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Water Conservation Manager
Citrus County, Florida

CONSERVATION SPECIALISTS

Citrus County has taken an active
role in resource protection and
promoting wise water use

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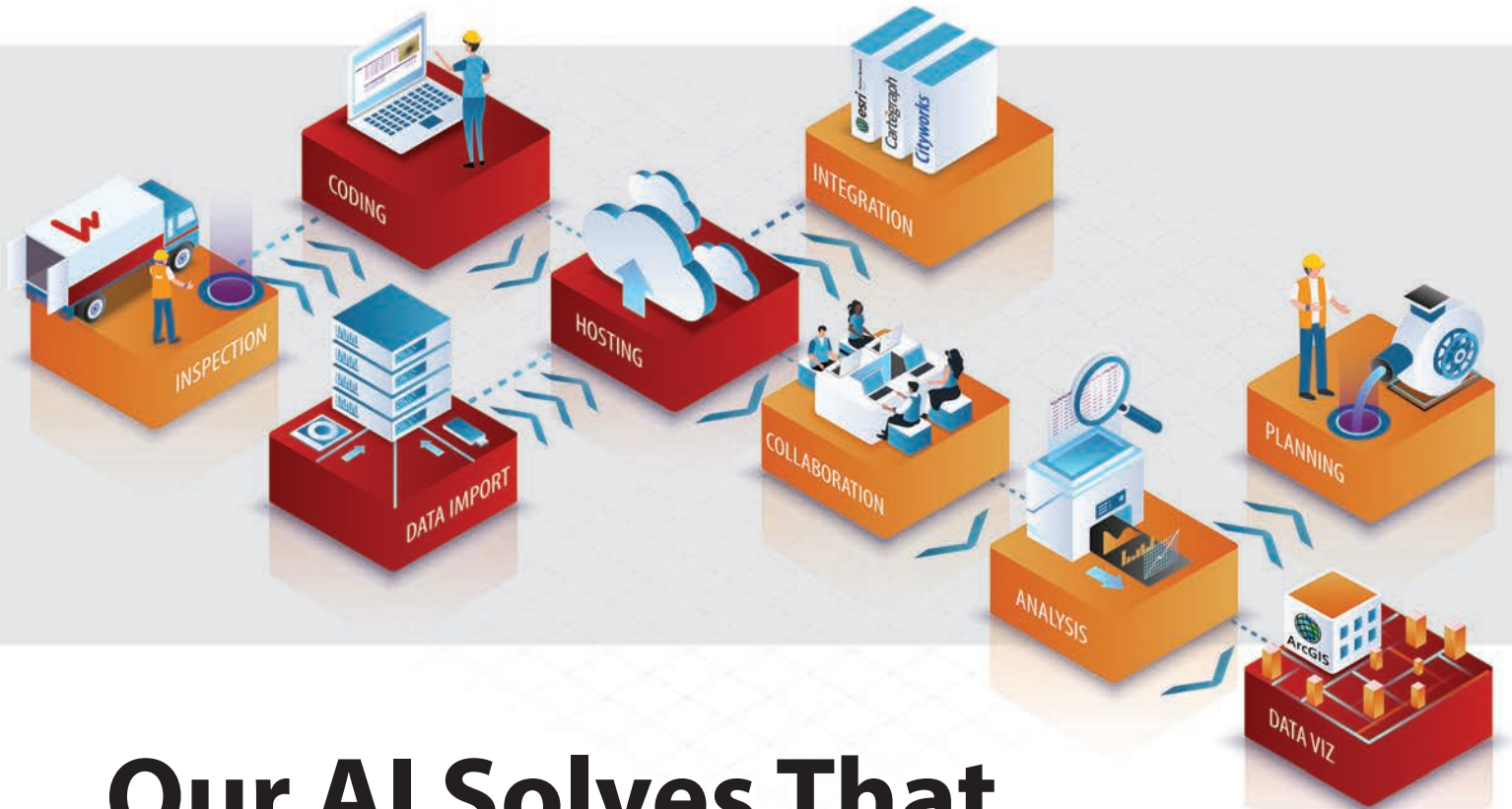


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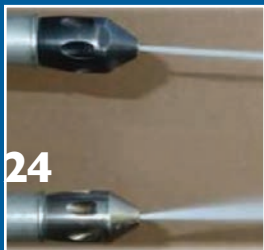
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ON THE COVER: Citrus County (Florida) Water Conservation Manager Debra Burden stands in front of colorful Three Sisters Springs, a complex of three separate springs that famously serve as a winter home for hundreds of manatees that take refuge in its constant 73-degree water. (Photography by Stephen J. Shaner)



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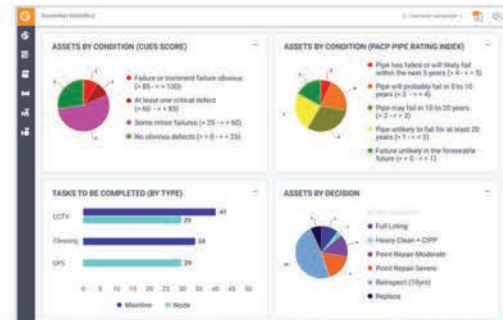


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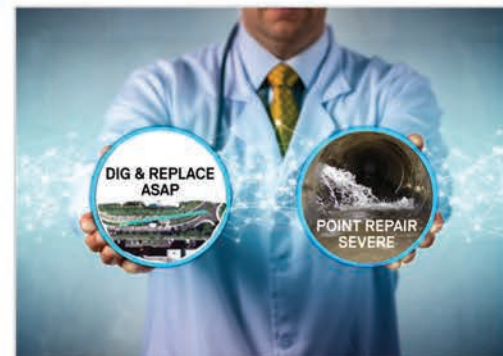


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Luke Laggis

WIPE MISTAKES AWAY

Talking, sharing knowledge and perspective, is good for the future of water

A conversation can go a long way. It could prevent a clog. It might make your systems stronger.

Sometimes I use this space to talk about industry issues. Sometimes I share personal stories. The sweet spot is where the two overlap. Such was the case in the November issue of *MSW*, where I talked about flushable wipes and shared a conversation with a friend who's also the superintendent of my hometown's water department.

During that conversation my friend commented that no flushable wipes are actually flushable. Feeling full of water/wastewater knowledge from my time with this magazine and countless conversations with people across the industry, I interjected to note that while most wipes aren't flushable, some certainly are. In the course of retelling the story in these pages I also noted

that I have a private septic system at my house so the flushability of wipes isn't a huge concern.

And that's where I was wrong. That column generated a response from an ecologist in New Hampshire whose husband is a town water and sewer commissioner and gets *MSW* delivered to their home. She brought to light some concerns I hadn't even considered.

First, wipes can cause problems in septic tanks. They don't break down any better in a tank than they do in a pipe. Second, and more important for this space, is the fact that tanks get pumped, and those contents still make their way to the local wastewater treatment plant. You're all aware of the problems wipes can cause there.

And while not quite the same, the use of general cleaning wipes has grown since the arrival of COVID-19, with many people taking extra steps to sanitize surfaces as well as self. For the most part, those aren't designed to be flushed, yet that's exactly what's happening and the problems are predictable and familiar.

Outreach here is critical. While some people simply don't care and will flush anything that fits down the toilet, plenty of people have no idea wipes are a problem and would change behaviors if they had the knowledge. Education is key.

As I said back in November, this is something that needs to be addressed. Include notes and reminders with customer bills. Spread the word through social accounts and any other way you interact with customers.

Explain that wipes are different materials made for different purposes and don't break down as fast as toilet paper. Or maybe even provide some guidance. There are wipes on the market that meet GD4 flushability standards, and even some that claim to break down faster than toilet paper. Regardless, make sure your customers know there are larger consequences to all those wipes that get flushed out into your wastewater systems.

Here's hoping you start seeing fewer problems in your systems.

Enjoy this month's issue. ♦

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

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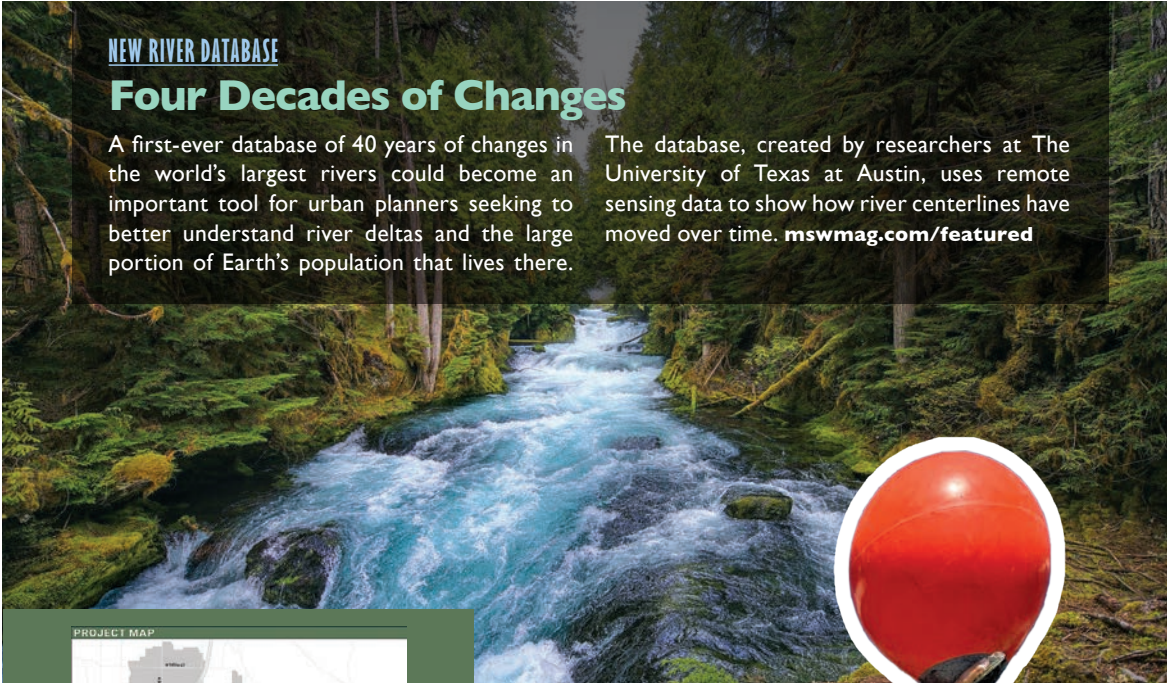
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NEW RIVER DATABASE

Four Decades of Changes

A first-ever database of 40 years of changes in the world's largest rivers could become an important tool for urban planners seeking to better understand river deltas and the large portion of Earth's population that lives there.

The database, created by researchers at The University of Texas at Austin, uses remote sensing data to show how river centerlines have moved over time. mswmag.com/featured



HAB STUDY

Toxins in National Parks

In an effort to address management needs related to harmful algal blooms, professional and trained citizen scientists are using innovative techniques to sample and monitor HABs in freshwater and marine environments across 18 U.S. national parks. The new suite of simple, low-cost sampling methods can analyze up to 32 freshwater and 25 marine algal toxins. mswmag.com/featured

OVERHEARD ONLINE

“If you’ve fallen out of the habit of holding regular one-on-one meetings with employees or if you’re not getting all you could from them, now is the time to take another look.”

— *When’s the Last Time You Scheduled a Meeting With Employees?*
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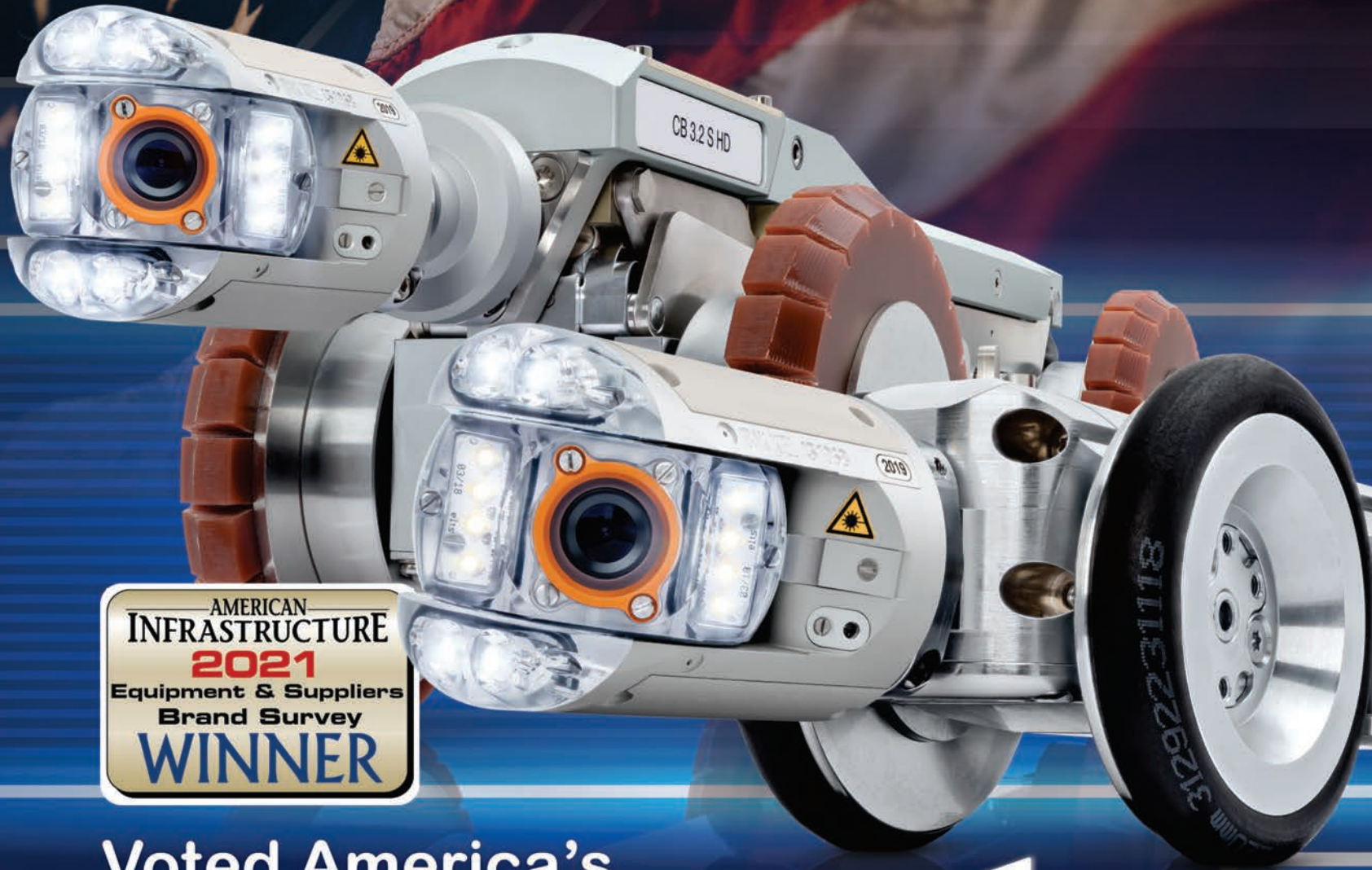
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I&I REMEDIATION

A Dual-Purpose Program

In an effort to explore I&I remediation as an alternative to expensive sewer upgrades, King County, Washington, is embarking on a dual-purpose public outreach and data collection program. The Thornton Creek Basin Sewer Study and Upgrade will ensure the 1.2-mile Thornton Creek sewer trunk is able to handle its flow during heavy rains and prevent overflows. mswmag.com/featured



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CONSERVATION SPECIALISTS

Citrus County has taken an active role in resource protection and promoting wise water use

By Giles Lambertson

Citrus County Water Conservation Manager Debra Burden and her team (from left) water conservation specialists Ed Bugbee, Tom McConnell, Reg West and Florida-Friendly Landscaping Program coordinator Steve Davis. The group is standing in the Florida-Friendly learning landscape garden that is used as a teaching tool to show people what plants are beneficial to their environment. (Photography by Stephen J. Shaner)



PROFILE:

**Citrus County
(Florida) Department
of Water Resources**

**WATER CONSERVATION
SECTION MANAGER:**

Debra Burden

**WATER RESOURCES
DEPARTMENT EMPLOYEES:**

90
**WATER CONSERVATION
EMPLOYEES:**
6

**CITRUS COUNTY
POPULATION:**

155,000

**SQUARE MILES
OF FRESH WATER:**

192

**NUMBER OF SPRINGS
IN COUNTY:**

Hundreds of small springs,
three “first magnitude”
(large) springs

WEBSITE:

www.citrusbocc.com/

Debra Burden is the idea person in the Water Conservation section of the Department of Water Resources in Citrus County, Florida, and the impact of her ideas and of the work of her water conservation team is real and measurable.

Tens of millions of gallons of water in the county is being saved every year through their efforts, thereby forestalling the time when water availability in the West-Central Florida coastal county will become a critical issue.

“We know we have enough water to meet our current demand and future demands for 20 years,” Burden says. “At the end of that 20-year period, we will need to look at alternative water supplies.”

Twenty years. That’s practically around the corner. The era of critical water usage in the county will arrive even sooner if Burden’s water conservation programs fail.

“We know if we can teach our children about conservation, as they grow up, they will teach their parents.”

Debra Burden

Persuading owners

Ironically, Citrus County has an abundance of water in and around it. No question about that. The Gulf of Mexico is to the west of the county, of course, but that’s saltwater. Inland, the county has 24 freshwater lakes, reputedly more than a hundred fishing spots including along two rivers, and hundreds of springs.

“We are surrounded by water,” Burden acknowledges. “We do have a lot of water here and that can be challenging to us. People say, ‘Conserve water? You have plenty of water.’”

The rest of the story is that the county also has plenty of people. Between 1960 and 2020, the population has grown from 9,000 to 19,000 (1970) to 93,000 (1990) to about 160,000 today. Needless to say, the water supply has not grown proportionally.

The water necessary to meet the needs of all these people is pumped from the Floridan aquifer that underlies the state. The aquifer is nearer the surface in Citrus



Water conservation specialist Reg West helps Citrus County, Florida, homeowner Cordula Spohr learn more about her irrigation system through the county’s Schedule a Specialist program. Spohr was provided with irrigation controller training, a zone-by-zone walk-through of the irrigation system to identify and flag issues and, finally, a map of her home’s zones and irrigation heads.

County and immediately surrounding counties on the upper Gulf side of the state, which is why so many springs freely bubble forth. Three of them are so-called first-magnitude springs, meaning that each one discharges at least 100 cubic feet of water per second.

This is the water-rich environment in which Burden and her staff labor to persuade property owners and commercial interests to moderate their water usage. It is not always an easy sale. While there is general support from a public aware of the precariousness of the longer-term water situation, not everyone buys into conservation.

“We receive a great deal of public support and positive feedback for our education efforts and programming,” says Burden. “There’s one in my email inbox right now. But we do, of course, also receive negative comments. You know, why are we regulating water use when there is a bottled water company in the county with a water permit?”

The conservation manager says she responds with both personal and professional perspective. “I often reply that I don’t throw trash out the window just because some others do. Conserving water is the right thing to do. We do have a large number of people who are concerned about our springs. The public education that we do connects water use to the health of our springs. It shows how what we do on our own property can impact the springs.”

In the classroom

Burden is a Florida native who moved to Citrus County more than two decades ago and began working with the county, including in parks and recreation. In 2011, Citrus County was put on official notice by

“On average, participants in the program are consuming 25 to 30% less water than before.”

Debra Burden

state and federal officials that its water management regime was failing to meet required conservation goals. County leaders responded by creating a water conservation manager position and Burden jumped at the chance to fill it.

“The job description was written for me. It has a lot of marketing and customer relations, and my degree is in public relations.” She heads a team of six people including a Florida-Friendly Landscaping coordinator and several water conservation specialists. Her responsibilities range from homeowner education to enforcement of one-day-a-week water restrictions.

Much of the work falls under the heading of education, though Burden doesn’t call herself an educator. “I think of myself as a program designer of education. I personally am not the one carrying out education in the field or in the classroom. I think I am more of a behind-the-curtains person.”

One of her education ideas involves elementary-age students and toilets. As

part of Fix-A-Leak Week, the children in seven schools go home and check to see if family toilets are running. In the sixth annual leak-check in 2021, more than a hundred toilets were examined by the kids, who identified leaks that, if corrected, would save more than 3,000 gallons of water each day.

“Yes, that was my idea,” Burden admits. “That was a fun one. We are blessed to have teachers of students in third through fifth grade who want to participate. The teachers say they have the funniest conversations with the kids about their toilet checks. We know if we can teach our children about conservation, as they grow up, they will teach their parents.”

Burden credits water conservation efforts in other parts of the district for helping her. “The southern region of the district has had water conservation programs for 20 or 30 years. We have benefited from them. We pick up all the successful programs that we know have saved water.”

Improving irrigation

Irrigation counseling is where the conservation effort is most beneficial in terms of water volume preserved, according to Burden. “It is our big water saver and I’m most excited about it.”

The Gulf side of Florida is a famously warm region of the country, so year-round irrigation of lawns and landscape plants is common. On the other hand, the county averaged 60 inches of rain per year over the last decade, so it is not an arid region. Yet rain or no rain, property owners like to see their irrigation nozzles pivoting and spraying just to, you know, be sure the grass isn’t hurting.

The conservation team is trying to change such thinking and to modify some bad habits. Partnering with Southwest Florida Water Management District and Withlacoochee Regional Water Supply Authority, the county five years ago initiated an irrigation check-up program. Focusing on high water-users, one facet of the program begins with installation of a WaterSense irrigation controller on a property owner’s system.

WaterSense is a label attached to fixtures developed by commercial firms that meet the EPA’s water efficiency and performance standards. After the county installs a labeled irrigation controller, it follows up with training by the conservation staff on how to use the device. A full irrigation system inspection is given, with tips on how to improve various functions.

After each property owner is taught how to examine a system to ensure it is functioning properly, the person is asked to regularly perform such inspections, at least quarterly. The Water Resources Department then tracks water usage at the prop-

(continued)



A broken or missing sprinkler head not only wastes a tremendous amount of water, it can also cause serious damage to a homeowner’s landscaping. Problems like this are flagged by the water conservation specialists and brought to the homeowner’s attention.

THE COST OF CONSERVATION

Conserving natural resources including water seems as natural as, well, nature. Yet it doesn’t occur naturally. It takes lots of priming to get water customers to think in terms of using H2O sparingly and wisely. It takes money, too.

Water-conscious utility departments like Citrus County (Florida) Utilities employ people whose job it is to persuade people to do the right thing. Conservation Manager Debra Burden heads a six-person water conservation staff for Citrus County, all of them devoted to educating residents about water usage and monitoring water usage.

The county annually budgets \$45,000 to fund its conservation program. That investment is matched by grant funding from Withlacoochee Regional Water Supply Authority. In the current year, the authority set aside \$140,000 for such support of local programs, but working closely with four counties, the dollars evaporate pretty quickly.

The Southwest Florida Water Management District also pitches in. The district is involved directly in county conservation work. It issues water use permits, for example, and has delegated authority to regulate how much water the county utility can provide customers, a limit imposed to guard against depletion of the Florida aquifer. It also monitors well drilling and management of surface water.

More to the point, the Southwest District provides half the funding for the county’s successful irrigation evaluation program. That involves installation of WaterSense controllers on irrigation systems and training of property owners on best water use practices. The program is deemed to be the largest component of the utility’s saving of water. Including the district’s contribution, the annual conservation budget in Citrus County totals about \$130,000.

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Water conservation specialist Tom McConnell places flags to mark potential issues with a homeowner's irrigation system.

“People who set up an irrigation system and forget about it are a huge barrier to water conservation.”

Debra Burden

erty for 12 months, comparing the results to the previous 12 months.

What is the department finding? Water savings. “On average, participants in the program are consuming 25 to 30% less water than before,” Burden says. The program mostly has focused on residential properties to date, with about 120 irrigation systems each year fitted with the WaterSense controllers and inspected. For the new year, the team is gearing up to focus on commercial irrigation systems.

“We found some of our customers struggled to make seasonal adjustments to the controller, overwatering at certain times of the year. A WaterSense controller can overcome that, turning off the irrigation after rain or reducing the amount of irrigating water being run through the system. Smart technology is the way of the future.”

She adds that conservation team members still go out to make sure property owners aren't watering the sidewalk and otherwise uselessly spraying water. “People who set up an irrigation system and forget about it are a huge barrier to water conservation.” A corollary county program sends specialists out to properties for a free walk-through of water systems inside and outside a

house and informs homeowners how to use water more efficiently.

Making headway

The various initiatives have garnered Citrus County Utilities three Partner of the Year awards from the EPA as well as three consecutive WaterSense Sustained Excellence Awards. These formally recognize that the county's various public education and active intervention activities are accomplishing significantly more than a drop in the bucket.

In fact, Burden says, “We are saving an estimated 70, 80, 90 million gallons of water each year. That's equivalent to easily serving one of our service areas for an entire month. When we talk about the 20-year time frame until we'll need alternative water sources, we factor in all these

savings. If we took them away, we would get to the end of our water supply much sooner.”

Still, Citrus County Utilities can't rest on its conservationist laurels. It has a full-time pipeline leak detection crew and has contracted with a satellite leak-finding company to ferret out leakage in its water lines. It also is closely monitoring the condition of its pipelines, which average about 30 years in the ground. The county also sends treated water from its treatment plant to a golf course for irrigation use and is upgrading the plant to increase the amount of reclaimed water it can distribute to other courses.

From all of this, the conservation manager concludes that the county is making headway in its efforts to protect the aquifer and use water resources efficiently.

“I really do think we are making progress. I look at our customers' water use. The number of them that are exceeding an ideal amount of usage is becoming less and less each year even though the size of our customer base is growing each year. So, that's a good sign.” ♦

Water conservation specialist McConnell shows homeowner Robert Krish how to use the app that controls the WaterSense-labeled Rachio irrigation controller installed by the county.



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* Data provided by the ASCE Manuals and Reports on Engineering Practice No. 92, "Manhole Inspection and Rehabilitation", 2008 Update.



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SNIFFING OUT LEAKS

Central Arkansas Water's favorite pet finds water system leaks and brings awareness to the issue

By Steve Lund

Officials at Central Arkansas Water decided in 2019 to get serious about leak detection. So they bought a dog.

"Dogs can identify lots of things," says Douglas Shackelford, director of public affairs and communications. "They are trained to sniff and identify something, whether it's drugs or explosives or anything they can train on. Trainers can take that ability and instead of the dog sniffing out explosive material or gunpowder, they're training on chlorine."

Central Arkansas Water serves about 500,000 people in and around Little Rock, pumping about 68 mgd through nearly 2,800 miles of pipes. Vessel, a Labrador retriever mix, and handler Tim Preator investigate leaks reported to the utility and even find leaks that haven't surfaced.



Is it stormwater or treated water? Vessel, with handler Tim Preator, can tell the difference.

BETTER MOUSETRAPS

METHOD:

Canine Leak Detection

APPLICATION:

The dog sniffs out difference in chlorinated water

BENEFITS:

Her nose is very sensitive to chlorine, she can find leaks without digging

USER:

Little Rock, Arkansas

Canine advantages

Vessel has a couple of advantages over other leak detection methods, even some high-tech methods such as using satellite imagery. Her nose can distinguish between treated and untreated water. Is that puddle along the road from a water main leak? Or is it just stormwater? Vessel can tell, because she's looking for the scent of chlorine.

"She'll work in a pattern, nose to the ground, trying to find water," Shackelford says. "Once she finds it, she'll sit and look back at her handler. He'll say, 'What did you find?' If she finds the scent of chlorine, she'll speak back; she'll bark." She is then rewarded with her favorite object, a tennis ball that Preator always keeps in his pocket.

"Her nose is so sensitive that she can find a difference in chlorine concentration."

Douglas Shackelford

Every time she discovers chlorine, whether it's a main leak, a training exercise or a demonstration for a school group, Vessel gets to run after the ball.

Her intense desire to play ball is what made her a washout as a service dog. "Vessel was going to be a service dog for someone with PTSD, or perhaps a Seeing Eye dog," Shackelford

says. "But she had a high ball drive: when they showed her the ball, she would forget her training and go for the ball."

Highly accurate

When Central Arkansas Water reached out about training a leak-sniffing dog, Vessel's trainer thought she would be a good candidate. Training began with canisters of chlorine, large ones at first but gradually smaller, and Vessel became extremely sensitive to the scent.

"Her nose is so sensitive that she can find a difference in chlorine concentration," Shackelford says. "There could be a large pool of water, but because she is so sensitive, she can pinpoint the higher concentration, which is probably closer to the leak. She can pinpoint the leak even more than a satellite could. That could enable us to dig once and repair the leak on the spot."

Before obtaining Vessel, the utility had tried many ways to find leaks. "We have done just about everything there is," says Shackelford. "Unaccounted-for water is a big deal, and trying to find leaks is a struggle, especially if they don't surface. Vessel can find leaks without digging. She can smell a little bit under the soil and tell the difference between rainwater or groundwater and treated drinking water." On her first 100 work orders, she was 97% accurate.

Public relations asset

Vessel's other advantage over competing methods is her popularity with



Vessel with her favorite object, a green tennis ball.

have investigated using dogs to detect leaks. The company that trained Vessel, On the Nose Detection Dogs in Roland, Arkansas, now advertises that it trains leak-detecting dogs.

“Now there are actually several,” Shackelford says. “Those companies reached out to us. I think it’s going to become more of an industry standard to use dogs to identify and pinpoint leaks. The return on investment has been very high, not only with the success of finding leaks, but also the exposure for the utility. ♦

customers. “Vessel is an ambassador for water here in Central Arkansas,” Shackelford says. “The community sees her as a celebrity. They can’t wait to get their picture taken with her when they see her.

“She brings an awareness to the community that you don’t always get with a spokesperson like me going on the morning news show talking about sprinkler usage or watershed protection. Everybody wants to see Vessel, and all of a sudden, they are thinking about drinking water in general, and that’s a great benefit to us. She’s very much a PR person.”

Vessel and her handler have their own truck with the utility’s logo on it; plans call for having the truck wrapped with a big image of Vessel.

Preator is Vessel’s second handler; the first was Stephen Sullivan, who was working in the distribution department when the utility obtained the dog. He had experience training hunting dogs; he worked with Vessel successfully for more than a year but then was promoted to a different position. Preator answered the utility’s ad for a new handler.

“Tim came to us from the Pulaski County Sheriff’s Department, where he was a canine officer,” Shackelford says. “We had to teach him water, but he already had a great understanding about how to handle service dogs.” Vessel lives with Preator and his family.

When there are no work orders for leaks to be investigated, Preator and Vessel sometimes walk easements just to see what she finds. “If we suspect there is a leak in a pressure zone, we’ll send her out to walk easements,” Shackelford says. “It’s a chance for her to find leaks that we don’t know exist. She’s pretty successful. They can be very small, minute leaks. She’s not triggering on the amount of water; it’s the chlorine.”


First but not only

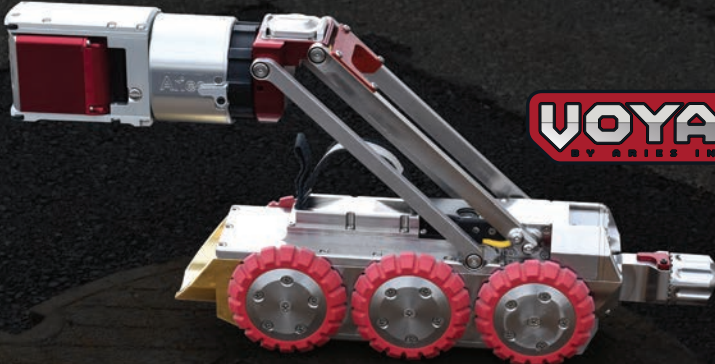
CEO Tad Bohannon, while on an international studies program in Great Britain, heard of a dog in Scotland that had been trained to detect leaks. “He came into my office and said, ‘Hey, I think we need to get a dog,’” recalls Shackelford.

The staff began searching for a dog and someone to train it. “Only then did we realize that this dog would be the first of its kind in North America,” says Shackelford.

Since Vessel has been so successful, other utilities

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HIT THE GROUND RUNNING

Good onboarding programs favor productivity over forms and formalities

By Ken Wysocky

Studies show that on average, about one-third of new employees quit their jobs within the first six months after getting hired. That's really bad news for employers contending with the double-whammy of a shrinking labor pool and plentiful jobs, not to mention the high cost of training employees that leave before providing a return on that investment.

With these factors in mind, it's easy to understand why experts say that effective onboarding programs that make employees feel engaged and energized from the get-go are more important than ever.

John Sullivan, a professor of management at San Francisco State University in San Francisco, suggests using a strategic, data-driven approach to onboarding that capitalizes on new employees' enthusiasm instead of stifling it with mind-numbing meetings and meet-and-greets.

"People come in excited about their new job and what they get is death-by-form — read this manual, fill out this form," says Sullivan, an author, speaker and business consultant who's helped dozens of companies — including utilities — develop effective onboarding programs. "By the end of that first day, all their excitement is gone."

In addition, poor onboarding raises other risks, says Sullivan, the author of *The Onboarding & Orientation Toolkit: Tools That Get New Employees and Transfers Productive Faster*. It puts new hires in a position to unknowingly damage customer relations or anger colleagues who believe they're carrying too much of the load when new hires don't get up to speed fast.

Positioned to succeed

The main priority of any onboarding program is simple: Put employees in a position to maximize their production as quickly as possible.

"Learning the rules is important, too," Sullivan says. "But if you hired Tiger Woods to join your golf team, the first thing you'd want him to do is play, not hold off for a few days and attend meetings."

The second-most important goal is employee retention. That can be achieved by assigning new employees a "peer buddy;" holding "get-to-know-you" events that hasten the networking process; providing them with answers to frequently asked questions, developed by surveying previous new hires; showing them possible career paths within the organization; and clearly spelling out goals and expectations, Sullivan says.

In addition, a new hire's manager should be present on the first day and consistently offer them attention, encouragement and training.

"Managers should own the onboarding process," he says.

In the end, onboarding programs should be systematically evaluated. For example, quiz managers about why certain employees become productive faster and use the findings to establish better onboarding protocols. Also ask new hires what worked best during onboarding — and what didn't work, too.

"The key questions are what helped them be productive faster and what prevented them producing more earlier," Sullivan notes. "Good data comes from real people."

Get at it quickly

Jeff Haden, a noted keynote speaker, writer and business adviser, suggests a results-oriented approach to onboarding in which newbies hit the ground running instead of the usual bevy of formal lunches and meet-and-greet sessions.

"Everyone is rightly concerned about inclusion, diversity and making people feel comfortable and part of a team," says Haden. "That's all very positive."

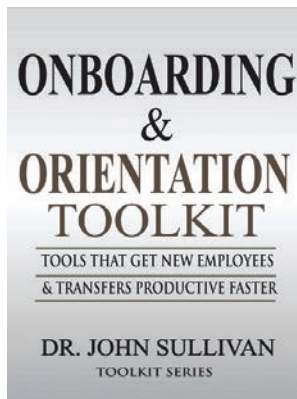
"But I think things have shifted too far to that side," he continues. "You're hired to do a job. And as a new employee, you're a little nervous about getting along with people, but a lot more nervous about doing the actual job."

Sure, there's still a place for making introductions on new employees' behalf. But Haden prefers less emphasis on relationship-building, which will happen organically over time, and more on becoming a contributing employee as fast as possible. There's a narrow window of time to make a strong, lasting impression on new hires, so managers should send a message that they're working for a performance-based organization that values results.

Moreover, giving new employees a chance to succeed right away makes them feel better about themselves. It also enables managers to more quickly determine if employees have the skills to succeed.

Provide immediate feedback

Another common managerial mistake is not letting new employees know when they make mistakes, for fear of making an already anxious rookie even more nervous, damaging their confidence or breaking their spirit.



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.

Nonsense, Haden says.

“If it’s important enough to do, it’s important enough to do it right. Step in and in a tactful, constructive and positive way, explain the right way to do something.

“If you want to create a performance culture, you have to actively build one,” he adds. “You can’t step back and just hope that somehow, someone will get there.”

The opposite also is true. Haden doesn’t believe that managers should encourage new employees to critique processes and procedures until they’ve been on the job for a significant period of time. As he puts it, employees shouldn’t try to reinvent the wheel until they fully understand how the wheel works.

Preboarding programs

Other workplaces also employ pre-onboarding — or preboarding — programs, which are aimed at easing the new hire’s equivalent of buyer’s remorse during those weeks between accepting a job and actually starting to work. Radio silence from an employer during that period can promote second-guessing that can quickly squelch a new hire’s sense of excitement and enthusiasm.

In simplest terms, preboarding fill that time gap with activities and events aimed at quelling those inevitable nagging doubts, workplace experts say.

Preboarding can take many forms. For starters, consider sending out an introductory company-wide email to announcing the new hire. Managers also could send a personal email, encouraging new hires to contact them if any questions arise.

Managers also can ease first-day jitters by providing information about the myriad of nerve-racking details that most new employees want to know before they arrive — things such as parking and transportation options, what time work starts and ends, workspace and restroom locations, any dress code requirements, places to eat lunch and any documents they’ll need to bring.

Provide advance intel

Managers also should provide a detailed job description and summary of expectations, a company and department organizational chart (including photos of people, if possible), a workplace map and a summary of the company’s culture, mission and short- and long-term goals.

Managers also might want to invite new hires to come to work for a tour or have lunch with members of their new team. And if incoming employees are relocating, managers could also offer to help with apartment- or house-hunting. They also could assign someone from the new hire’s team to serve as a local ambassador to help them acclimate to their new surroundings.

To help new employees quickly get up to speed on their first day at work, think about sending paperwork ahead of time; filling out forms for hours on the first day at work is a total buzzkill.

One more thing: Don’t forget to monitor your pre-boarding program’s effectiveness by having new employees critique it. A few weeks after they start, sit down and ask them about their experience and if there’s anything that could’ve made it better.

While there are many other things companies can do to make preboarding a meaningful experience, keep in mind that anything is better than the silent treatment after job acceptance. Think about what would make *you* feel welcome and enthused — what would help validate your decision to accept a job and get *you* excited to hit the ground running. ♦

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NAME:
Christoph Lendi

JOB TITLE:
Owner and president

YEARS IN THE INDUSTRY:
11

ENGINEERED TO CLEAN

Enz USA designs and produces sophisticated nozzles for every application

By Kim Peterson

The sewer cleaning industry has changed significantly over the past 35 years, but one constant has been the innovative nozzle solutions coming out of Swiss company Enz. The U.S. division of the company opened in 1996 and has been delivering quality, high-performance nozzles stateside since.

Its first rotating nozzle was produced in 1998, and this year Enz will debut a camera-equipped eNozzle that records as it cleans pipe and sends video straight to your phone. Enz strives to provide a nozzle for every application, no matter the size of the pipe or the type of debris.

Municipal Sewer & Water recently spoke with Christoph Lendi, owner and president of Enz USA, about the company's wide array of nozzles, select-

ing the best nozzle for the job, and what's to come for the pipe cleaning industry.

MSW: Tell us a little about the history of Enz USA.

Lendi: The Enz company was established in 1985 by Albert Enz in Switzerland. Albert was a visionary and saw a need and opportunity to bring his product to the U.S. Enz USA was established 25 years ago when it opened on Feb. 2, 1996, in Schaumburg, Illinois.

Enz USA developed a successful dealer network in North America and continues to provide excellent products, delivery and customer service. In 2006, Enz USA expanded and moved to Aurora, Illinois. In 2012, Albert

Enz sold the company to me. In 2018, Enz USA invested further in the site in Aurora and doubled the location's footprint. In addition to having a strong focus on the sewer nozzle line, we also expanded our industrial nozzle portfolio. Our next move will be to introduce different camera nozzles to the market.

MSW: What differentiates Enz nozzles from the competition? What sort of needs do they address?

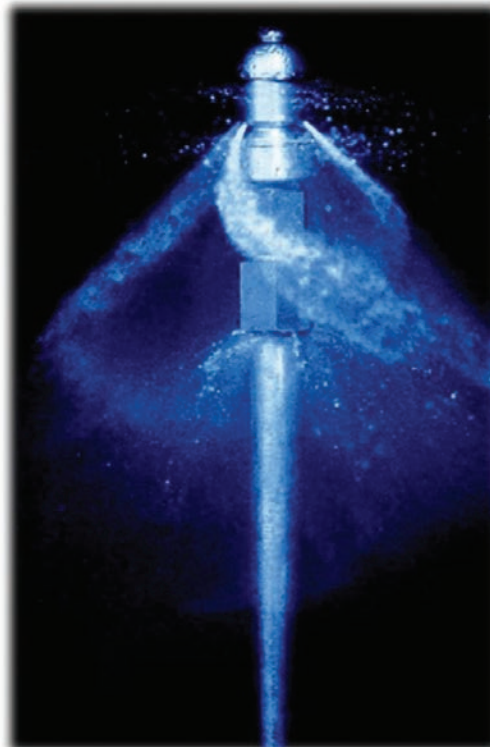
Lendi: Enz nozzles don't just spray water; they perform a deep clean. They transport debris efficiently out of the pipe with the correct balance between pressure and flow. Enz has expert technology and unique engineering styles that make us successful. Our rotating nozzles have controlled rotation with our patented Jet-Max inserts that can be used with recycled water.

Enz has a nozzle for all sorts of different applications for cleaning sewers and pipes. Our sewer systems are not sealed well so all types of debris can be found in the pipes. Loose debris, grease, roots and even concrete can find their way into them.

• Controlled constant rotation



• Too fast rotation





Products like those in the KBR line provide great value for the money while working with self-regulating accelerating and braking water jets. Higher-performance product lines, such as the Bulldog, work with an inductive magnet. The more you accelerate with water, the more braking the magnet provides. If rotation is not controlled, the nozzle will spin too fast, which will cause water to bend around the nozzle. This results in ineffective cleaning and possible damage to the nozzle.

MSW: What are some recommendations for customers shopping for nozzles?

Lendi: Enz has a solution for every problem. Our nozzles are designed to clean pipes, not damage them.

If you want a multipurpose nozzle that can cut through roots and remove grease, then we recommend our Bulldog nozzle. The Bulldog is like our Grenade Bomb in the back but with a spinner in the head and an unplucker in the front. With this versatile nozzle, you can clear anything from lots of debris to grease or even roots as thick as your finger. The Bulldog is a controlled rotating nozzle with a magnetic braking system.

If you have a large-diameter pipe to clean with a lot of debris, we recommend our Bulldozer nozzle. The Bulldozer has enormous flushing capacity, a compact design and excellent gliding ability.

If you want to clean a very large-diameter pipe, we recommend the Propeller nozzle (P360). Our easy-to-adjust skids can be adapted to clean egg-shaped or oval pipe profiles.

If you have heavy concrete or grout to remove, we recommend our Recycling Milling Cutter (IMC). It features low maintenance, easy handling, and superior performance compared to other cutters.

If you have very large roots that need removing, we recommend our line of chain cutters. The chain scrapers not only remove the toughest roots, they also remove incrustations, hardened grease and mineral deposits. You can install a diamond crown cutter on some of our scrapers to cut protruding taps.

Customers shopping for nozzles need to consider several things:

- What size pipe will you be cleaning?
- What kind of debris will you be removing?
- What is the gpm, psi and hose size you will be working with?

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»12 gpm @ 3000 psi
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THE SUPPLY SIDE



MSW: How do you see the sewer cleaning industry evolving?

Lendi: Several things come to mind. Pipe relining is an ever more common practice these days. Relining a pipe reduces the inner diameter of the pipe by up to 1/2 inch. Nozzles will need to adapt to new pipe materials and dimensions.

Recycled water trucks are making a debut in the U.S. to increase productivity. The nozzle technology will have to be able handle recycled water.

And digitization will pick up even more speed in the coming years. Different camera designs will be available on the market that will increase the efficiency and the quality of cleaning. For example, if you can clean and record at the same time, you can reduce operational costs and also increase the quality of cleaning.

MSW: What's new for Enz and what can customers expect out of Enz in the future?

Lendi: We recently introduced our first camera nozzle that can clean with rotation and record simultaneously using your smartphone or a tablet, while filing the videos in the cloud.

The new eNozzles expand our product portfolio to a new dimension for pipes greater than or equal to 6 inches in diameter. We also recently launched a camera nozzle with live view for pipes less than 6 inches in diameter.

Features of the eNozzles include:

- Sewer and pipe inspection with all-around cleaning
- Wireless recording for pre-inspection and quality control
- Integrated data management with the Enz cloud
- Visual cleaning control
- See and find every manhole on a map, including Google Maps, with geo-referenced videos

Our customers can continue to expect expert technology, constant innovation, and production of the highest quality products.

MSW: What do you want your customers to think of when they hear the name Enz USA?

Lendi: That Enz is the place to call if you need advice on sewer cleaning. We have a highly knowledgeable and experienced staff that cares about providing excellent customer service. Enz is synonymous with the highest quality and the most cutting-edge technology on offer when it comes to pipe cleaning.

Give the Enz nozzle team a chance to prove themselves. You won't regret it. ♦

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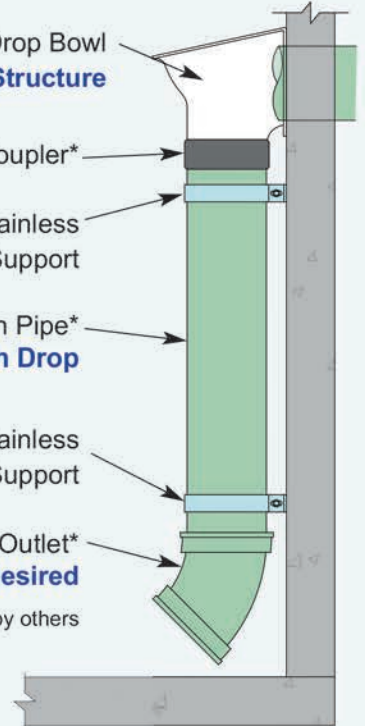
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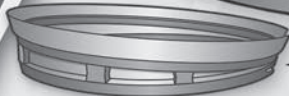
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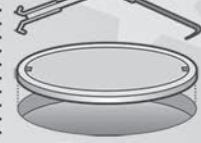
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Sheila Joy is executive director of NASSCO. She can be reached at director@nassco.org.

PFAS AND PIPE REHAB

Common chemicals are not found in CIPP resins or tubes

By Sheila Joy

By now most of us have heard the term PFAS, but there is still some mystery surrounding these substances, so NASSCO Technical Advisory Council Member Kaleel Rahaim provided an explanation of what PFAS are, why there is so much buzz surrounding them, and what one needs to know about PFAS in cured-in-place pipe resin formulations.

PFAS is the acronym for a diverse group of human-made per- and poly-fluoroalkyl substances. According to the U.S. Food and Drug Administration, PFAS have been used since the 1940s because of their resistance to grease, water, oil and heat. The special properties of the chemicals make them useful in a vast array of commercial and household products: Teflon pots and pans, stain-proof furniture and carpeting, waterproof clothing and outdoor gear, and more. The concern with PFAS materials is their bioaccumulative effects when found in water.

Resins

Polyester, vinyl ester and epoxy resins are produced for use as the thermoset resins in CIPP applications. CIPP is the process of renovating deteriorated underground pipes such as sewer pipes, stormwater pipes, culverts, drinking water pipes and industrial pipes.

Polyester resins are manufactured by a process called condensation polymerization. Dibasic acids are reacted with glycols to form an alkyd. This alkyd is dissolved in a reactive diluent such as styrene monomer. When this mixture is provided with an initiator that forms free radicals, a polymerization process begins that transforms the liquid product to a solid thermoset plastic. Chemical structures for these components are shown as follows:

Other components in smaller quantities include inhibitors, promoters, fillers, viscosity modifiers and initiators. These components, except for fillers, are generally found in levels of 1% by weight or below.

Vinyl ester resins are resins produced by the esterification of an epoxy resin and methacrylic acid or acrylic acid. As with polyester resins, there

are no PFAS compounds in any raw material used in the production of a vinyl ester resin.

Epoxy resins are produced with an epichlorohydrin and bisphenol-A, or BPA. Again, there are no PFAS in any component used or as a reaction product in the production of epoxy resins.

For PFAS materials to be present in CIPP resins, they must either enter the process as a component in one of the ingredients or be created by reaction during the process. For them to be created during the process, fluorine must be present in a component used.

None of the components listed in the creation of a thermoset polyester, vinyl ester or epoxy resin contain fluorinated compounds or free fluorine. These resins are PFAS-free.

Dry Tube

Several different materials are used to manufacture CIPP heat-cured dry tubes. These typically include a thermoplastic coating, polyester felt fibers, glass fibers, pigments and/or thread. Tubes for various markets and uses may include all of these materials, some of these materials or various combinations. None of these commonly used materials in CIPP dry tubes have been found to contain PFAS.

The finished CIPP product is a combination of resin and a dry tube. As discussed, presently neither the resin nor the dry tube contains PFAS materials. Thus, when installing or using heat-cured CIPP manufactured with polyester, vinyl ester or epoxy resin and a dry tube, there is no need to be concerned with PFAS. As the industry innovates with the introduction of new resin and dry tube combinations, PFAS impact on water quality and treatability must be considered. This mindfulness must extend beyond the CIPP industry to any rehabilitation solution that may include PFAS compounds in its formulation. ♦

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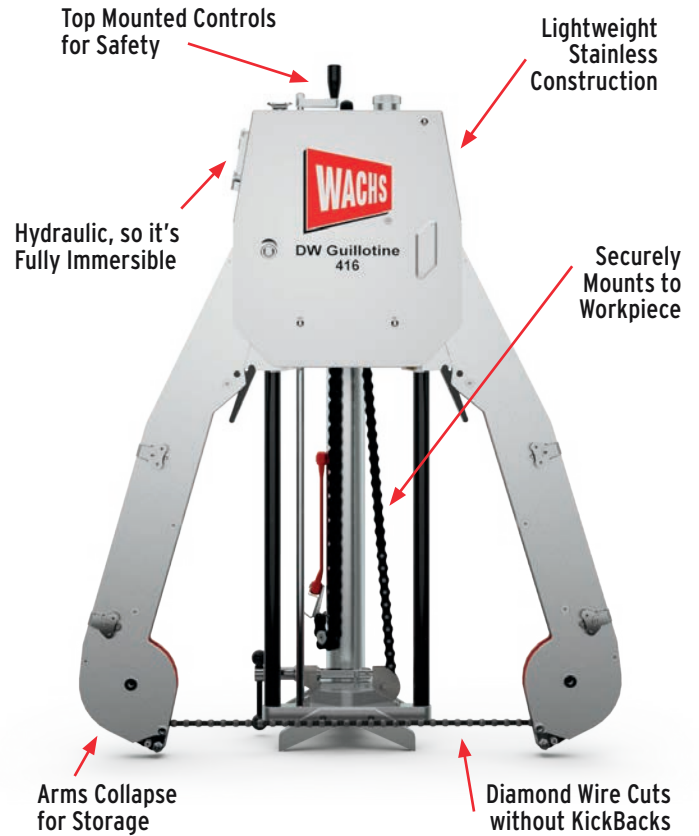
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Product Spotlight

Inline drain designed for easy installation, long-term performance

By Craig Mandli

Stormwater runoff is commonly one of the biggest causes of excessive inflow and infiltration issues. To combat that issue, Advanced Drainage Systems has released the Nyloplast 12-inch universal inline drain solution designed for contractors seeking a durable and water-tight pipe fitting for stormwater inlets.

Common applications include commercial settings, academic institutions, sports and turf fields, big box retail and grocery, multi-family and mixed-use development projects, warehouses and large manufacturing plants. The product, which easily connects to round, dome and square grates of various designs, comes standard with a 6-inch hole designed to match the grate inlet capacity and allowing the end user to install without any additional effort. The product can be easily adjusted on site and connects with all commonly used types of plastic pipes up to 12-inch diameter. Brian King, executive vice president of product management, marketing and sustainability, Advanced Drainage Systems, notes that the drain fitting shouldn't be complicated to install and maintain.

"It became quickly apparent in our discussions with contractors and engineers that a gap existed for a universal inline drain product that was readily available, easy to install and reliable beyond a handful of years," says King. "We are pleased to meet the market need with a



Nyloplast solution delivering an easy, clean and speedy installation experience that can accelerate a project timeline and preclude additional cost associated with delays and repairs."

The lightweight product uses injection molded consistency to enhance performance and life cycle. It has 100-year service life, maintains an H20 load rating, provides a water-tight connection and features a sloped bottom to promote positive drainage flow. Installation doesn't require use of grout or long curing times. An oscillating saw is recommended for coring of the 6-inch hole to either 8 or 10 inches when connecting to larger inlet grates. Advanced Drainage Systems provides various levels of training and continuous education opportunities for contractors using the Nyloplast universal inline drain, and provides local product specialists on site as necessary to ensure each project runs smoothly.

"This inline drain provides distributors with a universal solution that brings their customers project flexibility and reliable performance for stormwater management," King says. "The product's versatility reduces SKUs while advancing distributors' value to contractors seeking a quality and quick, hassle-free inlet connection for same-day pickup." **800-821-6710; www.adspipe.com**

ABB AquaMaster4 mobile comms flowmeter



ABB's AquaMaster4 mobile comms flowmeter is a wireless solution for continuous flow measurement, the logging of accurate data and communication of information. With its connectivity on 4G-LTE and NB-IoT networks, the electromagnetic flowmeter enables 60% lower power consumption, identifying leaks 10 times faster than the market standard. With bidirectional connectivity, the

AquaMaster4 provides near-real-time data used for intelligent water management. Operators can be hundreds of miles away and read values from the device remotely, giving them access to manage the device and their operations wherever they are located and at any time. Historical logged values of pressure, flow rate, alarms, battery life and the activity record can also be retrieved remotely. **800-435-7365; www.abb.com**

Vermeer MX300D diesel-powered mixing system



The Vermeer MX300 mix system is now available in a diesel-powered model, the MX300D. The mixing system is equipped with a Caterpillar 3-cylinder 24.7 hp diesel engine to power two pumps for a two-tank mixing system. This design delivers a constant supply of fluid to the drill

by moving fluids between tanks. After one tank is empty, HDD crews can begin mixing to replenish the fluid supply without impacting fluid pressure to the drill. The MX300D uses a single hopper and venturi and is paired with narrow rectangular tanks that allow many customizable mounting configurations. The mixing system's compact footprint and ability to support two tanks with one engine give crews more room on the truck or trailer to carry mixing additives to the job. **800-837-6337; www.vermeer.com** ♦

SPECIAL REPORT

Patterson Mfg. davit cranes



New davit cranes are available from corrosive environment and safety experts Patterson Mfg. Give your operations a lift with models in 1/2- and 1-ton capacities. The cranes exhibit the company's hallmark safety, simplicity and durability, with key features such as a reliable brake with

long life and readily available parts, a hot-dipped galvanized finish and no plastic sheaves or pulleys. They put safety and simplicity within your reach with a low maintenance, easy-to-assemble design that is made in the USA. For over 160 years, Patterson has been a trusted supplier of winches, rigging, fittings and custom products for lifting applications in the marine,

construction and mining markets. These davit cranes continue to deliver the company's promise of helping businesses run safer, easier and faster. Find out how our team and products can improve employee safety and positively impact your bottom line. 800-322-2018; www.pattersonmfg.com/davit-cranes

SPECIAL REPORT

OZ Lifting Products CompOZite davit crane



OZ Lifting Products' patented CompOZite davit crane is made of advanced composite materials making it 40% lighter than equivalent capacity steel davits. With a total weight of only 83 pounds for the boom, mast and winch combined, a single crane is commonly moved to

multiple base locations throughout a treatment plant. A ratchet screw jack allows the user to adjust the boom from horizontal to 45 degrees while under load and the 360-degree rotation of the crane allows a full range of motion. Smart-latch technology at the boom/mast means no tools are required for assembly. A zinc-plated finish on all non-composite parts provides added corrosion protection. AC and DC electric winches are optional or a manual winch comes standard with a drill drive adapter. The cranes are made in the U.S. and each one is individually tested and certified at 125%. 800-749-1064; www.ozliftingproducts.com



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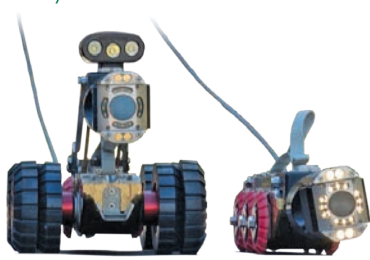
MAINLINE TV INSPECTION AND LOCATION

By Craig Mandli

Crawler Cameras

Aries Industries Mobile Pathfinder System

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



Envirosight ROVER X

The **ROVER X** from **Envirosight** lets an operator control inspections, view and record digital video, identify sources of I&I, log observations, generate reports and link directly to asset management software. All these capabilities are packed into a simple three-piece layout, with no CCU or other components to clutter the workspace. Twelve wheel options — plus camera lift, carriage and illumination accessories — mean it transforms in seconds to inspect lines from 4 to 96 inches. It can identify illicit connections, roots, cracks and corrosion with 145-degree tilt, 12X digital zoom and add-on side-scanning, laser profiling and lateral launch. Its six-wheel drive with proportional steering navigates past obstacles, and overlapping wheels climb offsets with ease. Powerful motors and a geared drivetrain maximize travel range. It is built on an expandable digital backbone, and future capabilities are limitless, as its firmware updates automatically to the latest features. **866-838-3763; www.envirosight.com**



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Electro Scan's ES- 620 Sewer Probe uses Focused Electrode Leak Location to unambiguously locate and measure all potential leaks in gpm. These

include bad joints, cracks, holes, fractures, bad service reconnections and poorly cured liners. FELL uses a high-frequency low-voltage electrical signal to inspect the entirety of the pipe wall. A watertight pipe does not allow electricity to escape or “leak” from a piping system unless there is an opening in the pipe wall. The larger the opening, the greater the electric current, meaning a larger water leak, as described in ASTM F2550. The system provides reports and data within minutes of scan completion and is available as a standalone system or as an addition to an existing CCTV system, for pipes 6 inches and above. **916-779-0660; www.electroscan.com**



Hermann Sewerin GmbH SeCorrPhon AC 200

The **SeCorrPhon AC 200** from **Hermann Sewerin GmbH** combines the characteristics of a correlator with acoustic water leak detection, offering prelocation, pinpointing and correlation in one single system. It is based on the tried and tested housing and hardware concept of the AQUAPHON A 200 by Sewerin. Each is ideal for leak detection across all sections, materials, diameters and lengths of pipelines. Numerous additional functions are also available for complex location scenarios. **888-592-9916; www.sewerin.com**



Subsite Electronics UtiliGuard 2

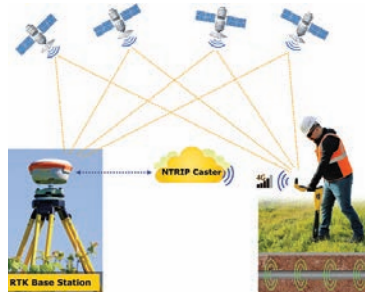
The **UtiliGuard 2** from **Subsite Electronics** provides locate crews with integrated data capture, GPS positioning and an intuitive user interface to help operators improve work quality and maximize locate awareness. Operators get an in-depth understanding of locating activity by documenting locate accuracy and operations performance for more consistent results on job sites. The user interface offers simplified graphics that are easy and fast to interpret. Operators will notice an obvious change in screen layout when directly over a utility locate, providing positive confir-



mation. These graphics deliver increased confidence, locate consistency and operational performance. The data automatically captured can be used by operators to quickly prove or track performance, compare with benchmarks and provide actionable outcomes to help increase quality and productivity while reducing cable strikes. In addition to data-logging capabilities, it is equipped with integrated GPS positioning, enabling crews to improve activity reporting. **800-846-2713; www.subsite.com**

Vivax-Metrotech vLoc3 RTK-Pro

The **vLoc3 RTK-Pro** receiver from **Vivax-Metrotech** includes real-time kinematic GNSS accuracy. Using the internal cellular module with 4G LTE capabilities, the operator can connect to a NTRIP RTK caster that provides RTCM 3 corrections. By using these corrections, the operator can collect both utility location data along with the geographical location of the utility with survey-grade accuracy. It is designed for all operator levels with user-friendly and intuitive locate screens. Operators confirm the utility data with the press of a button and align the electronic spirit level to store the data. All field data is sent to the cloud and retained in the receiver's onboard storage for review and exporting to external mapping programs. **800-446-3392; www.vivax-metrotech.com**



Inspection Vehicles

CUES truck-mounted pipeline inspection systems

CUES truck-mounted pipeline inspection systems are made to withstand the most severe conditions and are ergonomically designed for comfort and efficiency. Systems can include CCTV inspection equipment for sewer/storm/potable waterlines, mainline joint or lateral sealing, and lateral reinstatement cutters for the relining industry. Self-contained portable systems are also available and include the functions found in a truck-mounted system, but have the ability to achieve easement access and can be wheeled off-road for maximum versatility and mobility. **800-327-7791; www.cuesinc.com**



Mainline TV Camera Systems

CPI Products PoleCat

Sometimes push inspection cameras are hard to control when not in a pipe and trying to look into a ground-level space. It can be dangerous to kneel down and stick your head in these places, and in some areas, that violates safety rules. When needing to look into a manhole or confined space, inspectors often resort to improvising ways to control their inspection camera. The **PoleCat** from **CPI Products** is designed and made for this application. Simply strap an inspection camera



to it with the preinstalled Velcro, loosen the lock nut, turn to the angle desired, attach any standard broomstick threaded extension pole and it's ready. It fits any push inspection camera and installs in minutes. **413-443-0925; www.cplproducts.com**

Electric Eel eCAM Pro 2

The **eCAM Pro 2** from **Electric Eel** has a built-in battery cradle that accepts a Milwaukee M18 or equivalent battery (battery not included). This allows for operation in remote locations or anywhere electricity is not available. It includes a rugged stainless steel-housed, 1.68-inch self-leveling color camera with sapphire lens; a 20-LED light ring with an impact-resistant polycarbonate light ring cover; and a high-resolution CCD element. A flexible camera spring navigates 3-inch P-traps. The unit comes standard with 200 feet of braided fiberglass premium 1/2-inch-diameter pushrod (reel capacity available up to 400 feet), industry-standard 512 Hz sonde, 10.4-inch daylight-readable monitor with click-touch controls, one-touch recording directly to a USB flash drive, voice-over recording, an 8X zoom function, audio/video out jacks, 8-inch wheels for easy maneuverability and a secure-locking reel brake. **800-833-1212; www.electriceel.com**



EPL Solutions Gvision

The **Gvision** camera system from **EPL Solutions** offers a rugged, compact solution for inspecting pipelines 3 to 12 inches in diameter. Available with 200, 300 or 400 feet of pushrod, the reel has a stiff yet flexible fiberglass cable that is optimized for farther pushes through turns and bends. The color camera is self-leveling and includes a powerful, convenient, always-on 512 Hz transmitter for quick and precise area determination. The antiglare LCD monitor delivers a clear, crisp picture even in direct sunlight. To record video inspections, connect a USB storage device directly into the USB port. The DVR outputs HD-quality videos, which can be stored and shared from a mobile device. **714-453-9760; www.epls-usa.com**



General Pipe Cleaners Gen-Eye X-POD Plus

The **Gen-Eye X-POD Plus** sewer camera system from **General Pipe Cleaners** includes a Gen-Pack battery adapter, Wi-Fi transmitter and an on-screen distance counter as standard equipment. Depending on battery type and settings, the built-in battery adapter allows for up to 12 hours of operation in remote locations with limited access to power. The built-in Wi-Fi transmitter lets the technician view and record work on a cell phone



(continued)

or tablet. Using the system's USB port, they can also archive activity on flash drives. The on-screen distance counter shows how far the camera has traveled down a line in feet or meters. For optimum accuracy, settings can be adjusted for full size or mini-reel configurations. A 7-inch LCD color monitor with a sunscreen provides easy viewing in any location, and the camera has one-touch recording for speed and convenience. **800-245-6200; www.drainbrain.com**

Hathorn Wi-Fi DuraSCOPE

Hathorn's Wi-Fi DuraSCOPE inspection cameras offer the convenience of streaming video inspections to an Apple or Android mobile device using the free PipeSTREAM app. It can be used to take screenshots, overlay voice commentary and share videos with up to four devices. It has the choice of DuraCAM self-leveling or straight-view camera heads in multiples sizes and an on-screen footage counter. Municipal-grade camera reels are built tough, with butt-welded steel-frame construction, stainless steel camera heads and a choice of HDPE premium pushrod size allows the user to push far and remain in the field longer. It has 512 Hz sonde control and external 18-volt Milwaukee battery compatibility for quick swap-outs and longer time in the field. **866-428-4676; www.hathorncorp.com**



MyTana PGR400

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



RapidView IBAK North America MicroLite Pushrod System

The **MicroLite Pushrod System** from **RapidView IBAK North America** is a lightweight, small-diameter push system with durable steel-frame construction that delivers a high-quality image for all contractors and plumbers. Fitted with 100 feet of push cable, powerful LED lighting and an auto-uprighting camera, it is designed to inspect pipelines 2 to 4 inches in diameter. The entire system is powered by rechargeable batteries and is equipped with the positionable MicroLite Command Console, which includes a 10-inch touchscreen monitor, full Windows operating system, two USB connections and recording software. **800-656-4225; www.rapidview.com**



Ratech Electronics Plumber's Helper Jr.

The **Plumber's Helper Jr.** pipe inspection system from **Ratech Electronics** is based on a small-scale reel and comes with 100 feet of mini Gel Rod cable, a removable compact command module with 7.1-inch LCD, a built-in battery and an SD recorder for recording digital images and video. This mini pipe inspection system is available with a full-spectrum, 1.375-inch, self-leveling color camera; a standard color camera; or any of the company's three micro camera heads — 5/8-, 3/4- or 1-inch diameter. **905-660-7072; www.ratech-electronics.com**



RIDGID SeeSnake Compact2

The **RIDGID SeeSnake Compact2** with CS6x Versa camera system delivers big performance in a small package. It offers 100 feet of flexible push cable and has the ability to fit in smaller-diameter pipes, navigating through tight turns with a 2.5-inch minimum bend radius. Its self-leveling camera head provides an image that is always upright. The quick-release dock for the CS6x Versa monitor with Wi-Fi provides fast, efficient job setup. The CS6x Versa is an ergonomic, all-in-one solution for capturing media and delivering inspection results to customers, and it offers multiple mounting positions with an adjustable kickstand to suit job site conditions. A 5.7-inch, daylight-viewable display provides a crisp, clear in-pipe image. A sturdy metal frame provides a solid base that makes it easy to push and retrieve the cable. Its Flexmitter sonde has long range and preserves the camera's ability to make turns. **800-474-3443; www.ridgid.com**



USA Borescopes Wohler VIS 700

The **Wohler VIS 700** inspection camera, distributed by **USA Borescopes**, offers razor sharp high-definition images, a focus function for precise inspection, 360-degree viewing and 100 feet of working length. HD images are displayed on a brilliant, touchscreen high-resolution monitor. It is designed to transmit live video data to smart devices via wireless LAN. While conducting an inspection, the tech has the option to stream live images and videos on a smartphone or tablet. They can also save all the inspection footage to an SD card for reviewing at a later time. The system is available with interchangeable 1.5-inch camera heads with pan-and-tilt features as well as a smaller 1-inch straight-view camera head. **931-362-3304; www.usaboscopes.com**



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Cherne Smoke Fluid is a simple-to-use smoke testing system that produces thick, dense smoke to effectively identify inflow. Easy to pour and regulate, *(continued)*





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Planning with Vision

By Peter Kenner | Cover Story | May 2013

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County of Kauai Department of Water, charged with the task of supplying drinking water to the island of Kauai, is working to unify and modernize its water infrastructure, including aging water infrastructure, into a single, integrated system to ensure the supply of quality water for the future on this beautiful island.

it is constructed with a Briggs and Stratton engine that has the ability to generate air flow up to 3,679 cfm. Built with virtually indefinite store life, it can be used with traditional smoke candles or liquid smoke. It is available for purchase in three size variations 1- and 5-gallon totes and 55-gallon drums. **800-843-7584; www.cherneind.com**

Hurco Technologies Power Smoker 2

The **Power Smoker 2** from **Hurco Technologies** quickly locates leaks in new and existing plumbing systems. The machine is connected to a clean-out, and smoke is sent through the system to reveal any problem areas. The system uses LiquiSmoke, a laboratory-tested safe smoke that costs cents per minute to use and has an indefinite shelf life. When the test is complete, the smoke dissipates without leaving any odor or residue. **800-888-1436; www.hurcotech.com**



Superior Signal smoke generator

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



Software

AllMax Software Antero

Antero from **AllMax Software** accurately tracks maintenance data, allowing operators to streamline maintenance programs, all while providing peace of mind that equipment is being maintained efficiently and effectively. The newest version of the software includes a number of new sections and a complete redesign of the entire program. The improved My Work section is a one-stop place for a user to view all assigned work, manage their workload and complete work orders. Manage maintenance tasks in new sections such as Work Management, Work Order Review and Procedures. Changes to the Parts, Calendar and Home Screen sections make the program easier to navigate. **800-670-1867; www.allmaxsoftware.com** ♦



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Community employs inspection software to help prepare for storm

Problem:

With the picturesque and environmentally sensitive Big Thompson River running through its heart, the City of Loveland, Colorado, knew they had to take measures to protect it. That's why in 2018, the city's Public Works department prioritized storm sewer inspection and maintenance, bringing light to any issues underground.

Solution:

The city began by purchasing an IBAK CCTV inspection truck, then installing **ITpipes Mobile, Sync, and Web**. With an entire city worth of storm sewers to inspect, they knew their one crew had to be as efficient as possible. By integrating their Esri GIS, Cityworks Asset Management, and ITpipes inspection software, they have streamlined their workflow, allowing the crew to inspect around 10 or more pipes per day. These integrations allow the camera operator to select a pipe on the Esri map, which immediately opens the inspection for that asset in ITpipes, pre-populated with pertinent header data. Each night, all the pipe inspection data collected that day automatically uploads and syncs to the cloud. When that occurs, work orders are automatically created in Cityworks, allowing for labor, equipment and material costs to be tracked.



RESULT:

Thanks to this inspection data (plus a new combo truck), the city has strategically inspected and cleaned more pipe in this past year than the last five years combined. These efforts are allowing this rapidly expanding city to address issues such as upsizing undersized pipes, replacing deteriorated CMP, and building an accurate storm sewer model by locating missing/buried assets. With this undertaking, Loveland can show ratepayers massive quantifiable strides towards properly draining the city's rainfall, all while protecting the Big Thompson River. **877-487-4737; www.itpipes.com**

Software enhances crawler's functions in pressurized pipe

Problem:

Contractor Action Pipeline of Arizona was tasked by Tucson Water to detect and repair a leak in a pressurized 36-inch pipeline.

Solution:

Given the inaccessibility of the deep water environment, the company used its Deep Trekker DT340 crawler specially designed for such tasks. Action Pipeline controls the unit using **POSM Lite Software**. "Without Lite, you can't edit or add comments to the Deep Trekker footage 'live.' Instead, you must review the video and add observations after the inspection is complete. That takes longer and is less efficient," says Andres Amado, Action Pipeline's vice president of operations. "Lite is a streamlined, inexpensive software that removes options we didn't need. And, most importantly, includes the ability to edit Deep Trekker video inspections 'live.'"



Solution:

"We performed an internal investigation in the pressurized system. We installed an ink nozzle [onto the Deep Trekker unit] to seek and detect a leak 'live' thanks to POSM Lite," says Amado. "We inserted the robot into the pressurized pipeline and located a defect in the mortar. We injected the ink and watched it get sucked out of the pipe to document the spot in real time."

RESULT:

Because they paired Lite with their Deep Trekker, Andres says, "We were able to quickly and efficiently pinpoint the defect, dig it up and repair it." **720-636-0532; www.posmsoftware.com**

Software helps suburb prepare for population growth

Problem:

Like many municipalities with aging sewer infrastructure, the Village of Addison, Illinois, regularly faces I&I challenges, and two new subdivisions are expected to further strain its existing collections system. Previously, it was spending more than \$50,000 per year on contracted sewer inspection projects in addition to an in-house crew of five.



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Solution:

Now the sewer division's assistant supervisor, Jim Rhoads, has **WinCan VX** sewer inspection software on his truck and can do the same work without contractors. Soon after they started using WinCan, the team began taking advantage of the software's integrations with Lucity, finally connecting Addison's sewer infrastructure data to a municipality-wide database of assets. "There is much more information attached to the pipe segments now," says Rhoads. "Everything is catalogued, and not only are we using this data for inspection projects, we're also using it for our high-velocity jetting." Furthermore, using WinCan's integration with Esri's ArcGIS, Rhoads is able to plan work orders ahead of time, and inspect sewers more quickly and efficiently.

RESULT:

The integrations between WinCan, Lucity and Esri have allowed Rhoads to streamline his workflow to the point where he can now complete the majority of pipe inspections by himself. From building his work order in Lucity, to completing inspection in VX and conducting analysis in ArcGIS, having all the infrastructure data in one accessible place has streamlined his workflow. What's more, Addison can now take on future I&I challenges with confidence, preparing its sewer team and system for the expected population growth. 877-626-8386; www.wincan.com



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Envirosuite commences two strategic agreements with GHD

Envirosuite entered a new phase in the roll-out of EVS Water with two new strategic agreements with GHD, a consulting group with 200 offices on five continents. Under the agreements, GHD will support the scaling of implementation of EVS Water for major water treatment facilities as well as refer prospective clients to Envirosuite. GHD is an existing Envirosuite customer and user of the EVS Water Plant Designer product, a solution for the design and improvement of water and wastewater treatment infrastructure.

SJE acquires Ohio Electric Control

SJE announced it has purchased Ohio Electric Control. Located just down the street from SJE's existing facility in Ashland, Ohio, OEC brings to the partnership expertise in control solutions and strong customer relationships. Through the purchase, SJE will be able to offer additional technical resources and manufacturing capabilities that will augment OEC's current capacity and provide access to a broader product offering.

IDEX acquires Nexsight and its businesses

IDEX Corp. entered into a definitive agreement to acquire Nexsight and its market leading businesses —Envirosight, WinCan, MyTana and Pipeline Renewal Technologies — for cash consideration of \$120 million, subject to customary post-closing adjustments. The acquisition will complement and bolster existing IDEX business units iPEK and ADS, which design and create sewer crawlers, inspection and monitoring systems, and software applications that allow teams to identify, anticipate and correct wastewater

system issues remotely. Through the Nexsight acquisition, IDEX will expand to include iPEK's key North American channel partner and its leading wastewater video inspection software platform, broadening the capabilities of ADS's cloud-based wastewater system monitoring and predictive analytics platform.

ADS acquires Jet Polymer Recycling

Advanced Drainage Systems acquired Jet Polymer Recycling, a privately-owned recycling company located in the southeastern United States. Headquartered in Fort Payne, Alabama, Jet Polymer has three plastic recycling locations in Alabama and Georgia. They are the largest supplier of recycled polypropylene plastic for Infiltrator Water Technologies, a subsidiary of Advanced Drainage Systems.

Aries names Wes Brown as new Canadian sales manager

Aries Industries hired Wes Brown as Canada sales manager. Brown, based in Innisfil, Ontario, oversees the entire Aries Industries dealer network in Canada. He will focus on building strong customer relationships throughout the country, where Aries Industries has added three new dealers in the past 15 months. Brown holds undergraduate degrees from Western University and Georgian College, and is studying for an MBA at the University of Fredericton.



Wes Brown

Vermeer opens new facility in South Carolina

Vermeer MV Solutions celebrated the grand opening of its new 130,000-square-foot manufacturing facility in Piedmont, South Carolina, with a ribbon-cutting event. In November 2018, Vermeer announced its purchase of Vac-Tron Equipment, and its plans to bring the Florida-based company together with McLaughlin Group, which was purchased by Vermeer in 2017, to start Vermeer MV Solutions.

RATS exclusive service provider for InfoSense

Rapid Assessment Technology Services is the exclusive authorized service provider of acoustic sewer assessments in the Canadian province of Ontario. Based in Woodbridge, the RATS team will provide services using the patented Sewer Line Rapid Assessment Tool, or SL-RAT, manufactured by InfoSense.

Barbco promotes Schmidt to VP, business development

Barbco promoted Thomas Schmidt into the newly created position of vice president, business development. Schmidt has many years of leadership in numerous local plants including Harrison Paint, Heinemann Saw Co. and Georgia Pacific.



Thomas Schmidt

PPI publishes technical document for insulating plastic pipes

The Plastics Pipe Institute has published a new technical note related to the protection of plastic pressure piping materials against freezing. The new PPI Technical Note, TN-65 Insulation Recommendations for Plastic Pressure Piping Materials in Residential Applications, focuses on insulating plastic pressure piping materials against freezing. It applies to hot- and cold-water piping materials CPVC, PEX, PE-RT, PEX-AL-PEX, PP-R and PP-RCT, and is directed to applications such as plumbing distribution, fire protection and hydronics. ♦

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The **City of Delray Beach (Florida)** received a Sustainable Practices Recognition Award from the American Concrete Pavement Association in recognition of its use of pervious pavements in the Osceola Park Neighborhood Project. City leaders said that employing the latest technological innovations and proven best practices with that project will reduce stormwater runoff and flooding.

The **Clayton County (Georgia) Water Authority** earned the Georgia Association of Water Professionals Consumer Confidence Report Award for large surface water systems during the association's fall conference in November. The Authority's Communications & Community Relations Department also won a 2021 Public Relations Society of America - Georgia Chapter Phoenix Award in the Community Relations — Associations/Government/Non-profit Organizations category for its I'm Invested! CCWA Rate Awareness Campaign. The campaign was a collaboration with Jacobs Engineering.

The **Friends of Skagit Beaches (Washington)** received a \$74,400 grant from the National Fish and Wildlife Foundation to expand its Anacortes Stormwater Monitoring Project to other local communities.

Birch Street and the Magnolia Underpass in Kennett Square — two major connectors of the 14-mile Kennett Greenway (Pennsylvania) — will

be developed thanks to a \$1.471 million grant received by the Commonwealth Financing Authority's Multimodal Transportation Fund. The Birch Street Streetscape portion of the project will address stormwater issues, including the implementation of stormwater best management practices.

The **RiverLink** group received a \$35,000 grant from the Pigeon River Fund of the Community Foundation of Western North Carolina. The funds will aid construction of the Southside Community Stormwater Project to collect and treat runoff at Erskine Apartments to solve flooding issues and improve surface water quality at Town Branch.

Project Clean Water, an initiative of San Diego County (California) dedicated to protecting water quality, received a Gold Award at the MarCom Awards, an international creative competition that recognizes outstanding achievement in marketing and communications. The award was presented for "52 Ways to Love Your Water," a video that was created as part of a five-year, county-wide public education and outreach initiative around stormwater pollution and water quality. ♦

CALENDAR

March 2-5

National Utility Contractors Association Annual Convention and Exhibit, Hyatt Regency Hill Country Resort and Spa, San Antonio. Visit nuca.com.

March 13-16

American Society of Civil Engineers Operation and Maintenance of Stormwater Control Measures Conference, Wilmington Convention Center, Wilmington, North Carolina. Visit asce.org.

April 10-13

American Public Works Association Snow Conference, (hotel TBA), Pittsburgh, Pennsylvania. Visit snow.apwa.net.

April 24-27

American Water Resources Association Spring Conference, Bryant Conference Center, Tuscaloosa, Alabama. Visit awra.org.

May 2-4

Montana Stormwater Association Annual Conference, Holiday Inn Downtown, Missoula. Visit mtstormwaterconference.org.

June 12-15

American Water Works Association ACE22, Henry B. Gonzalez Convention Center, San Antonio. Visit awwa.org.

June 27-29

Water Environment Federation Stormwater Summit, Hyatt Regency, Minneapolis. Visit wef.org.


Aug. 28-31

American Public Works Association Public Works Expo 2022, (hotel TBA), Charlotte, North Carolina. Visit pwx.apwa.net.

Sept. 26-28

StormCon and National Rural Water Association WaterPro Conference, Gaylor National Resort and Conference Center, National Harbor, Maryland. These events are being held as parallel conferences. Visit nrwa.org or stormcon.com.

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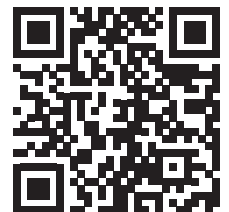
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