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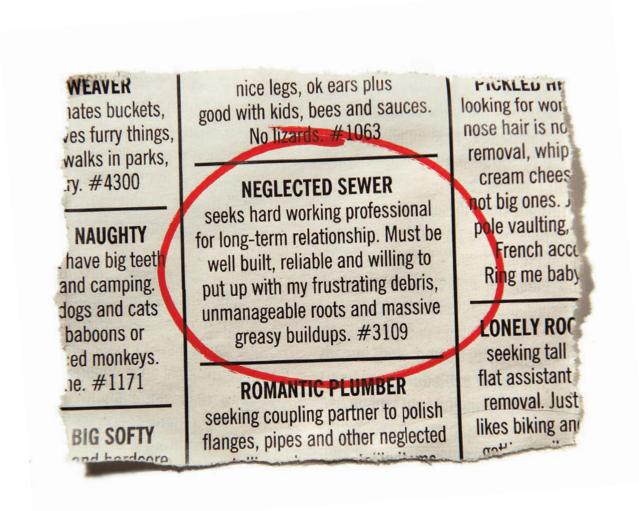
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INSIDE:

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ON THE COVER:

General Manager Michael Gualtieri has been with the La Habra Heights County Water District for 33 years, starting as a utility worker and working his way up. The district has ramped up maintenance and inspection while developing new water sources and encouraging conservation. (Photography by Collin Chappelle)



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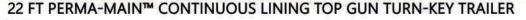
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UNDERSTANDING THE REAL VALUE

Securing adequate water resources for all people is critical, but it's not cheap

FROM THE EDITOR

Luke Laggis

ou've all no doubt heard plenty about the drought in California and the new water use regulations that recently went into effect.

Californians are in mandatory conservation mode and utilities are trying to figure out how to encourage water savings while policing the new regulations.

The La Habra Heights County Water District, profiled in this issue of MSW, encompasses a small service area with only 5,500 customers. They've employed a monthly contest to encourage conservation, and

it's worked well. La Habra is able to meet most of its water needs from its system of wells. The district is currently at work rehabilitating one of its wells, and officials hope to meet the entire water demand with new wells in the future.

But unlike La Habra Heights, many of the state's water utilities don't have the groundwater resources to meet demand. Over 80 percent of the state's water supply comes from surface sources, and severe drought has a crippling effect on those sources.

Conservation has been the big push, but if rain and snow don't replenish those sources, conservation alone won't be sufficient. New sources of water will have to be developed.

Back in April, William Shatner announced his intentions to launch a Kickstarter campaign to raise funds for a pipeline that would bring water from the saturated Pacific Northwest to the driest reaches of California. In an interview with Yahoo Tech's David Pogue, Shatner boldly laid out his plan to quench California's collective thirst with a 4-foot pipeline of freshwater streaming from Seattle.

"I want \$30 billion ... to build a pipeline like the Alaska pipeline. Say, from Seattle — a place where there's a lot of water. There's too much water," Shatner said. "How bad would it be to get a large, 4-foot pipeline, keep it above-ground - because if it leaks, you're irrigating!"

Pipelines have been proposed and shot down in the past, but California is facing one of the most severe droughts on record. Gov. Jerry Brown has ordered urban communities across the state to cut water use by 25 percent. Farmers plan to fallow 500,000 acres this year because they don't have enough water for crops.

So while \$30 billion may seem an absurd number, maybe it's not that great a price tag in a state that brings in double that in tourism spending each year, not to mention the agricultural significance.

"California's in the midst of a 4 year-old drought," Shatner told Pogue. "They tell us there's a year's supply of water left. If it doesn't rain next year, what do 20 million people in the breadbasket of the world do?"

This is an industry full of technology and proactive initiatives. Taking water from somewhere else would ease the pain, but it wouldn't necessarily solve the problem.

I recently saw a cartoon with an arrow pointing to California, which was labeled "Drought." There was another arrow pointing to the Pacific Ocean, which was labeled "Water." It's not quite that simple, but maybe the time for large-scale desalination has finally arrived. The San Diego County Water Authority is building the largest desalination plant in the Western Hemisphere. Work on the Carlsbad plant began in 2012 and it's slated to open next year.

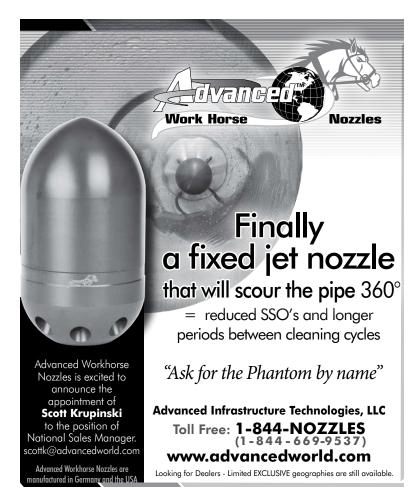
Cost is a major drawback of desalinated water. It may be cost-prohibitive in smaller communities and rural areas, but in heavily populated San Diego County, customers' water bills are expected to rise \$5 to \$7 to pay for desalination. That seems like a small price to pay for access to such a massive, secure water source.

Technology has come a long way in the last few decades. And drought isn't limited to California. It's time to start looking at new ways to provide water, and it's time for Americans to start placing the proper value on clean, safe drinking water. It is not a right; it's a service. And services cost money.

Perhaps the water supply isn't an issue in your service area, but funding for infrastructure improvements is an ongoing battle everywhere. Maybe it takes something like this for people to start to see the real value.

Enjoy this month's issue. ♦

Comments on this column or about any article in this publication may be directed to editor Luke Laggis, 800/257-7222; editor@ mswmag.com.



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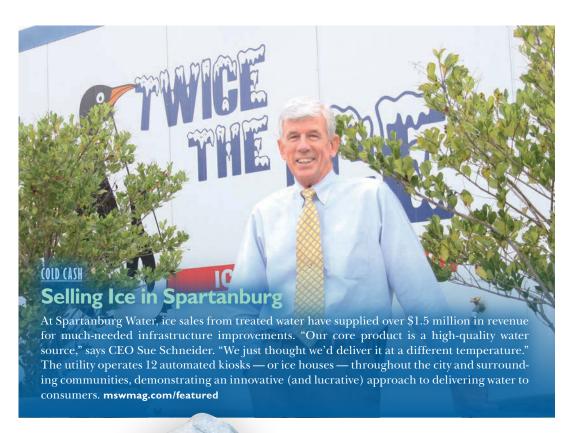
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OVERHEARD ONLINE

66 Your comments bring up the issue of how people value water — an issue our industry struggles with all the time ... You will continue your quest to help people understand the value of music, while people in my industry will do the same with water.

— Jay Z Rebuked by Denver Water in Open Letter mswmag.com/featured

Extensive Damage





Heavy rainfall led to the washout of a stormwater culvert in Granburgy, Texas, creating a massive sinkhole — and a \$500,000 problem — for the City. After surveying the damage left by the 45-footwide, 30-foot-deep crater, it was discovered that sewer lines attached to a nearby pumping station were severed and the lift station itself was a total loss. Learn how city crews helped minimize the discharge of wastewater into local waterways, allowing for repair efforts to begin. mswmag.com/ featured



Wipes Manufacturer **Ceases Flushability** Claims

SMALL VICTORY

You've seen it before and you'll see it again: Clogs in sewer lines caused by those not-soflushable wipes. It's no secret that flushable wipes are a huge headache for municipalities. Now one company — under an agreement with the Federal Trade Commission - has agreed to stop advertising moist toilet tissue as "flushable." Will regulating the marketing claims made by producers be enough to curtail the problem? mswmag.com/featured



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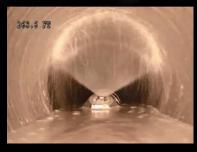




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GETTING AHEAD OF LEAKS

La Habra Heights doubles down on inspection and maintenance even though its water system is performing admirably

By Peter Kenter

alifornia's La Habra Heights County Water District boasts a high-quality water source, a young water system and an enviable leak record. However, the district refuses to rest on its success. It's ramping up on maintenance and inspection and developing new sources of water, while taking some unique approaches to encouraging water conservation.

The district is located 25 miles east of Los Angeles and includes most of the City of La Habra Heights and small portions of the City of Whittier and unincorporated Los Angeles County. The population of the district hovers around 5,500. Area residents pride themselves on

self-sufficiency. Volunteer firefighters assist the La Habra Heights Fire Department, private companies haul trash and most of the town relies on septic tanks. However, delivering freshwater to citizens is a sacred civic responsibility.

Rising from the ranks

Michael Gualtieri is general manager of the LHHCWD. He's been with the district since 1982 when he started as a utility worker.

"My father worked here before me, and I actually replaced him when he became sick," says Gualtieri. "I started at the bottom and worked my way through serviceman to superintendent to general manager in 2002." The water system is the direct descendent of the La Habra Heights Mutual Water Company, a privately owned water utility formed in 1919 with town residents as stockholders.

"By the mid-1970s the system was rated the second- or third-worst in California, and they didn't have the money to do the necessary repairs," says Gualtieri.

The community voted for the company to become a special water district under the California Water Code on Nov. 2, 1976, with ratepayers funding capital projects and operations. However, system improvements didn't occur overnight.

"When I started here in 1982, we averaged three leaks per day," Gualt-

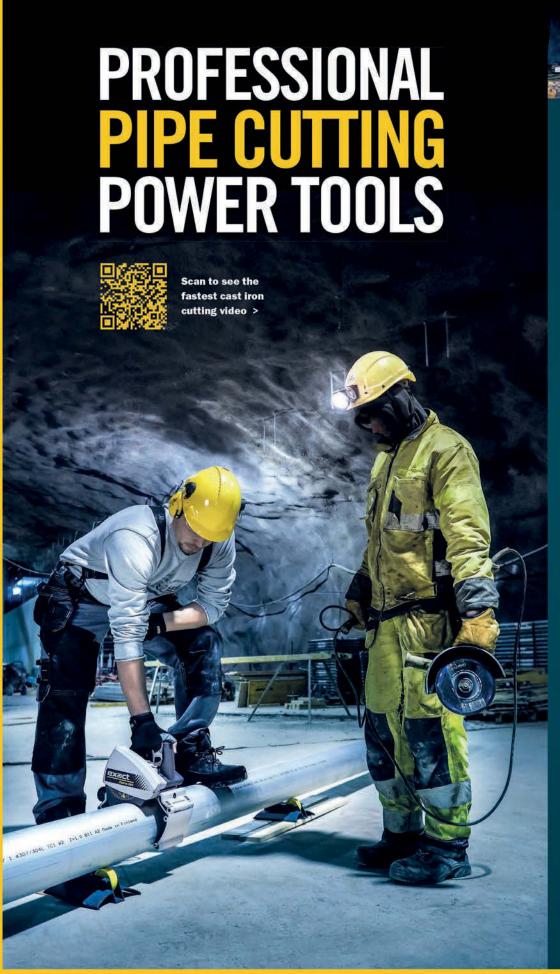
ieri says. "Whenever we had downtime we would walk down the waterlines to tighten the bands that had been placed around the pipes to keep them from leaking. However, in three to four years we ramped up construction and switched to mostly new piping."

A high-quality source

Local water is supplied by three wells located in Judson Well Field near the San Gabriel River in unincorporated Los Angeles County about 8 miles outside the city. Additional water is imported from the Metropolitan Water District of Southern California.

The district works cooperatively with its neighbors and supplies some (continued)







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PROFILE: La Habra Heights County Water District, La Habra Heights, California

YEAR DISTRICT **ESTABLISHED:** 1976

CUSTOMERS SERVED: 5,560 (1,975 service accounts)

AREA SERVED: 6 square miles

DEPARTMENT STAFF:

INFRASTRUCTURE: 60 miles

ANNUAL DEPARTMENT OPERATING BUDGET: \$4 million

ASSOCIATIONS:

American Water Works Association, Association of California Water Agencies/ Joint Powers Insurance Authority, Central Basin Water Association

WEBSITE: www.lhhcwd.com **Utility worker Kyle Titterud** checks Pump Station 1, which is responsible for providing water to the district's lower zone with a max elevation of about 833 feet at 235 psi. Right: Mario Cartegena, a helper with Layne, a La Habra Heights contractor, installs a flowmeter as part of the recent rehabilitation of the district's Well 9. The well's pump has the capacity to pump 1,500 gpm, though expectations for output are more conservative at 700 to 1,000 gpm.

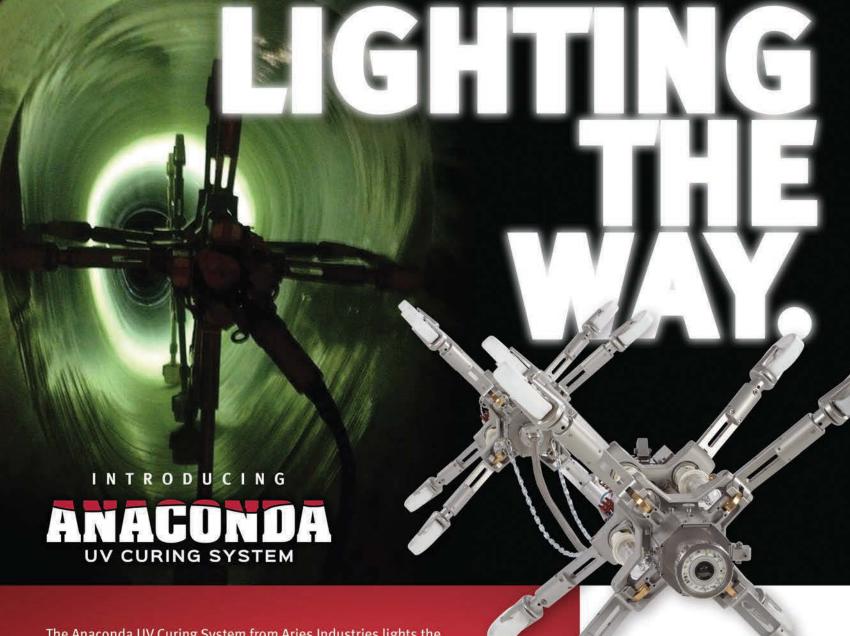
groundwater from its wells to the Rowland and Orchard Dale water districts.

The LHHCWD is divided into two zones, with two pump stations delivering water to the lower zone and two additional stations delivering water to the upper. Some imported water is delivered by a separate pump station. Seven reservoirs store water until it's needed.

"The water is of such high quality that we require only minimal treatment, with a small automated plant adding sodium hypochlorite," says Gualtieri. "It's an efficient gravity-fed system, and there aren't any major challenges associated with it except for the challenge of paying for all of the electricity required to run the pumps. It's hilly terrain and we need to move the water to the res-

(continued)





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The La Habra Heights County Water District team includes (from left) General Manager Michael Gualtieri, Treasurer/Office Manager Tammy Wagstaff and Superintendent Rick Vigil.

WATER CONSERVATION IS ALL IN THE GAME

Gamification—the use of game mechanics in non-game contexts has been used in everything from encouraging consumer buy-in to crafting employee training programs. So why not water conservation? Adopting the concept has earned measurable dividends for the La Habra Heights County Water District.

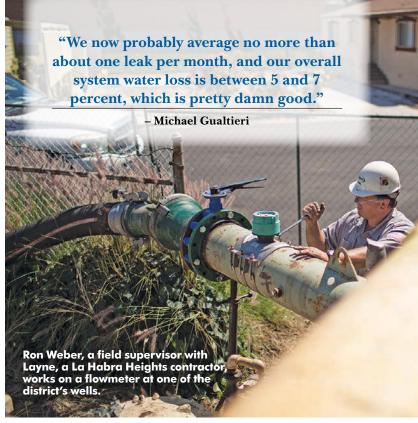
In drought-stricken California, water conservation has become increasingly important. However, in La Habra Heights, a relatively affluent community of sprawling ranch-style homes, the price of water isn't a significant factor.

"We don't have a tiered rate, and if a resident's priority is keeping the grass green and they can afford to pay for the water, it's more challenging to change those patterns," says Michael Gualtieri, general manager of the LHHCWD. "We've monitored usage patterns, and it's clear that increased consumption correlates with increased heat and drought, with most of the water used for landscaping."

The district has planted its own demonstration garden of droughtresistant, native plants and conducted an extensive public education effort, ranging from school programs to those aimed at ratepayers. However, a contest targeted to engage ratepayers has produced surprising results.

Ratepayers who reduce their water consumption by 10 percent or more from 2013 levels are eligible to submit their water bills in a quarterly prize drawing for \$125. Eligible ratepayers are also automatically entered in a yearly drawing for \$500.

"We haven't tallied the final numbers, but we've seen a significant decrease in water consumption that we associate with the contest announcement — 6.5 percent between February 2014 and February 2015," Gualtieri says. "So far, 54 people have submitted their entries for the first quarterly draw. Framing the program in the context of a game seems to have made the difference."



ervoirs, as high as 1,150 feet in the north central part of the district."

The district operates seven pressure-reducing stations — two major and five minor - although overall distribution pressure remains fairly high. System pressure averages between 100 and 110 psi, with some hot spots still ranging as high as 200 psi as the system is fine-tuned. In other parts of the system, pressure and volume have been increased at hydrants to exceed the requirements of the local fire department.

The current distribution system is composed of 60 miles of pipe ranging in diameter from 4 to 36 inches. Almost 90 percent of the pipe is constructed of asbestos cement (AC). About 10 percent is ductile iron, which was specified as the replacement pipe of choice from the early-1990s on. The system also contains traces of cast iron, steel and polyvinyl chloride.

"Our oldest pipe is now represented by a few sections from the 1930s, but the overall system is in great shape," says Gualtieri. "We now probably average no more than about one leak per month, and our overall system water loss is between 5 and 7 percent, which is pretty damn good."

Pipe displacement causes leaks

For La Habra Heights, the two primary causes of leaks are ground

movement from ground fault shifts and water pipes displaced by the growth of tree roots. The pipes recording the highest pressure are often the ones that show the earliest signs of leaking. Pipes are buried between 3 and 15 feet, depending on the elevation required to maintain gravity flow.

"We're a rural community without curbs and sidewalks," Gualtieri says. "It's a double-edged sword. When people plant trees along the road, water pipes are more at risk of getting bound up by tree roots than if they were planted behind the sidewalks. On the other hand, when there is a problem with the pipes, we don't have to break through concrete to repair them."

Another advantage to minimal paving: Water leaking into the arid soil quickly makes its way to the surface, allowing workers to more easily identify leaks.

"You can see the water reaching the surface on a walk-by," Gualtieri says. "When a leak is identified, we use an acoustic leak detector from Goldak to pinpoint the leak and repair it. We conduct a visual inspection of all of the pipes every two years and also check the piping as we manually read the meters. The system is in good shape, and we want to keep it that way at a reasonable price to customers."

In-house crews perform clamp



repairs on any pipe buried 5 feet or less beneath the surface, excavating with a Case backhoe. Clamps are sourced from a number of suppliers including Smith-Blair or Romac Industries. A nearby contractor handles projects involving deeper excavations.

A mature customer base

"We also put in new services, but the population remains very stable," Gualtieri says. "According to city code and the minimum lot size, there are only 100 potential lots that could be developed, and some of those are located on a hill-side, so adding a new service isn't something we do every day. It's all residential with a golf course as the only business. Without new development we have no development fees funding new infrastructure, and everything we do has to be covered by the existing customer base."

The district has employed trenchless technologies, including 3 miles of 28-inch cured-in-place pipe lining installed in the 1980s. Pipe bursting is still employed to draw copper service lines through old Orangeburg pipe.

La Habra Heights has looked at GIS mapping the system, but the district hasn't been satisfied with the consistency of initial results.

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Romac Industries, Inc. 800/426-9341 www.romac.com

Smith-Blair 800/643-9705 www.smith-blair.com "This is very hilly terrain, and it's not always easy to get a clear link to the satellite," Gualtieri says. "We'll keep looking at it as the technology improves."

Developing new water sources

The district is currently at work rehabilitating its Well No. 9, which had been deactivated, and looking to supplement its supplies with other wells. Its Well No. 8 is also on call for replacement in the next five to 10 years.

"In the future, we hope to meet our entire

water demand using new wells to extract groundwater from the Judson Well Field," Gualtieri says.

As the water district looks to the future, so do the employees who serve it. Like Gualtieri, many have been employed here for 20 years or more, with some veterans logging more than 30.

"I always tell applicants that they won't get rich working for us," he says. "However, if they take care of the water system, we'll take care of them, and they'll always be able to support their families while performing rewarding work." \(\display\)



CONFIDENCE **BOOSTER**

Relax and put these 7 strategies to work when you're feeling uncertain about your abilities

By Ken Wysocky

We invite readers to offer ideas for this regular column, designed to help municipal and utility managers deal with day-today 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.

any traits will help you succeed professionally — things like emotional intelligence, leadership ability, and great communication and decision-making skills. Yet none of these assets matter much without one key ingredient: confidence.

Confidence is the foundation upon which the rest of these abilities stand. And lack of it can undermine even the smartest and most talented people. In fact, rare indeed is the person who never experiences uncertainty about their abilities. Even famous athletes and actors suffer at least occasionally from performance-hindering anxiety and its obnoxious cousin, self-doubt.

The workplace is also rife with opportunities for confidence calamities. Think about the last time you interviewed with a higher-up for a promotion, gave an important presentation at a high-profile meeting or

made your first solo run on a sewer vac truck or a powerful water jetter. Feeling jittery and insecure at just the thought of these scenarios? You're in good company.

But it doesn't have to be that way.

Like many other obstacles we face, a crisis in confidence can be managed and overcome. Sometimes the mere act of doing is enough. As famous lecturer, writer and self-improvement guru Dale Carnegie once noted, "Action breeds confidence and courage. If you want to conquer fear, do not sit home and think about it. Go out and get busy."

But before you swing into action, here are seven confidence-boosting techniques that just might quiet those voices in your head that undermine your desire to succeed.

1. Practice makes perfect. In his ground-breaking book, Outliers: The Story of Success (Little, Brown and Co., 2008), author Malcolm Gladwell posits that becoming a master of anything requires following what he calls the "10,000-hour rule." In other words, to truly master a skill, you must practice it for 10,000 hours. In explaining his theory, he cites famous examples, ranging from The Beatles to gazillionaire Bill Gates.

Now, 10,000 hours is, without question, a boatload of time to spend jetting mainlines or practicing a speech or presentation. But the general principle remains sound: The more you do something, the more comfortable you're likely to feel doing it and the more likely you are to

get better at it, which in turn breeds confidence. Practice, indeed, does make perfect (or nearly so, anyway). So go ahead and run through that presentation a few more times and keep in mind the theory of the six Ps: Proper Prior Preparation Prevents Poor Performance.

- 2. Seek others' opinions. Experts say that validation from qualified colleagues about your abilities is a great way to build confidence. Be sure to seek out people who will provide an unflinchingly honest critique of your presentation or waterjetting skills, as opposed to someone who just gushes and raves about everything.
- 3. Do some soul searching. Bravado and bluster might work for a while, but in the long run gaining confidence requires a little self-eval-

Like many other obstacles we face, a crisis in

confidence can be managed and overcome.

Sometimes the mere act of doing is enough.

uation - honestly assessing what you're good at and what you're not so good at, then building on the former and shoring up the latter. In other words, there's one thing we all can feel confident about: We're not

good at everything. If this self-critique proves to be more difficult than expected, find colleagues who can help.

4. Perfect your posture. As always, mom was right with her constant admonitions to sit up straight. As it turns out, doing so — or standing tall, for that matter — yields more benefits than just fewer chiropractic appointments. In fact, scientific studies show that we're more likely to think positively when we sit erect as opposed to slumping (or assuming a fetal position). And standing tall not only makes us feel more powerful, but more likely to take risks, according to one study.

Another study showed that people who assume a powerful pose for even a few minutes — sitting upright in a chair, for instance — produce more testosterone, which makes us feel more focused and attentive, and less cortisol, a hormone that makes us feel more helpless and overwhelmed. People who sat slumped in a chair for a few minutes produced the exact opposite: less testosterone and more cortisol. So sit up straight — and send mom some flowers when you get promoted.

5. Visualize success. Legendary golfer Jack Nicklaus once said that

seeing in his mind's eye what's required to make a golf shot was critical to his extraordinary success. "I never hit a shot, not even in practice, without having a very sharp in-focus picture of it in my head," he once noted. The same technique works for numerous other athletes, from Olympians to professionals — and it can work in the workplace arena, too.

In fact, studies have shown that thoughts can actually train our brains in the same way as actual physical action. Think of it as a cranial form of muscle memory, where our thoughts can strongly influence our behavior.

6. Anticipate problems. While you're visualizing success, it can't hurt to also think about things that could go wrong — and develop a Plan B to handle them. What kind of questions might people pose after you give your presentation or speech? What's your action plan if a jetter malfunctions in between manholes while cleaning sewer lines? What kinds of questions might that executive throw your way during that promotion interview? Training yourself to expect the unexpected will boost your confidence even more. If you can find someone to do some role playing to simulate various situations, all the better.

In addition, make a mental list of all the reasons why you'll succeed at a certain task. Review all the skills you've compiled and any relevant prior experiences that can help you assert with utmost confidence, "I got this." If you're having trouble with this, ask colleagues or a mentor for help.

7. Set incremental goals. Achieving a goal is a great confidence booster. But often times in this regard, we're like a novice jogger who decides to run a marathon before reaching age 30 — with the birthday just three weeks away. Sure, aiming high is great. But never reaching goals creates a culture of failure. After all, nothing begets success like success, as the saying goes. So set small, achievable and manageable goals — and watch your confidence grow every time you reach one. And if you don't reach every goal the first time, remember that even the incomparable Michael Jordan missed more than 9,000 shots in his Hall of Fame career. Yet he stands as one of the most confident players in NBA history.

You've got game, too. Even if you find yourself occasionally racked with anxiety and overwhelmed by pesky thoughts of self-doubt, just remember to put these strategies into play — with utmost confidence. ◆









n the old days, when it rained, the North Olmsted collections crew would race out to surcharging manholes with portable pumps and work like mad to keep water out of customers' basements.

Today, they still go out during rainstorms, but only to monitor the flows and check on the effect of solutions they've put in place over the last three years to address the sewer overflow problem.

"It was a real fire drill," says collections system foreman Greg Peters, describing the previous situation.

But now, thanks to a major \$39 million capital improvement program, as well as ongoing maintenance and repair procedures, the North Olmsted team has the situation under much better control.

The underground

North Olmsted's 37,000 residents are served by a separate sanitary sewer system that runs for 159 miles beneath this Cleveland suburb. Sewer lines, most of them installed between 1960 and 1974 as the city grew, consist of vitrified clay pipe ranging in diameter from 8 to 42 inches. The system contains 2,800 manholes and approximately 900 hydrants.

Five pumping stations power the system. Four are positioned around the city in relation to a natural divide that passes through the area, and all four pump into a main sewer line south of Lorain Road. A fifth station was added more recently to serve a new commercial development.

Wastewater flows to a conventional activated sludge treatment facility, designed to handle average daily flows of 5.5 mgd.

Peters and Assistant Superintendent Joe Auner and their team use a CUES LAMP II camera truck to televise and inspect the system, including laterals. The unit provides one-pass pan and tilt inspection of the mainline, with simultaneous inspection of adjacent laterals up to 80 feet.

"We're able to inspect 100 to 150 laterals a year," Auner says.

The North Olmsted team aims for a complete inspection of the system every five years.

To clean the system and cut through root blockages, North Olmsted uses a GapVax MC Series combination jet/vac truck. The truck is a wet-only machine with a unitized water and debris tank and double subframe. The sewer district is divided into four wards and a portion of each ward is cleaned each year. "We're right on schedule," Peters says.

Issues and solutions

Located near the Lake Erie (continued) North Olmsted, Ohio, Wastewater Collections Division

FOUNDED: 1960s

POPULATION SERVED: 37,000

AREA SERVED:

City of North Olmsted, 11.5 square miles

STAFF:

INFRASTRUCTURE:

159 miles of gravity sewers; 2,800 manholes, 900 hydrants; 5.5 mgd (average) activated sludge treatment plant

ANNUAL OPERATING BUDGET:

\$1.5 million

WEBSITE:

www.north-olmsted.com





Jim McCutcheon (left) and Jeff Kohl carefully lower the CUES LAMP II lateral inspection camera down a manhole. Right: The camera is positioned at the bottom of the manhole for entry into the pipe.

shoreline, North Olmsted gets wet. Rainfall in an average year is just over 43 inches. Annual snowfall exceeds 60 inches. Sudden storms can dump as much as 4 inches of rain in just a few hours. The precipitation can present the utility with serious inflow and infiltration issues.

Following EPA orders that date to the 1990s, North Olmsted began an extensive sewer rehabilitation program specifically designed to combat the I&I problems that frequently turned streets into rivers and flooded residents' basements.

Completed in 2012, the project installed over 6,000 feet of new 12to 24-inch-diameter relief sewer line alongside existing sewers, and another 900 feet of 15- to 24-inch relief sewer line alongside sewers in another section. Open-cut trenching was used, with little or no traffic disruptions. PVC pipe has been used

for the relief lines. The existing pipes have been left in the ground for additional storage capacity.

The project also rehabilitated the existing pumping stations and the added overflow equalization tanks. The 4.5 mgd LeBern pumping station and the 7.9 mgd Dover pumping station work included new Pentair - Fairbanks Nijhuis dry pit solids pumps, Endress+Hauser ultrasonic meters and Muffin Monster (JWC Environmental) grinders. The Clague Park pumping station was expanded from 270,000 gpd to 1.25 mgd.

Perhaps the most significant improvement was the addition of equalization tanks to store sewer overflows and feed them back into the system during dryer weather.

A 1.25-million-gallon underground storage tank was added to the Clague Park pumping facility. It fills by pumping and drains by gravity. A gravity fill and drain 360,000-gallon equalization tank was added to the Dover pumping station.

Auner says the tanks have made a major difference, and although some overflows still happen during unusual storms, I&I has dropped appreciably since their installation. "They're designed for the 15-year rain event," he says. "After completion of the tanks, we've greatly limited the number of sanitary sewer overflows."

The LeBern work was completed in 2012, and the Dover phase in 2013. Bottom line? "Less reporting to EPA on bypassing," Auner says.

Current maintenance program

Capital improvements are just part of the solution. Ongoing maintenance and repair are just as important to the success of any collections system, and Peters and his team work constantly to keep the sewers tight and functioning.

Defective manholes and cracked pipes receive regular attention from North Olmsted's in-house repair team. Manhole chimneys are regularly resealed using Elastomeric from Sauereisen; manhole covers repaired or replaced. Peters says the utility does about 100 manholes a year.

Pipes are patched using trenchless technology, and the efforts have paid for themselves on the first two jobs, Peters says.

> It works like this: "After we cam-(continued)

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Foreman Greg Peters (front left) and Assistant Superintendent Joe Auner (front right) and their crew, from left: Connor O'Shea, Jim McCutcheon, Sixto Guardiola, Josh Kinnison, Tom Herbster, Jay Schemrich, Jeff Kohl and Steve Bagley. Right: Guardiola (left) and Bagley clean a sewer line with a GapVax MC2008 jet/vac truck.

era a line, Joe and I review all the footage," Peters says. "We try to concentrate on the major cracks places where we have soil showing through. Then we use a Source One fiberglass mat as the patch with a two-part epoxy. We saturate the

patch, then send it down the line and using a bladder, we inflate it against the inside of the pipe. Cure time varies from 90 to 200 minutes, depending on ambient temperature and patch type."

Once instructed in how to use

the trenchless technology by supplier Source One, the North Olmsted crew does all the work itself. "It's amazing," Peters says. "We've got it mastered."

HELPING OUT THE CUSTOMERS

The new equipment North Olmsted now has to help it maintain its sewer system also helps out the utility's customers.

Using their new CUES LAMP II lateral camera truck, the collections system crew is able to inspect not only the main sewer lines, but also shoot a camera sideways into the lateral lines, all the way to the "tee" where the customer's lateral ties in.

Collections system foreman Greg Peters explains that the lateral camera operates on a separate cable that can be launched into the lateral line, inspect the

lateral, then retract back into the mainline camera unit.

"It's helped us a lot and taken us to another level," Peters says.

"While we can't work on private property, we can respond to their problems. We'll take up to 250 calls a year, and TV about 150 laterals a year.

A RIDGID locator is the other invaluable tool. "In the old days, we'd have to dig to find a tee," says Joe Auner, assistant superintendent. "In some cases we couldn't even find it.

"Now we're able to locate them, and that helps with the investigation. It's a great service to our customers, and one we take great pride in."

The utility can't work on private property, of course, but Peters says his crew will patch lateral lines right up to the tee.

"We can go right up to the customer's line, and now with the new connections patching (recently made available), we can patch right around the connection."

Peters says trenchless has changed his crew's workload. "It's a big savings in time and cost," he says, comparing it to the old days of digging and replacing.

"The cost savings are enormous (with trenchless). We plan to stay on top of it."

Peters says the North Olmsted system has just a few root issues. "We have maybe 17 to 20 root areas," he

says. "We go out once a year and use the root cutter on our jetter truck."

Checking it out

Few people actually venture out during rainstorms to see what's going on, but the North Olmsted team dons wet-weather gear and heads out to observe the sewer system in action as the water rises.

"We do our investigations during heavy rains," explains Peters. "We have an evaluation sheet and we take a look at how various manhole locations along the system are functioning and identify the ones that might need attention — where bricks need replacement in manhole chimneys, or where there are bigger voids. Then, we use a cementitious filler (Sauereisen F-180 InstaPlug).

"We like to catch them while they're active," he says.

Two members of the staff also monitor flows before and after a manhole repair, using Hach flowmeters. "We go out once a week," says Peters. "It's continuous. We get the data back and we study it."

Positive results

The data is showing results. "Before the repairs, if we had a 1-inch rain, we'd have over-

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Hach Company - Flow Products & Services 800/368-2723

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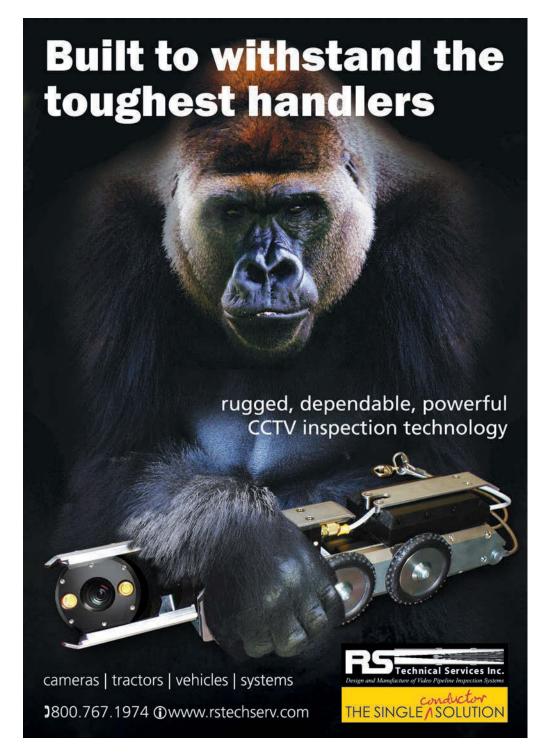
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Sauereisen, Inc. 800/444-8235 www.sauereisen.com flows," Peters says. "That's gone away."

Also in the past are the "fire drills," which were part of what Peters calls "a last-minute approach."

He says staff would watch the weather reports, then check known trouble spots. If a manhole started surcharging, staff would rush to the scene with portable bypass pumps and hoses to try to stay ahead of the storm and keep water out of basements. "It was time," Peters says of the SSO issues.
"This administration listened and stepped forward. The engineers and our operators have worked together (to address the SSO issue). We needed to take pumping off the streets."

He says the threat of emergencies is gone now. "We have some breathing room." ◆









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Advanced polyurea coatings and liners provide strong, flexible waterproofing capable of bridging large cracks

By Del Williams

Redstone Arsenal, a large U.S. Army base in Huntsville, Alabama, had a decision to make: demolish or repair a 5-million-gallon concrete water tank that had been leaking for years but was still functional.

The tank, built in 1941, has had a useful life storing water for fire sup-

pression as well as being a backup drinking water supply. The tank had hundreds of cracks and leaks, however, and was losing water at an appreciable rate.

"The concrete had cracked quite
a bit," says Brian Burgess, vice president of Contracting & Materials (C&M), a Decatur, Alabama-based specialty industrial coatings contractor. "The tank was losing a significant amount of treated drinking water, which is expensive."

The largest and most durable outdoor tanks and reservoirs are constructed of concrete or asphalt. Unfortunately, a variety of factors ranging from earth movement to expansion and contraction from seasonal temperature changes can cause these structures to develop sizable cracks through

"The VersaFlex polyurea sets up in seconds and can be put back into service as fast as an hour. It can take days for epoxy to cure enough to do the same. The time saved can provide tremendous savings to a facility."

- Brian Burgess

which large volumes of water can escape. The weight of water in a large reservoir or tank can also cause concrete to move several inches. In doing so, tiny cracks in a drained reservoir or tank can open to an 1/8 inch or larger when filled with water.

When this occurs, facility managers must decide whether to demolish and rebuild the aging structure or find a way to extend its service life.



The contractor's crew sprayed polyurea on all stairs, sumps and penetrations at the reservoir, and then tied those to the geotextile.

Repairs in Redstone

Redstone Arsenal's Public Works Department evaluated its options for more than 10 years with no apparent solution.

Waterproof coatings such as epoxies are often applied to tank surfaces to address these issues, but most traditional coatings lack the flexibility to move and flex with concrete or asphalt and will eventually crack. Advanced polyurea coatings and liners deliver a strong, flexible waterproofing that bridges large cracks and can elongate up to 400 percent without cracking.

"Redstone Arsenal had attempted to use different types of liners over the years, but it wasn't working," Burgess says.

After Redstone's recent success with the polyurea rehabilitation of a water storage pond, they recognized that they could use a similar approach on the leaking tank. C&M, the contractor on the pond, was also awarded the tank project.

A VersaFlex AquaVers 405 pure polyurea coating was chosen due to Redstone's potable water requirements. The product is ANSI/NSF 61.5 approved for both cold water and high temperature use up to 140 degrees, with a superior rating for a 1,000-gallon minimum tank size and no limit on the maximum coating thickness applied.

The spray-applied waterproof coating creates a seamless, waterproof, protective liner that stops leaks and strengthens the integrity of the entire storage structure. It is designed to withstand decades of freeze-thaw cycling and wide variations of temperature and humidity. It was issued a 75-year life span by Bechtel Engineering on the famed Boston Tunnel Project.

With minimal crack repair and surface preparation, the polyurea coating can be thick-film applied directly to the primed concrete, asphalt or similar substrate. The coating exhibits superior physical properties including high elongation, crack bridging, hardness and high tensile strength.

Because of the polyurea's ability to set and cure quickly, it also minimizes downtime. This can translate into thousands of dollars per hour in savings at facilities requiring potable water and a source of emergency water for fire protection.

"The VersaFlex polyurea sets up in seconds and can be put back into service as fast as an hour," says Burgess. "It can take days for epoxy to cure enough to do the same. The time saved can provide tremendous savings to a facility."

After repairing all cracks over 1/8-inch wide with a concrete repair grout, C&M primed the concrete surfaces of the 5-million-gallon water tank with VersaFlex AquaVers 20 primer, and applied 80-100 mils of AquaVers 405 pure polyurea. The walls were completed first. Next they removed the heavy equipment from the floor. The tank base was cleaned again and primed before the final application of polyurea on the floor. From start to completion, the project lasted two months.

Two years later, both Redstone Arsenal's polyurea rehabilitated 5-mil-

lion-gallon water tank and the water storage pond have been inspected and remain in excellent shape, with decades of extended life expected, according to Burgess.

Cost-effective reservoir rehab

In some cases, polyurea can also be pre-sprayed onto geotextile fabric panels that are placed above the existing substrate. The panels mitigate the need for surface or crack repairs. Once in place, panel edges are then fused together with more polyurea.

That's the route the Maui Water Department chose when a reservoir at its Olinda Water Treatment Facility in Maui, Hawaii, required rehabilitation to stop potable water leakage.

The big challenge was finding a cost-effective solution. The 8.5-million-gallon, 60,000-square-foot, 40-foot-deep concrete reservoir was up in the mountains, accessible only by a rugged gravel road. The reservoir's location made it difficult and cost-prohibitive to jackhammer out the old floor and pour new concrete.

After considering all the options, the utility hired restoration contractor Ahbe & Svoboda to install a pre-sprayed composite panel system combining geotextile and a pure polyurea membrane from VersaFlex.

After removing existing reservoir piping and the synthetic rubber liner from the structure's floor, a six-man crew installed AquaVers 405 pre-sprayed geotextile at 80 mils to the interior of the reservoir walls up over its rock parapet.

The pre-sprayed, 15- by 40-foot composite panels rolled out like a water-proof blanket. Once rolled out, the edges were matched, and the seams sprayed with AquaVers 405 pure polyurea. The crew mechanically fastened the geotextile to the reservoir walls with stainless steel termination bars, and then sprayed over the bars. They also sprayed the polyurea on stairs, sumps and penetrations, and tied them to the geotextile.

Despite rain almost every day, the contractors finished relining the floor and walls of the Olinda reservoir in seven weeks. The polyurea panels solved the problem and the project was completed on time and on budget. •

About the Author

Del Williams is a technical writer based in Torrance, California. He writes about health, business, technology and educational issues.



unicipal sewer work is all about efficiency. RootX has taken that idea to heart with the introduction of the FDU300 applicator, a device engineered to make applying RootX root-control solution to mainlines faster and easier. The applicator debuted at the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show.

"We've actually had it on the market in a limited capacity since January, and the reaction has been great so far," says Jarrett Jackson, a root control specialist with RootX, and one of the minds behind the new applicator's design. "The design is more user-friendly than our previous applicator, and the time-saving aspect will definitely enable the user to get more done in a day."

The FDU300 is constructed from stainless steel, with a self-righting spray head that helps make for easier and faster chemical loading. Its bayonet locking system eliminates the need for locking pins, and an eyebolt simplifies the lowering of the applicator into the manhole. Its easy-to-use spray nozzle applies up to two times as much chemical to the roots and the top of the pipe as the previous model, enabling a higher root mass saturation of the chemical formula. It is designed to treat up to 24-inch pipes.

"The self-righting spray head is really the key to why this applicator is more efficient," Jackson says. "It is easier to load, handle and apply the chemical, and the self-righting head allows for a more accurate application. Our previous applicator was and continues to be an effective unit, but it's been on the market for 10 years. It was time for an upgrade."

Because of its ease of use, RootX is urging municipalities and con-

tractors to add root control to their annual maintenance checklist. Through a "free use" program, customers can test the unit with the purchase of RootX root-control solution.

"The goal is inspiring contractors and municipalities to do root maintenance in-house and include root control as preventive maintenance," Jackson says. "The solution should be applied every two to three years to prevent root intrusion."

The new applicator was a hit among the diverse crowd at WWETT 2015, according to Chad Fahey, another RootX root control specialist who worked the company's booth at the show. "We were constantly busy, and the attendance appeared very strong this year," he says. "Many of the plumbers who attend the show are very familiar with it and are longtime users, but with the new applicator being geared more toward municipal customers and contractors, we had the chance to connect with many of those people at the show as well."

Fahey says the company's goal is to educate and get its products and offerings in front of as many potential customers as possible.

"This industry is always changing, so you either evolve with it or you're left in the dust," he says. "That was our main goal featuring the FDU300 this year. We want the industry to know that we're listening to them, and we're evolving to meet their needs." 800/844-4974; www.rootx.com. ◆



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COLE SEEKING PRESENTERS FOR 2016 WWETT SHOW



PHOTO BY CORY DELLENBACH

OLE Inc. is now accepting proposals for seminars to be presented at the 2016 WWETT Show in Indianapolis, Indiana, Feb. 17-20.

Education is a huge part of the Water & Wastewater Equipment, Treatment & Transport Show. The 2015 WWETT Show offered more than 100 educational seminars covering everything from nozzle selection to manhole rehabilitation.

Industry professionals interested in presenting in 2016 should complete and submit a seminar proposal form no later than Aug. 1, 2015. Forms may be completed online at wwettshow.com/cfp.

Accepted submissions will receive four full registration passes to the 2016 WWETT Show. Presentations should be 60 minutes in length and cover topics from a neutral, non-product-specific point of view.

Presentations should focus on one of the following topics:

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SIMPLE STEPS FOR **INVENTORY CONTROL**

Managing inventory isn't a top priority for most municipal managers, but it will ensure you have what you need when the next emergency arises

By David Wheat

anaging an inventory of clamps, couplings and other necessary repair parts is an issue all water utilities need to control. With a small inventory, utilities can save on space and money, but if there is a hitch with deliveries or a sudden spike in demand, installers won't have what they need for repairs.

Municipalities often have tight budgets, so keeping a large inventory on hand is often not an option. This is especially true in smaller municipalities where space for inventory can be very tight.

This balancing act between cost and space can be tricky, but with these five tips municipal utilities can ensure they have the repair products they need while keeping storage costs down.

Evaluate your need

Before deciding on how much inventory you need, take a careful look at the cyclical demand for repair parts and other materials. Look at your orders over the course of the last three or four years. Do you notice periods when the demand for certain clamps or couplings is high and other periods when it's low?

See if you can manage inventory based on past records and decide which products should be in high supply and which ones can be lower. A good understanding of the size and types of pipes in the ground will also give you a better picture of the parts and tools you'll need on hand.

Use repair products that can be used in a number of applications

If you store clamps and couplings that can be used in a number of applications, you won't need to keep as many in stock and space is reduced. Full transition couplings that fit pipes of varying types and sizes within your water or wastewater infrastructure save space and help you stay prepared for multiple scenarios. There are also products that have the versatility to either join or repair pipes.

Consider the weather

Weather can play a key role in when repair supplies will be in high demand and how fast you can obtain them. Repairs are frequent when the ground shifts during the spring thaw. The same is true at other times of the year when the weather is harsh, such as hurricane season on the Atlantic and Gulf coasts. Keep in mind that orders will be harder to fill when weather conditions get in the way of quick deliveries. It only takes one snowed-in regional shipping hub to delay orders across the nation.

Streamline your purchasing

Use software programs for both inventorying and ordering. Small utilities may rely on a paper checklist or simply go by memory, which is unreliable. Make it easy to keep track of supplies and ordering so there is no confusion. Assign a number for each product you order and keep track.

Put one person in charge

Delegate one person to be the purchasing manager to ensure multiple orders aren't placed unnecessarily. The designated purchasing manager should keep track of inventory and be informed of any changes in supply needs. A good purchasing manager will also ask vendors if they offer discounts for buying in volume or for paying the entire invoice within a specified amount of time.

Regardless of the size of your inventory, managing it properly will make you more efficient, keep costs down and ensure repair parts are available when crews need them.

About the Author

David Wheat is the materials manager at Krausz USA in Ocala, Florida.



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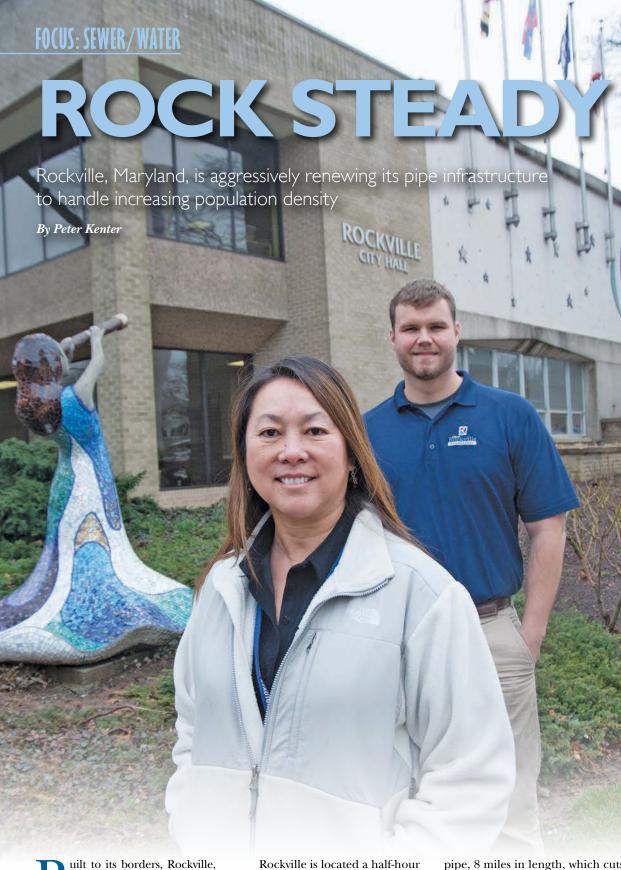
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Maryland, is growing up, not out. The city's Department of Public Works (DPW) is paving the way for growth by repairing, rehabbing and replacing its pipe infrastructure at an aggressive pace, while establishing a reputation for investing public funds to produce tangible results.

north of Washington, D.C., and is ringed by the Washington Suburban Sanitary District (WSSD). Judy Ding, deputy director of utilities at the DPW, calls it "a doughnut hole in the middle of a large doughnut." The city draws water from the Potomac River through a 24-inch

pipe, 8 miles in length, which cuts through the doughnut. The city operates its own water treatment plant, supervised by Ding, while the WSSD provides wastewater treatment and supplies water to about 30 percent of Rockville residents.

The DPW wears a number of hats, including water, sewer, storm**Civil engineer James Woods** and Deputy Director of Utilities Judy Ding, outside Rockville City Hall in Rockville, Maryland. (Photography by Bob Stockfield of Rockville MD Public Works)

water, recycling and refuse, transportation, environment and right-of-way management. It also offers an active in-house engineering department.

"Our engineers do a hell of a job," Ding says. "They act as program managers for our infrastructure projects and provide input on reports of outside engineering consultants."

The DPW maintains an aggressive program targeting the health and renewal of its water and wastewater systems. All of the pipes in both systems have been GIS mapped by in-house personnel using Esri Arc-GIS software.

Working on water

The city's water system is composed of 175 miles of pipe ranging from 6 to 24 inches in diameter. The oldest sections predate World War I and are made of unlined cast iron, with newer replacement pipes made of polyvinyl chloride and ductile iron.

The water transmission main from the Potomac is made of prestressed concrete cylinder pipe.

"The wire in the PCCP is beginning to fail as it nears the limits of its service life," says James D. Woods, P.E., PMP, a civil engineer II with the DPW. "We're keeping the transmission main under constant surveillance and inspection, repairing and rehabilitating as necessary."

System leakage averages less than 10 percent. However, stress inflicted by the necessarily high pressure from the transmission main appears to cause the greatest number of leaks. Ongoing improvements to the city's SCADA system are helping the department optimize a network of pressure-reducing valves.

(continued)













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Rockville Department of Public Works crew members Larry Connelly (left) and Randy Maness set up to flush a sewer main. Right: Engineer technician Joel Karpas removes a manhole prior to an acoustic line inspection.

PROFILE: Department of Public Works, Rockville, Maryland

YEAR UTILITY ESTABLISHED:

CUSTOMERS SERVED: 64,000

AREA SERVED: 13.57 square miles

DEPARTMENT STAFF: Approximately 160

INFRASTRUCTURE: 175 miles of water pipe; 148 miles of sewer pipe

ANNUAL DEPARTMENT **OPERATING BUDGET:** Operating, \$24.2 million; capital, \$37.6 million (fiscal 2015)

ASSOCIATIONS:

American Water Works Association, American Public Works Association, Chesapeake Water Environment Association, American Society of Civil Engineers

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Maintaining fire flows

The oldest unlined sections of the cast iron system are significantly tuberculated. Following an assessment in 2008, the department proposed the current replacement rate of 1 percent of the system per year.

"Water quality is a driver for replacing the pipes, but in this case the tuberculation reduced the diameter of the pipe to the point where we were getting substandard fire flows from some hydrants," says Ding. "However, we knew that the rate increases we needed to support that program might be tough to swallow."

The City Council unanimously backed four successive rate increases of 25 percent per year before increases leveled off in 2012. By targeting the most tuberculated sections first, the program is paying off.

"We're pretty close to meeting our target of having every hydrant producing 500 gpm by 2018," Ding says.

The engineering department designs most water main replacement projects. In-house crews perform the majority of water pipe repairs and short line replacements, while outside contractors take on larger jobs.

Sustaining the sewers

The city's sewer system measures 148 miles, and the oldest pipe also dates back to World War I. The largest pipes are 24 inches in diameter.

"A lot of the older sections are clay with a minority of Orangeburg

pipe," says Woods. "We prefer to replace any pipe with PVC."

The wastewater system is also being replaced and rehabbed at a rate of 1 percent per year. The DPW employs the Pipeline Assessment and Certification Program from the National Association of Sewer Service Companies to prioritize replacement.

"Whichever pipes rate a '5' get priority attention, although some

if you want to stop and look at something, you're also holding up the flusher. It's a great system for flushing something that you know needs flushing and then inspecting it, but it's not something you'd use for miles of inspection."

The city has also adopted the Sewer Line-Rapid Assessment Tool (InfoSense) as a cost-effective tool for rapid analysis of sewer line blockages (see sidebar).

"Our engineers do a hell of a job. They act as program managers for our infrastructure projects and provide input on reports of outside engineering consultants."

- Judy Ding

years we wind up with more '5s' than money to spend on them," Woods says. "However, we also take into consideration maintenance history at that location, a level of risk analysis and the consequences of not doing work immediately."

Pipeline assessments are based on results from the DPW's ambitious in-house inspection program. Every inch of the system is inspected every 10 years. The DPW fields two CCTV vans, one a dedicated CUES system and another a combination flusher and camera truck.

"The second truck uses a camera retrofitted to the back of the flusher," Woods says. "It was an innovative technique in 2009 when we installed it, but it has some limitations. You can't pan and scan like you can with a typical camera, and

Rockville has achieved Tree City USA status from the National Arbor Day Foundation. An abundance of roots and associated dirt is responsible for about 80 percent of system blockages. Inflow and infiltration are well under control, with much of the problem stemming from basement backups and sewer lateral leaks on the property owners' side.

In-house crews handle smaller repair jobs, including manhole-tomanhole segments. Crews also rehabilitate brick manholes, replacing covers and frames, repairing brick and parging the structure. Large construction projects are contracted out, while cured-in-place pipeline rehabilitation is covered by an outside specialist on a five-year standing contract.

Sewer and water crews share personnel and equipment. Each group (continued)

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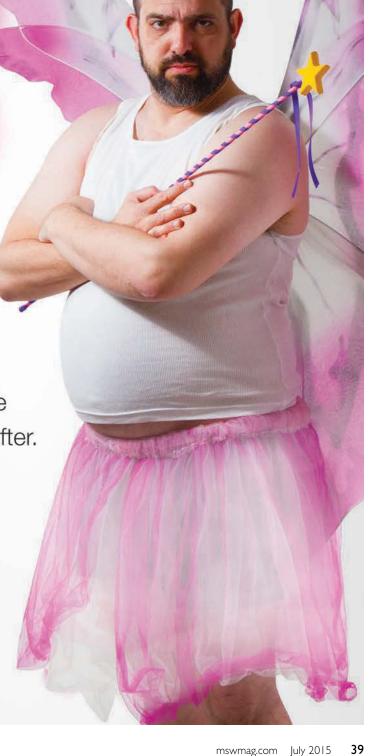
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The Rockville sanitary sewer preventative maintenance crew includes (from left) James Woods, Bradley Thomas, Michael Hott, Virgil Rossie, Lee Liller and Joel Karpas.

has its own utility truck and excavator, while the sewer crews operate a Vac-Con combo unit that does double duty cleaning storm drains.

Piggybacks cut costs

"We try to piggyback a lot of the work on existing projects ranging from road work to water main construction to valley stream restoration," says Woods. "That's less complicated than it might seem — we just poke our head out of the cubicle and ask each other what's going on."

The DPW is essential to the city's growth. Downtown development is seeing older commercial buildings replaced by high-rise residential and mixed-use development, placing strains on the collections system.

Funded in part by developers, the \$1.9 million Rock Creek Sanitary Sewer Capacity Improvement project is central to the city's development plans. City engineers completed hydraulic modeling of the project in-house using InfoSWMM and InfoSewer software by Innovyze.

"The city has three sewer sheds - Cabin John, Rock Creek and Watts Branch," says Woods. "The capacity constraint is in Cabin John, but that's the most difficult of the three areas to access and to mitigate effects of construction. Our hydraulic modeling showed that we could move the flow to Rock Creek and make the improvements there, benefiting both sewer sheds. Still, it's a complex project involving 4,000 feet of upsized pipe with the new pipe and manholes to be constructed in roadways and within easements that cross private property."

As the city moves forward on improvements to the sewer and water system, the primary constraint is funding.

Ding notes, however, that Rockville ratepayers value the results achieved by the department. In the 2014 City of Rockville Community Survey, eight in 10 residents rated water and sewer services as "excellent" or "good" - considerably higher than national benchmarks.

"Establishing that there's a clear relationship between rates and resulting service levels is half the battle." ◆



OUICK PEEK: ROCKVILLE ADOPTS THE SL-RAT

The Department of Public Works of Rockville, Maryland, has always been open to high-tech help. The city's sewer inspection force has recently adopted the Sewer Line-Rapid Assessment Tool, better known as the SL-RAT, by InfoSense, and significantly reduced flushing costs.

The compact device is operated by a two-person crew and relies on acoustic technology to rapidly assess blockages in a length of sewer pipe between two manholes.

The SL-RAT consists of a transmitter, which sends an acoustic signal down the pipe, and a receiver, which estimates the available air space above the sewer flow. A reading of zero indicates that a pipe is completely blocked, while a reading of 10 indicates it's completely open. The equipment is designed to work optimally in sewer pipes between 6 and 12 inches in diameter to a maximum length of 800 feet. Once manhole covers are removed, readings can be completed in as little as five minutes with no confined space entry.

"Initially, some of our crew members were a little skeptical of working with the equipment," says James D. Woods, an engineer with the department. "They'd tested out the unit on various types of pipes and noticed that the readings didn't appear consistent. However, the way the SL-RAT works is by comparing results from the same type of pipe and looking for anomalies across a series of readings."

Once workers in the field warmed up to the technology and inspections began to produce results, the department assigned a two-person crew to work with the SL-RAT full time, up to four days per week. At the current rate, the entire system will be acoustically inspected inside of two years.

"Before we used the SL-RAT we tended to flush all of the pipes as we were inspecting them, as part of routine maintenance," Woods says. "We now only flush the pipes when we know there's an obstruction inside them. That's cut our flushing budget significantly and allowed us to concentrate on flushing the worst spots and flushing them more frequently. We're finding smaller pipe blockages before they flare up, and ultimately this is resulting in fewer mainline stoppages."

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NASSCO's Annual Conference provides an opportunity to improve your utilities and further the industry By Ted DeBoda, P.E.

ummer breezes are still blowing across the United States, but now is the time to plan your winter getaway to Maui, Hawaii, for NASSCO's 40th Annual Conference to be held Feb. 10-12, 2016.

While the destination may imply fun in the sun, the technical and educational information far outshines the recreational benefits NASSCO members who attend this important conference will receive.

In addition to networking with peers, joining an influential NASSCO committee and participating in NASSCO'S general meeting, one of the highlights of NASSCO's Annual Conference is the highly acclaimed technical program. These one-day sessions offer a time for NASSCO members to come together to share new technologies and services to support NASS-CO's mission to set standards for the assessment and rehabilitation of underground infrastructure and to promote the continued acceptance and growth of trenchless technologies.

With NASSCO Annual Conference attendance and expectations growing every year, a formal Technical Program Committee was formed at the 2015 NASSCO Annual Conference in Savannah, Georgia. Members of this committee help evaluate topics to be presented and ensure the day remains an objective "no sales" event by providing education and information that is both timely and relevant to all involved in underground infrastructure. There will, however, be opportunities for members to share their products and services with small displays available outside the technical program rooms where attendees can network during breaks and lunch.

Calls for Papers were sent to all NASSCO members as well as each of NASSCO's highly active committees this spring. Approximately 15 abstracts were received and will be considered for inclusion in the 2016 Technical Program.

In 2015, NASSCO's Technical Program was structured as two separate tracks. The first covered Safety, Risk Assessment and Municipal Issues; the second covered Collection System Inspection, Maintenance and Rehabilitation. In 2016, the tracks will focus on Inspection, Laterals, Cleaning and Rehabilitation, and will include a Municipal Forum with participants who represent cities and utilities deeply involved in the use of trenchless technologies.

While the primary purpose of the Annual Conference is to educate and inform, members will also enjoy a special 40th Anniversary Celebration of NASSCO with a golf tournament, welcome reception and banquet.

The NASSCO Annual Conference will be held at the Sheraton Maui Resort and Spa. Attendance is open to all NASSCO members. Please visit sheratonmaui.com to book your room and learn more, and remember to request your special NASSCO rate.

If you are not yet a member and would like to attend NASSCO's 2016 Annual Conference, you can join online today at nassco.org or email info@nassco.org to learn more. •

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1:00 pm - 5:00 pm Day 2 Afternoon

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CHEMICAL AND MECHANICAL ROOT CONTROL

By Craig Mandli

Chemicals are often an effective remedy for root infiltration, but mechanical methods such as cabling, jetting and cutting are sometimes needed for severe blockages. Manufacturers offer a wide variety of tools for cutting out and clearing root problems. Here are some offerings.

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The TorqueMaster TM750 mainline drain cleaning machine from Coast Manufacturing has a double-welded, powdercoated tubular steel frame and an easy-start 3/4 hp dual-capacitor motor. The main shaft drive is fabricated from stress-proof steel, with sealed ball bearings on the shaft and drive arm bearings

that don't need lubrication. It has a straightforward pulley drive system, 10-inch-diameter solid polyurethane tires, extra-wide rear handle for stability in the upright position, and quick and easy one-man reel changeover. 800/541-7015; www.coastmanufacturing.com.

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1/2-inch cable. It comes with a telescoping handle and wheels to make it easy to maneuver. It can run both 16- and 19-inch reels, making it easy to switch between cable diameters and lengths. It is recommended for use on sinks, bathtubs, shower drains and floor drains. 877/244-0556; www.duracable.com.

Electric Eel Model C



The Model C dual-cable sectional drain and sewer 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 rpm of a continuous cable machine for maximum cleaning power in 3- to 10-inch lines. One-man operation means less time and labor expense. A heavy-duty 1/2 hp motor comes standard, with 3/4 and 1 hp motors available. The heavyduty, fully adjustable safety clutch keeps cable and tool breakage to a minimum and provides overload protection. Its fold-down handle allows for easy trans-

portation, storage and use in crawl spaces. Its carry handle enables balance and easy transport. 800/833-1212; www.electriceel.com.

Gorlitz Sewer & Drain Model GO 68HD



The Model GO 68HD heavy-duty electric drain cleaning machine from Gorlitz Sewer & Drain is available in two versions, either with an open steel reel or enclosed polyethylene drum, and can be outfitted with an optional power feeder. Standard configuration is 150 feet of 11/16-inch hollow-core cable, which should reach most blockages with a single reel. The unit

weighs 185 pounds, and adding a loading ramp and electric winch to any vehicle makes transportation quick and simple. It is designed to clean pipes from 3 to 8 inches in diameter. 562/944-3060; www.gorlitz.com.

Ken-Way 400

The Ken-Way 400 helps remove roots and other obstructions from sewer and process lines from 3 to 10 inches in diameter. The coned drum allows for maximum torque buildup and can hold 150 feet of 5/8-inch cable, 130 feet of 11/16-inch cable, or 110 feet of 3/4-inch cable. Its small footprint and 8-inch ball-bearing wheels and stair climbers allow it to operate in difficult-to-reach areas. It is available with an optional cable drive for feed and retrieve. Each unit comes



with a toolbox containing a set of blades, flexible leader and retriever. It is powered by a 1/2 hp motor with a three-speed pulley. A ground fault interrupter is built into the power cord and the foot switch is air activated. 800/533-0551; www.kenway.com.

Picote Solutions Miller



The Miller drain cleaning system from Picote Solutions can clean cast iron drains and sewers 1 1/4 to 10 inches in diameter. Three different sizes of cleaner are available, and when used with Circular Cyclone for fragile pipe or original stainless steel grinding chains, it allows fast and efficient cleaning of soft blockages,

scale and calcium buildup, tree roots, concrete, lead and failed gaskets and imperfections in pipe. 219/440-1404; www.picotesolutions.com.

CUTTING NOZZLES

Chempure Root Rat



Root Rat cutting nozzles from Chempure Products 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 rebuilding other than bearing replacement, which can be completed in less than two minutes for under \$10 in parts. 800/288-7873;

www.chempure.com.

ID-TEC Precision Jet Cutting System

The Precision Jet Cutting System from ID-TEC combines waterjet cutting and jetting to eliminate roots and other blockages from sewer mains and lateral connections. A sewer rehabilitation robot is equipped with a camera, a cutting nozzle and an adjustable high-pressure pump. FOG, sludge, calcium, small roots and other deposits are jetted away with pressures up to 4,500 psi.



Water pressures between 3,000 and 15,000 psi eliminate root intrusions by jetting away the dirt and small root branches first. Then the water blast cuts off the main root. It can be used at ultra high pressures to remove or cut hard plastics, clay, cement and concrete fast and precise without damaging pipe walls. The water blasts holes in the cement or concrete, causing the material to break loose from pipe walls as pressure rises. It can be used for cleaning and scuffing pipe surfaces for better bonding of CIPP relining materials. The robot suffers less vibration using the system, and water blasts are less likely to cause explosions. 503/504-8474; www.sewerrehabilitationseries.com.

NozzTeq Lumberjack



The **Lumberjack** cutting nozzle from **NozzTeq** is a low-torque, high-speed cutter for use with high water pressures. It is ideal for cutting roots, but it's also commonly used to cut grease, tuberculation, protruding laterals and other buildups. Because it's low torque, it's unlikely to cut

through host pipes. The bearings are sealed, grease lubricated, water cooled and largely maintenance-free, as water-cooled bearings don't need additional lubrication and are long lasting. The cutters rotate at a minimum speed of 10,000 rpm with flow rates from 10 to 250 gpm at varying pressures. They operate in pipes from 3 to 48 inches. All models clean with chain links, with optional cutting blades for severe blockages. All models come with a propelling jet housing, with tow rings available.

866/620-5915; www.nozzteq.com.

ROM by RockStar

The **RockStar** from **ROM** by is ideally suited to clean root-clogged laterals by crushing roots into small pieces. It can be attached to a cable machine and is avail-



able in different types and sizes depending on the pipe diameter and number of blades. Straight, rounded or toothed blades and can be used with different types of augers. www.rombv.com.

JETTERS

Amazing Machinery J/VB9030HGEA390-AM



The J/VB9030HGEA390-AM portable cart jetter from Amazing Machinery is powered by a commercial-grade Honda GX 690 twin-cylinder air-cooled four-stroke engine. It features low-oil shutdown and electric start. The General pump produces 3,000 psi at 9 gpm. It is plumbed with the bypass back to the customer's water tank and a thermal relief valve to prevent over-

heating. It is mounted on an aircraft-grade aluminum frame with oversized pneumatic tires. It comes with 200 feet of low-friction jetter hose, three nozzles and a foot pedal for easier start/stop of the jetting process. The wheeled hose reel gives you the option of jetting inside or outside drains with the machine operating safely outside. It is designed to clean 4- to 12-inch pipes. 800/504-7435; www.amazingmachinery.com.

American letter Compact Van letter

Compact Van Jetters from American Jetter have a skid footprint as small as 24 by 36 inches, while offering room for a camera and tools. Water tank footprints are as small as 24 by 24 inches, making it easy to have a fully operational jetter inside a van using minimum space. A full speed-control reel mounted above the engine and near the rear door maximizes operator comfort. A flexible



mount-anywhere exhaust system allows exhaust to be run through the floor or other areas, reducing engine noise. Kohler engines to 80 hp power low-water shut-off pumps from 7 to 20 gpm up to 5,000 psi. A wireless remote option allows for water on/off and engine shutdown. 866/944-3569; www.americanjetter.com.

Cam Spray E|T Series |etter



The **EJT Series Jetter** from **Cam Spray** is made in three versions — 12 gpm at 2,700 psi, 8 gpm at 3,700 psi or 7 gpm at 4,000 psi. Driven by a 690 cc Honda engine, it can jet up to 8-inch lines and

accommodate root-cutting tools. It comes with 250 feet of jet hose, a manual reel, 150-gallon water tank with low-water shutdown, industrial finished

trailer, laser nozzle, rubber gloves, face shield and tiger tail. 800/648-5011; www.camspray.com.

General Pipe Cleaners IM-2900 let-Set

The JM-2900 Jet-Set gas-powered water jet from General Pipe Cleaners can quickly clear grease, sand and ice in 4 to 8-inch drainlines. It is light and maneuverable,





and driven by a 13 hp Honda engine connected directly to a 3,000 psi, 4 gpm triplex pump. Vibra-pulse helps the hose slide around tight bends in small lines and down long runs. A 200-foot-capacity hose reel with reel brake is mounted on a heavy-duty frame with two pneumatic tires. It has a thermal relief valve to protect the pump from heat damage, along with a backflow check valve and inlet filter. An optional spray wand is available. 800/245-6200; www.drainbrain.com.

Hi-Vac O'Brien 7000



The O'Brien 7000 Series trailermounted jetter from Hi-Vac Corporation comes with water tanks with a sediment pump for easier cleaning and longer life, as well as 15 percent more water capacity. The trailer has the muffler and air cleaner mounted inside the enclosure for improved sight lines, electric reel control for smoother

rotation and easier operation, and hydraulic and water gauges mounted in the main control panel for easier viewing. 800/752-2400; www.hi-vac.com.

Vermeer by McLaughlin Vac/Jetter Combo

The Vermeer J12-30 sewer jetting system from McLaughlin turns a vacuum excavator into a versatile jetter/vac combination unit for use in a variety of applications, such as cleaning manholes, small sewer lines up to 12 inches in diameter, and hydroexcavation in sewer lateral repairs or spotting utilities. The jetter hose is inserted into the line and uses the pressure from the vacuum exca-



vator's water pump to propel the jetter head down the pipe. As the jetter hose flushes out the line, the unit's suction hose removes the debris. Once the cleaning is complete, the hose is retracted. The [12-30 option is available on VX80 vacuum excavators with 500-, 800- and 1,200-gallon spoil tanks, as well as MEGA Vacs. 800/435-9340; www.mclaughlinunderground.com.

MyTana MV80 let Pro Cart



The MV80 Jet Pro Cart from MyTana Mfg. Company is powered by a 24 hp Honda engine and delivers 8 gpm at 3,000 psi. It has a compact steel cart and easyto-use controls for the pressure unloader and pulseable valves. The 12-gallon water tank is set up for continuous resupply from a garden hose. The unit comes with 250 feet of 3/8-inch thermoplastic jetter hose

and a set of nozzles for penetrating, cornering and blind thrust. The hose cart has two reels, one for the 3/8-inch hose and one for a 50-foot jumper hose useful for remote jetting. 800/328-8170; www.mytana.com.

RIDGID Model KI-3100

The RIDGID Model KJ-3100 portable water jetter provides 3,000 psi actual working pressure to handle large commercial and industrial drain cleaning applications. It propels a highly flexible and lightweight hose through 2- to 10-inch lines, blasting through sludge, soap, grease and sediment



blockages. As the lightweight, nylon-braided hose is pulled back, it power scrubs the line, flushing debris away and restoring drainlines to their full, free-flowing capacity without the use of chemicals. It can be used with the Root Ranger 3000 jetter nozzle to completely clear obstructions. The head allows the nozzle to push its way through tough blockages, while the rearfacing turbo jet scours the drain clean and flushes away debris. 800/769-7743; www.ridgid.com.

Sewer Equipment 747-FR2000



The 747-FR2000 from Sewer Equipment has a stout, tubular steel frame to limit flex and sway while towing, and comes standard with Caterpillar engines and F.E. Myers pumps, and Duraprolene water tanks that come fully baffled to eliminate surging while stopping and turning with a load of water. These standard features are combined with a number of options

such as an ECO operating system, various pump configurations, wireless and tethered remote controls, tool storage, dual reels, CCTV system and the ability to truck mount. 877/735-4640; www.sewerequipment.com.

Spartan Tool Model 740

The Model 740 hybrid hydrojetter from Spartan Tool offers 4,000 psi of jetting power at a 12 gpm flow on a widetrack chassis towable by any vehicle. It is available in either a traditional gasolinepowered configuration or in a hybrid version that runs on liquid propane. The LP version offers 4,000 psi of jetting power



wherever needed, even inside food processing plants and other air-qualityconscious locales. It is also ideal for areas that experience ozone action days or other local emission restrictions. It comes with 350 feet of hose and a 40 hp electric-start engine. It is available in a skid-mounted version for installation into an existing van or trailer. 800/435-3866; www.spartantool.com.

Super Products Camel let 1600



The Camel Jet 1600 truck-mounted, high-pressure waterjetting system from Super Products is used to keep municipal sanitary and storm sewer lines and laterals clean and free-flowing. It uses three rotationally molded polyethylene tanks to carry up to 1,600 gallons of water. The

Lexan Containment System means users have additional safety protection from hose rupture or high-pressure water. Its heavy-duty triplex continuous-flow water pump provides up to 80 gpm and pressure up to 2,000 psi. Various water pump and drive system options are available, as well as a frontor rear-mounted 180-degree rotating hose reel with a 1,000-foot capacity. 800/837-9711; www.superproductsllc.com.

Vac-Con Hot Shot

Hot Shot high-pressure waterjet machines from Vac-Con are used for removing stones, bottles, cans, grease, sludge and other debris from sanitary and storm sewers by the flushing action of high-pressure water. They come with a noncorroding,



polyethylene water tank, and can be operated by a single person. All controls are located at the front of the machine for ease of operation and increased safety. They are available with a 1,000- or 1,600-gallon water tank capacity. Options include variable flow, an articulating hose reel, polyethylene water tank, 30 gpm at 3,000 psi water pump, auxiliary engine or hydrostatic drive, cold-weather recirculation system, side-mounted toolboxes, air purge system, hose footage counter, arrowboard, strobe lights, inspector cam, high-pressure spray bar, hose rewind guide, 600 psi hand gun system with 25 feet of hose and a full selection of nozzles. 855/336-2962; www.vac-con.com.

Vactor Manufacturing Ramjet



The truck-mounted **Vactor Ramjet** from **Vactor Manufacturing** comes with a Vactor Jet Rodder water pump to help break up blockages in sanitary lines and flush out debris. With up to 2,500 gallons of water in a stainless steel tank, it delivers flows of 60 to 100 gpm at 2,000 or 2,500 psi. The single-piston, hydraulically driven, dual-acting water pump delivers jackhammer-action water flow designed to break

through line blockages and scour caked-on debris from pipe walls. A single operator can quickly solve line problems and tackle regular line maintenance. It can be configured with either a front- or rear-mounted hose reel. The auto-wind hose guide allows hands-free operation from the control panel for a clean, tight wrap. 800/627-3171; www.vactor.com.

Water Cannon 17H85

The 17H85 Water Blaster from Water Cannon has a Honda GX 690 engine with electric start, 15-gallon long-run fuel tank, roll cage, poly chain drive, a TSP Series General triplex plunger pump that offers 4 gpm at 7,000 psi, a portable wheel and push handle, 50-foot hose, trigger gun, wand, QC nozzles and safety couplers. It meets or exceeds all 2014 EPA and State of California regulations relating to fuel tanks, vents and carbon canisters, and can be sold in all



50 states. It has low-permeation fuel tanks and fuel lines, and fuel caps vent to engine air cleaners rather than externally to the atmosphere, as required by law. 800/333-9274; www.watercannon.com.

MECHANICAL ROOT CUTTERS

Arthur Products Cnt-r-KUT Elite



The **Cnt-r-KUT Elite** from **Arthur Products** mechanically rotates to symmetrically clean pipes. Equipped with interchangeable chain and cable on the same rotor, it operates at pressures from 2,000 to 10,000 psi. The lightweight, flexible centering device, constructed from an aerospace elastomer, allows it to navigate the contour of

the pipe. Its jet porting uses both rotor sidekick jets optimizing rotational force and rear thruster jets for propulsion maximization. It is available in 3/8-, 1/2- and 1-inch NPT. 800/322-0510; www.arthurproducts.com.

Enz USA root cutters

Root cutters from **Enz USA** can clean pipes from 3 to 48 inches in diameter. Remove all debris and roots using rotating chain scrapers, including turbine model #10.060A/B/CTR for 3- to 8-inch pipes, turbine model #10.125TR for 6- to



12-inch pipes, model #10.150R for 6- to 10-inch pipes, model #10.200R for 8- to 16-inch pipes and model #10.400R for 16- to 48-inch pipes. All turbine units are complete with sealed bearings, while the others operate with sealed swivel joints. This allows each to be operated with both clean and recycled water, while being relatively maintenance free. They can also be used to clear grease, solids, mineral deposits, concrete and grout. Protruding laterals can be removed using "Diamond Tap Cutters," with model #10.150R (6 to 10 inch), 10.200R (10 to 16 inch) and 10.400R (16 to 24 inch). 877/369-8721; www.enzusainc.com.

IBG HydroTech WaMax



The **WaMax** milling system from **IBG HydroTech** is used for the removal of roots, mineral deposits, concrete, protruding sockets and other rehabilitation prep work. The pressure- and volume-independent control-milling system with small revolutions of approximately 250 rpm delivers effective performance. It works in pipe diameters from 3 to 40 inches. The system can be equipped with liner and rupturing knives, a round saw blade for removing roots and a pipe socket cutter. The system can be driven by process water from the water treatment system as well as recycled water without problems. It can also be used for oval and egg-shaped pro-

files. www.ibg-hydro-tech.de/en.

Southland Tool hydraulic root cutting motor kit

High-torque, powerful hydraulic root cutting motor kits from **Southland Tool** come with a motor that produces 225 pounds of torque. It is heavy duty and suggested for tap cutting and cement and calcium carbonate removal. It comes with a



set of heavy-duty saws that are 3/16-inch thick. Its four EZ skids are single piece and easy to use. The arbor tool can turn the motor without taking off the saw. 714/632-8198; www.southlandtool.com.

USB – Sewer Equipment Corporation Turbo Chain Cutters



Turbo Chain Cutters from **USB** – **Sewer Equipment Corporation** are made of tempered stainless steel with continuously adjustable guide skids. The chain retainer is driven by a high-performance turbine to remove roots, grease and mineral deposits from 4- to 48-inch sewer lines.

With an optimized 3-D hydromechanics design in conjunction with ceramic nozzle inserts, the cutters use recycled or clean water. They can also be used as barrel cutters with diamond bits for smooth removal of protruding laterals. Heavy mineral deposits can be removed with carbide bits attached to the specialized chain. 866/408-2814; www.usbsec.com.

(continued)

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ROOT CHEMICALS

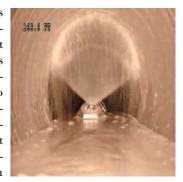
Lenzyme/Trap-Cleer Root Control



Foaming Root Control from Lenzyme/ Trap-Cleer has double the dichlobenil active ingredient of previous solutions, and a latex base that helps 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.

RootX

Chemical root control from RootX is a long-term solution to pipeline root intrusion, as it stunts new root growth without damaging the pipe, clearing pipeline roots that can cause blockages resulting in sanitary sewer overflows. It's been verified to have no harmful effects on water treatment systems. The simplicity of the application means crews can perform root control on-demand or as scheduled preventive maintenance. It is registered with



the EPA for both sanitary and storm use (EPA Reg. No. 68464). 800/844-4974; www.rootx.com.

Vaporooter



The **Vaporooter** formula destroys roots on contact and inhibits regrowth for years. It contains two herbicides that penetrate root cells to destroy roots on contact, and binds to pipe walls, joints and cracks to inhibit new growth. Computerized application equipment allows operators to jet up the line, push a button and fill the pipe with foam while retrieving the hose. The

application system fits any jet truck, and is available as an option from multiple truck manufacturers. 800/841-1444; www.vaporooter.com. ♦



<mark>1-800-683-8837</mark>



Regular maintenance with root herbicide reduces sewer overflows



Problem:

The City of Virginia Beach, Virginia, located at the mouth of the Chesapeake Bay, has little topographical relief and a multitude of pumping stations to convey flow from its customers to the local treatment facilities. Under Special Order by Consent, Virginia Beach

was ordered to reduce sanitary sewer overflows, rehabilitate its sanitary sewer system, reduce inflow and infiltration, and make long-term improvements to improve capacity.

Solution:

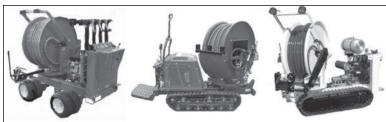
Brown and Caldwell identified grease and roots as the primary causes of SSOs. They incorporated a proactive MOM (management, operation, maintenance) program, which included product and services from Duke's **Root Control** to keep the sewers root-free, reduce I&I and improve capacity. Razorooter II diquat-based herbicide is registered by the EPA for controlling nuisance tree roots in sanitary sewer collections systems and received a classification of "evidence of non-carcinogenicity in humans."

RESULT:

The city noted that after the first year of the formal root control program, the number of SSOs dropped over 30 percent and have continued to drop substantially ever since. The city also noticed an instantaneous return on its investment via reduced frequency of SSOs after implementation of the MOM program, of which root control was an important part. 800/447-6687; www.dukes.com.

Cutter used to remove roots from clogged clay sewer line

A camera inspection revealed that backups at a residence in the Hidden Valley neighborhood of La Jolla, California, were caused by heavy root intru-



PROWLER EASEMENT MACHINES

The Prowler Easement Machine is available in extendable track, track, wheeled or track over wheel configurations. Reel available in capacities To 1,000 feet. Many options available. For more information contact:

3T Equipment Company Inc. 800-969-3001 tttequip@yahoo.com, Web Site at www.3TEquipco.com



sion in the line. Roots from nearby trees grew into the joints and cracks, blocking sanitary waste from traveling. The pipes ran under hilly terrain from the home's cleanout in the yard to the city's main sewer line. Not only were the pipes located 6 to 9 feet below

grass and trees in the customer's yard, but also in the neighbor's yard.

Solution:

Using the Micro-Cutter, a technician from Nu Flow America was able to clean more than 200 feet of 4-inch clay sewer pipe. The system rotates at approximately 2,000 rpm and will negotiate turns of 90 degrees in pipes down to 2 inches in diameter. It runs at 40 cfm and allows for multiple cutting heads to be attached.

RESULT:

The technician successfully cleaned the root-infested sewer line using existing access points, without the need to dig up the customer's or the neighbor's property. He then installed the Nu Drain Pull-in-Place structural liner to prevent future root intrusion. 905/433-5510; www.nuflowtech.com.

Controlled-rotation jetting nozzle effective in opening pipe at treatment facility



Rodney King, proprietor of Hydro-Mole mechanical cleaning company specializing in coil cleaning, hydro jetting and CCTV pipe inspections, recently received a call from the nearby City of Hurst, Illinois, about a blocked pipe at its sewer treatment facility. Prior to

arriving at the site, King was informed by the sewer treatment plant operator that the treatment ponds were overflowing due to the apparent blockage. Two jet trucks from other neighboring municipalities were already on the scene but had been unsuccessful in opening the pipe.

Solution:

"Upon setting up, I selected our WH-1/2 nozzle," King recalls. The Warthog WH-1/2 from StoneAge is a controlled-rotation jetting nozzle for 6- to 18-inch lines most commonly used with small-capacity combination trucks and large trailer jetters. It maximizes cleaning power into as few jets as possible to efficiently penetrate blockages, cut roots and clean walls.

"After running our machine for five minutes, the pipe began to flow," King says. "The 10-foot manhole that we were jetting from started overflowing within 45 seconds." 866/795-1586; www.sewernozzles.com. ♦



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Product Spotlight

Mini-mainline push system inspects up to 500 feet of 12-inch pipe

By Ed Wodalski

he MPlus+ XL mini-mainline push system, the newest member of the MPlus+ line from CUES, can inspect 4- to 12-inch-diameter pipe.

"It's a family of products now," says George Milkowski, design engineer for CUES. "So not only do operators have the ability to inspect laterals with the standard configuration MPlus+, but because of its modularity you're able to add an XL coiler system and use the control unit to inspect larger pipelines or mainlines."

The XL inspection system features a 360-degree pan-and-tilt camera, swappable camera heads, video observation coding, asset management software interface and digital recording. The XL coiler delivers up to 500 feet of 0.516-inch fiberglass push cable.

"The best feature is the modular design that allows a user to configure the system to the exact application required," he says.

The inspection system has a built-in digital video recorder with data stored on an SD card.

"One of the ways the MPlus+ line differentiates itself from other systems on the market is it not only can operate as a stand-alone system, but it's completely compatible with our GraniteNet asset management software system," Milkowski says. "You're able to integrate it to CUES mainline TV inspection trucks."

Standard features on the 65-pound push system include an 8.4-inch display mounted in a weather-resistant control unit with quick-connect mount for attaching to the coiler and internal lithium-ion battery with Intellicharge technology for four hours of continuous use on a single charge. The system also accepts AC and 12-volt DC power input.

Options include locator/receiver for camera location in metallic and nonmetallic pipes, line tracing post for use with optional line transmitters, and a large selection of skids and skates. 800/327-7791; www.cuesinc.com.

Vanair gas rotary screw air compressor

The Viper gas rotary screw air compressor from Vanair Manufacturing delivers 60 to 80 cfm at 100 to 150 psi and features an EFI-certified Kohler engine. The 42-inch-long by 21-inch-wide by 30-inch-tall compressor fits behind the cab or can be mounted on the side pack. 800/526-8817; www.vanair.com.

Vac-Tron LP-power vacuum loader

The LP 533/833 SGT gas vacuum loader from Vac-Tron Equipment is powered by a 37 hp Kohler gas engine. Similar to the pre-Tier 4 Final SDT diesel model with 1,000 cfm vacuum pump, the LP model features the Series 33 safety rear door that opens to a 90-degree angle with automatic safety lock. The CVS filtration housing has a 28-inch-diameter cyclone, fourway valve for reverse pressure, silencer for quiet operation and 6-inch debris discharge valve for off-loading liquid materials by gravity or under pressure to another container. The optional strong arm helps support the weight of the vacuum hose. 888/822-8766; www.vactron.com.

McElroy Talon 2000 fusion machine

The Talon 2000 fusion machine from McElroy can lift 2,000 mm (about 79 inches) of pipe from the ground and adjust its height and orientation to correctly align and fuse pipes. An electric-powered indexer positions the top-loading heater and facer into the fusion machine. The carriage converts to one fixed jaw and three movable jaws for easy tie-in. Skid-steer and track-mounted features enable it to position itself in tight spaces and move across rugged terrain. Built-in logging records fusion data that syncs with McElroy's DataLogger Vault for storage and analysis. 918/836-8611; www.mcelroy.com/fusion.

Turtle Plastics hose bridge extender
The hose bridge extender from Turtle Plastics provides greater distance between ramps, enabling vehicles with low clearance to easily cross the bridge. The standard hose bridge accepts up to 6-inch O.D. hose. The Super hose bridge accepts up to 10-inch O.D. hose. 800/756-6635; www.turtleplastics.com.

(continued)

















Trelleborg immersed tunnel seals

Gina and Omega gaskets from Trelleborg Pipe Seals Milford are designed to prevent water ingress in immersed tunnels. The Gina gasket is made from natural rubber combined with varying hardness and is supplied as a closed rectangular frame to seal each sectional element. The Omega seal connects each segment and is made from multiple layers of styrene butadiene rubber and nylon inlayers for durability. The seals enable the transfer of hydrostatic loads and movements between tunnel ends caused by soil settlement, concrete creep, temperature and earthquakes. 800/626-2180; www.trelleborg.com/en.

∠ Blue-White hybrid ultrasonic flowmeters

Sonic-Pro hybrid ultrasonic flowmeters from Blue-White Industries measure flow rate using either Doppler or Transit Time. Noninvasive clampon transducers work with both clean and dirty fluids with a high-capacity flow velocity range of up to 30 fps. The flowmeter can be configured and controlled remotely via RS-232, RS-485, USB or Ethernet. Real-time flow can be viewed remotely and data log files can be downloaded on a Windows PC. 714/893-8529; www.blue-white.com.

7Vactor hydroexcavator with Peterbilt option

The HXX HydroExcavator from Vactor Manufacturing is available with a Peterbilt 567 Class 8 truck chassis option. The chassis design reduces weight for increased payload capacity and improves maneuverability for operating in congested work sites. Chassis improvements include new air and fuel hard lines and the separation of air, fuel, diesel exhaust fluid and electrical system routings. 800/627-3171; www.vactor.com.

QTT Technologies plastic pipe splitting heads

Plastic pipe splitting heads from TT Technologies are capable of splitting and replacing plastic gas service and mainlines from 1/2 inch to 4 inches in diameter. The hardened heat-treated steel cutting blades are available in various designs and sizes to match the type of plastic host pipe and soil conditions. 800/533-2078; www.tttechnologies.com.

Sherwin-Williams interactive coatings app

The Water & Wastewater App from Sherwin-Williams Protective &

Marine Coatings is designed to provide users with protective coating recommendations for conventional water treatment, membrane water/wastewater treatment, water storage, water conveyance, sewer collection and wastewater treatment. The app is optimized for iOS tablet devices and all Android devices. It can be downloaded from the Apple or Android stores. 800/524-5979; www.sherwin.com.

Cat Pumps high-pressure plunger pump

The Model 3550 high-pressure plunger pump from Cat Pumps is rated to 10 gpm at 6,000 psi. The pump is designed for equipment operating in high-duty cycle applications in remote or mobile applications such as hydroexcavating, jetting, blasting and hydrostatic testing. It can be direct-driven hydraulically or pulley driven from a motor or engine. Features include completely lubricated and cooled V-packings and low-pressure seals with hard-chrome plated forged brass inlet/discharge block manifolds. The wet end can be serviced without entering the crankcase. 763/780-5440; www.catpumps.com.

| Cultec ultra-high-capacity stormwater chamber

The Recharger 902HD ultra-high-capacity stormwater chamber from Cultec has a bare chamber storage capacity of 17.66 cubic feet per foot and minimum installed storage of 27.26 cubic feet per foot when used with stone. Weighing 78 pounds, the chamber has an installed length of 3.67 feet, 78 inches wide and 48 inches tall. The chamber is designed to withstand AASHTO HS-25 defined loads when installed according to recommended instructions. 800/428-5832; www.cultec.com.

> Exact Pipe Tools portable pipe saw

The PipeCut 360E portable pipe saw from Exact Pipe Tools cuts through ductile iron, multi-layer material, steel, stainless steel, acid-resistant steel, copper and plastic pipes. It can cut 3- to 14-inch-diameter pipes with wall thickness from 0.4 to 1.7 inches. The 31-pound saw has a two-stage motor speed control, constant torque, soft start and automatic overload protection. 844/392-2800; www.exacttools.com. •





















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Siemens completes expansion of Wisconsin facility

Siemens Water Solutions completed a \$500,000 expansion of its 53,000-square-foot Rothschild, Wisconsin, facility, increasing manufacturing and warehouse space by 40 percent.

Hammond Manufacturing names vice president

Hammond Manufacturing Company Ltd. named Andreas Sobotta vice president of North American sales and marketing.



Andreas Sobotta

Legacy opens new corporate office

Legacy Building Solutions opened a new corporate office at its headquarters in South Haven, Minnesota. The 70- by 80-foot, two-story structure provides 10,000 square feet of office space for the company's engineering, sales and marketing teams. The office is attached to Legacy's existing fabric manufacturing plant.



Legacy Building Solutions

Corvias Solutions names vice presidents

Corvias Solutions named Jason Washington and John Campagna vice presidents of partnership development. They will assist municipalities in the Chesapeake Bay region with public-private partnership solutions for their infrastructure and stormwater needs.





Jason Washington John Campagna

Wastequip adds regional sales managers

Wastequip named Anthony E. Parker and Ernie Castro regional sales managers for its Technical Products Division. Parker will be responsible for the Midwest region and Castro will be responsible for growing sales in the Southeast, Latin America and the Caribbean.

WAMGROUP acquires Enviro-Care Company

Enviro-Care Company of Rockford, Illinois, has been acquired by WAMGROUP, headquartered in Modena, Italy. Philip A. Thompson, vice president of sales and marketing, was named president of WAM North America, dba Enviro-Care Company. WAM is a multinational company that serves the water and wastewater industry.

Ferguson Enterprises acquires Equarius

Ferguson Enterprises acquired Equarius, exclusive Neptune Meter distributor for California. The company will operate as Equarius Waterworks, Meter & Automation Group, a Ferguson enterprise. Management and all employees will remain with the business.

Vacuum Truck Rentals adds Hydro-Knife hydroexcavator

Vacuum Truck Rentals added the Ledwell Hydro-Knife hydroexcavator to its fleet of rental equipment. The 2,100-gallon hydroexcavator delivers hot water up to 200 degrees at 3,000 psi. Two 125-foot hoses work independently or in tandem to deliver 10 gpm each. The Hydro-Knife supports multiple excavators with or without onboard water systems.

Hamilton Kent adds Lifespan System distributors

Hamilton Kent has partnered with Martech, a contractor, sales and distribution company in western Canada, and Atlantic Purification Systems in east Canada to supply the Lifespan rubber manhole frame with lock-down cast iron or composite cover.

Aries Industries named Business of the Year

Aries Industries was named a 2015 Top 10 Business of the Year by the Waukesha County Business Alliance and BizTimes Media. The award recognizes companies headquartered in southeastern Wisconsin that have consistent financial growth and demonstrate good business practices through employee relations, customer-focused commitment, community service and business education partnerships.

SIE-Rhombus acquires ICS Healy-Ruff

SJE-Rhombus acquired ICS Healy-Ruff, manufacturer and integrator of control systems for municipal water and wastewater. ICS Healy-Ruff will become part of PRIMEX, the SJE-Rhombus business dedicated to engineered water control systems.

Nu Flow Italia adds licensees

Nu Flow Italia added two companies to its list of licensees. Termoidaraulica Mansi Enrico of Lugo will offer small-diameter pipe renewal technologies to areas east of Emilia Romagna. Benati Paolo will serve Verona Mantova and Vicenza.

Hydraulic Institute recognizes Xylem

Five employees from the Applied Water Systems (AWS) business unit of Xylem were recognized by the Hydraulic Institute (HI) for their service and involvement in the association of pump manufacturers. Mark Handzel received the Industry Leadership Award for U.S. Department of Energy pump effi-



Xylem

ciency regulations, Mark Heiser received the Industry Leadership Award for development of HI Standard 40.7 and recognition for completion of standard development for DOE pump efficiency regulations, and Paul Ruzicka received the Industry Leadership Award for development of HI Standard 40.6 and recognition for completion of standard development for DOE pump efficiency regulations. Chris Johnson was recognized for contributions to HI standards development and Jim Roberts was recognized for 20 years of service to the development of HI standards.

GapVax Rental Units names operations manager

GapVax Rental Units named Earnest Rankin operations manager. G.R.U. offers daily, weekly or monthly vacuum truck rentals. ♦



Earnest Rankin





2016 Day Pattern Shift:

Education Day:

Wednesday, February 17

Exhibits:

Thursday, February 18 Friday, February 19 Saturday, February 20



WORTH NOTING

PEOPLE/AWARDS

Terry Ball was named the director of the Streets and Stormwater Department for the City of Tulsa, Oklahoma.

Terry Pennington was appointed to the New Albany (Indiana) Stormwater Board by the City Council.

Engineering firm **Fehr Graham** and the **City of Monona** received an Outstanding Performance Award for watershed protection and water quality improvement from the Iowa Stormwater Education Program in recognition of the city's role in curbing stormwater runoff from Monona Aquatic Center into Silver Creek and, ultimately, Turkey River. The city, with the help of Fehr Graham, replaced the aquatic center's gravel parking lot with permeable pavement able to infiltrate, treat and slow down water runoff from polluting the creek. A majority of the \$260,000 project was funded through the State of Iowa Water Resource Restoration Program and the Clean Water State Revolving Fund.

Mike Keenum was named the city engineer for the Lubbock (Texas) Public Works Department. Keenum served as the stormwater engineer for the city since 2006 and managed the Stormwater Management Department's daily operations while also overseeing the capital improvement projects involving stormwater and drainage. Keenum replaces **Wood Franklin**, who was named director of Public Works.

The **City of Marysville** upgraded its water plant and wastewater treatment plant, and those combined projects received a Regional Project of the Year Award from the Detroit Metro Branch of the American Public Works Association, and a State Project of the Year Award from the Michigan Chapter of the American Public Works Association. The improvements at the sewer plant have had a big impact on water quality in the St. Clair River, primarily via the installation of a 2-million-gallon stormwater retention basin, in which combined waste and stormwater is held during big rain storms for later treatment at the plant.

The **City of Spirit Lake** received the 2015 Iowa Stormwater Award from the Dickinson County Clean Water Alliance for improvements to the storm sewer system and the quality of water in Center Lake.

A partnership among the City of Chicago, Chicago Public Schools, Metropolitan Water Reclamation District of Greater Chicago, Openlands and Healthy Schools Campaign — known as "Space to Grow" — received three high-level awards for its ongoing efforts in the field of environmen-

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tal sustainability across the state of Illinois. Space to Grow is a public-private partnership that transforms Chicago schoolyards into vibrant outdoor spaces that encourage physical activity, outdoor learning and community engagement, while addressing broader environmental issues, including stormwater management and water conservation. Space to Grow also received the Sustainability Award from the Illinois Association for Floodplain and Stormwater Management, which recognizes excellence in stormwater management across the state of Illinois.

LEARNING OPPORTUNITIES

American Water Works Association

The AWWA is offering:

- Aug. 12 Treatment Tips and Tricks: Filtration Webinar
- Aug. 26 Optimizing Filters: Assess Conditions, Rehabilitation and Management Webinar
- Oct. 26 Understanding Advanced Stormwater Management Techniques, New Brunswick, New Jersey

Visit www.awwa.org.

Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering Using WinSLAMM v.10.1: Meeting Urban Stormwater Management Goals R174 on Nov. 5-6 in Madison. Visit http://epdweb.engr.wisc.edu. ◆

CALENDAR

July 26-29

 $\label{thm:constraint} American Society of Agricultural and Biological Engineers International Conference, \\ New Orleans. Visit www.asabe.org.$

Aug. 2-6

StormCon North American Surface Water Quality Conference & Expo, Austin, Texas. Visit www.stormcon.com.

Aug. 17-19

Smart H2O Summit 2015: Sustainable Water Solutions, San Francisco. Visit www.smarth2osummit.com.

Aug. 18-20

National Association of Flood and Stormwater Management Agencies Annual Conference, Jackson Hole, Wyoming. Visit www.nafsma.org.

Aug. 30-Sept. 2

American Public Works Association International Public Works Congress and Exposition, Phoenix Convention Center, Phoenix, Arizona, Visit www.apwa.net.

Sept. 28-30

National Rural Water Association WaterPro Conference, Oklahoma City. Visit www.waterproconference.org.

Oct. 11-14

American Society of Civil Engineers 2015 Convention, New York City. Visit www.asce.org.

Oct. 12-16

American Water Works Association 2015 Water Infrastructure Conference and Exposition, Bethesda, Maryland. Visit www.awwa.org.

Nov. 16-19

American Water Resources Association Annual Conference, Grand Hyatt Denver. Visit www.awra.org.

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.

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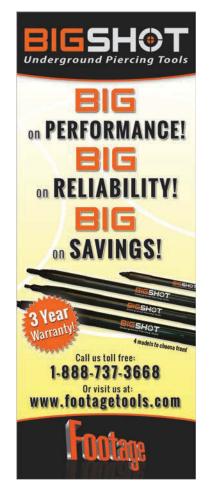
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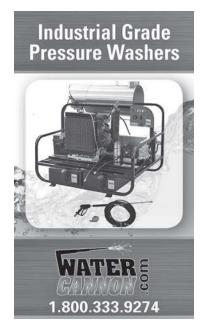


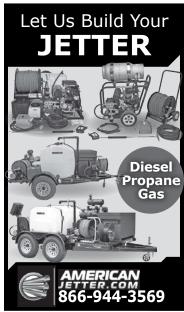




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MISCELLANEOUS

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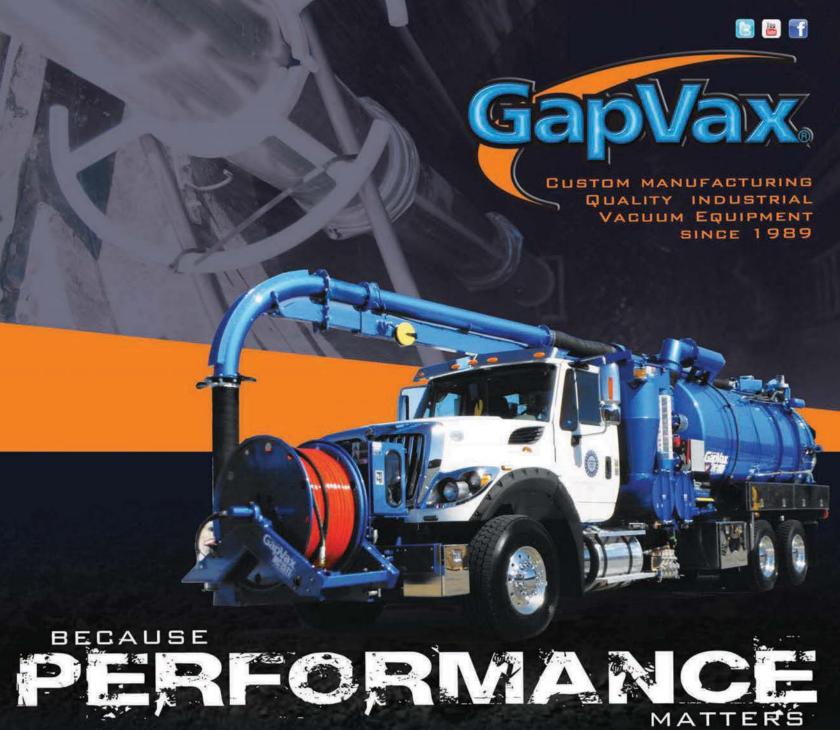
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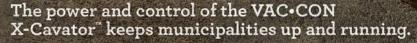
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