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April 2016

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SEWER: BRUNSWICK WATER SYSTEM  
TAKES TOP HONORS

PAGE 16

HUMAN SIDE: FAIR HIRING  
TAKES FOCUS

PAGE 24


TRENCH SAFETY: NO EXCUSE  
FOR ACCIDENTS

PAGE 36

# AN OCEAN OF UPGRADES

Honolulu makes a huge investment  
to improve its collections system  
and protect coastal waters

PAGE 28

A portrait of Lori Kahikina, a woman with long dark hair, smiling. She is wearing a dark blue blazer over a white top and a necklace with blue and white beads. The background is a blurred green field.

Lori Kahikina, Director  
Department of Environmental Services  
City and County of Honolulu, Hawaii

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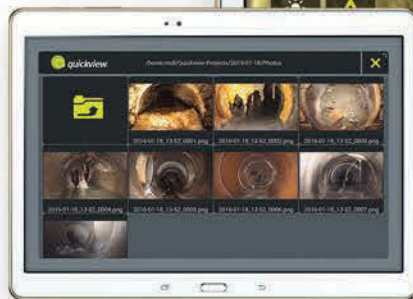
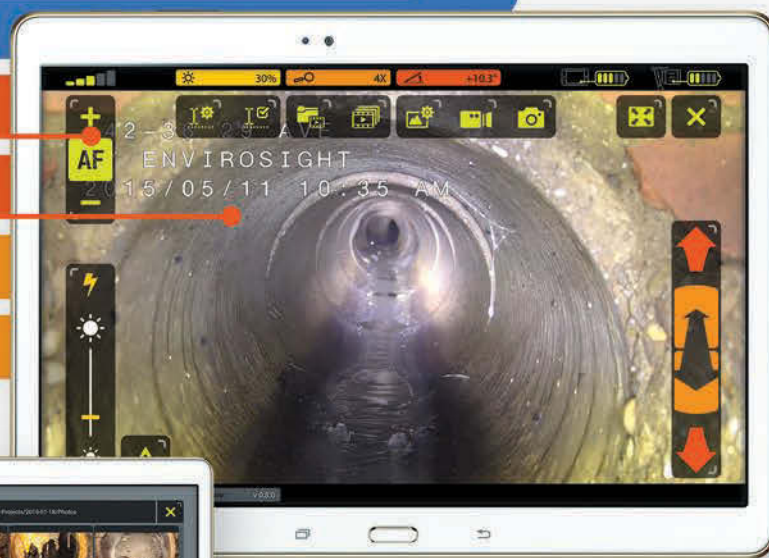
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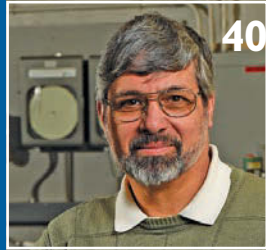
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# INSIDE:

MANHOLE EQUIPMENT & REHABILITATION



## ON THE COVER:

Lori Kahikina, director of the Department of Environmental Services for the City and County of Honolulu, Hawaii. (Photography by Marco Garcia)



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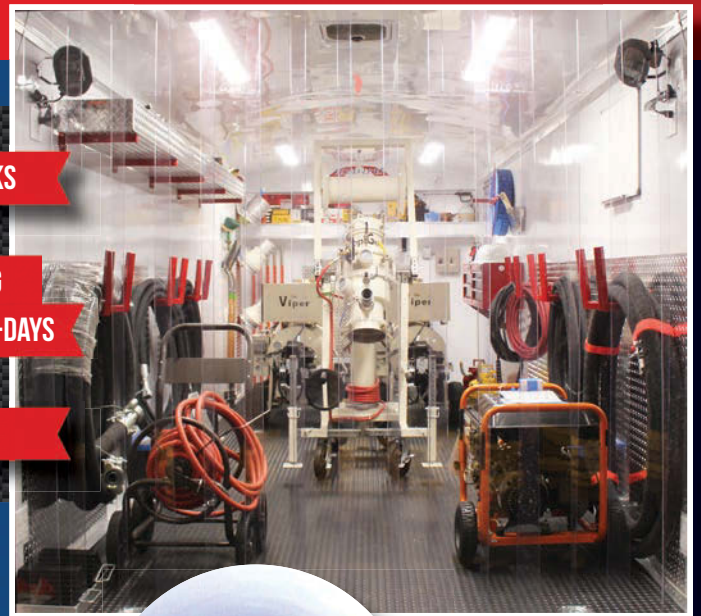
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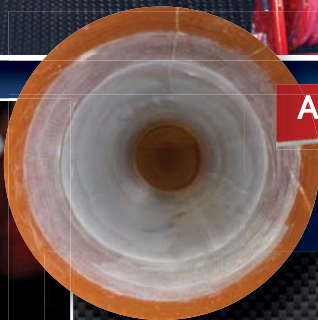
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# CELEBRATING OUR INDUSTRY

A week at the WWETT Show highlighted the character and strength of this industry



## FROM THE EDITOR

Luke Laggis

The sewer and water industry doesn't often get the positive attention it deserves. That's part of what I like so much about the Water & Wastewater Equipment, Treatment & Transport Show. It's the living embodiment of this industry, where all the people, stories and equipment are brought together and celebrated.

This year's show drew one of the largest crowds in the show's history. Total attendance climbed to over 14,400, and the number of exhibiting companies reached 599, an all-time high. Beyond the numbers, it was just great seeing so many of you in Indianapolis.

I saw a lot of municipal utility operators walking around at this year's WWETT Show. I made contacts with people from Cecil County, Maryland, to Lethbridge, Alberta. I saw familiar faces sitting in classrooms, in the exhibit hall, doing whatever they could to make their utilities stron-

ger. They were taking advantage of opportunities to learn and grow. I like seeing that. It's what this magazine is all about.

From the classrooms to the show floor, the whole show is an education. No matter how much technology advances and no matter how many years of experience you have under your belt, there are still new things to learn about some of the most basic services you provide. And don't for a second question whether the technology is advancing in meaningful ways.

**I saw familiar faces sitting in classrooms, in the exhibit hall, doing whatever they could to make their utilities stronger. They were taking advantage of opportunities to learn and grow. I like seeing that. It's what this magazine is all about.**

The future of this industry and your utilities was on display. All the new recycling technology on jet/vac trucks, new nozzles designed specifically for use with recycled water, robotic reinstatement cutters, inspection systems with 3-D mapping capabilities — the new technology is truly impressive.

And yet, as impressive as it was to see all these tools aimed at helping you do your job more effectively and efficiently, you can't learn anything from a piece of iron. It's the people you meet, and the knowledge and advice you glean from conversations with them, that can transform your utility. And it's hard to walk out of the Indiana Convention Center when it's over without feeling like you're part of something important, progressive and respected.

The greatest part of the show for me is meeting and talking to you. I speak with many of you from my desk in northern Wisconsin, but the opportunity to meet face to face, to speak with you directly and hear your stories in person really brings everything together. It's great to hear how the work we're doing at MSW is informing your work. That's the goal, and it's also the greatest reward.

Operating water and wastewater systems and protecting your communities takes commitment and dedication. It can be dirty and thankless. But that's nothing new to you; it's simply what you do. I just thought it deserved some recognition.

Enjoy this month's issue. ♦



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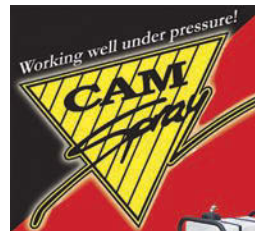


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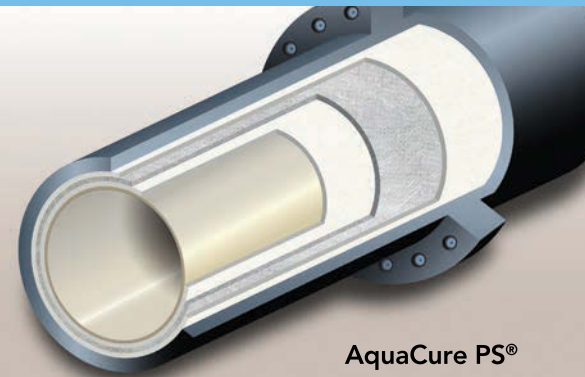


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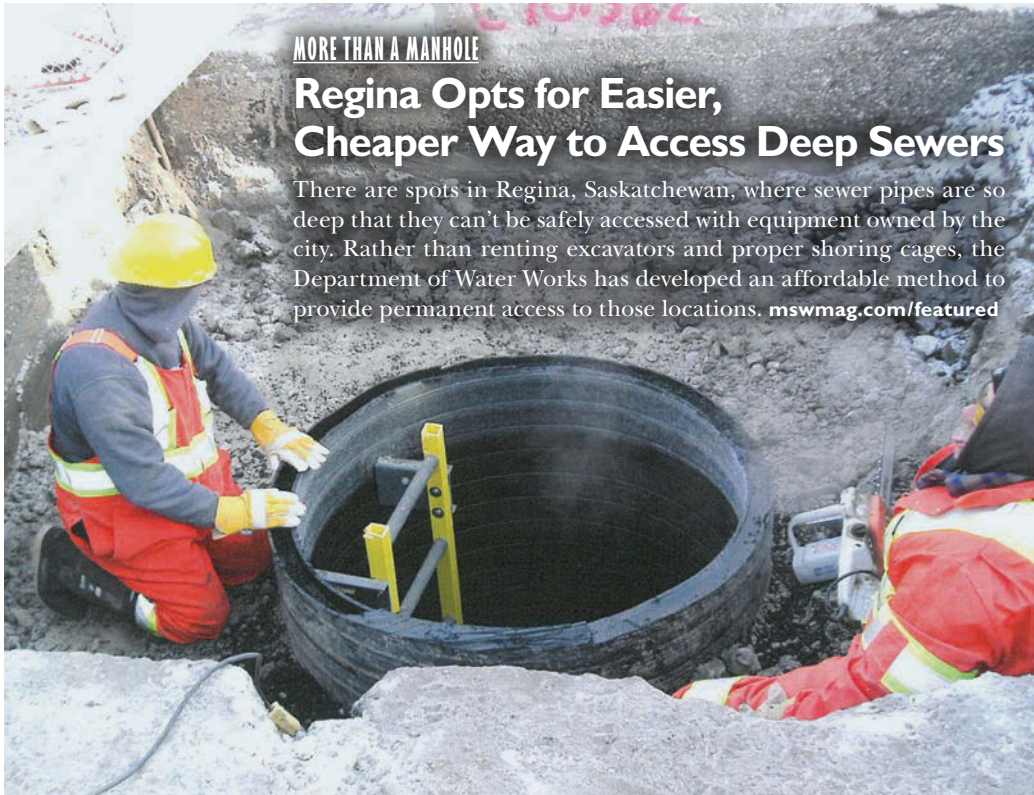
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## MORE THAN A MANHOLE

### Regina Opts for Easier, Cheaper Way to Access Deep Sewers

There are spots in Regina, Saskatchewan, where sewer pipes are so deep that they can't be safely accessed with equipment owned by the city. Rather than renting excavators and proper shoring cages, the Department of Water Works has developed an affordable method to provide permanent access to those locations. [mswmag.com/featured](http://mswmag.com/featured)



## MINIMUM REQUIREMENTS

### 14 Steps to Ensure Safety Around Trenches and Excavations

Safety expert David Dow provides a comprehensive yet easy-to-read list that simplifies OSHA's general requirements and will help your crew plan for and greatly reduce the dangers around the job site. [mswmag.com/featured](http://mswmag.com/featured)



## SEISMIC RELIABILITY

### Utility Completes Last Two Critical Water Pipeline Projects

Upgraded infrastructure will allow the Bay Area to resume water service within 24 hours of a major earthquake now that construction is complete on the last two major regional water pipeline projects. It's all part of the \$4.8 billion Hetch Hetchy Water System Improvement Program, which will allow the San Francisco Public Utilities Commission to serve its 2.6 million customers well into the future, even when disaster strikes. [mswmag.com/featured](http://mswmag.com/featured)

## OVERHEARD ONLINE

“What all this means is that the situation in Flint (and a few other places) poses the danger of contaminating the image of tap water in general. And that would be a shame.”

— *We Can't Let Flint Contaminate Tap Water's Reputation*  
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**FOCUS: SEWER**

# DELIVERING EXCELLENCE

Brunswick County builds up its staff and its distribution system en route to consecutive string of state honors

*By Dan Heim*



**Jerry Pierce, director of Public Utilities for Brunswick County, North Carolina, in the shop with the utility's 2014 Vac-Con jet/vac truck. (Photography by Alan Cradick)**





Meter technician Bill Schmidt preps a meter box for installation of a new water meter outfitted with a Sensus Smart Point transmitter.

North Carolina's Brunswick County borders the Atlantic Ocean. It has 46 miles of coastline, several barrier islands and an area of 1,050 square miles — the fourth-largest county in the state. It was named for the colonial port of Brunswick Town, now historic ruins.

Brunswick County Public Utilities provides both water distribution and wastewater collections for this extended area, and they do it extremely well. For three years running, BCPU has been recognized as Large Distribution System of the Year by the North Carolina Section of the American Water Works and Water Environment associations. And they're on track to extend their hat trick in 2016.

"By 'large system,' the AWWA means water systems with at least 500 miles of pipe," explains Jerry Pierce, director of Public Utilities. "It's a voluntary participation program, but most of the large systems in the state have signed on. So we're really proud to have gotten this recognition."

"And our system's been growing," adds John Nichols, assistant director for BCPU. "We take on new customers every year, plus we've taken over several smaller systems in the county and brought them up to our higher standards."

Those standards are ultimately set by the NC AWWA/WEA. The utility has met those standards since first signing on in 2013, winning awards every year. The work leading to this success began much earlier, in 2003, when serious renovation efforts began and BCPU built the county's first wastewater treatment plant.

### Lay of the land

The highest point in Brunswick County is 75 feet above sea level. It slopes downward from there to the Atlantic. Within BCPU's service area, the elevation change is 64 feet. To the west are the foothills of the Appalachian Mountains. Geologically, most of the county is classified as a coastal plain.

Some of the county's drinking water is drawn directly from the Cape Fear River. Its headwaters are 220 miles to the northwest, near Greensboro, North Carolina. It has a seasonally varying discharge that averages 3,885 cfs, a supply that offsets demand on the aquifer. This source is purchased from the Lower Cape Fear Water Authority, which provides some of the initial processing.

Unfortunately, Cape Fear is a black water river. With a deep and slow-moving channel, and its course through forests and wetlands, it picks up tannins from decaying vegetation and takes on a coffee-colored appearance. With standard pre- and post-processing, the tannins can be easily removed using anion resin filters. This is done at BCPU's 24 mgd Northwest Water Treatment Plant located in Northwest, North Carolina.

The remainder of their water is drawn from 15 wells tapped into the Castle Hayne aquifer at a depth of 175 feet. This water is processed by the 211 Treatment Plant near St. James, North Carolina. The 211 Water Treatment Plant is permitted for 6 mgd, but was designed to process up to 7 mgd.

"That's some pretty good water," Pierce says. "By comparison, what they get near the beach communities suffers from saltwater intrusion. Castle Hayne is hard water, but the wells are 3 miles from the coast, so at least it's fresh."

Within the county borders are 847 square miles of land and 203 square miles of water. Major access to the Atlantic is provided by the Brunswick and

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**Meter technician Walter Trulove (top) wraps up the vacuum hose on a Vermeer FM 150 SDT after cleaning out a meter box for a new meter installation (above) with technician Bill Schmidt.**

Cape Fear rivers, but hundreds of smaller streams weave between small lakes and wetlands.

“Yeah, it’s really kind of flat around here,” notes Pierce. “Not much chance to use gravity

without things backing up. But for distribution, we can get by with smaller pumps and a lot less electricity running them.”



## PROFILE:

### Brunswick County (North Carolina) Public Utilities

#### SERVICE AREA:

846.97 square miles

#### CUSTOMERS:

38,082 water, 15,280 sewer

#### POPULATION DENSITY:

127 per square mile

#### INFRASTRUCTURE:

1,062 miles water mains  
 2 water treatment plants  
 Total capacity 30 mgd;  
 588 miles sewer mains (force, gravity, vacuum assisted)  
 6 wastewater treatment plants  
 Total capacity 10.855 mgd  
 141 sewer pumping stations

#### ANNUAL BUDGET:

\$3.4 million capital  
 \$16.7 million operational (water);  
 \$3.1 million capital  
 \$9.2 million operational (sewer);  
 \$45.9 million total FY 2016  
 (including debt and ongoing)

#### EMPLOYEES:

112 full time in operations  
 12 in customer service

#### WEBSITE:

[www.brunswickcountync.gov/utilities](http://www.brunswickcountync.gov/utilities)





**Brunswick County maintenance mechanic Cody Knox uses a Sensus Trimble Nomad to program and test the Sensus Smart Point transmitter.**

### Smart meters

“We started installing Sensus AMIs in 2008,” Nichols says. “We’ve got about 46,000 meters in our system, and we’ve been putting in close to 7,000 each year. Another 6,000 to go and that project will be done. These AMIs have been a really significant factor in our AWWA awards.”

The AMIs are sensitive enough to pick up leaks, water running at strange times and other anomalies that dictate sending a crew to take a look. The Sensus software can be set to detect at any threshold and provides a system status report daily.

“We look at that report first thing in the morning,” says Nichols. “Any meter that gets flagged, we make contact with that customer and start looking for a solution. We can get a crew out there same day in most cases.”

Water savings from the AMIs haven’t significantly reduced BCPU’s total system demand. But when a customer is informed about a leak, they’re almost always grateful and cooperative — once they get past the initial surprise that such small leaks can be remotely detected. They appreciate BCPU’s help saving money on their water bills.

At some point in the future, these AMIs will allow customers to log into a BCPU portal and access data about their household water use patterns. Reductions in residential water use are already being seen, and when the portal goes live more is expected.

### Dealing with growth

Brunswick County’s population has been growing by more than 40 percent between each of the last four censuses, and will likely match that rate in 2020. Nichols notes that “the latest chamber of commerce figures say we’re adding about 3,500 people each year.”

When new development goes in, water infrastructure is the responsibility of the developers, and subject to inspection and approval. BCPU has extended lines as needed to accommodate this growth. “We refined and quantified our materials specs and design standards in 2010,” notes Pierce. “That’s eliminated a lot of problems with new builds.”

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**Brunswick County Utility Foreman Robert Horn (left) discusses results of scans from the MALA ground-penetrating radar with Water Distribution Superintendent Bob Tweedy.**

BCPU has two water treatment plants with a total capacity of 30 mgd. Demand averages 13.56 mgd, and the peak to date was 25.99 mgd. That's a lot of excess capacity, but BCPU is planning ahead for growth. Likewise

says. It's also led to improved morale and employee retention.

"We've got 18 licensed mechanics on our distribution crew," Nichols says. "In most utilities you might have a few. That creates an atmosphere of profes-

with wastewater: Six treatment plants have been built with a total capacity of 10.855 mgd. They've been averaging 5.76 mgd with a 7.42 mgd peak.

"We've been in the top 30 U.S. counties for growth over the last 10 years," Pierce says. "Golf is really big here. It's one of the few places in the country where you can play pretty much all year-round. That's been driving some of our growth."

Growth inevitably means an increase in demand for water. That's been kept to a minimum by customer education about household water use via media, bill inserts and the BCPU website. Any new builds are required to use water-saving fixtures.

### Earning the hat trick

One of the key factors in BCPU's success is the career ladder program instituted in 2006. It encourages employees to seek additional training and certification, and has increased the knowledge and licensure level of staff, Pierce

## AWARD-WINNING COLLECTIONS SYSTEM

In 2015, Brunswick County Public Utilities was recognized as Medium Collection System of the Year by the North Carolina American Water Works Association/Water Environment Association.

BCPU's task is made more difficult by the types of lines required for a relatively flat coastal plain. Those include standard gravity lines, vacuum-assisted gravity lines and low-pressure mains. Successful management and operation of this complex system was a factor in their NC AWWA/WEA award.

As with most collections systems, solving FOG problems is one key to success. BCPU's website provides a one-page brochure for customers that explains the problem, and lists what they should or should not put down the drain. The Grease Goblin mascot figures prominently, next to a photo of a frying pan with "grease" written in grease.

"FOG is less a problem here than in some other systems," says BCPU Director Jerry Pierce. "We have one dedicated employee who does nothing but grease trap inspections. There's a lot of restaurants in the

county, and compliance has been good."

Another part of BCPU's success stems from their extensive effluent recycling program. Reclaimed water is used for irrigation, flushing pipes, dust suppression and other non-potable applications. What's left over is used to recharge the Castle Hayne aquifer under the county's southeast coastal plain.

There's a small amount of BCPU wastewater treatment plant effluent discharged into the watershed, but it's closely monitored for contaminant levels. Some contaminants enter the watershed from failing septic systems in remote areas, but BCPU is adding those systems to their network as collection lines are extended.

Green Swamp Preserve, a 27.22-square-mile protected wetland and pine forest, is near the center of Brunswick County. Many smaller streams feed into it. BCPU is only peripherally involved in its management, but works as a partner with The Nature Conservancy and other environmental groups to ensure continued water quality.



sionalism, creativity and dedication that really improves our organization.”

Much of the training is through NC AWWA, with testing by the operations board. Half of BCPU’s team holds the highest level of licensure available in the state. Crew members are cross-trained in all aspects of distribution, so there’s always someone on site who can do the job.

BCPU inspects 10 percent of their wastewater collections system annually, along with their valve inspection and testing program. They also inspect backflow prevention devices annually, as required by the state, providing options and assistance with repairs.

For one month every year the entire distribution system is flushed with chlorine. “That helps maintain our high water quality,” Pierce says. “And since we have to flush all parts of our system, if there are any problems they’ll show up during this process.”

Nichols also credits the operations board for backing the utility in whatever they’re trying to do. One individual he notes specifically is David Sandifer, who was chairman in 2000 when the program started.

“It was his vision that shaped what we’ve done, and showed us how to get those awards. He was a major inspiration to all of us.” ♦



**Robert Horn uses the MALA GPR unit to locate underground utilities in a wooded area along the edge of a subdivision.**

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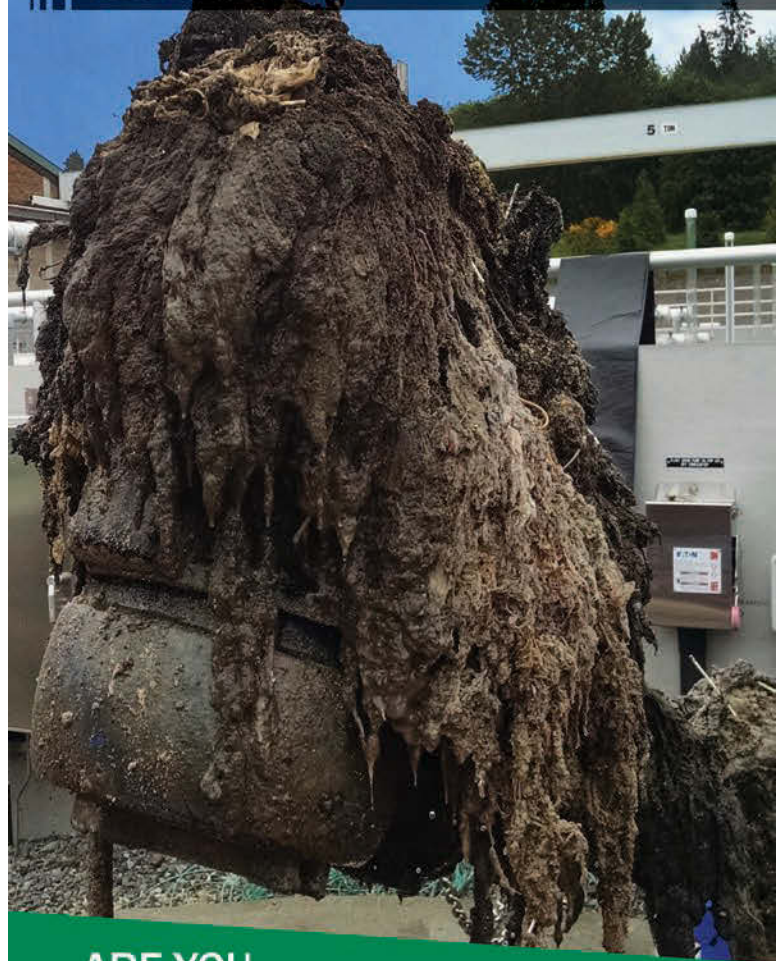
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# FAIR HIRING TAKES FOCUS

Develop a transparent hiring process that makes job applicants feel like they're treated fairly

By *Ken Wysocky*

For many organizations, landing a highly sought-after job recruit is a cause for celebration, especially in today's ultra-competitive employment market. But before you enjoy another round of congratulatory handshakes and backslaps, it might be best to curb your enthusiasm instead.

That advice comes from Brian Brazda, a partner at LEAN Human Capital ([www.leanhumancapital.com](http://www.leanhumancapital.com)), a nationwide talent-acquisition consulting firm. It's not that Brazda is a killjoy, by any means. It's just that from experience, he knows that at the same time many companies are employing a full-court press to successfully snare a top recruit, it's also likely that they're inadvertently damaging their chances of doing so again. The culprit? Unfair hiring processes that make snubbed job candidates angry and prompt them to bad-mouth your company or organization by word-of-mouth or via social media. Or boycott your products and/or services.

"We're seeing data that if a hiring process isn't fair, they (the rejected job candidates) won't use your products or services, which can have a direct impact on business," Brazda explains. "If all these candidates live and work in your community and feel it was a crappy hiring process, it directly impacts their buying decisions. There's not a 100 percent correlation, but it's large enough that organizational leaders see it impacting their businesses.

"Moreover, unhired candidates still might be qualified to fill another job in your organization," he continues. "But if they feel they were treated unfairly, they're unlikely to apply for future job openings — and also could tell well-qualified friends and family members to snub your company, too."

This is not mere conjecture on Brazda's part. Data from an ongoing LEAN Human Capital study of non-hired job applicants paints a grim picture: 39 percent agree that a company's website was procedurally unfair; 57 percent agree they experienced procedural unfairness with recruiters; and 59 percent agree that they experienced procedural unfairness with hiring managers.

## The waiting game

Where do most companies go wrong? Let's start with rejection notices — or lack thereof. This is one of the biggest sore points for rejected applicants, Brazda says. For most applicants, the job-hunt journey goes something like this: Find a job opening. Apply for it. Don't hear back from the company for months. Then finally receive a rejection notice by mail or email, long after the initial contact and/or interview. "Or they get no communication at all," Brazda notes.

In a similar vein, others wind their way through the job-hiring process

and actually get a personal interview — only to receive a rejection notice that doesn't tell them why they were not selected. "You don't need to go into detail or embarrass them," Brazda advises. "But any kind of education is valuable. ... We advocate that you just develop a way to communicate to folks who got that far. It's important to create that touch point."

Another hot-button topic for rejected applicants: timely notification. More often than not, applicants no doubt feel like an elephant bears children faster than companies send out thanks-but-no-thanks notices.

Most company officials probably recognize their hiring process is unfair; what may be less obvious is the negative impact of that inequity. As such, the crux of the matter is getting company officials to understand how unfair practices hurt the organization in the long run — as well as strategically determine the most cost-efficient way to fix the problem. "It's fairly obvious to most companies if their process sucks for applicants, but the trick is identifying what parts to go after and fix," Brazda points out. "And the answer is different for every organization — there's no cookie-cutter solution."

Some problems can be fixed easier than others, like quick notification for rejected applicants. "We think it should be done as quickly as possible," Brazda says. "Some companies with best practices are doing it within a week, and we think it should occur within at least one week of making hiring decisions.

"We're finding that companies that do it well are coming up with unique ways to communicate and educate (rejected) job applicants," he adds. "More sophisticated organizations are investing in technology and software platforms that can automate a lot of this."

One large Chicago-based health care provider developed a multipronged approach to making its hiring process more transparent, he notes. That company's ultimate goal was to provide better communications that were more timely, adequately explained the next steps in the hiring process and so forth. To accomplish this, the company:

- Implemented an applicant-tracking system that generates auto-emails with status updates for job candidates
- Added a frequently asked questions page to the careers section of the company's website, so candidates can learn more about the organization's hiring process
- Developed template letters to expedite the delivery of candidate notifications
- Regularly updates the career page of the company's website
- Created a central recruitment email address that job candidates can

**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](mailto:editor@mswmag.com).



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### Ask the right questions

Other problems may be more complicated to solve than just sending out notifications faster. But a carefully designed survey of rejected applicants can help pinpoint the weak links in your hiring chain — and point the way to solutions. But here, the key is to ask questions that create true insights into the problems, as opposed to questions that elicit answers with no usable information, Brazda says.

Brazda says LEAN Human Capital worked with a social scientist to develop survey tools that provide news-you-can-use answers. Here are a few examples from a LEAN Human Capital survey:

- I was able to offer clarification or additional information about my candidacy
- I was provided useful information regarding the next step of my candidacy
- I was provided timely information regarding the next step of my candidacy

“It is complicated because the process is complicated,” Brazda says in regard to rectifying the problem of unfair hiring processes. “But it’s all about prioritization. You need to gather data and understand where the weak points are in your process, then sit down and prioritize what you can do in the next couple days, weeks and years. It’s like eating an elephant — you chip away at a project plan in a very strategic and methodical way.”

The ultimate goal: Develop a transparent hiring process that makes job applicants feel like they’re treated fairly as they submit resumes and talk to hiring managers — and doesn’t spur them to scorch your company on social media if they don’t get the job, Brazda says. “You just want an equitable process that they can feel good about.” ♦

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# AN OCEAN OF UPGRADES

Honolulu makes a huge investment to improve its collections system and protect coastal waters

By Jim Force

Great beaches, fresh trade winds, big surf and a fascinating culture make Hawaii a very special place. In turn, the popularity of the islands, its climate and geology create special issues for wastewater collections.

In the City and County of Honolulu — now home to more than 1 million people — urban density, aging sewer lines and heavy rainfalls have led to wet weather sewer overflows and spills, some of which have closed the area's popular beaches. Hurricanes and other tropical storms can triple the amount of wastewater that normally flows through the system to the island's treatment facilities.

But now, under terms of a 2010 consent decree, the city's Department of Environmental Services (ENS) is taking action — including construction of large tunnels that will provide additional sewer capacity and replace the existing force mains, and implementing other measures to minimize the discharge of untreated wastewater. Over-

all, the price tag for the various projects is expected to reach \$5 billion.

"Honolulu is a very confined area," explains ENV Director Lori Kahikina, P.E. "We have easement issues with lots of sewers located beneath buildings. The soil is volcanic and close to the ocean, so we experience a lot of inflow and infiltration, and high salinity counts."

The first of the tunnel systems and its auxiliary components is scheduled to be completed this spring, with the second scheduled for commissioning in June 2018.

## The system

Kahikina's department is responsible for wastewater collections, treatment and disposal, as well as solid waste management, for essentially the entire 600-square-mile island of Oahu. A few privately owned systems serve military bases, small developments and the residential community of Hawaii Kai.

*(continued)*

A photograph of a worker in safety gear, including a hard hat, safety glasses, and a high-visibility vest, operating a large piece of machinery. The worker is adjusting a valve on a complex assembly of pipes and hoses. The background shows a grassy area with some plants and a building in the distance.

Honolulu Department of Environmental Services crew member Thomas Roberts regulates the steam flowing into a CIPP liner during the curing process. (Photography by Marco Garcia)



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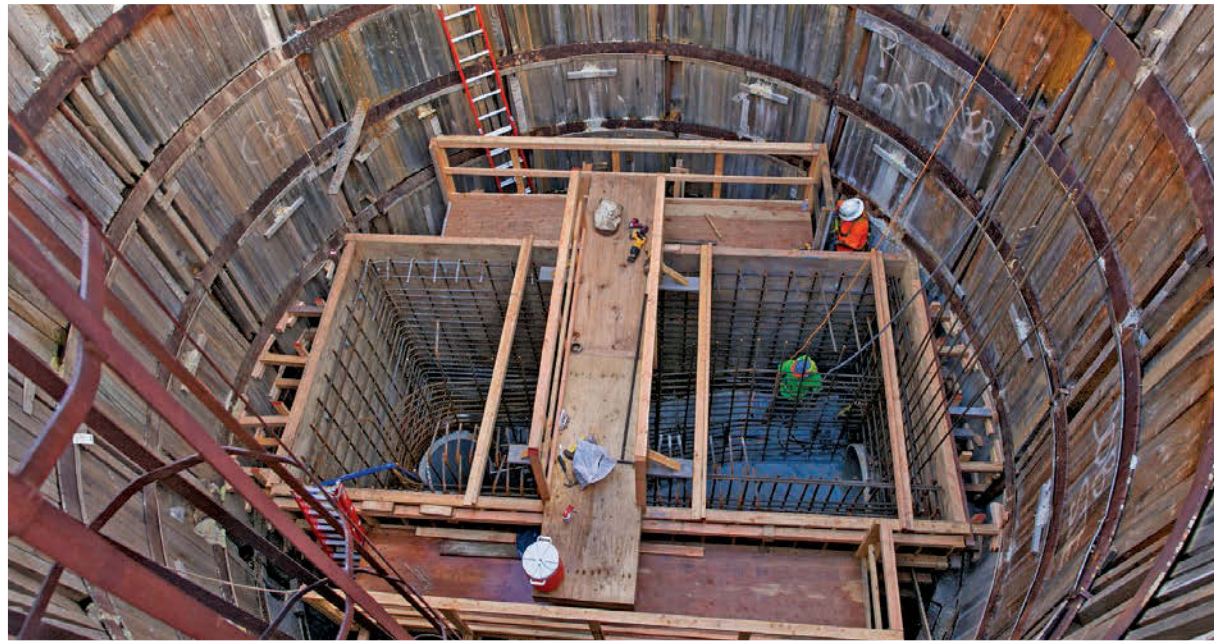
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**Left: Workers stage materials and equipment in the entrance shaft outside the Kaneohe-Kailua Tunnel project in Kaneohe, Hawaii. Above: A construction crew works on the drop structure where excess flow from Kailua is directed into the tunnel.**

**“Honolulu is a very confined area. We have easement issues with lots of sewers located beneath buildings. The soil is volcanic and close to the ocean, so we experience a lot of inflow and infiltration, and high salinity counts.”**

– Lori Kahikina

The overall sewer system extends for 2,100 miles and includes 70 pump stations. Much of the flow is by gravity. Sewer lines “run the whole gamut of materials,” Kahikina says, including old terra cotta lines from the last century, HDPE and reinforced concrete. Some of the older lines contain asbestos pipe. The lines range in size from 6 inches to 10 feet in diameter.

The department employs about 170 people in the collections division and manages an annual operations budget of around \$24 million.

The Honolulu team uses about a dozen Vac-tor combination trucks to clean the system. “They’re our workhorses,” says Kahikina, explaining that they are used mostly for road-accessible

lines and clean-outs. “For smaller lines in easements, we use mechanical rodders. Those are our two main technologies.”

The rodders are also used to cut and remove root growth — a common problem on the island.

The consent decree mandates that every main-line collections system asset be inspected and cleaned at least once every five years. Honolulu uses Aries Industries, CUES, RedZone and UEMSI equipment to meet that requirement.

Problem laterals are inspected more often and if there are roots or broken pipes on the city’s side, then cleaning and repairs are undertaken immediately. If the issue is on the property owner’s side, Kahikina’s department issues notices to the owners to have the deficiency corrected.

An ICOM3 asset management software system from RedZone Robotics drives the cleaning and maintenance program. The department also employs a GIS system, supported by Oracle and Esri software.

**Special circumstances**

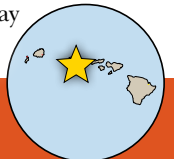
Kahikina says Honolulu is simply forced to live with some of the special challenges faced by the sewer system. Easements and lines under buildings are examples. “We’re pretty much stuck with those,” she says.

But on other fronts, her department takes an aggressive approach. Where roots have infiltrated the lines or salinity has caused pipe deterioration, Honolulu is using CIPP technology to line old pipe structures. Trenchless replacement is the choice wherever possible, because the density of buildings often makes open-cut installa-

tion difficult.

Kahikina explains that Honolulu uses IDIQ (Indefinite Delivery, Indefinite Quantity) contracts, inviting qualified contractors to bid on a package of line items that might be scheduled out over a period of time. “It’s like the federal procurement process,” she says. “The low bidder has the right of first refusal.”

The department’s crews pay  
*(continued)*



**PROFILE:**

**City and County of Honolulu, Hawaii, Department of Environmental Services**

**ESTABLISHED:**

Early 2000s (formerly part of the Public Works Department)

**AREA:**

City of Honolulu and most of the Island of Oahu

**POPULATION:**

Over 1 million

**INFRASTRUCTURE:**

2,100 miles of sewers, 70 pump stations, 9 treatment plants

**COLLECTIONS STAFF:**

About 170 employees

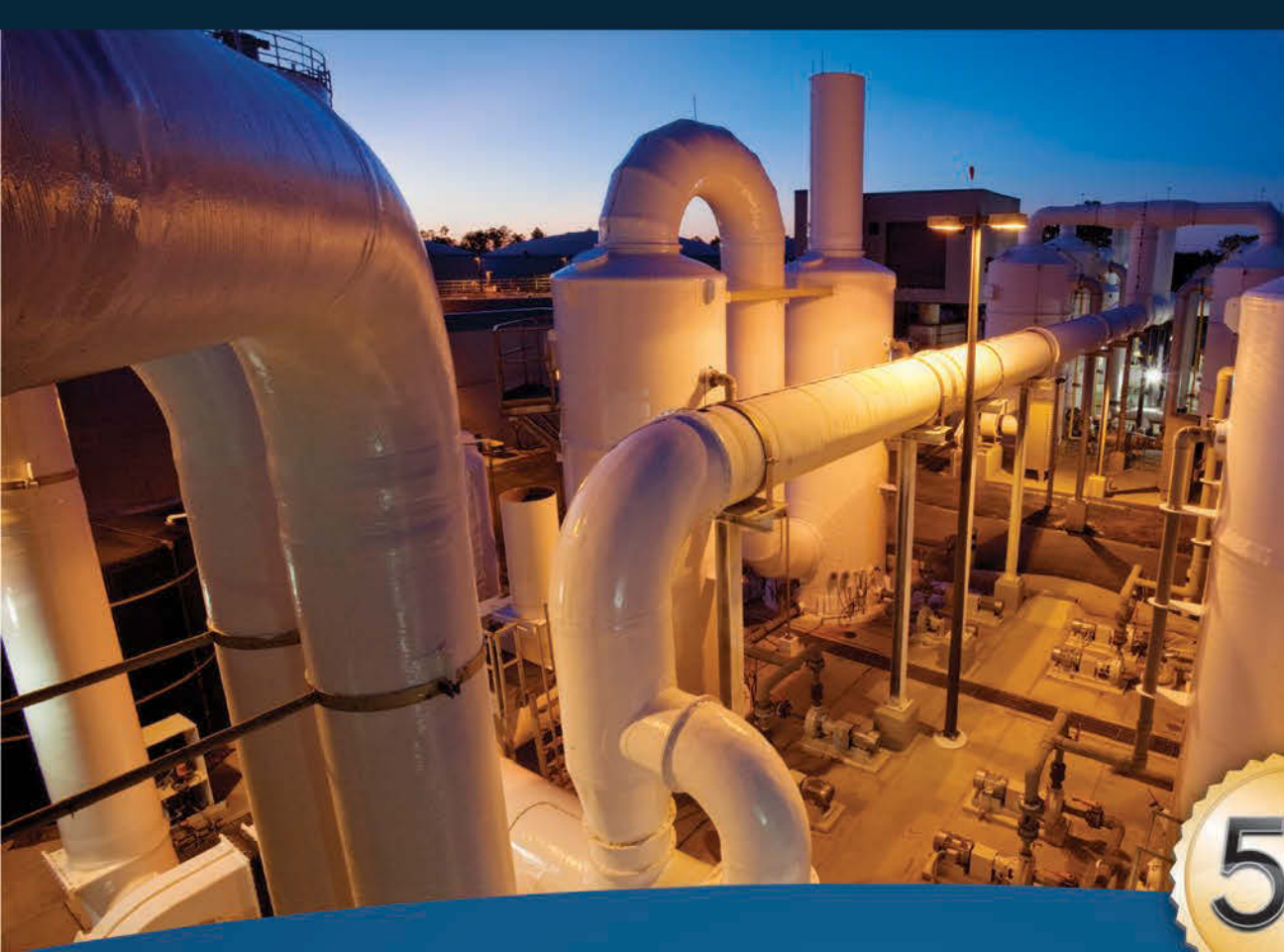
**OPERATING BUDGET:**

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**“We have a lot of grease and rags. It’s unbelievable what people flush down their toilets.”**

— Lori Kahikina



**Above: Workers pump grout around the Mokapu diversion structure at the Kaneohe-Kailua Tunnel project in Kaneohe. Left: A crew member inspects the area around the secondary odor control fan housing and ducts outside the tunnel.**

directed by Frank Doyle, chief of the collections division, for the significant improvement.

### The tunnels

The new force mains first pass under Honolulu Harbor at a depth of 30 feet below the harbor floor (approximately 90 feet beneath the ground surface) and connect the two large pump stations serving the vast majority of the east side of Honolulu with the Sand Island Wastewater Treatment Plant. When finished, the project will provide redundancy and flexibility in operations, including 7,000 feet of dual 60-inch steel casing with plastic pipes. About 1,600 feet of the new line will be below the Honolulu Harbor entrance.

The new lines, says Kahikina, will give Honolulu needed flexibility and redundancy.

“Two force mains will be available at any time to handle peak flow,” she says, with one in reserve, in case of a force main failure. That’s what hap-

pened in 2006, when a force main broke and allowed 48 million gallons of wastewater to spill into the Ala Wai Canal.

The original force main will be decommissioned.

The city’s Department of Design and Construction is working with Frank Coluccio Construction of Seattle to complete ancillary work related to the force main. The two force mains were completed in August 2015, and work is now proceeding on valving. The cost is about \$118 million.

The second dig is not as far along but will also have a positive impact on overflows when completed. Called the Kaneohe-Kailua (K-K) Tunnel, it will convey wastewater by gravity from the Kaneohe pretreatment facility to the Kailua Regional WWTP, a distance of 3 miles. The new line will also provide storage capacity for excess wastewater, further mitigating against spills and overflows. It will replace an older force main that



## AT THE BEACH

The last thing a popular vacation destination like Hawaii needs is beach closings. Unfortunately, that's happened twice in the last 10 years and is a major factor in the massive wastewater overflow control program the City and County of Honolulu has embarked upon.

In 2006, roughly 48 million gallons of untreated wastewater spilled into the Ala Wai Canal after a force main broke beneath the street. According to media reports, the spill triggered health concerns and closed several beaches in Waikiki.

And last August, as Honolulu was engaged in the first phase of its \$5

billion program to reduce overflows and spills, heavy rains spawned by tropical storm Kilo caused about 500,000 gallons of wastewater to be discharged from manholes and flow into the park and storm drains that lead to the ocean. Tourists and the general public were advised to stay out of coastal waters for several days.

"Once the ancillary work is completed, the city will have redundancy and flexibility to send the excess flow during heavy rain events from the metro region area to Sand Island WWTP," says Lori Kahikina, P.E., director of the city's Department of Environmental Services.

had been subject to numerous breaks.

Kahikina says Honolulu successfully negotiated with the EPA to build the 10-foot-diameter gravity sewer line rather than construct a redundant force main — a more expensive plan called for in the original design.

Contractor Southland Mole Construction of Kaneohe, Hawaii, is boring the tunnel at a diameter of 15 feet from a depth of 35 feet below ground level at the head end of the tunnel to a depth of 82 feet at the other. A major lift station will bring the water to the surface for treatment at the Kailua Regional plant. The project, which will cost about \$174 million, includes odor control, entry shafts, diversion structures and a storage reservoir.

### Consent decree

A second phase of the consent decree, signed in 2010, calls for installation of secondary treatment at both the Honouliuli and Sand Island WWTPs. The 26 mgd Honouliuli WWTP, which is partially secondary now, will be required to provide full secondary treatment by 2024, and the 62 mgd Sand Island WWTP by 2035. Previously, both facilities have operated under permits allowing variances from full secondary treatment.

The upgrades will be costly. The city estimates the total for improving treatment at both plants to be \$1.7 billion. ♦

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# NO EXCUSE FOR TRENCHING ACCIDENTS

Having a trained competent person at the work site is critical to ensure worker safety

By Doug Day



A competent person is the last line of defense for workers in trenches. The competent person must be knowledgeable about OSHA standards, soil types and protective systems.

The risks, including death, are well known. Despite being easily prevented, cave-ins during trenching and excavation work continue to occur, killing an average of 40 workers every year. Whenever he hears of an incident, Ronnie Perkins says, “The first thing that comes to my mind is ‘competent person.’”

Perkins, safety and education director for Associated General Contractors of Kentucky, stresses that a competent person is the last line of defense for workers and a company.

“There’s really not an excuse for anyone being injured in a trench accident,” Perkins says. “When you trace it all back, you usually find that they either didn’t have a competent person or that the person really didn’t meet the definition. If you have a competent person who has thoroughly inspected the site, classified the soil, chosen the correct type of protective system and trained all applicable employees in excavation and trenching safety, there should be no trenching accidents.”

Soil is very heavy; a cubic foot of soil can weigh over 100 pounds. Just 1 cubic yard of soil can weigh more than 2,700 pounds and easily kill or injure someone.

A competent person, says Perkins, is someone who is capable of identifying existing and predictable hazards or working conditions, and has been given authority by their employer to immediately correct any hazards. The competent person must be knowledgeable about the OSHA standards and the protective systems they choose to use, and must be able to:

- Classify soil
- Determine the correct type of protective system

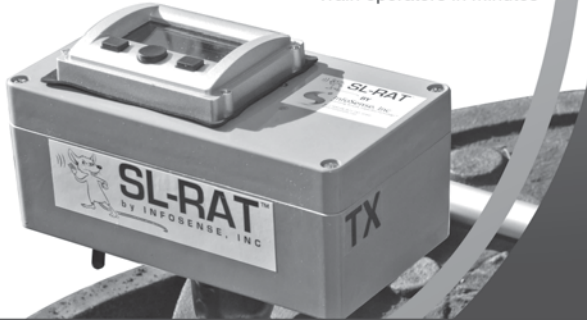




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**No one should ever work in a trench that isn't properly shored. A single cubic yard of soil can weigh more than 2,700 pounds and can easily kill or injure someone in a collapse.**

**“A lot of it is production related: There are only so many hours and minutes in a day. They figure all the extra work to do trench shielding or some kind of protective system is just not necessary, so they take a shortcut and it comes back to haunt them.”**

- Ronnie Perkins

- Monitor water removal equipment
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### Production over safety

Perkins says schedule pressure is a common cause of skipping steps that can easily eliminate the danger.

“A lot of it is production related: There are only so many hours and minutes in a day,” Perkins says. “They figure all the extra work to do trench shielding or some kind of protective system is just not necessary, so they take a shortcut and it comes back to haunt them.”

The consequences can be serious, obviously. Two companies were fined \$140,000 each last summer for the death of a 22-year-old worker killed in a Manhattan cave-in. Because

they were aware of the situation and failed to remove employees even after being warned by safety officials on the project, officials of both companies were also indicted on manslaughter and other charges. Two companies in Texas were fined \$70,000 and \$18,000 in September for violations, even though no accident occurred. In California, two construction companies that ignored OSHA stop-work orders in April last year were fined more than \$164,000 and \$140,000 for sending workers back into unprotected 11-foot excavations. “Safety has to be a line item in the budget. It has to be accounted for,” says Perkins.

But it's not just a financial or production issue. “The first ramification is dealing with the families of the victims,” adds Perkins. “What a company owner has to go through dealing with an employee's family far exceeds any kind of an OSHA penalty.” ♦



# IT'S ALL ABOUT TRAINING

Members provide direction for continued improvement of services within NASSCO

By Ted DeBoda, P.E.

We've noticed explosive growth in membership over the past five years. We have seen a 21 percent increase in our membership base, and NASSCO's annual conferences grow in attendance year after year. While these are extremely positive trends, it's important to understand the reasons behind the trend.

In January, we sent an online survey to 519 new members who have joined NASSCO since 2010. The majority of respondents were contractors, municipalities and engineers, and we learned some very interesting things, including the reasons people join NASSCO, the benefits they receive and areas where our association can grow.

### The Power of PACP

In the past, networking with peers, followed by education (e.g. access to specifications, webinars and other resources) were the two most important benefits members received from NASSCO. While they are still important today, our new members have identified training in NASSCO's Pipeline Assessment Certification Program (PACP) or Inspector Training Certification Program (ITCP) as the No. 1 benefit of NASSCO membership.

While NASSCO membership is not a prerequisite for training in either of these programs, PACP and ITCP were identified as the primary means for industry professionals to learn about NASSCO and opportunities to keep informed through training, stay involved through NASSCO committee participation and network with industry peers.

The importance of PACP and ITCP training was validated with a research question regarding where NASSCO should focus its efforts in the future. Training was the No. 1 answer, with specification guidelines and technical

references ranking No. 2 and No. 3. This is great news for us because over the past 10 years we have focused on the importance of specifications and proper installation of trenchless technologies to ensure the continued acceptance and growth of trenchless technologies, which is an important part of our overall mission.

### Areas for growth

It's always great to hear what we are doing well, but when we conduct research I find the most valuable responses come from those who suggest ways to grow and improve. This survey was no different. When asked what NASSCO could do better, respondents noted three main areas:

**Online training.** One of the most common suggestions was to provide online training, especially for recertification. Luckily, we are on it. One of NASSCO's major initiatives in 2016 is providing online recertification classes to accommodate the busy schedules of our members, trainers and students.

**Committee participation.** Interestingly enough, while 66 percent of the survey respondents do not participate in NASSCO committees, they said it's important for us to ensure committee leadership is strong and proactive, and to make it clear how to get involved in committees. Our committees are making real and lasting changes, and we will work to make participation as easy as possible.

**Regional representation.** Survey respondents indicated they would like better representation regionally and across North America. We hear this request frequently and are investigating the options. Our hope is that our growing partnerships with academia and other organizations, such as the Water Environment Federation, will provide opportunities for NASSCO members to come together more frequently throughout the year. ♦

## Get the EDGE Training and Continuing Education Courses

### PACP TRAINING

#### April 4

##### Northville, MI

1 Day Recertification Course

Trainer: Brandon Conley

Contact Ashley Groves for more information or to register: 248/349-0904 or email pacp@dohenycompanies.com

#### April 4-6

##### Honolulu, HI

PACP Only

A limited number of PACP Recertification seats available.

Contact Marilyn Shepard for more information or to register: 916/899-8961 or email mshepard1@hotmail.com

#### April 5-7

##### Northville, MI

Includes Manholes and Laterals!

Trainer: Brandon Conley

Contact Ashley Groves for more information or to register: 248/349-0904 or email pacp@dohenycompanies.com

#### April 11-13

##### Marriottsville, MD

Includes Manholes and Laterals!

Trainer: Ted DeBoda

Contact Dawn Jaworski for more information or to register: 410/442-7473 or email dawn@nassco.org

#### April 13-15

##### Conyers, GA

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Recertifications Welcome

Contact John Jones for more information or to register: 404/431-5584 or email plumblinconsultant@gmail.com

#### April 13-15

##### Seattle, WA

Includes Manholes and Laterals! (if desired)

PACP Re-certification seats available

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#### April 25

##### San Francisco, CA

1 Day Recertification Course

Trainer: Brandon Conley

Contact Ashley Groves for more information or to register: 248/349-0904 or email pacp@dohenycompanies.com

#### April 26-28

##### San Francisco, CA

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Recertifications Welcome

Trainer: Brandon Conley

Contact the Ashley Groves for more information or to register: 248/349-0904 or email pacp@dohenycompanies.com

#### May 10

##### Marriottsville, MD

PACP User Recertification

Trainer: Ted DeBoda

Contact Dawn Jaworski for more information or to register: 410/442-7473 or email dawn@nassco.org

#### May 16-18

##### Marriottsville, MD

Includes Manholes and Laterals!

Trainer: Ted DeBoda

Contact Dawn Jaworski for more information or to register: 410/442-7473 or email dawn@nassco.org

#### May 18-20

##### Conyers, GA

Includes Manhole and Laterals!

Recertifications Welcome

Contact John Jones for more information or to register: 404/431-5584 or email plumblinconsultant@gmail.com

#### May 18-20

##### Seattle, WA

Includes Manholes and Laterals! (if desired)

PACP recertification seats available

Contact John Jurgens for more information, register or discuss in-house training: 425/487-3325 or email nodig@aol.com

### ITCP TRAINING (CIPP and Manhole)

#### April 6-7

##### Detroit, MI

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8:00 am – 1:00 pm Day 2 Morning

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513/253-8461 email timbacktwo@gmail.com

If you are interested in having a class at your facility or in your area, contact Gerry Muenchmeyer at 252/626-9930 or gerry@muenchmeyerassoc.com

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# DEDICATED TO SERVICE

Palamara helps lead the Onondaga County Water Authority through system expansion, new regulations and a technological revolution

By Erik Gunn

**T**ony Palamara is a lifelong resident of the central New York region where he now works.

The 58-year-old is also a 26-year veteran of the five-county water utility that serves the region. But he's more than that — last year, he was recognized for his leadership as manager of water distribution for the Onondaga County Water Authority. And Palamara's commitment to public service doesn't stop there. He's worked as a volunteer firefighter and for 18 years has served on the town board of the community where he grew up.

Over his tenure at the authority, he's seen technological innovation, system consolidation and increased attention to safety as well as asset management. He takes it all in stride with a low-key style, but Palamara has a distinctive handle on the depth and breadth of the ever-growing system that he helps manage, according to his boss, Geoff Miller.

"Everyone can go to him because he understands our full system," says Miller, deputy executive director of OCWA. "If there's something odd going on in the water system, he's the go-to guy. You go to Tony and you know you can find the answer there." And with his experience as a

volunteer firefighter and in town government, Miller adds, Palamara's dedication seems limitless. "He cares about all the Public Works."

That helps explain why he was named statewide 2014 Professional Manager of the Year for Water Resources by the New York Chapter of the American Public Works Association.

## Multi-county system

OCWA serves most of Onondaga County in central upstate New York, with the exception of the county's largest city, Syracuse, which operates its own system. In addition, OCWA's reach extends to four surrounding counties. Besides its own distribution lines, it operates additional water distribution lines under lease agreements with various local communities it serves.

OCWA gets its water from Lake Ontario and Otisco Lake, the easternmost of the Finger Lakes splayed across New York's midsection. Ontario water is treated and resold to OCWA by the Onondaga County Metropolitan Water Board, accounting for about half of OCWA's customers. The other half gets its water from the Otisco Lake supply, which OCWA treats at its own facility.

The region has seen substantial consolidation of water systems over the years, but OCWA's

area still includes a number of local village and township water utilities, many of whom buy water from the authority.

## A changing business

OCWA's water distribution system consists of a mix of cast iron pipelines, some dating back to the early 1900s, prestressed concrete pipe that came into use in the 1960s, and more recent ductile iron pipe that has been in use since the early 1970s. Water drawn from the lakes is treated and held in massive covered concrete reservoirs.

The authority's distribution network includes more than 2,000 miles of pipe served by 55 water tanks and 42 pump stations. "We've really grown a lot over the years," Miller says. Through it all, Palamara has made it his business to keep up with the expanding system.

A native of the area, Palamara's first career was in construction. In the 1980s he gravitated to Public Works, joining OCWA in 1990. The

*(continued)*

**Tony Palamara, water distribution manager for the Onondaga County Water Authority, was named Water Resources Professional Manager of the Year by the New York Chapter of the American Public Works Association. (Photography by John Berry)**



## If You Indirectly Purchased Ductile Iron Pipe Fittings between January 11, 2008, and December 31, 2013, You Could Be Affected by Proposed Class Action Settlements

*Please read the entire Notice carefully, as these Settlements may affect your rights.*

### What Is This Lawsuit About?

The Proposed Settlements are in a class action lawsuit called *In re Ductile Iron Pipe Fittings ("DIPF") Indirect Purchaser Antitrust Litigation*, which is pending in the United States District Court for the District of New Jersey. The lawsuit alleges that (i) Defendants entered into price-fixing agreements for DIPF in the United States in violation of state and federal antitrust laws and state consumer protection laws, (ii) McWane monopolized the alleged market for Domestic DIPF in the United States in violation of federal and state laws, and (iii) SIGMA and McWane conspired to restrain trade and to monopolize the alleged market for Domestic DIPF in the United States in violation of federal and state laws. The lawsuit claims that plaintiffs paid more for DIPF and Domestic DIPF they purchased than they otherwise would have paid. Defendants deny all of plaintiffs' allegations. The Court has not made any decision as to the merits of the plaintiffs' allegations. The Defendants are: SIGMA Corporation, SIGMA Piping Products Corporation, Star Pipe Products, Ltd., McWane, Inc., and its divisions, Clow Water Systems Co., Tyler Pipe Company, and Tyler Union.

### Why Are There Proposed Settlements With SIGMA and Star?

Both SIGMA and Star have denied all liability and wrongdoing in this case and have asserted various defenses to the plaintiffs' claims. The Court did not decide in favor of the plaintiffs or SIGMA and Star. Instead, both sides agreed to the SIGMA and Star Settlements to avoid the cost and risk of a trial, and so the class members affected will get compensation. The class representatives and class counsel think the SIGMA and Star Settlements are the best result for all class members. The case is continuing against McWane.

### Am I a Class Member?

The **SIGMA Settlement** has two classes: All persons or entities that reside or have a place of business in the 29 affected States (full list available at [www.DIPFIndirectSettlement.com](http://www.DIPFIndirectSettlement.com)): (1) that purchased DIPF indirectly from any defendant at any time from January 11, 2008, through June 30, 2011; or (2) that purchased Domestic DIPF indirectly from McWane or SIGMA at any time from September 17, 2009, through December 31, 2013.

The **Star Settlement** has only one class: All persons or entities that reside or have a place of business in the 29 affected States (full list available at [www.DIPFIndirectSettlement.com](http://www.DIPFIndirectSettlement.com)) that purchased DIPF indirectly from any defendant at any time from January 11, 2008, through June 30, 2011.

### What Do The Settlements Provide and How Do I Get a Payment?

Under the respective Settlements, SIGMA has agreed to pay \$2,005,000 in cash and Star has agreed to pay \$641,250 in cash. If you are a class member and do not exclude yourself from the Settlements, you may be eligible to receive a payment. The SIGMA amount is subject to possible reduction under paragraph 51 of the Settlement Agreement.

To participate in the Settlements, you must send in a valid Claim Form, available at [www.DIPFIndirectSettlement.com](http://www.DIPFIndirectSettlement.com). Be sure to sign the Claim Form and mail it by first-class mail postmarked no later than June 9, 2016 to DIPF Indirect Purchaser Antitrust Litigation, c/o GCG, P.O. Box 10251, Dublin, OH 43017-5751.

If the Court approves the Settlements, payments from the SIGMA Settlement Fund and Star Settlement Fund will be distributed in the future to members of each class who submit valid and timely claims.

### Can I Exclude Myself?

If you want to keep the right to sue or continue to sue SIGMA or Star (or both of them) about the legal issues in this case, then you must exclude yourself from the Settlement Class with SIGMA and Star. **If you exclude yourself from either or both Settlement Classes, you will not get any payment from the Settlement(s) from which you are excluded.**

To exclude yourself, you must send a letter saying that you want to be excluded. Important instructions about how to exclude yourself can be obtained from [www.DIPFIndirectSettlement.com](http://www.DIPFIndirectSettlement.com). **Your letter must be postmarked by May 3, 2016.**

### How Do I Object?

You can object to either or both of the Settlements if you are a class member and have not excluded yourself.

To object, you must send a letter to the Court. Instructions about how to object may be obtained from [www.DIPFIndirectSettlement.com](http://www.DIPFIndirectSettlement.com). **Your letter must be filed with the Court by May 19, 2016.**

### What If I Do Nothing?

If you do nothing, you will remain in the classes for both the SIGMA and Star Settlements. If you remain in the classes, to qualify for a payment you must send in a Claim Form.

### Who Represents Me?

The Court has appointed Joseph C. Kohn of Kohn Swift & Graf, P.C.; Robert S. Kitchenoff of Weinstein Kitchenoff & Asher, LLC; and David Kovel of Kirby McInerney, LLP ("Class Counsel") to represent the Settlement Classes for purposes of the SIGMA and Star Settlements. If you want to be represented by your own lawyer concerning the Settlements, you may hire one at your own expense.

These lawyers will ask the Court to approve an award to pay for expenses incurred and that will be incurred in the prosecution of the lawsuit in the amount of \$459,250 (approximately twenty percent of the SIGMA and Star Settlements). The request for expenses will be available for viewing on the website below once it is filed with the Court. The lawyers are not currently seeking an award of attorneys' fees or incentive awards for the class representatives. Any request for attorneys' fees will not exceed one-third of the Settlement funds. You will be given notice if a request for an award of attorneys' fees or incentive awards is made.

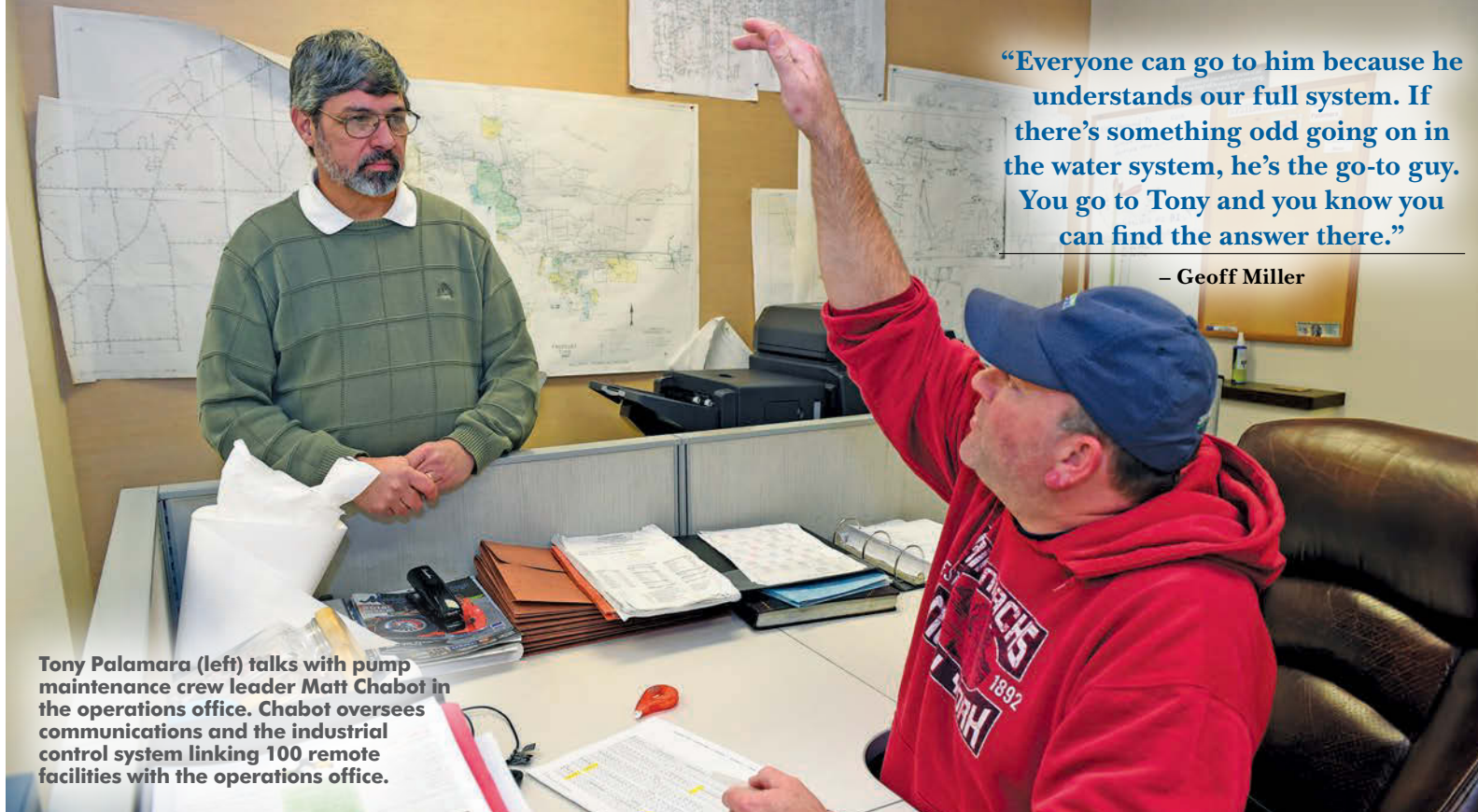
### When Will The Judge Decide?

The Court will hold a fairness hearing at 10:00 a.m. on June 8, 2016, at the United States District Court for the District of New Jersey, 402 East State Street, Trenton, NJ 08608. If there are objections, the Court will consider them at this time. You may appear at the hearing, but you are not required to do so. The hearing may be moved to a different date or time without notice. You should check the Settlement Website below for updates.

**This Notice is only a summary. For more information visit the website below.**

**[www.DIPFIndirectSettlement.com](http://www.DIPFIndirectSettlement.com)**





Tony Palamara (left) talks with pump maintenance crew leader Matt Chabot in the operations office. Chabot oversees communications and the industrial control system linking 100 remote facilities with the operations office.

“Everyone can go to him because he understands our full system. If there’s something odd going on in the water system, he’s the go-to guy. You go to Tony and you know you can find the answer there.”

– Geoff Miller

changes he’s seen since then have been enormous — from technology to changing regulations governing the water business. And then there’s the sheer growth of the system.

“We probably have twice as many customers and twice as many miles of water main as when I started,” Palamara says — although thanks to greater efficiency, the actual volume of water used each day isn’t much different.

### Technological revolution

When he first joined OCWA in 1990, Palamara recalls seeing only one or two computers in the office. “Now most employees have laptops. They have access to data and can provide data.” Add smartphones to the mix and workers in the field can tap into just about any information they need without having to return to the office to look it up.

For example, water system operators respond-

ing to customer concerns can collect data in the field and update the authority’s GIS system maps remotely instead of relying on paper maps of old.

Or take leak detection. Recording sensors deployed at key fire hydrants have played a role in helping pinpoint leak sources more accurately than ever, he notes — and by keeping track over time, can point to problems waiting to happen. And through it all, work crews never have to leave the field.

“We can take the hydrant recorder data, we can merge that into our existing data and we can look at trends to identify sources of water distribution problems in a timely fashion,” he says. The crews who go on site to investigate “can transmit pictures directly from the field, so I can make decisions based on their observations without doing a site visit.”

### Mobile office

With the power that technology puts in his crews’ hands, Palamara adds, OCWA took the logical next step — assigning wired-in leak detection crews who rarely have to come into the office.

“I had our leak detection crews set up with laptops, correlators, printers,” he says. “They are basically a mobile office. They spend most of their time in the field working, and they have direct access to

the data that they would need” — a site’s history of repairs and other reports, for example.

Technology even speeds up the process when third-party contractors get involved. When a trouble spot needing repair pops up, information can be sent directly

(continued)



### PROFILE:

## Onondaga County (New York) Water Authority

**POPULATION SERVED:**  
340,000

**SERVICE AREA:**  
Most of Onondaga County; portions of Cayuga, Madison, Oneida, Oswego counties in central New York State

**WATER VOLUME:**  
73 mgd capacity; 38.91 mgd average (2015)

**EMPLOYEES:**  
140

**INFRASTRUCTURE:**  
2,010 miles of water distribution lines under direct OCWA control; 1 treatment plant; 54 storage tanks; 42 pump stations

**ANNUAL OPERATING BUDGET:**  
\$42.8 million (2016)

**WEBSITE:**  
[www.ocwa.org](http://www.ocwa.org)



Three meter repair vehicles that can carry everything needed to install residential water meters were added to the Onondaga County Water Authority fleet in 2015.



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**Tony Palamara marks the location of a suspected water leak on a map in his office.**

tem. OCWA has been busy recording every available detail and history of key pieces of system infrastructure. “That’s going to be valuable as employees retire,” Miller points out.

Twice a year, Palamara explains, the facility’s maintenance crew runs a report on the SCADA system to generate routine maintenance work orders. They record the completion of jobs, and the system helps monitor the workflow.

The system also allows flexibility. “When a crew is doing preventive maintenance, if they find a problem they can repair it as corrective maintenance,” Palamara says. That proactive stance reduces the need to call in crews after hours for emergencies.

An outside engineering firm conducts regular inspections of the system. The reports help measure performance and plan for future projects.

to the contractor. The bottom line is that service speeds up all the way down the line. “We can respond quicker,” Palamara says.

### **Asset management**

Those changes aren’t just about new technology, though. They also reflect a bigger change in

recent years: OCWA’s implementation of asset management. “Our goal is to do more preventive maintenance than emergency maintenance,” Palamara says.

According to Miller, Palamara has led the way in upgrading the authority’s asset and work management system, which is part of the SCADA sys-

### **Team player**

Palamara is a team player — a characteristic that extends not just to his co-workers but to the people who report to him. “He’s supported all his employees in their growth and development throughout the years,” Miller says. “He’s always eager to learn more. He’s always excelled at every-



**The Onondaga County Water Authority team includes Water Distribution Manager Tony Palamara (front, left) along with (from left) pump maintenance worker Dan Buck, pump maintenance crew leader Matt Chabot, instrumentation crew leader Mike Jaquith, and pump maintenance workers Mark McPherson and John Baranello.**



thing he's done."

He's also been active in state and national professional groups, including the American Water Works Association and the American Public Works Association. Palamara has served on national committees for the AWWA, and has encouraged his staff to get involved in the organization locally.

And Palamara's not shy about lending a hand with other water and wastewater agencies across

the state. "There's been a lot of consolidation over the years," Miller says. "Tony's helped lead that effort. He's helped a lot of the communities in central New York get safe drinking water."

Not content with just a day job, Palamara has been serving his local community, the Town of Lenox, as an elected member of the town council since 1998. And, he notes, he's experienced valuable training in leadership and crisis management, particularly on the fire department, that

has helped him on his day job.

Palamara had no idea he'd been nominated for the Professional Idea of the Year award. When he won, Jeff Brown, the OCWA general counsel and public information officer, delivered the news to him personally. "I was quite shocked," Palamara says.

"It's more about us as a group than it is about me as an individual. I've got a great group of 20 people who work directly with me." ♦

## OCWA PUTS SAFETY FIRST

A 2014 award for the Onondaga County Water Authority's distribution manager, Tony Palamara, may have been something of a harbinger.

In 2015, the authority was recognized for its safety practices by the New York Section of the American Water Works Association.

"Safety is job one in my book," says Palamara — and the authority's board has always been committed to safe work practices during his 26-year tenure with the organization.

Among other things, the award recognized OCWA for its active safety. The committee, with representatives from various departments in the authority, meets once a month, reviews safety concerns and accident reports, and makes recommendations on corrective measures. Employees can bring concerns directly to the committee, Palamara notes.

Two to three times a year — or more often if particular issues arise that need addressing — the authority holds special training events for employees.

Employee suggestions get listened to. Geoff Miller, deputy executive director of OCWA, points to one example — monthly safety posters that the committee issues to raise awareness among employees. The posters aren't just generic, off-the-shelf pieces. They were generated in-house, with the help of a graphic artist on OCWA's staff.

Miller notes that the original idea came from one of the employees in Palamara's department.

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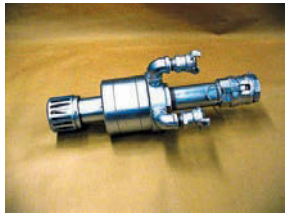


# MANHOLE EQUIPMENT AND REHABILITATION

By Craig Mandli

## APPLICATORS

### RFI Construction Products Model 360



The **Model 360** hand-held, high-speed, air-powered spinning nozzle from **RFI Construction Products** is used to apply fine-grain mortars, grouts and epoxies to circular surfaces. It has the capacity to line 4- to 96-inch-diameter pipe, manholes, storage tanks and pipe fittings. Linings can range from 1/8 to 1 inch. Coatings go on with a controlled wall thickness, and the operator stays above ground to spray. **631/752-8899; www.rficonstructionproducts.com.**

## CHEMICAL GROUTS

### Avanti International AV-100



**AV-100** from **Avanti International** is an ultra-low-viscosity, chemically reactive gel that has a similar viscosity to water. It can permeate anywhere water can travel and has adjustable cure times from five seconds to more than 10 hours. It is used to rehabilitate and sustain sanitary collection systems by eliminating infiltration in manholes, sewer mainlines, joints, laterals, and before and after various forms of CIPP lining. By elimin-

inating infiltration before lining pipes, users achieve maximum performance and an infiltration-free environment. It creates an effective, long-lasting water barrier while providing soil stabilization. **800/877-2570; www.avantigrout.com.**

## EPOXIES

### Epoxytec Mortartec Ceramico



**Mortartec Ceramico** epoxy-modified mortar from **Epoxytec** is a blend of epoxy technology combined with hardened ceramics. The result is a smooth mortar application with a hard, sealed surface once cured. It provides a chemical-resistant mortar and eliminates up to 95 percent of outgassing. It provides same-day recoat, epoxy topcoat three hours after applied, and ideal epoxy-assisted adhesion. There is no need for further preparation after cure (zero laitance). It has ultra-thin film capability (as low as 1/16 inch safely), up to 1 inch per pass. It increases adhesion to both underlayment and epoxy topcoat. **877/463-7699; www.epoxytec.com.**

### Infrastructure Repair Systems Infragard

**Infragard** concrete and manhole rehabilitation products from **Infrastructure Repair Systems** include Topcoat and Chim Coat, which are non-hazardous ambient cure epoxy systems for a small patch, an entire manhole or a retaining wall. This cost-effective solution requires no expensive equip-



ment, as it has an easy trowel-on application. They are corrosion resistant and high strength, with an impermeable structural bond to the substrate or to most any concrete or metal surface. Chim Coat is engineered with a flexible feature that maintains adhesion while expanding or contracting with changing temperatures and traffic loads. **877/327-4216; www.irsi.net.**

### Madewell Products two-component system



The use of a two-component system consisting of a high-build restoration mortar and a 100 percent solids epoxy corrosion barrier coating from **Madewell Products** is an effective way to repair and protect concrete and brick sewer structures. First the mortar is shot onto a damp substrate, using the water on the surface to achieve a strong bond. Then an epoxy topcoat is applied while the mortar is still soft, and the two materials cure together. The final product results in a strong and corrosion-resistant monolithic lining that provides a continuous surface. The mortar and topcoat are tightly bonded to the substrate and each other. This system eliminates the need to dry the structure prior to mortar application. The need for a second mobilization to apply the epoxy after the mortar has cured is also eliminated because the two materials cure simultaneously. **800/741-8199; www.madewell.net.**

### Raven 405



**Raven 405** from **Raven Lining Systems** is a solvent-free, 100 percent solids, ultra-high-build epoxy coating formulated with high physical strengths and broad-range chemical resistance. It exhibits superior bond to concrete, steel, masonry, fiberglass and other surfaces. Designed for operating temperatures up to 200 degrees F, its ultra-high-build ability allows it to be spray-applied on vertical and overhead surfaces. Its surface tolerance and high physical strength allow it to be designed as a structural lining in manholes, pipelines, tanks and other deteriorated structures. **800/324-2810; www.ravenlining.com.**

## INSERTS

### The Man Pan manhole insert



Manhole inserts from **The Man Pan** are easy to install and provide a short payback. They prevent grit, salt, sand, chemical spills and road oils from entering the collections system. They are effective in stopping surface inflows through exiting manholes. One study showed that just 1/8 inch of standing water on a manhole with



concealed pick holes allowed 637 gph of inflow. That can be prevented with a simple manhole insert, gasketed and trimmed to fit the system's manholes. Most inserts are made of corrosion-resistant plastic and have a neoprene gasket for extra protection. **724/942-9500; www.themanpan.com.**

## LIDS

### Trumbull Industries polymer manhole lids



Polymer manhole lids from **Trumbull Industries** are ideal for highway use in place of cast iron lids. Versions are available through 30-inch diameters for water meters and sanitary sewers. They have no scrap value, eliminating the theft problem common to cast iron lids. They are also lightweight, reducing finger and back injuries. They are radio-friendly, allowing signals from AMR and AMI water meter systems, as well as flow monitoring devices, to pass through. **800/677-1799; www.trumbull-mfg.com.**

## MANHOLE LINERS

### LMK Technologies CIPMH



The universal, stretchable, one-size-fits-most CIPMH system by **LMK Technologies** is engineered to produce a cured-in-place seal that resists freeze/thaw conditions. It is made to fit all manhole configurations, including barrel sections, eccentric and concentric cones constructed of brick and mortar, precast or block. Since it uses a stretchable liner, site preparation and installation can occur on the same day, eliminating lead-time for ordering. It can be installed as a chimney seal or full-depth manhole lining. Once the liner has been vacuum impregnated and manually inverted into the manhole, the liner will cure under pressure in one to two hours depending on depth. **815/433-1275; www.lmktechnologies.com.**

### Perma-Liner Industries CIPMH



The **Perma-Liner Industries** trenchless CIPMH one-size liner provides all the benefits of CIPP. It is simple to install and completely renews a manhole in a couple of hours. It requires no digging, resulting in minimal disruption to the public. It is made to fit all manholes, including barrel sections, eccentric and concentric cones constructed of brick and mortar, precast or block. The liner for chimney or full-depth manholes eliminates infiltration and inflow through manhole walls. This universal-sized liner is engineered to resist freeze-thaw cycles and create a watertight, corrosion-resistant structural lining. **866/336-2568; www.perma-liner.com.**

### Strike Products I & I Barrier



The **I & I Barrier** from **Strike Products** is designed to stop water from leaking into a manhole through the grade rings. It has no adjustment bands or flexible rubber material, as its rigid polyethylene barrier wall dams water and stops it from entering manholes. It is easy to install, and can be adjusted for different road variations. The manhole remains clean during the construction, as no debris can fall into the manhole. Inspection of the completed process is easy. **800/262-4129; www.striketool.com.**

## MANHOLE PARTS AND COMPONENTS

### Press-Seal Corporation PSX: Direct Drive



The **PSX: Direct Drive** from **Press-Seal Corporation** is a pipe-to-manhole connector providing a strong seal. This connector can be used in stormwater or sanitary sewer structures meeting and/or exceeding ASTM C 923. Every connector size uses a specific torque wrench preset to 12, 20 or 60 ft-lbs, and they are color-coded for easy identification when out in the field. The all-stainless-steel power sleeve, with no plastic, rivets or welds, means there is a stronger connection and sealing force around the gasket. To add an even tighter seal around the entire hole, multiple mechanisms are provided as the gasket increases in size at 26, 32 and 34 inches. The power sleeve and adjuster installs quickly and easily from the outside of the manhole. **800/348-7325; www.press-seal.com.**

### RELINER/Duran Drop Bowl



**Drop Bowls** from **RELINER/Duran** eliminate outside drops, clean up failed inside drops and can be used with stormwater drops. They are compact and reduce maintenance. They also simplify cleaning and provide full access to areas below. The low-profile bowls attach to the manhole wall with stainless steel expansion bolts. They are available in many sizes to accommodate different flows. Fully adjustable stainless steel clamps for the drop pipes are also available. **800/508-6001; www.reliner.com.**

### Simple Solutions Distributing Wolverine Brand Manhole Odor Insert



The **Wolverine Brand Manhole Odor Insert** from **Simple Solutions Distributing** is custom-made to exact dimensions to ensure a quality installation and trouble-free operation. Each insert is designed for easy installation and years of trouble-free service. It is available with an optional hydrogen sulfide saturation indicator sticker that monitors for saturation and end-of-service life of the filter media. Each is manufactured from a durable high-density polyethylene copolymer material that meets ASTM Specification Designation D-1248 Class A, Category 5, Type III. The carbon canister is manufactured from PVC and corrosion-resistant components. **866/667-8465; www.industrialodorcontrol.com.**

### USB - Sewer Equipment Corporation Alphajet



The **Alphajet** cleaning nozzle from **USB - Sewer Equipment Corporation** is designed to clean grease, sludge and crusts from lift stations and manholes prior to rehabilitations. It is actuated by water coming from the pressurized hose of the jetter truck. Four driving nozzles cause 360-degree controlled rotation in a horizontal plane, eliminating the need to cover the manhole. The horizontal rotation allows for observation of the cleaning progress. The body requires no lubrication or replacement of internal mechanical parts within the first 12 months of operation, making it user-friendly. Driving nozzles can be extended to accommodate various sizes of manholes/lift stations. **866/408-2814; www.usbsec.com.**

(continued)



**SAFETY EQUIPMENT/TOOLS**

**Coneqtec-Universal HS-57 Manhole Saw II**



The **HS-57 Manhole Saw II** from **Coneqtec-Universal** is a heavy-duty skid-steer attachment that removes the collar and surrounding area of concrete and asphalt encasing manhole covers. It reduces the hours required to repair manhole covers to minutes; typically 10 to 20 minutes in concrete and twice as fast in asphalt. It has a 14-inch-depth cut, improved positioning and optional centering arms. It includes

heavy-duty hydraulic motors, a hydraulic-powered breakout feature (no rocking or loader breakout), and 45 carbide-tipped picks to cut through concrete, asphalt and brick. A self-aligning hydraulic clamp securely attaches to the collar. It provides a 57-inch-diameter hole cut, and lifts the collar and surrounding layers of concrete/asphalt when the cut is finished. The entire area is set/released onto a truck bed for disposal. The collar can easily be broken free for reuse. **888/832-3462; www.coneqtec.com.**

**Fibergrate Composite Structures Dynarail**



Combining corrosion resistance, long life and a low-maintenance design, **Dynarail** fiberglass reinforced plastic ladder systems from **Fibergrate Composite Structures** are designed and manufactured to be easily installed with no guesswork involved. Components are lightweight and easy to fabricate. Combining its low cost of installation with low maintenance and long life, it offers a low life cycle cost. The line includes ladders, standard walk-throughs and safety cages. Ladder rungs with heavily serrated flutes ensure slip-resistant footholds, increasing worker safety. The ladders are useful

in applications such as manholes, pits, pump stations, wet wells and other access points where covers are used. **800/527-4043; www.fibergrate.com.**

**H2TR MPR100**



The **MPR100** manhole protection ring from **H2TR** protects camera lines, jetter hoses and liners from the rough edges of manholes by simply dropping it into the manhole prior to any equipment. It is produced in a highly visible safety orange to help identify the site and the open manhole, reducing potential hazards. It provides a full 360-degree area of edge protection. **517/204-2121; www.h2tr.com.**

**Hurco Technologies Valve & Vac**



The **Valve & Vac** system from **Hurco Technologies** was developed due to requests for user-friendly, durable and reliable valve-exercising equipment that will virtually eliminate worker fatigue

and injury. The vacuums use products such as Caterpillar, Gardner Denver and Giant. The valve exercisers have large range capabilities, so valves and hydrants located in hard-to-reach locations are easily accessed. Computerized data collection allows for error-free reports on valve conditions, and can be integrated with existing GIS. **800/888-1436; www.hurcotech.com.**

**Hy-Flex Corporation 30GM/DM**

The **30GM/DM** trailer-mounted rotor/stator pump from **Hy-Flex Corporation** has an integrated mixer and air compressor. Available with either



a standard gasoline or optional diesel engine, it is designed to pump cementitious linings and coatings. Mated with an optional Hy-Flex SpinCaster, the pump is a high output, agile, compact package for contractors performing wastewater, containment repair and rehabilitation projects. Ease of operation and maintenance make it an ideal choice. **866/849-6246; www.hyflexcorp.com.**

**LIFTPLAQ**



The **LIFTPLAQ** tool allows manhole covers and road stoppers to be removed in a safe manner. The mechanical assembly is fitted with a powerful magnet, connecting firmly to covers and road plates. It is ideal for personnel working on dry and wet networks and can be fitted with extensions to suit large manhole covers. The ergonomic design allows workers to lift covers with their backs straight and knees bent. There is no contact between the operator's hands and the cover. The unit is easy

to move and requires minimal storage space. **786/486-3197; www.liftplaq.us.**

**Logiball Lateral Test and Seal Grouting Packers**



**Lateral Test and Seal Grouting Packers** for trenchless rehabilitation of collections systems from **Logiball** are used to stop infiltration at lateral connections and in lateral joints all from the mainline sewer access as far as 30 feet from the mainline. They are available for 6- through 144-inch pipes. Packers for elliptical and box culverts are available. Flexible push/pull packers are used to seal the laterals from an above-ground access or laterals coming into manholes. Chemical grouting seals the soil

around the injection points, preventing washout of backfill into the sewer and sealing off infiltration. **800/246-5988; www.logiball.com.**

**Mr. Manhole Six Shooter Gold Series**



The **Six Shooter Gold Series** manhole cutter from **Mr. Manhole** has carbide cutting teeth with a curved profile, improving the longevity of the teeth and providing faster cutting. The cutting teeth can be replaced on the job site, in seconds. The tool has an adjustable cutting diameter with a quick adjust function that allows for quick diameter changes without tools. The auger has been enhanced to include a 2.5-inch hex connector. With a universal mounting plate, the auger connects to all skid loaders, regardless of make and model. Hose connections are Stucchi A13 SAE 3/4-inch. In conjunction with the enhanced auger, the weight of the frame has been increased

for a smoother cutting experience. **419/741-9075; www.mrmanhole.com.**

for a smoother cutting experience. **419/741-9075; www.mrmanhole.com.**

**Parson Environmental Products Pro50 Starter**



The **Pro50 Starter** manhole rehabilitation system from **Parson Environmental Products** has been upgraded to include a 2 hp motor and faster paddle speed. The lightweight and

*(continued)*

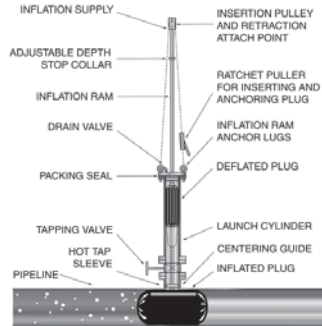


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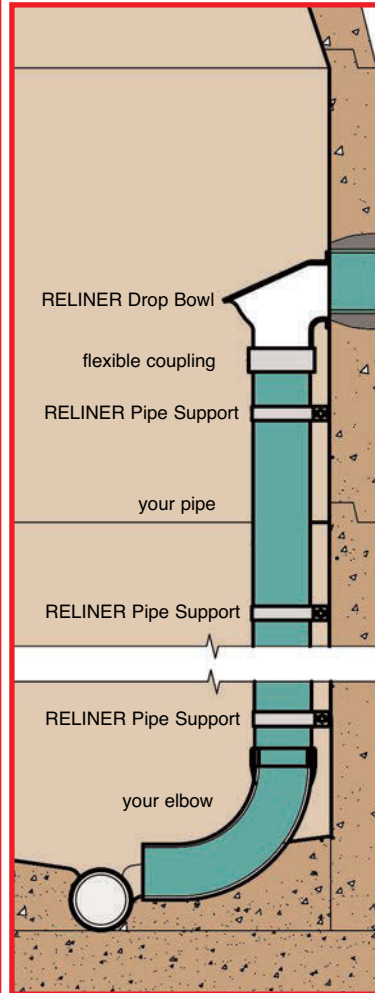
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portable unit has a larger drum diameter and a greater batch output than the previous model. Other notable changes include improved handles and wheels for easier movement. **800/356-9023; www.parsonsenvironmental.com.**



### Rock Mills Enterprises The Lifter PLUS

The **Lifter PLUS** from **Rock Mills Enterprises** offers an automated, safe and efficient solution for manhole cover and drainage grate removal. It delivers 3,500 pounds of magnetic gripping capacity, ideal for large-diameter, heavy covers that may also have raised rib and lettering designs. An optional swing arm has a 600-pound load capacity. It is operated with a hand-held remote control and is available with a roadway camera and vehicle dash monitor that allows the operator to

see the roadway and position the unit over the cover. **712/451-6550; www.rockmillsent.com.**

### Southland Tool Saf-T-Guide Roller



The **Saf-T-Guide Roller** from **Southland Tool** keeps contaminated sewer water from splashing up from the manhole. It is made of aluminum and incorporates clear, removable Lexan side plates that protect the operator from spray and mist. The plates are 3/8-inch thick with rubber trim around the edge that won't come off. The center

roller is made of durable nylon. The end lift plate allows the operator to insert hose with any size nozzle. Units are available for 24- or 36-inch manholes. **714/632-8198; www.southlandtool.com.**

### U-TECK Safe-T Lid



**Safe-T Lid** temporary manhole covers from **U-TECK** provide fall-in protection while the manhole or hand-hole lid is removed. Made from high-impact-resistant composite, each lid weighs 11 to 14 pounds and can support up to 400 pounds of direct weight. Openings along the edge accommodate cables, ducts or hoses.

Hand openings allow for easy transport, placement and removal. Custom sizes and engraving are available, and lids come in high-visibility yellow or orange. **800/542-7011; www.uteck.com.**

### WHIRLYGIG System



The **WHIRLYGIG** method of manhole riser/collar installation is size accurate, installs in minutes and leaves no doubt about quality control. Simply place a form on the manhole cone, trim the form to grade with the radial arm trimmer, place the manhole ring, check accuracy and pour Redi-mix. The system streamlines installation into a process that

works every time and produces a sturdy installation. **800/307-4263; www.wgig.us.**

## SEALANTS

### Milliken Infrastructure Solutions GeoSpray

The **GeoSpray** system from **Milliken Infrastructure Solutions** is made of a high-performance fiber-reinforced geopolymer mortar formulated and engineered for structural pipe rehabilitation, pipe leak repair and manhole



corrosion resistance. This high-strength, ultra-low-porosity material is made from natural mineral polymers and recycled industrial waste streams. It contains no leachable toxins and sets and cures quickly. It facilitates the creation of a new structural pipe within the old pipe. This process requires no digging, virtually eliminating traffic delays. It continues to react with itself for decades, building additional strength and enhancing its service life expectancy. It was tested under ASTM procedures to ensure it addresses market needs. **855/655-6750; infrastructure.milliken.com.**



### Quadex GeoKrete

**GeoKrete** geopolymer corrosion-resistant structural repair mortar from **Quadex** is ideal for rehabilitating deteriorated sanitary and stormwater sewer structures. It quickly and cost-effectively restores structural integrity to corroded manholes and other underground structures. It's a versatile product and can be spin-cast, sprayed or trowel-applied, depend-

ing on the need. The formulation is composed mostly of recycled industrial byproducts. It cures through polymerization instead of hydration, resulting in a strong, quick-setting repair mortar with exceptional chemical resistance. **870/688-7100; www.quadexonline.com.**



### Sauereisen Manhole ChimneySeal No. F-88

**Manhole ChimneySeal No. F-88** from **Sauereisen** helps prevent water inflow and infiltration within the chimney section of manholes. It is an elastomeric lining composed of fiber-reinforced, asphalt-modified urethane that maintains elasticity and adhesion from -30 to

250 degrees F. Its flexible nature allows it to withstand the forces that frequently cause breaches in manhole chimneys. By sealing this particularly vulnerable section of the manhole, it is possible to avoid the penetration of groundwater that would otherwise be treated as sewage. After two components are mixed, the slurry is simply wiped onto the surface of the manhole by hand while wearing a glove. No mechanical fittings are required, as it will bond to the contour of the structure without gaps. **412/963-0303; www.sauereisen.com.**



### Sealing Systems Flex-Seal Utility Sealant

**Flex-Seal Utility Sealant** from **Sealing Systems** is a plural component aromatic urethane with 800 percent elongation and a tensile strength of 3,200 psi. It is designed to prevent inflow/infiltration and provide corrosion protection at the grade adjustment ring or joint section. It provides an ideal seal and will pass a vacuum test according to ASTM standards. The internal seal is manually applied using a paintbrush, and the kit is designed to cover 12 vertical inches on a 27-inch-diameter manhole. **800/478-2054; www.ssisealingsystems.com.**

It provides an ideal seal and will pass a vacuum test according to ASTM standards. The internal seal is manually applied using a paintbrush, and the kit is designed to cover 12 vertical inches on a 27-inch-diameter manhole. **800/478-2054; www.ssisealingsystems.com.**

### Sprayroq SprayWall

**SprayWall** from **Sprayroq** is a structural spray-applied polyurethane for sewer, stormwater and potable water infrastructure rehabilitation and protection. The 100 percent VOC-free self-priming corrosion- and abrasion-





resistant spray-applied polyurethane coating reinstates structural integrity and provides infiltration control and chemical resistance for concrete, steel, masonry, fiberglass and other surfaces. It is designed for applications on surfaces exposed to acids, corrosives and other caustic elements. Environmental and climatic factors such as freeze/thaw cycling, high humidity or shrinking and swelling soil conditions have minimal effect. It can be applied at any desired thickness in a single mobilization. Its quick curing time allows newly protected structures to be returned to service quickly. It has been extensively third-party tested and provides exceptional ROI with a 50-year design life. 205/957-0020; [www.sprayroq.com](http://www.sprayroq.com).



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Storm Seal from **The Strong Company** is a specially formulated, fiber-reinforced, cementitious mixture designed for lining the interior of corrugated metal pipes, culverts, concrete pipes, catch basins and other stormwater structures. It is centrifugally cast using the Strong-Seal System mixer, pump and spinner, which are electronically controlled for consistent product and thickness of application. It may also be sprayed manually. 800/982-8009; [www.strongseal.com](http://www.strongseal.com). ♦

manually. 800/982-8009; [www.strongseal.com](http://www.strongseal.com). ♦

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### Large field sleeves provide watertight seal



#### **Problem:**

The Albuquerque Bernalillo County Water Utility Authority was concerned with the close proximity of the Rio Grande River when building the Southside Wastewater Treatment plant in Albuquerque, New Mexico. They wanted to make sure two large, flexible pipe penetrations remained watertight and ensure against the possibility of this 62,000-pound junction box settling.

#### **Solution:**

Premium flexible pipe-to-manhole connectors mounted in fiberglass field sleeves from **A-LOK Products** were chosen to guarantee a watertight seal around the 78-inch flexible, fiberglass pipe, as well as allow for the possibility of future settlement of both the pipe and junction box. A large extended base slab was also included as an anti-flotation measure. The connectors were delivered to All-American Precast, mounted in brown fiberglass field sleeves, and reinforced with wood to maintain their shape during the pour. They were mounted on the form and permanently installed in the precast base along with a liner.

#### **RESULT:**

Once the box was stripped out of the form it was carefully moved into position by PCL Construction. They removed the wood reinforcement from inside both field sleeves and then beveled, lubed and installed the fiberglass pipe into both connectors. Two flexible watertight connections with the ability to handle differential settlement between the pipe and the structure were achieved. **800/822-2565; www.a-lok.com.**

### Manhole risers ease tensions on resurfaced road

#### **Problem:**

A contract to resurface Routes 5 and 20 in Waterloo, New York, left out the specification to raise manholes to the new pavement height. The state needed an easy solution to fix the problem.



#### **Solution:**

They decided to try the **Top Hat** manhole risers from **Abart Industries**. Eighteen manhole risers were ordered to adjust the existing low manholes. Risers ranging from 1/2 to 1 1/4 inches thick were installed using glue and mechanical fastening methods to solve the problem. The Top Hat product can be made and/or manipulated in the field to match unexpected grade changes.

#### **RESULT:**

All manholes were brought up to grade and the New York State Department of Transportation has received many compliments on the smooth pavement and ride transition over the installed utility cover risers. **315/730-2588; www.tophatrisers.com.**

### Quality concerns drive use of catch basin risers



#### **Problem:**

Technicians at Akron, Ohio-based Perrin Asphalt Company were concerned when they noticed that typical parking lot repaving projects tended to leave large dips around catch basins. "After a paving lift, catch basins tended to end up below grade and that was a quality issue for us," says President Chuck Perrin. "Edges would be exposed, and degrade more quickly. So, we

started looking for a better way."

#### **Solution:**

That better way turned out to be catch basin risers from **American Highway Products**. The steel catch basin risers are fabricated to order in precise thickness and dimension increments, and can be delivered in just a few days. They fit existing utility rims securely, providing a new seat for the original grate that leaves the grate exactly on grade, with no dips or potholes, and no exposed asphalt or concrete that will crumble quickly. Because they install in 10 minutes or less, lane closure times are also potentially reduced.

#### **RESULT:**

"We've been installing at least a hundred annually for at least 15 years," Perrin says. "And I've never seen one fail, not even from rust. Usually, customers don't even know we install these risers. It's something we do on our own so that our paving projects look better and last longer." **888/272-2397; www.ahpl.com.**

### Lined manhole remains intact on collapsed sewer line

#### **Problem:**

Chicago maintains a massive combined sewer system exceeding 250,000 manholes and catch basins, with tens of thousands of deteriorating century-old brick and mortar manholes. An ongoing \$60 million project, initiated in 2006, involves rehabilitating thousands of manholes annually. In July and August 2010, two significant rainstorms overburdened the system, which carries sanitary waste and stormwater through the same pipes. Infiltration and erosion undermined a major sewer line, causing a section on Marquette Avenue to collapse.



#### **Solution:**

The lines were lined with **Permacast MS-10,000**, fortified with **Conmic-Shield** from **AP/M Permaform**. It is an ultra-high-strength, corrosion-resistant mortar with a minimum of 3,000 psi compressive strength in the first 24 hours and very high flexural strength that prevents water migration and leaks. A final layer of epoxy was specified to protect against industrial acids and road salts. Benchmark Construction, certified Permacast system applicator, centrif



ugally compacted mortar against the cleaned interior manhole wall in multiple clockwise and counterclockwise passes to attain a uniform application.

**RESULT:**

The rehabilitated manhole in the collapsed section remained structurally sound, significantly reducing repair costs and time. **800/662-6465; www.centripipe.com.**

## Lightweight grade rings provide durable solution on stormwater inlets



**Problem:**

Illinois' Champaign-Urbana Mass Transit District boasts over 12 million riders annually. The terminal's concrete pavement is approximately 5 years old, and there is a constant flow of coach buses through the terminal drive, causing a problem with premature failure around stormwater inlets. The pavement surrounding three of these inlets had deteriorated and was replaced three

years ago under warranty by the original contractor. The previously repaired areas had sunk and new repairs were once again needed.

**Solution:**

Due to the premature failures of these inlets, another method of construction had to be found. The **PRO-RING** from **Cretex Specialty Products** is manufactured from expanded polypropylene, a lightweight, high-strength plastic that has an energy dissipating property, weighs 95 percent less than typical concrete grade rings, yet meets or exceeds AASHTO HS-25 loading and has excellent chemical resistance. Since they are installed using a construction adhesive/sealant, the use of the butyl rope was eliminated, resulting in a long-term repair.

**RESULT:**

All three of the inlets were adjusted with the Cretex PRO-RINGS, and to date there have been no signs of pavement failure or settlement around the reconstructed inlets. **800/345-3764; www.cretexseals.com.**

## Spray-applied anticorrosive coating prevents carbon steel from rusting

**Problem:**

In 2015, Stericycle of Dallas, Texas, wanted to rehabilitate rather than replace multiple carbon steel tanks used to store industrial grease for further processing. A spray-applied coating was needed to rehabilitate the tanks and prevent the difficult-to-manage hydrocarbon from further damaging the company's tank farm.



**Solution:**

**EonCoat** anticorrosive coating was spray applied to the interior of the hydrocarbon storing tanks to prevent the tanks from rusting. The chemically bonded phosphate ceramic forms both an alloy layer on the carbon steel and a ceramic outer layer that prevents future rust from forming.

**RESULT:**

The spray-applied coating allowed for rapid rehabilitation — rather than replacement — of valuable tank farm assets due to the work of contractor DC Metal Construction. **754/222-4919; www.eoncoat.com.**

## Manhole adjusting rings save time, increase safety



**Problem:**

The City of Prescott, Wisconsin, had issues with concrete manhole rings failing after just a few years of service.

**Solution:**

"I heard of the many successes that **LADTECH** was having in other cities across the country," says Hank Zwart, the city's director of Public Works. "I changed

my specification to allow for LADTECH HDPE adjusting rings to be used in our city." The riser rings can be installed in minutes. They nest together and include a 2 percent slope ring and a 1/4-inch spacer ring for a precision fit. They're made of high-density, lightweight recycled polyethylene, meet AASHTO HS-25 axle-loading spec, and are impervious to hydrogen sulfide corrosion that destroys concrete. "They weigh only 6 pounds, compared to the 85-pound concrete rings, making them safe to handle and reducing on-the-job injuries and eliminating the need for heavy equipment," Zwart says.

**RESULT:**

Zwart says he expects the rings to be a long-term solution. **877/235-7464; www.ladtech.com.**

## Locking devices secure manholes at Super Bowl site

**Problem:**

Super Bowl 50 drew worldwide media and many more fans than the 68,500 that Levi's Stadium can hold. The event was also a tall order from logistical and security perspectives. Unsecured manholes in Santa Clara, California, posed a threat to event security and communications continuity.



**Solution:**

More than 50 **LockDown** devices were installed to minimize that threat. The device sits inside manholes under the cover to prevent unauthorized access. They have been installed in military bases worldwide, at the Pentagon, in airports, telecomm areas, data centers and retail areas. The device



was developed for and used to secure the 1996 Olympics in Atlanta. It is made of corrosion- and tamper-resistant, 12-gauge stainless steel, with no moving parts. It is fast and easy to install, and includes a lock guard and simple removal with the key. Modification of the manhole is typically not required.

**RESULT:**

They have a success rate of 99.99 percent across more than 70,000 installs in some of the world's most sensitive areas. This was the second Super Bowl secured with the LockDown device. **866/399-2512; www.lockdowninc.com.**

## Adhesives and resins provide transition between PVC liner and concrete manhole

**Problem:**

A 2015 Baltimore, MD pipe rehabilitation project (Streets 12th-15th) required transition between previously lined with Ribloc's Expenda PVC storm drain pipes and concrete manholes.

**Solution:**

**Neopoxy International** recommended using a combination of solvent-free PVC adhesives and epoxy resins for this project. CH2M Hill workers applied a strip of PVC adhesive on the ends of Ribloc pipe and followed by coating it with highly corrosion-resistant NPR-5305 epoxy to bridge PVC material with the concrete manhole.

**RESULT:**

Neopoxy's combination of PVC adhesive and NPR-5305 epoxy resin created a reliable transition between PVC material and concrete structure. **510/782-1290; www.neopoxy.us.**

## Custom-made carbon FRP pipe reduces manhole repair time



**Problem:**

The cooling system in Puerto Rico's Aguirre Electrical Power Plant consists of a large network of pressurized pipes with 29 manholes. The top 4 feet of each manhole was corroded and required strengthening for both internal pressure and overburden pressure from nearby traffic. The plant wished to minimize the installation time and improve the quality of the FRP repair.

**Solution:**

**StifPipe** from **PipeMedic by Quake-Wrap** was selected for this project. Each section was custom made to be 4 feet long with an outside diameter of 34.5 inches. The wall consisted of a 1/4-inch-thick 3-D fabric with two layers of carbon fabric on the inside and two layers of glass fabric saturated with epoxy on the outside. This resulted in pipe that can withstand over 150 psi internal pressure. Each segment weighed only 105 pounds. In the field, segments were easily inserted in the manhole, and the small 3/4-inch annular space was filled with grout. The overall rigidity was designed to resist the external pressure independent of the host pipe.

**RESULT:**

The fabrication in advance of the shutdown required for installation resulted in significantly shorter downtime and higher quality when compared to wet layup FRP. Only three hours were required to repair each manhole. **520/791-7000; www.pipemedic.com.**

## Watertight manhole bases save money in high-precipitation area



**Problem:**

Pierce County, located in Washington, south of Seattle, contains 22 cities and towns linked to the Chambers Creek Regional Wastewater Treatment Plant. As with many areas in the Pacific Northwest, the region experiences heavy rainfall and high groundwater, and needed manhole bases that were watertight. In addition to the watertight connections, traditional concrete benching needed

to be repaired or replaced within 10 years of installation.

**Solution:**

Pierce County Public Works and Utilities specified and installed its first lined manhole base from **PREDL Systems North America** in 1989. County officials were impressed by the watertight pipe connecting bells included on all manhole base liners. The liner is a molded, wastewater-resistant PP or FRP thermoplastic concrete protective liner system of reinforced polymer with a thickness range from 0.12 to 0.20 inch, mechanically bonded with the concrete base structure during the precast concrete process. They eliminate several sources of potential errors in manhole base production ensuring the correct layout right from the start.

**RESULT:**

The liners continue to provide a solution for corrosion, abrasion, exfiltration, inflow and infiltration for the entire manhole base. In a neighboring sewer district that has not specified manhole base liners, the inflow and infiltration rate increases seven times during a storm event. In Pierce County, the rate increase is just 1.5 times during the same event – a direct savings in treatment cost and plant capacity. **604/415-9944; www.predlsystems.com.**

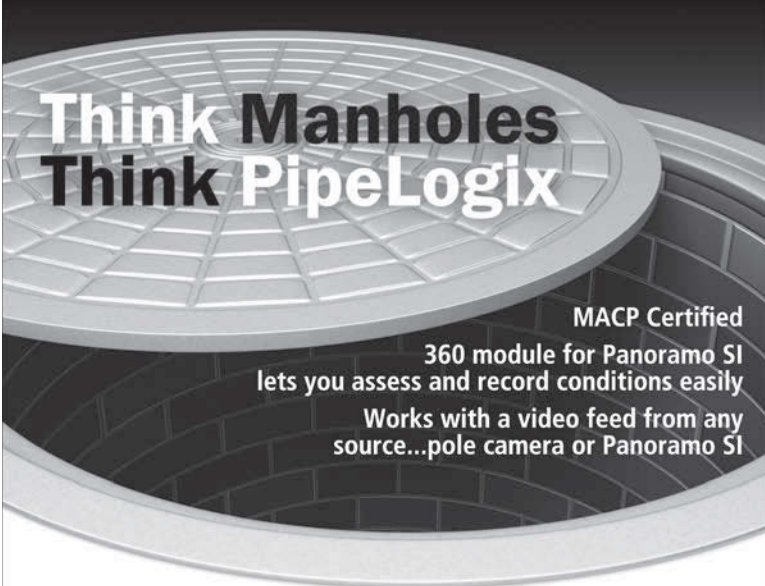
## Polyurethane resin stops infiltration before lining installation



**Problem:**

Ace Pipe Cleaning, a Carylton company in Kansas City, Missouri, has five crews doing manhole rehabilitation, including lift stations. Their bread and butter is applying epoxy coatings and cementitious linings, but in order to do that, they have to stop any active infiltrations.






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#### Solution:

They do this with low-pressure injection of **Prime Flex Hydro Gel SX** from **Prime Resins**. This single-component hydrophilic polyurethane resin reacts with water to form an impenetrable foam or gel, depending on the concentration. It is a very low-viscosity, quick-setting resin, ensuring the ability to penetrate fine cracks as well as fill larger gaps. Crews use pneumatic and electric pumps to install it in volume, though it can also be installed with the same equipment used for acrylamide grouts, including inline packers. Ace uses it to stop active infiltrations strictly in conjunction with lining, though other contractors use it by itself for sealing below-grade infiltration such as pipe penetrations.

#### RESULT:

“Because it’s fast acting, it helps expedite that part of our work,” says Ace’s Bryan Dobson. “Our revenue comes from lining, so the quicker we can fully stop leaks, the sooner we can install our linings.”  
800/321-7212; www.primeresins.com.

## Protective coatings repair corroded concrete manholes

#### Problem:

The City of Portland, Oregon, experienced severe manhole concrete spalling from hydrogen sulfide corrosion and cracking from the effects of natural ground movement. The structures had deteriorated over the course of 10 years and immediate repairs were required in low winter temperatures. A solution that could be quickly installed was critical to ensure downtime and road closures were kept to a minimum.



#### Solution:

**Rhino Extreme** rapid-curing polyurea from **Rhino Linings** was specified due to its performance in extreme weather conditions and lasting corrosion resistance. Once the surface was prepped, Primer 101 was applied as a moisture barrier along with Primer 161, a flexible elastomeric polyurethane primer. To ensure continued protection against future hydrogen sulfide, manhole walls, ceilings and benches were sprayed with Rhino Extreme at variable thicknesses ranging from 1/4 to 3/8 of an inch, depending upon expected H<sub>2</sub>S exposure levels.

#### RESULT:

The project was completed in one full workday. Efficient site preparation and application of Rhino Extreme has prevented and continues to prevent deterioration and chemical corrosion. The city is pleased with the quick turnaround time and the application’s performance.  
800/422-2603; www.rhino linings industrial.com. ♦

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# Product Spotlight

## InfraMarker System Reduces Time and Cost of Locating Underground Utilities

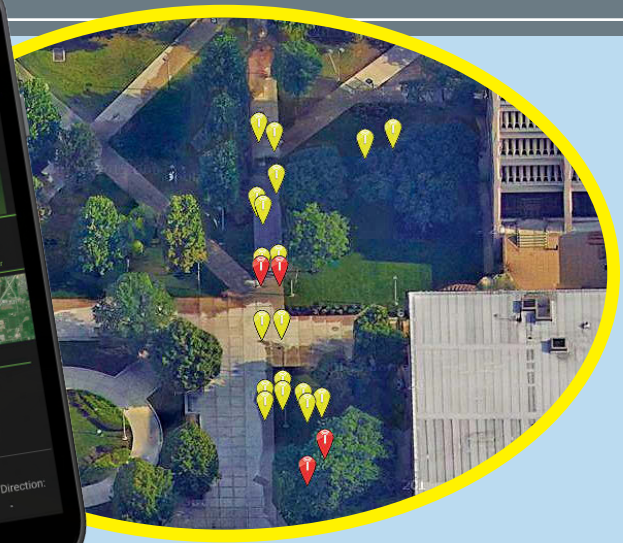
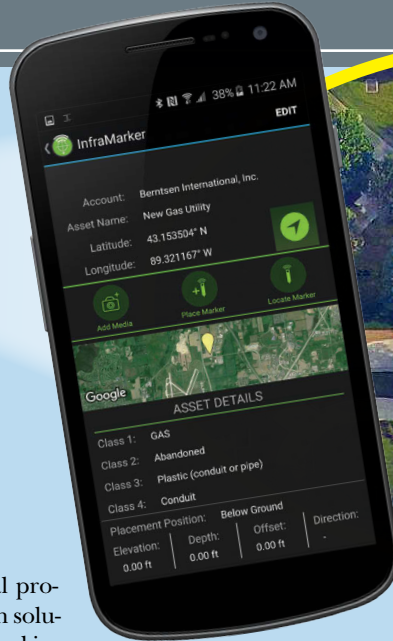
By **Luke LeNoble**

The InfraMarker System 3.0 from Berntsen International provides an integrated infrastructure marking and verification solution, including a suite of above- and belowground RFID marking products that enable precision locating in the field.

“It’s a faster and more reliable way of locating underground assets,” says Mike Klonsinski, director of business development for Berntsen International. “There’s always a tremendous amount of money and time wasted today in trying to relocate where you want to be.”

An updated mobile application improves marking, mapping and management of utility lines.

“We’ve tied it to a whole data collection and management system, so now a field locator can use a smartphone to see all the pictures, the past activity and documents associated with that asset while they’re actually out there locating,” Klonsinski says. “Changes are updated in real time, so any-



body who wants to track how maintenance activity is progressing can just tap in from the office.”

The upgraded application incorporates submeter GPS marking, supports addition of pictures, video and other media, and includes activity time stamping for audit and management compliance.

“I think the biggest thing is it’s much easier and more intuitive to use in the field,” Klonsinski says. “We’ve improved the audit trail, we’ve added a better permissions feature, and we’ve improved the exporting capabilities, so it’s much easier to integrate all of that data into anybody’s back-end GIS system.”

The InfraMarker 3.0 mobile app is available for a free trial on the Google Play store. Berntsen International plans to release an iOS version in the near future. **800/518-0934; www.inframarker.com.**

1.



### Water Cannon electric pressure washer

The 14M10 portable, 115-volt electric-powered pressure washer from Water Cannon delivers 3 gpm at 1,000 psi. Designed for restricted areas with power but no water, the washer has a 25-gallon onboard tank with room for a small hose reel. Applications include cleaning air-conditioning coils on rooftops or basements, jetting pipes in bathrooms or kitchens and quick clean-ups. **800/333-9274; www.watercannon.com.**

2.



### 2. Sherwin-Williams Dura-Plate 6100 corrosion protection

Dura-Plate 6100 from Sherwin-Williams helps extend the design life of a coated structure, featuring amine epoxy designed for corrosion protection of concrete and steel. It offers quick dry-to-touch times that reduce the potential for outgassing on buried concrete structures and return-to-service times of 12 hours to prevent downtime. At 77 degrees F, the coating is dry to the touch in 30 minutes and cures for immersion in 12 hours. It can be applied in temperatures as low as 50 degrees F. **800/524-5979; www.sherwin.com/protective.**

3.



### 3. Wastecorp Pumps engine-driven double-disc pump

The Sludge Pro engine-driven, double-disc pump from Wastecorp Pumps is designed for mobile wastewater and sludge pumping applications with capabilities ranging from 10 to 500 gpm. Select the size and style, clack valve or ball valve, that best fits the application. Diesel pump engines range up to 40 hp



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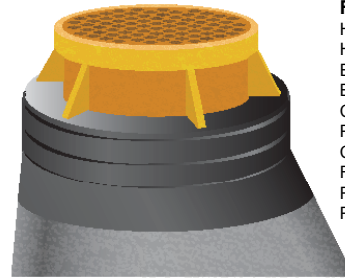
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### 5. Graphic Products wastewater treatment pipe marking wall chart

The wastewater treatment pipe marking wall chart from Graphic Products clearly illustrates how labels and valve tags are used to identify pipe contents, special hazards and the direction of flow. 888/326-9244; [www.duralabel.com](http://www.duralabel.com).

### 6. EnviroGear Pumps G Series Sealed Internal Gear Pumps

G Series pumps from EnviroGear Pumps have two moving parts and operate equally in either direction while providing a positive, non-pulsating flow. Its design provides multiple inlet and outlet positioning, a single end-clearance adjustment and easy drive-end access for ease of maintenance and adjustability. They are available in both cast iron and stainless steel and are interchangeable with most internal gear pumps. 909/422-1731; [www.envirogearpump.com](http://www.envirogearpump.com). ♦



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Looking for a job in the water-wastewater industry? WATER DISTRICT JOBS, an online career resource, lists dozens of great career opportunities on its website. Job listings are updated daily. You can also post your resume so employers can find you. Visit [www.WaterDistrictJobs.com](http://www.WaterDistrictJobs.com) for more information. (M04)

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## Crysteel Mfg. founder Jones passes away

Eldon D. Jones, founder of Crysteel Mfg. and inventor of the Lo-Boy hoist, has died at the age of 90. Jones and his wife, Helen, launched the company in 1969. Today, Crysteel Mfg. has 160 employees and a network of over 140 distributors across North America.



Eldon D. Jones

## InfoSense honored for rapid growth

InfoSense was recognized as the No. 1 fastest-growing company in Charlotte, North Carolina, by *Charlotte Business Journal* at the publication's annual Fast 50 Awards ceremony. The top 50 companies are ranked on annual revenue growth percentages over the last three years. InfoSense has seen revenue grow 465 percent each year, on average, during that period.

## Ditch Witch founder Malzahn passes away

Ed Malzahn, founder of Ditch Witch, a Charles Machine Works company, died Dec. 11. He was 94. Malzahn is credited with changing the way utility infrastructure is installed and maintained when he launched the first service line trencher, the Ditch Witch DWP, in 1949 from a small machine shop in Oklahoma. Today, the company employs over 1,500 workers and has more than 175 dealerships and branches serving 195 countries.



Ed Malzahn

## Aclara completes acquisition of GE's electricity meters business

Aclara completed acquisition of GE Energy Management's Grid Solutions subdivision. Terms of the transaction were not disclosed. The acquisition includes GE Meters' global headquarters in Somersworth, New Hampshire, as well as facilities in Chicago and Bilbao, Spain. It also includes more than 300 employees in these locations as well as other employees located in North and South America, Asia and the United Kingdom. As part of the transaction, Aclara acquired an intellectual property portfolio of active patents and patent applications.

## Hayward Flow Control receives ABS approval on CPVC product lines

Hayward Flow Control attained product approvals from the American Bureau of Shipping (ABS) for the majority of its range of CPVC thermoplastic flow control product lines.



## Envirosight appoints sales partner for Pacific Northwest

Envirosight named True North Environmental Equipment as its exclusive sales partner for Envirosight equipment in Oregon, Washington and Alaska. The partnership gives True North exclusive rights to sell Envirosight's sewer inspection technology throughout the Pacific Northwest region. ♦





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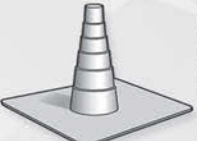
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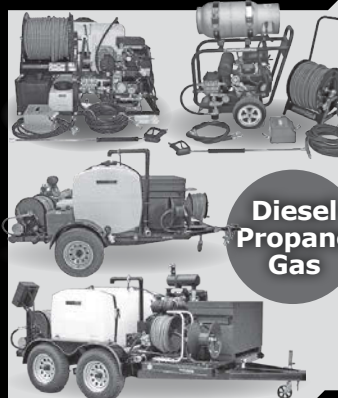
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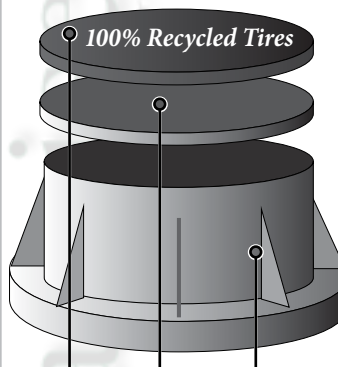
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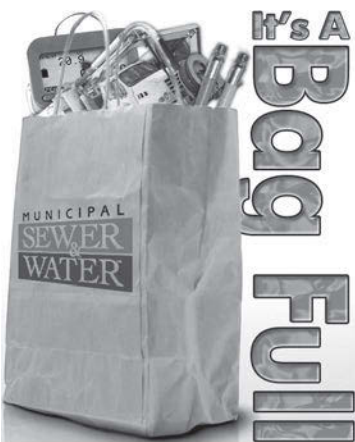
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## PEOPLE/AWARDS

The **Town of Watertown** was awarded a Massachusetts Department of Environmental Protection grant of \$41,000 to fund various projects and techniques to improve the quality of water. With the grant, the town hopes to improve and install green infrastructure including using vegetation, soils and other natural elements to reduce the amount of stormwater and stormwater pollutants.

The **Narragansett Bay Estuary Program** and the **New England Interstate Water Pollution Control Commission** announced that more than \$815,000 in grants will fund 11 projects aimed at protecting and restoring water quality in the Narragansett Bay watershed. These grants will support municipalities and nonprofit agencies in both Rhode Island and Massachusetts with a focus on projects to address stormwater, nutrients and pathogens.

An innovative project to reduce pollution by installing sturdy baskets with absorbent filters in existing stormwater drains to capture oil, trash and lawn clippings before they reach Tampa Bay has won the Golden Mangrove Award. The award was presented to the **Tampa Shores Special Dependent District No. 60** as Tampa Bay Estuary Program's most outstanding Bay Mini-Grant project.

The Colorado Association of Stormwater and Floodplain Managers awarded the **Southeast Metro Stormwater Authority** with the Grand Award for Engineering Excellence for SEMSWA's Cherry Creek Stream Reclamation at the Cherry Creek Valley Ecological Park improvement project.

The International Erosion Control Association Region One announced that the **Bijou Area Erosion Control Project** (Lake Tahoe, California) received the 2015 Environmental Achievement Award. It is IECA's top award for stormwater and erosion and sediment control projects, programs and operation. The IECA also announced that **John McCullah**, who has been in the industry for more than 30 years, received the Outstanding Professional of the Year award.

The American Council of Engineering Companies-Texas awarded civil engineering firm **Lockwood, Andrews & Newnam Inc.** a gold medal for its work on the San Antonio River Authority Water Quality Modeling Tool Development project.

## LEARNING OPPORTUNITIES

### American Society of Agricultural and Biological Engineers

The ASABE is offering a Young Professionals Development workshop April 8-9 in Lexington, Kentucky. Visit [www.asabe.org](http://www.asabe.org).

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### American Water Works Association

The AWWA is offering:

- April 7-8 – Ecosystem Services in Stormwater Control Measures, Milwaukee
- Nov. 30 – What You Need to Know About Climate Risks to Water Utility Infrastructure and Assets, webinar

Visit [www.awwa.org](http://www.awwa.org).

### Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering Using WinSLAMM v.10.1: Meeting Urban Stormwater Management Goals R174 on Nov. 5-6 in Madison. Visit [epdweb.engr.wisc.edu](http://epdweb.engr.wisc.edu). ♦

## CALENDAR

### April 25-27

American Water Resources Association Spring Conference, Sheraton Anchorage, Alaska. Visit [www.awra.org](http://www.awra.org).

### May 1-4

Collection Systems 2016 Conference, presented by the Water Environment Federation and Georgia Association of Water Professionals, Hyatt Regency, Atlanta, Georgia. Call 703/684-2441 or visit [www.wef.org](http://www.wef.org).

### May 22-25

American Public Works Association North American Snow Conference, Connecticut Convention Center, Hartford, Connecticut. Visit [www.apwa.net](http://www.apwa.net).

### May 23-26

National Utility Contractors Association Annual Washington Summit, Embassy Suites Washington D.C. Convention Center, Washington, D.C. Visit [www.nuca.com](http://www.nuca.com).

### June 15-17

Florida Stormwater Association Annual Conference, Sanibel Harbour Marriott Resort & Spa, Fort Myers, Florida. Call 888/221-3124 or visit [www.florida-stormwater.org](http://www.florida-stormwater.org).

### June 19-22

American Water Works Association Annual Conference and Exposition, McCormick Place, Chicago, Illinois. Visit [www.awwa.org](http://www.awwa.org).

### July 11-13

American Water Resources Association Summer Specialty Conference: GIS and Water Resources, Hilton Sacramento Arden West, Sacramento, California. Visit [www.awra.org](http://www.awra.org).

### July 17-20

American Society of Agricultural and Biological Engineers 2016 Annual International Meeting, Orlando, Florida. Visit [www.asabe.org](http://www.asabe.org).

### Aug. 22-25

StormCon, Indiana Convention Center, Indianapolis, Indiana. Visit [www.stormcon.com](http://www.stormcon.com).

### Aug. 28-31

American Public Works Association International Public Works Congress and Exposition, Minneapolis Convention Center, Minneapolis, Minnesota. Visit [www.apwa.net](http://www.apwa.net).

### Sept. 12-14

National Rural Water Association WaterPro Conference, Orlando, Florida. Visit [www.nrwa.org](http://www.nrwa.org).

### Sept. 28-Oct. 1

American Society of Civil Engineers 2016 Convention, Oregon Convention Center, Portland, Oregon. Call 800/548-2723 or visit [www.asce.org](http://www.asce.org).

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





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