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January 2024

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HUMAN SIDE:
EMPHASIZING TEAM INPUT
PAGE 24

STAYING SAFE:
JUST ASK THE QUESTION
PAGE 28

BETTER MOUSETRAPS:
FIGHTING LIFT STATION FOG
PAGE 30

ON SCHEDULE AND ON BUDGET

St. Louis dramatically reduces overflows and satisfies consent decree ahead of schedule

PAGE 20

Bruce Litzinger
Assistant Director of Engineering
St. Louis Metropolitan Sewer District

PIPELINE REPAIR AND
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PAGE 28

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CONTENTS

PIPELINE REHABILITATION AND RELINING



ON THE COVER:

Bruce Litzsinger is the assistant director of engineering for planning at the St. Louis Metropolitan Sewer District. The District is 11 years into Project Clear, a water-quality improvement initiative that has eliminated 85% of sanitary sewer overflows since its start. (Photography by Denny Medley)



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Pipeline and Infrastructure, Hydrants

- ◆ WATER: Upper Trinity district tackles water supply
- ◆ BETTER MOUSETRAPS: Bubbles eliminate lift station problems
- ◆ STAYING SAFE: Work zone safety takes vigilance

FEATURES

12 WATER: Branching Out

Florida utility stays ahead of increasing water delivery demands across four counties.

By Giles Lambertson

20 SEWER: On Schedule and On Budget

St. Louis dramatically reduces overflows and satisfies consent decree ahead of schedule.

By Ken Wysocky

COLUMNS

8 FROM THE EDITOR: Don't Drain the Swamp

Help your communities understand the tremendous value of wetlands and all they provide.

By Luke Laggis

10 @mswmag.com

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

18 TECH TALK: Locating in Complex Ground

Follow these best practices for locating utilities in congested underground environments.

By Patrick Lyonsi

24 HUMAN SIDE: Emphasizing Team Input

Virginia utility developed an innovation-centric culture that highly prizes new ideas.

By Ken Wysocky

26 STAYING SAFE: Just Ask the Question

Acknowledging where you lack understanding is the key to filling in holes in your training.

By Ronnie Freeman

28 PIPELINE REPAIR AND REHABILITATION DIRECTORY

30 BETTER MOUSETRAPS: Fighting Lift Station FOG

Active Mixing eliminates grease problems with less resources and no chemicals.

By Kara Fritze

32 NASSCO CORNER: Building and Buying American

Final guidance clarifies requirements of product manufacturers to meet the Made in America threshold.

By Sheila Joy

34 PRODUCT FOCUS: Pipeline Rehabilitation and Relining

By Craig Mandli

40 PRODUCT NEWS:

Product Spotlight: Condition assessment service helps utilities stay on top of issues.

By Craig Mandli

42 CASE STUDIES: Pipeline Rehabilitation and Relining

By Craig Mandli

44 INDUSTRY NEWS

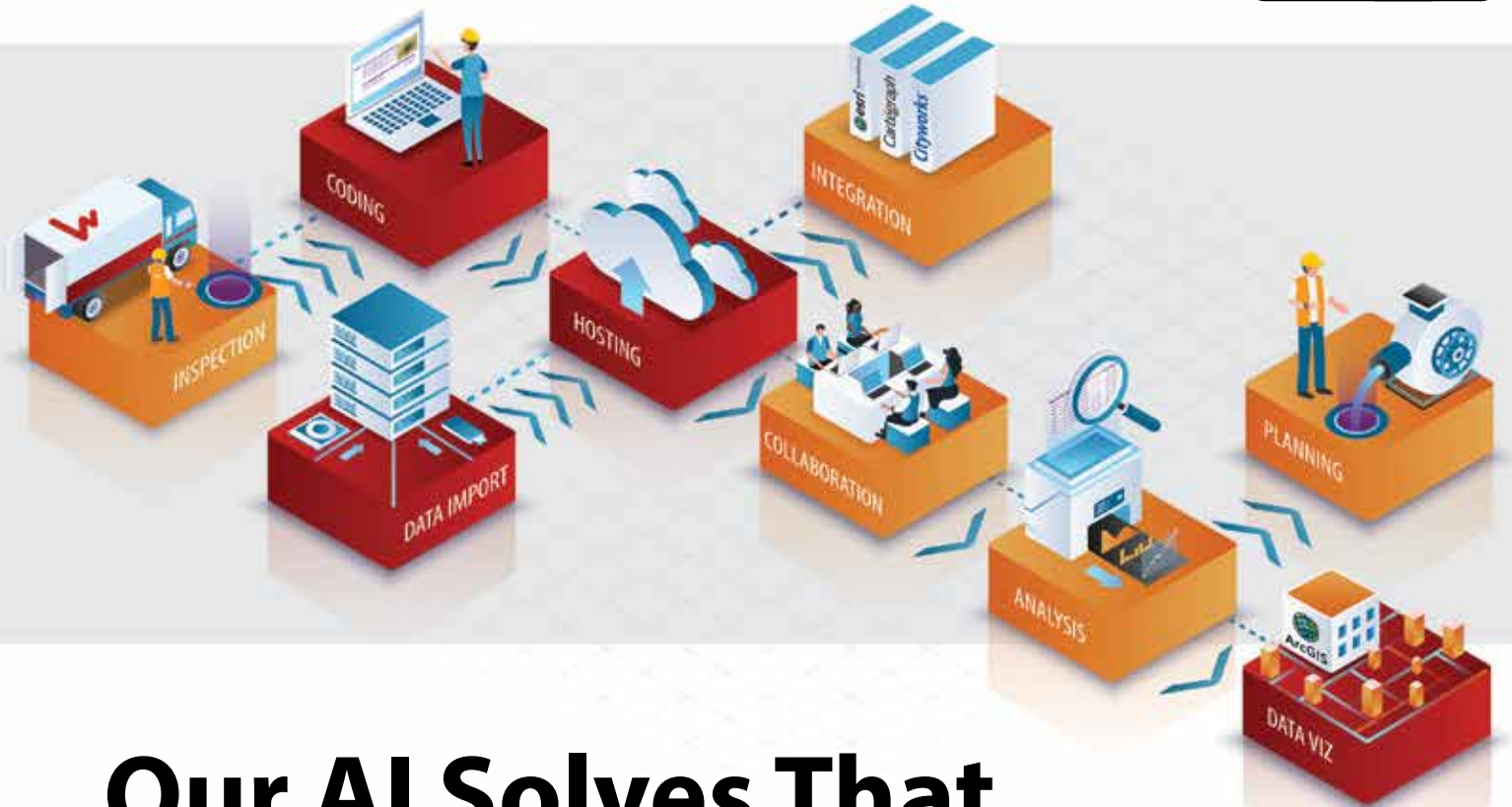
45 WORTH NOTING/CALENDAR

People/Awards; Calendar

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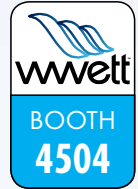
ADVERTISER INDEX

COMPANY	PAGE
American Highway Products Ltd.	41
Applied Felts, Inc.	27
Aries Industries	17
Brandt Truck Rigging & Trailers	45
Cam Spray	37
Composite Access Products (CAP)	15
CUES, Inc.	7, 19
EnviroSight LLC	2
Fibertech Inc.	44
GapVax, Inc.	47
Hydra-Flex, Inc.	39
InfoSense, Inc.	41

COMPANY	PAGE
International / Interprovincial Corrosion Control Co. Ltd.	6
Kasco Marine	32
OpenGov.com	36
Pipeline Renewal Technologies	25
Reline America	9
RNVA DIVISION OF TRUEBITE, INC	45
RootX	8
Spartan Tool LLC	11
Specialty Maintenance Products, Inc.	39
T&T Tools, Inc.	41
Vac-Con, Inc.	3
Vactor Manufacturing	48
Vaughan Company, Inc.	27
WinCan	5
WWETT Show	33, 43
CLASSIFIEDS	46
MARKETPLACE	46

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Luke Laggis

DON'T DRAIN THE SWAMP

Help your communities understand the tremendous value of wetlands and all they provide

Have you ever spent a full day deep in a swamp, watching over hummocks and tussocks guarded by tightly packed black spruces?

I've spent some long days in the swamp. Watching the sun rise through scraggly spruce tops, listening to the birds wake up and stretch their wings, the red squirrels chattering back and forth as they race from tree to tree. I've had blue jays and chickadees land on branches within a foot or two of my face, seen turkeys, grouse, coyotes and snowshoe hares.

One cold morning after a fresh snowfall, I watched a bobcat move with incredible grace through the thick brush at the edge of a clearing and perch on a hummock about 20 yards away. It sat for a minute at most before slipping into the woods on the other side of the opening. I never heard it make a sound. On another gray, blustery afternoon, I watched seven wolves move in single file across that same clearing at a much greater distance. I felt like I was a thousand miles from civilization as I watched one, then another and another push purposefully through the swamp.

I've researched the plants — Labrador tea and wild cranberries are plentiful in my particular swamp — and know what the primary feathered and furred

inhabitants are eating.

Nature doesn't shy away from the swamp. But people often do. The very term "swamp" carries negative connotations — dark, wet, mucky places where it's difficult to go and easy to get lost. People talk about draining swamps and filling them in. They get in the way of development. In that context, they're often seen as having no value. That's obviously far from the truth.

We've talked a lot about green infrastructure, watershed restoration and wetland protection as they pertain to stormwater management in the pages of this magazine. That term "wetland" is often viewed very differently than "swamp." It conjures a nurturing, natural environment with vibrant flora and fauna. Regardless of the language, that's what all swamps are.

They also — it should go without saying — play an incredibly important role in the water cycle. They are living filtration systems. They absorb contaminants. They capture and store massive volumes of water, mitigating flood risks in surrounding areas. Their value isn't measured in the revenue generated from a parking structure or the rent from an apartment building, but it can be far greater.

I'm lucky here in Wisconsin that state statutes govern most of the wetlands that lost federal protection after a Supreme Court decision last year. My swamp is protected. But across the country, many others are at risk. And that potentially puts commercial and residential areas at greater risk of stormwater issues, which often come at great expense.

I hope you'll help your communities understand the real cost of draining swamps and the full value of preserving and protecting wetlands.

Enjoy this month's issue. ♦

Nature doesn't shy away from the swamp. But people often do.

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

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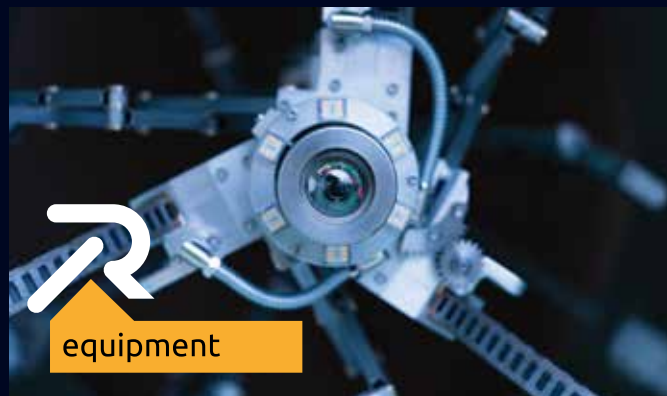
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With today's complex and congested underground environments, there's no room for error when excavating or exposing utilities. From understanding the differences in ground conditions to using the right water pressure, hydroexcavator operators can streamline efficiency and ensure job site safety with the best practices outlined in this online article.

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OVERHEARD ONLINE

“Stories of climate change are largely stories of water, whether we are talking about droughts, desertification, wildfire or floods.”

—**National Climate Assessment Reveals Intensified Water Challenges Ahead**
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WINTER'S RISKS

Protect Your Team

Ice, snow and freezing temperatures can add risk to all aspects of construction projects. Keep your people, equipment and job site safe in the cold season with some simple strategies outlined by the Association of Equipment Manufacturers. mswmag.com/featured



PUBLIC OUTREACH

Animated Wastewater Tutorial

Read about how the Metropolitan Council in Minnesota transformed an outdated slideshow into an interactive and educational 10-minute video titled "Wastewater Treatment for Kids," featuring animated characters to engage children in learning about wastewater. The video has gained widespread acclaim and viewership both locally and internationally. mswmag.com/featured



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BRANCHING OUT

Florida utility stays ahead of increasing water delivery demands across four counties

By Giles Lambertson

The Peace River Manasota Regional Water Supply Authority is an independent special district created in 1982 as a water-planning organization in southwest Florida. But the organization's mission changed in 1991 after a utilities development company in the region went bankrupt.

The authority acquired the failed company's infrastructure, including a water treatment plant, river intake pump station, a half-billion-gallon reservoir and 7 miles of 36-inch pipeline. Just like that, the authority became a water wholesaler to member-customers in Charlotte, DeSoto, Manatee and Sarasota counties.

Three decades later, the Authority has vastly expanded its operation and meets some 40% of potable water demands in a four-county area with a population of more than a million people. Two of the top 10 best-selling master-planned communities in Florida are in the mix.

"Our job is to meet the demands of this growing population," says Mike Coates, the authority's executive director. All evidence suggests the water supplier is succeeding at the task.

Safe storage

The authority pulls its water from the Peace River, a peaceful stream that ambles southwest through wetlands and forests for more than a hundred miles before emptying into Charlotte Harbor on the Gulf side of the Florida peninsula. As in other area rivers, the water is discolored from decaying vegetation, yet is deemed to be of excellent quality. The water is drawn from the river in DeSoto County where the treatment plant is located.

Built in the 1970s, the original 12 mgd treatment plant complex was expanded in 2000 and again in 2010. It now can process 51 mgd, which is comfortably above current 30 mgd customer demand. The technology of the plant has, of course, been upgraded through the years as well, utilizing redundant treatment trains to filter and enhance water.

Four times in the last seven years, the Florida chapter of the American Water Works Association has declared it the "most outstanding" plant in the state.

The authority's storage capacity has kept pace with the treatment plant's expansion. The reserve water is critical to the authority's mission. Southwest Florida has wet and dry seasons, which impact the Peace River's flow and the amount of water that can be withdrawn from it.

"We are permitted by the state to pull from the river when it is above a minimum flow or level. In an average year, we can take about 5% of the total flow," Coates says. Such withdrawals are allowed mostly during the rainy summer season when the flow reaches seasonal highs. The percentage drops to zero during drier winter months.

It follows that the authority withdraws the maximum allowable amount of water in season and stores it for later use. Consequently, the authority has built up a huge water storage capacity above and below ground — with yet more planned.

The oldest reservoir in the system dates to the 1980s. It covers 85 acres and can hold 500 million gallons of water. While that's impressive, a second reservoir constructed in 2009 is in a whole other league: It covers 640 acres and can store 6 billion gallons of water. When the river level is high enough, up to 120 million gallons of river water is pumped into the larger reservoir.





“We have a fantastic crew doing all the preventive and corrective maintenance.”

Richard Anderson

From there, it travels to the smaller reservoir, then into the plant for treatment and, finally, into aboveground storage tanks for eventual distribution to wholesale customers.

That’s just the beginning of the storage story. Some of the treated river water is diverted to the Floridian aquifers underlying the authority property. The underground limestone pools can hold 6.3 billion gallons, the largest subsurface water storage containment in the eastern United States. It is accessed through 21 wells.

“The water going into the aquifer is already fully treated drinking water,” notes Coates. Nevertheless, the recovered water is sent through the treatment plant a second time to eliminate any residue from the subterranean limestone caverns.

While all this storage might seem plentiful, think again: The authority has determined that the region’s projected growth in population and water usage requires even more standby water. So, a third reservoir is in the planning stage — one that will hold a whopping 9 billion gallons.

“I don’t know if it’s the last reservoir we’ll ever construct,” says the director, “but it’s the last one we can fit on the property we have.” The estimated cost of the planned reservoir is \$351 million. Expansion of the plant to

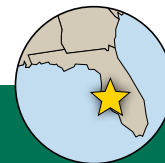
facilitate treatment of this extra stored water will cost another \$153 million.

Most of the water in the new reservoir will come from the river, of course, augmented by already collected water stored underground. In all, another 18 mgd will be added to the supply system to meet rapidly growing water demands in the region.

Thinking long-term

All of this strategic sourcing, stockpiling and distribution of river water is from careful design. After all, The Peace River Manasota Regional Water Supply Authority began life as a planning agency. Cost and usage projections, envisioning of eventualities, long-range calculations — these are the stuff of life for authority planners.

They look 50 years into the future and evaluate water sources, the probable



PROJECT:
Peace River Manasota
Regional Water
Supply Authority

SERVICE AREA:
2,600 square miles comprising Charlotte, DeSoto, Manatee and Sarasota counties plus the city of North Port

NUMBER OF CUSTOMERS:
The system meets about 40% of potable water demand in an area with a population of 1.1 million people

MILES OF DISTRIBUTION LINES:
80 (currently)

AVERAGE WATER DEMAND:
30 mgd

CAPACITY OF WATER TREATMENT PLANT:
51 mgd

WATER STORAGE CAPACITY:
13 billion gallons

NUMBER OF EMPLOYEES:
57

WEBSITE:
regionalwater.org

Austin Kortzendorf, left, a maintenance mechanic with the Peace River Manasota Regional Water Supply Authority, helps lead mechanic Chip Chaffee replace a charcoal filter. (PHOTO BY CHRIS TILLEY)



Director of Operations Richard Anderson stands in front of the pump stations that supply water to the Peace River Manasota Regional Water Supply Authority in Arcadia.



Electrician Ethan Morton takes care of electrical maintenance in one of the pump rooms in Arcadia, Florida. Below him are the metering pumps from ProMinent.



Operator Dan Atkinson runs a water quality test in Peace River's state-of-the-art lab.

“I don’t know if it’s the last reservoir we’ll ever construct, but it’s the last one we can fit on the property we have.”

Mike Coates

cost of developing new sources, patterns of population development in the four-county area, and any other relevant variables. Then they formulate a 20-year plan for addressing the future. From that they come up with a working master plan, which is updated every five years.

Terri Holcomb, the organization’s director of engineering, notes that planning goes beyond the needs of the existing customer base. “We try to look at the area holistically to identify what new demands are apt to develop in the region and then coordinate with water management districts to meet them.”

Using that approach, planners concluded that additional demand for water will beset the system by 2030 and yet further expansion will be necessary by 2040.

The final test of the efficacy of a water system probably is dependable delivery of water. The penultimate test, however, is the cost of delivering it. Peace River Manasota Regional Water Supply Authority board members are committed to maintaining a fiscally sound organization that can provide “affordable water rates that are fair and equitable.”

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Construction crews work on updating and refinishing one of the Authority's many water storage tanks.

ALL IN GOOD TASTE

Three years ago, the Association of Metropolitan Water Agencies cited nine public drinking water systems for excellent management. The Peace River Manasota Regional Water Supply Authority was one of them. The authority was praised for supplying “clean, safe and affordable drinking water.”

While that is all well and good, something is missing in the citation. How about good-tasting? Does the potable water produced by the Authority please the palate?

Well, as it turns out, the water is tasty, too. For example, a water sample submitted by the Peace River Manasota Regional Water Supply Authority was declared one of 12 local winners in Florida in the 2023 Best Tasting Drinking Water contest.

In the competition — an annual event sponsored by the Florida section of the American Water Works Association — nine utilities in the region submitted water samples that were evaluated on color, clarity, aroma and taste. Five judges tasted the water before concluding that the authority's water was superior.

Unfortunately, judges at a follow-up “Best of the Best” contest selected as champion the water from another system. No matter, the authority's water has been state champ on a couple of occasions.

“We can talk about lessons learned in a storm, but no matter how much planning you do, it never is enough.”

Ann Lee

The wholesale price of water from the authority to partnering communities is based on two factors: a base rate to cover debt service and other fixed costs and a utilization rate to cover costs of power and chemicals required to produce clean and safe water. The current authority rate is about \$3.60 per thousand gallons of water, according to Coates.

Retail water rates in the region vary from municipality to municipality depending upon local funding issues.

Extending reach

Collected and stored water is of no use to partnering municipalities unless it is distributed. To that end, the authority has 80-plus miles of transmission lines ranging from 24 to 48 inches in diameter. With two pipeline extensions in the works, the distribution system infrastructure soon will top 100 miles.

One of the extensions is a 13-mile line 42 inches in diameter to be laid mostly

in Charlotte County so water can get to a developing area in the western part of the county. A 7-mile line of the same dimension will run further north in Sarasota County to meet the needs of that “bustling” area. Yet another line running from there into Manatee County is anticipated.

Before the system is built out, authority planners expect to add 50 more miles of pipeline. “Our extensions are based on our customers’ identified needs,” Coates says. “That determines where we must deliver water and with what pressure it will be delivered.”

Maintaining water pressure is a contractual obligation. Three pump stations now can push the water to the end of the pipe and additional stations will be added as needed.

Though the authority inherited some relatively old infrastructure, the network of pipes and pump stations is practically new compared to many municipalities with pipes still in the ground after a century of use.

“A lot of our pipes are less than 25 years old,” says Richard Anderson, the authority’s deputy director. “In pipe age, that’s fairly young.”

To maintain the sprawling system, the authority relies on 11 people, including three mechanics, three electricians and three instrument techs. Their equipment is along the lines of backhoes and dump trucks. “We have a fantastic crew doing all the preventive and corrective maintenance,” Anderson says. When bigger jobs loom, contractors are called.

Contractors also do the landscaping and mowing on the property. The two existing reservoirs are surrounded by 85 acres of grass on flat land as well as on embankments 45 feet tall. The contractors cutting all that grass keep their eyes out for anomalies in the earthen structures they are trimming. Any unusually dry areas, animal burrows and wet spots are reported to authority staff. A wet spot could mean a leak, and a leak in a 6 billion-gallon aboveground reservoir could be catastrophic.

When Hurricane Ian blew through last year, the system was dealt more than \$3 million in damage. “We’re still working on repairs,” says Ann Lee, senior manager of finance. “We can talk about lessons learned in a storm, but no matter how much planning you do, it never is enough.”

Anderson adds: “Things happen you never anticipate happening. With Ian, the city of North Port was the hardest hit. Their power and communications were completely down. We couldn’t even talk to them on the phone and you never can communicate enough in those situations.”

One of the benefits of the authority’s 80-mile loop of pipe is that it interconnects municipalities in the four member counties. While the transmission lines are reserved for water delivery, other connecting links in the system can be engineered for coordinated water deliveries in emergency situations — such as when hurricanes come ashore.

With annual rainfall averaging 55-60 inches, the four-county area could be considered a water-rich area. “We

are on the lower end of a couple of rivers and the Gulf of Mexico is right there,” Coates says. “We have plenty of opportunities.”

But all that rain doesn’t fall liberally year-round, nor does the rainwater bubble up from the ground across the region ready to drink and be heated on the stove, to flush toilets and wash clothes, to moisten flower beds and feed industrial processes. Turning rainwater into always-available potable water is where the regional authority comes in. ♦

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LOCATING IN COMPLEX GROUND

Follow these best practices for locating utilities in congested underground environments

By Patrick Iyonsi

Identifying utilities through locating should be the first step on any underground construction project. Determining where water and sewer lines — and gas mains, electric and fiber cable — are located is critical for setting up a smooth job site and mitigating potential damage.

But in today's congested and complex underground environments, simply walking the project path with a utility locator won't cut it. These congested areas pose major pain points including issues of interference, unmarked utilities and lack of shared knowledge and data. While an individual locating technician won't be able to eliminate all these issues on their own, there are some best practices for locating in complex ground.

Understanding interference

As the labyrinth of underground pipe and conduit grows — especially in urban areas — locating technicians are seeing job sites that are more complex and congested with a variety of utilities. Capable of distorting the locating signal and providing inaccurate information, interference is the most common problem locating technicians face. To determine possible interference, technicians should start by walking the job site path and visually observing previous locate markers, fences and any other infrastructure that could cause interference.

Interference can take an active or passive form. Active interference comes from sources that have their own signal and in turn can distort your target signal. This can potentially cause your signal to bleed off onto an adjacent utility, risking a mismatch. Common sources of active inference include cable TV, dog fences, electrical-based irrigation systems and so on. Passive interference comes from sources without an electrical signal such as storm culverts, chain-link fences or even the rebar used in underground construction.

While not all sources of interference are visible, some manufacturers are designing equipment that will scan the job site and inform the locating technician of any potential active interference that is present in the area. One option is Ambient Interference Measurement. Technicians using a locator that has AIM on the receiver can use it to visually see which frequencies have the most or least amount of interference. As a best practice, lower frequencies like 263 Hz through 870 Hz are the best choice when encountering passive interference.

Frequency and leverage

Once possible interference has been identified, the technician must then determine the frequency of the target utility. As a best practice, you should start with the lowest possible frequency and work your way to a higher frequency. If you are using too high of a frequency — between 8.01 kHz and 44.6 kHz — you run

the risk of the signal bleeding off onto an adjacent utility line. This can result in a mismatch and potentially lead to a utility strike. However, if you are using too low of a frequency, you run the risk of not picking up a signal at all. When working in highly congested areas, using a locator with multiple frequencies can help technicians easily make the adjustments needed to accurately locate the correct utility.

Every job site is different and poses its own unique challenges. Going through the proper procedure of isolating a utility might sound like a no-brainer, but when technicians are challenged with time constraints due to high workload volume, they might try to find shortcuts.

One shortcut that is a major hindrance to a technician's accuracy is sticking to a favorite frequency. Since all frequencies have the potential of bleeding off and creating a mismatch, it's important not to get into the habit of using the same frequency. This often leads to inaccurate results.

As a best practice, you should start with the lowest possible frequency and work your way to a higher frequency.

Use the data

In addition to all of the steps and best practices utility locating technicians should take when preparing for an underground construction job, leveraging the data collected after the job can help them prepare and work more efficiently on future projects.

Most modern utility locating devices use automatic, real-time data capture and integrated GPS to help crews accurately and reliably locate underground utilities. The latest versions of the devices with enhanced receivers even allow a technician to locate utilities with centimeter-grade accuracy.

These devices allow technicians to map and label identified utilities in real time, and then upload the information to a mapping service. Because all data is recorded and managed digitally, rather than manually, it helps reduce the risk of errors. Planners can then more accurately estimate hours for new jobs based on historical job site data. By using technology that's designed to work together, utility locators have the potential to streamline data sharing and access any data, when and where it's needed, making the future of utility locating much simpler. ♦



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ON SCHEDULE AND ON BUDGET

St. Louis dramatically reduces overflows and satisfies consent decree ahead of schedule

By Ken Wysocky

The St. Louis Metropolitan Sewer District is in the midst of a massive \$7.2 billion, multifaceted infrastructure improvement program aimed at eradicating the sanitary sewer overflows that have plagued the city and surrounding St. Louis County for decades.

Called MSD Project Clear, the mammoth initiative also will improve water quality in the metro St. Louis area by eliminating the discharge of stormwater mixed with untreated wastewater into local waterways, says Bruce Litzsinger, MSD assistant director of engineering for planning.

“This is the largest capital improvement project in our utility’s history and I also can safely say it’s one of the largest such projects in the country,” Litzsinger says.

Project Clear started in 2012 and is expected to conclude in 2039. Jacobs Engineering, a consulting firm, helped the utility plan the project.

The complexity, scope and age of the MSD’s oldest infrastructure contributes significantly to the long timeline; the utility’s sewer system is the fourth largest system in the United States, featuring 9,058 miles of collection and trunk sewers and force mains, ranging in size from 6 inches to 29 feet in diameter.

“Some of the combined sewers are more than 170 years old,” Litzsinger points out.

More specifically, the MSD manages roughly 4,596 miles of wastewater sewers and force mains, approximately 2,998 miles of stormwater sewers and force mains and around 1,464 miles of combined sewers, mostly located in downtown St. Louis.

The utility serves nearly 1.3 million people in a service area that covers approximately 524 square miles, includes 88 different municipalities and features more than 1,500 creeks and 26 watersheds.

The primary components of the program include the repair of about 150 miles of sewer lines; the rehabilitation (primarily via pipe lining) of around 950 miles of existing sewer lines to stop stormwater inflow and infiltration; upsizing the capacity of approximately 150 miles of existing sewer lines; and building a network of aboveground storage tanks and “deep tunnel” storage facilities designed to hold wastewater until the sewer system can handle it, he explains.

Decades in the making

The genesis of Project Clear dates back to 2007, when the state of Missouri and the U.S. Environmental Protection Agency filed a lawsuit against the MSD to stop sanitary sewer overflows, which acted as relief valves that prevented wastewater backups when too much water entered the sewer system.

In the 1980s, more than 600 SSOs occurred. Those overflows dumped hundreds of millions of gallons of stormwater combined with untreated wastewater into local streams, creeks and rivers every year.

After years of negotiations, a federal judge approved a consent decree in April 2012 that required the utility to spend \$4.7 billion during the ensuing 23 years to fix the overflows and make other system improvements. (That deadline later extended by four more years, to 2039.)

But the utility already was working to eliminate SSOs decades before, Litzsinger says.

From 1992 to 2012, the utility spent approximately \$2.7 billion on system improvements that eliminated 350 overflows. As such, when Project Clear started, there were only 199 overflows left to fix. And as of last September, that number was down to 26, Litzsinger says.

“We achieved our mandated goal [from the consent decree] of eliminating 85% of our overflows by the end of 2023 and we did it ahead of schedule. We’re very happy about that.”

Stopping overflows

The initial focus of Project Clear was eliminating the SSOs. To do this, the utility spent the last decade

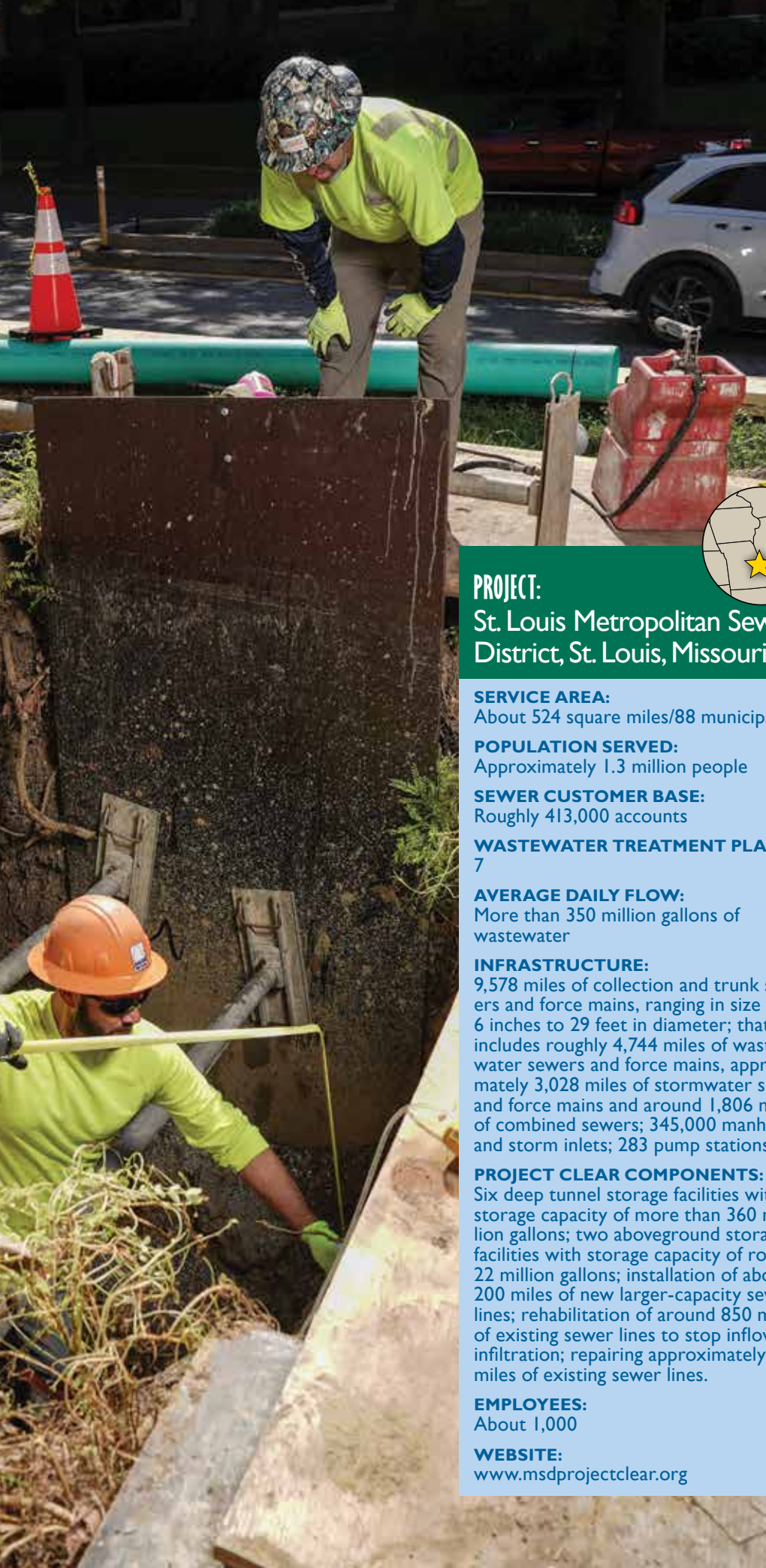
“Some of the combined sewers are more than 170 years old.”

Bruce Litzsinger



St. Louis Metropolitan Sewer District crew member Dave Ballard looks over the trench while Ryan Overkamp checks measurements before beginning repairs on a sewer main break.

PHOTOGRAPHY BY DENNY MEDLEY



PROJECT:
St. Louis Metropolitan Sewer District, St. Louis, Missouri

SERVICE AREA:
About 524 square miles/88 municipalities

POPULATION SERVED:
Approximately 1.3 million people

SEWER CUSTOMER BASE:
Roughly 413,000 accounts

WASTEWATER TREATMENT PLANTS:
7

AVERAGE DAILY FLOW:
More than 350 million gallons of wastewater

INFRASTRUCTURE:
9,578 miles of collection and trunk sewers and force mains, ranging in size from 6 inches to 29 feet in diameter; that includes roughly 4,744 miles of wastewater sewers and force mains, approximately 3,028 miles of stormwater sewers and force mains and around 1,806 miles of combined sewers; 345,000 manholes and storm inlets; 283 pump stations.

PROJECT CLEAR COMPONENTS:
Six deep tunnel storage facilities with storage capacity of more than 360 million gallons; two aboveground storage facilities with storage capacity of roughly 22 million gallons; installation of about 200 miles of new larger-capacity sewer lines; rehabilitation of around 850 miles of existing sewer lines to stop inflow and infiltration; repairing approximately 200 miles of existing sewer lines.

EMPLOYEES:
About 1,000

WEBSITE:
www.msdpjectclear.org

“That helped us to better understand the capacities of the system.”

Bruce Litzsinger

concentrating on eliminating inflow and infiltration, primarily through pipe lining. “We’ve spent hundreds of millions of dollars on cured-in-place pipe,” Litzsinger explains. “We have a lot of vitrified 8-inch-diameter clay pipe with a lot of breakage and blockages and we rehabbed a lot of it early in the process to minimize the need for pipe replacements.”

The next step was strategic replacement of existing undersized sections of the sewer system with larger-capacity pipes. This required a thorough inspection of the sanitary sewer system to determine pipeline condition, followed by the installation of flowmeters to develop a hydraulic model for all sanitary sewers 12 inches in diameter or larger — about 17% of the system.

“That helped us to better understand the capacities of the system,” Litzsinger says.

One of the largest projects currently under construction is installing 7,900 feet of 66- to 78-inch-diameter pipes and 16,200 feet (about 3 miles) of 8- to 54-inch pipe to alleviate system surcharging in western St. Louis County.

Concurrent with all these efforts, the district also is building deep tunnels, adding/upgrading pump stations, and improving the capacity of its wastewater treatment plants to handle the additional flow.

Going deep

The centerpiece of Project Clear is the construction of six deep-tunnel storage facilities, bored through limestone as deep as 250 feet underground. Collectively, they will hold more than 360 million gallons of stormwater.

Two of the tunnels are complete. One is located in northern St. Louis and is 3,000 feet long and 28 feet in diameter, with a capacity of about 12 million gallons; the second, located in the middle of St. Louis County, is just under 4 miles long and 19 feet in diameter and holds 40 million gallons.

Two other tunnels currently are under construction to convey wastewater flows from the collections system to treatment plants. One is located in southern St. Louis County; it will be 36,000 feet long and 8 feet in diameter. The other one, located in northern St. Louis, will be 17,000 feet long and 7 feet in diameter.

The two remaining tunnels, currently in the design phase, will help alleviate combined sewer overflows. The first one, located in southern St. Louis, will be 32,000 feet long (about 6 miles) and 18 feet in diameter with a storage volume of 58 million gallons. The



Bruce Litzinger is the assistant director of engineering for planning at the St. Louis Metropolitan Sewer District.

second one, located in southern St. Louis, is by far the largest of the six: 9 miles long and 30 feet in diameter with a storage capacity of 230 million gallons.

“These two tunnels are among the biggest components of the entire project,” Litzinger says. “The biggest one is the crown jewel of Project Clear. When we finish that and all the collection sewer lines that flow into it, we’ll have basically met the terms of the consent decree.”

Both tunnels should be completed in 2039.

In addition, the project includes three already-completed, aboveground storage facilities for “wet-weather sanitary flow,” with a total capacity of about 22 million gallons, Litzinger says.



St. Louis MSD crew member Mike Weissenback monitors progress inside the CUES CCTV truck during the inspection of an obstructed line.

“A few years ago, meeting our deadline of eliminating 85% of sanitary sewer overflows by the end of 2023 seemed like a pretty daunting task.”

Bruce Litzinger

Optimistic outlook

Project Clear has already delivered tangible results since ground was broken about a decade ago. Along with a dramatic reduction in SSOs, basement sewer backups have declined about 25%, says Sean Stone, the utility’s senior public affairs specialist.

“And that number looked a lot better before St. Louis got hit by two freak rain events in July of 2022 and last May,” he points out. “The July storm dropped 10 inches of rain in about 12 hours across our entire service area and was considered a 500-year rainfall. The May storm, which was more isolated, dropped about 6 inches in two to three hours and affected a significant swath of the most vulnerable parts of our system.”

The utility has already completed 650 individual projects as part of Project Clear, with 247 of them related to eliminating SSOs. That includes 50 miles of new, larger-capacity sewer pipes installed, 280 miles of sewer line rehabilitation, two deep tunnel storage facilities and two aboveground storage facilities.

Litzinger looks forward to the day when all SSOs are eliminated, which will significantly improve the area’s water quality and make life easier for customers by mitigating basement backups. (The project will not eliminate combined sewer overflows, but their flows will be significantly reduced.)

“We’re super excited about the progress made so far,” he says. “A few years ago, meeting our deadline of eliminating 85% of sanitary sewer overflows by the end of 2023 seemed like a pretty daunting task.”



Trash and debris pile up in a stormwater inlet before cleaning.

PITCHING IN WITH GREEN INFRASTRUCTURE PROJECTS

The Metropolitan St. Louis Sewer District's massive \$7.2 billion Project Clear initiative, aimed at eliminating sanitary sewer overflows, is an enormous and sprawling endeavor — one of the largest projects of its kind nationwide.

But on a much smaller scale, local residents and businesses also are playing an important role in reducing the flow of stormwater into the combined sewers by embracing various kinds of "green" infrastructure.

The Project Clear budget includes \$120 million to reimburse residents and businesses for the cost of installing green infrastructure on their properties. That primarily includes things such as rain gardens, permeable pavers, rain barrels and "green" roofs, says Jenna Jarvis, green infrastructure manager for MSD.

"Green infrastructure manages rainwater where it falls and filters the stormwater through the use of plants and soils," she explains. "This reduces the stormwater flow to sewers and acts as a water quality measure as well.

"Green infrastructure, and specifically rain gardens, also provide the added benefits of beautifying a neighborhood, reducing the urban heat-island effect and providing food and refuge for pollinators through the use of native plants."

Under the terms of a federal consent decree approved in 2012, the utility must use green infrastructure to reduce combined sewer overflows by 90 million gallons annually in a 43-square-mile area, mostly within the St. Louis city limits, where overflows drain directly into the Mississippi River.

The first step in the green infrastructure initiative was a \$3 million, five-year pilot program called the Old North Rain Garden, started in 2010. It consists of six neighborhood rain gardens capable of diverting approximately 2 million gallons of stormwater annually. Each garden is about as big as half of a city lot and provides an average of 1 acre of drainage, Jarvis says.

After analyzing the results, the project was deemed a success and the program expanded from there. To date, about 220 larger-scale neighborhood and business projects — big enough to require engineering, such as rain gardens, permeable-paver installations and green roofs — have been installed. And approximately 500 residential projects, mostly rain barrels and small rain gardens that don't require engineering, also have been completed, Jarvis says.

MSD has distributed about \$55 million for those projects, she says.

"We're already about halfway to our target spending goal and approximately 60% finished with our CSO-reduction goal, so I'd say the program has been very successful."

Before homeowners can apply for a grant of up to \$4,000, they must attend an educational training session about the rain gardens. That helps them determine if a rain garden will work on their property and teaches them how to design one, what kinds of plants to use and so forth. MSD also supplies a list of approved landscape contractors, though homeowners aren't required to use them.

In conjunction with the green infrastructure program, MSD also helps pay for the cost of demolishing homes and other structures on abandoned properties and eliminating impervious surfaces such as unneeded alleys and parking lots. In return, those areas are allowed to remain as green space that can absorb stormwater, Jarvis says.



St. Louis MSD crew members Ray Howard (left) and Carlos Brown use a Vactor 2100 to clean a stormwater inlet in the MSD service area.

"We were dealing with COVID-related issues such as labor shortages, rising prices for and scarcity of materials. ... It was all very concerning. But now we're largely on schedule and on budget. We're very happy about and proud of that." ♦

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EMPHASIZING TEAM INPUT

Virginia utility developed an innovation-centric culture that highly prizes new ideas.

By **Ken Wysocky**

Back in 2013, employees in the planning and analysis division in the Hampton Roads Sanitation District came up with a bold idea: Close a wastewater treatment plant that needed significant upgrades and divert the flow it was handling to another plant with sufficient capacity. The estimated savings: \$130 million.

Senior management at the utility, based in Virginia Beach, Virginia, approved the proposal and began building the necessary diversion infrastructure. And years later, the plant was shut down.

A post-shutdown analysis, aimed at determining whether the assumptions made in the initial proposal were good or bad, revealed that the move actually saved the utility \$239 million, says Jay Bernas, HRSD general manager and former head of the planning and analysis division.

The proposal to close down the plant was significant, and not just because it saved the utility hundreds of millions of dollars. It also was noteworthy because years earlier, employees probably wouldn't have pitched such an audacious idea and management wouldn't have approved it, Bernas observes.

"There was absolutely no way this would've been proposed or approved," he says.

The difference-maker? The development of an innovation-centric corporate culture under the leadership of Bernas' predecessor, Ted Henifin, who retired in February 2022.

"Our level of risk-tolerance changed dramatically," he says. "Without a culture of innovation, there's no way we would've pulled off that proposal."

Minimal collaboration

Before Henifin's tenure, the utility operated more like a system of silos. There was little communication and collaboration between departments, Bernas says.

"It was an old-school mentality about how people should work together," he explains. "There was a little bit of an us-versus-them mentality between departments."

"But when Ted came in, he shifted the focus."

For example, Henifin combined the treatment and interceptors departments, which forced people to work more collaboratively in terms of sharing resources and information. He also created a research division in 2008 that focused on developing technology.

Furthermore, Henifin hired a renowned wastewater engineer, Charles Bott, a former professor of civil and environmental engineering, as chief of special projects. (He's now the utility's director of water technology and research.)

"The innovations that came out of that division really provided great examples for the rest of our organization for what was possible," Bernas says.

For example, the research division collaborated with researchers at the District of Columbia Water and Sewer Authority (aka DC Water) to develop a process called partial denitrification-anammox (PdNA), which efficiently and cost-effectively removes nitrogen and ammonia from wastewater.

"Today we're the first wastewater utility in the world using this patented process," Bernas says.

"Without a culture of innovation, there's no way we would've pulled off that proposal."

Jay Bernas



Jay Bernas, Hampton Roads Sanitation District general manager

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.

Cultural shift

Henifin also brought in new leadership that fully bought into concepts such as listening to new ideas and taking calculated risks, Bernas says.

“Instead of the old mentality, where mistakes were punished, management emphasized that mistakes provide something you can grow from. That completely changed our level of risk tolerance.

“If you’re trying to shift a culture, one of the most important things is having a core group of people that help drive that change,” he adds. “That’s very impactful in moving the needle.”

Henifin also created an inclusive environment that encouraged employees at all levels to propose new ideas for doing things better. He also made sure senior management reviewed all ideas and then responded to each one so employees would know not only that all ideas receive consideration, but also understand why some ideas are rejected.

To further encourage innovation, the utility makes a point to celebrate successes. For example, when a new wastewater treatment innovation proposed by an employee became a reality, Henifin invited all employees to sign up for tours of the treatment plant in honor of the accomplishment. And he personally hosted the tours.

“It’s really important to take a step back and really think about how great it is that we executed a new idea and can see the fruits of our labors,” Bernas notes. “It’s great for boosting morale. Too often, it’s just go, go, go at utilities because there’s no shortage of brush fires to put out. But it’s important to reflect on accomplishments.”

In addition, representatives from a recently revived employee association get a seat at the table during HRSD’s monthly meeting of the utility’s leadership team, composed of directors and division leaders. This gives them an opportunity to directly contribute ideas.

Furthermore, to emphasize the importance of innovation, new employees are required to come up with an idea, execute it and present it to their team.

“If it’s a really good idea, it gets presented to the leadership team and possibly even patented,” Bernas says. “It reinforces to employees that we’re interested in their ideas.”

“Many things are required to change an organization’s culture. And it doesn’t happen in a day.”

Jay Bernas

Change takes time

Cultural change does not happen overnight, however, and it requires a deep commitment from senior management as well as leadership by example.

“There’s no one silver bullet to effect change,” Bernas notes. “Many things are required to change an organization’s culture. And it doesn’t happen in a day.”

But the rewards are well worth the time and effort

invested, says Bernas, who joined the utility in 2005, just before Henifin was hired as general manager. As such, he’s had a front-row seat as the cultural shift unfolded.

“It’s been 100% gratifying,” he says. “Everyone here understands they play a role in our success. As an organization, I feel like we’re firing on all cylinders, with everyone executing at a high level.

“Our turnover rate is very low and I think that’s because our employees really believe in and are very proud of our organization. It’s totally different than it was years and years ago.” ♦

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JUST ASK THE QUESTION

Acknowledging where you lack understanding is the key to filling in holes in your training

By *Ronnie Freeman*



I'm sure you've heard the phrase "There is no such thing as a stupid question, except the one that didn't get asked."

Some people have trouble raising their hand and asking the question that's important to them. Perhaps it's the possible embarrassment of being the only one who doesn't know the answer, or it could be that you missed an important point during a discussion and are afraid of looking like you weren't paying attention. Sometimes other employees may show some frustrations when you ask questions and that can also discourage you from asking. Whatever the reason, we can sometimes talk ourselves out of asking a very important question that could very well be important to our safety.

Don't let this be you. Ask the questions you need to ask.

In our industry many employees face different kinds of hazards on a daily basis — risks such as entering a confined space, operating heavy equipment, digging and working in trenches, handling chemicals and fall hazards. Part of mitigating those hazards is preplanning and implementing safeguards to protect us from those hazards. Sometimes though, things change, conditions around us change, a new piece of equipment is brought on site. If employees are afraid to ask questions, they could be putting themselves at risk of injury or even death.

When it comes to safety, it's critical that you ask questions like what could go wrong, how can you prevent it from happening, how do you protect yourself and what do you do if something does go wrong. By being willing to

ask these and other important questions you might be helping your coworkers who may have similar questions.

Also, asking the right questions begins with the willingness to admit you aren't trained in working certain types of equipment or projects. Sometimes our ego can get in the way of asking questions as we don't want to be considered the weak link on a work crew. So, we just begin working, putting ourselves at risk. Don't let this be you. Ask the questions you need to ask.

Complacency can creep in when we do the same work tasks over and over again. Workers with experience can easily become complacent and not even recognize the hazards, or they feel like there is less risk because they've seen it before. These employees are less likely to ask the questions that can get hazards addressed. If the work environment discourages questions, that just adds to the hazard.

Also, an employee's lack of knowledge can be a danger too as they might not recognize the hazards that are present. This can come from a lack of training or the employee being too new to the task at hand. They probably will not ask the necessary questions because they simply don't know what to ask.

Don't let the responsibility of knowing all the answers fall to them. Encouraging questions can help employees stay safe on the job. The willingness to ask the necessary questions about tasks, risks, hazards and worst-case scenarios helps maintain a good safety culture while on the job.

If you are a supervisor, encourage questions. This is just one simple step, but it can make a difference in improving the overall safety culture at your workplace. ♦

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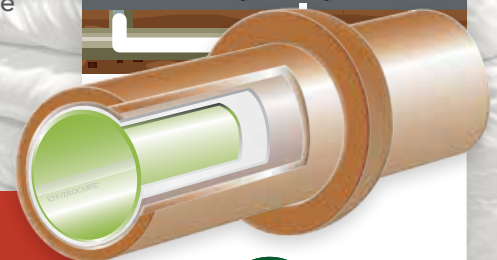
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 ARIES <small>INDUSTRIES, INC.</small> See Ad, Page 17	 Aries Industries, Inc. 550 Elizabeth St. Waukesha, WI 53186 800-234-7205 sales@ariesindustries.com www.ariesindustries.com			✓	✓		✓				
 AVANTI <small>WATER - SEWER - GROUT</small> <small>Control groundwater. Preserve life.</small>	 Avanti International 822 Bay Star Blvd. Webster, TX 77598 800-877-2570 281-486-5600 info@avantigrout.com www.avantigrout.com			✓	✓	✓			✓		
 CUES See Ads, Page 7 and 19	 CUES, Inc. 3600 Rio Vista Ave. Orlando, FL 32805 800-327-7791 Fax - 407-425-1569 salesinfo@cuesinc.com www.cuesinc.com			✓	✓	✓	✓	✓	✓		
	 Duracable Manufacturing Co. 300 Ashworth Rd. West Des Moines, IA 50265 800-247-4081 sales@duracable.com www.duracable.com		✓		✓			✓	✓		

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	Infrastructure Repair Systems, Inc. 4301 34th St. N, Ste. A St. Petersburg, FL 33714 877-327-4216 727-327-4216 Fax - 717-327-4118 www.irs.net • irsi@irs.net				✓	✓			✓		
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	The Strong Company, Inc. 4505 Emmett Sanders Rd. Pine Bluff, AR 71601 800-982-8009 870-535-7617 Fax - 870-850-6933 info@strongseal.com www.strongseal.com					✓					
	Warrior Trenchless Solutions 1400 Commerce Pkwy. Lancaster, NY 14086 716-601-7760 www.thermoformliner.com		✓		✓			✓			

FIGHTING LIFT STATION FOG

Active Mixing eliminates grease problems with less resources and no chemicals

By Kara Fritze

Lift station operators often rely on grease-dissolving chemicals to manage FOG in lift stations, but Farmers Branch, Texas, is taking a different approach.

Chemical treatment can be effective, but it carries potential drawbacks including the need for repeated applications and possible environmental impacts. Engineers are constantly working on different approaches to these issues, and one such solution has gained support in Farmers Branch.

That's one reason innovative engineers have been striving to create alternatives for lift stations. Kasco's new HydraForce product line is specifically designed to address wastewater problems, and the HydraForce Lift Station Agitator builds on the strength of Kasco's proven diffused aeration products.

Tested at a public works facility in Farmers Branch, Texas, the HydraForce Lift Station Agitator was found to dramatically reduce greasing, eliminating the need for continual grease remediation and ultimately saving the city thousands of dollars.

A greasy situation

James Ryan Sartor is the director of Public Works in Farmers Branch, a Dallas suburb with a population of approximately 36,000. Changing dynamics at a lift station brought unexpected problems that Sartor had to solve.

"In its early years this particular lift station only served a couple of large commercial complexes, and it operated perfectly fine at that time," Sartor says.

But that changed in 2017.

"There was a proposed housing development in Farmers Branch that grew beyond its original projected size," Sartor says. "It morphed into multiple single-family developments as well as several large multi-family apartment complexes. We had to upgrade to handle the increased flow, and as these new additions to the city were being occupied, we noticed the lift station was developing a grease issue."

Greasing is a significant problem in wastewater lift stations that can lead to operational issues and maintenance challenges. Grease primarily comes from sources such as kitchen sinks, dishwashers and food processing facilities, where fats and oils are often washed down drains.

When grease enters the sewer system, it can solidify and adhere to the surfaces of the wet well, pipes and pump impellers.

Grease buildup can reduce the effective volume of the wet well, potentially leading to decreased pump efficiency and increased pump cycling. It can create blockages in pipes and impellers, causing pumps to clog and malfunction. Over time, if not addressed, grease accumulation can lead to costly maintenance and repairs. And in severe cases, it can cause lift station failures and sanitary sewer overflows, posing health and environmental risks.

Chemical remediation

Effective prevention and management strategies, along with regulatory measures and public awareness, are essential to mitigate the impact of greasing on lift station performance and the overall sewer system.

"In the early stages, we were able to control the issue using various chemical treatments and cleaning methods," Sartor says.

Lift station operators often use chemical agents to break up grease accumulations within lift stations and associated sewer lines. Containing enzymes, bacteria, surfactants or other active ingredients, these chemicals are typically known as grease digesters or grease solvents, and are designed to help mitigate the problem of grease buildup.

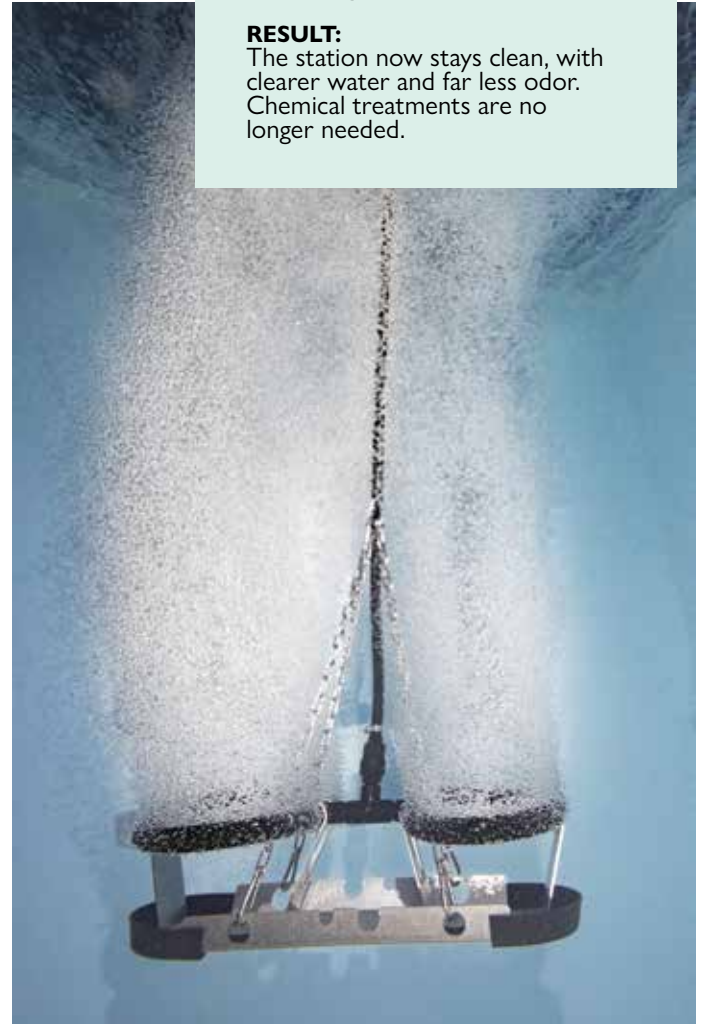
Grease-dissolving chemicals work by breaking down the fats, oils and grease into smaller, more easily dispersible components. Applied directly into the lift station's wet well or intro-

BETTER MOUSETRAPS

PROBLEM:
Lift station FOG

SOLUTION:
Installation of a HydraForce Lift Station Agitator from Kasco

RESULT:
The station now stays clean, with clearer water and far less odor. Chemical treatments are no longer needed.



"We now perform our standard weekly inspections of this site and have yet to experience a need for grease removal since installation."

James Ryan Sartor

duced into the sewer lines upstream of the lift station, this process helps prevent the formation of solid grease deposits on lift station surfaces and in sewer pipes.

But some grease-dissolving chemicals may have environmental impacts, and their effectiveness can vary depending on factors such as the type and concentration of chemicals used, the severity of grease buildup and the hydraulic conditions within the lift station. Many local and municipal governments have regulations and codes in place to control the discharge of FOG into the sewer system as well. These regulations often require businesses to implement FOG control measures and undergo inspections to ensure compliance.

Furthermore, grease-dissolving chemicals typically require regular application to maintain their effectiveness. This can add ongoing operational costs and maintenance tasks to lift station management.

Such was definitely the case in Farmers Branch. “As the service area began to grow, the cost of managing the grease issue was growing as well,” Sartor says.

The active mixer

After a lengthy search for solutions, Farmers Branch was approached by Axis Construction to look at an existing technology from Kasco that had been used in aquatic applications such as residential and commercial pond management, stormwater retention ponds and more. That technology was Robust-Aire, an underwater diffused aeration system.

There are several benefits to using a device that physically mixes water to break up grease in wastewater lift stations, either in combination with or as an alternative to chemical treatments. Mechanical mixers use physical agitation to break up grease deposits and keep them in suspension in the wastewater. This mechanical action can help prevent the formation of solid grease layers on the surface of the water or the wet well.

“I was very interested in the product,” Sartor says. “After examining its design and construction, I talked with Axis about installing the device in a lift station wet well for grease remediation. By March of 2022, Axis had completed the installation, and we spent a couple of weeks tweaking its placement and levels.”

Within just a couple of months, big changes began happening.

“By early May,” Sartor says, “we started to experience amazing results. The station was staying very clean, the water was clearer, and there was far less odor. We continued to see these kinds of improvements through the following year. Fast-forward to August of 2023, we’re no longer using chemical treatments in this lift station at all. At most, we may experience a small grease deposit in the far corners of the lift station, and those are easily washed down and dissipated.”

The savings to Farmers Branch in terms of expenditures and human resources were also dramatic.

“Our chemical treatments had been costing us thousands of dollars a year,” he says. “We were using equipment and personnel for grease remediation every two to three weeks. We now perform our standard weekly inspections of this site and have yet to experience a need

for grease removal since installation.”

Sartor notes he expects his experience with the Kasco HydraForce Lift Station Agitator to provide even more benefits down the road.

“This piece of equipment has greatly improved our operations. We are conducting a major lift station rehab starting later this year, and I am excited to have the balance of our lift stations retrofitted with this device very soon.” ♦

Kara Fritze is a municipal sales territory manager with Kasco.

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

BUILDING AND BUYING AMERICAN

Final guidance clarifies requirements of product manufacturers to meet the Made in America threshold

By Sheila Joy

NASSCO's Government Relations Committee goes the extra mile in helping the association achieve its goal to advocate for the underground infrastructure industry. Led by Committee Chair Steve Dye of Nexus Government Relations, and co-chaired by Chris White of Redzone Robotics, NASSCO is fortunate to have industry experts who provide trusted information to share with its members on the topic of funding.

One topic of particular interest to NASSCO members is the Build America, Buy America mandate. When Congress passed the Infrastructure Investment & Jobs Act in 2021, included was a provision that all federally funded or financed infrastructure projects are required to use Made in America materials, such as iron and steel, manufactured products and construction materials, bringing about the BABA mandate.

For water infrastructure projects, the BABA mandate presents a host of challenges due to limited domestic production of materials and products critical for managing drinking water and wastewater. To be clear, the mandate only applies to materials and products that remain permanently on-site of a project funded or financed with federal money; equipment or materials that are removed following construction do not need to meet the BABA mandate.

Over the last several years the White House Made in America Office and the U.S. Environmental Protection Agency have released guidance on what is required of federal funding recipients and technology providers to either be in compliance with the BABA mandate or obtain a waiver from the mandate if certain criteria are met.

On August 14, 2023, the MIAO published much awaited final guidance that clarifies what is required of product manufacturers to meet the Made in America threshold for iron and steel products, manufactured products and construction materials. For construction materials, certain kinds of material that were excluded from the BABA mandate because they were exempted in the IJJA statutory language, included "cement and cementitious materials; aggregates such as stone, sand or gravel; or aggregate binding agents or additives."

The IJJA statutory language required that the end-product must be manufactured in the United States and more than 55% of the total cost of all components of the manufactured product must also be of U.S. origin. The question the recent MIAO guidance attempts to answer is what "costs" can be counted towards the 55% threshold. The guidance stated:

- When a product manufacturer manufactures their own components, all costs associated with the manufacturing of the component, including transportation costs, plus allocable overhead costs are included. The guidance does not allow for the cost of manufacturing the end-product but allows for the costs of manufacturing the components that go into the end-product.
- When a product manufacturer purchases components, they can calculate the following costs toward the 55% threshold: the acquisition cost, including transporta-

tion costs to the place of incorporation into the manufactured product, regardless of whether or not such costs are paid to a domestic firm, and any applicable duty, regardless of whether or not a duty-free entry certificate is issued.

The recent MIAO guidance also addresses the question of how to define iron and steel products, construction materials, and manufactured products. The guidance states:

- Iron or steel products means "articles, materials, or supplies that consist wholly or predominantly of iron or steel or a combination of both."
- Construction Materials means "articles, materials, or supplies that consist of only one of the following: nonferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); fiber optic cable (including drop cable); optical fiber; lumber; engineered wood; and drywall." The definition also notes that "minor additions of articles, materials, supplies or binding agents to a construction material do not change the categorization of the construction material."
- Manufactured Products means "articles, materials, or supplies that have been processed into a specific form and shape; or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials or supplies."

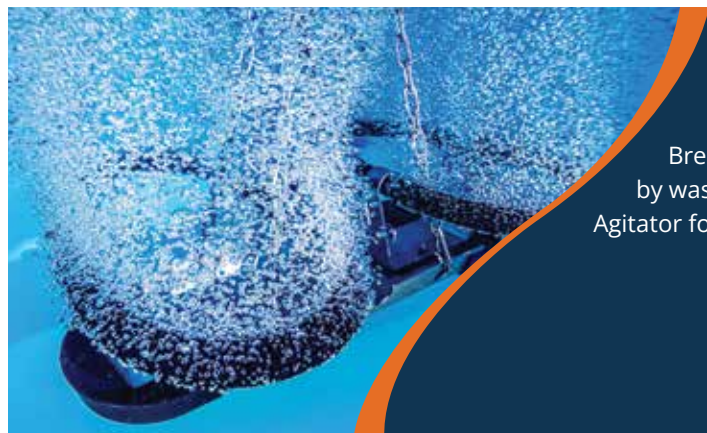
Finally, the MIAO guidance looked to clarify the criteria for funding recipients to obtain a waiver if they are unable to acquire materials or products that meet the BABA thresholds. Waivers will be granted for the following reasons:

- Public interest waiver — Applying the Buy America Preference would be inconsistent with the public interest.
- Nonavailability waiver — Types of iron, steel, manufactured products or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality.
- Unreasonable cost waiver — The inclusion of iron, steel, manufactured products or construction materials produced in the United States will increase the cost of the overall infrastructure project by more than 25%.

Additionally, previous guidance for the following waivers remains in effect:

- Small Projects Waiver — Federally funded projects of less than \$250,000.
- De Minimis Waiver — Products that qualify for a de minimis waiver cumulatively may comprise no more than a total of 5% of the total project cost.

For additional information, links to the guidance and resources by White House Made in America Office U.S. EPA, and links of the state SRF authorities, please visit nassco.org/advocacy/government-relations. ♦



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FORMADRAIN Formapox 101

Formapox 101 from **FORMADRAIN** is a durable steam-cured liner that eliminates the mess and cost of traditional dig-and-replace methods. It is made from a watertight, thin, yet extremely strong composite material and a specially formulated resin. The liner is bright blue in color. It is the mainstay of the company's pushed- or pulled-in-place, steam-cured, fiberglass and epoxy underground pipe repair system. It can be used in line sizes from 2 to 48 inches. The repair is so thin that pipes sustain their original flow capacities, even with a liner installed in such small diameters. **888-337-6764; www.formadrain.com**



MaxLiner WovoGlass

WovoGlass from **MaxLiner** is designed to withstand extreme wear. Its seamless, circular-knitted construction combines polyester yarns with extensible fiberglass reinforcement to deliver superior physical properties. It is three times stronger than most CIPP liners with the ability to negotiate multiple bends up to 90 degrees and transition several pipe sizes including 4 to 6 inch. It easily wets-out, inverts and transitions with very low pressure so there's no need for step inflation to exercise the liner. It can be cured by ambient, heat or LED light. **877-426-5948; www.maxlinerusa.com**



Picote Solutions Dual-Color Epoxy Brush Coating System

The **Dual-Color Epoxy Brush Coating System** from **Picote Solutions** allows technicians to rehabilitate pipes from 1.25 to 12 inches for drains, sewers, water pipes, electrical conduits, and heat and air-conditioning ducts by brush-casting a coating. The coating resin forms a pipe inside the original pipe that is tested, safe and environmentally friendly. The new pipe is damp-proof, corrosion-resistant and wear-resistant. It is ASTM- and NSF-certified (NSF/ANSI 61-5). It is a 100% solids epoxy, and the method allows for clear visual verification during the application process. Apply to small areas or all drains in multistory buildings. The system is practical and easily fits in tight places. **219-440-1404; www.picotesolutions.com**



Prime Resins PRI0L Liquid Acrylamide Gel

PR10L Liquid Acrylamide Gel from **Prime Resins** is a super low viscosity acrylamide grout that yields a gel upon reaction. The grout solution is as thin as water, allowing it to follow infiltrating water for sealing leaks or to deeply penetrate soils for stabilization. The gel time is adjustable for a few seconds to several hours. The cured grout provides an economical water barrier or soil stabilizer. **800-321-7212; www.primeresins.com**



Source One Environmental Thunder Drum 800

For high-capacity pipe lining repairs, **Source One Environmental** offers the **Thunder Drum 800** — a versatile CIPP inversion lining drum that rehabilitates pipe diameters 12 inches and below. This range in sizing makes it ideal for sewer laterals or in-home residential repairs. Suitable for ambient, hot water, steam and UV light curing, it is also hand wheel-mountable on both sides, Storz compatible to quickly swap accessories, and has multiple windows to allow for maximum visibility of in-unit liner movement. Built from stainless steel and with premium fittings, it is made for a long service life. In addition, it provides efficient and uniform inversion of the liner into the pipe, ensuring a smooth and consistent installation. **877-450-3701; www.s1eonline.com**



Warrior Trenchless Solutions Thermoform

Thermoform from **Warrior Trenchless Solutions** is a PVC-alloy structural pipe lining system designed for the trenchless rehabilitation of failing sewer and culvert pipes. It is an environmentally friendly, styrene-free thermoplastic. There are no harmful emissions, and it does not rely on any chemical reaction during installation. Factory-controlled production with rigorous material testing ensures a consistent quality product that conforms to and exceeds the expected standards. The material is highly flexible, allowing it to expand and fit tightly to the host pipe, including changes in shape and dimensions. It is produced in sizes ranging from 4 to 36 inches in diameter, and the wall thickness can be varied according to the application. All installers must be accredited and audited to ensure the highest quality work possible. **716-601-7760; www.thermoformliner.com**



Grouting

Aries Industries Test and Seal Grouting System

The **Test and Seal Grouting System** from **Aries Industries** reduces setup time and provides efficient hands-on control to quickly seal leaking joints. Grout — pumped to a leaking joint — flows through the leak, sealing the surrounding soil to form an impenetrable barrier. Sixty-gallon tanks and continuous-duty mixers provide high volume to seal large voids. Reels for fast deployment and retrieval, as well as high-power winches, quickly move the packer from joint to joint for high productivity. The unit's 800 feet of color-coded hose allows for long runs. The truck comes with a bench, storage and room to work. The operator tests and seals the joints while working in the control room, where test data and



the sealing process are easily viewed, recorded and logged.
800-234-7205; www.ariesindustries.com

Avanti International AV-100

AV-100 chemical grout from **Avanti International** is used to rehabilitate storm and sanitary sewer systems by eliminating infiltration in manholes, mainlines, joints, laterals and lateral connections, and before or after various forms of CIPP lining. It is injected after lining seals in the annular space between host pipe and liner, and lateral reinstatement, which are the primary sources of infiltration. It is an ultralow viscosity, chemically reactive gel with a similar viscosity to water. It can permeate anywhere water can travel and has adjustable cure times from seconds to hours, creating an effective, long-lasting water barrier while providing soil stabilization.

800-877-2570; www.avantigrout.com



Horizontal Directional Drilling

American Augers DD600

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800-324-4930; www.americanaugers.com



Ditch Witch AT120

The **AT120** from **Ditch Witch** enables maxi-rig drill operators to move down a class size to meet job site constraints without compromising job site productivity. It features 15,000 ft-lbs of rotational torque. With 120,000 pounds of thrust and pullback, it allows operators to take on a wide variety of projects, as well as move through longer bores and larger diameter installations more efficiently. With 20 feet of end-to-end drill pipe on board, it helps operators put more pipe in the ground, further boosting job site uptime. It offers a saver lock design to protect the drill pipe and drive system against wear and tear. With updated and intuitively located compartment panels, operators have increased access to critical components that frequently need to be maintained, streamlining maintenance routines and the serviceability of the drill. **580-336-4402; www.ditchwitch.com**



Point/Spot Repair

HammerHead Trenchless Point Repair

Point repair from **HammerHead Trenchless** is an appropriate solution for a wide variety of issues seen in different types of pipes 3 to 72 inches in diameter. It can be used in conjunction with CIPP installations or as standalone application over offset joints, pipe separations and damaged siphons. It can also be used to seal off interior drops and cap off unwanted laterals. It can even replace miss-

ing sections of pipe, repair 90-degree bends, bridge transitions or add extensions to a culvert. Choose between “winter” and “summer” point repair solutions to match working time to your job conditions. HammerHead point repair resin is odor-free, styrene-free and VOC-free.

920-648-4848; www.hammerheadtrenchless.com



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Sealing Systems Aqua Seal

Aqua Seal from **Sealing Systems** is an extremely reactive two-component hydrophobic polyurethane water stop system that can be injected into flowing water. It is an exceptionally fast reacting (3-5 seconds), quick sealing and high-early-strength grout that is pumped under pressure. It is designed to stop high infiltration sources in precast or brick structures and can stop leaks in excess of 50 gpm. It comes packaged with 12 600 mL dual-component urethane caulk tubes along with 12 static mixers. Since only a heavy-duty dual-component caulking gun is required, cities can easily install it with in-house maintenance crews. A user-friendly pneumatic gun is also available to provide a faster and more efficient installation. **800-478-2054; www.ssisealingsystems.com**



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January 17 at 12:00 PM CST

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Description

Does the date October 16 ring a bell? It's the deadline for the EPA's Lead and Copper Rule Revisions (LCRR) — just nine months away. To be compliant, all public water systems have to meet a list of requirements, including the creation of a lead service line (LSL) inventory. Also nine months away is the implementation of the new lead pipe replacement rule, the Lead and Copper Rule Improvements. Creating an LSL can be incredibly complex, and many water systems are struggling to comply. Tap into our step-by-step process to ensure compliance.

Join this webinar to learn how to create your lead service line inventory, including information on:

- Establishing guidelines for inventory and tracking methods
- Tips for collecting your inventory data — one of the most labor-intensive parts of the entire process
- Best practices for verifying your inventory
- How to prepare for the new Lead and Copper Rule Improvements requirement to replace 100% of lead pipes in the next 10 years

Speakers:



Tim Larson
Sr. Product Marketing Associate at OpenGov
tlarson@opengov.com



Daniel Johns
Director of Geospatial Technologies at ETM
johnsd@etminc.com



Sarah Grimsley,
Client Solutions Manager, ETM
grimsleys@etminc.com

To register, go to
<https://bit.ly/MSWJan2024>

PRODUCT FOCUS

tion, reducing customer disruption and increasing company profits. The process replaces the existing pipe with a fused HDPE pipe, which eliminates all joints and allows the operator to pull through bends such as 45-degree fittings. This system is modular and can be easily disassembled and reassembled for manhole and basement applications. With a compact design and very small footprint of only 20 by 20 inches, this unit can be used in tight locations.

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The **E24** revisits the essential **TRIC Tools** 4-inch lateral bursting package that created the industry of trenchless home sewer replacement decades ago. Redesigned with economy and practicality in mind, it is geared primarily toward residential bursting jobs up to 4 inches in diameter. The standard system includes a portable and reliable 10,000 psi electric pump, plus lightweight 5/8-inch compact swaged cable. It is suitable for indoor use, difficult backyard easements, and very tight spaces with limited access.

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Pipe Fusion

McElroy TracStar 412i

The **TracStar 412i** from **McElroy** is designed to fuse pipe sizes from 4 to 12 inches. It incorporates the FusionGuide Control system seen on other TracStar iSeries models, providing operators with three levels of control during the fusion process. Each level has varying degrees of assistance, from manual control to fully automatic fusion. An indexer keeps the heater and facer attached to the four jaw carriage, condensing the heater, facer and jaws into a single unit. It includes a new, larger-volume hydraulic tank that is secured beneath the machine's dome. In addition to providing additional cooling, the new design

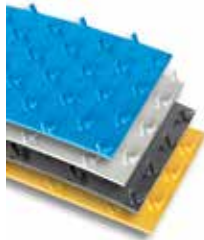


also reduces the risk of accidentally adding the wrong fluid to the hydraulic tank. It is controlled via the DataLogger, a ruggedized tablet that records fusion parameters and other pertinent data during the fusion process.
918-831-9236; www.mcelroy.com

Pipe Lining

AGRU America Sure-Grip

Sure-Grip liners from **AGRU America** are made of HDPE, HDPE-el, PP, PVDF or ECTFE, and serve as a long-term alternative to spray-applied concrete protection products. The liners prevent concrete corrosion and degradation, can substantially extend the lifetime of a structure and, by preventing exfiltration and infiltration, provide direct protection for the environment. The liners have anchoring systems that enable construction in areas of significant backpressure. Unlike spray-applied liners, which have to be reapplied regularly due to cracking or delamination, these liners are long-lasting, and are designed to avoid the residuals cost often associated with concrete spray-on liners, which require tank emptying and cleaning every few years for reapplication. **843-546-0600; www.agruamerica.com**



Epoxytec Series 456 CPP Sprayliner

Series 456 CPP Sprayliner from **Epoxytec** is a highly specialized product designed for water and wastewater environments, including the rehabilitation and lining of culvert. This two-component, 100% solids epoxy coating and lining system can be applied at an ultra-high build of up to 3/8 inch. It has high moisture tolerance and is engineered to protect against hydrogen sulfide corrosion. It also serves as a barrier to protect against I&I. It offers comprehensive defense against the challenges posed by water and wastewater environments. **877-463-7699; www.epoxytec.com**



Omega Liner

Omega Liner is a high-strength GRP UV-cured liner for trenchless rehabilitation of water, wastewater and stormwater piping systems. It is constructed with ECR (corrosion-resistant) fiberglass and advanced UV resins, and uses unsaturated polyester or vinyl ester resins for environmentally conscious projects. It is offered for both circular and noncircular pipes from 6 to 66 inches, has a six-month shelf life, conforms to ASTM F-2019, and meets and exceeds ASTM F-1216. Factory training and support is available, with a small equipment footprint and increased efficiencies. **605-558-1020; www.omegavpipe.com**



The Strong Company Storm Seal

Storm Seal from **The Strong Company** is a solution for structural fatigue and corrosion in stormwater pipes. This system stops I&I and exfiltration, and restores structural integrity. It is a fiber-reinforced cementitious mixture designed for rehabilitating corrugated metal pipes, culverts, concrete pipes, catch basins and other stormwater structures, and is recommended in applications where there is no evidence of sulfide conditions. It is a high-strength mortar, reaching compressive strength of over 9,000 psi, and its erosion resistance is comparable to concrete pipes and culverts. It was evaluated by the AASHTO National Transportation Product Evaluation Program and is approved by DOTs across the United States. It is a monolithic liner (free of any joints) and can be applied to a variety of shapes and structures.



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Pipe Plug

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Cherne Heavy Duty Poly-Lift Lines with Gauge provide the confidence, strength and durability to outlast the harshest environments as you inflate/deflate pipe plugs. With corrosion-resistant hardware, fittings and steel hooks as well as industrial-grade, heavy-duty spiral wrap, rubber gauge cover and high-flow hose, these lift lines offer maximum, long-lasting performance. Available in lengths ranging from 10 to 50 feet, they are designed with a heavy-duty 3/8-inch inside diameter hose. Hardware and fittings are made of stainless steel, and a heavy-duty rubber cover that protects the line's gauge. The lift line comes with clear-coated zinc-plated steel hooks as well as industrial quick disconnects. 800-843-7584; www.cherneind.com



Reinstatement Cutters

CUES Currahee Cutters

CUES Currahee Cutters provide a number of solutions for pipe inspection and rehabilitation — from clearing blockages, debris, protruding laterals and roots, to reinstating laterals in a CIPP liner. The cutters function in a range of 5.25- to 12-inch pipe, are equally effective in CIPP or fold-and-form liners, and can be installed on a CUES K2 truck-mounted cutter system. The system performs optimally using 1,000 to 1,500 feet of cable, and is operated with the CUES gamepad controller. 800-327-7791; www.cuesinc.com



Pipeline Renewal Technologies Micro S Light+

The Pipeline Renewal Technologies' Micro S Light+ provides the reliable cutting power needed to perform prep and reinstatement work in drains, laterals, and other small-diameter lines. It delivers maximum torque to make quick work of any material encountered. The air-powered unit fits in small access openings and has excellent flexibility in bends, navigating smoothly through elbows. It is suitable for both horizontal and vertical work in 4- to 6-inch lines with options to work in up to 10-inch lines. It also performs in 3-inch straight lines with the 90DCX Angular Cutting Motor. Twin joysticks control three axes of motion on the head, while the self-cleaning camera returns real-time footage to the 10-inch monitor. The robot accepts various cutting bits and detaches for easy transport. The entire system weighs just 104 pounds. 866-936-8476; www.pipelinert.com



RapidView IBAK North America MicroGator GT

The **MicroGator GT** from **RapidView IBAK North America** creates new possibilities for the controlled removal of large, resistant deposits in the pipeline. The rotating water-jet nozzle can be attached to a MicroGator tractor, with an additional high-pressure water hose, to transform the cutting and grinding robot into an ultra-high-pressure water jetting system. It has adjustable working pressure from 9,000 to 37,000 psi and 3 to 13 gpm. The CutterCam provides a constant view of the operating area so you can see exactly what you are cutting/jetting. It has a large range of motion with a 400-degree rotating elbow, full pan-and-tilt functionality, as well as fourth-axis



articulation, giving operators ultimate control during operations. There are a variety of different nozzle types available for purchase, including point blasting. 800-656-4225; www.rapidview.com

Trenchless Relining Equipment

BRAWO SYSTEMS MAGNAVITY SX for BRAWOLINER

Magnavity SX from **BRAWO SYSTEMS** offers safe light curing with NRTL certificate for the U.S. market. The compact system has a range of 197 feet. The two LED heads — Nano and Mega — enable the rehabilitation of diameters from DN 100 to DN 300 using BRAWOLINER and the vinyl ester resin BRAWO LR. The curing process is automated and the entire rehabilitation process is documented. It can rehabilitate longer pipes with bends with only one access point. www.brawosystems-usa.com



Flow-Liner Systems Neofit+Plus Expandable Pressure Pipe

Neofit+Plus Expandable Pressure Pipe from **Flow-Liner Systems** is a trenchless technology that creates an impenetrable barrier between drinking water and the existing host pipe. Host pipes (like lead and copper) can leach dangerous levels of toxic materials in your drinking water. The Neofit+Plus EPP structural material has been scientifically proven by examining extensive hydrolysis testing, indicating it will last well over 100 years. It's not a coating and it doesn't use resin or epoxy. It often only requires a single small access pit, saving yards, trees, sidewalks and floors from demolition. The speedy process allows for many installations a day and immediate return to service. 800-348-0020; www.flow-liner.com



Spartan Tool LightRay LR3

The **LightRay LR3** LED UV system, a collaboration between **Spartan Tool** and Waterline Renewal Technologies, provides the time and flexibility to install, then cures in as little as 10 minutes when the light is activated. The technology can significantly reduce costs and risks when compared to traditional thermo-setting or ambient-cured CIPP liners, creating new opportunities for drain cleaning contractors. The curing process doesn't start until the UV light is activated, giving the operator time to place and readjust the liner in the pipe as needed. Its non-VOC resin is pre-impregnated into the high-performance fiberglass liner and shipped ready to install, so there's no mixing or measuring of resin. 800-435-3866; www.spartantool.com ♦



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Product Spotlight

Condition assessment service helps utilities stay on top of issues

By Craig Mandli

Pipeline infrastructure is sometimes “out of sight, out of mind.” But as those systems age, they can present multiple challenges. That’s why Echologics offers a condition assessment approach so utilities can quickly understand the status of buried assets and efficiently execute their rehabilitation and replacement programs.

The ePulse Optimize condition assessment service is designed to help water utilities assess the condition of their distribution systems and identify potential issues before they become major problems. The non-invasive solution enables water utilities to prioritize repair and replacement of assets in their distribution systems, proactively managing the risk of infrastructure damage, supply interruption and inefficient allocation of capital funds.

“The ePulse Optimize condition assessment service is a powerful tool for water utilities looking to assess the condition of their distribution systems,” says Tim Ruhl, product line leader, asset management and capital planning. “By providing detailed and accurate asset information, the ePulse Optimize condition assessment service allows utilities to identify their at-risk assets, prioritize capital projects and stretch their investment dollars.”

The condition assessment service can provide condition information for shorter segments of buried pressurized pipeline than previously obtainable without compromising on the cost or risk associated with an assessment. It uses



acoustic wave analysis to assess the condition of water mains and distribution systems. The Echologics team of GIS and data scientists and acoustic signal processing experts have combined extensive industry knowledge with the latest industry standards, acoustic science and automation to produce highly accurate pipe wall measurements. As an added benefit, the service simultaneously pinpoints leaks to provide a comprehensive picture of overall asset health and condition. This data-driven approach provides asset managers valuable insights to assess risk and make informed decisions about maintenance, rehabilitation and replacement programs.

The service is easy to deploy and can be used to assess the condition of a range of pipe materials and sizes. It is also non-invasive and does not require excavation work or system shutdowns, minimizing disruption to water utilities and their customers.

“We are excited to bring the ePulse Optimize condition assessment service to market and help water utilities assess the condition of their distribution systems,” says Ruhl. “This service is part of our ongoing commitment to innovation and providing our customers with the most advanced tools and technologies to support their operations.” **866-324-6564; www.echologics.com**

SPECIAL REPORT

OZ Lifting Products davit crane wheelbase



The new wheelbase from OZ Lifting Products can be used with its full range of davit cranes up to 1,200-pound capacity. Made in the U.S., the wheelbase is adjustable and has four different length positions: 56.57 to 77.57 inches long, 32.44 inches wide and 36.87 inches high. It weighs 140 pounds when fully assembled (without a crane pedestal base), so the total weight will depend on the davit crane used. With durable steel construction and powder-coat finish, oversized casters make rolling the base and moving the crane easy. The floor anchoring system allows the davit to rotate 360 degrees, even when under load.

tion and powder-coat finish, oversized casters make rolling the base and moving the crane easy. The floor anchoring system allows the davit to rotate 360 degrees, even when under load.

800-749-1064; www.ozliftingproducts.com

Blackline Safety G6 single-gas wearable detector

Blackline Safety has added new features and service plans to its G6 single-gas detector wearable device. G6 now features the same real-time connectivity as the company’s G7 product line. Additional new features include an emergency SOS that workers can trigger in critical situations to get help, and an expanded suite of data and reporting analytics. The device also supports indoor location technology. The company has introduced two new service plans, Protect and Protect Plus, which bundle new features to fit within any safety program. Supporting H2S, CO, O2 or SO2 gas detection, G6 alerts the person when they have come into contact with gas using attention-getting lights, sounds and vibrations, and sends immediate notifications to emergency contacts. In a situation where gas has rendered a worker unconscious, these notifications coupled with the new SOS functionality can be lifesaving both for the down worker and for others in the area. **877-869-7212; www.blacklinesafety.com**





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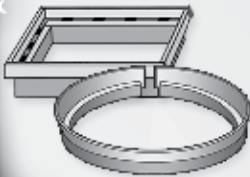
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McElroy TracStar iSeries

McElroy announced the addition of the TracStar 412i and TracStar 618i. Like their current Series 2 counterparts, the TracStar 412i is designed to fuse pipe sizes from 4-inch iron pipe size to 12-inch ductile iron pipe size, and the TracStar 618i fuses pipe from 6-inch IPS to 18-inch outside diameter. The TracStar 412i and 618i will incorporate the FusionGuide Control system seen on other TracStar iSeries models, providing operators with three levels of control during the fusion process. Each level has varying degrees of assistance, from manual control to fully automatic fusion. A new indexer keeps the heater and facer attached to the four jaw carriage, condensing the heater, facer and jaws into a single unit. Operators will be able to move the indexer side to side along a set of rails, allowing them to position the heater and facer between the carriage's movable jaws as needed.



918-836-8611; www.mcelroy.com ♦

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CASE STUDIES

PIPELINE REHABILITATION AND RELINING

By *Craig Mandli*

Epoxy used to rehab corroded large-diameter pipe

Problem:

The San Jose-Santa Clara Regional Wastewater Facility had 900 feet of 84-inch-diameter pipe with severe crown corrosion. Several areas had extensive concrete spalling with exposed rebar. An assessment estimated the remaining service life of the pipe between 0 and 12 years. A high priority was given to coating the pipe to lengthen its life span.

Solution:

Michels Pipeline patched badly deteriorated spots with cementitious material, followed by coating the pipe with Neopoxy high-strength corrosion-resistant NPR-5303 epoxy resin. The project owner decided to line only the top 200 degrees of the pipe due to the more serious corrosion in that area. The Michels crew applied epoxy at a thickness of 150-250 mils using plural component spray equipment.



RESULT:

The project was completed successfully. The coating successfully passed spark and pull testing. Several of the pull test results were over 1,500 psi (project specs required 250 psi minimum), with a clean concrete break rather than a separation of the coating and substrate. The pipes were back in service within a few days. Through the application of the Neopoxy NPR-5303, the life span of the large-diameter pipe was extended by approximately 50 years. 510-782-1290; www.neopoxy.com

Lining project successfully rehabilitates deteriorated manholes

Problem:

In 2020, a project was identified through a Florida-based electric authority's engineering department for seven severely deteriorated manholes in the area. The initial capital-improvements-funded project called for these manholes to be conventionally excavated and replaced with new structures. Unfortunately, this work would disrupt the local community for at least six months with heavy construction, bypass pumping and rerouting of residents around the construction site.



Solution:

Rather than the conventional dig-and-replace method, Florida-based contractor Engineered Spray Solutions concluded that the project was suitable for structural lining using Sprayroq's SprayWall at various thicknesses.

RESULT:

The clients accepted the proposal noting the tremendous cost savings and minimal disruption to the community. The project was completed on time, on budget and without a single neighborhood complaint. 205-957-0020; www.sprayroq.com ♦

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Aries Industries adds Colorado dealership

Aries Industries has strengthened its western U.S. market reach with the addition of a Colorado dealership with three locations. Faris Machinery specializes in new and used heavy equipment for municipalities and construction operations. The company provides sales, rentals, service and training from dealerships in Commerce City, Colorado Springs and Grand Junction.

Felling Trailers names Capobianco as regional sales manager

Felling Trailers has appointed Jim Capobianco as its northeastern regional sales manager. In his new role, Capobianco will be responsible for all sales development, activity and dealer support within Maine, New Hampshire, Vermont, New York, Rhode Island, Massachusetts, New Jersey, Maryland, Delaware, Connecticut, Pennsylvania and Washington, D.C. He will be taking over the Northeastern region once served by Mike Flynn, who retired in January 2023 after 22 years with the company.



Jim Capobianco

USG Water Solutions celebrating 60th anniversary

USG Water Solutions is celebrating its 60th anniversary in business. USG was founded in Madison, North Carolina, in 1963 as a regional painting and maintenance contractor specializing in the renovation of water storage tanks. Over the past 60 years, the company has grown into a provider of asset maintenance and rehabilitation solutions for the municipal water industry in the United States and has a staff of over 600.

Veolia North America releases annual Sustainability Report

Veolia North America recently released its annual Sustainability Report, featuring the results of the company's various programs and initiatives, showcasing the work they are doing across over 500 communities to save energy, reduce waste and preserve natural resources. The company also released a virtual, immersive version of the report, an online tool that brings visitors on a tour of their projects, allowing its work to come to life in an innovative and interactive way.

WEF honors Houston Flippin with lifetime achievement award

The Water Environment Federation has honored Brown and Caldwell Vice President Houston Flippin with its W. Wesley Eckenfelder Industrial Water Quality Lifetime Achievement Award. The award recognizes his 40-year career of enhancing the environment through the design, construction and optimization of industrial water and wastewater treatment facilities. Since joining Brown and Caldwell in 1984, he has evaluated and developed process design and operating guidelines for hundreds of treatment facilities encompassing food and beverage, chemical, pharmaceutical and nutrition, refinery and renewable fuels, mining and many more industries.



Houston Flippin

Terry Duperon receives highest Saginaw chamber honor

Terry Duperon, founder of Duperon Corp., has been named recipient of the 2023 Robert H. Albert Lifetime Community Service Award. The highest honor in the annual Saginaw (Michigan) County Chamber of Commerce Awards, the accolade recognizes individuals who have exhibited a lifetime of service to both the community and their profession. Duperon has been an integral part of the Saginaw business community as an inventor, entrepreneur, philanthropist and mentor for more than six decades. His first invention was born out of his garage in the 1970s, which led to the formal establishment of Duperon Corp. in 1985. The company has grown steadily over the course of its history, and currently employs more than 70.



Left: Mark Turpin, president of Duperon Corp., with award recipient Terry Duperon.

Colby Manwaring joins MentorAPM as board chairman

MentorAPM welcomed Colby Manwaring as its new chairman of the board. As chairman of MentorAPM's newly appointed five-member board, he will occupy a critical role in moving the company forward and expanding its footprint in the landscape of asset management for infrastructure and industry. His most recent roles include CEO of Innovyze, and vice president at Autodesk.



Colby Manwaring

Papadourakis retires, LANXESS names new CEO

President and Chief Executive Officer of LANXESS Antonis Papadourakis, has retired after eight years with the company. Frederique van Baarle, member of the board of management and labor director of LANXESS AG, has assumed the role of president and CEO for the company's Americas region. Van Baarle has held various management and leadership roles with the company since joining in 2011, and brings more than 20 years of global chemical industry experience to her new role. ♦



Antonis Papadourakis



Frederique van Baarle

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WORTH NOTING

PEOPLE/AWARDS

Karan Barnhill, stormwater coordinator for the city of Evansville, received the Excellence in Stormwater Management Award from the Indiana Association for Floodplain and Stormwater Management.

The city of High Springs received a \$700,000 grant through the Florida Small Cities Community Development Block Grant to conduct stormwater and drainage improvements. Allocated by the U.S. Department of Housing and Urban Development, FloridaCommerce administers Florida's Small Cities CDBG program.

The Georgia Tech team of Lucy Bricker, Makaela Edmonds, Isabella Hernandez and Olivia Verret took the top prize at the Water Environment Federation's Technical Exhibition and Conference international student design competition. The team's project, "Duluth Middle School Green Stormwater Infrastructure," was sponsored by Gwinnett County.

The city of Waukon received the Urban Stormwater Watershed Jurisdiction of the Year award from the Iowa Stormwater Education Partnership. The honor recognizes the city's completion of its Stormwater Quality Project, which will protect and improve the water quality of Indian Springs Pond and Paint Creek. ♦

CALENDAR

Feb. 13-16

National Association of Clean Water Agencies Winter Conference, Hilton Austin Hotel, Austin, Texas. Visit nacwa.org.

Feb. 25-28

International Erosion Control Association Annual Conference, Spokane Convention Center, Spokane, Washington. Visit ieca.org.

April 7-10

American Society of Civil Engineers Operation and Maintenance of Stormwater Control Measures Conference, DoubleTree by Hilton, Austin, Texas. Visit asce.org.

April 8-11

Center for Watershed Protection National Watershed and Stormwater Conference, InterContinental Kansas City At The Plaza, Missouri. Visit cwp.org.

April 9-12

Water Environment Federation Collection Systems and Stormwater Conference, Connecticut Convention Center, Hartford. Visit wef.org.

May 7-9

New York State Floodplain and Stormwater Managers Association, Queensbury Hotel, Glens Falls. Visit nyfloods.org.

May 15-17

International Erosion Control Association / United States Environmental Protection Agency Municipal Wet Weather Stormwater Conference, Auburn University, Alabama. Visit ieca.org.

May 8-10

Ohio Stormwater Conference, Kalahari Convention Center, Sandusky. Visit ohioswa.com.

June 23-27

Association of State Floodplain Managers Annual Conference, Salt Palace Convention Center, Salt Lake City. Visit floods.org.

Aug. 27-29

StormCon 2024, Grand Sierra Resort and Casino, Reno, Nevada. Visit stormcon.com.

Oct. 9-11

Southeast Stormwater Association Annual Conference, hotel TBA, Chattanooga, Tennessee. Visit seswa.org.

Oct. 21-23

California Stormwater Quality Association Annual Conference, hotel TBA, Sacramento, California. Visit casqa.org.

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



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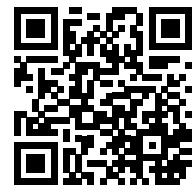

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