

MUNICIPAL SEWER & WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

October 2019

www.mswmag.com

HUMAN SIDE: SOCIAL LEARNING FOSTERS
CONTINUOUS WORKFORCE EDUCATION

PAGE 18

STORMWATER: DENVER TAKES A GREEN
APPROACH TO STORMWATER CONTROL

PAGE 20

STAYING SAFE: CONFINED-SPACE WORK
REQUIRES EMERGENCY PREPAREDNESS

PAGE 28



Jeff Haby
VP of Production and Treatment
San Antonio Water System

GETTING SMART

San Antonio cuts SSOs
by improving its
approach to cleaning
and maintenance

PAGE 12

PRODUCT FOCUS: FLOW CONTROL AND MONITORING



UNSTOPPABLE

M O M E N T U M



With power, versatility and agility, the ROVVER X sewer crawler has won a reputation that's larger than life. Behind it stands the industry's broadest network of service and support centers—each committed to delivering unrivaled uptime and low cost-of-ownership.

It all adds up to ROVVER X being the world's most trusted crawler. Schedule a demo today and see why.



Envirosight

(866) 936-8476 • www.envirosight.com

inspection crawlers | zoom survey cameras | video nozzles | push cameras | manhole scanners | inspection trucks | data management

VACTOR® 2100i **WATER RECYCLING**

SEE US AT WEFTEC
#1606



Great for the environment – and for the bottom line

- Saves thousands of gallons of water in every shift
- Increases productivity by up to **100%**
- Eliminates the need for crews to break down and refill



©2019 Vactor Manufacturing

SEE WHY WE ARE THE SUPERIOR COMBINATION SEWER CLEANER
VACTOR.COM/WATERRECYCLER

VACTOR
2100i

INSIDE:

WEFTEC SHOW ISSUE,
FLOW CONTROL & MONITORING



20



28



32



46

ON THE COVER: Jeff Haby, P.E., vice president of production and treatment for San Antonio Water System on a job site in San Antonio. The utility's approach to cleaning and maintenance has helped reduce sewer overflows significantly. (Photography by Mark Greenberg)



12

COMING IN NOVEMBER 2019

Location & Leak Detection

- ◆ BETTER MOUSETRAPS: North Bend (Oregon) eliminates root blockages
- ◆ SPECIAL: Fort Lauderdale (Florida) takes emergency action on miles of force mains
- ◆ HUMAN SIDE: Don't be afraid to constructively confront colleagues

FEATURES

12 SEWER: Getting Smart

San Antonio cuts SSOs by improving its approach to cleaning and maintenance.
By Erik Gunn

20 STORMWATER: A Touch of Green

Denver complements gray infrastructure with a variety of natural stormwater control features.
By Giles Lambertson

32 WATER: Operational Improvement

Suburban Milwaukee village strives for efficient operations through system upgrades and better management.
By Jim Force

COLUMNS

8 FROM THE EDITOR: Stay in Front

Emergencies are inevitable, but good planning can keep you ahead of them.
By Luke Laggis

10 @mswmag.com

Visit daily for news, features and blogs. Get the most from *Municipal Sewer & Water* magazine.

18 HUMAN SIDE: Never-Ending Education

Social learning through strategic employee pairings can help foster continuous workforce education.
By Ken Wysocky

28 STAYING SAFE: At a Moment's Notice

It's often overlooked, but emergency preparedness is vital to confined-space work.
By Jared Raney

38 ICUEE PRODUCT PREVIEW

40 NASSCO CORNER: NASSCO Welcomes Technical Advisory Council

Members represent a broad cross section of the trenchless industry.
By Sheila Joy

42 PRODUCT FOCUS: Flow Control and Monitoring

By Craig Mandli

46 CASE STUDIES: Flow Control and Monitoring

By Craig Mandli

48 PRODUCT NEWS

Heavy-duty water blaster enhanced with two pumps.
By Craig Mandli

50 INDUSTRY NEWS

52 WORTH NOTING

People/Awards; Learning Opportunities; Calendar

OCTOBER 2019

MUNICIPAL
SEWER
&
WATER

**PERMA-LINER™
INDUSTRIES, LLC.**

PATENT PENDING

WHY DIG THIS?

**Did you
know?**

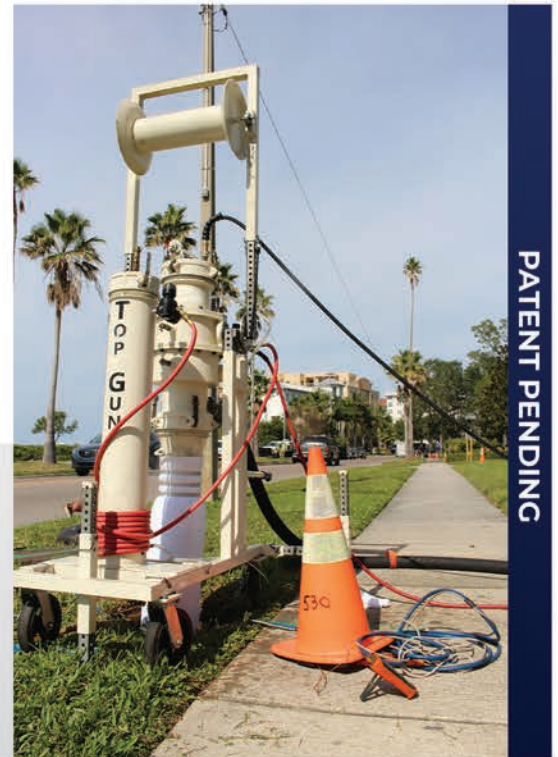
**The family of Insignia™ Hydrophilic Gasket
Seals is compliant with ASTM F2561, F3240
and F2599 for all CIPP lining**

STATE-OF-THE-ART, COMPACT LINING EQUIPMENT

- ✓ 6" TO 120" DIAMETER CIPP LINERS
- ✓ TRAINING PROVIDED BY EXPERIENCED
CERTIFIED TECHNICIANS
- ✓ TECHNICAL SUPPORT
- ✓ MARKET COMPETITIVE PRICING
- ✓ DELIVERY SERVICE AVAILABLE
- ✓ REFRIGERATION TRUCKS AVAILABLE

FEATURING Manhole Edge Protector

High-density ABS plastic
Color fade built into the plastic
Temp -40 to 180F with no deflection
Safety orange identifying the site
Protects camera and jetter lines
Eliminate Top Edge Roller and top side tiger tail
Thermal protection
Helps prevent against cuts and bruises to personnel











PATENT PENDING

**ZERO DIG CIPP TRENCHLESS TECHNOLOGY
WWW.PERMA-LINER.COM**

**TO LEARN MORE CALL
1-866-336-2568**

ADVERTISER INDEX

COMPANY PAGE

ADS Environmental Services.....	37
 American Highway Products, Ltd.	46
AP/M Permaform.....	26
 Applied Felts, Inc.	9
 Aries Industries31	
 Cam Spray44	
Composite Access Products (CAP)	49
Core & Main.....	11
 CUES41	
 Duke's Root Control, Inc.15	
 EnviroSight LLC2	
 enz usa inc.16	
 GapVax, Inc.55	
 Gorman-Rupp Company.....35	
Hermann Sewerin GmbH.....51	
 InfoSense, Inc.8	

COMPANY PAGE

Odor Control Products and Equipment, LLC.....	44
Pentair.....	47
 Perma-Liner Industries, LLC5	
Pipeline Renewal Technologies	29
 RapidView IBAK North America23	
RELINER/Duran Inc.51	
Sewer Equipment Co. of America by Sewer Equipment.....	25
SmartCover Systems.....	21
 T&T Tools, Inc.44	
 UltraShore30	
 Vactor Manufacturing3	
 Vac-Con, Inc.17, 56	
Vaughan Company, Inc.19	
VEGA Americas, Inc.27	
 WinCan, LLC.....7	
VWETT Show45, 54	
CLASSIFIEDS	52
MARKETPLACE	53

MUNICIPAL SEWER & WATER

FOR SANITARY, STORM AND WATER
SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

 COLE Publishing

1720 Maple Lake Dam Rd., PO Box 220,
Three Lakes, WI 54562



www.mswmag.com

© Copyright 2019, COLE Publishing Inc.

No part may be reproduced without permission of publisher.

In U.S. or Canada call toll free 800-257-7222

Elsewhere call 715-546-3346

Email: info@mswmag.com / Fax: 715-546-3786

Office hours Mon.-Fri., 7:30 a.m.-5 p.m. CST

SUBSCRIPTIONS: A one year (12 issue) subscription to *Municipal Sewer & Water*™ in the United States, Canada and Mexico is free to qualified subscribers. A qualified subscriber is any individual or company in the United States, Canada and Mexico that maintains, manages, designs or installs municipal or commercial sewer, water and storm infrastructures. To qualify, visit www.mswmag.com or call 800-257-7222.

Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico. Subscriptions to all other foreign countries cost \$150 per year. To subscribe, visit www.mswmag.com or send company name, mailing address, phone number and check or money order (U.S. funds payable to COLE Publishing Inc.) to the address above. MasterCard, VISA, American Express and Discover are also accepted. Include credit card information with your order.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact Nicole at nicole.labeau@colepublishing.com.

CLASSIFIED ADVERTISING: Submit classified ads online at www.mswmag.com/classifieds. Minimum rate of \$25 for 20 words; \$1 per each additional word. All classified advertising must be paid in advance. DEADLINE: Classified ads must be received by the first of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Fax to 715-546-3786 only if charging to MasterCard, VISA, Discover or AmEx. Include all credit card information and your phone number (with area code). Mail with check payable to COLE Publishing Inc. to the address above. CLASSIFIED ADVERTISING APPEARS NATIONWIDE AND ON THE INTERNET. Not responsible for errors beyond first insertion.

DISPLAY ADVERTISING: Contact Jim Koshuta or Kayla Bisnette at 800-994-7990. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.



Jim Koshuta



Kayla Bisnette

EDITORIAL CORRESPONDENCE: Send to Editor, *Municipal Sewer & Water*, P.O. Box 220, Three Lakes, WI, 54562 or email editor@mswmag.com.

REPRINTS AND BACK ISSUES: Visit www.mswmag.com for options and pricing. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicole.labeau@colepublishing.com. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email jeff.lane@colepublishing.com.

CIRCULATION: 2018 average circulation was 37,385 copies per month (U.S. and international distribution).



www.facebook.com/MSWmag
www.twitter.com/MSWmagazine
www.youtube.com/MunicipalSewerWater
www.linkedin.com/company/municipal-sewer-&-water-magazine



SUBSCRIBE TO MSW FOR FREE!

Each issue shows you:

- New technologies that boost efficiency and drive out costs.
- Tips for building a stronger, more productive staff.
- Bargains on a wide range of tools and equipment.
- And much more.

Plus, you'll learn from other successful people in your industry – how they do it, and how you can, too.

www.mswmag.com/order/subscription



Water & Wastewater Equipment,
Treatment & Transport Show
www.wvettshow.com

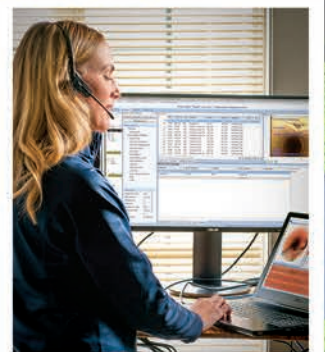
Education Day: Mon., Feb. 17, 2020
Exhibits: Tues.-Thurs., Feb. 18 - 20, 2020
Indiana Convention Center, Indianapolis, Ind.



Online Insight, Trusted Support

Share your sewer asset data on the cloud effortlessly and securely with WinCan Web. From the moment you sign on, our support specialists guide you toward better insight, better decisions and better teamwork. It's just one more way we never stop innovating.

www.wincan.com/web



STAY IN FRONT

Emergencies are inevitable, but good planning can keep you ahead of them

We talk a lot about being proactive versus reactive. It's unquestionably the better approach. But it's easier said than done.

It requires a much higher degree of planning and organization, for one. And it can require more resources, at least upfront. That can be a big impediment to making a shift in approach.

I'm not out inspecting and rehabilitating pipes. I'm not taking emergency calls for waterline breaks. But taking a proactive versus reactive approach applies to most things. It's a cycle of staying in front of things so you don't fall behind and allow manageable tasks to become significant problems. It certainly applies to my job, even though my line of work is quite a bit different than yours.

I edit three magazines. In addition to all the little day-to-day tasks, and there are many, it takes a tremendous amount of planning. Sometimes

that's not my strong suit. When my planning is good, when I know what's coming up four issues ahead, the whole job gets easier. The magazine gets better. You, the readers, benefit.

But when I fall behind — and with three publications and other responsibilities, it's inevitable at times — things can quickly snowball. Planning for four or five months down the road isn't as urgent as the missing photos or fact check that needs to happen immediately. So a little time I could have spent planning and staying ahead — being proactive — is lost to the urgent and immediate task at hand. And when something else pops up, which it always does, a little more time is lost. Suddenly I'm not planned out as well and I find myself reacting to problems instead of laying the groundwork for future issues of the magazine.

It's a cycle you're probably familiar with in your sewer and water systems. Maybe you're trying to stay ahead of flushing your large-diameter sewer mains, or listening for leaks in your distribution system, but a broken line and all the problems it can cause take your crew away from their flushing or leak detection work. And as soon as you get that broken line repaired, another one backs up and causes an overflow. Pretty soon you're chasing problems instead of preventing them.

Shorewood Water Works in Shorewood, Wisconsin, is a great example of taking a proactive approach to systemwide improvement. The utility is featured in this issue of *Municipal Sewer & Water*, and the staff there have done a tremendous job of improving their overall operations and cutting water loss. They've done it by auditing and reviewing their operations and looking for ways to get more efficient. The approach has improved their system, saved ratepayers money and earned them statewide recognition.

There's a lot to be learned from their example.

Emergencies are inevitable. Problems pop up. But the more time you spend focusing on the future, being proactive in your cleaning and maintenance operations, the fewer emergencies and problems you'll find taking away your ability to remain proactive. Easier said than done, but certainly worth the effort.

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.



FROM THE EDITOR

Luke Laggis

OUR TECHNOLOGY IS BASED ON SOUND SCIENCE

Inspect More, Clean Better

Active Acoustics screen for blockage with no flow contact

MILLIONS OF FEET INSPECTED

- Save time, water, AND money
- Screen 2+ miles per day
- EPA validated
- Highly portable and easy to operate



877-747-3245

sales@infosense.com • www.infosense.com



SL-RAT®

MORE?!



More Stories at MSWmag.com/featured
See what's not in print!

WE HAVE YOU COVERED.
NO MATTER WHAT
TYPE OF JOB
YOU NEED TO DO.



APPLIED FELTS

YOUR SUCCESS IS OUR SUCCESS™



AQUACURE PW

Multi-layer polyester felt/fiberglass hybrid liner
optimized for potable water applications



Applied Felts manufactures custom CIPP liners and calibration tubes for gravity sewer mains, pressure pipe, force mains, potable water, storm sewers and laterals, including vertical applications. We work with you to identify and match the finest PE or PP fibers; PU, PVC, PUXR or PP coating polymers; fiberglass and other raw materials; and your choice of ambient, water, steam or UV cure, giving you more choices than ever before.

We also make your job easier with pre-impregnated liners from one of our regional wet-out facilities.


No matter what your unique project demands, we've got you covered. **Visit appliedfelts.com**

Visit us at WEFTEC Booth #2902

Visit the site daily for new, exclusive content. Read our blogs, find resources and get the most out of *Municipal Sewer & Water* magazine.

SUSTAINABILITY EFFORTS

Fuller Aquifers

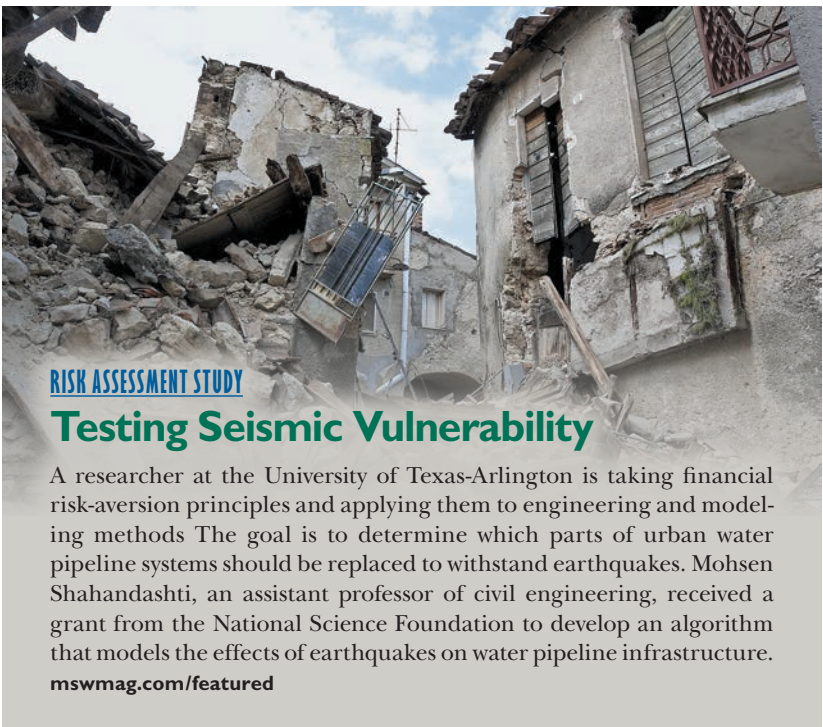


The last five years may not seem all that unusual when it comes to water use in Madison, Wisconsin. People are still taking showers, flushing toilets and watering their gardens, but there's been a big change in groundwater levels compared to a decade ago, according to city officials. Recent measurements of aquifer levels in the city performed by the U.S. Geological Survey show Madison Water Utility's sustainability efforts are paying off.

mswmag.com/featured

RISK ASSESSMENT STUDY

Testing Seismic Vulnerability




A researcher at the University of Texas-Arlington is taking financial risk-aversion principles and applying them to engineering and modeling methods. The goal is to determine which parts of urban water pipeline systems should be replaced to withstand earthquakes. Mohsen Shahandashti, an assistant professor of civil engineering, received a grant from the National Science Foundation to develop an algorithm that models the effects of earthquakes on water pipeline infrastructure.

mswmag.com/featured

PLANNING FOR DISASTER

Oakland's Pipeline Replacement Program



The Hayward Fault — situated just east of the San Francisco Bay in California — may be ready to produce a magnitude 6.8 to 7.0 earthquake, according to the U.S. Geological Survey. That's an event that would affect the drinking water infrastructure for a population of well over 1.4 million people. That's why the East Bay Municipal Utility District is pursuing an aggressive and innovative pipeline replacement program that includes earthquake-resistant ductile iron pipe by U.S. Pipe. mswmag.com/featured

OVERHEARD ONLINE

“Without proper training, employees working in supervisory roles tend to rely on their technical acumen in their day-to-day activities rather than their leadership skills.”

— 3 Keys to Successful Leadership Development
mswmag.com/featured



Emails
&
Alerts

Visit MSWmag.com and sign up for newsletters and alerts. You'll get exclusive content delivered right to your inbox, and you'll stay in the loop on topics important to you.



Join the
Discussion



Find us at:
facebook.com/MSWmag
twitter.com/MSWmagazine

The Leading Distributor of
Water, Sewer & Storm Drain
Products & Services



WE'RE ALL ABOUT THE *neighborhood*

When you need dependable service in the middle of the night, the eye of the storm or the center of town, you need the waterworks experts at Core & Main.

OUR VISION

To foster a world where communities thrive because our people and products provide safe, sustainable infrastructure for generations to come.

Proudly supporting



We'll see you there!

Local Knowledge | Local Experience | Local Service, Nationwide®

coreandmain.com

GETTING SMART

San Antonio cuts SSOs by improving its approach to cleaning and maintenance

By Erik Gunn

San Antonio Water System (SAWS) operator Ricardo Sanchez works the controls of a Vactor 2100i combination truck on a recent sewer cleaning project in Northeast San Antonio. (Photography by Mark Greenberg)



“We were spending too much time on the frequent-cleaning pipes and not getting to the rest of our pipes that we needed to continue to clean.”

Jeff Haby

As part of one of the oldest cities west of the Mississippi River, the San Antonio Water System’s wastewater collections operation has seen a lot of changes over the years.

It started with the water system — a series of irrigation canals dating back to 1720. Those same canals wound up being the first, unofficial sewer system, carrying waste downstream.

A century later in 1836, the aquifer was restricted to supplying drinking water and cooking water, and penalties were imposed for using it for bathing or sewage disposal. Then, an 1866 cholera epidemic prompted the city to reform its water supply and sewer disposal practices.

Construction of the city’s first modern wastewater collections system began in 1895 and was completed in 1900. Today, “we are one of the largest systems in the country,” says Jeff Haby, SAWS vice president of production and treatment.

A century later, San Antonio is once again rebuilding how it collects its wastewater, with new technology to help do the job better.

Focusing attention

In 2013, SAWS and the federal Environmental Protection Agency signed a consent decree committing SAWS to eliminate sanitary sewer overflows in the system.

The leading cause of overflows — about 75% of the problem — is debris such as wipes along with fats, oils and grease. So regular cleaning is a major part of the remedy.

In addition, the decree prescribes more frequent inspections; checking pipes to determine whether they’re large enough for the volume of sewage they carry, replacing undersized lines with larger-capacity mains; and repairing or replacing damaged pipes, and repairing or eliminating damaged lift stations.

“Prior to the consent decree, there were efforts to maintain clean pipes,” says Annette Duron, interim director of operations support for SAWS. That

included CCTV inspections as well as cleaning.

But the federal action spurred the system to rethink its approach and methods.

“The consent decree gave us more of a focus on ‘trigger’ pipe that was more vulnerable and an older part of the system,” Duron says. “That laid out the plan for us and our approach. We really revamped how we were collecting data, and both cleaning and televising.”

SAWS developed a routine for moving through the system. Varied cleaning cycles were set — from monthly to every 60 months — based on how quickly different sections became vulnerable to damage and overflows.

The shorter cleaning cycles, however, quickly started wearing on the utility’s budget and monopolized the focus of the cleaning program.

“We were spending too much time on the frequent-cleaning pipes and not getting to the rest of our pipes that we needed to continue to clean,” Haby says.

The 204 sites assigned to monthly cleaning cycles alone accounted for 2,448 cleanings a year. At \$500 per cleaning, those pipes ended up costing over \$1.2 million a year.

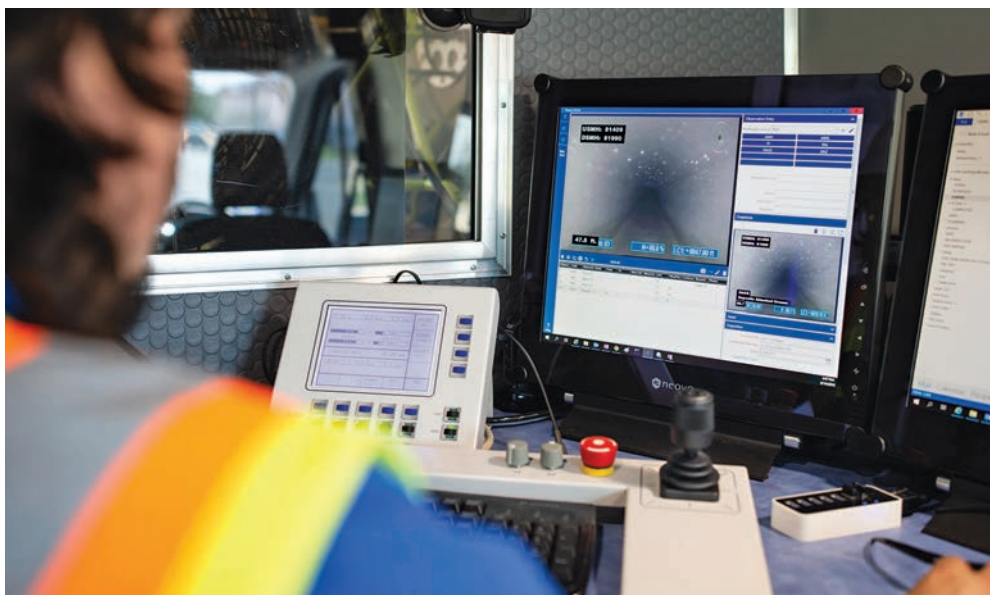
Technology changes

SAWS had already been experimenting with SmartCover Systems — manhole covers equipped with ultrasonic detection systems. The device monitors the level of flows both upstream and downstream of where the sensor is located. A rising level, indicating obstructions, triggers an alarm, which then leads to a work order for the site.

An early test was promising. SmartCover Systems were installed at sites where there had been repeat SSO events. “We’d monitor it, and if it started to back up, we’d send a cleaning crew out there to respond to it,” Haby explains.

The devices enabled San Antonio to reduce the cleaning frequency at many of the sites where they were installed.

San Antonio Water System LCTV crew foreman John Santiago operates a RapidView IBAK camera system during a sewer inspection.



After the consent decree was signed, Duron suggested that the utility ramp up its use of the SmartCover Systems. “We started with a pilot of 10 and put them on the frequent-cleaning pipes,” Haby says. When the volume of flow in the area started to rise, usually from debris or grease, crews would go clean the line. “Instead of going once a month and cleaning it whether it needs it or not, we only clean it when it starts showing that it’s backing up.”

Following a competitive bidding process, the utility



PROFILE:

San Antonio Water System/Sewer Division

(All numbers are Sewer Division only.)

POPULATION SERVED:

1.7 million people; 449,893 billed sewer accounts

SERVICE AREA:

City of San Antonio, plus majority of Extraterritorial Jurisdiction, including 5-mile buffer outside of city limits

SYSTEM CAPACITY:

Permitted — 187 mgd; average daily flow — 138 mgd

EMPLOYEES:

708.9 full-time employees

INFRASTRUCTURE:

- 5,544.4 miles of sewer mains
- 3 wastewater treatment plants
- 154 lift stations
- 108,580 manholes

ANNUAL OPERATING BUDGET (2018):
\$295.3 million

WEBSITE:

www.saws.org



Vice President of production and treatment Jeff Haby (center) visits (from left) operator Ricardo Sanchez, LCTV crew foreman John Santiago and operator Jose Vargas on a sewer cleaning and inspection project. The utility uses SmartCover Systems' SmartLevel sensors (seen on the manhole) to monitor selected sewer lines that are prone to build-ups.

"We really revamped how we were collecting data, and both cleaning and televising."

Annette Duron

has acquired over time a total of more than 500 units and moves them around to vulnerable sections of the system until more permanent repairs can be made, such as putting in new, larger pipes where more capacity is needed, or until FOG and debris problems stop recurring. It also uses 125 flowmeters to monitor other potentially vulnerable stretches of pipe.

The utility has also supplemented its sewer evaluation technologies, historically CCTV, with new sonar and laser inspection equipment.

More recently, San Antonio has contracted with a third-party service to maintain the Smart-Cover Systems units, including replacing batteries and undertaking repairs as needed. That has also helped save money, according to Duron and Haby, and allowed the utility to deploy its staff more effectively for cleaning and repairs.

Overflow control

Grease, roots, debris and similar problems continue to be the largest contributors to SSOs, Haby says. "SAWS does experience inflow and infiltration during rain events, which does result in SSOs, but the number of I&I-related SSOs is much less."

A robust public education effort focused on FOG as well as so-called flushable wipes is also underway, with public messages on the SAWS website and other programs.

In the meantime, the utility continues to proceed with repair and replacement under the remedial measures plan required by the consent decree.

"Historically, sewer mains were predominantly constructed of clay and concrete. We are finding that a large majority of our concrete mains are needing repair and replacement along with a portion of our clay mains," Haby says. PVC and fiber-glass-reinforced plastic are the pipe material of choice today.

(continued)

BREAKING GROUND IN RECYCLING

When it comes to the problem of what to do with treated effluent from the municipal sewer system, the San Antonio Water System is something of an unsung leader.

Through its sewer division, SAWS is making recycling purified sewer products a top priority.

"Our goal is to approach 100% recycling at our treatment plants," says Anne Hayden, communications manager for the agency.

SAWS recycles the purified water after it's treated, reducing strain on the Edwards Aquifer that serves the water distribution side of the system. It recycles the solids, and it collects the natural gas produced by the sewage digesters and pipes it to a contractor that then distributes the fuel on the

open market, says Jeff Haby, vice president of production and treatment.

"Most people don't realize we have the largest direct use recycling system in the country," he says.

This is purified water, not graywater, Haby points out. "It's been chlorinated and dechlorinated. It has gone through tertiary treatment."

Even so, the recycled water is not used in the residential market.

Instead, recycled water from the system's three treatment plants is purified and then distributed to industrial users, including several major manufacturers and area universities, where it is used for industrial and irrigation purposes, he explains.

It is also used by local golf courses for irrigation. And it has yet another use.

San Antonio's famed Riverwalk is one of the city's prime amenities for local residents as well as a distinctive tourist attraction. But during the dry season, the springs that feed the river for which the feature is named dry up.

"It receives recycled water to keep it flowing," Haby says.



Visit us at WEFTEC Booth #2605

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.



Tame your pipes with The Bulldog® Antiblast!



Specifically engineered to **prevent blowing toilets** when cleaning sewer lines near residential areas by reducing pressure in the pipe.

- Excellent streak-free, all around cleaning
- Low maintenance, & compatible with recycled water
- Proven design
- Pipe range cleaning 6" - 24"
- Scientifically engineered & tested
- For use in all types of pipe

CALL
1 877 ENZUSA1
FOR A DEALER NEAR YOU



www.enzusainc.com



1585 Beverly Ct., Unit 115 | Aurora, IL 60502

Operators Roberto Felix (left) and Jose Vargas retrieve the camera after a post-cleaning sewer inspection.



"SAWS has an ongoing capacity, management, operations and maintenance program, which is used to provide the guidance for repair and replacement of sewer mains due to condition and capacity."

Many of the projects require replacement because of the need for more capacity. Where that is not necessary, the utility has been employing various trenchless approaches to repair existing sewers, Haby says.

For the current construction season, a total of 51 sewer-related repair and replacement projects are underway. The projects are part of SAWS' comprehensive capital improvement program to upgrade the city's aging wastewater infrastructure, as well as to expand the system to accommodate growth in both the residential population and business.

SAWS doesn't just rely on age to determine when lines need to be replaced. Instead, it examines the conditions of pipes. "This allows us to extend the useful life span of pipes that have aged well while more aggressively pursuing replacement of those with the highest likelihood of failure," as the utility notes in a public message on its website.

Today, SAWS officials look back at the original consent decree as an opportunity to refocus how they do

their work while meeting the requirements it laid out.

"Focusing on providing needed work for the EPA consent decree has brought an organized approach to assessment of system needs to respond to the decree; planning for the needed work; and now implementation of new processes in assessing the condition and capacity of pipes, and replacing sections of the system that are undersized or need condition improvements," Haby says.

And while the decree set forth a timeline to meet its requirements, the impact will last far beyond the deadline date on the calendar, he adds. "We believe that we have implemented best practices, which now have become part of our everyday work." ♦

FEATURED PRODUCTS FROM:

**RapidView IBAK
North America**
800-656-4225
www.rapidview.com
(See ad page 23)

SmartCover Systems
760-291-1980
www.smartcoversystems.com
(See ad page 21)

**Vactor
Manufacturing**
800-627-3171
www.vactor.com
(See ad page 3)

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", .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)



The Kit - What's Included

- C70 Nozzle with HD Camera and LED lights
- Protective Case
- Tablet with GPS
- Pipeline Viewing Software
- Jet Inserts
- Battery Charger



INTERNATIONAL CONSTRUCTION
& UTILITY EQUIPMENT EXPOSITION
October 1-3, 2019
Louisville, Kentucky

BOOTH L346 & 3162

Sold Exclusively Through **VAC-CON** in North America

CALL US TODAY FOR A QUOTE!

888 • 781 • 7971

www.vac-con.com

Email the Team Directly at

Partsdepartment@vac-con.com

NEVER-ENDING EDUCATION

Social learning through strategic employee pairings can help foster continuous workforce education

By Ken Wysocky

If you prefer learning out in the workplace through interaction with colleagues over time in a classroom, you're not alone.

You're also well on your way to understanding the value of so-called learning relationships and how they promote continuous learning in the workplace. That, in turn, leads to more engaged and productive employees.

"As humans, we're innately wired to learn continually throughout our lives and careers," says Lauren Bidwell, Ph.D., a psychologist who works as a research scientist at SAP SuccessFactors. "The problem, however, is the typical disconnect between how we as people want to learn and how organizations tend to teach us."

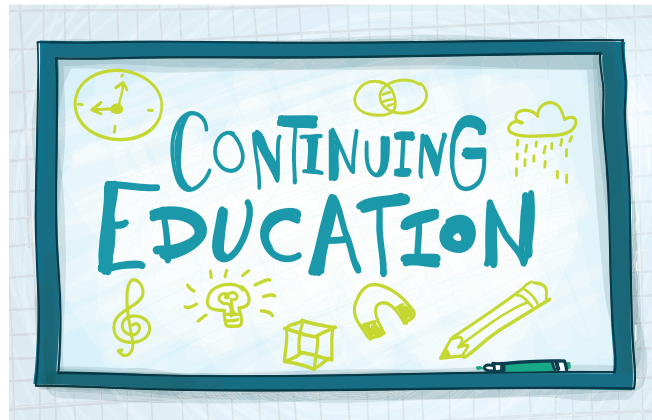
"Humans are social learners," she continues, speaking during a webinar about continuous learning, sponsored by the Human Capital Institute (www.hci.org). "The most natural and effective way we learn is through other people — simply watching them and mimicking. Children are a really perfect example of this. ... Social learning is always happening, whether it's intentional or not."

A natural process

Social learning, also called agile learning, is not only more desirable, it's also more cost-effective for organizations. Yet it's often difficult to achieve. More and more employees are working remotely, and as companies get larger and larger, social learning can pose logistical challenges, Bidwell says.

As a result, organizations instead developed formal training programs to disseminate knowledge and information relatively quickly to broad groups of people. "But this isn't consistent with how we learn best — how we prefer to learn — and it's costly to implement," she says.

Social learning is better because it happens all the time, with no formal start or end time. It's also employee-driven. Overall, it's more engaging and



"The most natural and effective way we learn is through other people — simply watching them and mimicking."

Lauren Bidwell

ships, Bidwell says.

Learning relationships generally occur between two employees and support the learning and growth of one or both people. They're more informal in nature and involve sharing skills as well as perspectives. They're also ongoing and adaptive/customizable.

A mentor and mentee represent one example of a learning relationship, but the definition is much broader than just an older, seasoned employee showing a young employee the ropes.

Instead, a learning relationship can serve a variety of purposes. Such a relationship might pair a new employee with a more established peer for onboarding purposes or for helping an employee adjust to a new role after a promotion, she says.

In other instances, the relationship might be aimed at specific skill development (think a younger employee teaching an older employee about social media). "You can pair someone with a desired skill with someone who desires it."

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.

effective than static learning, which tends to be top-down instruction that's mandated, comes from external sources (not fellow employees) and only occurs during a specific time period — say, during a daylong seminar, for example.

"Static learning relies on external resources rather than leveraging the knowledge that already exists in the workforce," Bidwell says. "Agile is a dynamic type of learning that's employee-driven. It's multidirectional, not just one person talking to you."

Moreover, static learning is reactive, while agile learning is more proactive.

Establish learning relationships

To integrate development into employees' jobs — instead of in addition to their jobs — companies need to learn how to leverage the power of learning relationships,

“They can partner together to achieve those goals ... and help hold each other accountable.”

Lauren Bidwell

A partnership also can connect employees who otherwise might not be as likely to connect. One example is intergenerational partnerships, which promote sharing different viewpoints and creating better cross-generational communication and understanding. That’s an important factor these days as companies contend with multigenerational workforces.

Organizations also can match employees from different backgrounds to improve diversity and inclusion efforts, or pair up people with similar diversity backgrounds to promote support networks. Or they can bring together employees with similar health and well-being goals, such as quitting smoking, running a marathon or losing weight. “They can partner together to achieve those goals ... and help hold each other accountable,” Bidwell says.

Tangible results

These learning relationships are effective when executed well. Bidwell says SAP data shows that mentees in the partnership — the people learning a new skill — are promoted five times more often than nonmentee employees. They also report an 18% higher level of job satisfaction, not to mention less work stress and increased self-confidence. “That (increased self-confidence) is especially good for employees who are learning a new role,” she says.

Better yet, the relationships are mutually beneficial. For example, mentors are promoted six times more often than nonmentors. And in organizations that foster these mentoringlike relationships, employee turnover is lower — 38% less for mentees and 20% less for mentors. Moreover, employment engagement is 66% higher.

Organizations that invest in partnerships aimed at diversity and inclusion also enjoy better retention of employees and enhanced employee diversity at management levels. “These (learning relationships) tend to outweigh other initiatives, such as diversity training, cross-training or targeted recruiting,” Bidwell says.

For many organizations, developing effective learning relationship programs can be a challenge. For instance, only 31% of surveyed SAP SuccessFactors customers rated their mentoring programs as effective, she says.

But technology can help mitigate those factors. For example, software programs can help identify good partner matches for learning relationships and

make it easier to track and monitor results, she says.

In the end, agile learning through strategic learning relationships looks like a viable answer to the problems of poor employee engagement, productivity and retention. ♦

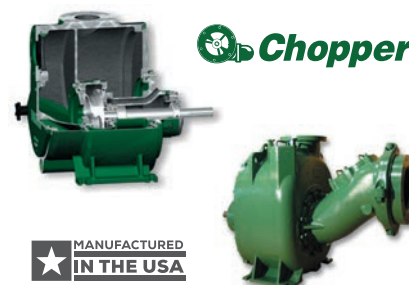


IT'S PRIME TIME

Simplify your set-up and reduce your maintenance costs with the Vaughan Self-Primer Chopper Pump. These pumps are designed to handle the toughest solids, while providing a cost-effective maintenance alternative to wet-pit pump installations. Self-primer pumps bring the same Vaughan Non-Clog Performance Guarantee to a maintenance-friendly chopper pump design.

The only Self-Priming Chopper Pump in the World.

- Eliminates use of comminutors prior to pumping
- Externally adjustable clearances
- Removable rotating assembly
- Expedite pumps and parts delivery
- Written performance guarantee
- Superior life cycle costs
- Hardened wear components
- Trial program available upon request



Contact us today to see why this versatile, reliable pump is perfect for your next project.

Ask about our on-site chopper pump demonstration.

ChopperPumps.com | 360.249.4042 | info@chopperpumps.com



A TOUCH OF GREEN

Denver complements gray infrastructure with a variety of natural stormwater control features

By Giles Lambertson

"It provides a host of city-wide benefits, including climate change resiliency, community livability and reduced water demand."

Sarah Anderson

Sarah Anderson, manager of the City and County of Denver's green infrastructure program, checks on the progress of the construction of new street-side stormwater planters on Brighton Boulevard. (Photography by Carl Scofield)

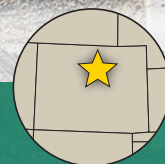
Colorado's legal marijuana industry has produced plenty of headlines, but in Denver it's the city's green infrastructure program that's generating buzz.

Denver is going green to control and filter South Platte River Valley stormwater that courses through the urban area after a rain or snowmelt event. The city and county stormwater system is increasingly turning to natural systems and permeable surfaces to slowly infiltrate runoff and separate out pollutants.

"The job currently is focused on water quality, but we are trying to transition to showing that green infrastructure is not just about water quality," says Sarah Anderson, who manages the green infrastructure program. "It provides a host of city-wide benefits, including climate change resiliency, community livability and reduced water demand."

Emphasis on green handling of stormwater began in 2013 when Anderson joined the Denver team from neighboring Centennial, where she

(continued)



PROFILE:

City and County of Denver Public Works

SERVICE AREA:
155 square miles

WASTEWATER VOLUME:
55 mgd

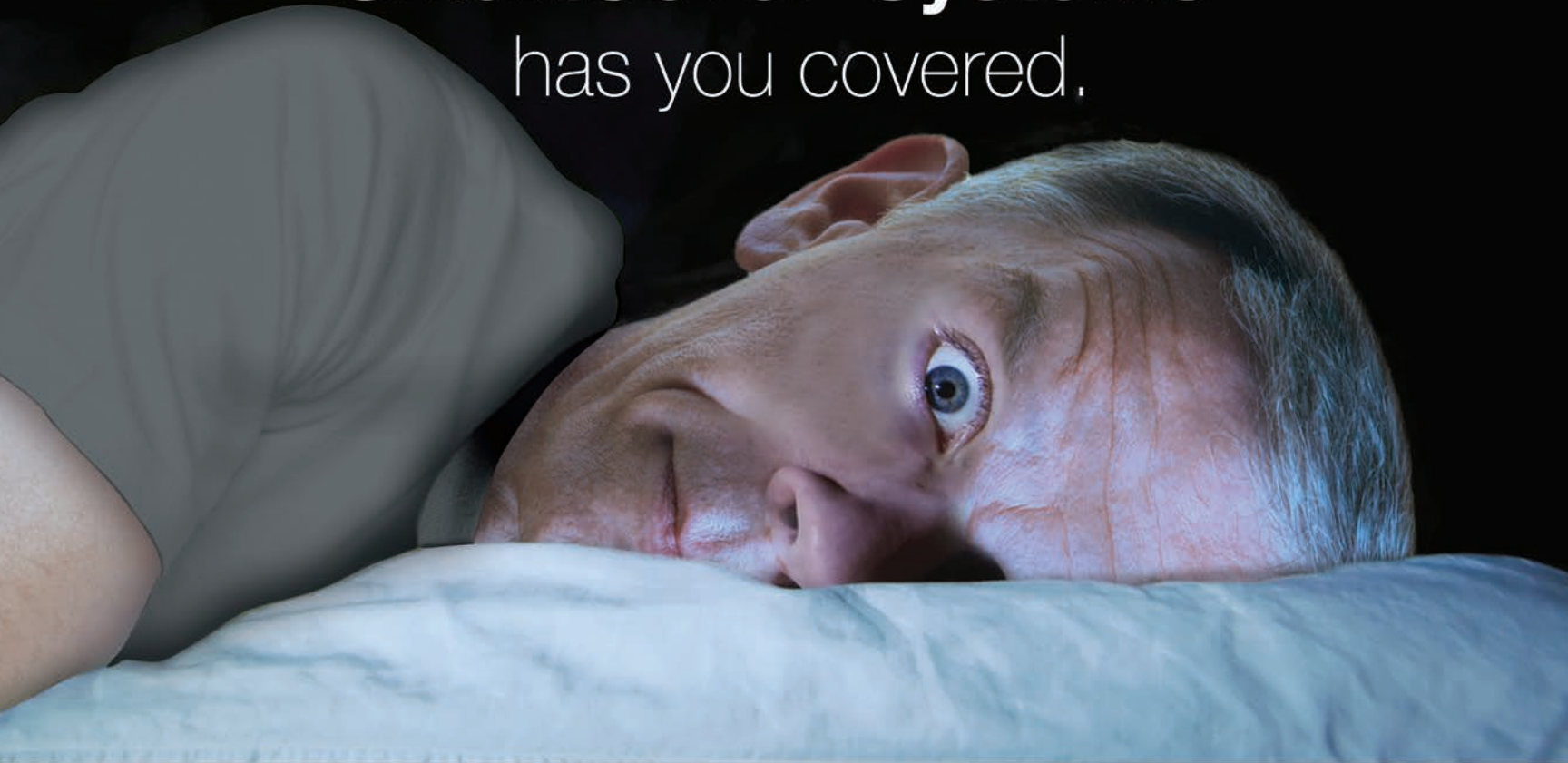
STORMWATER INFRASTRUCTURE:
822 miles of pipe, 10 green structures/projects constructed or under construction, 7 more in design stage

STORMWATER EMPLOYEES:
200 (across sanitary, stormwater and water-quality divisions)

WEBSITE:
www.denvergov.org

Something keeping you up at night?
Sleep well.

SmartCover® Systems™
has you covered.



Do you worry about what could go wrong with your collection system overnight?

Now you can rest easy.
SmartCover Systems has you covered.

SmartCover provides you with collection system visibility by offering real-time condition assessment, alerting you to a potential issue before it occurs.
No more spills or mess.

We deliver more than data. We deliver peace of mind!



smartcoversystems.com/msw • sales@smartcoversystems.com • 760-291-1980



A contracted crew works on the installation of street-side stormwater collection planters.

“I’m really proud of the Federal Boulevard project. It has environmental impact, as well as safety and economic impacts.”

Sarah Anderson

was environmental specialist for the Southeast Metro Stormwater Authority. Denver had just created a position in the Public Works department dedicated to water-quality enhancement and Anderson filled it.

Working together

Denver’s wastewater and stormwater systems are independent of one another. To help fund the green infrastructure envisioned by city-county leaders, annual stormwater rates were increased. The fee now averages \$140 a year for a median 7,500-square-foot parcel with 2,750 square feet of impervious surface. The fees generate a dedicated source of funding for water-quality work and support an annual green budget of \$5.25 million.

“We’ve been successful in leveraging that money by focusing on doing projects with partners,” Anderson notes. “To date, we have not done any projects on our own. Through cost sharing, we’ve done a lot more infrastructure projects than what \$5.25 million can get you.”

Partners include other city departments — transportation and parks — that mutually benefit from the projects. This cross-department cooperation stems directly from the decision to place Anderson’s green program responsibilities in the office of the executive director of Public Works, Eulois Cleckley. “Management has embraced us, which goes a long way,” Anderson says.

“The nice thing about being in the office is that we have the support of the director and chief of staff. Not only do we have upper-level management support, but we can more easily reach across to sister agencies. We have a remarkable relationship with the parks department.”

Anderson notes how one fairly unusable park

is being made more functional as a consequence of green infrastructure work and says similar cooperation is happening with transportation and wastewater departments.

Auxiliary benefits

Anderson attributes some of the success to her decision to systematically lay out the impact of green stormwater features to better sell it. She had given thought to the matter just after being hired and before money was available. “I had a little time to think about how I would spend money if the program had money. I thought about how I could invest it and provide more than one benefit, that being water quality. Things like green space and making areas safer for pedestrians and streets more comfortable for everyone.”

The money materialized after the stormwater rate increase in 2016 — “We had some of the lowest fees in the country,” Anderson notes. She prioritized the water-quality basins in the city for such things as pollution loading, urban heat and flood control. “We also looked at some hard numbers such as vehicle miles traveled in a basin, the amount of tree canopy and park density. We gave priority to where green infrastructure was most needed, and today we continue to really try to first focus our efforts on those basins.”

The plan focuses on the six highest-priority basins and a second tier of basins, as well as some special projects. The goal: efficiently and cost-effectively improve surface water quality and produce auxiliary benefits for citizens while doing so.

Driving improvements

Sometimes green infrastructure drives a project; sometimes it complements another

department’s project. The city’s River North Park in downtown Denver is an example of the latter. It will boast green space, artwork, play areas, three repurposed buildings and “a water-quality feature.” The water-quality feature is unobtrusively designed into the new park to let runoff from two streets and the impervious areas within the park be filtered by vegetation and other natural materials so what eventually enters a pipe is less polluted.

In the case of a makeover of South Federal Boulevard, Anderson’s green initiative is driving the work. The street is located in a high-priority basin with notably polluted stormwater. What’s more, the street ranks high among Colorado roadways in terms of traffic accidents and fatalities. Teaming with transportation officials, the street will get a \$2 million infusion of strategically placed green infrastructure to eliminate turnaround areas, create safer connections, reduce the urban “heat island” effect, and generally improve air and water quality.

“I’m really proud of the Federal Boulevard project,” Anderson says. “It has environmental impact, as well as safety and economic impacts.” Construction begins next fall.

Making strides

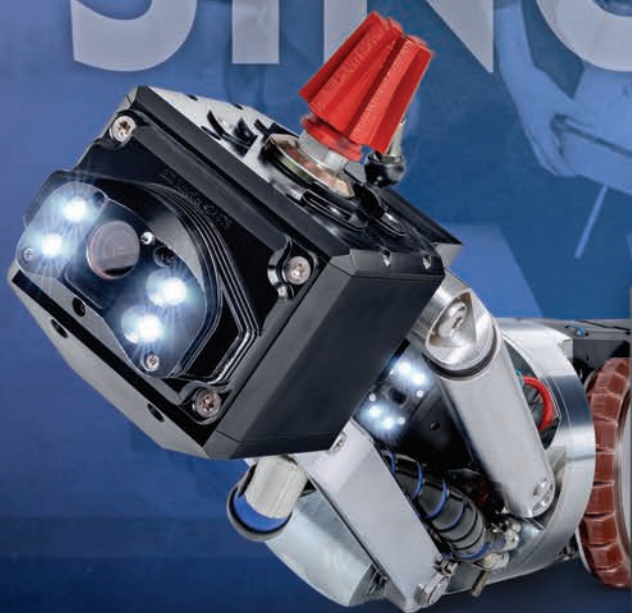
To stormwater management traditionalists, such projects are akin to putting a pretty face on an ugly situation. The benefits of green infrastructure improvements are often hard to quantify.

“Our program is a little too new to have hard numbers,” Anderson says. “In the spring, we started monitoring a number of our facilities and that monitoring effort will center around volume reduction and pollution reduction. We’re also trying with university partners (University of Colorado and Colorado School of Mines) to put some methodology in place to track cobenefits of green infrastructure, such as connectivity and safety. That is not as easy to do as monitoring water quality.

“In Denver, we don’t have a great handle on volume reduction numbers for green infrastructure,” she adds. “Sewer system and stormwater

(continued)

A HISTORY OF INNOVATION SINCE 1945.



MICROGATOR 2.0



PANORAMO 4K

Sourcewell
Formerly HJPA
Awarded Contract

We've seen it all...

We know that finding a new inspection camera system can seem overwhelming. Your reputation and money is on the line. That's why, when you choose RapidView IBAK, you can be confident that we will be with you for the long haul. IBAK invented sewer cameras in 1957 and we continue a history of innovation today. Our customers expect the best after-sales service in the industry, and we work every day to make sure they get it! We are committed to not only selling you the best equipment money can buy, but making sure that it stays in the field, earning you an increased return on your investment!



Push | High Def | Mainline | Lateral Launch | 3D Mapping | PANO 4K Scanner | Rehabilitation | Software
(800)-656-4225 | www.rapidview.com | Past Proven. Future Ready.

IBAK Inspection Equipment Manufacturing is Certified ISO 9001:2015 and ISO14001: 2015.

“It is better to have a complement of green and gray systems. That’s one of the next steps. When we come across areas where we don’t have to do gray, we can do green instead.”

Sarah Anderson



Sarah Anderson and Brian Wethington check on the successful growth in street-side stormwater planters that were planted by seed one year ago.

(continued)

WINNING OVER THE PEOPLE

In managing urban water quality and stormwater, giving priority to environmentally correct solutions is not always a crowd-pleaser. As is the case with green energy, some people still consider such proposals nice but impractical. Sarah Anderson, Denver’s green infrastructure manager, has not encountered such resistance ... much.

“I do run into that attitude a bit,” she says, but adds, “The hardest thing I’ve had to deal with is when someone says the green projects don’t work or they are too expensive. I always respond that they really are pretty inexpensive when you factor in all the other benefits, including economic and social benefits. This is all studied and researched stuff.”

The traditional green approach typically includes the creation of large detention basins to slow runoff and mitigate some of the pollution it carries. But urban areas like Denver lack available land for new detention facilities. That doesn’t keep the city and county from upgrading what it does have. Anderson talks about a detention basin at 38th and Holly streets that aggravated the neighborhood because it was largely a grassless eyesore.

“People were constantly calling Parks and Recreation to complain about it as if it were a park space instead of a stormwater management basin,” she says. In response, her department and wastewater operations

have redesigned the basin with a spillway and meandering natural channel and planted grasses, shrubs and trees. “We have really focused on designing facilities that the community wants. We want to do other projects like that in other neighborhoods.”

In another project along Brighton Boulevard, which connects the city center with Interstate 70, Denver is creating its first green corridor. Along with auto and bike lane improvements, the Public Works crew is planting trees and installing about a hundred street-side stormwater planters. “Businesses are proud of the improvements. From the feedback I’ve received, the neighborhood really likes the planters. They are proud to be the first street to have so many planters instead of the usual curb and gutter and tree lawns.”

In-house, the new approach also has won converts, Anderson says. Reluctance to go green is disappearing among co-workers. “There was a little pushback originally among stormwater employees. Some were a little slow to embrace the newer approach. They questioned whether the urban green infrastructure would really function or if it would be worth the expense.”

They have concluded it was a step in the right direction.

CAPPELLOTTO
by SEWER EQUIPMENT

GENESIS WATER RECYCLER



- PURPOSE-BUILT AND APPLICATION SPECIFIC: NOT A BOLT-ON AFTERTHOUGHT
- 5-STAGE PASSIVE SEPARATION
- EFFECTIVELY RECYCLES GREASE, SOLIDS AND FINE SILTS
- EXCLUSIVE SMART BOOM WITH 65 FEET OF VACUUM HOSE
- BUILT-TO-LAST COMPONENTS
- USING DURABLE STAINLESS STEEL CONSTRUCTION

THE MOST INNOVATIVE SEWER CLEANING TECHNOLOGY



MODEL 400 ECO MINI COMBINATION SEWER CLEANER

- BUILT-TO-LAST COMPONENTS USING DURABLE, STAINLESS STEEL CONSTRUCTION
- POWERFUL HIBON 28" HG POSITIVE DISPLACEMENT BLOWER WITH 4" SYSTEM
- 19,500 GVWR CHASSIS: NO CDL REQUIRED
- COMPACT OVERALL FOOTPRINT:
- IDEAL FOR URBAN ENVIRONMENTS AND LOW PARKING STRUCTURES



SEWER EQUIPMENT
CO. of AMERICA

BOOK YOUR DEMO TODAY
1.888.477.7611

WWW.SEWEREQUIPMENT.COM

managers know how many gallons of water they need to pull out of each pipe to prevent sanitary overflows. We haven't calculated that yet for green infrastructure. We plan to do some modeling."

The traditional method of collecting runoff and running it through pipes is commonly called "gray" technology versus her green technology. She says the two have to work together. "Very few people will say you can get rid of the gray system altogether. It is better to have a complement of green and gray systems. That's one of the next steps. When we come across areas where we don't have to do gray, we can do green instead. It certainly gets you a whole lot more."

Public Works officials aren't ignoring gray infrastructure as the green initiative is being rolled out. Denver is planning several large-diameter storm drain projects. An example is a drain project on 27th Street that will involve 5,900 linear feet of pipe from 78 to 96 inches in diameter.

Cleaning up surface water by filtering it through vegetation targets such pollutants as *E. coli*. Sources of the pernicious bacteria are both humans and wildlife, according to Anderson. "We have done a lot of *E. coli* mitigation efforts. It is hard to pinpoint where the efforts are working. It's tricky. We certainly try a lot of things, and we are making strides."

Regional leaders

Denver's long-term stormwater management strategy includes large-scale projects such as



The City and County of Denver's green infrastructure team includes (from left) Chief of Staff James Fisher, Brian Wethington, Sarah Anderson, Ashlee Grace and Public Works Executive Director Eulois Cleckley.

entire networks of parks, flood plains and filtration systems that employ natural filters like vegetation, soil and roots. Smaller-scale components of the plan include stormwater planters and so-called green alleys with permeable center strips that collect and filter runoff instead of sending it unfiltered to the nearest collector pipe.

None of these initiatives is revolutionary, new as it might be to Denver. Anderson mentions some cities in the rainy Northwest — "The Portlands of the world" — that have widely adopted infrastructure as green as their landscape. "But in cities

located in semiarid parts of the country, the green initiatives have not been prioritized like they have been in other climates. Denver and some other mountain communities in the Southwest are the leaders in pushing this in the region."

Anderson says Denver's green infrastructure strategy is not a 10- or 20-year plan.

"I would hope that it would be in perpetuity. The need for these environmental services is not going to go away in 10 year or 20 years. We'll always have the need." ♦



AP/M PERMAFORM
The trenchless solutions company

COUNTY AND MUNICIPAL
**SELF-INSTALL
REHABILITATION SYSTEM**

for
MANHOLES, CATCH BASINS,
AND DRAINAGE STRUCTURES

"With the AP/M Permaform trailer and spincaster, our own two-man crew is able to complete a basin rehabilitation in just two or three hours, and if conditions are right they can do as many as eight in one day."

Randall Dellaposta, Director of Equipment and Facilities at the Genesee County Road Commission (GCRC)



AP/M Permaform • 800-662-6465 • www.permaform.net

A submersible hydrostatic pressure sensor that lasts

RELIABLY MEASURE CONTINUOUS LIQUID LEVEL IN DEEP WELLS
AND PITS WITH THE VEGAWELL 52



VEGAWELL 52

- ✓ Durable ceramic measuring cell is 10x harder than stainless steel
- ✓ Integrated overvoltage protection in case of lightning strikes
- ✓ Versatile use through robust housing and cable design
- ✓ Simple installation with customized cable length up to 3,275 ft

Further information: www.vega.com
Call 1-800-FOR-LEVEL

VEGA Americas, Inc.
americas@vega.com



WEFTEC Booth #8543

Looking Forward

VEGA

AT A MOMENT'S NOTICE

It's often overlooked, but emergency preparedness is vital to confined-space work

By Jared Raney

If you're working in a confined space and the unthinkable happens, your team can just call 911, right? According to Gary Toothe, F.S. Solutions customer training manager, dead wrong.

"Calling 911 is not going to work, because most fire departments, especially volunteer fire departments, are not trained in confined-space rescue."

Take Atlanta, Toothe's closest city center. He says the metropolis has three departments that are trained for confined-space rescue — out of 34 total stations.

"If they happen to be out at a fire, they're not going to let the building burn down," Toothe says. "You may not have (a large) number of confined-space rescue teams, so put somebody on deck. Make sure you let them know enough in advance that somebody will need to be available if necessary."

That may seem obvious, but again, it's often something taken for granted. The OSHA regulation itself is somewhat lacking in specifics, and many people tend to overlook this aspect of confined-space entry.

Part of the difficulty of confined-space rescue training is that OSHA quantifies 16 different scenarios or manhole configurations, and a properly trained rescue team has to be prepared for any scenario that could reasonably be expected in their service area.



Training expectations

There are different types of confined-space training — and being trained to perform confined-space entry does not qualify you to perform rescue.

“Generally, the operation training will say something like, ‘You need to ensure that confined-space rescue services are available.’ And that’s it. That’s pretty much the throwaway tag line for the whole basic training,” Toothe says.

It’s also important to note that you can’t just call the first phone book ad claiming confined-space rescue services. OSHA clearly lists the criteria for a confined-space rescue team, and it is incumbent on the employer to evaluate any chosen team for proper training and capability.

Part of the difficulty of confined-space rescue training is that OSHA quantifies 16 different scenarios or manhole configurations, and a properly trained rescue team has to be prepared to act on any of those scenarios that could reasonably be expected in their service area.

For example, elevated or nonelevated manways are different scenarios, as are restricted and nonrestricted, as well as obstructed and nonobstructed. So if rescuing in a manway with obstructions, oxygen tanks and breathing apparatus could become a challenge, and rescue teams need to be prepared for that.

“Here’s the big problem with confined-space rescue: Ask most people how many different kinds of confined-spaces there are, and they will say two: nonpermit required and permit required. Ask them how often they practice, and they’ll say, ‘Once a year, just like OSHA says,’” Toothe says. “But there are 16 different configurations for permit-required confined spaces, which means if you’re going to be certified as a confined-space rescue person, you have to be able to extract people from 16 different styles of confined spaces. And you should practice those, or at least those you are expected to provide rescue from, at least annually — all of them.”

This means that instead of the one day that many believe to be the expectation, in order to be ready for all of the different scenarios, you would need about five full practice days throughout the year.

“That doesn’t happen a lot,” Toothe says. “The regulation states that you must practice for each configuration you’re reasonably expected to provide rescue from. Most contractors don’t get that. It’s a big mistake as far as confined-space rescue is concerned — it’s something that lays in the weeds, if you will.”

Developing a rescue team

Toothe says before becoming a safety manager, he did a fair amount of work for nuclear power plants,

where safety is paramount. They had two confined-space rescue teams available, but even so, he had to make sure that one of the teams would be available before he could proceed — it wasn’t simply a matter of assuming there would be rescue available.

“I generally tell people you need to put the rescue team on deck. Tell them they need to be prepared to do rescue if such an eventuality occurs so they can have the cart loaded with the proper materials. You need to make sure

**SpeedyLight+ is LED-based
UV Cure**

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

- Works with many approved felt and glass fiber liners
- Cures up to 3.3 fps over 328'
- Handles bends, transitions
- 3 interchangeable heads for 4–12"
- Single component, off-site wet-out
- Forward-view camera

PRT
Pipeline Renewal Technologies

www.pipelinert.com • 866.936.8476

you let them know enough in advance that somebody will be available to perform it if necessary.”

Larger facilities like the power plant or utilities can have their own rescue teams on hand, but even then, their availability can’t be taken for granted.

If developing your own rescue team is feasible, Toothe recommends an analytical approach.

“The first thing you should do is identify what types of confined spaces you need to provide rescue for or from. So do a general sort and say we don’t have any elevated, so we can eliminate that. Do an inventory of what style of confined spaces you need to provide rescue for.”

An added lifeline

Another big misunderstanding of confined-space rescue stems from an oversimplified interpretation of OSHA’s lifeline rule.

“There’s one other thing that most people don’t get, and that’s if you’re not going to wear a lifeline — if nonentry rescue is unavailable because you have chosen not to wear a lifeline — then the rescue team must be present at the portal, ready to perform rescue,” Toothe says. “They have to physically be there, sitting in a chair with their backpacks on, ready to go at a moment’s notice.

“OSHA says if wearing a lifeline would produce a greater danger to your life or health, it is not required. Now, people will bleed that off into,



Confined-space safety requires a lot more than just the proper gear. Trained rescue personnel should always be on standby.

ultra ultra ultra
LIGHT – VERSATILE – SAFE

ultraSHORE
P R O D U C T S



Quick to Install.
As light as 130lbs.



Roll Your Own.
Optional wheel kit.



Stacks easily with
2' & 4' high panels.

This is What Aluminum Shoring Was Meant to be!



1-800-683-8837

1-800-SH-ORING

CALL TOLL-FREE NATIONWIDE • 1-800-746-7464

www.shoring.com

‘OSHA says if it’s going to be a pain in my butt, I don’t have to wear one’ — that’s not exactly what OSHA says. If I have on a lifeline, the confined-space attendant can perform nonentry rescue. He can crank on the tripod or pull on the lifeline, and pull the entrant to the manway.”

Otherwise, a rescue team is required on site.

It’s important to note that even when you’re wearing a lifeline, for permit-required confined-space work, a rescue team must still be notified and ready to respond — even if they’re not required to be at the manhole.

“For most companies, confined-space rescue training is the minimum required by law: A 20-minute video and a 10-question true/false test afterward — it’s ‘What can we get away with?’” Toothe says. “I teach confined-space competent person (certification), and that’s an eight-hour class. But most people when you say, ‘Hey, if you’re going to do confined-space, get serious about it; I’m going to train you as a competent person and it’s eight hours,’ they’re like ‘Holy crap, I don’t think we’re ready for that.’ But it’s something you need to know.” ♦

delivering **POWER**



NEW

DESIGNED & BUILT
BY ARIES INDUSTRIES



©2019 ALL RIGHTS RESERVED

WOLVERINE 2.0 CUTTER

Powerful & Precise Cutter for Reinstating Laterals

Experience the next generation in cutters with the new electric Wolverine 2.0. Powerful and durable, it cuts through difficult material rapidly and accurately. The Wolverine 2.0 operates in pipes 6- to 18-inches. Features include:

- Fingertip control for outstanding operator ergonomics
- Infinitely adjustable speed and axis movement for accurate cutting
- Built-in lens wiper and scraper to keep the camera clear while in the pipe
- 500' cable reduces truck set-up time

Contact Aries today to see how Wolverine 2.0 is on the cutting edge.

**Visit us at this
upcoming show.**

groundwater
week
Exhibits • Workshops • Summit
Las Vegas, Nevada • December 3-5, 2019

**LAS VEGAS
DECEMBER 3-5, 2019
BOOTH #1031**

ARIES
INDUSTRIES, INC.

550 Elizabeth Street Waukesha, WI 53186 USA
800-234-7205 ariesindustries.com

raising the bar
UNDERGROUND

OPERATIONAL IMPROVEMENT

Suburban Milwaukee village strives for efficient operations through system upgrades and better management

By Jim Force



Village of Shorewood utility operator Scott Erickson runs the backhoe with guidance from operators Kyle Pinzer, Josh Sterr and foreman Dave Kunze while excavating to replace a 6-inch gate valve. (Photography by Michael McLoone)

“We plan major infrastructure projects in the even-numbered years, including water main replacement in road reconstruction programs. In the odd years, we’ll concentrate on hot spots.”

Joel Kolste

Shorewood Water Works may be old, but that doesn’t discourage the staff from doing everything they can to make the system current and cost effective.

Sitting around the conference table in the antique, cream-and-red brick Public Works building north of downtown Milwaukee, Leeann Butschlick, Public Works director; Joel Kolste, assistant director; and Dave Kunze, water utility foreman, tick off the many improvements they’ve made to the system:

- Audits of distribution system to identify infrastructure replacement needs
- Annual acoustical leak detection
- New procedures for systemwide flushing
- Cooperation with the local Fire Department on surge protection and water consumption
- Audit of meter inventory and testing to consolidate records into one central location
- Upgrade of master metering equipment
- New SCADA system to help staff monitor key operational parameters
- Automation of work orders for system repairs
- Updated lead and copper testing and lead service replacement policy.

To illustrate the result of these measures, Kunze lays out a spreadsheet showing a significant reduction in nonrevenue water, from 20% of production just a few years ago to less than 13% today.

“We used a recent large turnover in key staff as a springboard to audit and review our operations,” Butschlick says. “We retained City Water, a local consulting and operations firm, to help us develop new staff as well as improve our operational efficiency.”

Not only is the utility operating more effectively and saving ratepayers money, it recently won a utility achievement award from the Wisconsin Section of the American Water Works Association for management and operational improvements.

Shorewood draws its drinking water from the neighboring city of Milwaukee and delivers it through 32 miles of pipe to 3,500 accounts, serving 13,000 residents and businesses. The village borders both Lake Michigan and the Milwaukee River system. At just 1.5 square miles, the village is one of the most densely populated municipalities in the state of Wisconsin.

Six employees form the staff, and all are cross-trained to operate the village’s gravity sewer system, which delivers wastewater by gravity to Milwaukee for treatment.

“We’re unusual in that we have no storage capacity,” Kunze explains. “Our water comes from Milwaukee at 92 psi. In two valve pits, we step it down to 60-62 psi before it enters our distribution system.”

Those pipes date to the 1920s and earlier, and they consist mostly of ductile and cast iron.

New and improved

Shorewood turned a problem into an opportunity when half its staff left in 2013, including the utility foreman. They reached out to a local consulting and operations firm called City Water for help and guidance.

“We’d worked with Shorewood before,” says Tom Nennig, City Water principal, “along with a number of other municipalities in the north Milwaukee area.”

One of the first recommendations was to make Kunze the utility foreman and then support him with a range of good business practices that helped the utility address the water loss issue and other concerns.

“We wanted to make sure Dave could succeed,” Butschlick says. “City Water really helped us.”



PROFILE:

Shorewood (Wisconsin) Water Works

FOUNDED:
1904

CUSTOMERS SERVED:
3,500

AREA SERVED:
1.5 square miles

INFRASTRUCTURE:
32 miles of water main

STAFF:
Leeann Butschlick, Public Works director; Joel Kolste, assistant director; Dave Kunze, water utility foreman; operators Scott Erickson, Dave Bruner, Bill Nowak, Kyle Pinzer and Josh Sterr

ANNUAL OPERATING BUDGET:
\$1.9 million

WEBSITE:
www.villageofshorewood.org/water



Dave Kunze uses a SubSurface Leak Detection unit attached to a fire hydrant to listen for leaks in the line.

“Some of our old maps were from 1900.”

Leeann Butschlick

The firm served as mentor and coach, as well as a technical resource.

Meeting with City Water two to three times a week, Shorewood established a quarterly water audit to track purchased water against billings, including fire protection. Other measures included an audit of meter inventory that has led to an improved meter reading system and upgrade of the meters monitoring the incoming flow from Milwaukee. A new SCADA system (Starnet Technologies, An Electric Pump Inc Co.) has helped Shorewood get a better handle on breaks and leaks, and the village began using leak detection supplied by American Leak Detection.

“We upgraded and improved all our business practices, including basic recordkeeping,” Butschlick says. City Water was also familiar with all the new rules and regulations, based on their work with other communities in our area.

Another pleasant development: stabilization of staff. Butschlick says turnover has stopped and the team is in good shape with Kunze at the helm. Three of the employees have more than 20 years of experience.

Today, Shorewood is operating according to a rolling 10-year infrastructure planning and budgeting process. “We plan major infrastructure projects in the even-numbered years, including water main replacement in road reconstruction programs,” Kolste says. “In the odd years, we’ll concentrate on hot spots.”

Kunze says his crew cuts and recouples breaks or leaks in the ductile and cast iron pipes. And while the utility’s Esri GIS system isn’t new, the commitment to integrate it into daily operations has been very helpful, developing a usable interface with fieldworkers who all have iPads. “Some of our old maps were from 1900,” Butschlick says.

Meter upgrades

The lack of storage and the importation of water directly from the Milwaukee system present unique challenges to the Shorewood team.

(continued)

WATER SHOULD BE FUN

Kae Donlevy, who helped Shorewood develop its Shorewood Waters Project, has found the key to getting the water conservation message out to the general public.

“Make it easy, and make it fun,” she says, describing a wide range of programs she’s put together for the utility and other communities in the area.

Donlevy has worked in natural resources most of her professional life. “My passion is water,” she says.

Since 2011, jump-started by a Great Lakes Restoration Initiative grant of \$240,000 for stormwater investigation work, her stormwater education

programs for Shorewood have included “summer splashes,” Milwaukee River canoe trips, fish and feather festivals, kayak and boat trips, water booths, beach cleanups, school rain gardens, a history of water presentation, hikes along the river, and more.

The village has also partnered with many service clubs, environmental organizations, civic groups and municipal departments to get the word out about clean water.

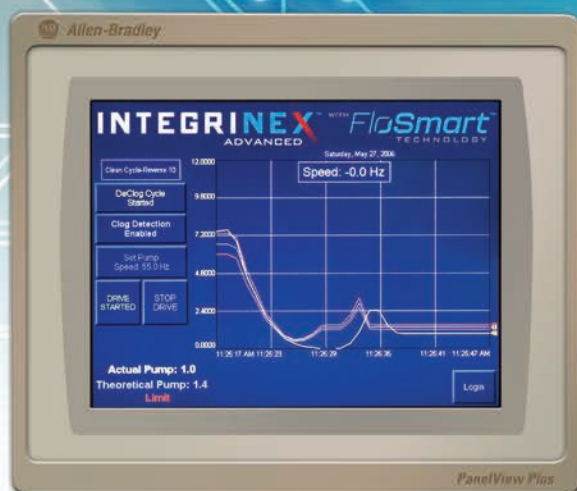
Donlevy’s latest project — a Fresh Water Toolkit — is based on many of the materials she has helped Shorewood develop.

“We’re developing a toolkit that all teachers and others across the area can use to help educate the public about the importance of clean water and their role in its conservation and protection,” she says. “There’s no sense if all communities develop their own. This will be one everyone can use.”

THE BRAINS BEHIND THE OPERATION.

GR
GORMAN-RUPP
PUMPS

The Pump People®



Integrinex™ Advanced controls with FloSmart™ technology are smart enough to detect a pump obstruction...and clear it.

Gorman-Rupp's Integrinex™ Advanced controls with new FloSmart™ technology are the brains behind the management of your ReliaSource® lift station. FloSmart technology, featuring integrated architecture, is capable of recognizing when a pump is clogging and initiating a cleaning cycle without interfering with the operation of your pump station. For more information, call us at 419.755.1011 or visit GRpumps.com.



**Visit Gorman-Rupp Pumps at WEFTEC
Booth #1231
Sept. 23-25, 2019 • Chicago, IL**

INTEGRINEX
ADVANCED
WITH **FloSmart**
TECHNOLOGY



Scott Erickson uses a backhoe to guide a trench box into place with help from Josh Sterr, Kyle Pinzer and Dave Kunze.



Village of Shorewood utility operators (from left) Kyle Pinzer, Erickson, Sterr, Bill Nowak and Kunze. Not pictured: Dave Brunker.

Kunze explains that the two vaults — or pits — holding the master meters and pressure regulators that monitor and control the flow are underground structures built sometime in the 1930s. One pit contains the equipment supplying the Shorewood water; the other is devoted primarily to fire flow.

Shorewood intends to update the vaults, and it represents what Butschlick says is a delicate project.

“We made emergency repairs to the PRVs (pressure regulating valves) in 2013,” Kunze says. “But they will be replaced with the vault.” He adds that issues with the PRVs became obvious in 2013 when pressure surges were “popping mains.”

Pending Public Service Commission approval, the plan is to construct a prefabricated vault unit that will be installed next to the existing pit. The existing master meters, owned by Milwaukee Water Works, will be disconnected and then reconnected to the new piping in the new vault. The utility’s contractor would conduct this work at night during low-flow periods. Butschlick says neighboring communities — partners in the North Shore

Water Commission — have been contacted about supplying emergency water if necessary.

The community’s overall 3,500-meter system (Sensus SR IIs) is due for replacement as well. Butschlick says a request for proposal has been issued for a new open architecture metering system and radio-read infrastructure. The system will replace the current manual reading system.

Stormwater

Because Lake Michigan lies along the eastern border of Shorewood, the community must comply with Great Lakes rules and regulations regarding stormwater. The separate storm sewer system discharges to the Milwaukee River, which is on the Impaired Waters List. Flow from the 18-mile combined sewer and the separated wastewater system go to the Milwaukee Metropolitan Sewerage District.

All combined sewer service areas within the Milwaukee Metropolitan Sewerage District are required to disconnect household downspouts by 2025. Shorewood is somewhat unique in that just under half of its combined sewer area is actu-

ally served by a storm sewer system that collects flow from street inlets. In these areas, the village has installed an 8-inch PVC pipe “terrace drain” system just behind the curbs, connecting to catch basins.

Property owners in these areas will have the option to connect their private storm drain systems to the terrace drains. “We’re putting these in our storm sewer areas. We can’t put them everywhere, but where we can, we are,” Butschlick says.

Facing the future

In addition to infrastructure repair, Shorewood faces challenges familiar to all water utilities in the older sections of the country: talent drain and lead service lines.

Recruitment of new staff is challenging. “We’re a small utility, and we have a lot of information in our heads,” Butschlick says.

But what happens when the heads leave? Butschlick says getting information into their GIS system is a critical step.

Refilling the positions is another matter. Butschlick, a graduate of the state university’s natural resources program, notes how much the times have changed and the fact that water is just not in the forefront of young people’s minds these days.

“You don’t hear them saying, ‘Oh I want to be a water operator,’” she says.

They’ve had better luck with the lead replacement project, begun in 2016. It’s modeled after one developed by the Greater Cincinnati Water Works and includes AWWA best practices. The only lead in the public distribution system is in the municipal portion of the service lines.

“Milwaukee adds orthophosphate to its finished water to prevent leaching,” Butschlick explains.

As the village replaces its public distribution system mains and replaces laterals with copper from the main to the curb stop, it offers property owners along the way the option to replace their private service lines at the same time. Five-year no-interest loans act as an incentive, and the results have been pretty good. Kolste reports that 16 of 28 eligible property owners signed up for the replacement program this year — about 57%.

Moving forward, the Shorewood staff expects that number to get even better. ♦

FEATURED PRODUCTS FROM:

American Leak Detection
800-755-6697
www.americanleakdetection.com

Esri
800-447-9778
www.esri.com

Sensus
800-638-3748
www.sensus.com

SubSurface Locators, Inc.
775-298-2701
www.subsurfaceleak.com

Trusted Solutions to Critical Wastewater Problems

Services

Installation, Monitoring,
Condition Assessment, O&M

TRITON+®
Flow Monitor

RainAlert® III
Rainfall Monitor

FlowView PRISM™
Software &
Data Solutions

ECHO™
Level Monitor

Integrated Solutions

ADS® delivers consistent, quality data for critical engineering, operations, and maintenance applications; providing actionable insight that enables users to make informed decisions. ADS integrated solutions equip users with the tools necessary for superior asset and operational management.

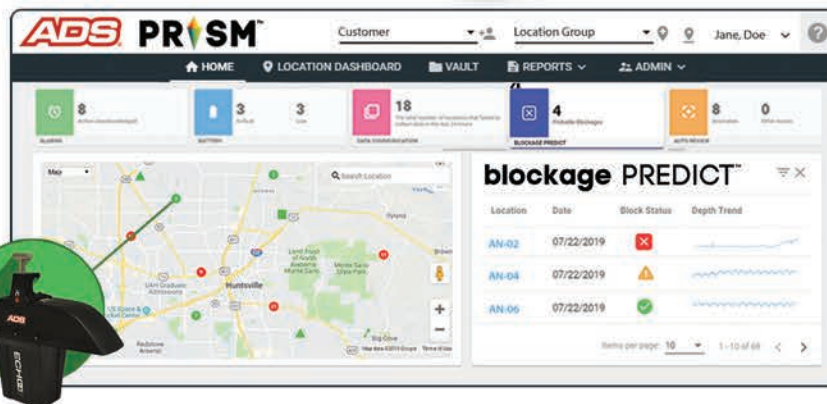
Choose ADS for:

- ▶ Blockage prediction & prevention
- ▶ Cleaning optimization
- ▶ CSO monitoring and reporting
- ▶ Capacity planning & management
- ▶ I&I analysis and reduction
- ▶ Hydraulic model calibration
- ▶ Accurate billing data

Find Your Trusted Solution

E: adsinfo@idexcorp.com

C: 800.633.7246



ADS has developed a machine learning app, **blockage PREDICT™** - part of the all-new cloud-based **PRISM™** software. It enables operators to see a developing sewer blockage weeks before it becomes an issue - **blockage PREDICT** analyzes and recommends action. Operators benefit using actual, real-time site conditions to drive, schedule and reduce cleaning up to 80% while gaining 24/7 safeguards against SSOs.

SOMETHING BIG IS COMING

weftec
the water quality event™

Visit ADS in **Booth # 2025**

September 23-25, 2019 | Chicago, IL

ADS
www.adsenv.com

Dig These New Products at ICUEE 2019

BY CRAIG MANDLI

The International Construction and Utility Equipment Exposition (ICUEE), also known as the Demo Expo, is the premier event for utility professionals and construction contractors to gain comprehensive insights into the latest technologies, innovations and trends affecting their

industry. This year's event, slated for Oct. 1-3 in Louisville, Kentucky, promises to show off some of the finest new products on the construction market. Below is a preview of some of the newest products that will be highlighted at this year's show.

Boss Industries Bullet D

The **Bullet D** from Boss Industries is a compact, strategically designed system that integrates all major components on to a single frame, enclosed in a tough, weather-resistant canopy. Its design provides output of up to 80 cfm at 100 psi. Because it measures just 20 inches wide by 48 inches long by 40 inches high, it can be set on any class truck with minimal effect on load capacity and visibility. It is narrow enough to fit into standard industrial gates and doorways, as well as service elevators for highrise or underground construction. The width of the unit makes it suitable for mounting on top of 20-inch-wide service body compartments.



800-635-6587; www.bossair.com; Booth L475

Ox Equipment MTS Dino Series

Advanced technology allows the **MTS Dino Series** dry suction excavator from Ox Equipment to powerfully dig without the use of water, eliminating issues related to slurry disposal as well as overweight loads. It uses a twin-fan system, which generates over 24,000 cfm. The large 10-inch-diameter suction hose, which extends up to 30 feet off the back of the truck, is precisely manipulated via the mechanical Power Arm. The functional side-tipping feature allows for efficient dumping from the 10-cubic-yard spoils container, allowing the unit to stay on site all day, effectively doubling productivity.



888-290-4044; www.ox-equipment.com; Booth K373

Hyundai Construction Equipment Americas R30Z-9AK

Hyundai Construction Equipment Americas will exhibit nine equipment models, including a prototype of an electric-powered model, the R35E, developed in collaboration with Cummins Engine Co. They will also exhibit six conventional diesel-powered models from the 9A series of compact excavators, ranging from its smallest (the R17Z-9A) to its largest (the R80CR-9A) and including the **R30Z-9AK**. Also on display from the full-sized HX series of hydraulic excavators will be the HX140L, powered by a 127 hp Cummins QSF3.8 engine. Rounding out the exhibit from the HL900 series of wheel loaders will be the HL940TM model.



877-509-2254; www.hceamericas.com; Booth K345

Oxford Plastics Systems LowPro 23/05 road plates

Oxford Plastics Systems' **LowPro 23/05** road plates are HS20-44 load rated for up to a 36-inch-wide trench. Two workers can transport this composite modular system in a work truck and install coverage for 6 feet of trench in 10 minutes. Interlocking sections have a high-visibility, anti-skid surface. The chamfered Flexi-Edge is easy to grip and reduces noise. Gravity-fed underside pins prevent lateral movement. EasiLift handles lock into the sections, making installation easier and more ergonomic.



800-567-9182; www.oxfordplasticsusa.com; Booth 3044

Rival Hydrovac T7

The **T7** from Rival Hydrovac was designed primarily to be a unit that could be loaded with debris and driven within legislated road limits with most types of debris on board. Additionally the unit comes standard with a scale that reads real-time weights both in the cab and on the wireless remote to confirm weights prior to travel. It is operator friendly, and the operating system is engaged through one PTO switch. The remainder of the operation occurs from the rear panel or the wireless remote. The components used in this truck are high performance in nature, and the unit will dig at levels competitive to large units.



403-550-7997; www.rivalhydrovac.com; Booth 5142

TRUVAC by Vactor Paradigm

Designed for utility, municipal and contractor customers involved in the installation, maintenance and repair of underground water, sewer, gas, electric and telecommunications lines, the versatile **Paradigm** subcompact vacuum excavator from TRUVAC by Vactor can dig holes with water or air; vacuum, contain and dispose of drill mud; power pneumatic, hydraulic or electrical tools; and provide transport and storage of replacement parts, equipment and tools. The truck's Park-n-Dig design minimizes the time between arriving on the job site and excavation, including the ability to dig up to 6 feet in depth without additional pipe and hose. The standard air compressor powers utility tools such as jackhammers and tampers that may be used on the job.



800-627-3171; www.truvac.com; Booths I531, N2013

Sonetics wireless headsets

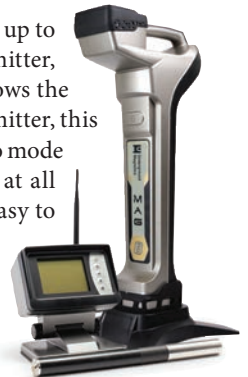
Sonetics **wireless headsets** enable natural conversation in the most challenging environments. Talk hands-free with a crew and protect hearing from dangerous noise. Listen-Through Technology provides control of when and how much outside sound to let in to maintain situational awareness. High audio quality and an auto-leveling, noise-canceling microphone lets the user understand the subtle differences in what they hear — even in the middle of a loud work zone.



800-833-4558; www.soneticscorp.com; Booth 3706

Underground Magnetics Mag 8

With an easy-to-use interface and the ability to go up to 360 feet deep with the Echo 110 extended range transmitter, the **Mag 8** receiver from Underground Magnetics allows the user to go deep. Even with the standard Echo 50 transmitter, this receiver provides a depth range of up to 160 feet. Bore-To mode is always displayed on both the receiver and display at all times, with no programming required. This locator is easy to operate. Once set up, the operator never needs to press a button to accurately know where the transmitter is and where it is going. It includes the ability to change not only 10 frequencies downhole, but also change between high and low power.



515-505-0960; www.umaghdd.com; Booth 2956

Super Products Mud Dog

Super Products offers a safe, efficient and versatile alternative to traditional digging equipment with the **Mud Dog** hydroexcavator product line. The Mud Dog is designed for operator convenience and consistent performance in the harshest environments. It is available with 12- or 16-yard debris capacity and has a 1,500- to 2,000-gallon water tank capacity to meet the challenges of a variety of applications, excavation projects and job site conditions.



800-837-9711; www.superproductsllc.com; Booth 3422

Vactor 2100 Plus

A water recycling system, available as an option for the Vactor **2100 Plus** sewer cleaner, reuses water already in the sewer to clean sewer lines, eliminating the need for clean water. The system helps municipalities save thousands of gallons of freshwater, improve efficiencies, reduce costs and promote sustainability. The system can also increase operator productivity by up to 100%, enabling operators to clean twice the number of lines. The five-stage filtration system combines settling, centrifugal separation and absolute filtration to 100-micron particle sizes, preventing most abrasive solids from entering the jetting system. The filter cleaning system allows the machine to operate continuously at full operating flows and pressures throughout the day.



See ad page 3

800-627-3171; www.vactor.com; Booths I531, N2013

NASSCO WELCOMES TECHNICAL ADVISORY COUNCIL

Members represent a broad cross section of the trenchless industry

By Sheila Joy

In preparation for Lynn Osborn's transition away from NASSCO's technical director position and into his role as president of Utility Engineering & Surveying Institute, last spring NASSCO conducted an extensive, nationwide search to find his replacement.

We received many applications from highly qualified industry professionals to take over Osborn's position, and they all brought something unique to the role. Some had more experience in specific trenchless technologies than the others. Some had postgraduate degrees, while others learned everything they knew in the field. Some had years of experience training Pipeline Assessment and Certification Programs, others training Inspector Training and Certification Programs, and a few had no experience in either. Some worked previously for cities, some for contractors, others for engineering firms and a few for manufacturers or suppliers.

The common denominator was they all shared NASSCO's mission to set standards for the assessment, maintenance and rehabilitation of underground infrastructure and to ensure the continued acceptance and growth

of trenchless technologies.

There was a lot to consider in making the right choice. It's important that all technologies are represented fairly, as well as different points of view — meaning the municipal, contractor and engineer perspectives. As a result, we have decided to form NASSCO's Technical Advisory Council, which will be comprised of the top applicants for this important position. As of press time, formal agreements have not been signed by all of the council members, but by the time this article is published, the names of these individuals will be posted at www.nassco.org.

All Technical Advisory Council members will support NASSCO in its mission, and in doing so, each member will know, understand and represent trenchless technologies as viable solutions for failing underground infrastructure, remaining objective in his or her presentation of trenchless technologies and recognizing the benefits of each for unique purposes. The council will accomplish this through industry advocacy, education and the development of resources. ♦

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

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

Get the EDge Training and Continuing Education Courses

PACP TRAINING

October 14

Marriottsville, MD

Includes: PACP, MACP, LACP
Trainer: Irvin Gemora
410-458-9591 • irv.gemora@gmail.com

October 14

Louisville, KY

Includes: ITCP - Manhole Rehabilitation
Trainer: Tim Back
513-253-8461 • timbacktwo@gmail.com

October 14

Costa Mesa, CA

Includes: ITCP - Manhole Rehabilitation
Trainer: Rocky Capehart
916-834-2712 • rcapehart01@comcast.net

October 15

Orlando, FL

Includes: PACP, MACP, LACP
Trainer: Laurie Perkins
888-621-8156 • laurie.perkins@wright-pierce.com

October 15

Belmont, NC

Includes: PACP, MACP, LACP
Trainer: Paul Booth
704-681-3989 • woodsideenv@gmail.com

October 15

Chicago, IL

Includes: LACP, PACP, MACP
Trainer: Jerry Weimer
513-659-5008 • jerryweimerconsulting@gmail.com

October 15

Twinsburg, OH

Includes: PACP, MACP, LACP
Trainer: Brandon Conley
248-349-0904 • pacp@dohenycompanies.com

October 15

Louisville, KY

Includes: ITCP - CIPP
Trainer: Gerry Muenchmeyer
252-626-9930 • gerry@muenchmeyerassoc.com

October 16

Covington, GA

Includes: LACP, PACP, MACP
Trainer: John Jones
678-527-4212 • plumblineconsultant@gmail.com

October 17

Costa Mesa, CA

Includes: ITCP - CIPP
Trainer: Rocky Capehart
916-834-2712 • rcapehart01@comcast.net

October 22

Romulus, MI

Includes: MACP, LACP, PACP
Trainer: Jerry Weimer
513-659-5008 • jerryweimerconsulting@gmail.com

October 22

Bolton, Ontario

Includes: MACP, LACP, PACP
Trainer: Brandon Conley
248-349-0904 • pacp@dohenycompanies.com

October 29

Bensalem, PA

Includes: PACP, MACP, LACP
Trainer: Irvin Gemora
410-458-9591 • irv.gemora@gmail.com

October 29

Durham, NC

Includes: PACP, MACP, LACP
Trainer: Paul Booth
704-681-3989 • woodsideenv@gmail.com

November 05

Framingham, MA

Includes: ITCP - CIPP
Trainer: Will Markey
508-479-7204 • whmcusefan@gmail.com

November 05

Hollywood, FL

Includes: MACP, LACP, PACP
Trainer: Paul Booth
704-681-3989 • woodsideenv@gmail.com

November 06

Phoenix, AZ

Includes: ITCP - CIPP
Trainer: Rocky Capehart
916-834-2712 • rcapehart01@comcast.net

November 11

Frederick, MD

Includes: MACP, LACP, PACP
Trainer: Irvin Gemora
410-458-9591 • irv.gemora@gmail.com

NASSCO PRO TRAINING



OTHER CLASSES FORMING

Contact one of the trainers listed above if you are interested in having a class at your facility or in your area.



SPiDER

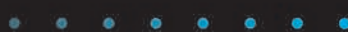
Quickly prioritize and identify sewer issues with CUES manhole inspection equipment.

Make the best use of your time and money by using CUES manhole inspection equipment to inspect your manholes and mainline pipes. CUES manufactures numerous manhole inspection systems designed to reduce system operation/management costs and quickly identify high-risk areas of wastewater and stormwater systems. Inspect and assess 50 manholes or more per day, increasing your revenue, while reducing your expenses. Call today for a free demo and learn how CUES can help you GO THE DISTANCE!



CALL TODAY FOR A FREE DEMO!

800.327.7791 | salesinfo@cuesinc.com



www.cuesinc.com

FLOW CONTROL AND MONITORING

By Craig Mandli



Hermann Sewerin GmbH SePem 155



ADS Environmental Services ECHO



Blue-White Industries
Digi-Meter F-2000 Series



FCI - Fluid Components International
ST80 Series



McCrometer
FPI Mag

DATA LOGGER AND MANAGEMENT

Hermann Sewerin GmbH SePem 155

SePem 155 data loggers from Hermann Sewerin GmbH can help reliably identify existing leaks and catch new ones early on. 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 cannot be clearly distinguished from minimum nighttime consumption when measuring the flow. However, the data logger is designed to report the leak after just one night. It is ideal for mobile use and can also be used for the stationary monitoring of water supply networks. 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. 888-592-9916; www.sewerin.com.

FLOW CONTROL/MONITORING EQUIPMENT

ADS Environmental Services ECHO

The ECHO from ADS Environmental Services is used for continuous monitoring of manholes and multiple associated pipe segments to determine when they need to be cleaned. The monitors provide visibility of water levels and changes that occur, preventing overflows. The ECHO has five alarms that are configured for each site and has 28 feet of total measure range. 800-633-7246; www.adsenv.com.

Blue-White Industries Digi-Meter F-2000 Series

The Digi-Meter F-2000 Series electronic, digital paddle wheel flowmeters from Blue-White Industries monitor flow in a wide variety of applications. The units measure water ranges from 0.4 to 8,000 gpm and feature an easily visible, eight-digit LCD readout with up to four decimal positions. The meter is field programmable via the front panel touchpad, and the panel is equipped with a security lockout. It is designed to accommodate pipe or wall mount installations. The insertion-style F-2000 displays flow rate, total flow and includes an NPN open-collector output for communica-

tion with data loggers, SCADA systems and other external devices. Additional features include 4-20mA/0-10 volts DC, batch processing, a high/low flow-rate alarm output and front panel security lockout. It comes factory programmed with a calibration certificate. 714-893-8529; www.blue-white.com.

FCI - Fluid Components International ST80 Series

The next-gen ST80 Series thermal mass flowmeter from FCI - Fluid Components International has Adaptive Sensing Technology that combines the advantages of thermal dispersion constant power and constant temperature technologies into one precision-accuracy, rugged meter with an extensive selection of application-matched flow sensors available. Its versatile transmitter outputs are compatible with DCS, PLC, SCADA, recorder or alarm systems. They include traditional 4-20mA analog or digital bus communications such as HART, Foundation Fieldbus, PROFIBUS or Modbus. The meter's intuitive, easy-to-read local display is a graphical, backlit LCD that shows what's happening in the pipe by providing flow rate, totalized flow and temperature data, which are continuously displayed in a digital and bar graph presentation. Alarms and/or diagnostic messages are displayed as needed to alert operators. 760-744-6950; www.fluidcomponents.com.

McCrometer FPI Mag

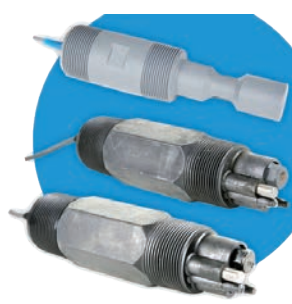
The FPI Mag magnetic flowmeter from McCrometer employs a configuration where the coils and electrodes are assembled in a tube that inserts into a pipe perpendicular to the full flow profile of the pipe. It measures flow at various points within the pipe diameter using a multielectrode sensor design. The ability for a utility to install and remove the flowmeter under pressure means significant cost savings and provides greater budget flexibility. Flanges are not required, pipes do not have to be cut and welding is generally not necessary. This means installation is simple and easy, making it suitable for retrofits, upgrades and maintenance projects, as well as sites never metered before. It can be used in pipe sizes from 4 to 138 inches and is available in both forward and bidirectional configurations. The unit comes precalibrated, requiring no recalibration in the field. 800-220-2279; www.mccrometer.com.



PMC Engineering VL4500 Series



AMETEK Drexelbrook DRX500 Series



Sensaphone sensors



SmartCover Systems UnderCover 2



PRIMEX Pump Watch Express



Greyline Instruments PSL 5.0

PMC Engineering VL4500 Series

The **VL4500 Series** transmitter from **PMC Engineering** ranges as low as 30 inches water column. It has a highly stable piezoresistive element manufactured from micromachined silicon. It is available with a rugged side-entry cable with optional wedge nose cone for use inside pipes where the level measurement is required under flowing conditions. This is offered as a standard option for 3/4-inch-diameter transmitters, but can also be provided for other series. This combination is suited for installations into sewer pipes to minimize flow restrictions and possible clogging. A titanium housing provides immunity to virtually all environments, including brackish or seawater, or other chemicals unsuitable for stainless steel. The polyurethane vented cable is molded to the transmitter, providing a high-integrity waterproof assembly. **203-792-8686; www.pmc1.com.**

PRIMEX Pump Watch Express

Pump Watch Express from **PRIMEX** is a comprehensive family of 4G LTE/3G compact cellular RTUs and gateways used for monitoring pumping systems. It offers a simple tool for management of multiple sites, including alarm notification, data logging and graphic system visualization. It includes a lithium-ion backup battery for power loss detection and notification, SMS/email/web portal alarm notifications, graphic HMI with simple and clear station status display, interactive pumping station map, data logging and historical trending, first year of service included, and optional web portal customization. The NEMA 4X control panels come in three versions: lite, premium and gateway. **844-477-4639; www.primexcontrols.com.**

METER

AMETEK Drexelbrook DRX500 Series

The **DRX500 Series** from **AMETEK Drexelbrook** is a set of 80 GHz radar transmitters that covers applications with liquids, slurries and solids for both hygienic and nonhygienic requirements. All 80 GHz radar transmitters are especially beneficial for level measurements in narrow tanks with internal obstructions due to their small beam angle. The transmitters, with their flush-mounted polyether ether ketone lens antenna and wide process connection options, are suitable for hygienic liquids. They include a large, backlit LCD screen with a

four-button keypad that can be assessed with a bar magnet without opening the housing cover. Each uses software that has a quick setup assistant for easy installation. Each conforms to NAMUR recommendations NE 21, NE 43 and NE 53 and can measure fast-moving processes. The transmitters are available with aluminum or stainless steel housings. **215-674-1234; www.drexelbrook.com.**

SENSORS

Greyline Instruments PSL 5.0

The **PSL 5.0** pump station level controller from **Greyline Instruments** has redundant level sensing. It includes a noncontacting ultrasonic sensor and can be connected to a loop-powered pressure sensor for redundant sensing in applications with foam or grease. It will continuously recalibrate the pressure sensor and automatically switch back and forth from ultrasonic to the pressure sensor as required. It is designed for lift stations, wet wells and storage tanks. Calibration and relay setpoints are easy to enter through the user-friendly keypad and menu system. An automatic pump runtime logging and reporting system helps operators to plan pump maintenance and identify lazy pumps before they fail. It includes an isolated 4-20mA output and six programmable control relays for pump control, pump alternation and level alarms. An intrinsically safe sensor and a built-in data logger are optional. **315-788-9500; www.greyline.com.**

Sensaphone sensors

Monitoring sensors from **Sensaphone** indicate when conditions fall outside of a safe range. They are compatible with most Sensaphone remote monitoring systems, which provide alerting and data logging functionality. Instant notification ensures prompt corrective action to keep water safe and equipment working properly. ORP sensors measure water cleanliness by detecting contaminants. PH sensors detect changes in pH that can reduce water quality and damage equipment. Toroidal conductivity sensors measure water purity based on ion counts. They monitor chemically aggressive process solutions in applications where conventional contacting sensors may become fouled or corroded. **877-373-2700; www.sensaphone.com.**

SmartCover Systems UnderCover 2

UnderCover 2 from **SmartCover Systems** makes use of advanced micro-electromechanical 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. UnderCover 2 is now an integrated function within all of SmartCover's remote monitoring units, including leveraging Iridium satellite communications impervious to local power or cellphone outages. **760-291-1980; www.smartcoversystems.com.**

(continued)

ONE STOP ODOR CONTROL SHOP



OCPE®
ODOR CONTROL PRODUCTS & EQUIPMENT

Visit our websites: www.ocpe.store
and www.shopodorcontrol.com
Call us toll-free: 1 (800) 578-9404
E-mail: info@ocpe.store



Pressure Washers & Drain Jetting Equipment

We Custom Build Machines To Your Specifications!

800-648-5011

www.camspray.com

sales@camspray.com

Van and Truck Mount Models Available
See All The Features And Specifications At CamSpray.com

STB Series Trailer-Mounted Drain Jets



- DC-Powered Jet Hose Reel and 4-Nozzle Set
- Pressure Gauge & Hour Meter
- Electric Start with Low Oil Shutdown
- Pumps Handle Fluids Up To 160°
- Lockable Tool and Storage Boxes
- 150' Garden Hose on Manual Reel
- 300 Gallon Tank with Low Water Shut Off
- Gearbox Drive Triplex Plunger Pump with Ceramic Plungers and Stainless Valves
- Trailer with Industrial Painted Finish and 15" Aluminum Wheels

STB4012K \$21,699

- 12 G.P.M. @ 4000 PSI
- 999 CC Kohler • 400' x 1/2" Hose

STB3015K \$20,999

- 15 G.P.M. @ 3000 PSI
- 999 CC Kohler • 400' x 1/2" Hose

STB2712K \$15,399

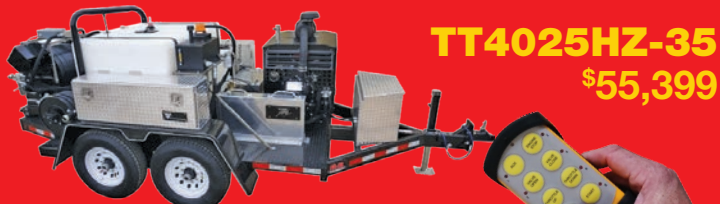
- 11.5 G.P.M. @ 2700 PSI
- 689 CC Honda • 400' x 1/2" Hose

STB3708K \$14,999

- 8 G.P.M. @ 3700 PSI
- 689 CC Honda • 300' x 3/8" Hose

STB4007K \$12,999

- 7 G.P.M. @ 4000 PSI
- 689 CC Honda • 300' x 3/8" Hose



TT4025HZ-35 \$55,399

- Produces 25 Gallons Per Minute at 4000 PSI
- 74 HP EPA Tier 4 Final Compliant Hatz Turbo Intercooled Diesel Engine
- Hydraulic Slide Out Swivel Reel with 500' x 5/8" Hose
- Air Purge Valve and 18 Gallon Anti-Freeze Tank and Freeze Protection
- Heavily Constructed Trailer with 2" x 4" Steel Tube Box Frame
- 26 Gal Fuel Tank Gives Hours of Run Time on a Single Fill
- 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

PRODUCT FOCUS

FLOW CONTROL AND MONITORING



Teledyne ISCO LaserFlow Ex

Teledyne ISCO LaserFlow Ex

The **LaserFlow Ex** noncontact velocity sensor from **Teledyne ISCO** is designed for intrinsically safe locations. The subsurface flow measurement sensor is certified for hazardous areas classified as Class 1, Div. 1, Zone 0 and ATEX category 1G. The LaserFlow Ex can remotely measure flow in open channels with noncontact Laser Doppler Velocity technology and noncontact Ultrasonic Level technology. The sensor measures velocity with a laser beam pointed below the surface of the water or wastewater stream. It offers built-in diagnostic tools, simple installation and minimal maintenance, which reduces the number of site visits. With a variety of communication options, programming and data retrieval can be performed from a remote location. 800-228-4383; www.teledyneisco.com. ♦



T&T Tools, Inc.
800.521.6893



Hooks...

- Heat treated for long life
- Manhole Cover Hooks
- Septic Tank Lid Hooks
- Many styles available
- "T" handles for two hands or compact "D" handles

Probes...

- Insulated, Standard and Specialty
- Metal shafts: 3/8 round or hex
- Replaceable hardened tips
- Optional "slide" available to make your probe a mini-slide hammer

Call for a FREE Catalog

Email: sales@mightyprobe.com Fax: 800.521.3260



INDUSTRY MARKETPLACE

With 600 exhibitors and 350,000 sf of exhibit space, the WWETT Show is THE marketplace for the wastewater and environmental services industry. See the new product launches, get hands-on with equipment, and make your purchases. The WWETT Show Marketplace is WHERE DEALS GET DONE!



WHY SHOULD YOU ATTEND?

- ✓ **Explore the Marketplace** for tools and resources you need for your business
- ✓ **CEUs** from some of the best and brightest speakers in the industry
- ✓ **Events** to network with your peers - or just kick back with friends.



CONFERENCE: **FEBRUARY 17-20**

MARKETPLACE: **FEBRUARY 18-20**

INDIANA CONVENTION CENTER

MORE INFORMATION AT WWW.WWETTSHOW.COM



AMI solution provides improved meter reading

Problem:

South Walton Utility Co. manages Miramar Beach water and wastewater services in Florida. In the past, one utility employee would drive around the service area reading meters, but as the population continued to expand, the utility realized the need to update its metering system. South Walton Utility also needed to address a Department of Environmental Protection regulatory issue to prevent backflow, and without hard data to justify the need for replacement of preventors, this could have been costly.

Solution:

South Walton Utility went with the **Mueller Water Products Mi.Net** system that connects meters, distribution



sensors and control devices to provide near-real-time data that monitors water consumption and determines if any leaks exist. If the system detects any problems, it immediately sends emails and alarms to administrators, who can address the issue in a much more timely fashion than before, which saves the utility money and reduces water loss. Additionally, the system sends an alert when backflow conditions are detected, helping the utility remain compliant with the Florida DEP's regulations.

RESULT:

The Mi.Net system has not only helped South Walton Utility improve revenue, but it also helped meet the requirements for its consumptive use permit from the Water Management District by demonstrating they are minimizing water loss. South Walton Utility is now looking at expanding its advanced metering infrastructure solution to include leak detection, as well as shut-off meters and a customer portal. **800-423-1323; www.muellerwaterproducts.com.**

Magnetic flowmeter solves data problem for major water utility

Problem:

SUEZ Water Technologies & Solutions operates a large water system in the New York City suburb of Westchester County and was planning to upgrade its aging infrastructure. The utility's top priority was finding a solution that could pinpoint and stem water loss quickly and easily, even in no-power situations, to save water and reduce its bottom line.

Solution:



SUEZ developed a big data-driven model of its water systems to compare real-time water usage against a historical

baseline. They chose the **Sitrans FM MAG 8000** flowmeter from **Siemens Process Instrumentation** as the primary input for the model. This battery-operated water meter measures accurately and reliably in very low-power or low-flow applications, and the transmitter is designed for remote mounting. Water flow data is stored in its wireless data logger at one-minute intervals, and the data logger's cellular modem uploads the data to the SUEZ database at the end of each day.

RESULT:

Siemens collaborated with SUEZ to fine-tune the measurement accuracy to better than 1% of rate on an average flow day and 2% on a minimum flow day. With real-time water usage data, SUEZ is now realizing water savings of 1 mgd and has reduced leak detection times from several days to less than 24 hours. **800-365-8766; www.usa.siemens.com/pi.** ♦

AMERICAN HIGHWAY PRODUCTS LTD.
RAISING AMERICA, ONE INCH AT A TIME

PIVOTED TURNBUCKLE MANHOLE RISER

The Most Efficient and Powerful Expanding Riser on the Market.

Riser heights 3/4" and up in all diameters. 1" diametric variance and DOT approved in most states.

Made in the USA

INCLINED MANHOLE RISER

Now you can raise and tilt the manhole cover to match the grade of the road surface.

Manhole Safety Ramp

Sewer Lid Seal Kit

Solid Rubber Adjusting Ring

Toll Free 1-888-272-2397 • www.ahp1.com • e-mail: sales@ahp1.com • Free Video/CD ROM

Cutting Edge Performance. **FOR LIFE.**

Clogged municipal wastewater collection systems can be costly in both time and operating expenses.

For decades, the challenges have continued to grow as more foreign debris including anything from construction materials to FOG (fats, oils and grease) to disposable wipes are entering municipal sewer systems.

It's time you get a cutting edge to combat clogs.

Explore the latest advancements in grinder pump technology.

Download our **FREE** White Paper.
PENTAIR.COM/CUTTING-EDGE



PENTAIR MYERS V2 SERIES GRINDER PUMPS
Featuring patented axial cutter technology

Product Spotlight

Heavy-duty water blaster enhanced with two pumps

By Craig Mandli



A water blaster is a big investment for any contractor. That's why finding one that offers versatility is key. The Jetstream of Houston TwinForce dual-pump water blast system is designed for high-flow applications including industrial cleaning, surface preparation and hydrodemolition, but it can also be used in low-flow situations.

"The Jetstream TwinForce is a powerhouse solution functioning as a large-capacity 650 hp unit or as two 325 hp independently run units," says Ronnie Felts, product manager at Jetstream. "The versatility of our system provides the contractor with the ability to bring two units into the space of one for virtually any application."

The TwinForce unit is built around the versatile UNx fluid end water blast system. With the interchangeable UNx fluid end design, operating pressures from 8,000 to 40,000 psi and flow from 11.9 to 125.4 gpm can be changed in minutes. Because the fluid end offers flexibility in the field, it reduces downtime and maintenance while maintaining superior performance.

A dual-pressure control station offers full instrumentation at the technician's fingertips, with two separate control panels in one convenient location. The unit also includes dual 200 gpm stainless steel water filters on

each pump (four total per unit), and its dual fuel tanks help reduce dry weight while resisting corrosion and enabling longer runs between refueling. Heavy-duty bearings spaced widely apart and oil-bath lubrication differentiate its spread bearing PTO from the typical pilot bearing model. This design offers reliable power transmission and reduced maintenance time, as daily greasing is eliminated in favor of regular oil changes. An optional hydro-throttle control can be used to save fuel and wear on the John Deere Tier 4 engine while enabling manual throttle override to maintain set engine speed. Its Powerband belt drive includes dual five belt bands offering high torque-carrying capabilities. The durable unit includes a ductile iron power frame and a high-strength crankshaft. It offers unobstructed access to both fluid ends for performing pressure conversions or routine maintenance. Its open power unit keeps the engine cooler and provides easy access for maintenance.

In addition, personal training through the Jetstream RightStart program is also available with the purchase of a TwinForce system, Felts says. "The classroom and hands-on instruction provided by our RightStart technicians will educate operators on the safe, proper and efficient use of their new equipment." **800-231-8192; www.waterblast.com.**

Reed Pump Stick battery-operated water transfer pump

The Reed Pump Stick with cordless power provides a portable, job-site-friendly way to remove water. The battery-operated liquid transfer pump can be used with an 18-20-volt battery by replacing the battery adapter plate with one designed for common, slide-style batteries. It has a hard-shell, aluminum main body shaft for durability, and the on/off switch is sealed and water resistant. There are multiple screens, strainers and filters to protect the impeller. The Pump Stick comes with a 2-foot hose, but 4- and 7-foot hose extensions are available. The pump lifts water up to 12 feet. A comfort grip handle at the top brings the pump to 4 feet for operational ease. **800-666-3691; www.reedmfgco.com.**



VMAC UNDERHOOD 70 air compressor for Ram trucks

VMAC's UNDERHOOD 70 air compressor is now available for 2019 Ram trucks with a Cummins diesel engine. The rotary screw air compressor is designed specifically to be installed in the engine compartment of

the Ram truck. It can produce up to 70 cfm of continuous airflow at 100 psi, with a maximum of 175 psi. The compressor frees up to 25 cubic feet on the truck deck and saves up to 260 pounds, allowing for more tools and equipment or better fuel economy. It also performs well in extreme climates, including arctic and desert environments since it is installed in the engine compartment of the truck and protected from the elements. **800-738-8622; www.vmacair.com.**



Schneider Electric arc flash isolation design

Schneider Electric's ArcBlok technology in the Square D brand Model 6 motor control center is a new equipment design that is not just a barrier to arc flash events, but also helps to prevent the causes of arc flash, extinguishing and containing the arc energy if they occur. Thermal sensors allow temperature monitoring in a mobile device while standing



CAP Composite Covers and Frames

- ✓ 100% Watertight in 20 inches of water– 0.00 GPM
- ✓ H-25 Traffic Rated – Load Rated above 100,000 lbs
- ✓ DOT Approved – “Within Roadway”
- ✓ Resists Corrosion, UV and Theft
- ✓ Odor Free
- ✓ Half the Weight of Iron...but not too light.
- ✓ Pigmented & Stone-like Appearances Available
- ✓ RFID encapsulated for Asset Tracking and GIS compatibility – *Patent Pending*
- ✓ Detectable With Standard Metal Detectors
- ✓ Designed, Molded, & Assembled in Texas
- ✓ 100% American Owned – The Only USA Compression-Molded Composite Cover



*Remember, if it doesn't say
"Made In USA," It is Chinese*

**Don't Settle for Those Chinese Knock-Offs...
Just CAP That!®**

Composite Access Products (CAP) • 5216 N 26th St, McAllen, TX 78572 • www.justcapthat.com • 844-344-CAP1 (2271)



outside the arc flash boundary. Faster temperature readings can be taken without the personal protective equipment normally required for infrared thermography. Zigbee communication protocols can be used to monitor main breaker operating temperatures on a wireless device. The unit can be specified for new installations or retrofit as a new main section as a part of a modernization project to add protection to an existing motor control center installation. 919-266-3761; www.schneider-electric.us.

Nidec Motor vertical HOLLOSHAFT inverter duty motors

Nidec Motor's totally enclosed fan-cooled CORRO-DUTY vertical HOLLOSHAFT inverter duty motors are cast iron and designed with full Class H insulating materials to withstand the steep-wave-front voltage impressed by the variable-frequency drive waveform. They are designed to run smoother and cooler on inverter power supplies, which can lead to improved system efficiency and reliability. Previously only available as built to order, the motors are now available to purchase off the shelf. The motors are NEMA Premium efficient and are available in 5-300 hp with two and four poles (3,600 and 1,800 rpm) and frame sizes 184-449. 888-637-7333; www.nidec-motor.com.



Apollo Safety Man Down/Lone Worker safety devices

Apollo Safety introduced an enhanced line of Man Down/Lone Worker detection devices from Industrial Scientific. Through its monitoring technology, when a lone worker falls and does not get back up right away, the system can trigger an audible, visual and vibration alarm back to a moni-

toring station, to a cell through text or email notifications, or directly to emergency services. The system can alert responders and direct them in real time to a precise outdoor location or, if indoors, to the exact floor and room where an employee is located. Man Down/Lone Worker technology also features false fall detection, enabling the lone worker to cancel the pending alert before it's communicated to monitoring personnel. A press of the check-in button returns the device to normal operation. 800-813-5408; www.apollosafetyproducts.net.



Vermeer D23x30DR S3 Navigator horizontal directional drill

The Vermeer D23x30DR S3 Navigator horizontal directional drill integrates dual-rod technology into a compact machine design to efficiently maneuver through rock in congested cities, busy neighborhoods or tight job sites. Featuring a narrow footprint and a weight of 16,500 pounds, its light weight is well suited for fiber, electrical, gas and water installation in hard rock, as well as other challenging ground conditions. It has the Vermeer Firestick drill rod dual system that provides a 7% downhole steerability. The unit's threaded outer rod has a rotational torque of 3,000 ft-lbs, while its hex inner rod delivers up to 800 ft-lbs. The drill is powered by a DEUTZ TCD 3.6 L4 diesel engine and a thrust/pullback of 24,000 pounds. 800-837-6337; www.vermeer.com. ♦



VMAC sponsors Nanaimo Community Hospice's 2019 Hike for Hospice event

VMAC supported Nanaimo Community Hospice's signature fundraising event, Hike for Hospice, with a \$2,500 platinum sponsorship and a large team to participate in the walk/run. Nanaimo Community Hospice provides compassionate programs, services and support to all members of the community free of charge. Hike for Hospice is an annual fundraiser, with the 2019 hike being the most successful event in recent years. With approximately 200 participants in attendance, over \$40,000 was raised.

Pipe Lining Supply adds a new technical representative and sales

Pipe Lining Supply promoted Chris Gorum to the position of technical representative and sales serving Texas. He has been with Pipe Lining Supply since 2015 in the warehouse division. Gorum will support Pipe Lining Supply's customer base with training, advice and sales for CIPP lateral lining and AIPPR pipe coating projects for drain, waste and vent lines in Texas and surrounding areas.



Chris Gorum

Vacuworx International announces new hires and promotions

Vacuworx International announced the promotion of two employees and three new hires as it expands the marketing and strategy teams in support of global growth. Alan Odgers has been promoted to senior vice president of strategy from vice president of marketing. William Bompreszi was hired as director of business analytics and will focus on making continuous improvements within the organization and supporting global initiatives. Paula Bell was promoted to director of marketing from marketing manager, managing the development, implementation and evaluation of integrated marketing strategies to increase both brand awareness and sales revenue. Vacuworx has also hired Brandon Martin and Denise Warner as marketing coordinators.



Alan Odgers



William Bompreszi



Paula Bell



Brandon Martin



Denise Warner

AIMS Cos. acquires Southern Hydro Vac

AIMS Cos. announced it acquired Southern Hydro Vac, a soft-dig hydro-excavation company in Georgia. The company will do business as Southern Hydro Vac under the AIMS umbrella. All 50 Southern Hydro Vac employees will work with the combined organization moving forward. AIMS now employs over 500 professionals nationwide and is averaging two new regional locations per year with additional growth plans.

McElroy revels in 50 years of fusion

McElroy announced it is celebrating its 50th year as a manufacturer of thermoplastic pipe fusion machines. The 65-year-old company found its niche in the thermoplastic world when, in 1969, Phillips DriscoPipe asked company founder Art McElroy to design a 2-inch prototype for their high-density polyethylene pipe product. After spending the majority of time in outdoor, underground construction, the company started fusing polypropylene pipe for plumbing and mechanical systems in 2014.

New Jetstream website offers a more intuitive experience

Jetstream of Houston announced it launched a new website. Featuring a fresh design and improved navigation for information on products and services, the site offers visitors a more intuitive digital site experience to better serve industrial cleaning customers with its waterblasting solutions. The new website gives visitors easier access to information on products, services, solutions and resources, and the site platform is easier to maintain and manage.

Sauereisen receives its second E Star Award

Sauereisen was awarded its second President's E Star Award for Exports, the highest recognition a U.S. entity can receive for making a significant contribution to the expansion of U.S. exports. Honors were presented to Sauereisen and 47 other companies by U.S. Secretary of Commerce Wilbur Ross at a ceremony in Washington, D.C., in May. Sauereisen is one of only four companies to receive a second President's E Star Award for Exports in the history of the program.

Newterra acquires StormwaterRx

Newterra announced it has expanded its footprint by acquiring StormwaterRx, headquartered in Portland, Oregon. StormwaterRx designs, manufactures, installs and maintains stormwater treatment systems including Clara, Aquip, Purus and Zinc-B-Gone products.

Vac-Con welcomes new Michigan dealership

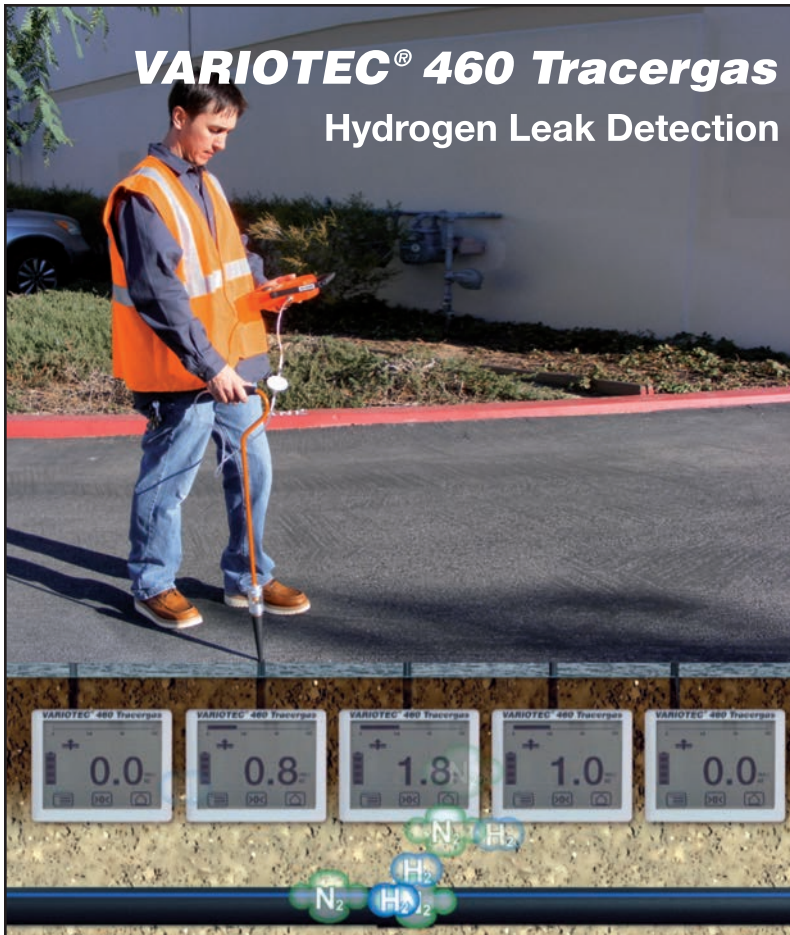
Vac-Con announced that it has added Lakeshore Municipal Equipment to its dealer network. Lakeshore Municipal Equipment is a family-owned company located in Holland, Michigan. It is the primary Vac-Con dealership for the state of Michigan and will support all functions including sales, service and parts.

Mueller Water Products opens new Echologics location

Mueller Water Products announced the opening of its new Echologics office in Toronto. The facility serves as a Mueller Engineering Center of Excellence, focusing on the development of Echologics leak detection and condition assessment technologies for water mains. The 20,000-square-foot facility has over 60 employees with room to grow in both the office and warehouse. ♦

VARIOTEC® 460 Tracergas

Hydrogen Leak Detection



Visit us at
**NORTH AMERICAN
 WATER LOSS 2019**
 Nashville | Tennessee
 December 03 – 05, 2019 | Booth No. 200



While others are still searching ...
 ... **WE ARE FINDING LEAKS!**



Hermann Sewerin GmbH | Office 888 592 9916
 Cell 888 592 9916 ext. 102 | www.sewerin.com
sewerin-usa@sewerin.net

Wastewater Solutions from RELINER®/Duran Inc.

Inside Drop Bowl Stainless Pipe Supports

Type 304 & 316 Stainless Steel



Manhole Invert Channels



- Eliminate outside drops
- Reduce maintenance
- Simplify cleaning
- Stop corrosion
- Install quickly
- Outlets from 4" - 24"
- Optional force line hood



RELINER® Drop Bowl
Fits any Structure

Flexible Pipe Coupler*

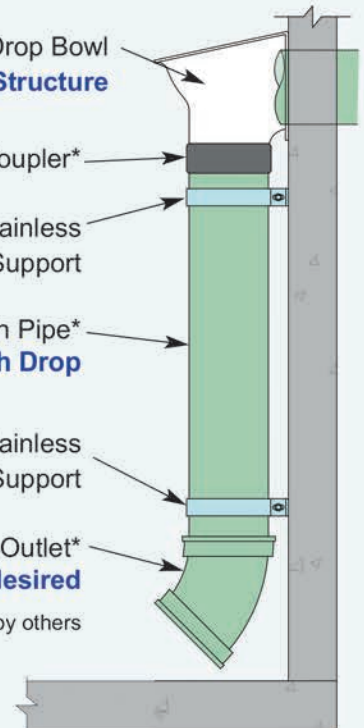
RELINER® Stainless
Steel Pipe Support

Down Pipe*
Any Length Drop

RELINER® Stainless
Steel Pipe Support

Bend at Outlet*
Orient as desired

*Supplied by others



U.S. Patents #5553973, 6074130

www.reliner.com

Proudly made in the USA

1-800-508-6001

PEOPLE/AWARDS

Wendy Ogilvie, director of environmental programs for Grand Valley Metro Council, received the West Michigan Sustainable Business Forum 2019 President's Award for contributions to the organization's growth and development.

Kelly Hefner was hired as general manager of water and sewer for the city of Oskaloosa, Iowa. He most recently served as stormwater/sewer supervisor for the city of Cape Girardeau, Missouri.

The city of South Pasadena, California, hired **Shahid Abbas** as its Public Works director. He most recently led the Public Works Division for the city of Sunnyvale.

Stone Environmental received an Engineering Excellence Merit Award from the American Council of Engineering Cos. of Vermont for an innovative, green stormwater infrastructure design and implementation project in the town of St. Johnsbury.

The city of **Columbia** and a team from **Woolpert** were honored by the South Carolina American Public Works Association with its 2019 Project of the Year award in the category of Structures/Historical Restoration for their Martin Luther King Jr. Park Detention and Water Quality Project. It addressed routine flooding and water-quality issues while improving the appearance and functionality of the park.

The town of **Ashland** received a \$60,000 grant from the Massachusetts Department of Environmental Protection and the Massachusetts Clean Water Trust for future investments to its stormwater, water and wastewater systems.



POSITIONS AVAILABLE

GapVax, Inc., a nationally recognized manufacturing business, is seeking a talented, highly motivated individual to fill a full-time Sales Position in the Midwest (Iowa based preferred) region. GapVax is the leading manufacturer of industrial and municipal vacuum units and hydroexcavation units in the United States. We provide the most reliable, comprehensive, and efficient mobile vacuum units in the industrial and municipal markets. Specifications of the position are listed on our website, www.gapvax.com, click on the Now Hiring link in the left hand column. Send resumes to or betty@gapvax.com or 575 Central Avenue, Johnstown, PA 15902. (MBM)

SERVICE/REPAIR

Dynamic Repairs - Inspection Camera Repairs: 48 hour turn-around time. General Wire, Ratech, RIDGID, Electric Eel Mfg., Gator Cams, Insight Vision, Vision Intruders. Quality service on all brands. **Rental equipment available.** For more info call Jack at 973-478-0893. Lodi, New Jersey. www.dynamicrepairs.biz (MBM)

TV INSPECTION

NEED TRACTION? We make aftermarket gritted/gripping pads for all chain-driven camera transporters. Custom fabrication secured to a high-quality, nickel-plated carbon-steel chain that doesn't stretch. Also have non-gritted pads, wheels, and tires for all different brands. Pad samples upon request. **Pipe Tool Specialties LLC:** Phone 888-390-6794; Fax 888-390-6670; Visit us online at pipetoolspecialties.com or email pts4422llc@gmail.com (MBM)

USED EnviroSight ROVER Sewer Inspection Crawler: Overhauled with new parts and ready to run. Includes automatic cable reel, pan/tilt/zoom camera, steerable 6-wheel-drive tractor with various wheel sets, controls, and accessories. Call for pricing 973-252-6700. (MBM)

CAMERA OPERATORS, STOP SPINNING YOUR WHEELS IN GREASY PIPE! Aftermarket gritted polymer wheels, steel carbide wheels, gritted and treaded tracks, tow cables, kiel sticks and more. Fitting Aries, CUES, EnviroSight, Ibak, Rausch, RST, Schwalm & IDTec. **ORDER TODAY** at www.TruGritTraction.com; info@trugrittraction.com; 407-537-0746 (MBM)

The town of **Tecumseh, Ontario**, received the Wege Small Cities Sustainability Best Practices Award from the Great Lakes and St. Lawrence Cities Initiative.

The cities of **Martinsburg** and **Ranson**, both in West Virginia, each received \$30,000 grants from the Chesapeake Bay Trust for green infrastructure projects. Martinsburg's project, called ReGrowing Green City of Martinsburg, aims to fully design concepts for construction to address an area prone to flash flooding. Ranson plans to use the funding for the Beltline Avenue Linear Stormwater Park Design Project.

LEARNING OPPORTUNITIES

Oklahoma

The American Water Works Association is offering:

- Oct. 1-2 – Customer Service Seminar, Tulsa.
- Oct. 3-4 – Effective Utility Management, Tulsa.

Visit www.awwa.org.

Webinars

The American Public Works Association is offering:

- Oct. 3 – Preparing for Implementation of Automated/Connected Vehicles.
- Oct. 10 – Succession Planning.
- Nov. 21 – Facility Maintenance Efficiency Strategies.

Visit www.apwa.net. ♦

CALENDAR

Oct. 9-13

American Society of Civil Engineers Annual Conference, Miami. Visit www.asce.org.

Oct. 20-23

AWWA Water Infrastructure Conference & Exposition, Hyatt Regency at The Arch hotel, St. Louis. Visit www.awwa.org.

Nov. 3-7

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

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.

**Green Bison heavy duty degreaser**

Superb product for grease control in collection systems. Emulsifies grease, improves high pressure cleaning performance. Highly recommended for cleaning/degreasing of tools, equipment and machinery. With Green Bison you do not have to trade efficiency for safety. Green Bison is a certified environmentally responsible product that utilizes natural and bio based ingredients, delivers industrial strength cleaning power while keeping your cost down.

Call us today **866-366-0587**



This product meets the Green Seal™ standard for cleaning/degreasing agents based on its reduced hazard to humans, reduced aquatic impacts, reduced smog production, and low ozone depletion potential.

safe-tee
chemical

safeteechemical.com

**Now That's Smokin'!**

Tests up to 7500 cubic feet of pipe per minute

Turbo Fog MH75

• Easy • Cost Effective • Compact •



1.800.394.0678 www.turbo-fog.com

GET **EMAIL**
NEWS ALERTS FOR

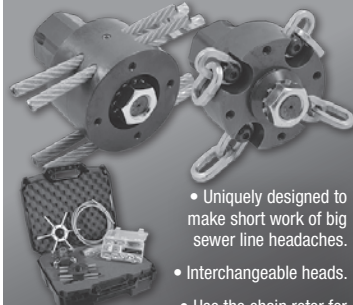
tpo

Go to
tpomag.com/alerts
and get started today!



mswmag.com

- > Classifieds
- > Used Equipment
- > E-zines
- > Product Categories

RAT OUT YOUR ROOT PROBLEMS

- Uniquely designed to make short work of big sewer line headaches.
- Interchangeable heads.
- Use the chain rotor for major obstructions and the cable rotor for less aggressive problems.



330.874.4300

Patented • Made in USA • www.rootrat.net

Let Us Build Your JETTER

Diesel Propane Gas

Hot or Cold



AMERICAN JETTER.COM
866-944-3569



PATENT #US 8,273,062

IndustrialOdorControl.com

A Broad and Economical Range of Odor Control Solutions

- Manhole Odor Inserts
- Pollution Control Barrels
- Activated Carbon
- Lift Station Odor Control
- Septic Vent Filters
- Custom Solutions

Simple Solutions
DISTRIBUTING LLC
Makers of the Wolverine Brand of Odor Control Solutions

866-NO-STINK
(866-667-8465)

973-846-7817 in NJ

DYE TRACERS

Solutions for:

- Infiltration
- Septic Systems
- Cross Connection
- Leaks and more...

BRIGHT DYES
Division of Kingscote Chemicals



www.brightdyes.com • **1-800-394-0678**

**= Thank You!**

Hand-selected Wisconsin sausage and jerky delivered in a 20-qt. **RUGID** cooler.

\$219.99 Delivered

Meaty-Delivery™

meaty-delivery.com
833-777-8443

BUYING SOMETHING?
SELLING SOMETHING?
LOOKING FOR SOMETHING?

We have **some things** and more

in the **CLASSIFIEDS.**

Check it out in each issue of *Cleaner* magazine or go to www.cleaner.com/classifieds



AMT

A Gorman-Rupp Company

The Pump People

Please visit us at www.amtpump.com

Beyond buckets and blades.

digDIFFERENT

FREE subscription at digdifferent.com

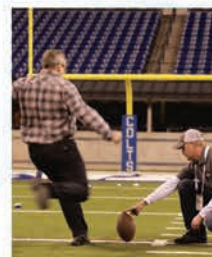


BEST-IN-CLASS-EDUCATION

Come to the WWETT Show for the best in education for our industry.

- 100 sessions across 21 topic tracks
- CEU credits from 45 states, provinces, and organizations
- Certification classes, Technical Tours, and the new Workshop series

WWETT Show Education. It's a great way to step up your game.




wwett™ 20

CONFERENCE: **FEBRUARY 17-20**

MARKETPLACE: **FEBRUARY 18-20**

INDIANA CONVENTION CENTER

WHY SHOULD YOU ATTEND?

- ✓ **Explore the Marketplace** for tools and resources you need for your business
- ✓ **CEUs** from some of the best and brightest speakers in the industry
- ✓ **Events** to network with your peers - or just kick back with friends.

**UNMATCHED
QUALITY**

1989 **30** 2019
YEARS

**SUPERIOR
PERFORMANCE**

GapVax®

Custom Built to meet your needs
Combo JetVacs • Recycle JetVacs
Hydro Excavators • Air Movers
Jetters • Skid Mount Vac Units
Parts & Accessories



**CALL TODAY
FOR A DEMO**

MAKE PLANS TO VISIT US

- **HGACBuy Conference**
Oct 1-2
Houston TX
- **APWA Midwest Michigan**
Branch Snowplow
Rodeo & Equipment Show
(MTECH) Oct 7
- **Road & Street Show (One.7)**
Oct. 8-10
- **WJTA Nov 12-13**

#BESTTRUCKSINTHEBUSINESS

888-442-7829 Johnstown, PA

281-884-8658 La Porte, TX

www.gapvax.com



XCAVATOR™

HYDROVAC



Check out the Product Line-Up in Person



October 1-3, 2019

Louisville, KY
In Partnership with



Booth L346

steril KONI Booth 3162

904.284.4200



VAC-CON
MORE **POWER** TO YOU

www.vac-con.com