understanding how sewer systems function is just a baseline for CCTV operators. Good operators must be tech savvy, able to adapt to circumstances and focused on continually learning.

## Gradual training

Both Timberlake and Kerr suggest a gradual training program: one where a candidate is working alongside an experienced operator to get to know the equipment and to observe how the operator codes.

Once trained on the robotics, Timberlake sends his operators for NASSCO Pipeline Assessment and Inspector Training certification programs. Operators can then work independently on smaller-diameter pipe to build experience until finally they become what he refers to as the “elite crews” of pipe inspection — the operators who are inspecting 100-plus-inch pipes.

Steve Sebastian, national training manager for Envirosight, says that as robots progress and are equipped with better cameras and sensors for other



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data, the information they gather combined with software analysis helps minimize variances in operator perception. Meaning, the software will be able to accurately determine if a pipe is 30% blocked or if it's more like 50%. Better accuracy could mean the difference between a relatively

inexpensive repair and a costly pipe replacement. However, that level of sophistication will require more skill and training for the operators.

Envirosight uses a support network all across the U.S., and those partners are responsible for training the end user. Sebastian says the company's

**As camera technology evolves, operators require a higher degree of skill and training.**



approach is to teach operators the basics of the equipment and give them a few weeks to put that training into use in real-life scenarios. Local support is what makes this staged approach to training possible.

"We don't want to overwhelm them with the fancy stuff until they are capable of handling the basics," Sebastian says.

Once the operator has the basics down, the trainer comes back to cover the reporting software and other functionalities of the robot.

Given the fact that these robots can be significant investments for municipalities, it's no wonder resourcefulness and common sense are traits companies are looking for. Also, let us not forget that CCTV inspection operators are not just responsible for their equipment, but they are also responsible for crew and public safety. ♦



# DELIVERING EXCELLENCE

A meticulous approach helps the Sparta water team minimize water loss and maximize efficiency

By Ted J. Rulseh

Todd Hanson can observe his community's entire drinking water system from the SCADA screen in his office at the water treatment plant.

At a glance, he knows if the pumps are running normally, knows the water levels in the three towers and the above-ground reservoir, and can detect when something out of the ordinary is happening and needs attention.

That doesn't mean he and his team members in Sparta, Wisconsin, are armchair operators. The water utility's three certified operators make rounds to all the wells and storage structures every morning just to make sure all is shipshape. Meanwhile, a regular upgrade program, in place for decades, replaces old piping with brand-new ductile iron mains.

That kind of meticulous care is one reason this city of about 9,500 people in the state's southwest corner experiences just 2% unaccounted-for water and, on average, just two water main breaks per year. In 2018 the city earned a Small System Excellence Award from the Wisconsin Section of the American Water Works Association.

Hanson, water utility superintendent, is quick to credit the entire city team for the utility's success. That includes past and current mayors, Public Works directors and city councils who have supported progres-

sive policies, system upgrades and rigorous maintenance. It also includes the members of the water utility staff.

"We have a bunch of hardworking people here," Hanson says. "They all demonstrate excellence. I know sometimes municipal workers get labeled that they're just putting in their time. That's certainly not the case here. It's been a real sense of accomplishment to see the utility evolve from what it was when I started 32 years ago to what it is today."

## Looking back

All those years ago, Hanson was a dairy farm kid and a high school graduate with studies in groundwater and distribution under his belt from Chippewa Valley Technical College. He started with the Sparta utility as a laborer and quickly applied the work ethic he learned from his parents. He worked his way up the ranks and became superintendent eight years ago.

"All that hands-on training was invaluable," Hanson says. "In the position where I am now, I can understand all aspects of how the utility is working and how it's supposed to work."

At present, Sparta is growing steadily. Some growth consists of commuters to La Crosse, about 25 miles west on the Mississippi River. Some is related to the nearby Fort McCoy U.S. Army training center about 7 miles east.

The water system includes 68.7 miles of mains, 619 fire hydrants and more than 4,100 meters. Caring for that system, along with the 2.25 mgd (design capacity) water treatment plant is the responsibility of Hanson and operators Sam Peterson, Brian Betts and Lee

Sparta (Wisconsin) Water Utility  
Superintendent Todd Hanson stands  
in front of one of the Sparta water towers.  
(Photography by Michael Lieurance)





**Todd Hanson can view the entire Sparta water system on a SCADA screen in his office. He monitors operations of the entire system several times a day making sure pumps, controls, chemical dosages, water levels in towers etc. are all working properly.**

Schwier. All four hold state certifications for groundwater, distribution and iron filtration; Hanson is a state-licensed pump installer. The team also includes Jan Becker, utility billing clerk, and Gail Clark, accountant.

### Staying up to date

The water utility's chief ongoing challenge is the continuous upgrading of the distribution system. "We have about 16 miles of 4- and 6-inch water mains in the system that date back many years," Hanson says. "We try to do a rehab project every year based on the condition of the facilities. In my 32 years, hardly a summer has gone by that we haven't torn up a street somewhere to rehab the water, sewer, street pavement, curb, gutter and sidewalk."

Hanson works with Mark Flock, sewer superintendent, to oversee a five-year upgrade plan. The 4- and 6-inch waterlines are upsized to 8-inch or larger using Class 52 ductile iron piping. Much of the piping being replaced is old sand-cast iron that is brittle, especially at low temperature, and subject to breakage.

"For services, on the city side we specify Type K copper," Hanson says. "If customers want to go with plastic on their side, that's their prerogative, but on the city side, it's all copper up to the curb stop."

### Finding leaks

Main breaks are rare. Hanson estimates that three decades ago, four to six breaks per year were typical. "Now we're down to two a year. Most communities would think we're doing something right. We hardly ever see a main that is 30 years or newer break." Most breaks occur in the sand-cast pipe and in early-generation ductile iron mains installed in the 1970s. The most common cause is freeze-thaw conditions.

Sparta doesn't electronically monitor for leaks



**Lee Schwier (left) and Sam Peterson disassemble a Waterous Pacer WB 67 – 250 fire hydrant to make repairs. All 619 hydrants in the Sparta Water Utility are flushed and serviced as needed in April and October.**

or regularly send crews out with listening devices, although the utility does own a Geophone acoustic leak detector (Pollardwater). Most leaks are noticed when the water surfaces through the area's sandy loam soil.

The SCADA system also provides clues when breaks occur. "I can look at that daily," Hanson says. "I know the system, and I can tell if something isn't right out there. If the pumps on the west side of town have pumped more water and the west reservoir has cycled more than it normally does, then we're over on the west side investigating. We might reach out to other city staff and say, 'We think something might be going on in this part of town; if you see something, let us know.'"

### Rigorous maintenance

While leaks and repairs are sporadic, main-

**"It's been a real sense of accomplishment to see the utility evolve from what it was when I started 32 years ago to what it is today."**

**Todd Hanson**

tenance is a year-round affair. From the first of the year through mid-March, Hanson compiles data for the annual Public Service Commission audit. Meanwhile, the staff does maintenance on the pumps, the motors and all equipment related to the city's six well houses.

"Sprinkled in with that is painting the facilities,"

### PROFILE:

**Sparta (Wisconsin)  
Water Utility**



**FOUNDED:**  
1910

**POPULATION SERVED:**  
9,500 (4,123 meters)

**DAILY PUMPAGE:**  
1.23 million gallons

**SYSTEM STORAGE:**  
2.22 million gallons

**AREA SERVED:**  
6.6 square miles

**EMPLOYEES:**  
6

**INFRASTRUCTURE:**  
68.7 miles of water mains

**ANNUAL BUDGET:**  
\$2 million (operations)

**WEBSITE:**  
[www.spartawisconsin.org](http://www.spartawisconsin.org)





Sparta Water Utility team members (from left) Brian Betts, Todd Hanson, Sam Peterson and Lee Schwier in front of the utility's building.

## **"There's something to be said for being out in the field and seeing things firsthand."**

**Todd Hanson**

Hanson says. "We have a lot of structures throughout the city, so there is maintenance and upkeep on those buildings. Winter is when we do a good share of that because once spring hits, we've got a rehab project going. When we hit April 1, it's go time."

Betts spends most of his time in the field doing locates for Diggers Hotline using a Vivax-Metrotech line tracer. He also does the majority of valve exercising, mostly by hand, although he does use a trailer-mounted exerciser (Wachs Utility Products) on older valves that are difficult to turn. In addition, he visits the facilities daily "to check for anything that may be unusual — a sound or a little puddle of water," Hanson says. "There's something to be said for being out in the field and seeing things firsthand."

Peterson performs most of the maintenance on the wells (and the filters at wells 6, 7, 9 and

10). Schwier is largely dedicated to changing meters; about 10% are changed out annually. Since 2011, the city has used a drive-by automated meter reading system (Sensus).

"When I started here," Hanson says, "the superintendent at that time gave me a notepad and a pencil and said, 'Go find Kent Street and start reading meters.' Back then it took three of us one week to read our meters. Now, with technology, one guy reads the meters via laptop in the truck, and it takes about six hours."

"Next for us is advanced metering infrastructure, where we'll put antennas on a couple of our towers," he adds. "We have about 900 meters to change with Meter Transceiver Unit boxes compatible to the AMI system. Then we'll be able to proceed with that step. I foresee it happening in the next few years."

Flushing, maintenance and repair of the fire hydrants take place in April and October. The city uses just one fire hydrant model to minimize the parts inventory. The water towers and reservoir are inspected by Lane Tank on five-year (half-drained) and 10-year (fully drained) cycles and rehabilitated as conditions warrant.

## **The extra mile**

During maintenance, team members can make refinements to the utility's infrastructure map. The city worked with engineering firm Mid-States Associates to map the system on GIS. "Our guys have tablets and/or laptops in their trucks," Hanson says. "So for example, if they see a valve that according to the map runs east but really runs north, they can make the change to the GIS in the field. So we're getting more accurate each time we do valve exercising."

*(continued)*

## **HELPING HANDS**

Smaller community water utilities can't always afford to own all the tools they need to take care of their distribution systems. So they work together, sharing equipment and expertise. The water utility in Sparta, Wisconsin, is a case in point.

Earlier this year, the operations team discovered water bubbling up about 2 feet from the foundation of a house. "When we arrived, we assumed the water service had ruptured before it went through the foundation into the house," says Todd Hanson, water utility superintendent. "But after we shut the curb stop off, the water didn't quit. We started valving the main off until we got it isolated and the leak stopped."

Then it was a question of finding the exact location of the leak, and that's where cooperation came in. The nearby city of Onalaska owned a correlator from Vivax-Metrotech and gladly lent it to the Sparta team.

"We hooked it up to the pipe and found that the leak was about 40 feet from where the water was bubbling up," Hanson says. "The correlator mapped the leak to within about 3 feet of where it actually was. That was a really valuable piece of equipment at the time. If we would have just started digging where the water was bubbling up, we would have been there all day and half the night just to chase the leak."

Sparta and Onalaska had some previous experience in sharing equipment. "During the terrible winter of 2013-14, everybody had their pipes freezing up," Hanson says. "We had a small Magikist service line thawing unit. We lent that out to Onalaska. They were appreciative of that and in turn they did me a favor."

Hanson also reaches out to the Wisconsin Rural Water Association for assistance when needed. "I am a member of a WRWA committee, and I work closely with them, as do most utilities in Wisconsin, especially in communities under 10,000 in population. All the communities in this area get along and work together. If someone needs something, we're always willing to help each other out."



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**“Next for us is advanced metering infrastructure. ... I foresee it happening in the next few years.”**

**Todd Hanson**

Meanwhile, team members strive to deliver excellent service. “If Jan, our billing clerk, notices that water usage seems high at 310 Main St., she’ll red-flag that,” Hanson says. “I pass the work order to my staff and they’ll go talk to that homeowner face-to-face. If the customer wants, they’ll go inside the house. Maybe it’s an elderly person who has a toilet running but can’t hear it — that’s why the bill was \$200 instead of \$100 for the quarter.”

Good relationships also extend to the city administration. Hanson is careful to keep the mayor, City Council members and other department heads in the loop. At annual goal-setting sessions with the City Council, the department heads list the previous year’s accomplishments, the current year’s activities and the next year’s plans. The department heads meet monthly or bimonthly, usually on the morning after council meetings, to make sure their wishes and the council’s are in alignment.

#### On the grow

Meanwhile, Sparta keeps growing, and Hanson and his team are preparing for system expansion.

**Brian Betts actuates a water main valve. The city’s water system includes approximately 1,000 valves.**



The biggest new development is the South Pointe Business Park where phase one streets and utilities are in place and businesses are already moving in. Extension of utilities for phase two is in progress. The growth might call for another water tower. “We’re on top of that,” Hanson says. “We’ve been working closely with Mid-States Associates and getting a game plan in case that should happen.”

Hanson enjoys his job and the support he gets from all quarters: “To succeed, you’ve got to have good people around you, and that’s what we have here in Sparta. My theory has always been: Treat your people like they make a difference,

and they will make a difference. I’m blessed to be able to work here for 32 years and I hope many more years before I retire.” ♦

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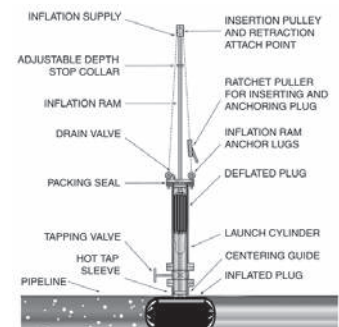
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# SAVE THE DATE

NASSCO's Motor City Exchange will draw industry experts from across the country

By Sheila Joy

NASSCO's 2019 Annual Conference in Fort Lauderdale, Florida, drew more than 200 attendees from across the country and around the world, including representatives from the Columbia Institute for Subterranean Infrastructure Technologies and Techniques in South America and WRc in the United Kingdom.

Representing the largest NASSCO conference to date, NASSCO members had the opportunity to network with industry peers, hear about the many accomplishments achieved by NASSCO committees and staff over the past year, and learn about safety and other topics important to contractors, public agencies, consulting engineers, and the manufacturers and suppliers of equipment and material for use in trenchless assessment and rehabilitation.

NASSCO's Exchange was launched at the 2019 Annual Conference to provide an interactive forum for industry experts to share best practices on subjects important to our industry, and it provided attendees the opportunity to engage with questions and shared experiences. The event focused on the topic of safety — the No. 1 issue that keeps our members up at night.

Moderated by Jim Stehaphin, director of education and training at the

National Utility Contractors Association, the event's safety panel included Tom Hayes, chief operating officer at Hydromax USA, who spoke on the challenges contractors face with increased safety requirements. Ed Fitzgerald, Doheny Technical Institute certified instructor, discussed confined-space entry; Fred Tingberg, chief operating officer at Lanzo Corp., covered bypass and traffic safety; and Jerry Weimer of Jerry Weimer Consulting discussed cross-bore prevention and detection. Special guest Dennis Pivin, vice president of Safety, Health and Environmental at Aegion, rounded out the panel.

Jimmy Stewart, business development manager at Xylem, served as master of ceremonies and guided the discussion of other presenters who represented consulting engineering firms, municipalities and institutions of higher learning.

A post-event attendee satisfaction survey resulted in the event receiving 4.5 out of 5 stars and set the stage for additional NASSCO Exchange events in the future. In fact, the upcoming NASSCO's Motor City Exchange is scheduled for Nov. 7, 2019, in Dearborn, Michigan. It is expected to draw attendees from across the country. To learn more, visit [www.nassco.org/events](http://www.nassco.org/events). ♦

**NASSCO (National Association of Sewer Service Companies)** is located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104; 410-442-7473; [www.nassco.org](http://www.nassco.org)

Sheila Joy is executive director of NASSCO. She can be reached at [director@nassco.org](mailto:director@nassco.org).

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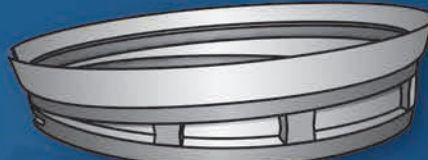
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# BETTER GRADES

Adjustable rings install easily and match road crown for a smoother surface

By Angus W. Stocking

When a manhole lid isn't flush with the road surface, you know it. Everyone who drives that road knows it.

Setting lids flush with the road surface and maintaining them at grade through years of traffic and road maintenance is a challenge every wastewater utility faces. Flat or crowned surfaces, upgrading existing infrastructure, old roads, new pavement — it's hard to find a solution that fits all circumstances.

Cory Rackley, lead equipment operator, is responsible for keeping about 10,000 manholes in St. Charles, Missouri, precisely at grade. If they're too low, citizens and council members complain, and if they're too high, even by as little as a quarter inch, snowplows will catch and tear them out.

"We have old and new areas, which means we have a lot of odd-sized

**"It was nice to have the ability to exactly match the sloped surface, and it made for a higher-quality roadway."**

Todd Beaber

sewer structures," Rackley says. "Adjustable risers make it much easier to raise all these differently sized manholes to grade."

For years, his crews raised manholes to grade after new paving with traditional methods that required excavation and the use of concrete rings or bricks. But since 2008, he's been using Pivoted Turnbuckle Adjustable Manhole Risers, made by American Highway Products, to raise manholes precisely to grade without excavation, significant traffic closures, or the need for equipment to lift and set heavy concrete rings.

"When we have a manhole to raise now, we can do it in half an hour or less, depending on traffic, without stopping traffic or digging up pavement," he says. "Compared to that, the concrete rings were a nightmare — they'd take one to two days and usually required detours."

The American Highway Products adjustable riser is a sturdy, flexible, galvanized ring made with American steel that uses a turnbuckle to adjust riser diameter. Installation is simple and fast; one person sets the riser in the original utility rims and uses a screwdriver as a lever to expand it to fit. Since the turnbuckle leverage applies thousands of pounds of force, the riser seats in the rim tightly, providing a new rim for the manhole with no rattling or play.

## BETTER MOUSETRAPS

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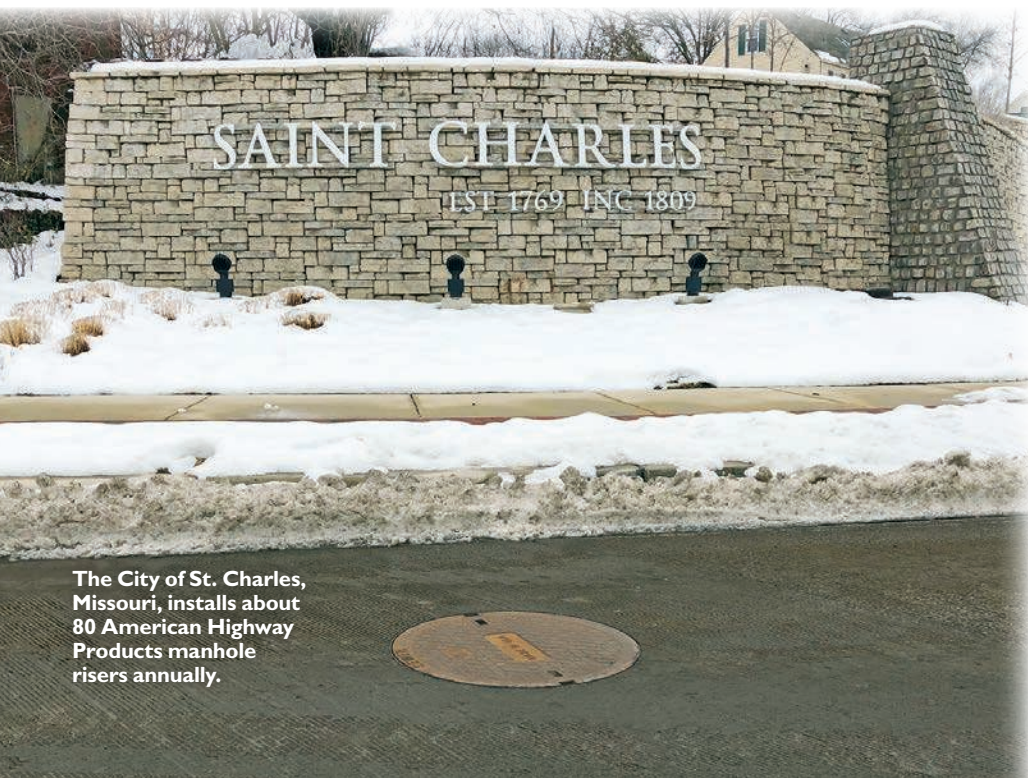
Raises manholes to grade

### BENEFITS:

No excavation, traffic closures, or equipment to lift and set heavy concrete rings is required

### USER:

St. Charles, Missouri



The City of St. Charles, Missouri, installs about 80 American Highway Products manhole risers annually.





American Highway Products' turnbuckle risers have been around for a while now, and the new Inclined Manhole Adjusting Riser Rings use the same technology while accommodating pitched road surfaces.

### A new angle

While the company's turnbuckle risers have been around for a while now, the new Inclined Manhole Adjusting Riser Rings are using the same technology to accommodate pitched surfaces. They feature a turnbuckle linkage pivoted at each end to expand the riser. A 60-pound force applied 7 inches from the center of the pivoted turnbuckle exerts a 5,600-pound tangential force in the rings that will be bent to fit the out-of-round, worn manhole opening.

Wisconsin-based Stark Pavement Corp. sets up to 100 Pivoted Turnbuckle risers annually in and around Milwaukee and has set as many as 35 on a single project. The firm has also used the inclined risers, which incorporate the same pivoted turnbuckle for easy adjustability, along with the capacity to tilt the riser as needed to match sloped road surfaces.

"We purchased the inclined risers for a project in Kenosha with a very high crown," says Todd Beaber, paving supervisor. "It was nice to have the ability to exactly match the sloped surface, and it made for a higher-quality roadway."

Stark crews install the adjustable risers just before paving. "We usually have a couple of guys working just ahead of paving machines," Beaber explains. "It's nice that these risers are so much lighter than cast iron risers — our crew can carry all they need in a small truck. Really, all they have to do is clean the old rim with a scraper, set in the new riser and tighten it. They're done in five to 10 minutes."

One key to the riser's efficiency is precise sizing. They can be ordered at any diameter, as thin as 3/4 of an inch and up from there in 1/4-inch increments. "They can be ordered on short notice, but we try to keep an assortment in stock at all times," Beaber says. "Sometimes we're moving fast, and it's nice to have exactly what we need on hand."

"We've had no failures that I know of," Beaber says. "I think they're the best riser available and a good value too. Money is so tight on municipal projects, and these risers make it easy to get manholes to the right elevation without excavation and without any rattling."

### Good match

In St. Charles, city crews set 40 or more of the American Highway Products risers annually, and contractors set about the same amount. The city also keeps risers on hands, in multiple sizes, for their own use and occasionally for contractors. In the last year, Rackley has also started using inclined risers, a newer product from American Highway Products.

"Streets aren't usually flat, so these have been great for us," he says. "They let us make an even closer match to the final road surface. They're a wonderful product, and there doesn't seem to be anything else out there quite like them — we'll certainly continue to use them." ♦

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## CHEMICAL AND MECHANICAL ROOT CONTROL

By Craig Mandli

### CABLE MACHINES

#### Draincables Direct Valor

The **Valor** drum machine from **Draincables Direct** cleans drainlines from 1 1/4 to 4 inches in diameter and up to 100 feet in length. The drum provided with the machine holds up to 100 feet of 5/16- or 3/8-inch, or 75 feet of 13/32- or 1/2-inch cable. The drum includes an inner drum that will guard against cable flip-over. It is designed to clean sink lines, floor drains and roof vents. The drum is driven by a 1/12 hp universal motor, and the cable is manually fed in and out of drains. There is an optional autofeed accessory available to advance or retract the cable. The drum tilt adjusts, providing the proper angle for cable feed. **800-421-4580; www.draincables.com.**



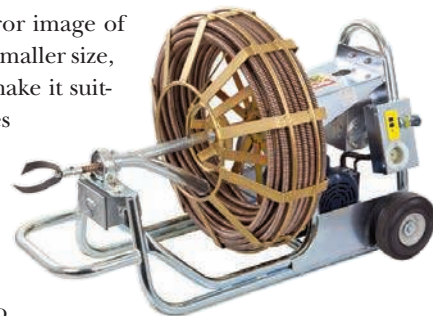
#### Electric Eel Model C

The **Model C** dual-cable sectional drain cleaner from **Electric Eel** runs up to 200 feet of 1 1/4-inch, self-feeding dual cable in 8- or 10-foot sections that require no handling when rotating. It spins cable at twice the revolutions per minute of a continuous cable machine for cleaning 3- to 10-inch lines for distances up to 200 feet. One-man operation means less time and labor expense. A heavy-duty, 1/2 hp motor comes standard, and 3/4 and 1 hp motors are also available. A custom-designed and manufactured gearbox ensures higher quality, lower cost and parts availability. The heavy-duty, fully adjustable safety clutch keeps cable and tool breakage to a minimum and provides overload protection. A fold-down handle allows for easy transportation, storage and use in crawl spaces. Its carry handle allows for balance and easy transport. **800-833-1212; www.electriceel.com.**



#### Gorlitz Sewer & Drain Model GO 62HD Series

The **Model GO 62HD Series** machine from **Gorlitz Sewer & Drain** is a mirror image of the larger Model GO 68HD. Its smaller size, low profile and lighter weight make it suitable for getting into tight spaces or through narrow doorways and basements. It is available in a variety of reel and/or drum combinations. With a quick turn of an Allen wrench, the machine can be broken down into separate frame and reel components for easy transportation or adding an additional cable reel for extended reach. It includes a ball bearing 1/3 hp reversible motor and aluminum gearbox that develops approximately 100 pounds of torque and cleans sewer lines and drainlines from 2 to 4 inches in diameter up to 200 feet long. The machine comes equipped with a standard hollow-core 5/8-inch-diameter cable with slip-joint connectors. An electric foot switch is provided for safe operation of the machine. **877-446-7548; www.gorlitz.com.**



#### MyTana Mfg. M745 Workhorse

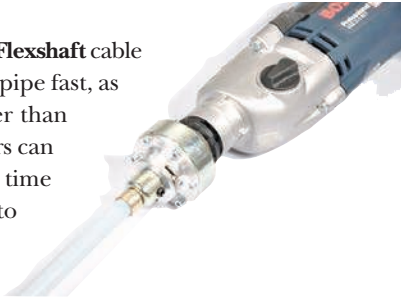
The **M745 Workhorse** drain machine from **MyTana Mfg.** can adjust cable speed on the fly for maximum performance, and it features two torque settings for safety. It incorporates SmartDrive technology, so cable speed can be throttled up to 300 rpm to negotiate turns, strengthen cleaning force, and expedite feeds and retrievals. Speed can also be reduced to as low as 100 rpm for tackling obstructions and debris. SmartDrive sounds an alarm when cable torque approaches unsafe limits and then automatically cuts power when that limit is reached. The machine comes equipped to work in 3- to 4-inch lines with 100 feet of cable, slip-joint fittings, autofeed, blades and accessories. A sink line kit is available to address 1 1/2- to 2-inch lines, and no tools are needed to swap reels due to the quick-release design of the drive system. **866-327-7176; www.mytana.com.**





### Pipe Lining Supply Flexshaft

When used with a hammer drill, **Flexshaft** cable from **Pipe Lining Supply** can clean pipe fast, as the cable turns up to 10 times faster than a conventional cable machine. Users can see what they are cleaning in real time because they can strap a camera to the sheath of the cable that doesn't spin, providing the ability to see what they are doing and where they need to clean without wasting time in unneeded areas. 888-354-6464; [www.pipeliningupply.com](http://www.pipeliningupply.com).



### RIDGID FlexShaft

**RIDGID FlexShaft** drain cleaning machines quickly and efficiently deliver wall-to-wall clean in 1 1/4- to 4-inch residential and commercial pipes up to 70 feet. Lightweight and fully contained machines, they are used in conjunction with a full suite of specialized accessories designed for clearing grease, sludge, small tree roots and soft blockages with less mess and enhanced speed. They utilize powerhouse chain knockers that expand to the size of the pipe to quickly clear the entire circumference. The chain knockers are connected to a flexible, nylon-sheathed cable that is housed in a fully enclosed drum and powered by a cordless drill attached to the drive shaft. Designed with efficiency and cleanliness in mind, the machines allow for inspection cameras to remain in-pipe throughout the entire drain cleaning process for maximum efficiency. 800-769-7743; [www.ridgid.com](http://www.ridgid.com).



### Spartan Tool Model 300

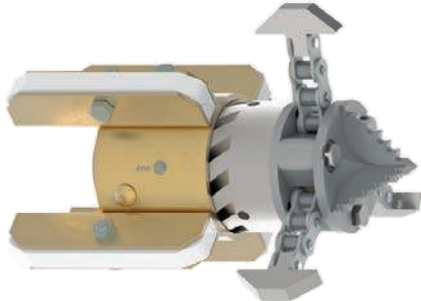
The **Model 300** from **Spartan Tool** has a compact design that is suitable for tight spaces and narrow doorways. Its enclosed inner and outer steel drums keep the mess contained. It can be combined with up to 107 feet of Magnum cable for increased power and performance in a compact machine. 800-435-3866; [www.spartantool.com](http://www.spartantool.com).



## CUTTING NOZZLES

### Enz USA Golden Jet 10.125TR

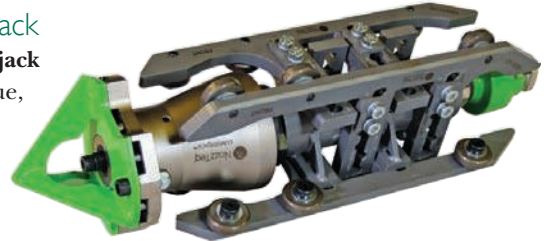
With operating flows as low as 13 gpm at 2,000 psi, the **Golden Jet 10.125TR** turbine nozzle from **Enz USA** is a powerful cleaning tool. The turbine design allows for lower flow and less water usage while



maintaining high torque for effective pipe cleaning in lines ranging from 5 to 12 inches. Because of its sealed bearings, this nozzle can be operated with both clean and recycled water while being relatively maintenance-free. It is a powerful root remover and conquers grease, solids, mineral deposits, concrete and grout. The kit includes a selection of pre-cut chains, skids and two head styles. 877-369-8721; [www.enz.com](http://www.enz.com).

### NozzTeq Lumberjack

**NozzTeq Lumberjack** cutters are low-torque, variable-speed, multi-purpose cutting nozzles powered by common sewer jetting or combination trucks. The cutting chains rotate at speeds of 10,000 to 50,000 rpm, depending on pressure and flow rate. The precisely engineered cutter is designed to cut roots, but it also effectively clears out concrete, tuberculation, grease, protruding laterals and other obstructions. Low torque means it won't get stuck, won't harm host pipe and won't spin off the hose end. The cutters are sealed, include grease-lubricated bearings and are water-cooled so they don't need daily maintenance. Five models clear pipes from 3 up to 48 inches. The entire kit includes the turbine, water supply tube, chain plate/pull plate, tow ring, cutting blade, sleds, five sets of chain per sled size, propelling nozzle with jets and adapter, spanner wrench, hand tools and toolbox. 866-620-5915; [www.nozzteq.com](http://www.nozzteq.com).



### Red Dawg Nozzles Root Dawg Mini

The **Root Dawg Mini** from **Red Dawg Nozzles** is a small lateral line cleaning nozzle designed for resolving organic blockages safely. This nozzle has an 18-degree rotating jet in the front that breaks up roots and grease using water systems as small as 10 gpm and up to 25 gpm. Four-inch clean-outs are easy to tackle due to its small size. The tough urethane cover provides ample protection for daily use. No viscous fluid is needed with this toolless rebuild for repairs in the field. 281-485-9513; [www.reddawgnozzles.com](http://www.reddawgnozzles.com).



### Root Rat cutting nozzle

**Root Rat** cutting nozzles are used with jetters from 11 hp to large truck-mounted models. The cutters are made of hardened stainless steel and come with a toolbox with two interchangeable rotors: one with cables and the other with chains. The combination kit includes extra chain, cable and bearings. They need no repair or

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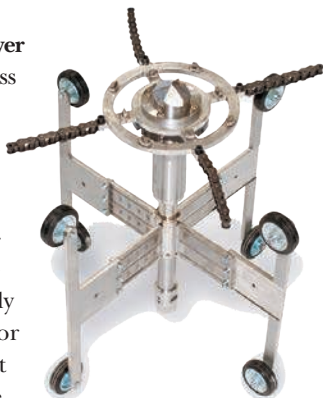




rebuilding other than bearing replacement, which can be completed in less than two minutes for under \$10 in parts. **800-288-7873; [www.rootrat.net](http://www.rootrat.net).**

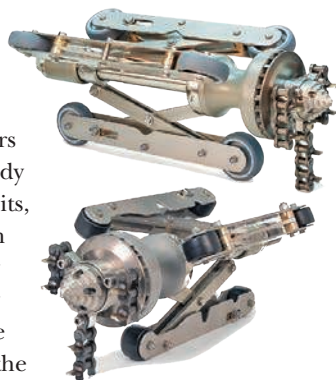
### Sewer Pro Shop BLUESTAR Viper

**BLUESTAR Viper** chain cutters from **Sewer Pro Shop** are made of high-grade stainless steel and are equipped with ceramic nozzle inserts and UHMW wheels. They require no maintenance and are designed to be operator-friendly for the municipal and industrial markets. The efficient, powerful hydrodynamic tool is designed to remove heavy obstructions caused not only by roots, but by grease, mineral deposits or other solid organic material as well. The unit is driven by a high-performance turbine, which doesn't require any lubrication. It utilizes turbine technology with Optimized 3D Hydro Mechanics, enabling less water and fuel consumption. The unit is available with three different-size continuously adjustable guide skids: 10- to 16-inch, 16- to 28-inch and 28- to 48-inch. It is also available with carbide bits for stubborn calcium deposits and scaling. It can be operated with recycled water. **877-864-9394; [www.sewerproshop.com](http://www.sewerproshop.com).**



### USB-USA Heavy-Duty Turbo Chain Cutter

**Heavy-Duty Turbo Chain Cutter** nozzles from **USB-USA** continuously adjust from 8 to 15 inches (Turbo S200) or 12 to 24 inches (Turbo S600) to easily fit into the pipe. Turbine technology powers the durable chain retainer on a robust body to remove roots, concrete, calcium deposits, hardened grease and tuberculation from sewer lines. They are designed to be very aggressive for the hardest materials. They are more durable and have double the amount of turbine-driving water jets than the company's other models, generating tremendous cutting power. The cutter can be easily adjusted to within a 1/16 inch by spinning the rear to make it larger or smaller. Internal 3D fluid mechanics, in conjunction with one-piece ceramic nozzle inserts, allow the cutter to be used with recycled or clean water. **844-285-5770; [www.usb-usa.com](http://www.usb-usa.com).**



## JETTERS

### American Jetter Hot Jetter

**Hot Jetters** from **American Jetter** include a water-heating system that uses efficient dual-coil burners. Burner exhaust temperatures are reduced from 400 to around 127 degrees F, effectively releasing less



heat into the atmosphere. This is coupled with 20% or more fuel savings from the optional Kohler 19 to 38 hp EFI engines. The increased fuel savings will provide longer runtimes. **866-944-3569; [www.americanjetter.com](http://www.americanjetter.com).**

### Cam Spray CV Series cargo van hot-water drain jet

The **CV Series** cargo van hot-water drain jet from **Cam Spray** uses diesel-fired hot water to add additional jetting power. Several models are available up to 4,000 psi and 12 gpm. Its triplex plunger pump with power pulse valve provides an extra push when needed. Air purge and recirculation can be used in the tank for freeze protection. Its 5-gallon fuel tank provides hours of runtime on a single fill. A heavily built powder-coated frame has a full deck and 130-gallon water capacity. Its 12-volt DC reel with 2-1 clutch drive allows for free spooling and powered hose return. It is controlled by push button or foot switch. Accessories include a four-nozzle set, storage box, tip cleaner, tiger tail, safety shield, rubber gloves, high-visibility safety vest, 50-foot washdown hose and trigger gun. **800-648-5011; [www.camspray.com](http://www.camspray.com).**



### GapVax Gjet

The **GJet** truck jetter from **GapVax** offers 500- to 3,000-gallon stainless steel water tank options and 40 to 100 gpm water pump options along with a front-mounted hose reel, various toolbox options, room for a vice or crane, and 10-foot tube trays. **888-442-7829; [www.gapvax.com](http://www.gapvax.com).**



### Hot Jet USA Xtreme Flow III

The **Xtreme Flow III** trailer jetter from **Hot Jet USA** offers 18 gpm at 4,000 psi jetting power, clearing drains from 2 to 24 inches. It offers twin 35 hp Vanguard engines on a 5-by-14-foot, heavy-duty, 10,000-pound-rated trailer. It is designed to bust through any clog, roots or debris. **800-213-3272; [www.hotjetusa.com](http://www.hotjetusa.com).**



### Jetters Northwest Eagle 200

The **Eagle 200** midsize trailer jetter series from **Jetters Northwest** is available in 12 gpm/3,000 psi (model Eagle-200/3012) with 1/2-inch I.D. jet hose or the 9 gpm/4,000 psi (model Eagle-200/4009) with 3/8-inch I.D. jet hose. It comes with either a Kawasaki





(liquid-cooled) or Kohler (air-cooled) fuel-injected engine, an industrial-duty trailer with brakes for safety, and an A-frame tongue that allows it to be towed when full of water. Flattop fenders allow for additional mounting surface. Chrome wheels give it a sharp appearance. It comes with a super-duty triplex UDOR U.S.A. pump, 12-volt power-wind hose reel with wind-speed controller, 200-gallon water tank, large 60-inch lockable tool storage bin, 300 feet of jetting hose on the main 12-volt reel, 100 feet of 3/4-inch water-supply hose on a second reel, adjustable pulsation control and four jetting nozzles. **877-901-1936; [www.jettersnorthwest.com](http://www.jettersnorthwest.com).**

## Sewer Equipment 747-FR2000 ECO

The **747-FR2000 ECO** jetter trailer from **Sewer Equipment** includes frames made of fully welded steel tubing, maximizing strength and corrosion resistance. Its



Duraprolene water tanks are fully baffled to eliminate surging during stopping and turning with a load of water. Once on the job, the standard rotating safety hose reel allows operators to position the trailer in the safest possible manner while simply rotating the reel, complete with NEMA 4 watertight control panel, to conveniently face the access point. The ECO operating system allows the engine to run at 33% lower revolutions per minute than traditional designs, saving operating costs on fuel and creating a safer work environment for operators. They are built with Ford engines and Giant pumps as standard equipment, with options including various pump configurations, a wireless remote control system, added tool storage, dual reels, safety lighting and a CCTV system. **888-477-7611; [www.sewerequipment.com](http://www.sewerequipment.com).**

## Vector RamJet 850 Series

The **RamJet 850 Series** truck jetter from **Vector** has a choice of front or rear hose-reel locations and productivity-enhancing options. An integral aluminum rear shroud with heavy-duty, see-through Lexan windows is available. Large service access doors on both sides of the shroud enable easy greasing, maintenance and service. The rear shroud keeps the hose and components warm and protected for quick setup and cleaning in extremely cold conditions. It comes standard with a certified flow of 0 to 80 gpm at a variable pressure up to 2,500 psi at the hose reel to clean any size line. An optional JetRodder water pump-heated cabinet keeps the pump and plumbing covered and protected. **815-672-3171; [www.vector.com](http://www.vector.com).**



## Vector Technologies VecJet

The **VecJet** line of powerful, compact trailer-

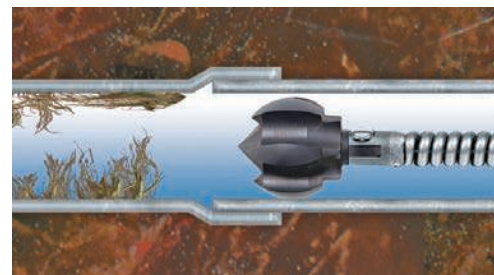


mounted jetter machines from Vac-Con, in cooperation with **Vector Technologies**, features a high-pressure water jet system with a Vac-Con hose reel. They come standard with a 99 hp Kubota diesel engine, a 500- or 700-gallon water tank, 500 feet of 1/2- or 3/4-inch jetter hose, and water flow of 25 gpm at 4,000 psi or 40 gpm at 3,000 psi. **800-832-4010; [www.vector-vacuums.com](http://www.vector-vacuums.com).**

## MECHANICAL ROOT CUTTERS

### General Pipe Cleaners ClogChopper

The **ClogChopper** cutting tool from **General Pipe Cleaners/General Wire Spring** has six self-sharpening blades that dig into encrusted debris and root masses, grinding up stoppages, scale and crystallized urine with-



out risking pipe damage. Its spherical design maneuvers around tight bends and traps, thoroughly and safely cleaning metal, plastic and clay pipes. It is available in 1-, 1 1/2-, 2-, 2 1/2-, 3- and 4-inch sizes and can be adapted to most brands of drain cleaning machines. It is suitable for clearing stacks, downspouts and mains, as well as for drain lining jobs. The balanced unit automatically negotiates multiple, tricky bends, maintaining a central line position and minimizing pipe wall, elbow, connection and joint damage. With all-surface cutting edges, it clears clogs and scrapes encrusted debris from inner walls in one operation. **800-245-6200; [www.drainbrain.com](http://www.drainbrain.com).**

### Picote Solutions Mini Sweeper

The **Mini Sweeper** from **Picote Solutions** is designed to clean and descale pipes, including removing tree roots.



It grinds away debris from the inside of the pipe at 1,000 to 1,500 rpm. The aggressive tool is effective in situations where there is thick scale, rust or other waste materials that are difficult to remove. It can also be used to remove wrinkles in liners or to remove excess lining material from the pipe wall after a failed liner has been removed. It is rebuildable after the legs become dull. It is available for 2-, 3- and 4-inch pipe sizes and is powered by the Picote Mini or Maxi Miller. **708-267-6366; [www.picotesolutions.com](http://www.picotesolutions.com).**

### Schwalm USA robotic cutters

Robotic cutters from **Schwalm USA** are self-propelled, multipurpose units designed to quickly and efficiently perform repairs in both sewer mains and house laterals



(continued)





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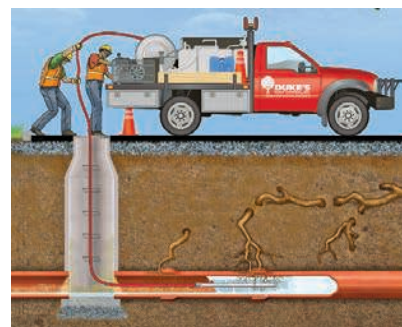
## PRODUCT FOCUS CHEMICAL AND MECHANICAL ROOT CONTROL

from 6 to 24 inches. The Talpa 1330 and 2060 robot systems' design, stable platform and versatility are suited for heavy-duty repairs, including lateral reinstatement, removal of protruding taps, cutting, cleaning and high-pressure jetting, milling concrete, ceramics, organic substances and plastics, installation of multiple trenchless rehabilitation solutions, and CCTV camera inspection. 855-949-3441; [www.schwalm-usa.com](http://www.schwalm-usa.com).

## ROOT CHEMICALS

### Duke's Root Control Razorooter II

Diquat-based **Razorooter II** root-control herbicide from **Duke's Root Control** is registered by the U.S. Environmental Protection Agency for controlling nuisance tree roots in sanitary sewer collections systems. It kills roots and eliminates mainline stoppages caused by live tree roots. 800-447-6687; [www.dukes.com](http://www.dukes.com).



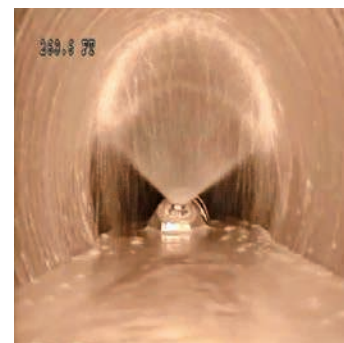
### Lenzyme Trap-Cleer foaming root control

Foaming root control from **Lenzyme Trap-Cleer** has double the active ingredient dichlobenil of previous solutions, along with a latex base designed to help it stick to roots longer. It is easy to apply and provides a slower foaming action to coat the entire pipeline and eliminate fast-foam-over messes. 800-223-3083; [www.lenzyme.com](http://www.lenzyme.com).



### RootX chemical root control

Chemical root control from **RootX** is a long-term solution to pipeline root intrusion. It stunts new root growth without damaging the pipe, clearing pipeline roots that can cause blockages and sanitary sewer overflows. The chemical won't harm water treatment systems and is registered with the U.S. EPA for both sanitary and storm use (EPA Reg. No. 68464). Simplicity of application enables crews to perform root control on demand or as scheduled preventive maintenance. 800-844-4974; [www.rootx.com](http://www.rootx.com). ♦

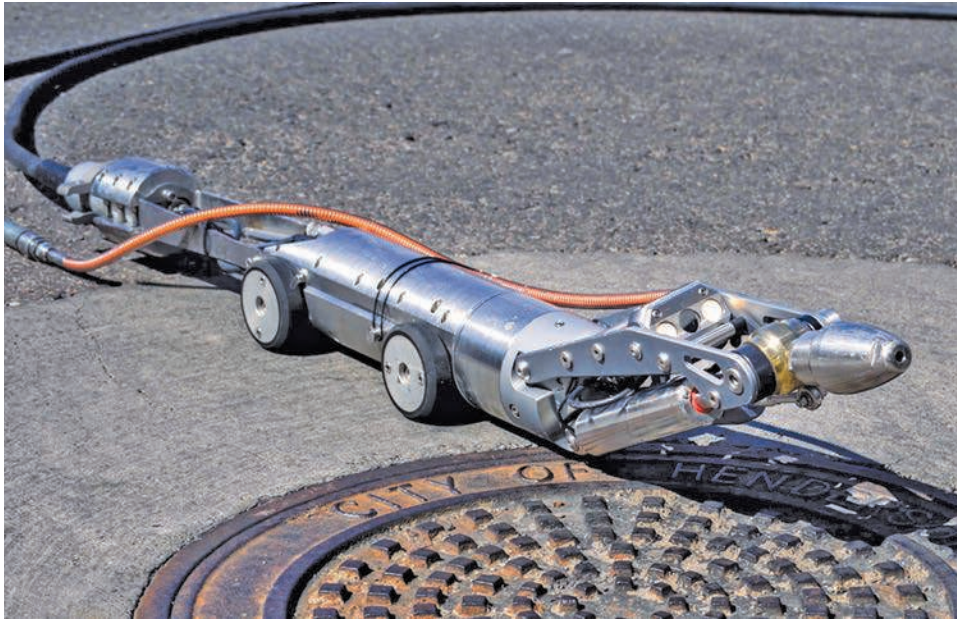




## CASE STUDY

### CHEMICAL AND MECHANICAL ROOT CONTROL *By Craig Mandli*

Root infiltrations removed from sewer main joints and lateral connections



#### **Problem:**

An 8-inch vitrified clay sewer main was overrun with multiple tree roots infiltrating from joints, cracks and laterals every few feet in Los Angeles. The roots were so thick and the root masses were so dense that a conventional jetting truck was not able to clear them.

#### **Solution:**

The Sewer Robotics USA WJ125 water jet robot with camera and pan-and-tilt water jet nozzle was used to drive into the obstructed pipeline to apply a high-pressure, low-flow water blast directly to the root obstructions. The water jet cutting robot is easily controlled by an operator from inside a van and includes a camera to oversee the targeted operation. The system can be used to remove any solid obstruction and deposit settled, including roots, calcium, scaling, grout and concrete from inside 6- to 40-inch sewer, storm and water pipelines.

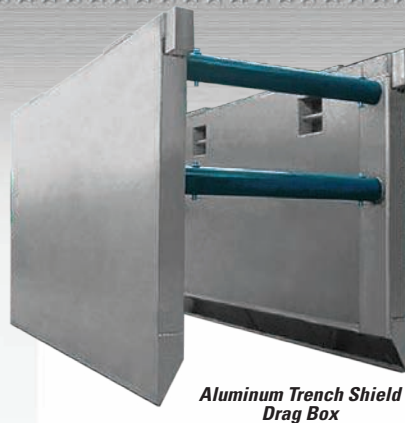
#### **RESULT:**

All roots, including the masses infiltrating from joints and laterals, were cleared within just seconds; and a clean pipeline, ready to be relined, was left behind. 717-251-2279; [www.sewerrobotics.com](http://www.sewerrobotics.com). ♦

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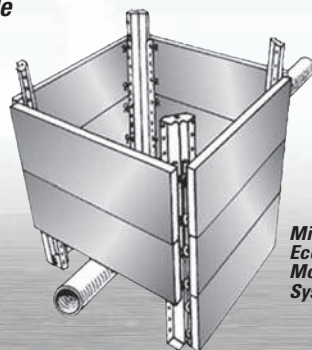
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# Product Spotlight

## Spray system improves manhole rehabilitation efficiency

By Craig Mandli

Civil infrastructure rehabilitation has become an exact science. In fact, the days of rehabilitating manholes, lift stations and wet wells with the same type of standard spray equipment and coatings is gone. Those jobs now demand precision application with application-specific coatings to help extend the life of the infrastructure. The sprayMASTER from Quadex, a Vortex company, is designed specifically for the rehabilitation of municipal manholes.

SprayMASTER is a completely self-contained manhole mortar lining installation system. It comes fully equipped for the precise, low-velocity spray and/or spin-cast application of cementitious and geopolymer mortar manhole lining materials. According to Sam Wisener, Quadex's product manager, the unit is the company's answer to the constantly evolving manhole rehabilitation industry.

"We designed sprayMASTER to be an all-in-one system that can utilize our GeoKrete, along with other lining systems," he says. "We've found that as these lining systems have evolved, the methods with which they are applied have to adapt as well. This is a more efficient product."

Key features of the sprayMASTER unit include a 250-gallon, poly-lined water tank, 44 hp Tier 4 turbo diesel engine with hydraulic power plant, a 29 cfm 90 psi air compressor, 20-gallon-capacity fuel cell, 40 psi hydraulically



powered water transfer pump, Fill-Rite water metering system, an ergonomically positioned control center, 75-gallon-capacity mixer with vertical shaft mixing blade, three-stage progressive cavity material pump and holding hopper, a center-mount material platform designed to hold one pallet of Quadex lining material, and a compact-designed, low-velocity, wet mortar spray nozzle.

"We believe that utilizing a compact, all-in-one system can increase the efficiency of a rehab crew by 10% to 15%," Wisener says. "We believe it's important for crews to stay ahead of the game, and their competition."

Wisener says much of the unit's efficiency comes from a lining mixing system that is "twice as fast as previous models." The unit can also be used in all climates, adding to its versatility. He says that beta tests of the unit in the field have been positive, and he expects to have units available for purchase in late summer.

"The feedback has been pretty overwhelming," he says. "The contractors we have spoken with about this unit have indicated that having something like this is going to solve a huge need for them. We're excited to see where it goes." 855-949-3441; [www.vortexcompanies.com](http://www.vortexcompanies.com).



## SmartCover Systems UnderCover 2

UnderCover 2 from SmartCover Systems makes use of advanced microelectromechanical systems technology for intrusion detection and unauthorized opening of sewer manholes to

combat illegal dumping, vandalism and other security issues. The MEMS technology improves the robustness of entry detection and expands the configurability of the systems at remote and hard-to-access locations for utilities, communications, nuclear facilities, border security, transportation infrastructure, military installations and others. UnderCover 2 is now an integrated function within all of SmartCover's remote monitoring units, including leveraging Iridium satellite communications impervious to local power or cellphone outages. 760-291-1980; [www.smartcoversystems.com](http://www.smartcoversystems.com).



## Sherwin-Williams Dura-Plate 6000 epoxy lining

Sherwin-Williams' Dura-Plate 6000 is a new, 100% solids, high-build, high-strength, reinforced epoxy lining for concrete and steel in severe wastewater service environments. Reinforced with glass flakes, the material can be applied more than 0.125 inches thick in a single spray, eliminating the expenses of renting a generator and using a plural pump operator. Dura-Plate 6000 has a long pot life, reducing waste material, as well as a 21-day extended recoat window, reducing missed recoats.

In addition, the lining does not require a glaze coat. 800-524-5979; [www.protective.sherwin-williams.com](http://www.protective.sherwin-williams.com).





## Reelcraft Industries Series 3000 ultracompact reels

Reelcraft Industries Series 3000 reels are all-steel construction and ultracompact for a wide range of bench mount or mobile applications with critical space requirements. These compact reels fit within a 1-by-1-foot space. The reels incorporate multiple slotted mounting holes to accommodate many configurations. An optional guide arm accessory

is available for multiple adjustment positions of the hose or cord. Hose reels are available with up to 25 feet of 1/4-inch or 20 feet of 3/8-inch air/water hose. The cord reel models are available with 30 feet of 12/3 cord with multiple cord ending options including a new quad box receptacle. **800-444-3134; [www.reelcraft.com](http://www.reelcraft.com).**



## CUES Pearpoint flexiprobe P540c portable push system

The CUES Pearpoint flexiprobe P540c portable push system is a user-friendly, reliable and dependable push camera system. Engineered to provide all-day use in rugged conditions, the system offers a variety of rods for different applications. The P540c is equipped with a new upgraded command module that produces automatic survey reports. Also, the new command module can be used on any of the six available push systems and can be used continuously for up to five hours on a single charge. A choice of a 1- or 2-inch camera is available and can be used interchangeably between most systems, and a built-in 512 Hz sonde is provided for locating purposes. **800-327-7791; [www.cuesinc.com](http://www.cuesinc.com).**



## Sewer Equipment Model 400 ECO Mini Combination Sewer Cleaner

The Model 400 ECO Mini Combination Sewer Cleaner from Sewer Equipment has all-stainless-steel construction for durability, including its 4-yard debris tank, water tank with up to 600-gallon capacity, hose reel with 400 feet of 1/2-inch sewer hose, and full shroud. It offers a UDOR U.S.A. 18 gpm/4,000 psi water pump and a Hibon Inc. (a division of Ingersoll Rand) positive displacement blower at 28-inch Hg with a 4-inch system. The jet/vac truck utilizes a 19,500 GVWR chassis, requiring no CDL, and it also offers the ability to enter a standard 8-foot parking structure. **800-323-1604; [www.sewerequipment.com](http://www.sewerequipment.com).**

## Teledyne ISCO LaserFlow Ex flow measurement sensor

The LaserFlow Ex noncontact velocity sensor from Teledyne ISCO is designed for intrinsically safe locations. The subsurface flow measurement sensor is certified for hazardous areas classified as Class 1, Div. 1, Zone 0 and ATEX category 1G. The LaserFlow Ex can remotely measure flow in

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## Matco-Norca 225 Series valves

The 225 Series American Water Works Association valves from Matco-Norca come in 3- and 12-inch and 3- and 24-inch models and sizes. The heavy-duty, ductile iron-resistant valves are manufactured to the latest AWWA C515-15 standard and are UL listed and FM approved. Its NSF 61/NSF 372 certifications are verified by UL Water Quality. The 225 Series valves have lift lugs, valve box centering guides, full-flow waterway, and a full 304 stainless steel stem, nut and bolt package. The valves are manufactured using a 300 psi ductile iron body, 304 stainless steel nonrising stem and resilient EPDM wedge. They can be fitted with a post indicator plate so both vertical- and wall-mount post indicators can be attached. **800-431-2082; [www.matco-norca.com](http://www.matco-norca.com).** ♦



## Wynnchurch Capital's industrial platform rebrands as Midland Industries

Wynnchurch Capital announced it has rebranded its industrial distribution platform as Midland Industries. The platform is comprised of Anderson Metals, Midland Metal, Buchanan Rubber and Mid-America Fittings. Midland Industries distributes and manufactures valves, fittings, hoses, couplings and related products.

"The new name helps us better communicate our culture and broad set of capabilities to our customers," says Vince Hodes, CEO of Midland Industries. "The new brand reflects the company's commitment to a unified strategy, and we're very bullish about the growth opportunities ahead."

## Electric Eel celebrating its 80th year

Electric Eel, based in Springfield, Ohio, since 1939, is celebrating its 80th year as a manufacturer of quality drain and sewer cleaning equipment. Electric Eel's current product line includes a wide range of electric and gas-powered sectional drain cleaning machines, drum-style machines, high-pressure water jetters and pipeline inspection camera systems and locators.

## MyTana Mfg. releases employee handbook template

MyTana Mfg. released an employee handbook template. The free resource provides explanations, instructions and sample text to help plumbing and drain cleaning business owners clarify policies and avoid legal problems. A free copy of the template can be downloaded at [inbound.mytana.com/employee-handbook-template](http://inbound.mytana.com/employee-handbook-template).

## ONICON Measurement Solutions announces acquisition

ONICON Measurement Solutions announced it has been acquired by the TASI Group. The TASI Group is a privately owned industrial business focused on test, measurement, inspection, and assembly instruments and equipment. All ONICON Measurement Solutions business units, including ONICON, Air Monitor, Fox Thermal, Seametrics, Greyline and Pulsar Process Measurement, are included in the transaction.

The ONICON Measurement Solutions companies will become part of

the existing TASI Flow Group of companies, which are currently comprised of AW-Lake Co., Exact Dispensing Systems, KEM GmbH, Litre Meter, SignalFire Wireless Telemetry and Vogtlin Instruments. John Norris, current president of ONICON Measurement Solutions, was named president of the TASI Flow Group and will report to John McKenna, TASI Group president and CEO.

## NLB opens new branch in Louisiana

NLB announced the opening of a new rental and service office in Sulphur, Louisiana. The branch facility, located at 3473 S. Beglis Parkway in Sulphur, offers waterjetting customers a second Louisiana location to meet the needs of NLB's growing customer base in the southwest Louisiana area. The branch will offer experienced sales and service to high-pressure waterjetting users in addition to the rental of water jet pumps and accessories and an inventory of NLB replacement parts.

## Waterline Renewal Technologies acquired by Behrman Capital

Waterline Renewal Technologies was acquired by Behrman Capital, a private equity investment firm based in New York and San Francisco. WRT was formerly a division of Triwater Holdings. WRT has a line of products and technologies offered through each of its brands — AP/M Permaform, ConShield Technologies, LMK Technologies and Perma-Liner Industries — that allow its customers to deliver solutions that repair sewer systems and wastewater lines without excavation or property damage and that prevent overflows created by excess inflow and infiltration of groundwater into wastewater systems.

## Legacy Building Solutions adds design and project consultant

Legacy Building Solutions announced Pat Hamilton joined the organization as a design and project consultant for the military industry. Hamilton comes to Legacy Building Solutions with 18 years' tactical sales experience in military and public sector services. In his new role, he will work with customers in the military sector to provide them with engineered fabric structures on a rigid steel frame. ♦



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## PEOPLE/AWARDS

**Michael Wehner**, assistant general manager of the Orange County (California) Water District retired after 28 years' service to the district and more than 40 years of contributions to the fields of water reuse, water quality and water resource management.

Terraphase Engineering, headquartered in California, hired **Craig Heimbucher** to help strengthen the firm's capabilities in stormwater management, environmental compliance and remediation services for private and public sector clients. Heimbucher has 17 years' engineering and management experience.

**Gregory LeFevre**, assistant professor of civil and environmental engineering at the University of Iowa, received the National Science Foundation CAREER Award to conduct research on inexpensive ways to remove pollutants in stormwater treatment, as well as to create public education programs on water quality.

**Wes Zech**, Ph.D., and his previous work with the Auburn University Erosion and Sediment Control Testing Facility in Alabama received the Environmental Excellence Award from the International Erosion Control Association Region One.

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The **Westmoreland (Pennsylvania) Conservation District** received a 2019 Governor's Award for Environmental Excellence for its stormwater basin retrofitting educational video.

The **Shingle Creek Watershed Management Commission** (Minnesota) announced the nonprofit Environmental Initiative awarded it an honorable mention Environmental Initiative Award. The award recognizes the biochar- and iron-enhanced sand filters project, a method of reducing bacteria contamination in stormwater runoff.

The Institute of Scrap Recycling Industries awarded its 2019 Lifetime Achievement Award to **Jerry Simms** of Atlas Metal & Iron in Colorado. Simms filled a variety of the institute's leadership positions over the years, including being a member of the stormwater steering committee. ♦

## CALENDAR

### July 7-10

American Society of Agricultural and Biological Engineers Annual International Meeting, Boston Marriott Copley Place, Boston. Visit [www.asabe.org](http://www.asabe.org).

### Aug. 18-22

StormCon 2019, Hyatt Regency hotel, Atlanta. Visit [www.stormcon.com](http://www.stormcon.com).

### Sept. 8-11

American Public Works Association Public Works Expo (PWX), Washington State Convention Center, Seattle. Visit [www.apwa.net](http://www.apwa.net).

### Sept. 9-11

National Rural Water Association WaterPro Conference, Nashville, Tennessee. Visit [www.nrwa.org](http://www.nrwa.org).

### Sept. 21-25

Water Environment Federation Annual Technical Exhibition and Conference, McCormick Place, Chicago. Visit [www.weftec.org](http://www.weftec.org).

### Oct. 9-13

American Society of Civil Engineers Annual Conference, Miami. Visit [www.asce.org](http://www.asce.org).

### Oct. 20-23

American Water Works Association Water Infrastructure Conference & Exposition, Hyatt Regency at The Arch hotel, St. Louis. Visit [www.awwa.org](http://www.awwa.org).

### Nov. 3-7

American Water Resources Association Annual Water Resources Conference, Sheraton Hotel, Salt Lake City. Visit [www.awra.org](http://www.awra.org).

### March 23-26

American Water Resources Association Geospatial Water Technology Conference, DoubleTree by Hilton, Austin, Texas. Visit [www.awra.org](http://www.awra.org).

### May 19-22

American Public Works Association North American Snow Conference, Salt Palace Convention Center, Salt Lake City. Visit [www.apwa.net](http://www.apwa.net).

**Municipal Sewer & Water** invites your national, state or local association to post notices and news items in this column. Send contributions to [editor@mswmag.com](mailto:editor@mswmag.com).





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