

MUNICIPAL SEWER & WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

November 2019

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ON MILES OF FORCE MAINS

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A MODEL OF INTEGRATION

Canadian utility takes a
comprehensive approach
to sustainable operations
and environmental
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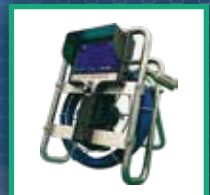
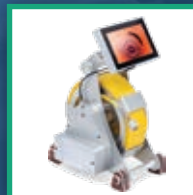
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MUNICIPAL INNOVATIONS

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Wil Wedel
Utilities Division Manager
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PRODUCT FOCUS: LOCATION AND LEAK DETECTION



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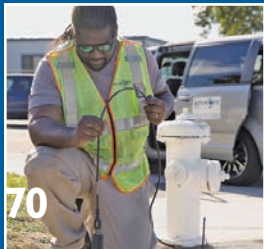
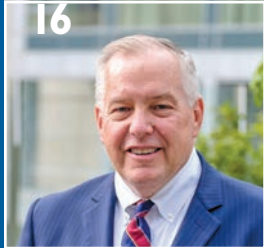
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INSIDE:

LOCATION AND LEAK DETECTION



ON THE COVER: City of Prince George Utilities Division Manager Wil Wedel has helped lead an integrated community sustainability plan designed to be a model of sustainable cities for the rest of Canada. (Photography by Terrill Bodner)



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- ◆ BETTER MOUSETRAPS: Cut through curb box corrosion
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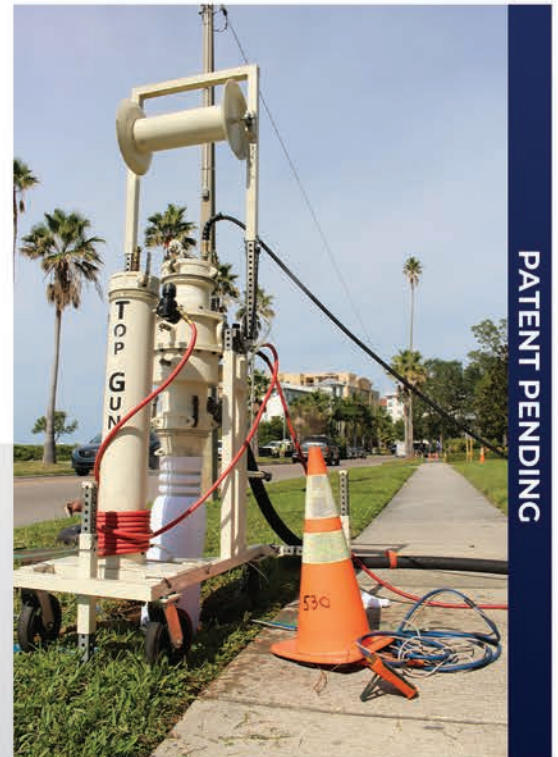
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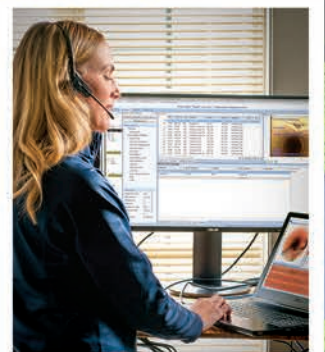
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PROTECTING THE FUTURE

The steps you take today to prepare your utilities for tomorrow will have a long-lasting impact



FROM THE EDITOR

Luke Laggis

Resiliency. Maybe it isn't the first word you thought about 30 years ago when discussing the necessary qualities of a water and wastewater utility, but if you're not talking about it now, you're behind the curve.

The world is continually evolving. Our population is growing. The climate is changing. Regardless of your politics and whether you think that last fact is a result of man-made factors, the earth's natural cycles, or God's wrath, it is a fact.

The need for resiliency is important no matter what area you serve, but it's certainly more so in some locations. Drought-proofing and ensuring a reliable supply of water for the future is critical in the Southwest. Protecting resources and infrastructure from rising sea levels is critical in

coastal areas. Preventing contamination is a major concern in industrial areas.

Hurricane Dorian is roaring up the East Coast as I write this. It's the type of scenario you can't prevent and can never truly be fully prepared for, but it's a good case in point. Utilities that haven't attacked inflow and infiltration are going to experience sanitary sewer overflows. Pump stations will be knocked out. Stormwater systems will be flooded. And in those floods, pollution and contamination become very real health and safety problems.

There are many forward-thinking utilities that have been addressing these types of issues. The Plainfield Area Regional Sewerage Authority in New Jersey immediately comes to mind. The utility's efforts to improve operations and the efficiency of its collections system were profiled in *Municipal Sewer & Water* in 2014. Inspection, sliplining, grouting, and other I&I reduction and flood control measures have all helped move the utility from the New Jersey Department of Environmental Protection watchlist to one that's

winning awards from the Water Environment Federation.

Miami, profiled here in 2017, is another utility that comes to mind. The city's Water and Sewer Department is spending billions to overcome climate change (including rising sea levels), replace aging infrastructure, address the threat of cybersecurity, comply with new regulations and still meet the demands of economic growth and an expanding population. WEF named the Miami WASD a Utility of the Future, thanks to its efforts to build resiliency into its systems.

And in this issue of *MSW*, you'll read about the Prince George Utilities Division in British Columbia, another utility focused on preparing for the future. The utility operates a unique caisson-lateral system that delivers the city's drinking water, a sewer program that focuses on source control, stormwater management to reduce pollution of nearby rivers and the operation of an energy recovery loop that heats downtown buildings.

It's all part of an integrated community sustainability plan designed to be a model of sustainable cities across Canada and centered on the concept that a healthy environment supports a robust and stable economy.

Some issues are unique to specific geographical areas. Some issues affect all utilities. Regardless, you all have a responsibility to the future of your communities, and to the health and safety of all who follow you. I hope these stories can help you along your way.

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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BETTER COLLABORATION

Building Water-Efficient Cities

How much water single-family residences use is closely related to a community's built environment, according to recent study led by the University of Arizona. In particular, design factors such as vegetated land cover, housing density and lot size appear to have a strong impact on water use.

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OVERHEARD ONLINE

“There will be times that life throws you a curveball and going to work fatigued is inevitable. This is where technology can help.”

— *Mitigating the Risks of Worker Fatigue Through Tech and Safety Culture*
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PROPER WET-OUT PRACTICE

Preventing Root Intrusion

Have you ever experienced a root growing through a CIPP liner? The author of this online exclusive article has, and he turns that failure into a great teachable moment. Author John Heisler of Pipe Lining Supply and Quik-Lining Systems shares best practices for the wet-out stage of CIPP lining jobs. mswmag.com/featured

COOPERATIVE STRATEGIES

Water Supply Resiliency

As with the stock market, climate change requires a diversified portfolio of solutions. California Gov. Gavin Newsom recently signed an executive order to develop a comprehensive strategy for making the state's water system climate-resilient. The order calls for a broad portfolio of strategies to deal with outdated water infrastructure, unsafe drinking water, flood risks and depleted groundwater aquifers.

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A MODEL OF INTEGRATION

Canadian utility takes a comprehensive approach to sustainable operations and environmental stewardship

By Jim Force



Brandy Greenfield of the Prince George Utilities Division sets up an acoustic sewer main inspection with an InfoSense SL-RAT. (Photography by Terrill Bodner)

From energy to drinking water, sanitary sewers to stormwater management, the city of Prince George (British Columbia) Utilities Division does it all — in a sustainable way that limits the environmental impact all around the system.

Headed by Wil Wedel, utilities manager, the Prince George team is responsible for a unique caisson-lateral system that delivers the city's drinking water cost-effectively, a sewer program that focuses on source control, stormwater management to reduce pollution of nearby rivers, and the operation of an energy recovery loop that heats downtown buildings.

It's all part of an integrated community sustainability plan designed to be a model of sustainable cities across Canada and centered on the concept that a healthy environment supports a robust and stable economy.

Drinking water

The "Northern Capital" of British Columbia, Prince George is the largest city in the northern part of the province, situated at the confluence of the Fraser and Nechako rivers.

To serve the population of 78,000, about 10.3 million gallons of drinking water are produced each day, stored in 14 reservoirs and distributed to 22,000 homes and businesses through approximately 350 miles of pipes and 10 pumping stations. Most of the water is drawn from three interconnected wellheads consisting of a large underground concrete caisson and several lateral pipes that collect groundwater that seeps from the aquifer near the Nechako River.

Each caisson is over 98 feet deep, with a network of laterals extending in each direction. The wells each have a capacity to

draw about 423 gallons from the aquifer per second. Electric pumps then move the water to the surface where it is disinfected through the use of sodium hypochlorite, generated on site.

"The use of the laterals greatly enlarges the aquifer field each well can draw from," Wedel says.

Instead of drawing water from a single point, this system can draw from 160 feet in each direction from the caisson.

Wedel says each caisson can house up to 11 laterals per level, with some caissons having two levels. The second level is available for future demands.

Other benefits of the caisson system include system redundancy, the ability to supply the entire city from one location, and low operating costs — basically limited to loading bags of salt for the on-site hypo system.

While the installation can be costly, Wedel says, the day-to-day operation is minimal. "We get high volume at low cost," he says.

Prince George also withdraws water from four other smaller sites, which serve a separate water system, and can provide supplementary water and serve as a backup.

The Prince George system is monitored and tested regularly, with 90 samples taken every month and sent to the British Columbia Centre for Disease Control. The natural filtering of the groundwater prevents the pres-

"The use of the laterals greatly enlarges the aquifer field each well can draw from."

Wil Wedel

ence of *Cryptosporidium* or *Giardia*, and buffered chemistry of the city's water limits the leaching of heavy metals. For example, Prince George scored one of the lowest concentrations of lead in the province.



Equipment operator Loyd Marchand and supervisor Jon LaFontaine use a Vacall combo unit to flush oil and grease from a sanitary sewer line.



PROFILE:

Prince George,
British Columbia,
Utilities Division

CITY ESTABLISHED:
1807, incorporated 1915

CUSTOMERS SERVED:
78,000

AREA SERVED:
123 square miles

INFRASTRUCTURE:
Approximately 350 miles of water mains;
431 miles of sewers and laterals; waste-
water treatment; stormwater management
system; renewable energy system

STAFF:
Wil Wedel, utilities manager

WEBSITE:
www.princegeorge.ca



Supervisor Steven Mercedes reviews construction plans.

“We get high volume at low cost.”

Wil Wedel

Leaks are detected by inspecting and repairing waterlines as streets are repaved.

Wastewater treatment

Wastewater is collected and directed to the treatment plant through 292 miles of gravity and force mains and another 139 miles of sewer laterals.

The utility repairs and replaces broken sewers or sewer connections using both open-trench excavation and pipe lining with cured-in-place pipe and cast-in-place plastic liner.

At the plant, screens remove plastics, rags and grit ahead of primary clarifiers. Biological treatment is provided by trickling filters followed by a mixing tank and final clarification. Treated, disinfected effluent is discharged to the Fraser River. The plant is designed for a population of 115,000 with design peak flow of approximately 30 mgd. Actual average daily flow is between 6 and 7 mgd.

Solids are digested, dried and spread on area farm fields and forestlands in accordance with the province’s Organic Matter Recycling Regulation. Microturbines use the biogas produced in the digester to create both energy and heat and also create a considerable reduction in energy costs when in operation.

The Prince George sewer system averages about 500 calls a year for vacuuming and flushing using the city’s three Vacall combo units.

These calls result primarily from roots growing into the lines and by improper disposal of grease, wipes, diapers, lint and other items flushed down the toilet.

For that reason, and to protect the Fraser River, the city pays close attention to source con-

trol, conducting a Sewer Smart public education program and recently adopting a new sanitary sewer bylaw affecting what customers can discharge to the system.

Sewer Smart

Begun in 2015, the source control team advises customers about Sewer Smart practices to use at home and at work. “Many household items like wipes, paper towels, diapers and hygiene products can cause buildup and blockages in pipes and pumps. Even items promoted as ‘flushable’ do not always break down in the sanitary sewer system. Blockages damage pipes and treatment systems and cause sewage backups,” advises the utility’s website. The advice is followed by a list of items that should not be disposed of down the sewer.

Wedel says that in addition to the website information, users are advised through a local newsletter and media outlets.

The website also links to the Water Environment Federation’s Will It Flush? program.

While the Sewer Smart program has reduced unwanted materials in sewers, Wedel is even more hopeful about the new sanitary sewer bylaw going before the City Council in the fall of 2019 and expected to take effect in 2020.

Developed by city staff in consultation with stakeholders — and in particular industrial and commercial users — the new bylaw is meant to create a more comprehensive and fair approach to wastewater treatment costs while encouraging treatment of harmful substances at their source.

Wedel says the source control team has worked closely with food industries, auto repair shops, car washes and other entities to identify harmful substances in their waste stream and develop ways to remove them at the source.

“We’ve had meetings with businesses and area

residents to discuss the bylaw. In many cases, these users did not understand the potential impact of what they were doing.”

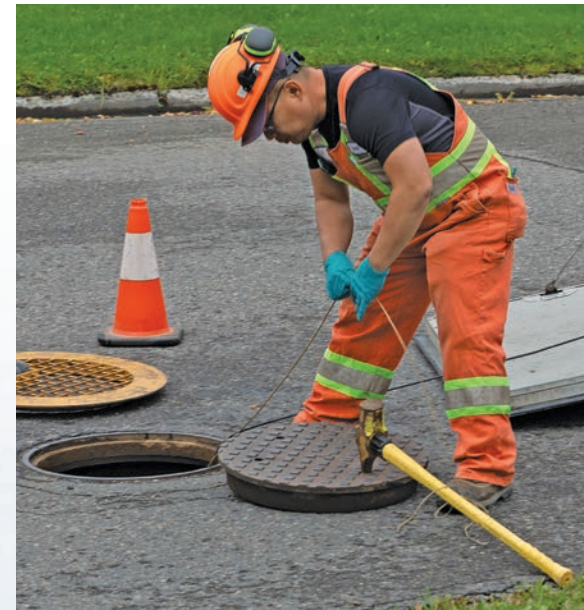
Many users simply needed to implement solutions already in place with their existing plumbing. In other cases, modifications or changes to production processes were called for. “In the case of car washes, the issues are the volume of water as well as sediment and debris. The problem can be solved simply by proper maintenance of existing debris traps,” he says.

“The goal is to create a level playing field with all of us on the same page.”

Stormwater management

Both the sanitary sewer and storm sewer pro-

A Prince George technician uses a Jake manhole cover extractor (Doug Meadows) to set up for a sewer main inspection.



A crew from the Prince George Utilities crew, including Thierry Mboneko, Matt Duchesneau, Jason Murrin, Kayden Heinrichs and Wil Wedel, works on a waterline repair.

“The goal is to create a level playing field with all of us on the same page.”

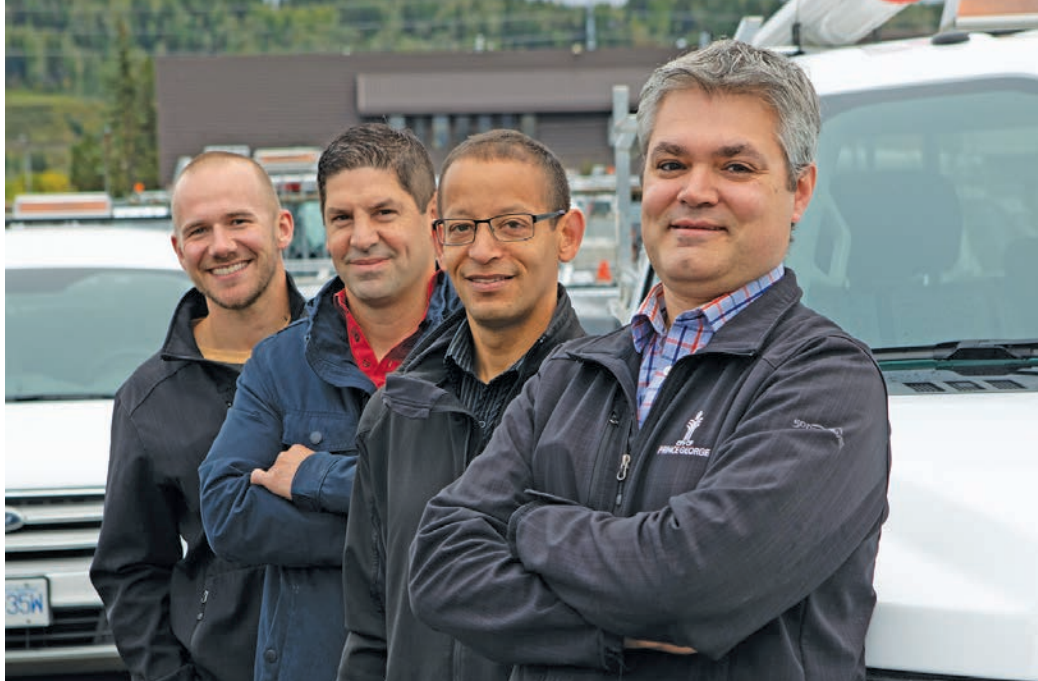
Wil Wedel

grams are designed to prevent contamination of the Fraser River, one of western Canada's major rivers and a valuable habitat for fish, including all species of Pacific salmon.

The Utilities Division maintains an elaborate system designed to prevent sediment, road salt, sand and other debris from reaching the river. It includes over 800 culverts, 4,000 manholes, 5,500 catch basins, 426 miles of open ditch and drainage channels and 194 inlet structures.

Storm flow, most serious during the spring snowmelt, is conveyed through 224 miles of underground pipe. Some of it is stored in stormwater storage basins where sediment settles. The system includes 318 discharge points.

Wedel says the major maintenance tasks revolve



Utilities Division Manager Wil Wedel, from right, with supervisors Steven Mercedes, Jon LaFontaine and Cory Smith.

VOLUNTARY METERING

While all new residential construction and commercial and industrial customers must install water meters, Prince George, British Columbia, maintains a voluntary metering system for its existing water customers. Up until 2015, residential customers were charged a flat rate of \$41.61 per month, irrespective of the amount of water they actually used.

“Residents in the city currently use more water than the provincial and the national average,” explains Wil Wedel, utilities manager. “There is clearly a need to move toward more conservative water use. The rationale behind the metering program is education; residents will be able to more accurately track their water use and conserve more as a result.”

“If customers use less water than the average user, they will pay less. Plus, customers will be able to immediately detect leaks in their water system and be able to better monitor water conservation habits.”

The city began providing free voluntary water meters in 2016, installing 100 units for volunteers who sign a contract. Wedel says the meters are installed inside the home due to the cold winter temperatures. The voluntary program is going well, and the city has no plans to require mandatory metering in the near future.

around cleaning the basins. “It’s a pretty intensive effort,” he says. The Prince George maintenance crews use Vacall hydroexcavators to remove the material, much of which is salt and sand used to keep area roads open during the winter.

Renewable energy

Not all water utilities are responsible for energy. But in Prince George, the Utilities Division operates and maintains a renewable energy system that heats a cluster of buildings in the downtown area and cuts energy costs and greenhouse gas emissions at the same time.

The system takes advantage of the close proximity of Lakeland Mills, a producer of high-end stud lumber, located at the edge of the central city. The mill provides waste heat from its drying process and wood-waste burners to a system of belowground pipes throughout the central city. The pipes are made of thin-walled steel, jacketed with insulation.

The heat is exchanged against water to produce hydronic heat in the library, City Hall, Royal Canadian Mounted Police building, the convention center, an art gallery, the Wood Innovation and Design Centre, a swimming pool and provincial courthouse.

Wedel explains that heat exchangers are located at each building on the system and that the utility maintains a peaking energy center, fired by natural gas, as a backup to the heating system. “The renewable energy system operates about 90% to 95% of the time with heat from the mill,” he says.

More buildings could be added to the system in the future, as long as they are along the piping network.

European model

The concept for the renewable energy system is based on similar systems in Europe and was the result of a 2010 contract agreement between the utility and mill.

Both economic and environmental benefits are being realized. Buildings on the system have seen energy cost reductions as much as 30%, as well as carbon credits, Wedel says, mainly because they don’t have to maintain their own boiler systems. The concept is also attractive to new businesses considering moving to the area, and it strengthens the relationship between the city and local businesses.

On the environmental side, the energy system has reduced total particulate matter (from the mill, as well as buildings on the system) and has cut greenhouse gas emissions by 1,984 tons per year. The program also supports the local forest products industry and has proven to be more cost-effective to implement than other potential renewable energy sources.

The overarching Prince George sustainability plan, developed through broad cross-cultural and community involvement, includes such strategies as strengthening downtown and neighborhood centers, protecting valuable open space, supporting green infrastructure and buildings, reconnecting with nature and the local culture, building on assets and encouraging growth that is beneficial to both the community and environment.

The city’s renewable energy program and water management plans are a perfect fit. ♦

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MAKING POSITIVE CHANGE

NASSCO committees are more active and productive than ever before

By Sheila Joy

NASSCO committees have accomplished a lot over the years, including the development of standards and specification guidelines that help set the course for the proper assessment, maintenance and rehabilitation of underground infrastructure.

Most recently, NASSCO has put stringent measures in place to ensure the committees are even more productive. Committee members now sign participation agreement forms and track their involvement over time. As a result, NASSCO is achieving more than ever before. A few 2019 highlights to date include:

- Government Relations Committee's impact on the advancement of policies and funding in Washington, D.C.
- Grouting Committee's ongoing development of Inspector Training and Certification Program curriculum for infiltration control
- Health and Safety Committee's response to the CIPP styrene emissions research findings by the Trenchless Technology Center at Louisiana Tech University
- Infrastructure Assessment Committee's partnership with the Government Relations Committee to encourage cross-bore policy at state levels

- International Relations Committee's translation of Pipeline Assessment and Certification Program Version 7 into Spanish to serve a wider, international audience

- Lateral Committee's activity to protect CIPP as a viable option for rehabilitation of lateral lines (specifically, UPC 715.3).

Other NASSCO committee activity includes the Manhole Committee's presentation at Underground Construction Technology (UCT) 2020, the O&M Committee's completion of the Jetter Code of Practice Manual, the inclusion of spiral wound and fiberglass reinforced CIPP specifications to NASSCO's growing library of trenchless technology guidelines, as well as so many more activities happening now to improve our industry tomorrow.

Other benefits of NASSCO committee participation include having a voice in making positive changes to our industry while networking with other professionals who share similar visions. Committee participation pays off in other ways, too. NASSCO will now recruit NASSCO board members from NASSCO committees, nominating only those individuals who have proven to be committed to NASSCO, its mission and the betterment of our industry.

If you are a NASSCO member and are not yet plugged into one of our many dynamic committees, sign up today at www.nassco.org. ♦

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

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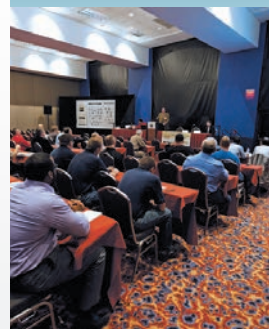
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ABSORBING THE IMPACT

Philadelphia takes a simple, innovative approach to stormwater management

By Traci Browne

Philadelphia has a significant combined sewer overflow problem. To solve the problem, the Philadelphia Water Department came up with a solution so elemental that it just might work.

The comprehensive plan covers everything from sustainable home improvements to business credits and greening playgrounds, parks, streets and sidewalks. And the solution is simply to reduce the amount of water going into the system in the first place.

CSOs are a common problem, but Philadelphia's situation is unique and the scope of its solution is unprecedented.

A unique challenge

Long before the city was covered in streets, sidewalks and skyscrapers, it was nothing but rolling hills, farmland, forest and streams — a lot of streams — as far as the eye could see. Like all developing cities, that land became less pristine as the population grew. The city's creeks became convenient receptacles for just about anything anyone wanted to get rid of, including sewage, slaughterhouse refuse and industrial waste.

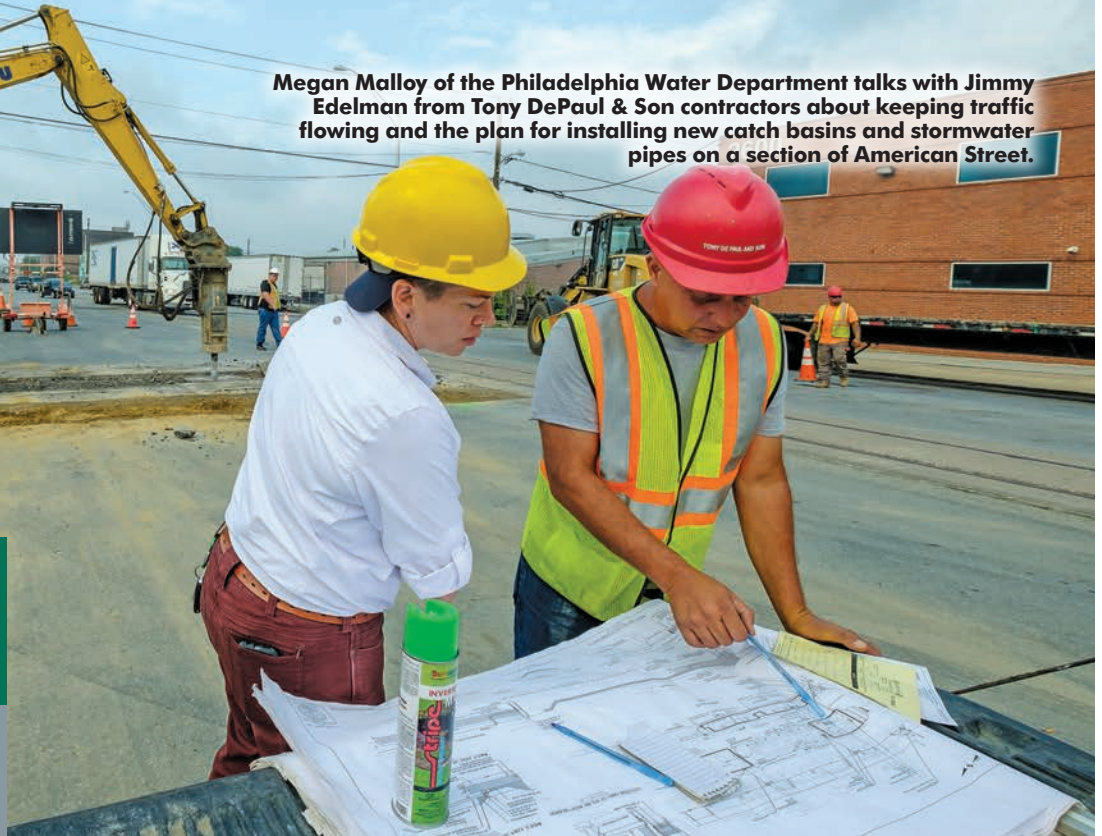
Not only were the creeks becoming heavily polluted, but they also stood in the way of development. During the mid-1800s, Philadelphia engineers tackled both problems by culverting the streams. One could say it was an “out of sight, out of mind” approach to the filth.

By the early 1900s, however, people started realizing that dumping sewage and other waste into the rivers was not sustainable and Philadelphia began a project to divert all those foul creeks into sewage treatment plants. These creeks became combined sewer systems that would only release directly into Philadelphia's main waterways during heavy rain. It has been operating that way for the last century and will continue to work that way for the foreseeable future.

Today the PWD is responsible for

The American Street project is one of the largest streets and water projects the city of Philadelphia has ever undertaken. It includes the removal of an old rail line in the center of the street where new greenways are being installed. (Photography by Kevin Blackburn)

Megan Malloy of the Philadelphia Water Department talks with Jimmy Edelman from Tony DePaul & Son contractors about keeping traffic flowing and the plan for installing new catch basins and stormwater pipes on a section of American Street.



PROFILE: Philadelphia Water Department



ESTABLISHED:
1801

SERVICE AREA:
360 square miles (wastewater)

PEOPLE SERVED:
2.2 million (wastewater)

WASTEWATER INFRASTRUCTURE:
300

INFRASTRUCTURE:
3,000 miles of sewer, 79,000 stormwater inlets, three wastewater treatment plants, 25 pump stations, 175 combined sewer overflow regulating chambers, 164 CSO outfalls, 450 stormwater outfalls

WEBSITE:
www.phila.gov/water

“We weren’t known as the green entity or the entity that would be putting rain gardens in versus a new sewer. So, we had to change that mindset.”

Joanne Dahme

A new initiative

In 2011, Philadelphia launched its 25-year plan called the Green City, Clean Waters initiative. The ultimate goal is to improve water quality, and at the end of the 25 years, PWD is required to capture 85% of the pollutant loading discharged by the CSOs. However, on a year-by-year basis, CSO rates are too variable to use as a measure of success because of unpredictable weather events.

Instead, they measure incremental success through the achievement of greened acres. One greened acre is equivalent to 1 inch of managed stormwater from 1 acre of drainage area, or 27,158 gallons of managed stormwater.

The PWD green stormwater management systems are designed to capture the first 1 1/2 inches of rainwater. The more systems in place, the more greened acres and ultimately fewer CSO events. The department’s goal at the end of 25 years is to transform 34% of the combined sewer areas to pervious acres.

Joanne Dahme, general manager of public affairs for PWD, says they did consider taking the combined lines and making separate sanitary and storm lines, but it just wasn’t cost-effective or even practical in a dense, urban environment like Philadelphia. Sewer separation would require new stormwater laterals for every home and business on the block, and that involves disconnecting area drains, and downspouts at every property. Therefore, reducing the water flowing into the sewers was the most logical approach.

House by house

Philadelphia is home to over 1.5 million people, and residential roofs make up 20% of the city’s impervious cover. The PWD says that one key to success for this program may lie in the simplicity of smaller-scale stormwater management solutions on homeowners’ properties. The target is not to green every roof in the combined sewer area, but to capture the runoff before it goes into the sewers.

To chip away at the problem house by house, the PWD has developed a program they call Rain Check and hired the Pennsylvania Horticultural Society and the Sustainable Business Network of Greater Philadelphia to implement the program. Residents can use the Rain Check website to plug in a bit of information about their property and budget and they’ll get recommendations for several stormwater management options.

For example, residents can opt for a 55-gallon rain barrel to capture rainwater from their roof, and the city will pick up the entire tab. Alternatively, they might choose to plant a rain garden or install permeable pavers in their yards, in which case the city will cover 80% of the cost up to \$2,000.

The Rain Check program does require residents who wish to participate to attend a workshop to learn about their different options. If they still want to proceed, an approved contractor will come out to their residence and conduct a site audit to make sure the project is feasible.

approximately 3,000 miles of sewer, 79,000 stormwater inlets, three drinking water treatment plants, three sewage treatment plants, more than 25 pump stations, 175 CSO regulating chambers, 164 CSO outfalls, approximately 3,000 miles of water mains and more than 450 stormwater outfalls. The estimated annual CSO discharge is at about 16 billion gallons from 164 CSO point sources.

So, while many cities and towns have to deal with CSO events, PWD not only has to deal with rainwater runoff from buildings and streets, but naturally swelling streams as well. While the city does have a fair amount of green space in the combined sewer areas, developers are building on every square foot available. The result is very little private green space and even more runoff with nowhere to go but into the combined sewer systems. To put it simply, Philadelphia needs to absorb more of its rainfall into the land instead of directing it into the sewers, and they have a plan to do just that.



Douglas Carney, senior vice president of real estate design and construction at Children's Hospital of Philadelphia, in the facility's new rooftop gardens.

A STORMWATER PIONEER

The Children's Hospital of Philadelphia was named the 2017 Stormwater Pioneer for outstanding stormwater management in the newly constructed Buerger Center for Advanced Pediatric Care.

The awards are a way for the Philadelphia Water Department to recognize innovative stormwater management on private property.

The Buerger Center includes a 2.3-acre public plaza that sits on top of the parking garage. Within the plaza are more than 35,000 square feet of vegetation that filters rainwater and promotes evapotranspiration of the runoff.

There is also a 14,000-square-foot rooftop garden on the sixth floor of the center that is accessible only to patients, families and staff. Interestingly, this space overlooks the Schuylkill River, which is one of the bodies of water protected in part by the hospital's stormwater management features.

In addition to the gardens, the hospital also implemented a tank storage system to manage overflow from the garage structure. These tanks serve two purposes: The first is to collect water and slowly release it into the sewer system, and the second is to provide irrigation for the plaza and rooftop gardens.

All in all, the stormwater management system at the Buerger Center is expected to capture approximately 105,000 gallons of water during a 1-inch rainfall event.



Stan Kristekas and Bill Daugherty from BrightLine Construction work on a stormwater bump-out and new sidewalk in one of Philadelphia's historic row home neighborhoods.

"I think the plan is harder to implement than we thought and mostly because of the cost. We didn't have a set of designs we could just pull off the shelf."

Joanne Dahme

Dahme says downspout planters are the most widely implemented of the options available because they fit on almost any property, including the city's iconic row homes. Permeable pavers are increasing in popularity, even though \$2,000 doesn't go a long way for a sizable property. The growing participation in the program is evidence that the PWD's message is getting out, and residents are doing their part to ensure the health of their rivers and streams. In fact by the end of 2018, just six years after the program launched, close to 750 residential projects were completed.

Community partners

While homeowner participation plays a role in the success of the plan, Dahme says the best sites to help meet their greened acre milestones are public spaces such as playgrounds, recreation centers, parks and schools.

Dahme's favorite project is also one of the department's very first: the Columbus Square park.

"We weren't known as the green entity or the entity that would be putting rain gardens in versus a new sewer. So, we had to change that mind-set," she says.

Getting community support was not easy on that first project. Street parking is difficult to come by in Philadelphia, and residents were not pleased to lose parking spots (legal or not) to the construction of gardens.

The department knew community engagement would be critical to the success of the project, so they started with the people most invested in the park — the Friends of Columbus Square. Once they had their support, they had an active partner in community outreach.

Educational events organized by PWD with



Left: Kareen Hyman fills a water bag on a recently planted tree while David DeMase pulls weeds around the edge of the rain garden.

Above: Meg Malloy talks with Aaron Kirkland and the maintenance crew about problem areas she found in the rain garden.

“We were really, really conservative when we started. We wanted to ensure we didn’t cause any flooding to any property or cause any problems.”

Joanne Dahme

outing to perform simple maintenance such as weeding and replanting becomes a science learning opportunity.

Continuing on the success of the planters, a rain garden was also installed in the park, creating an oasis everyone can enjoy right in the middle of the neighborhood.

Working together

The PWD works closely with the Streets Department and other departments to identify areas to retrofit with green stormwater infrastructure. If the Streets Department is tearing up a road for maintenance or improvements, that can be the perfect opportunity to incorporate stormwater infrastructure.

A significant project currently underway is the revitalization of a 2-mile stretch of the American Street corridor, an important hub of manufacturing from the late 1800s through the mid-20th century. This wide boulevard was once home to a Philadelphia & Reading Railroad route. Now, however, the train tracks running down the middle of the street sit unused and many of the buildings are abandoned, but that will soon change.

This area is experiencing a development boom and American Street is now a prime location. The Streets Department is leading the street revitalization project and is using a Transportation Investment Generating Economic Recovery, or TIGER, grant to make the area pedestrian- and bike-friendly. Some of that grant will pay for the removal of the old railroad tracks.

“That gave us the opportunity to install rain gardens where the tracks were located, which will

manage approximately 1.4 million gallons of water every time it rains,” Dahme says.

In addition to the vegetated median bioswales, stormwater bump-outs will be incorporated into the new street design. The bump-outs will be composed much like the sidewalk planters at Columbus Square with a layer of stone topped with soil and plants. Inlets and curb cutouts will direct runoff into the structures, and whatever the soil and plants can’t absorb will be released into the sewer at a more manageable rate.

According to the PWD, aside from managing stormwater, bump-outs also help calm traffic; and when located at crosswalks, they provide a pedestrian safety benefit by reducing the street crossing distance.

Fee reductions

Private companies and institutions are responsible for about 16% of the city’s impervious cover. The city expects that a large number of buildings will be facing upgrades during the 25-year program, making them a prime target for incorporating green stormwater infrastructure into their plans. To sweeten the pot, the PWD created a new Parcel Based Billing initiative that ties impervious cover to the stormwater fee. Large private, nonresidential customers can earn credits in the stormwater portion of their bill for retrofitting their properties with stormwater management infrastructure.

PWD also requires stormwater management on new development and redevelopment sites through the stormwater regulations. The stormwater regulations have four main components: water quality, channel protection, flood control, and public health and safety release rate requirements.

the assistance of the Friends of Columbus Square were held at the park. At those events, residents would learn about the CSO problem and how they could not only mitigate the problem, but beautify their park at the same time.

The plan was to install stormwater management sidewalk planters just outside of the park. Storm management planters are different from regular planters in that they are slightly below grade. Each of the Columbus Square planters can take runoff from 8,000 square feet of street and sidewalk. The sidewalk runoff enters the planter through an open-mouth inlet, and the street water enters through a grate inlet.

During a rain event, a few inches of water will pond in the planters as it slowly trickles into the soil. Beneath the soil is a layer of stone that holds the water until the peak of the storm has passed and then releases it into the system at a rate the sewer can handle.

It is important to note that while there are commonalities to all sidewalk planters, rain gardens, bump-outs, etc., each system is designed specifically for the drainage area in which it is located.

While the PWD is ultimately responsible for maintaining the gardens, they encourage the community to help. For example, at Columbus Square, some schools have adopted the planters, and an



The Philadelphia Green Stormwater project is big, requiring the work of many engineers and builders, but direction and support comes from the crew at the main office.



Marc Cammarata is deputy commissioner of Planning and Environmental Services for PWD.

These regulations apply to new development, redevelopment and demolition. Existing properties looking to lower their stormwater management bills can apply for grants to install stormwater features to manage runoff better.

Stormwater grants can cover up to 100% of the cost to design and construct stormwater retrofit projects on nonresidential properties. After a project is complete, the property owner then qualifies for lower stormwater charges on their monthly bill. PWD partners with the Philadelphia Industrial Development Corp. to award the grants, and just this year they increased the annual sum available from \$15 million to \$25 million.



Meg Malloy pulls and checks a dome drain filter in the Columbus Park neighborhood. These sidewalk planters work to catch water from street and sidewalk runoff next to a community garden. Community gardens are spread throughout Philadelphia and are helping with stormwater control.

Setting a standard

Thanks to the cooperation of city residents, businesses and public entities, the city is well on its way to achieving its 10-year goal of 2,100 greened acres by 2021. As of May this year, there are already 1,400 greened acres on the books. However, innovative plans of this magnitude can often be somewhat unpredictable.

PWD initially estimated the cost of the plan — the most extensive green stormwater infrastructure program ever envisioned in the U.S. — to be approximately \$2.4 billion. Dahme says they recently revised that figure to \$4 billion.

“I think the plan is harder to implement than we thought and mostly because of the cost. We didn’t have a set of designs we could just pull off the shelf.” The infrastructure has to be designed uniquely to the situation where it’s being installed, but PWD is attempting to create design templates for reoccurring cases.

“We were really, really conservative when we started. We wanted to ensure we didn’t cause any flooding to any property or cause any problems,” Dahme says. While PWD regularly exchanges ideas with other utilities and municipalities, they were the first to do something of this nature at this scale. There was no one who could provide advice or share lessons learned.

“It would’ve been hard for us not to do it the way we did it, because we were one of the first and so we did have to be the innovator, and we didn’t have much of a choice about that.”

The PWD will be doing a thorough review to see how they can best bring the costs down moving ahead.

What has been a challenge for Philadelphia doesn’t have to be for other municipalities looking to implement a similar program. Utilities and government representatives from all over the U.S. and abroad come to Philadelphia to see what PWD is accomplishing.

The Water Department doesn’t just accommodate these requests; they encourage them. If you are interested in learning more about the Green City, Clean Waters initiative, visit the PWD website. If what you see inspires you, contact the department to request a tour. ♦



To learn more about the Philadelphia Water Department, watch a video profile at www.mswmag.com.



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FAST-TRACKING FORCE MAIN REHAB

Fort Lauderdale emergency project uses innovative technology to rehab miles of sewers in just nine months

By Ken Wysocky

Faced with a public works emergency caused by a series of disastrous breaks in aging, ductile iron sewer force mains — including one line that handles about a third of the city's sewage — officials in Fort Lauderdale, Florida, found themselves in crisis mode in mid-2017.

To resolve the burgeoning problem, which at one point had inundated some residential neighborhoods with more than a foot of sewage, the city hired Murphy Pipeline Contractors in Jacksonville to use trenchless technology to rehab a little more than 4 miles of sewer force mains.

City officials opted for trenchless technology because speed was of the essence in the wake of more than 20 million gallons of raw sewage leaks during the previous several years. The leaks were especially troublesome because of Fort Lauderdale's location amid intracoastal waterways and other environmentally sensitive marine areas.

The nearly \$15 million project centered on two different rehab technologies. The first involved installing approximately 8,600 linear feet of new 30-inch force mains via horizontal directional drilling. The second included rehabilitating another 11,500 linear feet of existing 30-inch force mains

"We had three days to submit a bid. There was no time for feasibility studies or analysis. We had to design and build almost immediately."

Richard Crow

with an innovative new technology called compression-fit lining, which uses HDPE pipe.

"This was a true emergency in every sense of the word," says Richard Crow, director of engineering and special projects for Murphy Pipeline Contractors. "On a scale of one to 10, it was an 11. It made the national news, with whole neighborhoods submerged in sewage. There was a dire need for repairs."

It also hit the city hard financially. After city

officials closed off the broken segments of force main, they had to hire contractors to pump wastewater out of lift stations. The contractors then transported the waste to manholes farther downstream, where it was discharged for treatment. At one point during 2017, the city spent nearly \$12 million for pumping in just five months. (The cost was exacerbated by heavy rain from Hurricane Irma, which caused sewer overflows.)

Navigating obstacles

The project, which was designed by engineering consultant Chen Moore and Associates, posed numerous challenges. First of all, there was pressure to fast-track the project and complete the bulk of it in six months, from August 2017 through January 2018.

An entry pit on Murphy Pipeline Contractors' Fort Lauderdale, Florida, project shows a DD-440T directional drill and P-600 mud pumps from American Augers. Murphy installed 8,600 feet of new pipe on the project, using primarily directional drilling. (Photos courtesy of Murphy Pipeline Contractors)





Murphy Pipeline crew members fuse HDPE pipe segments using a McElroy pipe fusion machine on the job site in Fort Lauderdale.

“We were working so fast that we didn’t have an understanding of what was in ground until we actually started working.”

Richard Crow

“We had three days to submit a bid,” Crow notes. “There was no time for feasibility studies or analysis. We had to design and build almost immediately.”

Murphy Pipeline Contractors also had to contend with several contaminated sites; sensitive adjacent intracoastal ecosystems; and dense commercial and entertainment districts where rights-of-way were limited and businesses couldn’t afford major disruptions. The company also had to deal with a thicket of permitting agencies — nine all told, including the Army Corps of Engineers and the Florida Department of Environmental Protection.

Moreover, there was a little snag called Hurricane Irma, which pummeled Florida with high winds and rain in early September. Crews also had to work around concerts and other large special events that had been booked a long time ago and couldn’t be canceled. “We worked a lot at night,” Crow says. “We wanted to avoid disturbing communities or places of business as much as possible.”

At the peak of the nine-month-long project, which concluded in May 2018, Murphy Pipeline Contractors had about 60 employees working on its various phases. “It was a massive operation,” Crow says. “To help us out, some of our clients (with less time-sensitive projects) let us work on their jobs later on. It was really great to see the mutual respect they gave us — they were very accommodating.”

Under pressure

To avoid complete disruption to business operations and potential accompanying financial losses, open-cut replacement of the force mains wasn’t an option. “It would have been challenging, costly and very slow going,” Crow says. “Plus, the water tables here are very high, so there’s a lot of wet, nasty soil.”

But Murphy Pipeline Contractors had a perfect

alternative technology: compression pipe-lining with HDPE pipe. The company’s owner, Andy Mayer, brought the technology — popular in Europe for decades — to the U.S. from England in 1999, the year he established Murphy Pipeline Contractors.

Here’s how compression pipe-lining works: Using powerful winches, workers pull long runs of HDPE pipe through custom-made steel dies and into the host pipe; the dies are slightly smaller in diameter than the host pipe.

As the pipe passes through the die under extremely high force — anywhere from 70 to nearly 100 tons of pressure, depending on the length of the pull — it gets compressed to a smaller diameter than the host pipe. Crews can pull up to 5,000 feet of pipe at one time. When the pull is complete, the line from the winch is removed.

Now no longer under pressure, the pipe slowly expands back to its original diameter and tightly conforms to the interior of the host pipe, typically within 48 hours. This forms an inner liner that should last about 100 years. The pipe can remain under tension for a couple of days; after that, contractors run the risk of the pipe hardening in its smaller-diameter configuration. After the new pipe passes a pressure test, it’s good to go online, Crow explains.

The actual pipe-pulling doesn’t take that long; on a good day, a crew can complete, say, a 2,000-foot-long pull in about 10 hours. So why did the project take nine months to complete? Because crews first have to dig access pits at the points of entry and exit (small pulls require 40-foot-long-by-8-foot-wide pits and longer pulls require 80-foot-long-by-8-foot-wide pits, with depths that vary by project).

Fused HDPE pipe is pulled back through the pit as it is installed. Crews were able to pull back approximately 2,000 feet of pipe in about 10 hours.



Workers also have to inspect the lines to see if any obstructions exist, clean the lines to remove any debris and obstructions, send a “proving pig” through to ensure the pipe is ready for lining and so forth, Crow says.

“It also took awhile just to get materials,” he adds. “We pulled in our crews quickly, but that doesn’t mean materials are on the shelves, ready to go. It’s not like 30-inch plug valves and 30-inch HDPE pipe is just sitting on shelves in a store.”

Setting up

Compression-lining technology was used on about 65% of the 22,000 feet of force mains. DBE Utility Services used horizontal directional drilling to replace another 30%, and the rest of the repairs required open-cut work.

“Some of the directional drilling also involved installing interconnects to cross-connect some of the force mains,” he explains. That way, the city could stop pumping the lift stations by diverting wastewater from the bad sections of pipe to the new pipes.

“Sometimes we’d just roll out (as-built) plans on the tailgate of a pick-up truck and figure things out with city engineers.”

Richard Crow

DBE Utility Services used a DD-440T directional drill and P-600 mud pumps from American Augers on the site. To fuse the pipe together, crews used McElroy fusion machines. Excavation equipment from Hitachi was also on site.

The project was broken down into four phases, the first three of which started concurrently.

1. Rehab several sections of force main — 3,200 linear feet in all — with compression lining and install 700 feet of new force main under the Tarpon River via horizontal directional drilling. (Six bore pits required.)
2. Install 1,500 linear feet of new pipe with horizontal directional drilling. (Two bore pits required.)
3. Install 6,400 linear feet of new pipe with horizontal directional drilling. (Three bore pits required.)

Crews installed 7,900 linear feet of new pipe with horizontal directional drilling. Here the pipe is laid out and ready to be pulled in.

HDPE pipe is pulled through a pit. On the project, compression-lining technology was used on about 65% of the force mains, while horizontal directional drilling accounted for 30% with the rest open-cut.



4. Rehab three segments of force main — a total of 8,300 linear feet — using compression lining. (Six access pits required.)

“We couldn’t start phase four until the first three were completed,” Crow says.

Collaborative effort

The project started in August 2017 and finished in May 2018. Along the way, the Murphy Pipeline Contractors team had to continually react on the fly to new situations and obstacles — pretty much what they expected, given there was so little time for analysis and planning, Crow says.

“Some of the locations were quite challenging due to unsuitable soils,” he explains. “In other areas, the original fittings didn’t work. We were working so fast that we didn’t have an understanding of what was in ground until we actually started working.

“In phase two, we did some excavating and saw things wouldn’t work as planned,” he continues. “Keep in mind we were working with only aerials and as-built drawings. We took on a lot of risk because most times we didn’t know what was in front of us. We had a game plan, but we had to pivot a little bit each day in order to keep moving forward.

“Sometimes we’d just roll out (as-built) plans on the tailgate of a pick-up truck and figure things out with city engineers,” he notes. “It was a total collaborative effort to find solutions. That was the best part of the project.”

It helped that Murphy Pipeline Contractors also has hundreds of miles of compression lining under its belt. The company has worked all over the U.S. and even internationally in Mexico, South Korea, Saudi Arabia and other countries.

“We’re definitely a niche contractor,” Crow says. “There’s only two other companies in the world that do compression-fit technology.”

Crow hopes that the success of the Fort Lauderdale project will help other communities buy into the compression-lining technology and HDPE pipe as a trenchless rehab solution, especially since it demonstrated what can be accomplished in terms of minimal disruption to residents, businesses and vulnerable ecosystems.

“This shows that HDPE pipe is a good long-term solution for clients that need to solve problems caused by corrosion and cyclical fatigue in ductile and cast iron pipes,” he says. “It also demonstrates what can be achieved on an emergency basis when installing HDPE pipe with trenchless methods and qualified contractors.” ♦

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CUTTING INTRUSIONS AND OVERFLOWS

North Bend eliminates root blockages with a simple chemical treatment program

By Angus W. Stocking

Roots plague many sewer systems. In the temperate climate of North Bend, Oregon, it was especially bad.

North Bend is a small city (population 10,000) surrounded on three sides by Coos Bay. It is a lush, green place with an abundance of trees and hedges. Roots inevitably find their way into the sewer system, clogging pipes and causing significant problems for Joe Vos, collection foreman.

“In less than four years, there wasn’t a single clogged line left, and we could CCTV all of them.”

Joe Vos

“We realized that roots were a problem we had to take seriously, and jetting and cutting wasn’t very efficient,” Vos explains. “So we took a look at the various root killers available, and RootX looked right for us. We put it to work right away, saw quick results and stuck with it ever since. If it’s applied correctly, it’s amazing.”

Immediate results

The sewer system network in North Bend is mostly made up of 6- to 12-inch lines, 30% of which are clay, 50% concrete and the rest PVC. And they’re all in good shape. “Even the clay is holding up well, and it’s been in since the 1920s,” Vos says. “We only have root problems because of the joints.”

In the first few years of RootX use, North Bend applied about 12 boxes of RootX annually, using the supplied foaming applicator. The strategy then was simply to foam every line clogged with roots. And it worked well.

“We had a list of clogged lines and treated nearly all of them, and honestly it worked well from the beginning,” Vos says. “In less than

Twenty years ago, there were routine callouts for blocked sewers, lots of jetting, and many hours and dollars budgeted for digging up and replacing hopelessly clogged sewer lines.

four years, there wasn’t a single clogged line left, and we could CCTV all of them. We’ve eliminated most of our root problems. We may get a callout now and then for laterals, but never in the mainlines.”

RootX is effective mainly because it’s designed to foam on contact with water. The foam fills lines and raises the root-killing active ingredient to the top of sewer pipes, where 90% of root intrusion occurs. It is also formulated to strip away grease and grime, which allows the active ingredient to penetrate roots, killing them and stunting future growth. This is far more effective than simply jetting or cutting roots, because cut roots grow back aggressively and will soon clog pipes.

And also, more important, the active ingredient dichlobenil does not have a negative effect on downstream wastewater treatment plants. It simply kills roots and retards future root growth, keeping sewer pipes running efficiently and significantly reducing sanitary sewer overflows.

North Bend began addressing its root-clogged sewer lines with RootX about 20 years ago. Four years later, all lines were clear.



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APPLICATION:

Kills tree roots

BENEFITS:

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USER:

North Bend, Oregon



RootX is designed to foam on contact with water and fill the pipe with its active root-killing ingredient.

After that initial heavy treatment protocol, RootX use dropped dramatically; the initial use of 10 to 12 boxes annually has dropped to just 16 boxes applied every other year. “We don’t have to treat roots annually now,” Vos explains. “We CCTV our entire network on a three-year cycle and use that data to identify lines that should be treated, which we do every two years. That has kept our lines continually clear of roots, and it works so well we’re considering treating every three years.”

Clear mains

Vos likes to share examples of how happy he is with RootX’s effectiveness in his system.

“When we started, we had one line that was so clogged we couldn’t even push a jetter through. We assumed it was going to have to be dug up and replaced, but we went ahead and tried RootX. Three years later, it was com-

pletely clear and we could even verify that with a CCTV run.

“We even had a manhole that was completely filled up with roots, and we treated it in the simplest possible way by pouring in a bag of RootX and applying water to foam it up,” he adds. “The next year, we pulled all those roots easily and haven’t had a problem since.”

So root-clogged sewer lines are essentially no longer a problem in North Bend and haven’t been since the utility implemented its root treatment program. At least, root-clogged mainlines haven’t been a problem. “We never get callouts anymore for mainlines,” Vos explains. “But laterals are different: They’re up to owners to maintain, and roots do get in there. We let them know about RootX, and usually they give it a try and it solves their problems.”

Twenty years is a long commitment to one sewer solution, especially in an age where new technology is being introduced constantly. But Vos says, “I want to say to skeptics that if it’s applied correctly, it’s amazing. RootX worked immediately for us and then kept working and keeping lines clear, and I can demonstrate that with before-and-after CCTV footage throughout our system.” ♦

About the Author

Angus W. Stocking is a former licensed land surveyor who has been writing about infrastructure since 2002.



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MUNICIPAL INNOVATIONS 2019

Water and wastewater utilities are always on the lookout for ways to boost efficiency and reduce costs. Municipal Innovations is a special section dedicated to companies providing solutions to the problems your utilities face everyday.

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Vac-Con Releases Titan Dual Engine Combination Machine



Vac-Con knows a thing or two about innovation. Since 1986, the Vac-Con team has kept the industry on its toes with evolving products that push the envelope.

Just this year, Vac-Con released the Titan Dual Engine Combination Machine with a product launch to the market at the 2018 WWETT Show in Indianapolis. The key drivers behind this design were all about efficiency and power — two components that any operator considers critical on the job.

The upgrades featured on the Titan revolutionize the standard dual-engine combination machine, and statistically beat out competitor products with impressive averages of 44% fuel-savings and 16-30% more horsepower.

The Titan dual-engine drive system is equipped with the Aeroboost Q Drive, which lowers noise emissions and substantially reduces fuel consumption, all without sacrificing power. Enhanced twin cyclonic separators — one located on each side of the truck — optimize efficiency and filtration, while the Aeroboost three-stage fan balances airflow resulting in less turbulence and more power.

Meanwhile, the Omnibus Precision Power control system provides operators with a wireless remote that performs all machine functions with the press of a button, vastly improving usability and efficiency.

“The Titan is designed to bring a new kind of power to users,” says Darrell LeSage, company president. “Streamlined features engineered for optimal efficiency ensure that the power of our systems is elevated, while boasting a drastic decrease in noise emissions and reduction in fuel consumption.”

OPERATOR ACCOLADES

The Titan has been well received by operators who were ready to put the machine to the test in its natural habitat. One of these customers, Carthage Water & Electric Plant (CW&EP) in Carthage, Missouri, bought its

Titan at just the right time. CW&EP has become very active in the maintenance and rehabilitation of its collections systems that provide service to over 14,000 residents. The Titan will take center stage as CW&EP begins to develop and implement these programs across their its.

“The capabilities of the Titan will play a critical role in these programs along with its many other uses,” says Jason Choate, director of water services. “I’m amazed at how much this truck has improved our overall efficiency in all aspects of our operation.”

The dual-engine design and upgraded components that maximize fuel-savings were an important purchase point. “I preferred the Vac-Con combo truck to others in the industry because of their 50 gpm at 3,000 psi pump,” says Cecil Howard, distribution/collections manager. “This lets our crews spend more time jetting sewer lines and less time filling up the truck. While you are jetting, the chassis motor is turned off, and you use the auxiliary motor to run the jetter. This lets you stand in front of the machine without all of the excessive noise, while realizing a significant fuel-savings.” ♦



Vac-Con has manufactured more than 8,400 custom-built, truck-mounted machines to serve public and private environmental markets globally since its inception in 1986. Located in Green Cove Springs, Florida, it is one of the largest producers of sewer-cleaning equipment in North America. Vac-Con employs more than 300 people at its single location and is 100% employee-owned, enabling a focused work environment, on-site feedback, and around-the-clock innovation and testing. **904-284-4200 | vns@vac-con.com | www.vac-con.com**

Vactor 2100i Combo Sewer Cleaner Delivers Highly Connected Operator Experience

Built around the operator and designed for public utilities and professional contractors cleaning wastewater and sanitary systems, the Vactor 2100i combination sewer cleaner features an intuitive one-touch control system; superior vacuum performance; a high level of operator comfort and control; and good fuel, air routing and filtration efficiency.

MAXIMIZING OPERATOR EFFICIENCY

The successor to the popular Vactor 2100 Plus combination sewer cleaner, the 2100i redefines simplicity with Vactor's exclusive IntuiTouch one-touch control system that delivers advanced, yet intuitively simple controls designed to maximize operator efficiency. The IntuiTouch system includes both the in-cab and operator's station.

The in-cab one-touch engagement activates the power take-off and transfer case, allowing the operator to quickly gain control of all operating systems with the simple push of a button.

The operator control station design allows the operator to easily focus on the work at hand. All controls are intuitively placed to provide the operator with easy reach to boom, hose reel, water pressure and other system functions.

A 7-inch dashboard displays data on water pressure and flow, hose footage, chassis rotations per minute, vacuum, and water and debris tank level. The articulating controls adjust to the desired location for the operator's optimal placement.

BOOM OPTION IS TIME SAVER

Available as an option, the RDB 1015 rapid-deployment boom telescopes 10 feet out and extends the debris hose down 15 feet into catch basins, manholes or lift stations, speeding up work. In many cases, it eliminates the need to assemble and disassemble additional debris tubes. Without the added physical exertion and time-consuming set-up and tear-down steps, the operator is more productive on the job.

The RDB 1015 boom can also maintain a lower profile, which allows the combination sewer cleaner to clear low overhead obstacles and still reach needed depths. The rapid-deployment boom can stow with the catch basin tube attached on the truck, making it even easier to begin work immediately.



OTHER FEATURES

The dual-action, single-piston Vactor Jet Rodder water pump is available with up to 3,000 psi. The only pump designed exclusively for sewer cleaning, the Vactor Jet Rodder delivers powerful "jackhammer" action for difficult blockages and steep climbs.

Designed for pulling material long distances, the Vactor 2100i is available in a positive displacement configuration with blower offerings providing inlet volumes in excess of 5,000 cfm and 18 Hg vacuum.

Vactor's fan system is designed for all-around sanitary and storm sewer cleaning. Whether equipped with a single- or dual-fan system, the lightweight aluminum fan provides superior performance to handle the toughest jobs. The unique system also minimizes energy consumption while maximizing performance. ♦

VACTOR
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Vactor Mfg. is based in Streator, Illinois. The company is an industry leader in sewer and catch basin cleaners, and industrial vacuum loaders featuring innovative technology and custom configurable designs.

815-672-3171 | sales@vactor.com | www.vactor.com

Growing Population Calls for Upgrades in the City of Tigard

Like many communities in the state of Oregon, the city of Tigard has seen major and consistent growth in recent years. With an annual population growth rate of 2.67% in 2017 — a trend that's only projected to continue — the city has had to take a step back and reassess how it manages its sewer maintenance operations, among other processes, to keep up with the increase in demand.

Currently, the city's wastewater and stormwater division manages 890,862 feet of sewer pipe and 693,597 feet of stormwater pipe.

"We are stressed for equipment and manpower, as a lot of growing cities are," says Rob Block, the city's wastewater and stormwater operations supervisor and a 20-year veteran of the division. "We are trying to add to our fleet."

The current population of Tigard is around 54,000, and the city's sanitary system is 100% dependent on gravity, with no pump stations or pressurized components.

STREAMLINED INSPECTIONS

To keep up with its changing needs, the division decided to acquire more efficient inspection equipment. Its old crawler system required specialty parts from overseas every time it needed repairs. When the inspection camera broke, it was down for weeks. So the team began looking into other options.

In 2016, the division purchased its first ROVER X sewer inspection crawler, which it had retrofitted in a truck. And early in 2019, it purchased a second.

"The crew that runs the equipment, they liked the EnviroSight product the best," Block says of the decision to purchase the ROVER X initially. "Part of that was how light it is, how maneuverable it is, the ability with that particular product to basically take the reel, disconnect it from the truck, and pack it out into the woods if you need to. And the close-proximity of True North for any maintenance repair."

True North, EnviroSight's exclusive sales partner in Oregon, Washington, Alaska and Hawaii, is headquartered fewer than 10 miles away from Tigard.

A more compact and steerable camera for some of Tigard's challenging older storm and sewer areas was the city's main priority when looking for new equipment, Block says.

"Tigard's a heavy traffic area, so having the ability to steer through manholes that have slight bends in them, the ability to turn corners for blind keys and continue on, the ability to steer around protruding taps or masses in pipes to continue the inspection — they were all key factors in determining which product we chose."

The equipment has proven to be a great asset for the city's waste and stormwater systems, and it's reflected in the numbers.

"It's increased our productivity by about 20 to 25%," Block says. "We have been able to inspect about 95%-plus of our storm system, which a lot of was previously out of compliance due to us being unable to inspect."



Completing more inspections than ever before has also made the city's regulatory agencies very happy, Block says with a laugh. "This camera can get into spots that other cameras can't, and it can traverse around obstacles." ♦



EnviroSight LLC of Randolph, New Jersey, provides sewer cameras and other pipeline inspection solutions to municipalities, contractors, departments of transportation and civil/environmental engineers. **866-936-8476** | mail@envirosight.com | www.envirosight.com/roverx.php

Next-Gen Technology Improves Operation for GapVax G2X Jet/Vac



Advancements in technology allow manufacturers to improve safety and ease of operation. The G2X is GapVax's next-generation addition to its MC series of combination jet/vac units, and it was designed with end users — and their safety — in mind.

The G2X unit is designed with quick and easy engagement of all components, easy-to-read display screens at the front control box (optional screen inside the cab). Push-button operation with on-screen guidance, smooth operation with joystick and wireless controls, and dump/washout functions from the wireless remote are all features for safer operations.

The unit also includes fuel consumption tracker; water consumption tracker; accumulated footage counter with 10 stored distance counts; and a job card that tracks date and time, current, accumulated and total footage, total gallons used, average jetter pressure, peak pressure, fuel used, and fuel rate.

A USB port allows for easy download of data to Excel format, along with complete system and chassis diagnostics.

MC SERIES CHASSIS

The GapVax MC Series is built on a chassis with an extended front frame rail. This extension provides rigid support for the front hose reel, maximizing stability. "Our units are built to increase the truck's capabilities and last a long time," says a GapVax spokesperson. "Our units are designed by the operator, for the operator."

The GapVax MC Series unit is made of 3/16-inch ASTM A572 Grade 50 Exten steel. The debris body ranges from 5 to 12 cubic yards (stainless steel available). The stainless steel water tank has a 2,000-gallon capacity, while the unitized water and debris tank features a double subframe.

A heavy-duty double acting single-lift cylinder provides a stable 50-degree dump angle. The MC Series vacuum pump options range from 3,500 to 5,000 cfm with up to 27 inches Hg and is a wet-only vacuum truck.

FEATURES AND SERVICE

The MC series is also equipped with an 8-foot, front-mounted, telescopic boom with dual lift cylinders reaching 26 feet with a 180-degree rotation. The front-mounted hose reel has an 800-foot by 1-inch hose capacity. The standard water pump is rated at 80 gpm at 2,000 psi, and other water pumps are also available.

Other options include a washdown system; hydroexcavation package; extra storage space; heated boxes; liquid level load indicators; remote pendants and wireless remotes; additional work lights; tube racks; and a remote diagnostics system that allows for less wiring and hoses.

"We believe customer service is a necessity for maintaining successful relationships with our customers," says the spokesperson. "Our dedicated team of service technicians is only a phone call away and will come to you when needed. Our service team is on call 365 days a year, 24 hours a day. We have a full selection of parts and accessories, not just for your GapVax unit but other brands as well. Our Gulf Coast office also has parts on hand." ♦



GapVax is a manufacturer of industrial and municipal vacuum trucks. The company offers a full line of accessories, hoses and replacement parts. GapVax has five regional sales managers and 15 dealers to meet the needs of its customers. Founded in 1989, GapVax specializes in custom-built equipment that is easy to operate and maintain. Superior performance and high-quality components are priorities for the company, which is located in Johnstown, Pennsylvania, with a secondary location in Deer Park, Texas, and a nationwide dealer network. **888-442-7829 | www.gapvax.com**

WinCan Gives California City Seamless Integration for Wastewater and Beyond

For infrastructure operators in the city of San Clemente, California, efficiency is a way of life.

Four years ago, the city utilities division in this coastal town of around 70,000 transitioned from a largely analog CCTV assessment process to an integrated, data-driven inspection solution. The division ensures water, sewer and drainage services as well as regulatory compliance, and its adoption of WinCan transformed the operation.

Workers who had once generated vast amounts of paperwork and DVDs began submitting clean, digital data. PACP data certification became easier, and reporting was automated. Regular syncs with the community's GIS solution ensured mapping accuracy. Data from the old paper CAD atlas was converted and transferred into Esri's Local Government templates, where it could easily be fine-tuned, developed and applied.



AN INTEGRATED WORKFLOW

Yet San Clemente also attributes its wastewater management success to WinCan's ability to integrate inspection data and workflows with Lucy's enterprise asset and work management platform. The city has used the integration to optimize its life-cycle management programs, improve service levels, maintain regulatory compliance and be more responsive to the needs of its residents.

WinCan inspections can be brought in as recommended work orders for informing and executing both preventive maintenance and capital planning, resulting in a complete feedback process that offers real-time dashboard visibility and management reporting capabilities.

The sewer inspection team runs Lucy alongside WinCan to support its workflow. As the camera team inspects pipelines, workers can log PACP-certified observations and flag areas of concern. That data is imported into Lucy, where it automatically generates work orders and alerts for designated codes.

"We made a workflow for our engineers," says Elmer Catapang, San Clemente's computerized maintenance management system coordinator. "Instead of someone spending hundreds of hours viewing video and identifying things to work on, they are automatically filtered."

Damage that used to take a year to be inspected, reviewed, added to the queue, and repaired can now be addressed in a two-week period, which leads to less costly repairs, fewer crises, and fewer claims from property owners.

VISIBILITY AND ACCOUNTABILITY

By connecting the field crew, engineering and repair teams, the WinCan-

Lucy system allows everyone to track rehab projects. Inspectors are confident that the things they video are being repaired, and engineers know they'll have quick, easy access to the right footage when they need it.

Increased visibility in both the wastewater system itself and the department's practices also allows the city to plan more effectively. "The system makes sure we're proactive in inspections and schedule projects to minimize corrective work," says Ken Knatz, who was the principal civil engineer and asset manager for the San Clemente Public Works Department during the program's early years. The city has also found WinCan to be a valuable budgeting tool.

The team knows that managing risk through preventive maintenance is cumulative. By addressing minor problems now, they're avoiding community and financial crises that might occur in the future. And it's an effort that — thanks to the interdepartmental integration of WinCan and Lucy — all stakeholders can understand, see and support. ♦



WinCan

WinCan was the original pipe inspection and asset management software when it entered the market in 1990. WinCan transforms raw inspection data into the intelligence municipalities and contractors need to make critical maintenance decisions.

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Crane Pumps & Systems Announces 8- and 10-inch Submersible Chopper Pumps

Crane Pumps & Systems recently announced the launch of its 8-inch and 10-inch Barnes Sithe submersible chopper pumps. With this product extension, Sithe chopper pumps are available from 3 hp to 150 hp in 3-, 4-, 6-, 8- and 10-inch discharge sizes.

With flows exceeding 4,800 gpm and heads up to 140 feet, these large chopper pumps are a great pump choice for tough solids-laden applications including municipal sewage and stormwater in high-flow lift stations, master stations, plant intake, screenings transfer, sludge transfer, return activated sludge and waste activated sludge.

PUMP FEATURES

The 8- and 10-inch Sithe chopper pumps are equipped with patented open-center cutting technology that slices through even the most troublesome solids in the waste stream. The Sithe provides value to customers in the form of superior nonclogging and solids size-reduction capability, high reliability, ease of maintenance, low life cycle cost and low lead times.

Some of Sithe's market distinguishing features include long-life heat-treated stainless steel blades, field replaceable cutters, quick disconnect plug-and-play cord, optional high-chrome impellers, a motor that is variable-frequency drive compatible and liquid cooled, dual- and tri-voltage motors, high-quality commercially available seals, and moisture detection sensor. ♦

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CUES SPiDER Offers Wireless 3D Manhole Inspection With Color Imagery

Municipal workers and contractors looking for wireless color manhole inspection technology in a lightweight and compact form should consider the SPiDER Scanner by CUES. Three-dimensional Scanning is a new technology in the sewer industry, according to a company spokesperson.

Existing manhole cameras use panoramic photographic imagery (360-degree horizontal-stitched imagery), but what CUES offers is laser surveying.

With 3D scanning technology, manholes can now be documented in true 3D (360-degree spherical instead of panoramic horizontal), creating a mesh with 1 mm accurate density. The mesh can be used to document the structural change of a manhole before and after rehabilitation (CIPP lining or coating) up to 100 feet deep.

WIRELESS CONVENIENCE

The scanner can wirelessly calculate its position in the manhole shaft by using its sensor data to measure its incremental motion horizontally or vertically — a first in the manhole inspection industry, according to the manufacturer. This technology frees inspections from problems associated with poorly calibrated cable counters or carrying heaving cables to inspect difficult-to-access manholes.

The SPiDER scanner weighs less than 30 pounds and can be easily carried to difficult sites and only requires a tablet to control it. This portability is possible because the processing computer and battery supply are located on the camera.

SPiDER collects millions of 3D measurements during each manhole inspection so the manhole can be measured to less than 5 mm accuracy in manholes as deep as 100 feet and as wide as 15 feet. Typical accuracy is 1 mm.

The SPiDER point cloud also measures manhole structural changes before and after rehabilitation, and it functions with all National Association of Sewer Service Cos, Manhole Assessment and Certification Program software.

The CUES SPiDER is a user-friendly 3D manhole scanner with wireless technology for MACP inspections, and it's capable of measuring the thickness of rehabilitation liners.

The company's warehouses stock more than \$10 million worth of inventory to support its customers and production requirements, resulting in reduced lead times for spare parts and completed systems. All systems and repairs are completed under strict quality-control standards, facilitating continuous improvement for all equipment. ♦



CUES is a leading manufacturer of CCTV inspection, rehabilitation and pipe-profiling equipment, as well as pipeline inspection and asset management software. The equipment is designed for use in sanitary and storm sewers, industrial process lines and waterlines.

Headquartered in Orlando, Florida, the company dedicates 70,000 square feet and more than 230 full-time employees to serve and support customers. Additional facilities with stocking warehouses and service personnel are located in southern and northern California, Georgia, Wisconsin, Oregon and Toronto.

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Duke's Root Control System Goes to Work in Virginia Beach

When the Virginia Beach (Virginia) Department of Public Utilities needed a proactive management, operation and maintenance (MOM) program to address its sanitary sewer overflow problem, it rooted out the cause with Duke's Root Control's Razoroooter II.

The Razoroooter II is a herbicide-laden thick foam the consistency of heavy shaving cream. Since effectively killing roots in sewer systems requires access to the entire line, the Duke's crew inserts a hose from manhole to manhole. The hose releases and sprays the foam in all directions, allowing it to adhere to roots and penetrate through wye connections to kill roots even in lateral lines.

The entire system is treated as the foam compresses against pipe surfaces and penetrates cracks, joints and connecting sewers. Roots are killed on contact inside and outside the pipe walls before decaying naturally and sloughing away. Regrowth is then delayed for two to three years. Trees and other aboveground vegetation are not harmed, according to the manufacturer.

SSOS IN VIRGINIA BEACH

The city of Virginia Beach has 400 pumping stations, 1,800 miles of gravity pipe and 190 miles of force mains. The Department of Public Utilities needed an MOM program to determine the cause of stoppages and overflows, begin building a maintenance history, along with work process and system characteristics.

Inspections and thorough analysis showed that grease and roots were the top two causes of the city's SSOs, and Duke's Razoroooter II pilot program was initiated.

The results of the Razoroooter II MOM program showed instantaneous return on investment via the reduced frequency of SSOs.

In the formal root control program's first year, the number of SSOs dropped more than 30% and have continued to drop substantially every year since.

Taking an O&M approach as opposed to a find-and-fix mentality — all other things being equal over the course of 20 years — would cost the city about \$157 million, according to the manufacturer. Meanwhile, the traditional once-and-done solution would cost \$400 million and could require reinvestment 20 years down the road.

"The comprehensive MOM program, which includes a sizeable root control effort, is a prime example of a success story that can be shared with other similar communities," says Aaron Nelson, P.E., vice president of Brown and Caldwell. "It documents capacity assurance results and reductions in SSOs — which was our primary goal — without the high cost of implementing traditional inflow and infiltration reduction efforts.



"We now have a good, solid foundation, fewer environmental impacts and a process to continually get to the cause — grease and roots — instead of our previous reactionary approach to clean when the stoppages occurred. We have made great strides." ♦



Duke's Root Control is focused on helping its customers' collections systems run efficiently and cost effectively. The company identified a need for root control in 1979 and became a trailblazer in the industry. Today, Duke's continues to build on its innovative culture with a range of technology solutions for FOG and I&I that transition clients' operations and maintenance programs from reactive to proactive. The company's solutions pinpoint critical defects and capacity problems to isolate rehabilitation, prolonging the life of existing infrastructure and reducing costs. **315-472-4781 | www.dukes.com**

SSO prevention starts here.

Duke's Razorooter® II is a diquat-based herbicide that is registered by the EPA for controlling roots in sewer lines.

Duke's has sewer root control down to a science. Nearly 40 years of experience, 300 million feet of treated sewer lines, and a quality guarantee make Duke's the root and grease control company you can count on. This long-term success is possible because of what happens behind the scenes. Duke's trained team of experts in the laboratory, on the street and in the office constantly work to develop the best products, deliver world-class customer service and ensure every application is successful. Guaranteed. **Visit dukes.com or call 1-800-447-6687 today.**

Sewer root control done right.



Last-Minute Design Change Benefits Akron Project

Akron, Ohio's industrial past led the U.S. Environmental Protection Agency to issue a federal mandate for the city of Akron to comply with the Clean Water Act of 1972 and end pollution in local waterways.

Because about a quarter of Akron's existing sewer system had been designed as combined sewers when constructed in the early 1900s, frequent overflows mixed stormwater with sanitary sewage. This mix ultimately emptied into the Cuyahoga River, the Little Cuyahoga River, the Ohio and Erie Canal, and Lake Erie.

The city of Akron created a program called Akron Waterways Renewed! to control combined sewer overflows and improve water quality in nearby rivers. A portion of that plan was to create the 6,240-foot Ohio Canal Interceptor Tunnel, construct three new storage basins, upgrade CSO racks, and upsize and reinforce the main outfall sewer capacity.

The 27-foot-diameter OCIT sections were a feat in themselves, dug with a massive tunnel boring machine and constructed of reinforced concrete pipe. The basins will hold combined sanitary and stormwater overflow until it can be safely released to Akron's wastewater treatment facility.

BUILDING AN INFLUENT LINE

Of particular interest is the design and construction of the influent line to the new Howard Storage Basin (CSO Rack 22) at the intersection of Howard and Cuyahoga streets, which will provide temporary storage of combined sewer flow from the North Hill tributary area. With a 2.4 million-gallon capacity, it is the largest of the three new storage basins.

H.M. Miller Construction was subcontracted for the site work for the Howard Storage Basin, one of Akron's 34 sewer separation units, as well as relocating the existing waterline to accommodate influent piping.

The H.M. Miller engineering staff saw a potential problem with the original design that called for elliptical RCP influent line to run beneath Cuyahoga Street. They realized there would be difficulty in achieving clearance under the public road, even though the RCP line would be elliptical, and that could lead to an inability of the RCP line to pass the required pressure test specification, according to John Smith, president of H.M. Miller.

CALLING ON HOBAS

Smith contacted his resources at HOBAS to assist in devising an alternate plan for Howard Storage Basin that would resolve the inherent difficulties surrounding installation and testing using the RCP. Together they came up with a design that saved time and money, tying the Howard Storage Basin into the mainline. In place of the elliptical RCP originally specified to be installed under Cuyahoga Street, the new design called for twin 57-inch HOBAS centrifugally cast, fiberglass-reinforced, polymer mortar pipe that would tie into the OCIT-1 mainline with a concrete collar subsequently designed by the project engineer.



H.M. Miller has a long history of contracts with Akron. The mutual respect that developed between the firm, the Public Service Department, and local engineering firms allowed for the acceptance of this major design change during the construction phase. ♦



HOBAS Pipe USA offers centrifugally cast, fiber-reinforced, polymer mortar pipe, which is inherently corrosion resistant. The company's pressure and gravity pipe diameters range from 18 to 126 inches.

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Montauk Services Introduces SmartFoam Tools for Pipeline Integrity



Montauk's SmartFoam Tool has 18 electromagnetic sensors that constantly monitor and collect data.

Montauk Services — one of North America's most experienced pigging and testing companies over the last 37 years — reports that it has heard continual requests by engineers and municipalities for a free-flowing pig that can determine wall degradation in cast iron, ductile and steel mains.

Montauk Services SmartFoam Tool is a specialized smart pig with the same characteristics as the foam poly pig. It can run long lengths of pipe, navigate T-intersections and elbows (up to 1.5 feet in diameter) and can be retrieved in an excavation or terminus manhole.

The critical information generated by the SmartFoam Tool identifies pipe wall anomalies and wall degradation, precise locations, pipe wall ID change, all fittings and valves, and overhead bird's-eye views of the entire main.

A FAMILIAR PROCESS

The SmartFoam Tool is run similar to a cleaning pig, and uses a system's pressure and flows. These innovative tools combine the benefits of advanced electromagnetic sensors with simple and easy-to-deploy foam pigs. The result is a highly capable in-line inspection tool that can negotiate complex geometry pipelines while inspecting for internal corrosion and cracking.

Montauk is working with similar technology for identification and location of leaks as small as 1 gpm and will produce the same data minus wall degradation as the SmartFoam Tool. This tool is primarily for water distribution systems and can be launched and retrieved through fire hydrants. It can also be used in force mains up to 12 inches.

RECENT CASE STUDIES

For over 37 years, Montauk has delivered exceptional water and force main cleaning services as well as hydrostatic testing and chlorination. Montauk is known in the pipeline industry for complex and large-diameter

intakes and outfall cleaning, transmission mains and wastewater treatment plant typing.

In 2018, Montauk worked with the city of Toronto to clean three 60-inch diameter HDPE raw water intakes at the Island Water Treatment Plant. Quagga mussels adhering to the interior wall of the HDPE pipe created flow turbulence, which diminished the volume of water delivered to the facility and caused increased pumping costs.

After the pigging, C-factor analyses performed by the city demonstrated water flow conditions that were better than when the pipelines were new. The quagga mussels and any other buildup reducing water flow had been completely cleared.

In another recent project for Charlotte, North Carolina, Montauk pigged 14 miles of an 8-inch sludge line, which decreased operational pressures by 50%. This decreased the chances of main breaks and restored the pipe condition to the original start-up flows and pressure. ♦



Montauk Services has been known among municipalities since 1986 for its unique combination of institutional knowledge, expertise and innovation. The company specializes in pipeline pigging services and equipment for pressure pipeline cleaning, focusing on water and wastewater. The company offers turnkey, joint venture and technical support on a time and material basis. Launchers, receivers, tracking equipment and foam pigs are also available for rent and purchase. The company was founded by CEO Rex Murphey.

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TRACKING



RENTALS & SALES

How to Calculate the True Cost of Ownership



If you're in the process of choosing a new inspection or rehabilitation system, you should calculate the true cost of ownership. Expenses must be weighed against the brand's productivity potential in order to assess the true cost of ownership and return on investment. Spend some time thinking about the following cost and productivity factors, comparing each brand and/or technology.

FACTORS TO CONSIDER

Initial purchase price — The initial price is important, but it is by no means the only factor. Don't forget that there are many manufacturers and dealers who will work with municipalities and contractors to get them the equipment they need and stay within a reasonable budget.

Production rates — Each piece of equipment has its own capabilities. Do you expect to inspect the estimated national average of 1,500 feet per day, or will the equipment you choose inspect up to 5,000 feet per day. Technologies exist that can easily inspect two to three times more per day than traditional CCTV systems. They have a higher initial purchase price, but lower operational costs due to this high production rate.

Employee wages, benefits and salaries — Will the equipment require an increase or a decrease in labor to complete your project on time? Equipment with high productivity rates can reduce your employee cost exposure allowing you to inspect more with fewer dedicated employees. Equipment that is safer and easier to operate can also reduce employee stress.

Vehicle maintenance costs — What do you typically spend to own, license, run and maintain a vehicle? Systems with high productivity can reduce the size of your fleet, reducing your cost.

Repair cost — Is the system going to be costly to repair? How often will it break down? All systems are susceptible to damage, but a well-designed system can reduce recurring repair costs. If you save \$10,000 on the initial purchase price, you may find yourself paying well over that each year in

repair and maintenance costs.

Lost time due to repairs — Contractors lose money and municipalities get behind schedule when equipment breaks down. If equipment does not break down, it's in the field paying for itself and not sidelining personnel.

Features — Does the system provide deliverables that allow the contractor to charge more for their services compared to the competition, and the owner to make better decisions regarding their infrastructure?

Product life cycle — Will this equipment last 10 years or three? Is the system ready for digital output? Consumer electronic products have a notoriously short life cycle, and if the manufacturer chooses to use off-the-shelf components, you may find yourself with a system that is outdated in a few years.

MAKING DECISIONS

It's critical that contractors and municipalities make educated purchase decisions. Choosing the right equipment can make your life easier, increase your effectiveness and decrease your costs, but you must be cognizant of product quality and the benefits it can provide. Look at the total cost of ownership that a piece of equipment has over the course of its expected life cycle and make purchase decisions based on the true costs. ♦

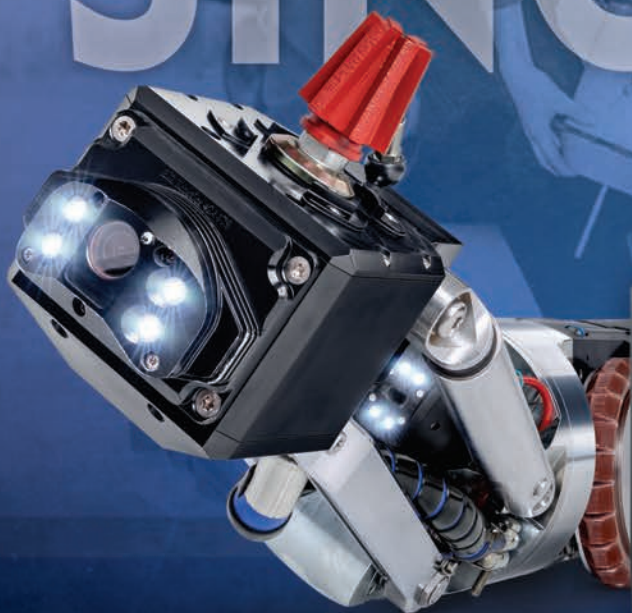


RapidView LLC has created business partnerships with several manufacturers of high-quality sewer pipeline maintenance products, including its primary product line from IBAK Helmut Hunger GmbH & Co. KG of Kiel, Germany, a manufacturer

of high-quality CCTV pipeline inspection systems since 1957. Rapidview LLC imports, distributes and services the complete IBAK camera inspection product line, within North America, from its facility in Rochester, Indiana.

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RootX Offers Solution for Restoring Pipe Flow Capacity

RootX was engineered to limit exposure issues and environmental impacts, and to remove pipeline roots without affecting the treatment systems at the wastewater treatment plant downstream. RootX was also engineered for fast, simple and cost-effective applications that don't require extensive training or expensive add-on equipment.

HOW IT WORKS

The RootX formula foams on contact with water, allowing it to reach to the top of the pipe where 90% of root growth occurs. RootX foam lifts and adheres the active ingredient — dichlobenil — to the roots and to the top of the pipe.

The formula strips away grease and grime, allowing the active ingredient to penetrate and kill the roots. Dead roots will decay and break off, and new root growth will be stunted, eliminating the aggressive regrowth of roots that happens when roots are simply cut.

Regular maintenance with RootX will reduce, if not eliminate, sanitary sewer overflows caused by roots, according to the manufacturer.

SAVE TIME AND MONEY

By using your own crew and equipment to clear pipe blockages, companies eliminate the need to hire and schedule special contractors. RootX is registered with the Environmental Protection Agency and has a low environmental impact, making it a go-to solution for municipal systems nationwide.

Now, RootX is easier to apply than ever with the new FDU 300 applicator, engineered to make applying RootX to mainlines faster, easier and more effective. "Within a month after applying RootX, roots are dead and decaying, keeping your lines moving for up to 36 months — guaranteed," says a RootX spokesperson.

PRODUCTS AND MARKET

RootX and Grease-X are sold to professional drain cleaners, municipal sewer departments, municipal sewer contractors, property management companies, or any organization or individual who is dealing with pipeline root or grease problems.

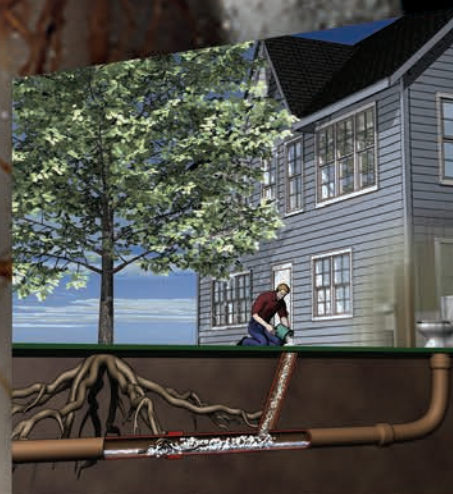
Municipalities use RootX and Grease-X as part of their maintenance programs. The simplicity and effectiveness of RootX and Grease-X applications allow a municipal sewer department to do its own effective root and grease control on its own schedule. Drain cleaning companies also include RootX and Grease-X as part of their service, allowing them to offer an effective solution for their customers' sewer line problems. ♦



RootX was introduced and patented as a root control formula in 1994. For more than 20 years, RootX has been a simple and effective solution for pipeline root control. **800-844-4974 | www.rootx.com**

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**ROOTX**[®]

*visit www.rootx.com/municipalities/guarantee for details.

Saving Money, Facing Consent Decrees Is Easy With SmartCover Technology

The San Antonio Water System was facing an U.S. Environmental Protection Agency consent decree with an estimated cost of \$1 billion. SAWS adopted the EPA's Capacity, Management, Operations & Maintenance guidelines. An important part of its CMOM program was the institution of high-frequency cleaning for its 110,000 manholes and pipeline segments.

Effectively, this meant SAWS established a program of cleaning high-risk pipes with potential for overflows, and instituted routine cleanings at monthly, bimonthly, quarterly, semiannual and annual frequencies. As conscientious sewer operators, SAWS identified 200 high-risk sites for regular monthly cleanings — whether these pipes needed cleaning or not.

SAWS was anticipating over 2,400 annual monthly cleanings to prevent sanitary sewer overflows. After extensive review, SAWS deployed SmartCover at its high-frequency cleaning sites to gain insight and started cleaning as needed rather than cleaning just in case.

MAJOR REDUCTION IN CLEANING

Since deploying SmartCover, 65 cleanings have been identified and performed at locations where previously nearly 1,300 cleanings were scheduled. SAWS has experienced a 95% reduction in cleaning and zero SSO incidents after 216 SSO saves for an estimated \$1 million in savings, according to SAWS.

The results have not only lowered cleaning costs while preventing SSOs, SAWS has deployed a smart infrastructure solution that has fast payoff and excellent return on investment, solves old problems with new technology, extends underground asset lifetime, eases stress on staff, creates staff availability for other tasks, lowers pressure on user rates and significantly decreases operational liabilities.

It took some time to earn the trust of the cleaning crews and staff, according to a city spokesperson, but over time, SmartCover allowed SAWS workers to see the difference.

MANHOLE DIAGNOSTICS

For example, there was one location issuing alarms multiple times a day. The combo operators couldn't believe a 115-inch deep manhole could surcharge and recede in such a short amount of time. Every time the unit would issue an alarm, a combo operator would check the manhole only to find the level had lowered back down to a normal flow.

SmartCover dispatched a customer support field technician to monitor on site during a surcharge to document the measured rise and fall of levels. After analyzing the SmartCover data, a pattern analysis indicated there was blockage downstream. A cleaning crew video inspected the line and found a severe obstruction from debris and grease accumulation three manholes down from the location with the surcharge activity.

Through a site inspection it was determined that this line serves dozens of homes in the neighborhood and SAWS was able to prevent any spill contamination of this nearby community.

SAWS effectively transitioned from a routine, calendar-based cleaning system to a data-driven cleaning program to properly respond to the current actual operating condition of the collections system. The fact that SAWS is embracing smart technology, trusting the data, and benefiting from an optimized cleaning schedule has led to significant positive benefits for the operator, the environment and the communities served by SAWS.

Not only is SmartCover effectively reducing wear and tear on pipelines



from the routine cleaning, it's also allowing SAWS to refocus resources — time, labor and money — on other activities. ♦

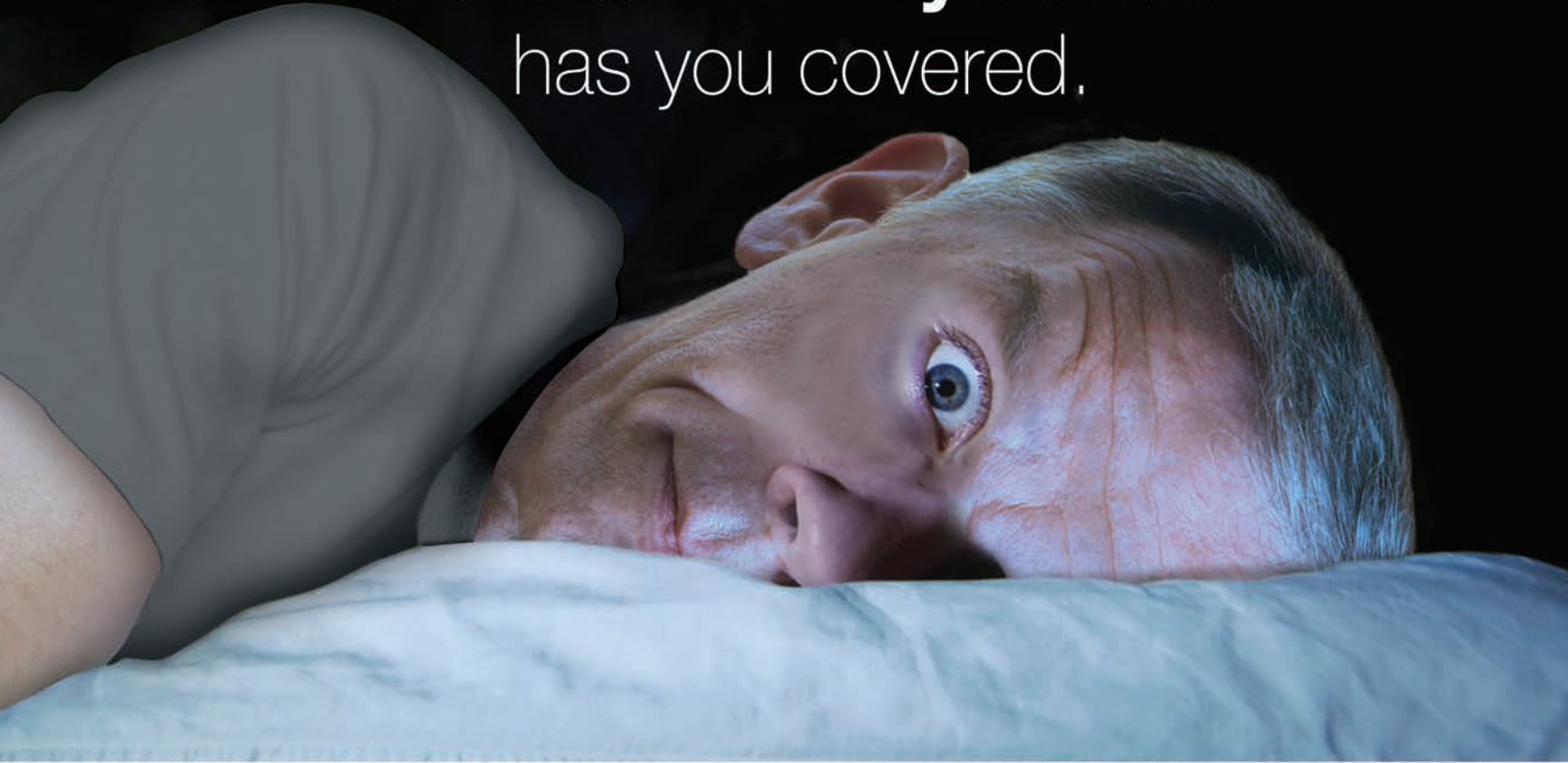


SmartCover technology monitors sewer pipes and transmits real-time data analysis via military-grade satellite communications to alert sewer operators exactly where and when to clean.

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Integrated Wireless Communication Delivers Results for Drilling Contractors

Every drilling project presents a unique set of challenges. In order to effectively deal with changing site conditions, maintain safety and meet deadlines, drilling crews must communicate in real time. Without it, delays and misunderstandings can lead to mistakes and accidents.

COMMUNICATION VS. HEARING PROTECTION

Communicating on a job site involves two opposing needs: being able to communicate properly, and protecting ears from the noise of dangerously loud equipment. There are a number of partial solutions that address only half of this dilemma.

PARTIAL SOLUTIONS

Hearing protectors like earmuffs or earplugs block out noise, but make it impossible to communicate effectively. Removing hearing protection to enable communication can lead to hearing damage.

Communicating with hand signals can be easily misinterpreted and is dependent on line of sight, which is difficult to achieve around equipment and traffic. Meanwhile, continued shouting is stressful and fails if it isn't heard.

Two-way radios require taking your hand off controls to press and hold the push-to-talk button. Cellphone use distracts operators when their eyes move away from gauges and attention wanders from the task at hand.

None of these traditional communication methods provide hearing protection for crew members in high-noise environments.

What about shutting down loud equipment? This solves noise and communication problems when workers are close by. However, distance remains a limiting factor. Also, frequent work stoppages lower productivity, efficiency, and increase wear and tear on machinery.

It's a Catch-22 scenario: How can operators and locators communicate clearly while wearing effective hearing protection?

BENEFITS OF INTEGRATED WIRELESS COMMUNICATION

Sonetics' Portable Wireless Communication Systems combine hands-free, full-duplex communication with advanced hearing protection to let drilling crews communicate clearly and easily while protecting their hearing.

DECT7 wireless technology provides instant, simultaneous two-way communication — just like a mobile conference call — for crews of up to 15. The voice microphone is continuously live with no need to press and hold a push-to-talk button. Noise-cancellation technology and automatic adjustments prevent background sound from being heard by other team members.

Both the headsets and portable ComHub are wireless, allowing crews to move freely around the work zone without being tethered to equipment. Components are battery operated and provide up to 24 hours of talk time



on a four-hour charge.

With a 24 db noise-reduction rating, Sonetics wireless headsets lower all outside sound to safe levels, preventing hearing damage and the risk of permanent hearing loss.

Many workers refuse to wear effective hearing protection due to fear of isolation. Sonetics wireless headsets feature stereo listen-through microphones, providing users with situational awareness and hearing protection at the same time by combining outside sound with voice communication.

"Drilling contractors look for every advantage to help them deliver the highest quality results on or ahead of schedule," says Julie Steding, Sonetics marketing manager. "Sonetics' unique combination of hands-free, wireless communication headsets with integrated hearing protection helps drilling crews be more productive, operate at a higher level of safety, and reduce the stress that comes with daily high-noise exposure." ♦

Sonetics®

Sonetics Corp. creates wireless communication solutions that enable natural conversation in challenging environments. Building on a platform of collaboration and rugged performance, the company's team communication systems deliver a productive, safe and enjoyable work experience. With 35 years' experience, Sonetics Corp. and its Sonetics, Flightcom and Firecom product brands deliver innovative solutions to customers, transforming the way they work.

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Pipe Owners and Communities Can Benefit from C70 HD Video Cleaning Nozzle



The C70 HD Video Cleaning Nozzle by Sewer Robotics boasts eight interchangeable cleaning jets, double sapphire lenses, LED lighting, and a self-leveling HD camera for optimal video recording and clarity. The C70 is designed to jet pipelines ranging from 6 inches to 40 inches.

To ensure durability and longevity on the job, the C70 is equipped with an eight-plus hour runtime, and is fully submersible. The C70 features a flow of 40 to 170 gpm and operates at a pressure of 2,000 to 4,000 psi. The Wi-Fi-integrated nozzle allows for wireless video downloading to the included tablet, which also features GPS.

The C70 is offered in a protective case kit which includes the C70 nozzle, tablet, pipeline-viewing software, jet inserts and battery charger. A range of optional accessories is also available including skids and assessment software.

WHY SELECT THE C70 NOZZLE?

The C70 provides quick and immediate visualization of pipe status by the cleaning crew at very low costs and without requiring TV crew, and it demonstrates to the pipe owner that cleaning has been performed and that the pipe is clean. It also informs the pipe owner about visible pipe problems such as cracks, I&I, cross bores, protruding taps, deposits settled and solid obstructions to offer additional solutions.

The C70 nozzle saves time, water and fuel costs by using specialty nozzles on specific pipe issues, prioritizing troubled areas and avoiding cleaning

pipes that are already clean. It gains a competitive advantage by offering a video with each cleaning, and it keeps track of information on past pipe conditions and cleanings.

The risk of accidents related to cross-boring, protruding traps and other problems is reduced when a contractor or municipality uses the C70. It also allows for the immediate identification of pipes on the verge of collapse.

PIPE OWNER BENEFITS

The C70 provides constant and timely status on the sewage system and cleaning interventions carried out, while providing more information at a lower average cost for improved identification of structural conditions and problems that require immediate attention.

It also allows for pipe owners to standardize cleaning interventions and ensure quality of work performed, and gives insights to plan for short-, medium- and long-term maintenance.

COMMUNITY BENEFITS

On the community's side, the C70 helps reduce water usage, CO₂ emissions and traffic interruptions while preventing sewer backups and overflows.

The benefits listed above also help foster relationships of trust and expertise between local utility management personnel or service contractors and residents.

The C70 is offered in North America exclusively through Vac-Con. ♦



Vac-Con has manufactured more than 8,400 custom-built, truck-mounted machines to serve public and private environmental markets globally since its inception in 1986. Located in Green Cove Springs, Florida, it is one of the largest producers of sewer-cleaning equipment in North America. Vac-Con employs more than 300 people at its single location and is 100% employee-owned, enabling a focused work environment, on-site feedback, and around-the-clock innovation and testing.

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www.vac-con.com/c70-video-cleaning-nozzle

C70

HD Video Cleaning
Nozzle

A Nozzle Idea

The Sewer Robotics C70 video nozzle features 8 cleaning jets, battery pack, LED lighting, WiFi, and self-leveling HD camera for video recording and jetting 6" to 40" pipelines.

Video is recorded on an SD-card inside the nozzle and downloaded to the included tablet via integrated WiFi as soon as the nozzle has returned to the manhole.

Specifications

Scope of Use:	6" - 40" Diameter Pipelines
Jet Angle:	20 Degrees
Hose Connection:	1.25", 1", and .75" Fitting
Flow:	40 - 170 GPM
Pressure:	2,000 - 4,000 PSI
Battery Runtime:	8+ Hours
Video Memory:	8+ Hours

Features

- Auto Upright HD Camera
- 7 Pressure Switched LEDs
- 8 Exchangeable Jet Inserts
- Double Sapphire Lenses
- Wireless Video Downloading
- Rugged Tablet with GPS
- Fully Submersible
- Cleaning Assessment Software (optional)

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An Innovative Way to Be a Good Neighbor for Springdale's New Lift Station

As part of one of the fastest growing metropolitan areas in the U.S., Springdale, Arkansas, is discovering that rapid growth can sometimes be problematic. However, officials at the Springdale Water Utility view growth as an opportunity to infuse innovation into a new lift station.

The lift station site is near residential and commercial areas that are ripe for development, and is situated near a major traffic corridor and an airport. The design capacity of the lift station required an unusually large range of flows, from an initially minimal amount to 4,600 gpm once the area is fully developed.

The station also needed to blend visually with the expected development while seamlessly meeting the subsequent rapidly increasing demands. That's when the utility called Olsson.

PROJECT DETAILS

Olsson's wastewater team began working with SWU to find a location safe from flooding, that fits aesthetically with the neighborhood and shields all components from public view. In addition, a split wet well system with a baffle wall was included in the design to allow crews the ability to do maintenance work without having to shut down the station.

Olsson served as the primary design firm for the project. The work included a site study and site recommendation, process design, civil site and drainage design, structural and architectural design, assistance



Kansas State Chilled Water / Manhattan, Kansas

olsson

We're Olsson, engineers who understand that where there's a project, there's a purpose. Discover why students at Kansas State University are happier than ever at **olsson.com**.



with bid services, construction administration, and landscape design.

The lift station is equipped with features that allow for ease of access, remote monitoring, employee safety and the necessary components that will triple capacity at the time of anticipated expansion. ♦

olsson®

Olsson is a nationally recognized, employee-owned engineering and design firm. Founded in 1956 on the same mindset that drives the company today, its goal is to improve communities by making them more sustainable, better connected and more efficient. Olsson offers planning and design, field services, engineering, environmental services, and innovative technology.

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SpeedyLight+ Offers Quick-Curing CIPP Solution

The need for quick-curing technology is paramount for CIPP projects, and that's where Pipeline Renewal Technologies' SpeedyLight+ comes in. The SpeedyLight+ is an LED-based UV solution for CIPP that cures at speeds ranging from 0.66 to 3.3 fpm.

Because it's compatible with felt (as well as invertible glass fiber), SpeedyLight+ can cure 90-degree bends in lines as small as 4 inches, as well as other challenging geometries like transitions and verticals.

ODOR-FREE UV TECHNOLOGY

Free of styrene and amines — and the associated odor — UV-based cure technologies like SpeedyLight+ raise fewer objections from the public and your crew. LED UV curing is less disruptive to communities because it requires a smaller footprint when performing trenchless repairs, with no large trailers or trucks blocking roadways. In addition, the process requires little time and is energy efficient.

The single-part vinyl ester resin requires no mixing and eliminates shelf life and working time challenges. Any extra resin can be saved for future use.

SpeedyLight+ uses LED lamps to cure, drawing half the power of traditional UV technology without sacrificing intensity. Meanwhile, the SpeedyLight+ camera head is able to show operators what's happening underground every step of the way, giving them the ability to control the speed and accuracy



SpeedyLight+ is LED-based

UV Cure



**Cures Faster,
Relines Bends,
No Styrene or Mixing**

- Works with many approved felt and glass fiber liners
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of the curing process. The highly portable design allows for access from even the most remote sites, curing up to 328 feet of liner in pipes ranging from 4 to 12 inches. ♦



Pipeline Renewal Technologies is an EnviroSight company focused exclusively on the pipeline rehabilitation market. The company delivers innovative technology for no-dig structural lateral renovation, drain and mainline cutting, durable point repair, video drain flushing, and process management.
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Schonstedt Introduces Low-Cost Rex Lite

Since its launch in mid-2017, Schonstedt's Rex pipe and cable locator has been embraced by locating professionals. With its powerful, ultraportable transmitter (up to 5 watts and 100 volts, weighing in at just 3.5 pounds), Rex got high marks from the field right off the bat for overcoming poor grounding and high impedance and putting a strong signal on the target line.

But for some locating jobs, all that power and multifrequency capability may not be called for, so Schonstedt engineering responded with a stripped-down, lower cost version dubbed the Rex Lite which offers dual frequency (82kHz or 33kHz, plus 512 Hz) that calls for only 1 watt of power from 10 AA disposable batteries. Rex uses a rechargeable battery and built-in charger.

Like its older brother, the Rex Lite system weighs in at just over 7 pounds — including transmitter, retractable receiver and accessories — and fits easily into a custom shoulder bag.

LOCATOR USES

Schonstedt magnetic locators are used to find cast or ductile iron pipes, corner markers, curb and valve boxes, steel enclosures, manhole covers, marker magnets, reinforced septic tanks, steel pipes, unexploded ordnance, and well casings. Schonstedt pipe and cable locators are effective and versatile tools for detecting and tracing the path of underground utilities. ♦

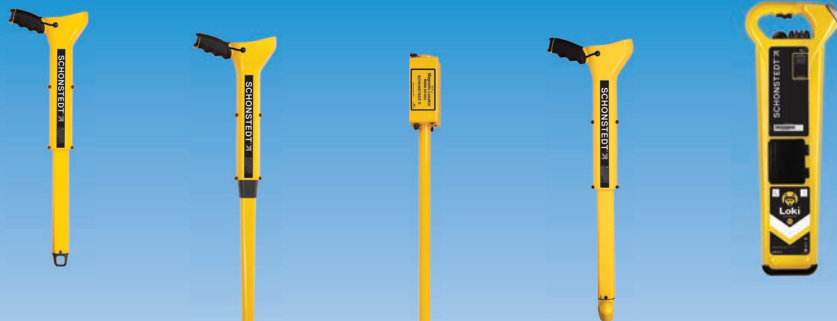
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SE-Series Submersible Chopper Pump Stays Strong Through Wettest Storm in U.S. History



When the main lift station serving the wastewater treatment plant in Morgan's Point, Texas, continually experienced problems with its three standard nonclog pumps, the city spent around \$100,000 over a seven-year period maintaining and servicing them.

The pumps frequently clogged when rainfall totals reached or exceeded 2 inches. Shop rags, pieces of two-by-four lumber, plastic bottles, gloves and wet wipes all commonly clogged the pumps when the standard demand increased.

SUBMERSIBLE CHOPPER PUMP SOLUTION

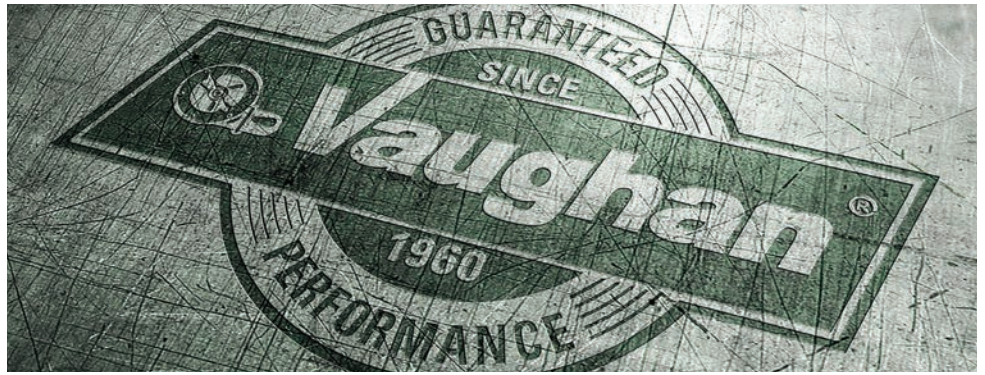
The city of Morgan's Point approved a new Vaughan Co. SE-Series submersible chopper pump, along with a complete guide rail system, to solve the frequent pump clogging problem.

Since the Vaughan pumps were installed in late July 2016, the city has experienced over 100 inches of rainfall with no plugging incidents or other issues.

And during Hurricane Harvey in 2017, the Vaughan pumps ran continuously for 72 hours with no plugging incidents and no problems while pumping over 2.5 million gallons of unscreened sewage through the lift station.

Brian Schneider, city administrator for Morgan's Point, says if the former pumps were still installed that all of the residents would have had sewage in their homes.

"I just wish we had purchased these pumps years ago to eliminate the maintenance headaches we endured, and the costs we incurred keeping our previous pumps in operation," he says. "The Vaughan pumps have been very reliable since installation." ♦

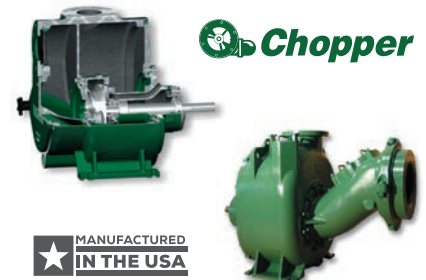


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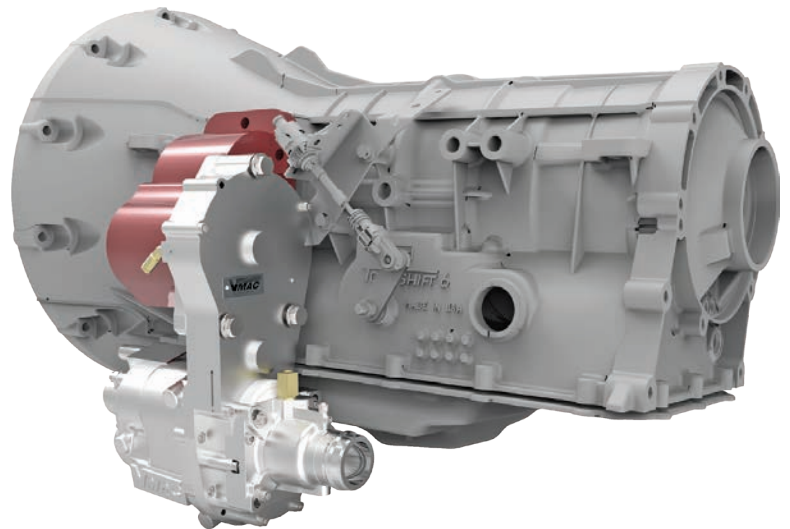


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The DTM70 is a reliable air compressor that easily powers 1-inch impact wrenches, 60-pound pavement breakers and many other common tools. It's well suited for utility servicing, municipal work, commercial tire services and mobile equipment repair.

VMAC's DTM70 air compressors are built for Ford F-250 to F-750 Super Duty 6.7-liter and RAM 3500 to 5500 chassis cab 6.7-liter diesel trucks. The DTM70 is specifically engineered to complement the vehicles' existing transfer case and components, resulting in a sleek design that maintains original equipment manufacturer warranties. ♦



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extraordinary build quality, durability and reliability, and backs its air compressors with a VMAC lifetime warranty. **877-912-6605** | sales@vmacair.com
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Cam Spray to Highlight Sewer Jetting System at WWETT Show



Cam Spray has responded to customer needs for more than 47 years. The company's product evolution is a mix of an old-school, keep-it-simple design while focusing on the latest technology to give customers products that do their work effectively, efficiently and safely.

Keeping in line with that philosophy, Cam Spray plans to highlight its TT20540HZ-750 Sewer Jetting System at the 2019 WWETT Show, offering operators technology and safety benefits usually only offered on higher priced systems.

POWER AND CONVENIENCE

Featuring the latest technology in diesel engine power, the system boasts a 74 hp Turbo Intercooled Hatz Diesel engine designed for quiet operation, fuel efficiency and EPA Tier 4 final compliance. It drives a pump system producing 40 gpm at 2,500 psi.

The sewer jetting system also comes equipped with a new wireless remote engineered from the ground up with exceptional distance control in real-world applications. At the touch of a button, users can control start/stop, throttle up/down and water flow.

A hydraulic powered swivel reel, over-center clutch, 500-foot by 3/4-inch hose and 700-gallon tank capacity add to the draw of the TT20540HZ-750 Sewer Jetting System. ♦



Cam Spray is a small, family-owned company based out of Iowa Falls, Iowa, specializing in pressure washers, drain and sewer jetters, and accessories. The company started in 1963 when John and Jim Campbell purchased a local supply business known as The Manning Howell Co. that specialized in farm and industrial supplies. **800-648-5011 | www.camspray.com**



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TT4025HZ-35 \$55,399

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- Wireless Remote to Control Throttle Up and Down, Water Valve and More
- 350 Gallon Tank with 2" Hydrant Fill
- Features 150' Wash Down Hose and Front-mounted & Over-fender Tool Boxes

CAP Manhole Covers Offer Solid I&I Solution

Municipalities have long suffered trying to open iron manhole covers fused to the frames by hydrogen sulfide corrosion. The common solution is striking the cover with a sledgehammer to break the bond. Both time consuming and frustrating, that pounding often leads to operator injuries, cover and frame damage, or simply skipped inspections if an operator can't open it.

Composite Access Products' (CAP) composite, traffic-rated manhole covers are made in the United States, and they're corrosion resistant, which reduces the operator time, safety risks, and potential vehicle and pedestrian hazards caused by broken or uninspected covers.

Inflow and infiltration also can be reduced with CAPs. The compression molding process reduces part-to-part dimensional variation compared to casting iron which allows for a closer cover-frame fit.

The city of San Antonio recently performed a test, submerging a CAP manhole cover in a water tank. The findings were that CAP's gasketed, four-bolt model leaked 0.00 gpm under 9 inches of water.

THE COSTS OF I&I

I&I costs cities millions each year. The Environmental Protection Agency



fines for sanitary sewer overflow events, unnecessary rain guards, high wastewater treatment costs and astronomical capital costs on over-capacity plants for high rain-water events. Reduced I&I allows for smaller plants.

CAP covers weigh approximately half that of iron covers, reducing operator disability costs from back, finger and toe injuries. They also eliminate the root cause of manhole theft, as metal thieves take them to sell to scrapyards.

"No more replacement costs, vehicle damage and pedestrian falls," says a CAP spokesperson. "CAP's thermosetting, UV-inhibited composite formula gives strength and weatherability. CAPs are also transparent to transmission signals so there's no need for antennae holes."

CAPs are available in various colors, stone looks, custom logos and with encapsulated radio-frequency identification. Finally, CAPs are affordable and available in weeks, not months. ♦



Composite Access Products was started in 2015 by W. Chad Nunnery, former executive of a large U.S. composites leader. After learning of the desire for American-made advanced composite utility cover solutions, CAP was formed in McAllen, Texas. The company uses high tonnage compression presses for the best blend of quality and affordability. **844-344-2271 | www.justcapthat.com**

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Detect Water Losses Early With SePem 155 Noise Logger

Leaks in water pipe networks can result in significant water losses. Thanks to systematic monitoring of the network with SePem data loggers, you can reliably identify existing leaks and catch new ones as early as possible.

In relation to the size of a measuring area, the volume of water initially escaping from a new leak is usually so low that it can't be clearly distinguished from minimum nighttime consumption when measuring the flow. In practice, many months often pass before the size of the damage is great enough to produce a flow volume that can clearly be identified as a leak. SEWERIN's SePem 155 can report the leak after just one night, according to the manufacturer.

SIMPLE, RELIABLE INTERFACE

The SePem 155 data loggers are perfect for mobile use and can also be used for the stationary monitoring of water supply networks. The SePem 01 Master receiver, with its simple and intuitive menu navigation, provides fast and reliable results and can also be reliably operated by less experienced users. The measuring times and periods of radio activity are freely programmable. ♦



SEWERIN is an international, technically innovative, family owned company with headquarters in Gütersloh, Germany. With top-level products and services, the company is a technology leader and partner to the gas and water supply industry. Together with its 85 years' experience in the development of measuring devices, the knowledge accumulated by the company's measuring teams contributes to its success. **888-592-9916** | sewerin-usa@sewerin.net | www.sewerin.com

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Reed's Cordless Pipe Beveler deburrs and bevels plastic pipe of 2 inches or larger diameter. This lightweight tool creates fast, smooth bevels in the field with ease.

It's useful on most PVC glued joints and some sizes of bell and gasket joints. It's adjustable for bevel length, and the Reed RBIT1 router bit evenly cuts a 15-degree external bevel up to 5/8 inch long.

Add the optional Reed RBIT2 router bit to create 12-degree bevels up to 1 inch long. To eliminate damage to the gasket, pipe bevel is required when installing into a pipe bell. Bevels on cement joints allow for even distribution of solvent cement glue to maximize glue contact area.

For internal bevels on plastic conduit of 2 inches or more, electrical and utility contractors appreciate the ability to make pipe interiors snag-free. ♦



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Utility Barges From American Pleasure Products Provide Operator Stability

When it comes to maintenance work or routine inspections on treatment ponds, lagoons or reservoirs, utility service barges from American Pleasure Products provide a safe, stable working environment for operators. The Aqua Cycle 8-by-12 utility service barge offers stability thanks to two 12-foot-long by 23-inch-diameter pontoons. The barge includes aluminum-frame construction with stainless steel hardware and the deck is covered with a nonslip nickel-plate vinyl for stability and easy cleaning.

Keeping employee safety in mind, a heavy-duty protective handrail is included. To maneuver the barge, the company provides an outboard motor mount for small gasoline or electric motors.

The standard features include lifting crane with 1,000-pound capacity, a life ring and weld-on lifting eyes on each corner. The company also offers custom manufacturing for unique needs. ♦



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- Safety chains
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Full Range of Configuration Options Available for vLoc3-Pro Utility Locator

The vLoc3-Pro utility locator by Vivax-Metrotech Corp. introduces new innovative tools for locating buried utilities, assuring damage prevention while gathering information for analysis. With two sets of screened 3D antennas, signal distortion is easily detected and displayed on a bright full-color display.

OPERATING MODES

Along with classic locate screens, the vLoc3 series offers new perspective screens, including Vector Locate for fully automatic nonwalkover locating; Transverse Graph showing both peak and null while providing immediate measurement of signal distortion; Plan View showing the relative orientation of the cable at any angle; and a new graphical Sonde screen with guidance arrows leading to the sonde location even if it's vertical.

USER CONFIGURATION

The vLoc3 series is user configurable, containing eight passive locate modes, fault-find mode, SD (showing direction of outgoing current), and a range of frequencies from 16 Hz to 200 kHz.



Audio and mechanical vibration alerts also can be programmed by the user to provide warnings for shallow depth, overload, overhead cables and excessive swinging.

Plug-in-play options for the receiver include an optional Bluetooth module useable with external GPS devices, the Marker Locator Adapter EMS foot to locate buried markers, and an A-frame cable sheath fault locator.

FLEET MANAGEMENT

Manage a fleet of utility locators with the free MyLocator PC software. Users can configure a fleet of locators by turning on or off features, selecting which frequencies the user has access to and creating custom startup screens. The MyLocator software also will transfer data from the locator to a host computer, perform software updates and save the locator's settings. ♦



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YES, YOU CAN BE TOO NICE

An inability to constructively confront colleagues about various issues can derail organizations

By Ken Wysocky

Developing a workplace with a “culture of nice” sounds like a worthy goal for any organization. After all, who wants jerks for employees?

But a workplace that fosters such a culture also needs to ensure the “nice” factor doesn’t mask a hidden problem: Employees who act nice in order to avoid confronting colleagues with things they find offensive or that hamper their productivity. Instead, they just maintain their autopilot smiles and pretend everything is copacetic instead of confronting the issues head-on in a healthy, constructive manner.

By doing so, however, they improve the odds of increased stress and poor mental health as issues fester. And organizations run the risk of higher turnover and decreased productivity as team relationships slowly unravel.

In short, a culture of niceness for the wrong reasons can actually derail organizational success, says Stacey Engle, president of Fierce Inc., a training company that teaches people how to have effective conversations that boost bottom lines.

Stacey Engle

If this kind of behavior and workplace culture is all too familiar, you’re not alone. A recent Fierce survey of 1,000 employees in the U.S. shows that 63% of respondents don’t share ideas, opinions or concerns for fear of being perceived as combative or uncooperative. Furthermore, eight out of 10 employees think it’s important for colleagues to think they’re nice, the study reveals.

Most people want to be liked. It’s human nature. From childhood on, we’re encouraged by parents and others to not say anything if we don’t have something nice to say. And more often than not, employees see what happens to colleagues who speak their minds and then suffer from adverse consequences, Engle notes.

Natural tendency

Most people want to be liked. It’s human nature. From childhood on, we’re encouraged by parents and others to not say anything if we don’t have something nice to say. And more often than not, employees see what happens to colleagues who speak their minds and then suffer from adverse consequences, Engle notes.

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.

“Most people aren’t encouraged to effectively address issues head-on,” she explains. “We tend to avoid difficult conversations or conversations that we frame in our own minds as difficult. But as more and more organizations emphasize transparency and accountability, it forces people to face issues directly. ... So they need to be skilled at this.”

Those who lack the skills run the risk of upending their careers. How? Inability to meet project deadlines because you don’t know how to have a healthy confrontation with a colleague whose poor work ethic is bogging things down, for example. And in doing so, you’re only making yourself a victim of the situation instead of proactively trying to change it, Engle says.

In addition, organizations miss out on potential innovations and collaborations when people are afraid to voice opinions. Or they end up wasting substantial amounts of money on projects that have little chance of success, just because saner minds didn’t feel comfortable voicing concerns.

Moreover, we tend to overexaggerate in our own minds the possible negative effects of voicing concerns. The truth in many instances is that colleagues will feel relieved when you clear the air by healthily raising concerns about various things, Engle notes.

“As humans, we like to tell stories,” she explains. “So we’re always telling stories in our head of what might happen (if we raise a concern), and we usually envision the worst outcome, which is a shame because almost all the time having these conversations enriches relationships.”

Let’s talk about it

So how do we go about raising concerns in a healthy and nonthreatening way? First of all, it’s all about context; it’s important to frame the conversation as a joint exploration of a particular issue and how it affects things. “Think of it as really not confronting a person, but confronting an issue,” she says.

It’s important to name the point of friction specifically — explain exactly what is bothering you and why it’s an issue for you. Brevity and simplicity are critical. “People often avoid these conversations for a

Little Rock Works at the Speed of Sound With Rapid Acoustic Inspection

With a time-based maintenance program, Little Rock (Arkansas) Water Reclamation Authority annually serviced 40% of its small-diameter collections system using high-cost resources such as CCTV or cleaning.

In January 2017, Little Rock started using the Sewer Line Rapid Assessment Tool (SL-RAT) to rapidly screen 100% of its small-diameter pipes for blockages on an annual basis at low cost. They focused high-cost resources on the 20% of the system that was determined to have blockages through acoustic screening.

By using acoustic technology to screen before cleaning, Little Rock cleaned 32% fewer linear feet but increased cubic debris removed by 116% in 2017. By 2018, the city reduced sanitary sewer overflows by approximately two-thirds without hiring any additional personnel. ♦



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long time, so by the time they do have them, they do what we call a ‘dump truck’ — rattle off 16 examples of the behavior in question,” she observes. “That’s very overwhelming.”

It’s important to create a 60-second opening statement that clearly outlines the issue at hand, offers a brief example or two, and explains the negative effects.

“The whole premise is that you only have 60 seconds before someone experiences a ‘flight-or-fight’ response,” Engle says. “Again, you need to view this as examining an issue side by side with the other person. And you need to be very intentional with the conversation.”

Practice, practice, practice

Like anything else, practice makes perfect. Also consider that reading the statement to yourself can be drastically different than actually saying it out loud. So it may help to read it aloud to a trusted friend or partner, Engle says.

Should you approach a difficult conversation any differently with a manager than with a colleague? Not really, Engle says, noting that the concept and strategy remains the same, although the stakes certainly are higher when confronting a supervisor. In either case, it helps to schedule a specific time for such conversations; you want to be sure you’re fully prepared, plus it’s not fair to catch someone completely off guard with a spur-of-the-moment conversation, she says.

There’s always the possibility that the person you’re talking with will get defensive. They may refute everything you say or blame it on something or someone else. “But you have to be able to hold the space and say, ‘This is what I experience,’” Engle advises.

“You may have to continually redirect the conversation,” she adds. “If the person gets overwhelmed or emotional, it’s completely fine to either give him or her a moment or stop and schedule a follow-up meeting.”

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Training is critical

Many times companies need formal training programs to teach employees how to face issues constructively. Organizations also need to consider if they truly want an environment where people can dissent and express their opinions in a healthy way versus just pay lip service to those concepts, Engle says.

But if no training is available, employees can teach themselves; it just takes preparation and practice. And if they’re still fearful of the consequences of candor, they should focus on this: Any real change in outcomes — both personally and professionally — requires healthy conversations. And you enhance your chances of affecting that change if you do it the right way at the right time, she notes.

“People make assumptions that things can’t ever change,” she continues. “But unless someone tries, people — and companies — miss out on eliminating potentially damaging issues. In addition, lots of people leave jobs simply because they think something will never change.”

“If you don’t do anything, it’s likely everything stays the same,” Engle says. “And if what’s happening right now isn’t what you need to get where you want to go, you need to move the needle yourself.”

The irony is that when asked, most employees want colleagues to share any issues and concerns and work toward solutions. “Almost always, the answer is yes,” Engle says. “Yet we still avoid confrontations. We all need to keep in mind that we connect more deeply with people who level with us. And when that happens, it’s even easier to talk about real issues and challenges.” ♦

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LOCATION AND LEAK DETECTION

By Craig Mandli

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ELECTRONIC LEAK DETECTION

2. SubSurface Locators LD-18

The **LD-18** digital water leak detector from **SubSurface Locators** reduces ambient, intermittent noises from dogs barking, cars passing by, footsteps and people talking. Its digital electronics sample the sounds every few

thousandths of a second, and if it detects an intermittent sound, it suppresses it instantly. Water leak sounds are almost always continuous noises, and the unit can identify continuous leak sounds, even in difficult conditions like busy streets. 775-298-2701; www.subsurfaceleak.com.

ELECTRONIC LINE LOCATORS

3. Radiodetection RD8100

The **RD8100** cable locator from **Radiodetection** is engineered to deliver high precision for damage prevention when locating buried cables and pipes. This advanced range of underground utility locators offers optional integrated GPS and usage logging. Containing an arrangement of five custom-manufactured, precision ground antennas, it allows the user to choose the best method to locate specific pipes and cables. Integrated GPS and usage-logging options automatically generate data for customer reports or in-house quality and safety audits to promote the best working conditions. 877-247-3797; www.radiodetection.com.

4. Schonstedt Instrument Loki

Schonstedt Instrument's Loki is a multifrequency locator solution designed to sweep large areas to quickly and easily locate buried assets. With



Dual Mode capabilities, the Loki can simultaneously search for and identify transmitter and power signals for quick and accurate sweeps prior to excavation. Available in two models, Contractor and Utilities, the locator operates in Active, Inductive, Sonde and Passive modes. The ShallowAlert warns of shallow pipes and cables, and NoiseProtect enables use in electrically noisy environments. Each model is optimized to perform in the demanding environments of the construction and utilities industries. **888-367-7014; www.schonstedt.com.**

5. Subsite Electronics UtiliGuard

The **Subsite Electronics UtiliGuard** utility locating system includes ambient interference measurement that automatically scans the surrounding area for noise and recommends the best frequency among its 70 options. To help users make more accurate locates of obstructed utilities, it measures distances (depth) both horizontally and vertically to the utility. To ease use, the system has an intuitive, six-button, multilanguage operator interface and a high-contrast LCD to ensure visibility in all conditions, including direct sunlight. A dual-output feature allows users to connect the transmitter to two utilities at once, and the system is Bluetooth-enabled to simplify data transfers. Its rugged IP65-rated housing protects against a job site's dusty, dirty and wet conditions, and its transmitter and receiver battery life is 100 and 30 hours, respectively. **800-846-2713; www.subsite.com.**

PUSH TV CAMERA SYSTEMS

6. 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 anti-glare LCD monitor delivers a clear, crisp picture even in direct sunlight. To record 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.**

7. MyTana Mfg. DrainSteer

The **DrainSteer** from **MyTana Mfg.** uses high-pressure water for propulsion, steering and cleaning as it captures live inspection video from inside lateral lines. Its design makes it able to traverse multiple bends in pipe, steer through branches and levitate above debris. With these special capabilities, municipal contractors and commercial plumbers can locate failed pipes, cross bores and blockages, as well as clean the lines. It is fully water-driven, as six propulsion nozzles generate the power needed to pull its own flexible hose through multiple bends, and a side nozzle on the camera can be aimed to steer through diverging pipes and hover past obstacles. An optional forward-facing nozzle can be pulsed to clear debris and other obstructions. The system works with any high-pressure water source, including pressure washers and combination trucks. Its 1/2-inch hose comes in lengths from 115 to 190 feet. **800-328-8170; www.mytana.com.**

8. RapidView IBAK North America MicroLite Pushrod System

The **MicroLite Pushrod System** from **RapidView IBAK North America** is a lightweight, small-diameter push system with durable steel-frame construction that delivers a high-quality image for all contractors and plumbers. Fitted with 100 feet of push cable, powerful LED lighting and an auto-uprighting camera, it is designed to inspect pipelines 2 to 4 inches in diameter. The

(continued)



entire system is powered by rechargeable batteries and is equipped with the positionable MicroLite Command Console, which includes a 10-inch touchscreen monitor, full Windows operating system, two USB connections and recording software. **800-656-4225; www.rapidview.com.**

9. Ratech Electronics 5/8-inch Ultra Micro Camera

The **5/8-inch Ultra Micro Camera** from **Ratech Electronics** is tiny enough to inspect kitchen sinks and toilet P-traps. Made for 1- to 4-inch pipe inspections, it conveniently maneuvers around bends and turns smoothly. It is adaptable to any existing Ratech Electronics system, including the Elite SD/USB, Fast Peek or Mini Peek portable drainline units. The camera is complemented with four super-bright LED lights producing an ideal color picture. **800-461-9200; www.ratech-electronics.com.**

10. RIDGID CrossChek

The **RIDGID CrossChek** enables users to visually inspect where they have bored before installing a new utility line, helping reduce the likelihood of undetected cross bores. It is designed for bore slots 1.75 to 3 inches wide and works in most soil types, including wet clay and dry sand. It also allows easy digital documentation of inspections, further reducing risk and uncertainty by allowing multiple individuals to review footage before new utility installation. In addition, it integrates seamlessly into existing boring processes. Simply cut the bore using a pneumatic mole, remove the mole and connect the unit to the air hose. Pull the air hose back through the bore slot to visually inspect and document the bore. **800-474-3443; www.ridgid.com.**

11. Trojan Worldwide C100-512SL

The **C100-512SL** self-leveling color camera system from **Trojan Worldwide** is a lightweight, easy-to-operate system designed for 1 1/2- to 4-inch lines. It has a 1-inch, self-leveling waterproof color camera head with adjustable

LED lights. The 512 Hz sonde transmitter is built into the spring of the camera, which allows more flexibility when maneuvering around sharp turns, and also creates a stronger signal for locating. The system has a 115-foot durable pushrod and a built-in footage counter. The display screen is a 7-inch LCD with DVR, with SD card recording and a built-in microphone for voice recording. The built-in battery offers seven hours of runtime and has an AC adapter for charging or direct power. The SD card, USB adapter for the SD card, protective visor and two skids are included, along with a waterproof case for the entire system to fit in for easy transportation. **800-392-4902; www.trojanworldwide.com.**

12. Vivax-Metrotech vCam-6

The **vCam-6 HD** inspection system from **Vivax-Metrotech** includes features such as text writer, voice-over, locatable sonde and traceable pushrod as standard equipment. The standard reel is available with 200, 300 or 400 feet of pushrod and choices of 1.3- or 1.8-inch self-leveling HD camera. The system includes a daylight-viewable control module with a 9.7-inch HD LCD monitor, distance counter and internal rechargeable batteries with five-plus hours of battery life. Video recording and JPG-format pictures can be saved to the internal 1 TB hard drive. The control module has built-in Wi-Fi to stream live video and snapshots to smartphone apps or directly to a computer for recording to the hard drive. **800-446-3392; www.vivax-metrotech.com.**

SMOKE LOCATORS

13. Hurco Technologies Power Smoker 2

The **Power Smoker 2** from **Hurco Technologies** quickly locates leaks in new and existing plumbing systems. The machine is connected to a clean-



out, and smoke is sent through the system to reveal any problem areas. The system uses LiquiSmoke, a laboratory-tested safe smoke that costs cents per minute to use and has an indefinite shelf life. When the test is complete, the smoke dissipates without leaving an odor or residue. **800-888-1436; www.hurcotech.com.**

14. Superior Signal smoke testing

Smoke testing from **Superior Signal** can effectively help find cross-connected sewer lines and other sources of surface inflow causing wet-weather sanitary sewer overflows. Smoke candles provide visible smoke to detect more faults and at a longer distance. It is a fast, easy and inexpensive way to find leaks and faults in any type of collections system, with generators available in sizes to meet any need, from 30 to 500,000 cubic feet. **800-945-8378; www.superiorsignal.com.**

15. TURBO FOG Division of Kingscote Chemicals M-45

The **TURBO FOG Division of Kingscote Chemicals M-45** is a versatile, lightweight, portable, self-contained smoke generator that's capable of producing dense, voluminous white smoke using leak-proof liquid smoke cartridges. Each cartridge can be replaced in seconds, even while the unit is operating, for uninterrupted smoke production. No additional smoke bombs or pump garden sprayers are needed for additional test time. The Briggs & Stratton-powered, turbine-type blower weighs 45 pounds and creates a discharge velocity of over 75 mph and 2,000 cfm. It continues to work under pressure in up to 5.75 inches of water. It is available with a plumbing conversion kit. **800-394-0678; www.turbo-fog.com.**



TRANSMITTERS

16. Siemens Process Instrumentation SITRANS FS230

The **SITRANS FS230** digital clamp-on ultrasonic flowmeter from **Siemens Process Instrumentation** is a process-optimizing solution for measuring flow in virtually any liquid application. Designed to provide both performance and cost savings, it is a suitable fit for industries requiring high-quality liquid flow measurement — including water and wastewater, hydrocarbon, HVAC and power, food and beverage, pharmaceutical, chemical, mining, and pulp and paper. It offers accuracy of 0.5% to 1% of flow rate and repeatability of 0.25% according to ISO 11631. Its 100 Hz data update rate allows it to detect the smallest, most rapid fluctuations in flow. Its Digital Sensor Link digitizes the signal for a strong signal-to-noise ratio and high-precision measurement. It has simplified installation with multiple setup wizards and an easy-to-use human-machine-interface graphic display with menu navigation and the option to display up to six customizable parameters at once. **800-365-8766; www.usa.siemens.com/pi.**

17. SmartCover Systems UnderCover 2

UnderCover 2 from **SmartCover Systems** makes use of advanced microelectromechanical systems technology for intrusion detection and unauthorized opening of sewer manholes to combat illegal dumping, vandalism and other security issues. The MEMS technology improves the robustness of entry detection and expands the configurability of the systems at remote and hard-to-access locations for utilities, communications, nuclear facilities, border security, transportation infrastructure, military installations and other applications. It is an integrated function within all of SmartCover's remote monitoring units, including leveraging Iridium satellite communications impervious to local power or cellphone outages. **760-291-1980; www.smartcoversystems.com.** ♦

Leak detection system saves money for Texas school



Problem:

A leak beneath Anna Middle School in Anna, Texas, caused water to surface in the parking lot. The problem presented potentially costly demolition and repairs.

Solution:

The school called Spencer Plumbing, and a technician used a **Gen-Ear LE** water leak detection system from **General Pipe Cleaners/General Wire Spring**. Compact and lightweight, the unit uses an advanced acoustical leak detection system to quickly and accurately locate leaks in cast iron, copper, steel and PVC lines. The equipment quickly found two distinct problems. "We fixed the small inside leak without major disruption," says Bryan Spencer, owner of Spencer Plumbing. He then showed how the serious outside leak actually channeled water down a ditch to where it was surfacing in the parking lot.

RESULT:

"We pinpointed problems so clearly and quickly that the customer saved thousands in unnecessary demolition and repair work," Spencer says. And the new equipment's learning curve proved surprisingly short. "Once we learned to identify different types of leak sounds, we began using the system immediately." 800-245-6200; www.drainbrain.com.

Acoustic technology helps assess water utility pipeline health

Problem:

Netzgesellschaft Düsseldorf mbH (NGD), which is responsible for energy and water supply for the North Rhine-Westphalia capital of Düsseldorf, Germany, has a significant number of steel and cast iron transmission and distribution mains that are due for replacement. Without historical data and with limited capacity for underground work to assess its structural condition and remaining service life, NGD needed a cost-effective solution to prioritize its pipeline rehabilitation and replacement decisions.



Solution:

The utility used **Echologics ePulse** condition assessment technology from **Mueller Water Products** because of its ability to locate leaks noninvasively while assessing actual pipe condition without any excavation. This is accomplished by attaching acoustic sensors to existing contact points, such as fire hydrants or valves, or through direct contact with a pipe and inducing a sound in the pipeline. The acoustic sensors capture the time it takes the sound wave to travel between two sensor stations. The speed at which the sound wave travels is dictated by the condition of the pipe wall. The data feeds through algorithmic analysis to measure the strength of the pipe wall — an ideal measure of actual pipe condition.

RESULT:

After analyzing a little over 17 miles of pipeline, ePulse pinpointed three leaks and determined that only 30% of the cast iron trunk mains needed replacing within the year. The degradation of wall thickness varied from 15% to 34% on the DN1220 pipes and 15% to 22% on the DN600 mains. The utility can now prioritize pipe replacement and plans to remeasure the moderate pipes after five years to evaluate any change in structural wall thickness. 800-423-1323; www.muellerwaterproducts.com. ♦

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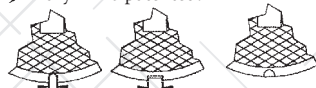
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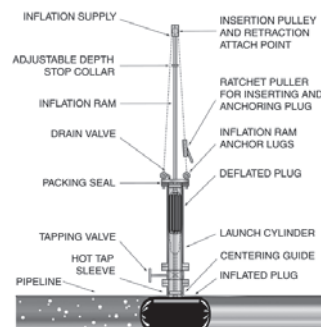
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Advanced Drainage Systems acquires Infiltrator Water Technologies

Advanced Drainage Systems announced the acquisition of Infiltrator Water Technologies for a purchase price of approximately \$1.08 billion from an affiliate of the Ontario Teachers' Pension Plan and other stockholders. Infiltrator has been a long-standing supplier and customer of ADS for over 15 years. In a press release, Scott Barbour, ADS president and CEO, states, "This acquisition will allow us to offer an enhanced suite of water management solutions to a broader set of customers and expand our addressable opportunity in the attractive and related onsite septic business."

Aries Industries expands nationwide dealer network

Aries Industries announced it added two companies to its growing network of dealers. Williams Equipment, based in Henderson, Colorado, for over 40 years, will sell and service Aries pipeline video inspection products, such as the Mobile Pathfinder System, to customers in Colorado and New Mexico. Also joining the Aries family of dealers is Instrument Technology Corp., located in Sonoma County, California. ITC, in business for nearly 20 years, will provide Aries products and service to customers in Northern California and Nevada.

InfoSense approved as BuyBoard vendor in Texas

Effective Oct. 1, InfoSense is an approved BuyBoard vendor through the Local Government Purchasing Cooperative. This allows participating member cities, counties and other local government agencies in the state of Texas to eliminate the bidding process and save time and cost associated with placing bids. BuyBoard vendors must go through the competitive procurement process and abide by competitive procurement laws to be approved.

Anue Water Technologies names new senior sales manager

Anue Water Technologies announced the addition of Sharon Paterson as senior sales manager. She joins Anue with 15 years' wastewater industry experience, having most recently served in business development and marketing positions with Seaglass Consulting, Veolia and Envirosuite. Paterson earned her bachelor's degree in communications at Calumet College of St. Joseph in Indiana and her MBA from the University of Chicago Booth School of Business.



Sharon Paterson

VMAC makes 2019 Best Workplaces in Manufacturing list

VMAC earned its position within the Great Place to Work's Best Workplaces in Manufacturing, joining the top 11 manufacturing organizations in Canada. To be eligible for the list, organizations must be Great Place to Work Certified in the last 12 months, which requires

co-workers to complete a confidential Trust Index Survey. An additional culture application must be submitted by organizations to be considered for the specialized Best Workplaces lists, such as manufacturing.

Liberty Pumps names new president

Liberty Pumps announced that the board of directors elected Robyn Brookhart to the position of president. She replaces Charlie Cook who will remain CEO and chairman. She has been with the company for 22 years and has served in a variety of positions including sales and marketing, customer service and manufacturing. Most recently she has been the company's executive vice president, as well as its chief operating officer, a position she will retain.



Robyn Brookhart

Mathias joins Boss Industries as sales representative

Boss Industries named Rory Mathias as its new Western regional sales manager. Based on the West Coast, he will be the key contact for the telecom and utility contractor industries along with heavy equipment, construction and mining segments.



Rory Mathias

Bigley to serve second term as WESTCAS president

Steve Bigley, director of environmental services for Coachella Valley Water District, was named to a second term as president of the Western Coalition of Arid States. Formed in 1992, WESTCAS is dedicated to protecting the environment and encouraging the development of water programs and regulations that ensure adequate supplies of high-quality water for those living in arid regions. WESTCAS currently has members in California, Arizona, Colorado, New Mexico, Nevada and Texas.



Steve Bigley

Vacuworx names Williamson regional sales manager

Vacuworx announced that Bruce Williamson was hired as regional sales manager for the Southeast, serving the territory of Florida, Georgia, Alabama, North Carolina, South Carolina, Kentucky and Tennessee. ♦



Bruce Williamson

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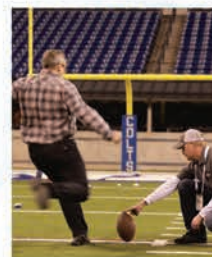


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Product Spotlight

Lightweight alternative helps bring manholes to grade

By Craig Mandli

In the past, heavy concrete risers were typically used to build up a manhole or catch basin chimney so the cover and its frame could be raised during manhole construction or road resurfacing. But those risers were cumbersome and required heavy machinery to install.

As an alternative, Cretex Specialty Products offers the PRO-RING manhole grade adjustment system — a lightweight alternative to concrete grade rings or brick and mortar used in the construction of manholes, catch basins and other underground utility structures. Available in round, square and rectangular, these rings are manufactured from expanded polypropylene, known for its exceptional strength-to-weight ratio, durability, chemical resistance and long service life under harsh conditions. According to Lee Haessig, Cretex Specialty Products general manager, the product's ease of installation and durability is its calling card.

"One man can install the PRO-RING system in just minutes to within a quarter inch of finished grade, and they are watertight," he says.

"Where concrete rings break and may cause injury, the PRO-RING system eliminates the hazard, helping minimize the risk of injury," says Bill Blashka, director of Public Works for the town of Sheboygan, Wisconsin.

At 7.5 pcf density, a single 36-by-24-by-6-inch PRO-RING weighs just 14 pounds and is easy for a single worker to handle and install. Alternatively, a typical concrete grade ring weighs 40 to 70 pounds per vertical inch, making PRO-RING almost 20 times lighter. The ability to hand-carry these adjustment rings into backyards, easements and remote locations makes the overall process safer and

less disruptive. According to Haessig, the ease of transport and install has made the product a versatile solution compared to other grade leveling methods.

"PRO-RING was originally developed with the sanitary sewer market in mind; however, we have learned there are applications in storm sewer, telecommunications, electrical and other underground structures," he says. "The PRO-RING system dramatically speeds manhole installation and repair time. Sites can be opened, repaired and closed in one day, reducing overall costs from 20% to 30%, based on conditions."

Haessig points out that the rings help solve an issue that has plagued installers for decades: sinking and deteriorating manholes due to weak grade adjustments.

"The grade adjustment area is typically the weakest part of manholes, catch basins and other underground utility structures," he says. "We are approaching the 10-year anniversary of the first PRO-RING installation that was done in the city of Beloit, Wisconsin, and recent inspections confirm that the rings are in excellent condition and remain watertight." 800-345-3764; www.cretexseals.com.





1. GSSI StructureScan Mini XT ground-penetrating radar

The Geophysical Survey Systems Inc. (GSSI) StructureScan Mini XT portable ground-penetrating radar can help locate rebar, conduits, post-tension cables and voids. It can also help identify structural elements, including pan deck and concrete cover, and provide real-time determination of concrete slab thickness. The radar is equipped with a 2.7 GHz antenna, positioning system and control unit combination. It can reach depths of 24 inches and is positioned 0.31 inches off the surface, providing enough ground clearance that it can be used over rough concrete surfaces. **800-524-3011; www.geophysical.com.**

2. Toro TRX walk-behind trenchers

The TRX-250 and TRX-300 walk-behind trenchers from Toro feature Intelli-Trench technology, an innovation that optimizes the machine's hydraulic flow for the digging conditions. The system automatically diverts the hydraulic flow from the traction motors, providing more power for the trencher head. As a result, the traction handle can be held in one place without requiring constant adjustment, reducing operator fatigue and optimizing performance. In addition, the Intelli-Trench feature decreases track wear and maintains engine revolutions per minute for efficient engine cooling. The TRX models also have a new hydraulic design that requires significantly fewer components than previous models, simplifying maintenance and potentially reducing service needs. **855-493-0088; www.toro.com.**

3. Avanti International AV-500 epoxy injection grout

The AV-500 epoxy line from Avanti International is used to stabilize soils and rock, restore structural integrity, stop leaks and control groundwater. The line includes the AV-502 injectable bonding series, developed for structural concrete repair by crack injection, gravity feed or patching. The AV-522 crack sealing paste is a two-component, nonsag

structural epoxy designed to offer mechanical strength in anchoring and bonding applications. The AV-580 joint filler epoxy is ideal for filling saw-cut control joints and contraction joints in concrete. And the AV-590 joint filler is a two-component, 100% solids, VOC-free, rapid-setting polyurea system that cures to a semirigid resiliency to support joint edges. **800-877-2570; www.avantigrout.com.**

4. Bricking Solutions rolling work platform

Bricking Solutions' rolling work platform is designed for improved safety and efficiency during maintenance of horizontal vessels. The platform offers 25% increased productivity over traditional rolling scaffolds and features a durable, custom-engineered design. It is used in a variety of applications including water treatment, tunneling and mining. Coupled with a hydraulic jack system, the rolling work platform is erected in as little as 30 minutes and adjusts to maintain a level working surface in less than 20 minutes, while operating in vessels with an incline of up to 20 degrees. Four-inch swivel caster wheels further increase mobility on flat or rounded surfaces, such as those found in tunnels and pipes. **360-794-1277; www.brickingsolutions.com.**

5. MyTana Mfg. PGR400 municipal inspection system

The PGR400 municipal inspection system from MyTana Mfg. is capable of inspecting up to 400 feet of pipe. The system's structural upgrades prioritize mobility, ease of use and versatility. New features include a sturdier and more compact reel frame; balanced weight and anti-skid feet making it easier to tilt and maneuver; a monitor mount offering full swivel for optimal viewing while inspecting; a reel brake with adjustable drag to control or halt spin; and multiple push-rod lengths. Designed for small to medium municipalities, the inspection system is suitable for 4- to 12-inch lines. Additional features include a 12-inch daylight-readable screen, all-digital recording and wireless streaming to any mobile device. **800-328-8170; www.mytana.com.** ♦



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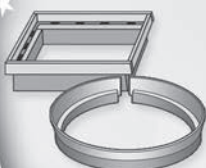
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WORTH NOTING

PEOPLE/AWARDS

Terry Suehr was hired as director of the Department of Project Implementation for the city of Alexandria, Virginia. Stormwater projects are among the city's infrastructure initiatives.

Plaster Creek Stewards received the Learning Network Signature Award from the Urban Waters Learning Network, Groundwork USA, River Network and U.S. Environmental Protection Agency. The award honors individuals and organizations that have made significant contributions to the network of urban waters practitioners and to the field of urban waters protection and restoration. Plaster Creek Stewards is an initiative of Calvin University dedicated to returning health and beauty to one of the most contaminated urban waterways in west Michigan. A major goal of the work is to reduce the amount of stormwater runoff that enters Plaster Creek.

Santa Clarita Valley residents **Wayne Crawford**, president of Santa Clarita Concrete, and **Jason Gibbs**, a mechanical engineer with GP Strategies, were named as advisers to the Safe, Clean Water Program Watershed Area Steering Committee for Los Angeles County.

LEARNING OPPORTUNITIES

Webinars

The American Public Works Association is offering:

- Nov. 21 – Facility Maintenance Efficiency Strategies.
- Dec. 5 – Talking Top Tech.

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CALENDAR

Nov. 3-7

American Water Resources Association Annual Water Resources Conference, Sheraton Hotel, Salt Lake City. Visit www.awra.org.

Nov. 3-7

American Water Works Association Water Quality Technology Conference & Exposition, Sheraton Dallas Hotel, Dallas. Visit www.awwa.org.

Jan. 14-16

South Dakota Association of Rural Water Systems Conference, Ramkota Hotel, Pierre, South Dakota. Visit www.sdarws.com.

Feb. 18-20

Illinois Rural Water Association Conference, Holiday Inn, Effingham, Illinois. Visit www.ilrwa.org.

March 23-26

American Water Resources Association Geospatial Water Technology Conference, DoubleTree by Hilton, Austin, Texas. Visit www.awra.org.

April 14-17

Center for Watershed Protection National Watershed and Stormwater Conference, Renaissance Austin Hotel, Austin, Texas. Visit www.cwp.org.

May 17-21

World Environmental & Water Resources Congress, presented by the Environmental & Water Resources Institute of the American Society of Civil Engineers, Green Valley Ranch Resort, Spa and Casino hotel, Henderson, Nevada. Visit www.ewrcongress.org.

May 19-22

American Public Works Association North American Snow Conference, Salt Palace Convention Center, Salt Lake City. Visit www.apwa.net.

July 12-15

American Society of Agricultural and Biological Engineers Annual International Meeting, CHI Health Center, Omaha, Nebraska. Visit www.asabe.org.


Aug. 9-12

American Society of Civil Engineers Pipelines Conference 2020, San Antonio (site TBA). Visit www.asce.org.

Aug. 18-22

StormCon, Hyatt Regency, Atlanta. Visit www.stormcon.com.

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



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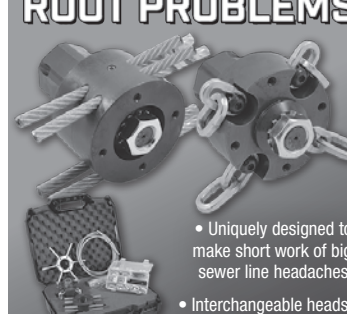
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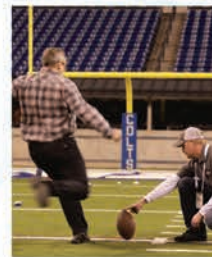
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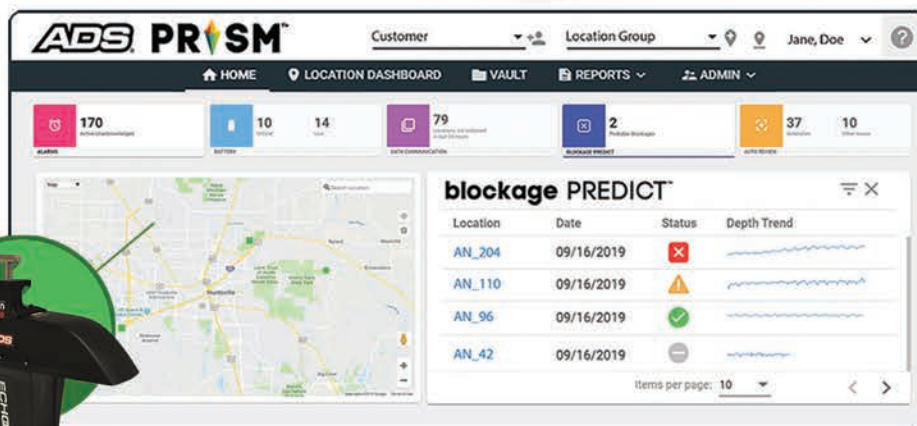
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