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Michael Johnson
General Manager
Birmingham Water Works
Birmingham, Alabama

SYSTEMATIC UPGRADES

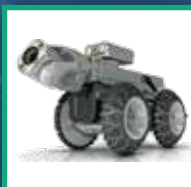
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approach to correcting
the flaws in its
sprawling system

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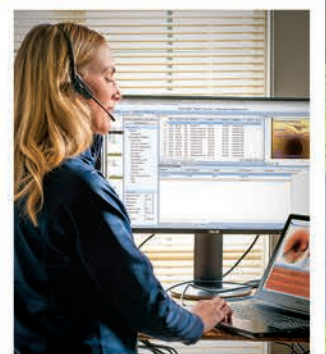
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ON THE COVER: Michael Johnson, general manager of Birmingham Water Works, reviews a pallet of MJ sleeves in the utility's equipment yard. (Photography by Meg McKinney)



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Luke Laggis

LINING AND LEARNING

Stories come and go, but every one contributes to my education

Downtown Madison, Wisconsin, is surrounded by water. It's an isthmus with Lake Mendota on one side and Lake Monona on the other. From my sister's place I have a direct view of Monona to the south and some obscured views of Mendota off past the capitol to the north.

I mention that because Madison is a city that's built around water, and it's where I began my water and wastewater education in earnest very shortly after joining COLE Publishing. It would be a while before I became editor of *MSW*.

I came to Madison to do a story on a CIPP lining project the Madison Water Utility was working on. Everything on the job site was completely new to me — things I'd only just begun reading about. I knew the basic principles of pipe lining, but I didn't know much else. The differences in curing systems, liner materials and resins were still well beyond me.



Madison, Wisconsin, with Lake Monona in the foreground and Lake Mendota behind the capitol.

The engineer I interviewed and toured the site with, Adam Wiederhoeft, was incredibly helpful in guiding me through the different facets of a pipe rehabilitation project. In the weeks and months after, I weighed everything I read and heard about pipe rehabilitation against what I saw on the Madison project. That became my baseline, which was incredibly helpful.

I never wrote the story because I felt like I didn't understand the process well enough at that point to convey the project's most noteworthy and nuanced aspects in any kind of meaningful context. If I recall correctly it was the first potable water-main lining project in the state.

Sitting here today at my sister's, looking out over Monona Bay with a ring of snow-covered ice around its shoreline, I started thinking back on that project. I don't remember a lot of the specifics, but it was the foundation of my education in pipe rehabilitation. I've learned enough over the past nine years that there are things I take for granted now. Complacency can creep in no matter what you do. But thinking back on that trip to Madison, on my introduction to trenchless rehabilitation of any kind, I'm reminded of how impressive this industry can be and the significance of what you do.

It's satisfying to think how much I've learned over the past nine years. At the same time, I know I have a long way to go. There's always room for improvement. And no matter where you're at in your career, the same likely applies to you. I kind of enjoy that part. If we knew everything, it would be pretty boring. If you could solve every problem without challenge, your jobs would probably be a lot less rewarding. Taking on the challenge is what makes you, your utilities and your communities better.

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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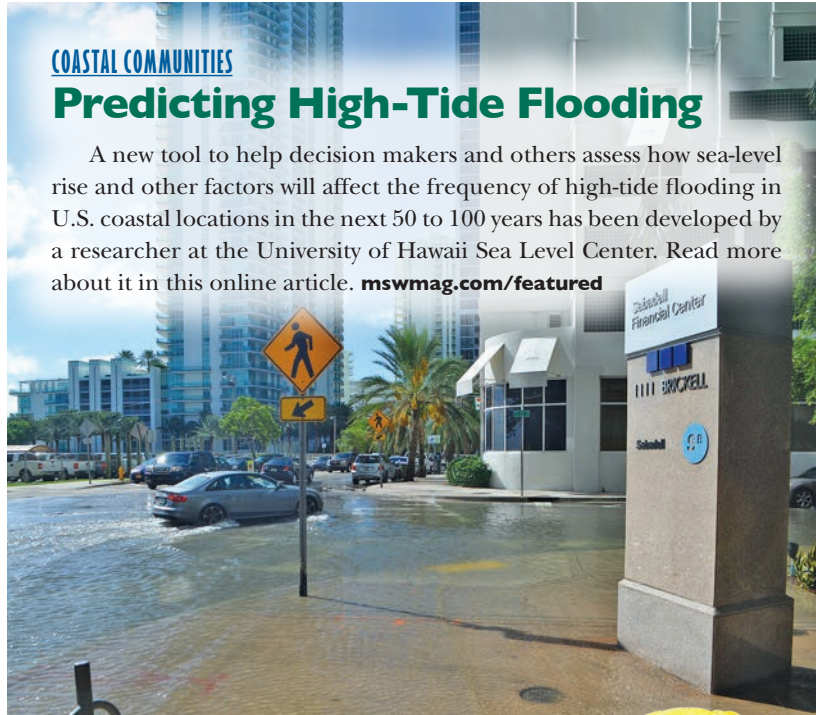
“If you deviate from the process and try to cut corners, you only create problems for yourself. Patience is a virtue when it comes to pipe lining.”

— **Pipe Lining Innovation Allows Liners to Cure Unattended**
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COASTAL COMMUNITIES

Predicting High-Tide Flooding

A new tool to help decision makers and others assess how sea-level rise and other factors will affect the frequency of high-tide flooding in U.S. coastal locations in the next 50 to 100 years has been developed by a researcher at the University of Hawaii Sea Level Center. Read more about it in this online article. mswmag.com/featured



PUBLIC OUTREACH

Road Salt Awareness

More than 525,000 tons of road salt in Wisconsin washes into lakes, rivers and streams each season, negatively affecting the state's water quality. That's why a coalition of organizations in Wisconsin is organizing a public outreach effort called WI Salt Awareness Week.

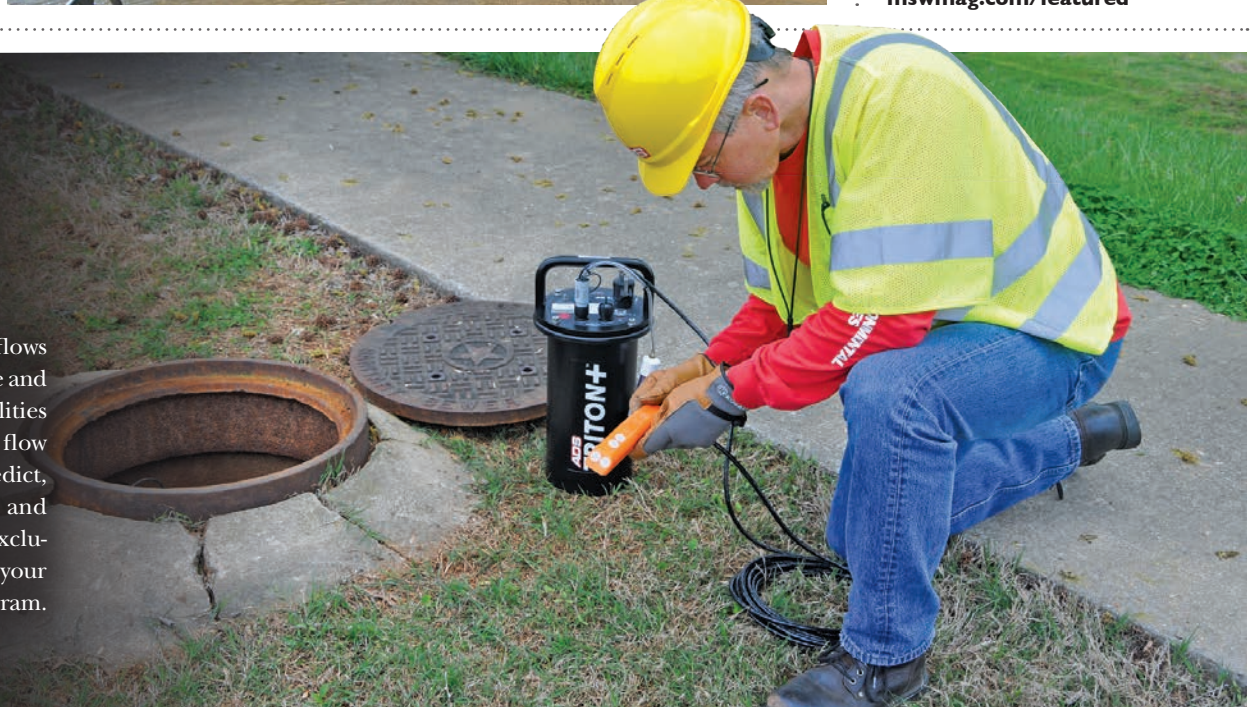
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SEEING I&I

Establishing Advanced Flow Monitoring

As sanitary sewer overflows become less tolerated by state and federal agencies, more utilities are turning to advanced flow monitoring programs to predict, record and monitor inflow and infiltration. In this online exclusive article, learn how to get your utility started on such a program. mswmag.com/featured



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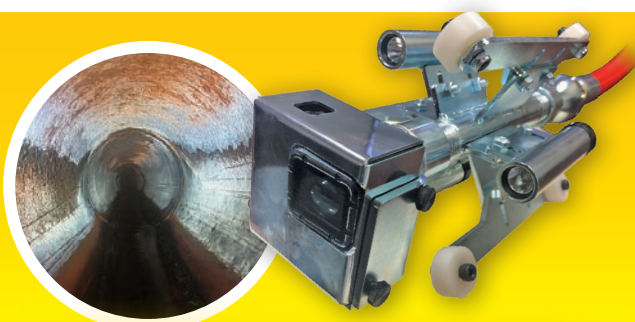
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SYSTEMATIC UPGRADES

Birmingham Water Works takes a methodical approach to correcting the flaws in its sprawling system

By Giles Lambertson

The water system in Birmingham, Alabama, includes more than 4,000 miles of water main, some of which dates back nearly a century. Keeping water moving efficiently and rates low is an ever-present challenge.

Birmingham Water Works is addressing the issue by replacing one aging pipe at a time. General manager Michael Johnson says systematically upgrading the system is a years-long process.

“Our plan is to replace all of the old pipe eventually, of course,” Johnson says. “We are budgeting \$30 million for pipeline replacement this year and again next year and will continue with a robust plan to replace it. It is difficult to say when we will complete the replacement, given financial restraints, but it’s a priority.”

The \$30 million capital expense for pipe is projected through 2022 and Johnson says the job might not be finished for 20 years. “And that’s a conservative estimate.”

The thousands of miles of water pipe are laid across a system that began in Birmingham proper and now sprawls across five counties in north-central Alabama. The system dates to 1873 when Birmingham was just 2 years old. Today, the Jefferson County seat is a city of 200,000 and part of a metropolitan area of more than a million people.

Economy of scale

In 1951 — 70 years ago — city fathers opted to buy the water utility from a private sector operator and set up an independent water board.

The current nine board members are a credentialed group with degrees from such places as Harvard and Yale, backgrounds in law, community activism and college classroom instruction as well as election to local and state offices.

Johnson says answering to an independent board instead of a city council has lessened politics to some extent. “It is an advantage to not have some of the pressures that city utility systems have,” he says. “It makes it somewhat easier to manage and to focus on difficult decisions such as raising rates when needed.”

The utility is, in fact, the largest water system in Alabama by just about any measurement — 4,000-plus miles of water main, 655,000 customers, a 700-square-mile service area. It grew both by building out to accommodate new residential and commercial developments and by absorbing smaller systems in its path. Its largest customer is the campus of the University of Alabama-Birmingham.

The advantage of operating a system of that size is economy of scale. “Because of that we are able to provide our service at a lower cost than a smaller utility could,” Johnson says. “This is a very, very expensive business. When you can add accounts and stretch operating costs across a larger customer base, it makes it somewhat cheaper to provide water as well as making it more efficient and effective.”

For customers, that translates into water bills that are lower than the national average, according to Johnson. On average, the Water Works



Birmingham Water Works maintenance crew member Willie Byner guides a trackhoe operator during excavation of a water line for replacement. (Photography by Meg McKinney)

charges a residential customer \$44.63 for 600 cubic feet, which he says probably ranks somewhere in the top third in Alabama. “Our rate increase has been less than the national average over several years and we pay attention to that. We need to raise rates periodically but only to a level our budgeting process says the rates need to be.”

Dig and replace

One factor in setting rates, of course, is the cost of maintenance. As noted, Birmingham Water Works has a large, aging system to maintain. Johnson notes that 541 miles of the system’s distribution pipe is either unlined cast iron or galvanized steel. “That pipe accounts for 14% of the system, but it accounts for two-thirds of our maintenance activity. Some of the galvanized pipe is more than 90 years old.”



“Our rate increase has been less than the national average over several years and we pay attention to that.”

Michael Johnson



PROFILE:
Birmingham
(Alabama) Water
Works

SERVICE AREA:
700 square miles

WATER DIVISION
EMPLOYEES:
650

METERED WATER
CONNECTIONS
AND CUSTOMERS:
228,000 meters,
655,000 customers

MILES OF PIPE:
4,064 miles of main, another
1,000 miles of service lines

RAW WATER FACILITIES:
4 water intakes, 22 storage
tanks, 3 booster stations

TREATED WATER
FACILITIES:
4 water treatment plants,
51 finished water storage tanks

AVERAGE PEAK DEMAND:
167 mgd

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Replacing those two types of pipe is the top priority. Most of the newer pipe is ductile iron with a little PVC thrown in.

“The other 86% of the system is maybe 40 years old on average and that’s not where problems are occurring. We don’t know exactly what is in the ground in some places,” Johnson says, alluding to the segments of pipe laid by smaller utilities and subsequently acquired by Birmingham Water Works.

Upgrading the infrastructure is entirely through replacement. That is, old lines are dug up, scrapped and replaced with new pipe, or new lines are laid parallel to the old ones, which are then abandoned. The utility does not reline or burst sections of suspect pipe — the two increasingly popular trenchless methods for repairing an ailing system. Instead, the utility lays new ductile iron or cement-lined pipe.

“We do look at technology from time to time but replacing the bad pipe has been most efficient and we’re comfortable going with what works for us here,” Johnson says. “We are open to new technologies. We’ve looked at other ways of doing it, but we’re not implementing anything new right now.”

A significant advantage Birmingham Water Works has in laying all-new pipe is that American Ductile Iron Pipe, a division of American Cast Iron Pipe, has a manufacturing facility in Birmingham. The utility gets bids on everything, Johnson notes, but there are no shipping costs or storage costs when the local product is ordered, which generally means a lower overall cost to the utility when American wins a bid.

The majority — fully 65% — of the utility’s pipe-laying projects are bid out. If a job is notably complex



Crew members remove a section of old pipe from the utility's 4,000-mile distribution network for replacement with zinc-coated ductile iron pipe.

“The other 86% of the system is maybe 40 years old on average and that’s not where problems are occurring.”

Michael Johnson

or requires larger equipment than the utility has in its yard, contractors are invited to do the work, according to Johnson. “We have good maintenance crews, but we know what they are capable of. We don’t do the bigger jobs in-house.”

When a repair or replacement project is small enough in scale, the utility has the machinery to handle it, including four John Deere and Caterpillar backhoes. It also has four midsize excavators — two 68-hp Komatsu PC88 models and two 10-ton Caterpillar 308 models as well as a Cat mini-excavator. Or crews can call on a Guzzler jet/vac unit with a 10-cubic-yard debris body.

Moving water

The other pressing maintenance issue for Birmingham Water Works is, unsurprisingly, leakage. Johnson says the volume of leaked water is “quite a large number. We’re not pleased. We think it’s costing us \$1.2 million a year in additional production costs.”

The water is not escaping in large volume from any specific points — “We don’t have any big leaks of treated water,” he says.

Rather, the loss is from relentless seepage across the service area — dribs and drabs from 60-inch pipes carrying raw water from four distant water sources. The closest is Lake Purdy, within the county and just 10 miles from a treatment facility. But Smith Lake is 36 miles northwest of the city, Inland Lake 22 miles northeast and Bankhead Lake on the Warrior River another 22 miles west of Birmingham.

To monitor the leaking, the utility relies on electronic leak noise correlators. The devices utilize sensors to detect the sounds of escaping water and mathematical algorithms to pinpoint the area of leakage. Three brands of listening equipment — FCS, Matchpoint and Gutermann — are used to identify loss points.

Systemwide, peak usage is 167 mgd. To meet the demand, four treatment plants positioned in quadrants surrounding the city receive and treat water from the reservoirs and lakes and distribute it to nearest customers. It all sounds very efficient, but when rain failed to fall for two months in 2016, the surface water sources were stressed to deliver the needed water.

“We went 70 some days without rain that year,” Johnson recalls. Lake Purdy, which is in the driest part of the system, lost three-quarters of its capacity, almost reaching a level to where water couldn’t be drawn from it.

In response to the drought, water-use restrictions were imposed and a punitive rate system was set up by which customers could be charged an extra-high rate if they were discovered violating the emergency usage standards. “Thank God, it didn’t get to that point. It started raining finally.”

The utility now maintains wells in the Lake Purdy area as an additional source during drought. And one of the capital improvements to be com-

TRAINED TO SUCCEED

Efficiently delivering quality water to customers spread across five counties is the day-to-day task of Birmingham Water Works. Little things like aging water meters — big things, too, like mountains — pose challenges to the independently operated utility. Michael Johnson, general manager, seems to take them in stride.

He certainly was prepared by schooling for the task. The 62-year-old executive is a University of Alabama graduate with a bachelor’s degree in accounting, plus he holds a master’s in business administration and a master’s degree in taxation. Plus, he’s a certified public accountant.

Johnson worked for the IRS as an auditor for four years and worked his way up to partner in an accounting firm. He was employed by the city of Birmingham for 11 years culminating as director of finance before finally landing at the Water Works 12 years ago, becoming interim general manager in 2018.

But he credits none of those stops with his success at the utility. “What has helped me most in my job was joining the U.S. Marine Corps,” he says.

Johnson served 26 years as an active and reserve officer in the Corps, retiring as a colonel. In the service, he honed skills in fiscal planning and

logistics, finding constant opportunities to develop logistical strategies to support deployment of people and machinery.

“When you fight a fight, you organize water and other supplies. You maintain equipment in forward positions. So much logistical thinking goes into supplying and maintaining people and equipment. That thinking, coupled with my financial background, serves me well in this position,” he says.

At the utility, the job is to keep water flowing without interruption through thousands of miles of pipe, in and out of 48 distribution pump stations and 51 storage tanks, across 20 pressure gradients to reach taps at 228,000 metered locations and 15,000 hydrants. There indeed would seem to be some logistics in planning and coordinating all that. A possible indicator of the utility’s success is that it has been cited for excellence in governance by both Standard & Poor’s and Moody’s.

Johnson says the strength of the organization lies in three areas. One is superior water — “We have really great water” — and the utility’s strong financial position. The latter is a function of maintaining a reasonable level of debt service and healthy reserves in several areas.

The third leg, he says, is the utility’s 650 employees. “We have really, really good people, a committed and strong workforce with a lot of experience in a lot of areas. In my job, you have to have good people around you. I have had good people to work with, and who have worked with me.”

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Excavation and replacement of the water line is part of the utility's plan to replace 541 miles of aging, unlined cast iron and galvanized steel pipe.

pleted this year is the final leg of a new pipeline that will route supplemental water to the area from Inland Lake. "We are very fortunate that we can move water around in our system and distribute it in a way that lets us pick up slack in some parts of the system," Johnson says.

Increase education

So, the rehabbing of water mains in and around Birmingham continues, year by year. It

is not an exclusive focus of capital improvement funds by any means. The \$30 million budgeted to the task is just part of \$81 million to be expended the next fiscal year, with other projects including dam stabilization, pump station and water tank repair work, filter plant improvements, dewatering centrifuges and replacement of worn-out water meters.

The meter replacement is a relevant detail. The utility still sends readers from meter to meter, 228,000 of them, to lift covers and manually record monthly readings instead of using a drive-by or cellular reading system. Upgrading to one of the more efficient automated systems isn't fiscally possible at the moment. "That's one of the things we've been looking at," Johnson says. "But right now, our priority in capital investments is pipe replacement."

All in all, Johnson says long-term infrastructure upgrades are on schedule, albeit a long schedule. "We are feeling OK. We're not ahead of the game, by any means. In a perfect world, we would replace the older pipe in a shorter time, but we have to balance our repair work with keeping our rates affordable."

The utility is working hard to convey the parameters of the problem to customers, and the public is largely accepting of the situation. "We had a budget hearing in early November and we talked about the old pipe, but people don't really understand that. We just have to keep educating

the public. When we have a rate increase of any kind, people want to know why."

Birmingham Water Works enjoys a good reputation, the Montgomery, Alabama, native says. "We deal with 200,000 customers a month. That's 2.4 million opportunities a year for people to complain. So, we get some complaints, of course. We are continually trying to get better at everything we do, because affordable delivery of clean drinking water is what our customers expect." ♦

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PLANNING FOR SUCCESSION

Texas water utility takes strategic approach to handling a potential wave of retirees

By Ken Wysocky

Faced with the prospect of hundreds of employees becoming eligible for retirement in a relatively short time frame, the city of Fort Worth Water Utility knew it had to get serious about succession planning.

What transpired during the next several years, starting around 2017, could serve as a blueprint for other utilities facing the same challenges posed by the so-called “silver tsunami.”

The predicament created as waves of baby boomers prepare to exit the industry is well-documented; various studies show that up to 3 million water and wastewater workers nationwide — roughly one-third of the total workforce — will become eligible for retirement during the next 10 years.

That roughly mirrors the situation at the Fort Worth utility, where about 285 of its roughly 930 employees, or about 31%, will qualify for retirement within the next five years, says Shane Zondor, manager of workforce initiatives.

“We could see the hand-writing on the wall,” he says. “Our workforce is aging and we needed to start preparing and planning for succession.”

Daunting task

One of the biggest downsides of many employees leaving after decades of service is the loss of so-called institutional memory — the hands-on knowledge and intuition employees develop after decades on the job. Few organizations, public or private, are prescient enough to document this knowledge, which can include everything from self-developed, time-saving shortcuts to efficiently and competently handling operational emergencies to merely knowing which key people in an organization to contact when help is needed.

“Longtime employees know all the ins and outs of operating their plants, gained from years of working with the same people, equipment and processes,” Zondor explains. “They operate with a depth of intuition and experience, and those intangible job aspects are very hard to train people to do.

“So the key is to find a way to off-load that institutional knowledge to younger employees, which gives them the confidence to do the jobs.”

Succession planning is a daunting prospect, especially for utilities that have nothing in place and little time on the horizon to prepare. “It often seems overwhelming,” he notes. “The issue for many utilities is they don’t know where to start.”

That was the case at FWWU. So the utility hired a third-party consultant to help it develop a road map for succession planning.

Starting at square one

The consultant helped utility officials develop a multi-pronged approach. Because succession planning can take a long time to develop, the utility

decided to primarily focus on areas where retiring employees would hit delivery of services the hardest, as well as on positions that historically are the most difficult to fill, Zondor explains.

“That helped define where we needed to go,” he says. “Plant operations became the highest priority because employees there have the most institutional knowledge and their jobs also are the hardest to fill.”

After identifying the positions with the highest succession priority, utility officials began to map out detailed job descriptions for those jobs, with an intense focus on daily, weekly and monthly “milestone” tasks performed on a routine basis, he says.

During a series of meetings, officials then worked with the affected employees to break down those tasks into even smaller pieces until a comprehensive picture of their job responsibilities emerged.

“It looks kind of like a spiderweb when you’re done,” Zondor says.

Don’t rush the process

It helps to ask the affected employees well ahead of the meetings to start thinking about their job routines and repetitive tasks and processes. The job-mapping process shouldn’t be rushed, either, as employees aren’t likely to recall every single thing they do during the first couple run-throughs, he cautions.

“It takes about an average of three weeks, with an initial review done one day followed by multiple check-ins,” Zondor says. “It’s hard to do. The brain is a muscle, and in that sense, most of what we do at jobs is, in a sense, muscle memory — it’s done on autopilot.

“So it’s important to give employees adequate time to reflect on their job and experience.”

When the process is complete, the job map is reviewed with the employee, followed by a separate meeting with the employee’s supervisor. Interviewing the supervisors separately provides an honest assessment of the position, the skills and experience needed, as well as how they see this position evolving over time, based on technological advances and utility strategy.

Benefits abound

Detailed job maps provide multiple benefits. Consider task alignment, for example, or ensuring that employees are doing the tasks they’re really supposed to be doing, Zondor notes.

That may sound odd, but Zondor points out that it’s not unusual for job maps to reveal that employees are doing things that technically aren’t part of their jobs. Perhaps it’s duties that the employee enjoyed and didn’t

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

want to give up after a promotion, for instance. Or a task that an employee simply found easier to do on their own instead of delegating it to someone else — and just kept on doing it for years.

Either way, the road maps give organizations an opportunity to align tasks under the job positions where they should reside, which aids the overall efficiency and effectiveness of teams, Zondor points out.

The job maps also provide an opportunity to update and revise job classifications to be sure they truly reflect the work that's actually being performed. It's not unusual for job descriptions to get outdated and require updating, he notes.

Perhaps even more importantly, these job maps also can help organizations spot knowledge gaps by comparing the job descriptions to the qualifications of staffers who might be next in line when an employee above them retires or takes another job.

"Not everyone wants to progress to the next level," Zondor notes. "But it helps to know where knowledge gaps exist — see whether or not people who want to move up have the right skill sets. It also tells those employees what the job entails and the experience needed."

Objective benchmarks

This latter factor is especially useful for avoiding situations where employees take it personally when they're passed up for a promotion and get disgruntled and/or demoralized, he says.

Employees often believe they're capable of doing a job based on anecdotal information. But a job map provides a more accurate and objective picture, including benchmarks against which they can measure their skills. That, in turn, can change their perception of how qualified they really are to actually do the job, Zondor notes.

"The goal is to flip this scenario from what appears to be a subjective process to more of an objective process," he says. "At times, organizations tend to create expectations that certain employees will be the next logical choice for a position when it opens up.

"But we want to shy away from that and put the ball in the employees' court — tell them they need to earn the position and have them take an active role in their professional development."

The job descriptions also are useful for measuring the skills of external job candidates, he adds.

Lots of work remains

Zondor says the utility has a long way to go before its succession plan is complete. The primary short-term focus is developing job maps for employees with upcoming eligibility for retirement, followed by the rest of the workforce.

When that's completed, he contends the utility will no longer have a succession plan.

"After we get all those positions documented, employees with aspirations to grow can look at the

"The brain is a muscle, and in that sense, most of what we do at jobs is, in a sense, muscle memory — it's done on autopilot."

Shane Zondor

job road maps and determine what training they need to be ready for a job when it becomes available," he says.

"Creating descriptions for all the jobs in the utility is a huge undertaking, but it's critically important because when it's finished,

our succession plan no longer is a succession plan for retirements — it's an employee-development plan," he continues. "That's what we're striving for, and we're fighting hard to get there." ♦

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VALUABLE PARTNERS

Data analytics and new infrastructure help California utility conserve water and boost reliability

By Ken Wysocky

With intricate links to distant primary sources of potable water and the ever-present threat of drought, the Moulton Niguel Water District takes a proactive, data-driven approach to both conserving water and ensuring reliable water service for its 170,000 customers in Orange County, California.

During the past decade, the district — based in Laguna Hills, about 50 miles southeast of downtown Los Angeles — has invested more than \$75 million in infrastructure and advanced technologies. The goal: Conserve water and keep customers' faucets flowing in the event of a planned or unplanned outage of its imported water supply.

"We believe in being proactive — anticipating community needs for safe and reliable service," says Joone Lopez, the district's general manager. "We also take an approach that emphasizes smart investments and planning.

"We value our customers' dollars. We treat it like it's our own money. So when we make investments, we look for innovative opportunities that provide the greatest value and allow us to be a valuable partner in our community."

The utility buys its water from the Metropolitan Water District of Southern California, a regional wholesaler that provides water to 26 agen-

"Public engagement is critical because it turns customers into active partners."

Joone Lopez

cies serving approximately 19 million customers. That water comes from sources that lie hundreds of miles away — snow run off from the Sierra Nevada Mountains to the north and water from the Colorado River to the east.

The only local source of water is recycled wastewater, which goes through three treatment stages and is discharged into a recycled-water distribution system for use in irrigating things such

“With that information, we can direct our leak-detection staff to focus their efforts on areas with higher water loss, which yields a more effective output.”

Matt Collings

to three days in the event of a water outage, perhaps caused by an earthquake, for example, or a planned-maintenance shutdown. Today that number stands at 31 days, Collings notes.

Furthermore, in 2005 utility customers used an average of 183 gallons of water per capita per day. Today that figure stands at 118 gpcd; even as the district’s population grew by about 50% during that time.

Smart technology

An \$8 million advanced metering infrastructure program stands as a good example of the district’s penchant for high-tech adoption. Funded by a combination of grants and water-rate revenue, the four-year-old program was spurred by customer requests for more real-time usage data that could help them conserve water.

“When customers get their water bills, it’s after the fact,” Lopez explains. “So our customers wanted to understand their water usage better in real time. When they’re aware of their usage, it makes them more efficient. It also engages them and makes them proactive, as opposed to us telling them what they need to do.

“Public engagement is critical because it turns customers into active partners. For example, when we’ve asked customers to reduce water usage during droughts, we’ve seen some amazing levels of cooperation. We not only survived during our last drought (from 2014 through 2017), we thrived.”

The first phase of the project consisted of implementing smart meters on the district’s irrigation accounts, since they’re the largest water consumers, plus a couple thousand residential accounts. The second phase included smart meters for commercial customers, which allowed the utility to ensure that there was sufficient radio coverage throughout the service area for a full residential rollout.

The district is currently rolling out the program for remaining residential customers. Officials expect to complete the project within the next 12 to 18 months, Collings says.

Efficient leak detection

The smart meter project does more than just help consumers conserve water, however. It also supports other water-management programs. For example, when used in conjunction with the district’s SCADA system, the district can more efficiently target leaking connections.

This is no small matter for the district, which includes approximately 55,000 service connections. As such, trying to find leaks is the definition of hunting for a needle in a haystack.



Moulton Niguel Water District General Manager Joone Lopez has helped the utility take a proactive approach to engaging customers.

But rather than send out technicians with acoustic leak-detection systems on random searches, the utility uses data from the SCADA system and smart meters to eliminate guesswork.

“We could go and listen to all 55,000 service connections,” Collings says. “But instead we use data to target certain areas.”

The SCADA system enables district staff to remotely operate equipment at various treatment plants, pump stations and flow-control facilities — turn pumps on and off, open and close valves, adjust flow rates and so forth. But it also gathers and aggregates operational data, such as the amount of flow coming into the district, the amount of water that



PROFILE:

Moulton Niguel Water District, Laguna Hills, California

SERVICE AREA:

About 37 square miles in Orange County

WATER INFRASTRUCTURE:

About 656 miles of water mains, ranging from 4 to 54 inches in diameter

WASTEWATER INFRASTRUCTURE:

About 501 miles of sanitary sewers, ranging from 4 to 48 inches in diameter

ANNUAL OUTPUT:

More than 7 billion gallons, sourced from the Colorado River and Sierra Nevada Mountains

WEBSITE:

www.mnwd.com



The red valve crew with Moulton Niguel Water District works on a water valve replacement project in Laguna Niguel, California. (Photography by Doug Gifford)

as parks, golf course, street medians and other landscaped areas.

With water such a scarce commodity, it behooves the district to embrace technology as a valuable water conservation ally.

“We utilize available data and resources to be efficient and effective in solving problems for our community, as opposed to developing blanket programs,” says Matt Collings, assistant general manager. “We try to be focused and smart about how we operate.”

The investments have delivered tangible results. In the early 2000s, a district study showed that it could supply customers with water for two

PARTNERSHIPS SAVED UTILITY MILLIONS

The Moulton Niguel Water District increasingly uses technology to meet its water-conservation goals. But it also has proactively forged partnerships with high-tech organizations equipped with the know-how and technological firepower to do things the utility simply can't afford to do.

One such alliance saved the utility — based in Orange County, California — about \$20 million by proving it didn't need a new recycled-water-storage facility in order to meet peak demand.

The story begins in 2015, when the utility worked with other regional water agencies to establish a nonprofit group called the California Data Collaborative. At the time, California was in the midst of a record-setting drought that prompted the district to look at how to better conserve water.

But it was difficult for the utility to determine what actions would be the most impactful because its 73 million or so customer-related data points weren't standardized or centralized, notes Joone Lopez, the water district's general manager.

"Instead, it was all in boxes and file drawers," she says. "That made it difficult to develop policies that would achieve the end result we wanted. A lot of what we had been doing was based on anecdotal information, so we couldn't say what actions yielded what results."

Like most utilities, the district didn't have the financial or technological resources to do the kind of sophisticated data analysis required to make all those customer data points meaningful. But data experts at the California Data Collaborative were able to collect all the data and convert it into computer code.

Better yet, through contacts made via the collaborative, the utility developed a partnership with Netflix. Data scientists at the giant media firm created a custom analytics software program that examined the data, which included water-usage patterns. It included a predictive-modeling tool, similar to the technology that Netflix uses to make viewing suggestions for customers, based on their past viewing selections.

"Those predictive-modeling tools showed how the utility could better manage when its recycled-water customers used recycled water," Lopez explains. "So in the end, we didn't have to build that additional infrastructure."

"When you allow people to dream big and build friendships and networks, both internally and externally, amazing things can happen."



Members of the Moulton Niguel Water District blue street crew excavate a small section of pavement for a valve replacement.

“Good relationships help these agencies come together to put great projects into place that benefit the region as a whole.”

Matt Collings

flows through pump stations and any change of volume in its 21 storage reservoirs, which can store 71 million gallons of water.

"Using both systems allows us to break information down into defined zones and run water-loss analyses," Collings explains. "The ability to compare real-time source data for defined zones with actual water consumption in those zones allows us to calculate water loss in those particular zones."

"With that information, we can direct our leak-detection staff to focus their efforts on areas with higher water loss, which yields a more effective output."

In addition, the district is using the smart meters to gather data on urban water runoff in a local watershed. It hopes to use that data to work with local agencies to reduce runoff, which will improve the health of the watershed and its beaches.

Keeping water outages at bay

To improve system reliability, the district also teamed up with other regional water agencies to build additional water storage and treatment infrastructure. The effort included three major projects: The Baker Water Treatment Plant, the 250 million-gallon Upper Chiquita Reservoir and the Irving Ranch Water District-Orange County Water District emergency interconnection line, Collings says.

The Baker plant, which went online in 2017, can treat up to 28.1 mgd. By contract, it also provides about 30% of the district's water needs. The plant treats surface-water supplies from the MWD and delivers it to regional transmission mains. It also serves as a redundant source of treated water from MWD.

"It's the region's first new surface-water treatment plant in 50 years," Collings says.

The Upper Chiquita Reservoir, which provides emergency storage of treated water for five agencies in southern Orange County, more than doubled the district's treated-water storage capacity. It went online in 2013.

During emergencies, the critical Irving Ranch-Orange County emergency interconnection line provides otherwise inaccessible potable groundwater to six agencies in south Orange County, including Moulton Niguel.

Innovative project

A 410-foot-long, 72-inch-diameter microtunnel that carries waterlines under I-5, a major north-south freeway that splits the district's service area, represents another major infrastructure project aimed at improving system reliability and capacity. Completed in 2020, the \$8 million project, funded with bond proceeds and rate revenue, is unusual because it combines a potable waterline with a recycled waterline inside the same micro-tunnel casing, Collings says.

"It's the first time the State Water Resources Control Board has allowed a recycled waterline and a potable waterline within the same tunnel. The two-in-one design saved the district millions of dollars."

At issue was an aging 14-inch-diameter potable waterline installed in the 1960s that was prone to leaks. In addition, two recycled waterlines that also were installed in the 1970s — 8 and 12 inches in diameter — also needed upgrades.

The design featured a 20-inch-diameter, fused PVC pipeline for potable water and a 30-inch-

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The red valve crew uses a Vactor HXX hydroexcavator to expose a waterline beneath a residential street.

diameter fused PVC pipeline for recycled water, both enclosed in PVC pipe casings. In turn, those two casings then are enclosed within a larger, 72-inch-diameter steel casing, Collings says.

Improved system reliability

These infrastructure projects, coupled with expanded recycled water capacity and a budget-based rate structure that financially incentivizes customers to use water more efficiently, all helped the district achieve its goal of 31 days of water reliability.

The projects, many of them jointly funded ventures, also underscore the value of developing and maintaining strong relationships with neighbor-

ing water agencies. Collings says the operational staffs of regional water agencies meet regularly, as do members of their respective boards, to talk about issues and opportunities.

"Good relationships help these agencies come together to put great projects into place that benefit the region as a whole, but would be difficult for each agency to do on its own."

Looking ahead, Lopez says she remains excited about finding new ways to further engage customers and promote water-conservation efforts, as well as continuing to embrace new technologies as they emerge.

She believes there might even come a day within the next 10 years or so when district customers will be able to drink recycled water.

"Water is a very scarce resource here," she

says. "And it gets worse with each drought, which is why we need to be so efficient about how we use it. We're trying to get people to embrace water conservation as a way of life." ♦



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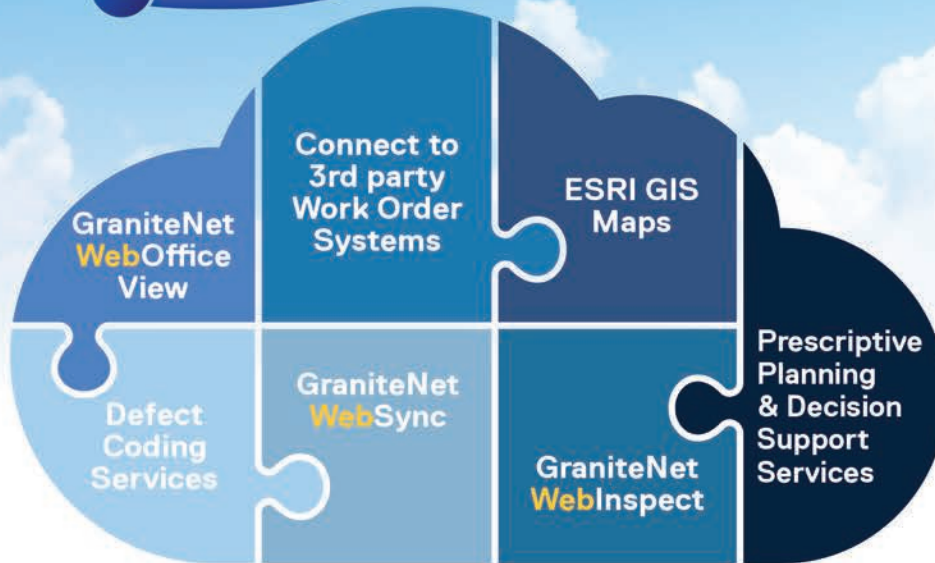
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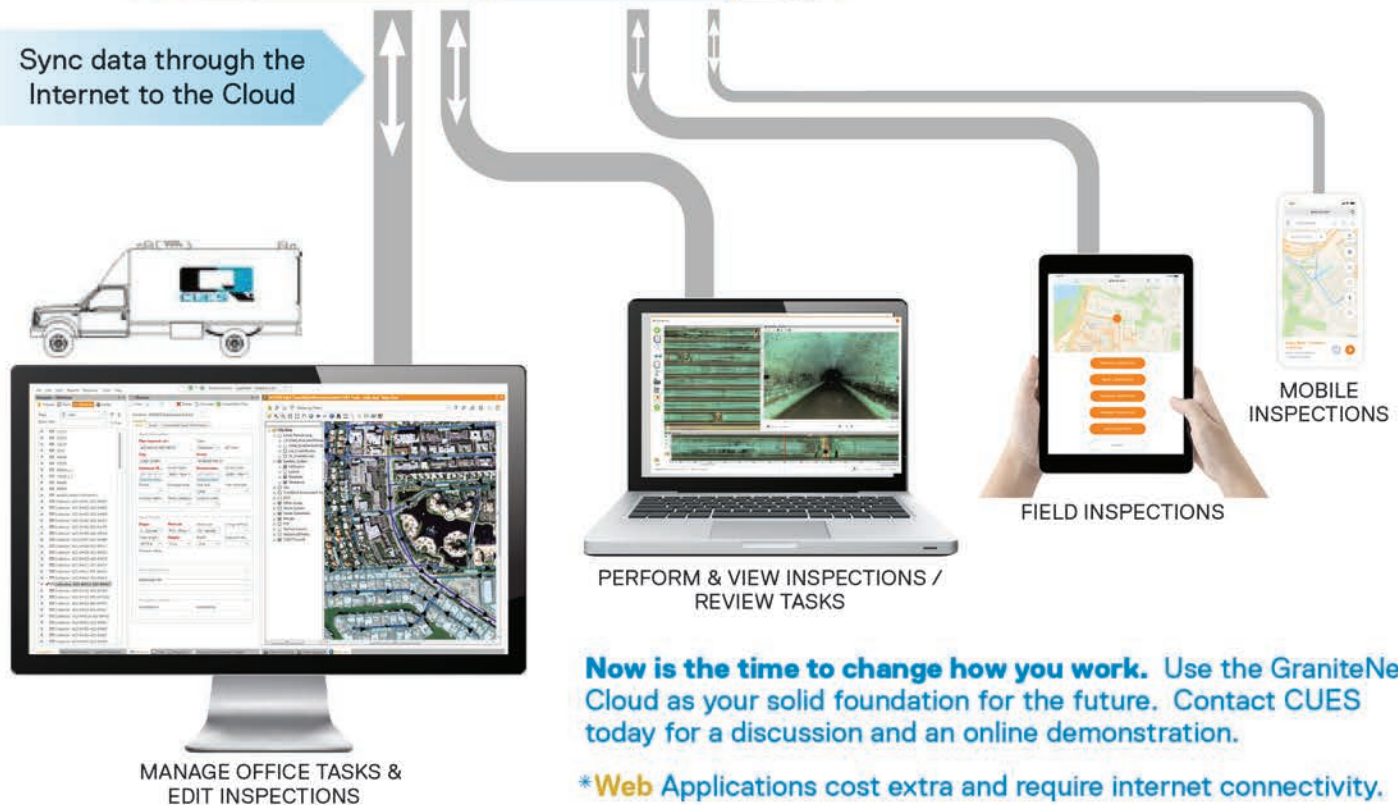
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THE TOOLS TO WORK IN-HOUSE

Vacuum excavators help the city of Maryville expand and maintain its underground infrastructure

By Cori Sellars

Nestled in the foothills of the Great Smoky Mountains, the city of Maryville, a suburb of Knoxville, Tennessee, is going through a growth spurt. With a population of nearly 30,000 people and climbing, the city has experienced a big spike in utility development within the last two to three years.

In preparation for expanding its underground infrastructure, as well as maintaining existing lines, city crews are using niche equipment, like vacuum excavators to locate and soft dig in sensitive areas.

"I've been here almost 23 years now, and I've never seen as much new construction, both residential and commercial, going on as we're experiencing right now," says Scott Brown, fleet superintendent for the city of Maryville.

Brown is responsible for outfitting city crews with the equipment they need to tackle the day-to-day needs of the utilities, public works, grounds, maintenance, police, fire and engineering departments. He says that with all of the new infrastructure comes the need to install more utilities, including fiber, gas and sewer lines, as well as the expectation that the work will be done right the first time.

"Our residents expect nothing less than perfect from our city crews, from garbage pickup and brush collection to the fire and police departments," Brown says. "And they expect the installation of new utilities to be just as perfect. It's how we work."

The right equipment

To keep up with the influx of utility work — and people's expectations — the city of Maryville recently invested in a new Vermeer McLaughlin series VXT8 Mega Vac vacuum excavator, adding to the municipality's vacuum excavator fleet, which also includes a Vermeer Vac-Tron series LP573SDT vac trailer and Vermeer McLaughlin series VX50-500 vac trailer.

"When we bought our first trailer-mounted vac unit, we bought it kind of on a whim," Brown says. "At the time, a lot of people asked me where we would use it. We put it to work right away, and the next thing I knew, I had departments fighting over it because they saw all of its possible uses, including cutting in and setting meter basin and taps. It just kind of blew up from there, so we invested in a second trailer — and now we bought the truck."

Before adding the new VXT8 Mega Vac to the fleet, city crews kept their trailer vacs busy, says Brent Robbins with Maryville's water and sewer department. The trailers are well suited for sewer line work, with built-in jetters and hydraulic valve-turning arms that allow crews to back out valve boxes, then operate and exercise the valves.

But the two trailer units weren't enough to keep up with demand. With the type of work the crews were taking on, Brown knew they needed a bigger, more powerful machine to complement the work the trailer units were

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BENEFITS:

Keeping up with the influx of utility work

USER:

City of Maryville, Tenn.

"All I have to do is hit the vac brakes and throttle it down, and I can stand right there beside the boom and talk with my crew."

Brent Robbins



The city of Maryville (Tennessee) recently addressed its need to pothole utilities and excavate around existing infrastructure by adding a Vermeer McLaughlin series VXT8 Mega Vac vacuum excavator to its fleet.

doing. He called on Tim Hedrick with Vermeer Heartland for help in choosing the right model to add to their fleet. Knowing the applications that city crews were handling, Hedrick recommended the VXT8 Mega Vac.

"The biggest advantage of the VXT8 Mega Vac is that it has a whole lot more capacity in the tank, and it hauls more water than trailer vacs," Robbins says. "Another advantage of our new vacuum excavator is how quiet it is to operate. All I have to do is hit the vac brakes and throttle it down, and I can stand right there beside the boom and talk with my crew. It's also a piece of cake to run."

Taking on more projects

The new VXT8 Mega Vac has allowed the municipality's crews to take on new work. "We use the truck for potholing utilities and excavating around existing infrastructure," Robbins says. "There's getting to be so much infrastructure in the ground now that we run into a lot of situations — like we're not able to dig or don't want to take a chance of damaging anything with a backhoe — so we use the new vac truck to hydroexcavate material out."

For example, Robbins says that happens when his crews are called to find a meter box in a flower bed, and they have to dig it up. "We'll use that vac truck to suck out the dirt around that meter box, and we don't tear up nearly as much stuff as we would if we went in there with a backhoe."



Maryville's fleet of vacuum excavators has allowed crews to do more work in-house, rather than outsource projects to contractors.

On one occasion, the crew vacuumed out 6 to 7 feet of ditch with existing utilities in it. "It was just a lot faster to vac it out than it would have been trying to figure out the backhoe," Robbins says. Crews have also used the truck to prepare for sewer rehabilitation projects and to vacuum dirt and gravel out of storm catch basins.

The vacuum units have allowed city of Maryville crews to do more work in-house, rather than outsource projects to subcontractors. "I'd say we do 95% of the work with our own crews and equipment," Robbins says. "When we get a big sewer job, we'll still sub it out because we just don't have the people to do it plus keep up with all our maintenance work. But on smaller projects, anywhere between 400 and 1,000 feet of line, we'll lay it ourselves."

Even when the city of Maryville crews call on subcontractors to help out, the vac units come in handy. "We've got a lot of good contractors in the area that we work with, but we don't want to leave it all up to them on whether or not they think something should be potholed," Robbins says. "Instead, we want to be the ones pointing the utilities out. Saying, 'See, there it is, right there.'"

"If we have lines that are critical, like a main feeder line that runs between tanks or something, most of the time, we'll pothole them to make sure everyone — both our crews and the contracting crews — know where the utilities are, even after they have been located," Robbins adds. "Any critical line, we pothole those ourselves. This means we've done our due diligence in helping these folks avoid hitting something when they're installing new lines."

In-house expansion

The city of Maryville is dedicated to providing quality services for its citizens, and it believes the best way to provide them is by doing as much work in-house as possible.

"We very seldom sub stuff out anymore because we have talented, trained teams working in all of our city departments. Our people take a great amount of pride in what they do, how they do it and when they do it," Brown says. "It's a winning combination

"Any critical line, we pothole those ourselves."

Brent Robbins

that keeps all the city's public utilities operating at peak efficiency and helps maintain the beauty of the community." ♦

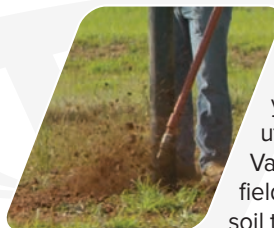
About the Author

Cori Sellars is the product marketing lead for Vermeer MV Solutions.



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 CUES, Inc. 3600 Rio Vista Ave., Orlando, FL 32805 800-327-7791 Fax: 407-425-1569 www.cuesinc.com salesinfo@cuesinc.com		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
 Electric Eel Mfg. Co., Inc. 501 W Leffel Ln., Springfield, OH 45501 800-833-1212/937-323-4644 Fax: 937-323-3767 www.electriceel.com msperanza@electriceel.com		Yes				Yes					
 Envirosight 111 Canfield Ave., Randolph, NJ 07869 866-936-8476/973-252-6700 Fax: 973-252-1176 www.envirosight.com mail@envirosight.com		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
 EPL Solutions, Inc. 1330 W Collins Ave., Orange, CA 92867 714-453-9760 www.epls-usa.com sales@epls-usa.com		Yes				Yes			Yes		
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 InfoSense, Inc. 8116 S Tryon St., Charlotte, NC 28273 877-747-3245/704-644-1164 Fax: 704-930-0145 www.infosense.com sales@infosense.com	Yes										
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 See Ad Page 7	RapidView IBAK North America 1828 W Olson Rd., Rochester, IN 46975 800-656-4225/574-224-5426 Fax: 574-223-7953 www.rapidview.com sales@rapidview.com		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Ratech Electronics, Ltd. 260 Spinnaker Way, Ste. 7, Vaughan, ON L4K 4P9 CANADA 800-461-9200/905-660-7072 Fax: 905-660-1519 www.ratech-electronics.com sales@ratech-electronics.com		Yes				Yes	Yes		Yes	Yes	
	SewerAI Corp. 227 Bliss Ct., Walnut Creek, CA 94598 855-952-2200 www.sewerai.com sales@sewerai.com		Yes			Yes	Yes	Yes	Yes	Yes	Yes	
	Spartan Tool, LLC 1506 W Division St., Mendota, IL 61342 800-435-3866 www.spartantool.com sales@spartantool.com		Yes				Yes			Yes	Yes	
	Subsite Electronics 1950 W Fir St., Perry, OK 73077 800-767-1974 www.subsite.com info@subsite.com		Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
See Ad Page 48	The Safety Company LLC, dba MTech Company 7401 First Place, Oakwood Village, OH 44146 800-362-0240/440-646-0996 Fax: 440-646-9953 www.mtechcompany.com sales@mtechcompany.com		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
 See Ad Page 35	Vivax-Metrotech Corp 3251 Olcott St., Santa Clara, CA 95054 800-446-3392/408-734-1400 www.vivax-metrotech.com salesUSA@vxmt.com		Yes				Yes			Yes	Yes	
 See Ad Page 3	WinCan 300 Cedar Ridge Dr., Ste. 308, Pittsburgh, PA 15205 877-626-8386 www.wincan.com/en mail@wincan.com										Yes	

NAME:

Scott Fier

JOB TITLE:

Owner

**YEARS IN THE
INDUSTRY:**

43

YEARS WITH COMPANY:

26

A BETTER MECHANICAL WAY

The right products make setting and maintaining manholes at grade a simple task

By Luke Laggis

American Highway Products is a family business that was born by chance in a Cleveland traffic jam.

Raymond Fier, P.E., started AHP in 1978. His sons Eric and Scott were the company's first employees at ages 16 and 14. The brothers worked outside the company after college, but came back and took over the company in 1995 ushering in a new era of growth working with utilities across the U.S. and Canada. Today, the company makes a host of products that make manhole, catch basin and valve box rehabilitation and maintenance easier and more efficient.

Municipal Sewer & Water recently spoke with Scott Fier and General Manager Jason Downing about the company's past, present and future.



Scott Fier
American Highway Products

“Our riser lowers the cost, project time and liability of bringing utilities up to a new grade.”

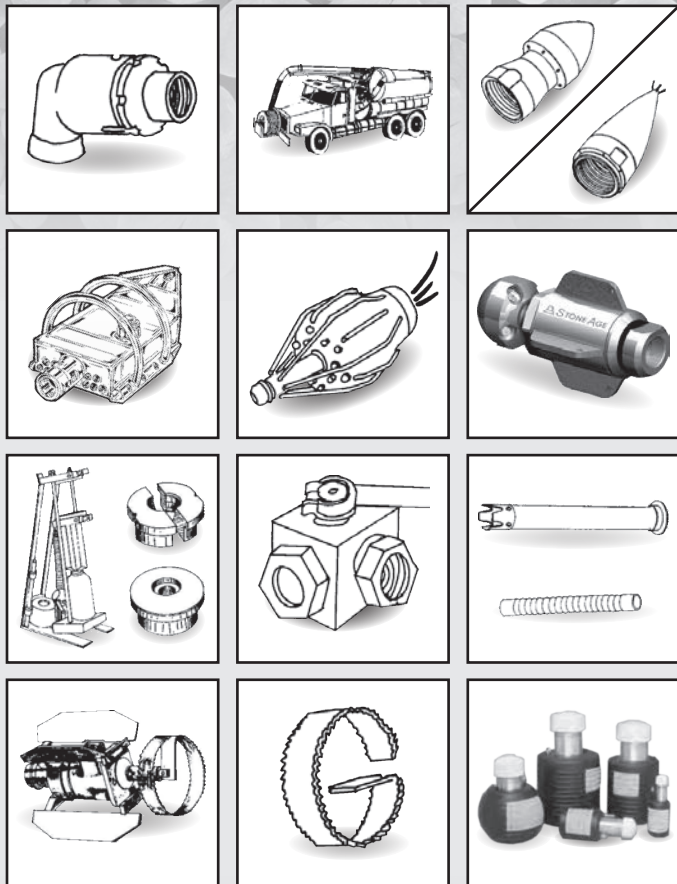
Scott Fier

MSW: Tell us a little about the history of American Highway Products and how it got started.

Fier: My father, Raymond Fier, started AHP in 1978. He was a graduate of Case Western Reserve with a degree in mechanical engineering. In the early '70s he started his own engineering consulting company and designed only new machinery — machines that did not exist at
(continued)



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Turnbuckle risers are installed in front of the paving operation, which saves time and eliminates additional road or lane closures.



“American Highway Products caters to projects that involve utility structures that need adjustment to grade.”

Jason Downing

Downing: The topic of manholes reaches a wide range of utility service providers and municipal departments throughout the country. The majority of underground utilities — sewer, water, electric, stormwater, phone, etc. — have manholes. They're important to all those different providers to gain access for inspections, maintenance and upgrades.

that time. He was considered a mechanical genius. He enjoyed the challenge of designing original machines, and designed many new mechanical products that were patented by his customers. Some of the projects he worked on included NASA's crawler and satellites, truck suspensions, automatic welding machines, railroad maintenance machines and things for many other industries.

This changed in 1977. He was stuck in traffic in Cleveland, Ohio, on the way to a meeting. He witnessed a man installing a four-segmented cast iron manhole riser. He watched the man struggling to expand the bolts, going around to each bolt, turning, then on to the next bolt until he dropped his wrench into the sewer. He thought, “There must be a better mechanical way of doing that.” Raymond went to work at age 48 designing and creating four patented products for American Highway Products over the next few years. He designed the machines to make the product as well. Our ring-rolling machine can roll a ¾-inch-thick bar extremely accurately in 45 to 70 seconds, depending on bar size. It's the key machine in making our product precise.

In 2016, I designed a fixture to make 1.5 million different sizes of manhole risers, made two of the fixtures and then added robotic welding to both. It is the first time Lincoln Electric ever used two lasers and touch sense on one fixture to weld 1.5 million different sizes, so they did a case study on it.

MSW: Why are manholes such a universally important topic for municipal utilities?

Fier: A manhole allows the maintenance crew to access the utility. It is the only way to quickly access the utility and diagnose a problem. They must be kept to grade on road maintenance projects and always accessible by maintenance crews.

MSW: What's the most common problem you see your municipal customers facing?

Fier: Finding a manhole riser that fits their casting, does not rattle loose in traffic, receiving it quickly, and finding the correct riser height for the job.

Downing: It is critical to our infrastructure that access to manholes is convenient. Manholes come in a variety of styles and sizes, which can be problematic when bringing them up to grade during asphalt resurfacing projects. Finding a company that can manufacture exactly what's needed for quick and reliable adjustment to the new grade is a common problem. Our customers need to get a reliable product fast.

MSW: Tell me about the Pivoted Turnbuckle Riser and how it was developed.

Fier: Our patented, pivoted-at-both-ends Expandable Manhole Riser mechanically expands and contracts without creating a built-in moment in the linkage causing it to bend or break when expanded or contracted.

Downing: The Pivoted Turnbuckle Manhole Riser was developed and patented by Raymond Fier, P.E. It wasn't just the pivoted turnbuckle design that took the product to the top; the engineering and design of the manufacturing machinery used to get the final product also contributed to the success.

MSW: What does the full suite of AHP products provide for municipal utilities?

Fier: Our main product is our Pivoted Turnbuckle Manhole Riser used to raise the lid to a new grade when repaving the streets. We also manufacture a compression Valve Box Riser used in small, round utilities such as

(continued)

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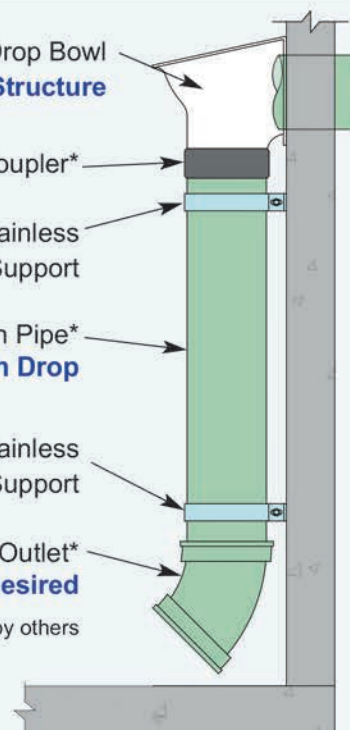
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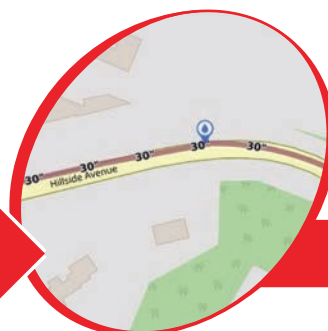
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In addition to its products, American Highway Products designs the machines that make the products, like this robotic welder. The company's jobshop manufacturing approach allows it to make exactly what its customers need based on their dimensions.

water or gas valves in the street. Another riser we offer is for catch basin/inlet storm grates. We also offer inclined risers for manholes and catch basins/inlet risers. We offer a rubber adjusting ring (Flex-O-Ring) used for new construction or rehab of manholes.

For mill & fill projects we offer rubber ramps to protect motorists from the utility's exposed edges after the street is milled. It eliminates having to ramp each utility with cold patch and then having to remove it before paving. Our Manhole Safety Ramp is used for the manholes and our Safety Ramp is used for the transverse milled edge at the beginning and the end of the milled road, steel plates or bridge deck.

We also offer the EZ-Lift tool for removing concealed pick-hole lids, the ID Locator for finding paved-over utilities and our Sewer Lid Seal Kit to stop rattling lids and seal out I&I.

MSW: How has your product line evolved to better meet the needs of customers with aging infrastructure and limited budgets?

Fier: Our riser lowers the cost, project time and liability of bringing utilities up to a new grade. First, the average cost of digging up a frame, resetting it and backfilling with cement or asphalt is \$500 to \$1,000 per adjustment. A typical Pivoted Turnbuckle Manhole Riser cost is around \$120. Second, our risers are installed in front of the paving operation, eliminating closing off the road to adjust utilities. That saves a large amount of time compared to a manual adjustment of manhole casting. It also eliminates liability of preforming the manual adjustment around active lanes.

Downing: We manufacture risers in a way that you could consider jobshop manufacturing. What that means is there is no standard size we make — we work off the dimensions provided by our customers to make exactly what they need. This helps those customers using older castings get the size

riser they need to adjust them rather than buying a new frame and lid or manually adjusting the structure.

MSW: Is your product line aimed more at infrastructure rehabilitation or new construction?

Fier: Our manhole riser, catch basin/inlet risers, valve box risers, safety ramps and manhole safety ramps are used on infrastructure rehabilitation. Our rubber adjusting ring is used on new construction.

MSW: What differentiates you from the competition?

Fier: Our Pivoted Turnbuckle Manhole Riser is the most efficient, powerful, expandable riser available. Our service is five business days to manufacture. We manufacture over 1.5 million different manhole riser sizes and our riser heights start at ¾-inch and go up in ¼-inch increments. We also offer Inclined Manhole Risers and Catch Basin Risers that allow you to change the angle of the manhole lid or storm grate to match the new crown of the road.

Downing: American Highway Products caters to projects that involve utility structures that need adjustment to grade, whereas our competitors offer many different products for applications other than utility adjustments. This is why we are able to provide a product to meet their specific manhole requirements with faster turnaround times than our competitors.

MSW: Do you sell direct to contractors and utilities or go through distributors?

Fier: American Highway Products covers 30 states directly. In the other 20 states we have 14 factory representatives. All of Canada is covered by factory representatives.

Downing: With so many different styles and designs it is not always possible to have a stocking distributor. We prefer to have factory representatives that have direct contact and experience with our target audience.

MSW: What's coming up for AHP in 2021 and what can customers expect out of you in the future?

Fier: Product reliability and service is what we are known for. That will never change.

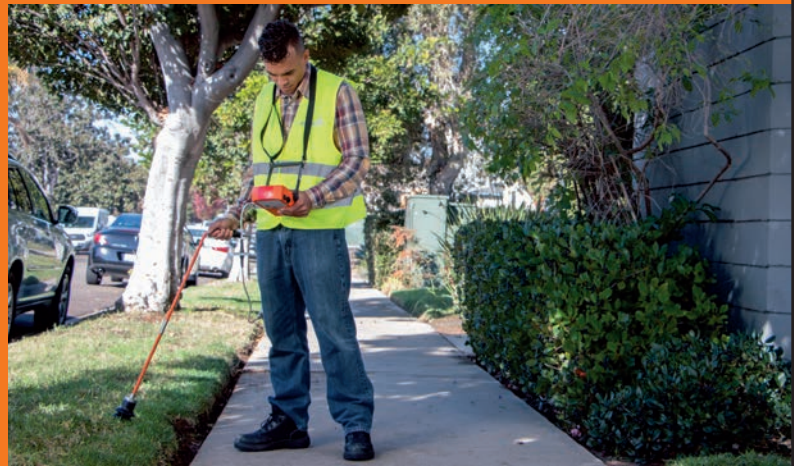
Downing: We continually upgrade equipment and do extensive training throughout the winter months. This helps us every year to be prepared to provide top-notch service for all our customers.

MSW: What else would you like people to know about American Highway Products?

Fier: We are an easy company to do business with. Over half our customers have been using our product for 15 to 40 years. That shows great commitment from our customers for our products and services.

Downing: We want to make all customers feel confident we will be there for them when they need us. We accommodate rush orders every day and strive for only excellent reviews. We understand that situations come up that require our product fast and our goal is to keep our customers' paving operations moving, not being at a standstill because they need risers. ♦

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ONGOING ADVOCACY FOR OUR INDUSTRY

NASSCO representatives present policy recommendations to congressional leaders

By Sheila Joy

While COVID has disrupted the way we do business, in some cases it has provided new and unexpected opportunities. NASSCO's nimble development of virtual training for PACP and ITCP is one example; meeting with congressional leaders to advocate for the protection of our buried assets is another.

For the past three years, since I have served as executive director of NASSCO, a small group of members have gathered in Washington, D.C. during the month of December to advocate for underground infrastructure funding. This past December our annual fly-in looked very different.

During the week of Dec. 7, 2020, under the superb guidance of our government relations consultant, Steve Dye of Nexus Government Relations, NASSCO conducted 30 virtual meetings with congressional leaders from across the country. In many cases, the senators or members of the House of Representatives met with us directly, which is something that I believe was made possible by the virtual format of our discussions.

Steve Dye and I prepared and then joined NASSCO members — constituents who were paired with congressional leaders from their home states — on each of the 30-minute virtual meetings to share the critical need to support funding for underground infrastructure:

- There are an estimated 19,700 wastewater pipe systems in the U.S., comprising approximately 800,000 miles of sewer pipe.
- The American Society of Civil Engineers gives U.S. wastewater and stormwater infrastructure conditions a D+.
- The EPA estimates that at least 23,000 and up to 75,000 sanitary sewer overflow events occur in the United States each year due to structural failure, blockages, and overflows.
- Diminishing of wastewater collections systems impacts public health, the environment and the success of businesses large and small across America.

While the term "infrastructure funding" may conjure the image of roads, bridges and airports, what many people — even our government leaders — do

not understand is that without a solid underground infrastructure, that beautiful new road may just collapse, wasting significant taxpayer dollars.

NASSCO's position is very clear, and during our virtual fly-in we were able to share three very specific policy recommendations and requests:

1. Increase federal funding and financing for wastewater and stormwater collections infrastructure
2. Strengthen asset management requirements and funding
3. Maintain regulatory compliance enforcement

While NASSCO's first policy recommendation, to increase funding, is the primary request, we believe it is important to ensure these funds are spent appropriately through proper asset management requirements and funding, especially for those communities that lack financial or technical resources. Additionally, NASSCO recommends full funding annually to federal programs and offices that directly and indirectly ensure that the Clean Water Act and National Pollution Discharge Elimination System permits remain in full regulatory compliance.

All virtual meetings with congressional leaders last December resulted in positive results, with each of them understanding the need, appreciating the policy recommendations, and promising to utilize NASSCO resources to better understand the issues and use us, and our members, as valued resources.

As we round the corner into the second quarter of 2021, it is important that we continue to communicate with Capitol Hill on the ever-changing funding requirements and opportunities, and with virtual platforms our meetings no longer need to occur just once each year. Through NASSCO's Sewer System Heroes campaign, which is open to members and nonmembers, you can quickly and easily communicate with your elected officials via an automated email that is updated frequently to address the shifting climate in infrastructure funding.

To learn more about specific issues affecting our entire industry, to download NASSCO's full policy recommendation document, and to watch our overview video, please visit www.nassco.org/government-relations. ♦

NASSCO (National Association of Sewer Service Companies) is

located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104; 410-442-7473; www.nassco.org

Sheila Joy is executive director of NASSCO. She can be reached at director@nassco.org.

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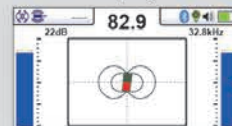
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MAINLINE TV INSPECTION AND LOCATION

By Craig Mandli



CRAWLER CAMERAS

Aries Industries Mobile Pathfinder System

The **Mobile Pathfinder System** from **Aries Industries** is a lightweight, portable system for accurately inspecting mainlines that are 6 inches or larger. It includes a powerful transporter, camera and lightweight reel; these components are operated by an all-in-one remote control. The transporter comes in a variety of wheel sizes and is equipped with a rear-viewing camera and an adjustable electric lift to keep the camera centered in a range of pipe sizes. It features a WiperCam pan-and-tilt camera with an in-the-pipe cleaning system and field-replaceable wipers. The camera has a 300-degree viewing angle and LED lighting system to capture pipe details and ensure accurate assessments. The lightweight reel has 1,000 feet of low-friction, multiconductor cable, making the system fully portable. **800-234-7205; www.ariesindustries.com.**

2. EnviroSight ROVER X

The **ROVER X** inspection crawler from **EnviroSight** lets an operator control inspections, view and record digital video, log observations, generate reports and link directly to asset management software. All these capabilities are packed into a simple, three-piece layout, with no CCU or other components to clutter the workspace. Twelve wheel options — plus camera lift, carriage and illumination accessories — mean it transforms in seconds to inspect any size line. The crawler is six-wheel drive with proportional steering to navigate past obstacles and has overlapping wheels to climb offsets. Powerful motors and a geared six-wheel drivetrain maximize travel range. It is built on an expandable digital backbone, with the ability to add side scanning and laser profiling, view data from onboard sensors, automate tasks with macros and measure defects on screen. Its firmware updates automatically to the latest features. **866-936-8476; www.envirosight.com.**

3. Ratech Electronics Mini Crawler PNT

The **Ratech Electronics Mini Crawler PNT** is a self-propelled, four-wheel-drive multiconductor camera transporter. The 12 super-bright LEDs with variable intensity light the way through 5- to 30-inch-diameter pipes. Using the full 360-degree-rotation pan-and-tilt camera, users will be able to see defects and obstructions more closely and in more detail. This same

camera head is interchangeable with the head on the company's push camera system. The power and controls to operate the crawler are in a handy remote control device. It comes with a manual lift and built-in 512 Hz sonde for locating purposes. **800-461-9200; www.ratech-electronics.com.**

4. Spartan Tool Explorer

The **Explorer** modular camera system from **Spartan Tool** has a control box that is compatible with five different pushrods up to 400 feet in length, letting the user quickly adapt to any environment. Included WinCan software allows the user to map full plumbing systems for future reference, and files can be saved to a WinCan account, the cloud, external USB drives and the system's internal storage. The stainless steel camera head provides a crisp, color picture to the superbright, sunlight-readable LCD. Change out reels to create a system that provides the ability to tackle any size job. **800-435-3866; www.spartantool.com.**

5. Subsite Electronics Lateral and Mainline Inspection System

The **Lateral and Mainline Inspection System** from **Subsite Electronics** is a fully integrated single-conductor-technology lateral launch system that performs mainline and lateral pipeline inspections simultaneously. This second-generation system uses picture-in-picture or dual video monitors and can inspect mainlines up to 500 feet in length and laterals of up to 200 feet. It can be used to inspect mainlines from 6 to 24 inches and lateral lines from 4 to 8 inches in diameter. It has a 40:1 zoom, pan-and-rotate mainline camera with auto iris and autofocus, a color rear-view camera, tilt connector for easy deployment, and a high-resolution RodStar lateral camera. It offers a dual video monitor view format that lets the user view the mainline and lateral simultaneously. The six-wheel-drive tractor has three forward speeds, reverse and freewheel. **800-846-2713; www.subsite.com.**



6. TruGrit Traction TruGrit STEEL
TruGrit STEEL crawler wheels for 10- to 15-inch pipelines from **TruGrit Traction** are universal-fit stainless steel carbide grit camera crawler wheels. With custom reusable hub adapters, the wheels will fit on wheeled crawlers manufactured by Aries, CUES, RapidView IBAK, Subsite, EnviroSight and Proteus. Once purchased, the adapters can be used to fit all of the TruGrit family of wheels, including the solid steel and poly gritted wheel for 8-inch pipe. Simply purchase the reusable hub adapters one time, and then purchase new TruGrit wheels as needed. **407-900-1091; www.trugrittraction.com.**

ELECTRONIC LOCATORS

7. General Pipe Cleaners Gen-Eye Hot Spot
 The **Gen-Eye Hot Spot** pipe locator and transmitter from **General Pipe Cleaners** includes a total field antenna and on-screen icons to help lead users to their targets without a long learning curve. It can be used to quickly and accurately locate inspection cameras, sondes, active power lines and utility lines. Rated at IP65, it is water resistant, dustproof and dirtproof. The 5-watt transmitter, in tandem with the locator, makes finding buried utilities quick and easy. More power means more signal to locate. Choose one of four frequencies to best suit the application. **800-245-6200; www.drainbrain.com.**

8. Radiodetection RD8200G
 The **RD8200G** advanced precision locator from **Radiodetection** has a built-in gyroscopic measurement system, which alerts the user of excessive swing, driving correct usage. A high-performance audio system allows operations in noisy environments. A waterproof speaker housing is positioned to provide maximum feedback to the operator and tuned for optimum resonance for the frequency tones chosen. Five power output levels assist technicians working in challenging environments. The locator handle vibrates when alerts activate, leaving the operator to concentrate on the job at hand. It records details on how, when and where it is used. This information can be utilized to drive best practices, identify training needs and maximize operator productivity. A single or dual Bluetooth system offers a connectivity platform designed to offer future upgrades and connectivity solutions. **877-247-3797; www.spx.com/en/radiodetection.**

MAINLINE TV CAMERA SYSTEMS

9. CPI Products PoleCat
 Sometimes push inspection cameras are hard to control when not in a pipe and trying to look into ground level space. It can be dangerous to kneel down and stick your head in these places, and in some areas violates safety rules. When you need to look into a septic tank or other opening inspectors often resort to improvising ways to control their inspection camera. The **PoleCat** from **CPI Products** is designed and made for this application. Simply strap an inspection camera to it with the preinstalled Velcro, loosen the lock nut, turn to the angle desired, attach any standard broom



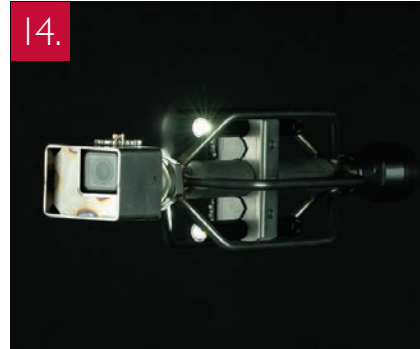
stick threaded extension pole and it's ready. It fits any push inspection camera and installs in minutes. **413-443-0925; www.cplproducts.com.**

10. CUES MPlus+ XL
 The **CUES MPlus+ XL** push system is designed for easy operation and flexibility with an all-in-one setup and quick removal of the control unit, which can be used separately. It includes a coiler configuration and pan-and-tilt camera for mainline and larger pipeline applications up to 500 feet. It integrates video observation coding, observation coding interface and digital recording. The lightweight system includes large, durable wheels for portability and a balanced footprint for stability. It is manufactured to handle rigorous field use. **800-327-7791; www.cuesinc.com.**

11. Electric Eel eCAM Ace 2 SL
Electric Eel's eCAM Ace 2 SL pipeline inspection camera system has a new battery cradle that accepts a Milwaukee M18 or equivalent battery. Battery life is six to seven hours. Other features include a self-leveling color camera, one-touch USB recording, on-screen footage counter, and wheels for easy transport and maneuverability. The system also includes a rugged stainless steel housed 1.68-inch-diameter self-leveling color camera for inspecting 3- to 10-inch lines. A flexible camera spring is designed to navigate 3-inch P-traps. An LCD monitor with AR film for optimal viewing in sunlight is encased in an anodized aluminum housing mounted to the reel. **800-833-1212; www.electriceel.com.**

12. EPL Solutions Gvision
 The **Gvision** camera system from **EPL Solutions** offers a rugged, compact solution for inspecting pipelines 3 to 12 inches in diameter. Available with 200 to 400 feet of pushrod, the reel has a stiff, yet flexible fiberglass cable that is optimized for farther pushes through turns and bends. The color camera is self-leveling and includes a powerful, convenient, always-on 512 Hz transmitter for quick and precise area determination. The antiglare LCD monitor delivers a clear, crisp picture even in direct sunlight. To record

(continued)



video inspections, connect a USB storage device or Apple mobile device directly into the USB port. The DVR outputs HD-quality videos, which can be stored and shared from a mobile device. **714-453-9760; www.epls-usa.com.**

13. Forbest Products FB-PIC3388MT-200

The **FB-PIC3388MT-200** from **Forbest Products** has a 1.5-inch self-leveling camera head (512Hz built-in sonde transmitter in the spring kit), 200-foot pushrod, and a portable control station with a 10-inch LCD screen. It is suitable for lines from 4 to 8 inches. It has a detachable and interchangeable design that allows the user to easily screw on or off parts for upgrading or repair. **877-369-1199; www.forbestusa.net.**

14. GP Sewer Cam

The **GP Sewer Cam** is made to be dropped. The heart of the jet-powered system is its durable and simple-to-use GoPro Hero 7 Black camera. Not only is GoPro camera technology affordable, its durability guarantee has made it the go-to camera to document extreme sports, where it takes a physical beating. The skid unit is compatible with 6- to 18-inch pipe, and is constructed from Type 304 stainless steel. Custom skids are available for larger pipe. GP Sewer Cam has teamed up with Arthur Products so every GP Sewer Cam comes with a custom-drilled (to buyer's jetting specs) nozzle. The unit is 4 1/2 pounds, has three screws, one moving part, and is completely made in the USA. **310-774-9468; www.gpsewer.com.**

15. Hathorn WiFi Camera Reels

WiFi Camera Reels for municipal pipe inspection from **Hathorn** are designed to work with any Apple or Android mobile device. They allow for streaming video inspections directly to a mobile device, along with recording, taking screen shots, making voice commentary and sharing video inspections seamlessly. These municipal-grade reels are compatible with 18-volt Milwaukee Tool batteries for portability and are fitted with a choice of DuraCAM self-leveling or straight view camera heads all equipped with super bright cool-running LEDs for optimal HD picture quality. **905-604-7040; www.hathorncorp.com.**

16. MyTana PGR400

MyTana's PGR400 push camera has the range and rigidity to inspect long laterals and small mains, with the choice of 325 or 400 feet of pushrod for use in lines 4 to 12 inches in diameter. The reel has a brake with adjustable drag to help manage the pushrod as the technician works. A self-leveling camera head with adjustable LED illumination delivers crisp video footage and includes a built-in 512 Hz sonde. The control box mounts securely on a full swivel bracket to position the 12-inch daylight-readable monitor for best viewing. All-digital recording lets the user save footage to internal storage or USB flash drive. Operators can also stream video wirelessly to multiple devices. The rugged frame has balanced weight and antiskid feet for easy maneuvering. A skid and camera guides for the camera head help jump offsets and navigate bends. **800-328-8170; www.mytana.com.**

17. Pearpoint P540c

The **Pearpoint P540c** offers an intuitive graphical user interface with built-in user manual, a full-size QWERTY keyboard and a choice of six different languages at launch. Context-sensitive, ATM-style buttons on both sides of the display provide access to the easy-to-use menus while an additional seven buttons offer direct control of the most-used functions. It has the capability to use the newly designed command module with any reel system. This will provide contractors the flexibility of having multiple rods for different uses while only needing one command module. **800-688-8094; www.pearpoint.com.**

18. RIDGID SeeSnake Compact C40 with CS6x Versa Camera System


The **RIDGID SeeSnake Compact C40 with CS6x Versa Camera System** features a 25 mm self-leveling camera head and 131 feet of flexible push cable that is suitable for small/restricted branch lines with tight turns and shorter runs in main laterals. It includes a high dynamic range image sensor, TiltSense inclinometer and integrated TruSense technology. Its quick-release docking system makes it suitable for pairing with the CS6x Versa digital reporting monitor. An ergonomic, all-in-one solution for capturing media, the monitor has a 5.7-inch daylight-viewable display that provides a crisp, clear in-pipe image. It offers multiple mounting positions with an adjustable kickstand to suit job site conditions, and can be tilted to the desired viewing angle while docked or removed for convenient placement. **800-474-3443; www.ridgid.com.**

(continued)

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ENGINEER & CONTRACTOR AGREE: Sealing & Stabilizing Service Laterals is Essential

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We know from the US-EPA, nearly half the flow to treatment facilities nationwide is clean groundwater. That means twice the cost to pump, transport, and treat the influent. The question is: are there proactive measures we should take to mitigate I&I with a short term pay-back on investment?

Based on experience, our four experts will weigh-in on all corrective methods, outline a holistic approach to manage the cause of I&I, and pay special attention to service laterals and connections to mainline pipe because of cost, value, and reward.

Hosted by
Luke Laggis, Editor



Interactive learning is better.

Take-aways for Attendees

- Identify I&I sources and how to mitigate each
- View research project for needed clarity on methods
- Build consensus on ROI with the Facts
- Gain Decision Support document on sealing laterals

DATE: March 11, 2021
 TIME: 2:00PM (EST)
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Expert Presentations

Marc Ancil, President,
Logiball, Inc.

Manufacturer of inflatable pipe plugs & sealing solutions for underground structures since 1983. Marc has served on the NASSCO Board and as President in 2008, and currently serves as Chairman of ICGC.



Randy Belanger,
Sales Manager, Visu-Sewer, Inc.
Providing contracting services to keep underground infrastructure optimum. Randy has driven the sales & business development practices of Visu-Sewer for 16 years and currently serves on the Board of Directors at NASSCO.



George Kurz, P.E.,
DEE Independent Researcher
Over 33 years working with state and municipal agencies to measure and correct I&I problems, George conducted groundbreaking studies to analyze 500 sewer systems.




Michael Vargo, Vice President
Prime Resins, Inc.
Recognized world-wide, Prime Resins is well-known for its infrastructure repair solutions and Mike has devoted much of his professional career to the well-being of customer and partners.



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RECORDING/ARCHIVING/DATA DEVICES

19. Fluid Conservation Systems PermaNET SU

The **PermaNET SU** correlating noise logger from **Fluid Conservation Systems** combines a leak noise sensor and 4G LTE cellular communications technology into a compact single unit. Designed specifically for smaller and more challenging installation environments, it is fully compatible with the online data viewing and analysis platform, PermaNET Web. It allows leakage teams to monitor the status of each logger deployed from a map-based web dashboard on any internet-enabled device. Once the presence of a leak has been identified, secondary measures can be used to check and remove “false positives” and correlate the position of the leak. **800-531-5465; www.fluidconservation.com.**

20. Sensoray Model 4023

The **Model 4023** from **Sensoray** is a compact high-definition digital video recorder designed for embedded OEM applications. It captures and records analog HD video (TVI, CVI, AHD) and stereo audio to USB storage media and can capture JPG images on the fly without interrupting stream recording. It provides both DVI and composite NTSC/PAL outputs to allow live or recorded video and JPG snapshots to be displayed on an external HD or SD monitor. Date and time are maintained by a real-time clock with battery backup. To implement a complete embedded DVR, connect power, a keypad or keyboard, and a USB storage device. **503-684-8005; www.sensoray.com.**

SMOKE LOCATOR

21. Superior Signal smoke generator

Smoke generators from **Superior Signal** locate sources of surface inflow resulting in wet-weather sanitary sewer overflows. A fast, inexpensive and easy way to find leaks and faults in collections systems, smoke candles provide visible smoke to detect more faults at longer distances and come in sizes to meet any need. Smoke candles, blowers and fluid systems for smoke testing are available. **800-945-8378; www.superiorsignal.com.**

SOFTWARE

22. RapidView IBAK North America IKAS Evolution

IKAS Evolution sewer analysis software from **RapidView IBAK North America** is in full control of acquisition and sewer data analysis. This software was developed with modularity in mind. The user interface is standard throughout the software platform, so once a user is familiar with one program, they will already know their way around the next one. It is available in four base bundles with more than 24 extension options available for advanced inspections. Included is a powerful tool called 3D GeoSense, where the sensor tracks the movement of the camera as it travels through the lateral, capturing distance, position and depth in 3D space. This opens up new options for acquiring and using positional data for underground utilities. **800-656-4225; www.rapidview.com.**

23. WinCan VX

WinCan VX makes it easy to collect detailed, standards-compliant inspection data. It identifies trends, pinpoints hotspots, prioritizes maintenance and lets the user forecast budgets. It offers users cloud compatibility for securely sharing and publishing inspection data, images and video; a customizable interface that adapts to any screen size; integration with the newest video technology; full-featured Esri GIS implementation for easy mapping and infrastructure data management; and compatibility with all NASSCO data collection standards, including PACP, MACP & LACP 7.0. It works with all brands of sewer inspection technology—including crawlers, zoom cameras and push cameras—as well as all major applications of side scanning, laser profiling, manhole scanning and other emerging technologies. Its modular design lets the user expand capability as needs evolve. Add-on modules support emerging technologies like side scanning, laser, sonar and 3D visualization. **877-626-8386; www.wincan.com.**

SURVEYING/MAPPING

24. Vivax-Metrotech VMMap Utility Mapping App

The **VMMap Utility Mapping App** from **Vivax-Metrotech** records data from the field, which is instantly available online via the VMMap Cloud web portal, or can be shared using the email function in the app. Location data is obtained from the mobile phone, or an external GPS device of your choice. Depth readings, GPS coordinates, the distance between locates and more are captured as data logs and can be saved as xls, txt, shp, and kml extension files. The image capture feature allows the user to attach a JPG format image to the surveys. This is useful to add points of interest or a snapshot of the completed survey. The app generates maps in real time, giving confidence to the field technician that the data being collected is accurate. **800-446-3392; www.vxmt.com.** ♦



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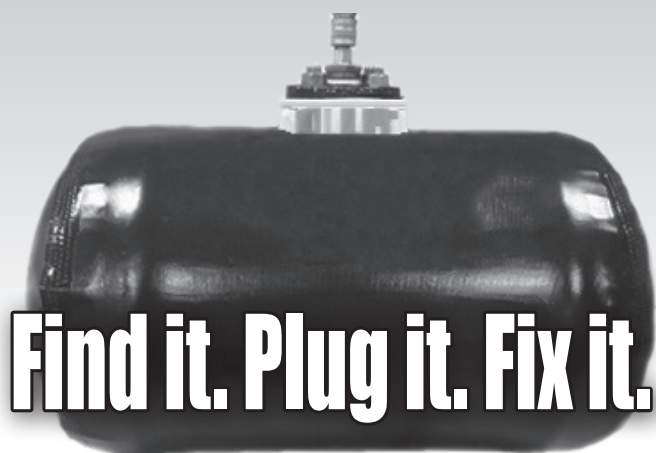


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Electrode leak location helps Florida utility identify infiltration

Problem:

After spending decades and millions of dollars rehabilitating sewer pipes across its service area, a large coastal Florida utility realized its legacy pipe inspection program was failing to reduce excessive infiltration.



Solution:

The utility engaged **Electro Scan** to perform a **Focused Electrode Leak Location** pipe inspection program, comparing equal lengths of 50-year-old unlined vitrified clay pipe, newly lined cured-in-place pipe, and 15-year-old CIPP liners to evaluate its efficacy to support improved rehabilitation strategies.

RESULT:

Remarkably, the 50-year-old unlined VCP performance for controlling I&I was two and one-half times greater than the newly rehabilitated CIPP liners. This single finding resulted in an immediate priority to inspect all remaining VCP to identify which pipes do and do not require further attention at this time. The cost avoidance benefit of this alone will exceed several million dollars. A side-by-side comparison was also performed between FELL and legacy CCTV inspection results. By stark contrast, FELL documented 1,188 individual infiltration defects, compared to just 34 defects identified by CCTV inspection. More importantly, FELL inspection found 74% of customer taps were defective, compared to only 3% seen using CCTV inspection. **800-975-6149; www.electroscan.com.**

Municipality conducts two studies to determine value on AI

Problem:

Two CCTV sewer inspection projects similar in scope in Silicon Valley, California, were carried out by a municipal services contractor one year apart. Both projects required cleaning and CCTV inspection of 6- to 12-inch VCP sanitary and combined sewer mainlines, and they were carried out primarily by the same individuals using the same vehicle chassis outfitted with the same type of robotic CCTV systems.



Solution:

The intent was to study what's made possible through an AI technology called **AutoCode** from **SewerAI**, which automatically recognizes pipe conditions in CCTV sewer data. When AutoCode predicts a condition in a CCTV image, it brackets that part of the image and

assigns a detailed label, logging the predicted condition and its distance in the pipe. The output is then reviewed by an industry-certified analyst to create a final condition assessment report. To compare these two methods, and to see if there could be both a cost savings and improvement in efficiency through the use of AI, SewerAI documented daily production (in total linear feet inspected) for each crew, for each day, for both projects, with Project A being completed using the traditional manual real-time data entry method, and with Project B being completed using the new AI-enabled workflow where operators did not manually enter data during the inspections.

RESULT:

A 98.95% increase in production when implementing the AutoCode-enabled workflow in the field. On Project A, crews yielded a daily average of 1,352 linear feet inspected per day. Project B produced a daily average of 2,691 linear feet per day. **855-952-2200; www.sewerai.com. ♦**

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WORTH NOTING

PEOPLE/AWARDS

Mike Reynolds, who led the Buffalo Grove (Illinois) Public Works Department, retired, concluding a 37-year career in public service that included stormwater service duties.

Zak Bradley was hired as the director of public works for the city of Falls Church (Virginia). Overseeing the city's stormwater system is among his responsibilities.

The Illinois Section of the American Society of Civil Engineers presented **DuPage County Stormwater Management** and the village of **Bensenville** with an Outstanding Civil Engineering Achievement Award for the Redmond Reservoir Expansion Project.

Advanced Drainage Systems received the Wisconsin Department of Natural Resources 2020 Recycling Excellence Award for Innovation for its performance with a recycling program that surpassed the DNR's expectations. ADS products are used in various industries, including stormwater. ♦

CALENDAR

April 12-16

Center for Watershed Protection National Watershed and Stormwater Conference, event will be a virtual conference. Visit cwp.org.

April 15-16

American Water Resources Association National Capital Region Water Symposium, event will be a virtual conference. Visit awra.org.

June 13-16

American Water Works Association ACE21 Conference, San Diego, California (options available for attending either in person or online). Visit awwa.org.

July 11-14

American Society of Agricultural and Biological Engineers Annual International Meeting, event will be a virtual conference. Visit asabe.org.

July 19-21

American Water Resources Association Virtual Summer Specialty Conference. Visit awra.org.

Aug. 29-Sept. 1

American Public Works Association Public Works Expo (PWX), America's Center, St. Louis. Visit apwa.net.

Sept. 13-16

StormCon Milwaukee and WaterPro Conference, Wisconsin Center, Milwaukee, (parallel events being held on same days and location). Visit stormcon.com or waterproconference.org.

Oct. 6-9

American Society of Civil Engineers 2021 Convention, Hilton Chicago Hotel, Chicago. Visit asce.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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SAERTEX celebrates groundbreaking on new facility

SAERTEX multiCom held a groundbreaking ceremony to launch construction of its new 113,000 square foot manufacturing facility in Huntersville, North Carolina. The company has been operating in Huntersville since 2009. The new facility will allow the company to expand production capacity and add resin impregnation capability, something that had previously been outsourced. SAERTEX multiCom will retain 34 existing positions and add 45 new jobs over the next five years.

Brown and Caldwell hires new Pittsburgh leader

Brown and Caldwell welcomed Heather Dodson as its new Pittsburgh leader. With 17 years' experience in water, wastewater and stormwater management design and permitting, land development and municipal engineering, Dodson will be responsible for operations management, providing client service and expanding Brown and Caldwell's regional presence and talent pool to meet market needs.

120Water and PUR Community join forces on water programs

120Water, a digital water platform in use at more than 180,000 sample sites across the nation, has joined forces with PUR Community, a new municipality initiative created by PUR, a Helen of Troy brand, to simplify point of use drinking water programs for utilities, municipalities and facilities, including lead remediation programs. With this partnership, 120Water can offer PUR pitcher and filter kits as part of its digital water platform to manage and modernize complex water programs and to help stay compliant with EPA regulations, including the upcoming revised Lead and Copper Rule.

ITpipes welcomes new business development manager

Mark Grabowski has joined ITpipes as business development manager. As business development manager, he will oversee enhancing the customer experience, improving relationship marketing and managing the overall brand and marketing activities for the firm's inspection software platform.



Mark Grabowski

Grand opening of Renegade Equipment, Sales and Consulting

Mike Grieco announced the opening of his new business, Renegade Equipment, Sales and Consulting, based in Longmont, Colorado. The company is a specialized construction equipment, sales and rental-based company committed to servicing the needs of buyers and sellers throughout the process of acquiring or selling specialized equipment.



Mike Grieco

Centrisys/CNP introduces new name for AirPrex

Midwest-based Centrisys/CNP has introduced a new name for one of the company's nutrient recovery technologies, previously called AirPrex, which will now be called MagPrex in North American markets.



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Anue Water names J.H. Wright as exclusive channel partner

Anue Water Technologies announced that J.H. Wright and Associates is the exclusive new channel partner for the sales and distribution of Anue's eco-friendly product line throughout the Gulf states of Louisiana, Mississippi, Alabama, the Florida Panhandle and Georgia.

Vactor launches virtual tours

Vactor Mfg., a subsidiary of Federal Signal Corp., announced the launch of contactless, virtual tours that offer customers a detailed and photorealistic viewing of equipment. The tours are now available for many of the company's models, including the Vactor 2100i PD and the Vactor 2100i Fan, and are accessible through Vactor authorized dealers. The guided 3D tours leverage state-of-the-art software to develop high-quality and realistic digital models, allowing visitors to walk around the equipment and learn more about cutting-edge technology and features.

Inframark partners with New Mountain Capital

Inframark announced that it has partnered with New Mountain Capital, a growth-oriented investment firm with \$28 billion in assets under management. The investment provides access to capital that enhances Inframark's capacity for growth while maintaining and building on its leadership position in the outsourced water services market. Terms of the transaction were not disclosed.

Vortex divides products and services into separate divisions

In a move to streamline its operations, Vortex Companies has divided its products and services into separate operating divisions. To lead this change, Andrew Gonnella, EVP products, and Wes Kingery, EVP services, have been promoted to president of their respective new operating divisions.

OBIC moves into new headquarters

Owners of OBIC, SS Directional Boring, and Advanced Rehabilitation Technology, father and son team Tod and Dustin Schlachter announced a new 48,000-square-foot headquarters built to house their three businesses in Bryan, Ohio. The business spaces, including a 5,000-square-foot office section, a fully equipped training facility and its state-of-the-art technology area, and truck and equipment maintenance and storage, occupy the eastern half of the building. The western half is reserved for another project: a small business incubator space, available for rent or lease to local businesses. ♦

Product Spotlight

Technology helps predict future pipe failures

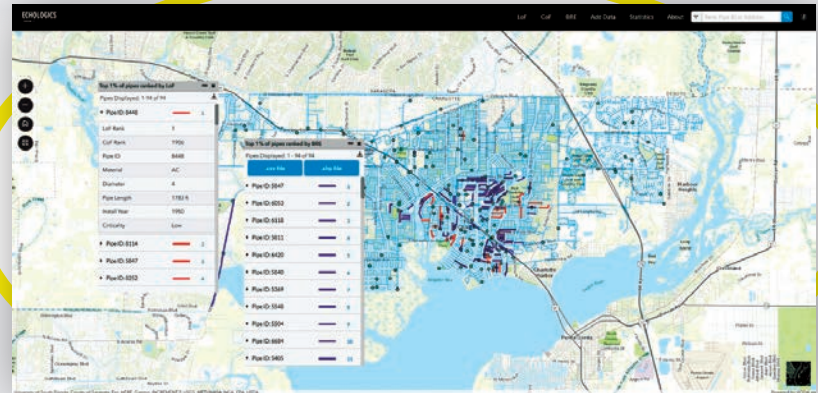
By Craig Mandli

Pipe failures can lead to significant water loss and customer service disruptions, often bringing emergency crews out in the middle of the night. Pipes that still have plenty of useful life are often replaced, draining funds that could have been used elsewhere in your utility.

That doesn't jive when managers and engineers are required to create effective operating and capital-planning programs that will result in lower nonrevenue water loss, improved customer satisfaction, and enhanced worker safety, while keeping the budget in check. That's why PipeRank technology makes sense as an affordable solution to providing accurate pipe failure estimates for justifying investment plans and rate cases. In essence, it enables water utilities to see pipe failures before they happen.

The PipeRank technology, powered by VODA.ai and delivered by Echologics, a Mueller brand, is designed to predict future failures more accurately than age-based estimates or the prior failure models that are used today.

"Aging infrastructure continues to present challenges to cities around the world," says Chad Mize, senior vice president, sales and marketing at Mueller. "Mueller is focused on developing and delivering advanced data-driven solutions to help water utilities address these challenges, leveraging technology that enables them to make critical operational decisions."



The PipeRank technology identifies pipe segments that are likely to fail in the future and assigns a corresponding business risk score. A condition assessment is then performed on the pipelines using Echologics ePulse technology to diagnose specific problems. This condition assessment makes it easy for utilities to plan operating and engineering programs by tailoring their course of action, and focusing capital expenditures and resources on the highest-risk assets. The system can produce business risk profiles for one to 20 years, helping utilities reduce pipe failures, nonrevenue water and premature pipe renewal.

"Current industry best practice is to leverage as much desktop data as possible to identify trends and generate data-supported decisions for failure planning and capital deployment," says Eric Stacey, vice president and general manager of Echologics. "The PipeRank technology pairs available pipe degradation factors with a proprietary machine learning model to prioritize every pipe segment analyzed by likelihood and consequence of failure." 800-423-1323; www.echologics.com.

REED Bevel Boss cordless pipe bevelers

REED's Bevel Boss cordless pipe bevelers provide a safe way to bevel pipe in the field. Bevel Boss trims small- to large-diameter plastic pipe, including pipe already in the ditch. Powered by a die grinder of operator's choice, the lightweight system significantly reduces prep time by quickly and consistently beveling on multiple cuts. Adjustable for bevel length up to 1 inch, the required carbide router bits cut evenly and efficiently. Plus, the guide plate eliminates guesswork and yields a consistent result. The RPMs from the powerful die grinder provide smooth cuts when paired with REED router bits. The pipe beveler adapts to cut pipe interiors, too. To create internal bevels, add the REED interior bevel shroud with guide plate, CPBIDS. 800-666-3691; www.reedmfgco.com.



Mueller Sentryx-enabled Super Centurion hydrant

The Super Centurion hydrant from Mueller Water Products can serve as a communications hub and physical platform for both pressure moni-

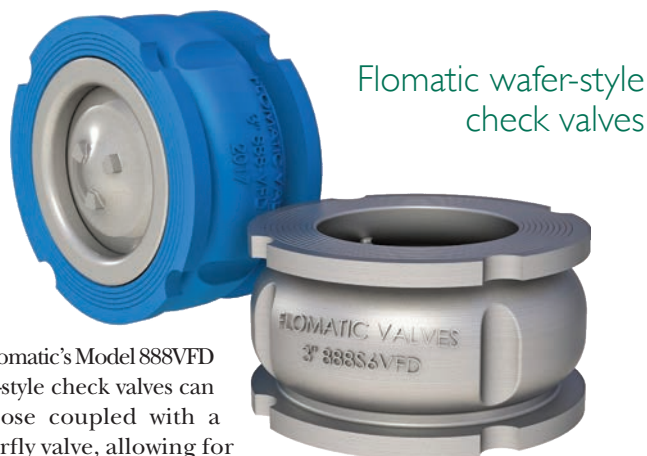
toring and leak monitoring systems. Mueller's pressure and leak monitoring solutions can be integrated seamlessly into existing water infrastructure and communicate via the cellular network to the cloud-based Sentryx Water Intelligence Platform. The Sentryx platform records and displays data communicated from the hydrant, and reports, data and notifications gathered from the platform can be easily pushed to workforce management software, billing software, meter data management or other utility software platforms. The Sentryx platform can interface with other software platforms and third-party devices to accommodate specific utility needs. The hydrant is manufactured with corrosion-resistant materials and offers a long battery life. 800-423-1323; www.muellerwaterproducts.com.



CUES QZ3 Advanced portable inspection camera

The QZ3 Advanced lightweight, portable, HD wireless video inspection pole camera from CUES can be operated by one person using any tablet. The camera is designed to provide safe viewing in industrial or environmental areas with no man entry. The QZ3 can also be used to locate lateral services or to identify blockages at manholes, access ports, or other entry

SPECIAL REPORT



Flomatic wafer-style check valves

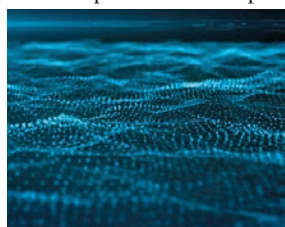
Flomatic's Model 888VFD wafer-style check valves can be close coupled with a butterfly valve, allowing for operation of the butterfly valve in an open or closed position with no interference. Its unique poppet design operates quietly and efficiently across a wide range of flow velocities, which makes it ideal for varying flow rates in VFD-controlled pumping systems. The design helps minimize flow losses and hydraulic shocks in the pump system. The spring-loaded poppet system is guided in an oversized sleeve for stability, resulting in quiet and efficient operation regardless of flow rate. The valve begins to close as flow is reduced and fully closes at zero velocity stopping reverse flow, helping to reduce water hammer shock. It is suitable for direct mounting of butterfly valves, eliminating the need for a 2- to 6-inch spool piece. The valves save energy and maintenance costs, and are rated NSF/ANSI 61 and NSF/ANSI 372, and they meet MSS-SP 125. **800-833-2040; www.flomatic.com.**

points without entering the line or structure. Added features over the basic model include motorized height and tilt, and laser distance measurements. The camera is mounted on a lightweight, telescopic carbon fiber pole that can extend up to 24 feet, and an optional 34-foot pole is available. The 1080p camera features a 360-to-1 zoom with built-in image stabilization, automatic focus and distance-to-defect measurement. Self-contained waterproof Multiple Aspheric Projection lighting, including 6 LED spotlights, works in pairs and focuses at different lengths, to provide enhanced, detailed viewing of cracks, breaks, pipe separations, scale and various defect conditions. The QZ3 Advanced also includes 2 diffused flood LED lights for evenly lit manhole inspections. **800-327-7791; www.cuesinc.com.**



Innovyze Info360.com SaaS platform

Innovyze's new Software-as-a-Service platform, Info360.com, enables water and wastewater utilities to monitor, analyze and optimize their operations using the power and convenience of the cloud. The new platform is being released with Info360 Insight, the first of multiple solutions to be developed for real-time water life-cycle management. Info360.com offers a pathway for utilities to power digital twin and transformation initiatives by unifying and con-



SPECIAL REPORT



Patterson Manufacturing davit cranes

New davit cranes are available from corrosive environment and safety experts, Patterson Manufacturing. Give your operations a lift with models in 1/2- and 1-ton capacities. The cranes exhibit the company's hallmark safety, simplicity and durability, with key features such as a reliable brake with long life and readily available parts, a hot-dipped galvanized finish, and no plastic sheaves or pulleys. They put safety and simplicity within your reach with a low-maintenance, easy-to-assemble design that is made in the USA. For over 160 years, Patterson has been a trusted supplier of winches, rigging, fittings and custom products for lifting applications in the marine, construction and mining markets. These davit cranes continue to deliver the company's promise of helping businesses run safer, easier and faster. Find out how our team and products can improve employee safety and positively impact your bottom line. **800-322-2018; www.pattersonmfg.com/davit-cranes.**

verting raw data from SCADA and IoT systems and turning it into an actionable dashboard to detect and manage critical network events, incidents and KPIs. The new SaaS platform provides a foundation for innovative new tools that use AI to help operators and engineers optimize their water and wastewater systems. **626-568-6868; www.innovyze.com.**

Rock Mills Lifter PLUS access cover lifter

Rock Mills Enterprises' Lifter PLUS complements and builds on the success of the existing Lifter, a high-quality, reliable solution to remove conventional-sized covers found in many underground networks. The Lifter and the Lifter PLUS offer an ergonomically effective tool to provide a safer, more efficient work environment for field teams. The Lifter PLUS is a more powerful solution for large-diameter, heavy access covers often found in electric utility, telecom, airport and other underground networks. The Lifter PLUS is currently being used to remove access covers over 50 inches in diameter and weighing in excess of 700 pounds. **712-451-6550; www.rockmillsent.com.**



Vermeer replaceable wing PDC hole opener

The replaceable wing PDC hole opener from Vermeer's ground-up design joins the ever-growing line of rock-focused tooling from Vermeer, targeting consolidated rock formations less than 25,000 psi. From a single 2.875-inch



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PRODUCT NEWS

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