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January 2014

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Shaunie Cochran,  
Public Utilities senior  
construction engineer,  
Seattle, Wash.



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## PIPELINE REHABILITATION AND RELINING



### ON THE COVER:

Seattle Public Utilities senior construction engineer Shaunie Cochran oversees work on the Windermere combined sewer overflow project in Seattle, Wash. Seattle has worked with the EPA on a unique initiative to incorporate stormwater control into its plan to address water quality improvements as ordered by consent decree. (Photography by Mark Mulligan)



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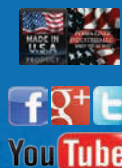
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# MAKE YOUR SYSTEMS SING

Utilities have a harmony and flow all their own, and a good operator is very much in tune

**S**ometimes things that don't seem at all connected really are. I was talking to a friend and coworker this morning about music. It's fascinating how a song, a melodic combination of musical tones and expressions, can stir such passion — how a simple song can have such an impact.

You might not associate music with your profession. A good chord progression doesn't have much to do with wastewater collections in most people's eyes, but they're not all that different. A well maintained system has a harmony and flow all its own, and a good operator is very much in tune. Your jobs impact everyone in your communities.

It's very appropriate my friend and I were having this conversation about a band that came out of Seattle in the early 1990s. That's where music and the water/wastewater industry

**You might not associate music with your profession.  
A good chord progression doesn't have much to do  
with wastewater collections in most people's eyes,  
but they're not all that different.**

came together for me. Seattle Public Utilities is featured in this month's issue of MSW.

Officials in the Emerald City had to confront a serious issue with combined and sanitary sewer overflows. Utility leaders were in tune with their system, and they knew stormwater control was playing an even bigger role in local water quality issues than the overflows. So they listened to what the system was telling them and they worked with the EPA to be able to

address stormwater issues ahead of some of their planned CSO projects.

The effect of stormwater runoff on Seattle's water environment can be 100 times greater than the effect of the relatively small volumes of CSOs entering the same

water body. The city is only three years into a 15-year plan to address their issues, but their approach is allowing them to not only identify the problems, but evaluate and understand the underlying causes and treat them appropriately.

The people at the Peachtree City Water and Sewer Authority in Peachtree City, Ga., are also in tune with their collections system. The utility is in the second phase of a complete evaluation of its entire collections system. They're getting to know every inch of their system so they can operate and maintain it at an optimum level.

The PCWSA has also taken an aggressive stand against FOG. Their program is so complete it even includes hair and pet grooming salons, because the products those businesses use contain a high oil content and are an often-overlooked source of blockages. The program is so thorough and effective it has earned the utility an Award of Excellence from the Georgia F.O.G. Alliance.

Up in Coon Rapids, Minn., Rick Bednar's crew is out cleaning every day, and they know their collections system so well they don't really have to worry about regular pipe inspections. The utility is lining 40,000 feet of sewer line annually, and I&I has been virtually eliminated.

When Bednar took his position as operations supervisor nine years ago, Coon Rapids suffered multiple sewer backups per week. Last year there were only six total, and those were all a result of root balls being flushed into the mainlines from laterals. To say the crew is in tune with the system is an understatement.

All of these utilities are doing great work. They are great examples of how the right approach can keep a system singing. I hope their stories provide some insight on how to approach your own challenges.

Enjoy this month's issue. ♦



## FROM THE EDITOR

*Luke Laggis*

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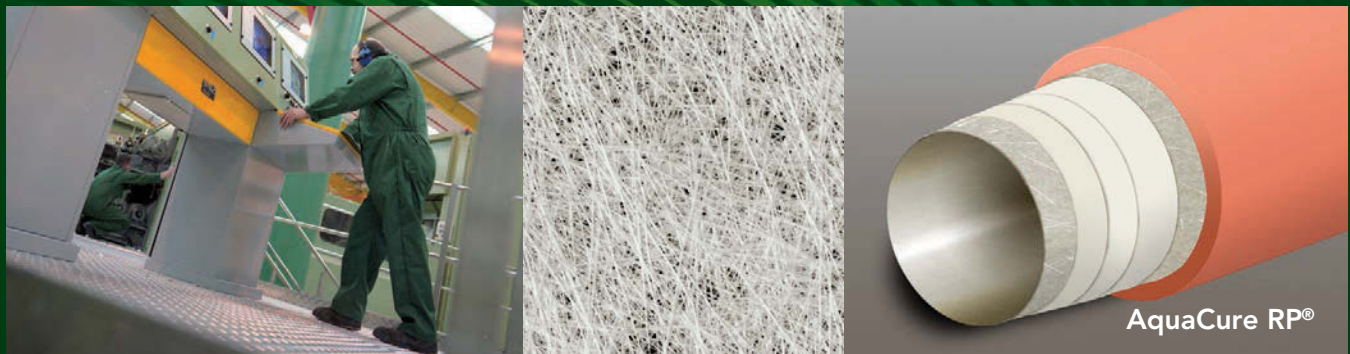
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## Tank of the Year

Oh, the creativity! In 2013, Tnemec painted thousands of water tanks across the country. In a voting process that included more than 200 tank nominations and more than 10,000 votes, the city of Mt. Vernon, Ill., came out the winner with its multicolored circles and spirals. Read more about the contest and see the runners-up.

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**HOLY TRUCKS!**

## SEMA Pickup Roundup

Have you died and gone to truck heaven? Unfortunately, no. It's just a roundup of some of the most drool-worthy vehicles — including a Team Realtree showpiece and a refrigerator-equipped Ford F-350 Super Duty — from the annual Specialty Equipment Market Association conference in Las Vegas. So sit back, dream a little and enjoy some truck eye-candy (just don't let your technicians get any ideas!).

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**UTILITY BANKRUPTCY**

## Balancing Debt and Customer Rates

What can Jefferson County, Ala., teach municipalities about debt? The county recently declared bankruptcy, resulting in greatly increased sewer rates and a \$1 billion deficit in available funds to maintain the sewer system. Find out what this could mean for other distressed municipalities.

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Utility maintenance workers Dan Zollinger, left, and Keith Murschel set up to clean a sanitary sewer line with their Vactor jet/vac truck. (Photography by Judy Griesedieck)

## FOCUS: SEWER

# LINING THE WAY

Coon Rapids turns to CIPP and continual cleaning to make big improvements in its collections system

By Luke Laggis

Inflow and infiltration used to be an issue in Coon Rapids. Now, not so much. The Minnesota municipality has been aggressive with system rehabilitation and is reaping the rewards of its progressive approach.

Coon Rapids, in Anoka County, is a northern suburb of Minneapolis with a population just over 60,000. It is largely residential but also has industrial and commercial areas. The collections system, operated by Public Works department's Utilities Division, includes about 240 miles of sewer, 80 miles of which is clay tile. The system isn't especially old — the clay tile was installed from the 1950s into the early 1970s. The

rest of the system is PVC, installed from the mid-'70s on. The utility maintains its own collections system, but all treatment is handled by the Metropolitan Council in St. Paul. The council also maintains the interceptor lines that carry wastewater from Coon Rapids' system to the plant in St. Paul.

The utility has worked hard to eliminate sources of I&I, particularly in the older parts of its system, where heavy root intrusion caused frequent sewer backups. From 2008 through 2013, the utility lined approximately 240,000 feet of sewer.

"It's something we've gone after," says Rick Bednar, operations supervisor with Coon Rapids Utilities. "We fix whatever we can find."

### Falling in line

In 2007, with the help of a local engineering firm, Coon Rapids prioritized its system for lining. Sewer lines were prioritized for the lining process based on how much time crews spent on cleaning operations in those areas along with the specific problems. The next year, they began lining pipes in the areas where they had been having the most frequent problems.

"We started with the bad areas and we've been working toward the better areas, but we're still going to keep lining for another couple years," Bednar says.

In some cases, pipes need to be dug up and repaired before they can be lined. Over the 40,000 feet



### PROFILE:

**Coon Rapids (Minn.) Public Works Department (Utilities Division)**

**POPULATION:**  
62,000

**CUSTOMERS:**  
21,000

**INFRASTRUCTURE:**  
17 lift stations, 6,000 manholes, 240 miles of pipe

**EMPLOYEES:**  
13 (6 water, 7 sewer)

**BUDGET:**  
Approximately \$7-10 million (collections)

**WEBSITE:**  
[www.ci.coon-rapids.mn.us](http://www.ci.coon-rapids.mn.us)





The Coon Rapids Public Works Utilities Division team includes, front row, from left: Fawn Finsman, water lead; and Anthony Barthel and Todd Marcotte, utility maintenance workers. Back row: Dan Zollinger, Josh Bautch and Keith Murschel, utility maintenance workers; Jim Allen, sewer lead; Chuck Nevala and Mike Drake, water plant operators; Mike Stalboerger, utility maintenance worker; and Rick Bednar, utility operations supervisor. Not pictured: Chip DeVries, Bob Doran and Mike Warsko, utility maintenance workers.

**“I got here nine years ago and we were having sewer backups multiple times a week. Last year we had six sewer backups that were our responsibility, and those came from roots that had been pushed out by a service cleaning.”**

**Rick Bednar**

they’re rehabilitating annually, Bednar says there are approximately eight to 10 sections that require repair. For this reason, he says larger general contractors frequently bid on the jobs and hire someone else to do the lining. Insituform has been the main provider.

The city is spending about \$1 million per year on sewer lining right now. When the process is complete, Bednar says they will have lined a majority of the 80 miles of clay pipe, and the entire system will be in good shape for years to come.

Lateral lines have not been a sig-

nificant issue. In areas served by clay tile line, the laterals are also clay, but the property owners are responsible for those lines from the main to the house. Everything has been televised, and while there are a lot of root problems in the laterals, there is very little I&I. Since the Metropolitan Council closely tracks the volume of metered water used by Coon Rapids customers and the volume of wastewater flowing to its plant, assessing I&I levels is fairly easy, and Bednar says the laterals haven’t been a big factor.

### **Additional upgrades**

Bednar says with the frequency of the utility’s sewer cleaning schedule, regular pipe inspection isn’t necessary.

“We have what we call our spot check list that we go through every month — problem areas. You’re always going to have your smaller lines flowing into bigger lines, 90 degree turns in manholes, things like that. We look at about 200 manholes every month, and there are some we have on a quarterly list.”

## **GETTING OFF THE PAPER TRAIL**

The Coon Rapids Utilities Division has made upgrades in its operations as well as its infrastructure. The addition of Cityworks software to track and manage system assets has provided a big efficiency boost.

Cleaning records, condition reports and other important information can be quickly accessed at any time, which is a big help in emergency situations. And if customers try to file claims against the city as a result of backups, it’s easy to pull up the cleaning records and show there’s no negligence.

“It’s gone from a paper trail to being able to look it up on the computer in two minutes,” says Operations Supervisor Rick Bednar. “All of our cleaning records are there.”

Currently, technicians go out with maps and then enter the data into the system at the end of the day, but the city’s GIS is incorporated into Cityworks, and eventually the paper maps will no longer be necessary.

“Eventually I will get it to where we can enter all this information right in the field with laptops,” Bednar says. “It’s going to help us all out a lot.”

They’ve had to replace the rings on some manholes, but they haven’t had to deal with many structural issues. They’ve also lined some manholes, typically where I&I or root intrusion has become a problem, using a variety of spun epoxy systems depending on the contractor.

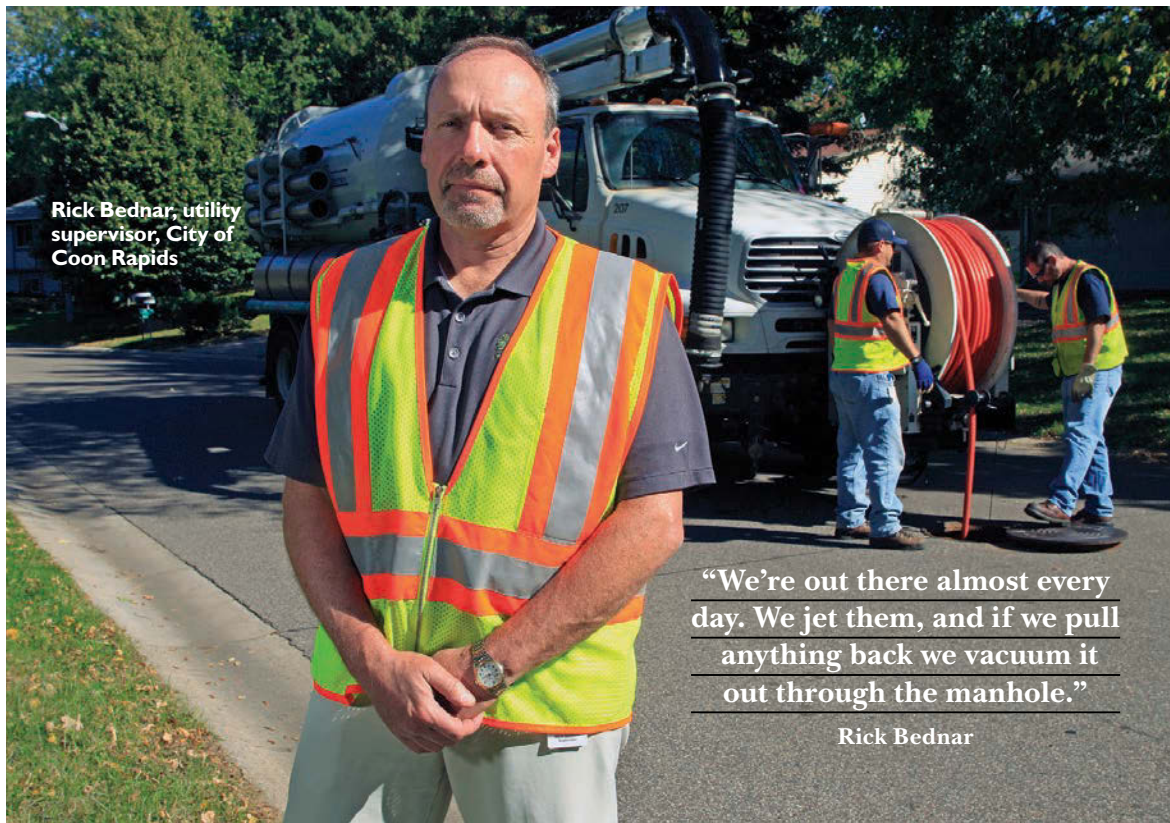
While lining has been the primary rehab method in Coon Rapids, the utility has also done some pipe bursting, including a 4,000-foot section of thin-walled PVC that had become egg-shaped. The pipe ran through a business area and was

replaced with HDPE. The pipe’s shape made it impossible to reline, and the traffic and congestion made pipe bursting the only viable option. “It was quite successful,” Bednar says.

The utility has also been spending about \$600,000 per year on lift station projects, and the last one slated for reconstruction will be finished in 2014. These are significant projects, with some stations as deep as 40 feet, so the work is contracted out.

“We’ve replaced a sewer lift station every year since 2006,” he says. “We’re completely rebuilding





Rick Bednar, utility supervisor, City of Coon Rapids

**"We're out there almost every day. We jet them, and if we pull anything back we vacuum it out through the manhole."**

Rick Bednar



**The Utilities Division does spot checks on about 200 manholes every month to make sure the system is flowing properly.**

them, with new wet wells, pumps, control panels, everything. We have standby portable generators on the ones we have trouble getting to in a power outage, or ones that we don't have a lot of time to get to in a power outage. We have three portable generators that we can take out and hook up to lift stations, but the high flow stations and the ones that are a ways away, we've put in permanent generators."

The Twin Cities area doesn't fea-

ture a lot of topographic relief, but the lift stations are all in low spots and are required to move the wastewater to points where gravity flow can be restored.

### **Roots, grease and non-flushables**

Coon Rapids had been active in cutting and removing roots from its own lines, twice a year in some areas. The issues were primarily in the clay tile lines, but most of those pipes

have since been lined, and roots are no longer a significant problem.

PVC lines, which comprise the other 160 miles in the system, are also cleaned on a regular basis. The Utilities Division tackles that task with a Vactor combo unit and a jet truck from Sewer Equipment Co. of America, which also includes an Aries camera. The utility tackles about a third of the system, or 80 miles, every year.

"We're out there almost every

day," Bednar says. "We jet them, and if we pull anything back we vacuum it out through the manhole."

One of the common problems they encounter is large root balls that have been cut and flushed out of the laterals. Bednar says if they are unaware of these situations, they can lead to backups.

"We encourage customers through quarterly newsletters to let us know if they have their services cleaned, but if we don't know, sometimes we get backups from service roots that get pushed out in the main."

The utility always tells customers that the first thing they should do when they have a backup is notify the utility so they can make sure it's not an issue in the city line.

## **LINING WATER PIPES**

Coon Rapids, Minn., has had great success lining the older pipes in its collections system, and last year the utility decided its water lines might benefit from similar attention.

"This is our second year," Bednar says. "The first year we lined about 1,800 feet in a residential area that we had been digging up continuously. It's a residential street with twin homes on it, and rather than dig it up and replace it ... we decided to line it."

It wasn't a main street, but it was busy and the traffic disruption would have been difficult to manage.

This year, the utility lined 1,500 feet of 12-inch ductile iron pipe through a busy industrial area with a lot of businesses that are constantly shipping and receiving orders, but Bednar says everything went pretty smoothly.

"The reason we lined that was strictly traffic," he says. "If we had dug that road up and replaced the main, it would have been a huge disruption to traffic, so we decided to line it."

"We just did these two areas as kind of an experiment to see how it would go," Bednar continues. "We're going to take next year off and prioritize a bunch of areas to start up a lining project."

The decision on what pipes to line, just as on the wastewater side, will be based on how often they've had to service an area, how much digging has been done and how much disruption it will cause.

"There are quite a few medical facilities in town that aren't very happy when their water is shut off, so we need to go in there and line those pipes and be done with it," Bednar says.

Insituform handled both water line projects, and Bednar says they were very pleased with the results.

"Two years ago we lined that residential area and we haven't been back in there since," he says. "It was a weekly thing for a while there, and people weren't very happy having their water shut off once a week. And usually it was an emergency, so they had no warning."



"We go out and check right away," Bednar says. "When somebody calls in saying they're having a sewer backup, we go check our lines to make sure that's not the problem."

The utility also urges customers to notify them if they've had their sewer cleaned so they can go out and make sure there are no clogs or root problems in the main. And they include information about what not to put down their drains — grease and "flushable" wipes.

"We try to educate everybody that way," Bednar says. "It's been pretty effective."

Coon Rapids hasn't had too many sewer backups related to flushable wipes because pump stations have two pumps.

"People have been pretty good about it, but you're always going to have your problems," he says.

With a large number of restaurants in town, FOG is a concern, but the utility has been proactive about addressing and preventing problems. Some traps are cleaned regularly. Others haven't been too big of an issue, and Bednar says cleaning lines in problem areas twice a year has been a big help.

"We have a list of restaurants we clean in the spring and fall to make sure there's no grease in the lines," Bednar says. "We catch the stuff before it becomes too much of a problem."

FOG has also been an issue in a few residential areas. "We can usually run a camera up and find out which service it's coming from, so we either knock

**"We have a list of restaurants we clean in the spring and fall to make sure there's no grease in the lines. We catch the stuff before it becomes too much of a problem."**

**Rick Bednar**

on the door or send them a letter if they're not home," Bednar says. "It helps."

The city does have a grease ordinance, but some restaurants don't have grease traps, so the ordinance spells out the amount of grease in parts per million that's allowable in the city lines. Business owners are notified if they're in violation of the ordinance, but there is no real enforcement mechanism.

"Most of them are pretty good about capturing that stuff before it gets in the line," Bednar says.

### Systematic improvements

"I got here nine years ago and we were having sewer backups multiple times a week," Bednar says. "Last year we had six sewer backups that were our responsibility, and those came from roots that had been pushed out by a service cleaning."

When Bednar first arrived in Coon Rapids, he says the League of Minnesota Cities, which insured the utility, was going to cancel their insurance because there were so many claims. He met with them and spelled out the plan — lining, cleaning, spot-checking, grease traps — to improve the system and reduce backups.

"We laid out what we planned to do, and it's worked," Bednar says. "We got back in their good graces and they're insuring us and we don't have any trouble anymore. It's really worked out pretty well." ♦

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# SEE THE STARS IN INDY



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NFL Combine gives football fans extra incentive to attend the Pumper & Cleaner Expo

By Cory Dellenbach

**S**o, you're attending the 2014 Pumper & Cleaner Environmental Expo International in late February, you've arrived a few days early and are looking for something to do, right?

You don't have to go too far if you're an NFL fan. Just look to Lucas Oil Stadium where the 2014 NFL Combine will be taking place — the combine and the Pumper & Cleaner Expo overlap by two days.

It'll be the third straight year the NFL will be distributing tickets for the scouting combine that is held each February in Indianapolis and draws the best college athletes hoping to make it onto an NFL roster.

In 2012, the NFL opened the scouting combine to 250 and demand was so high that the NFL increased the number of tickets

ter or, as done in the past, fans would need to write an essay saying why they deserved the ticket. Those plans weren't finalized by deadline, according to Corry Rush, AFC Football Communications Director.

"The NFL is looking for real, die-hard fans to be a part of this opportunity," said Rush.

Fans getting tickets will get a chance to see some of the top draft prospects — Louisville quarterback Teddy Bridgewater; South Carolina defensive end Jadeveon Clowney; Texas A&M tackle Jake Matthews; Clemson wide receiver Sammy Watkins; and UCLA linebacker Anthony Barr.

"It's the ultimate job interview," said Indianapolis Colts General Manager Ryan Grigson.

Fans could watch the 40-yard

**"Fans will see coaches, general managers and college athletes walking around the hotel, through the convention center and around that area of Indianapolis."**

**Corry Rush**

available to 600 and fans could be allowed in for two days instead of just one.

This year, NFL officials are saying more tickets could be available. Those tickets would either be sold via a ticket outlet such as Ticketmas-

dash for quarterbacks, wide receivers, offensive linemen and tight ends, and position skill drills.

The NFL Scouting Combine has been growing in popularity over the last several years. In 2012, more than 6.5 million people watched on the



**The Pumper & Cleaner Environmental Expo returns to the Indiana Convention Center in February, and since the NFL Combine at Lucas Oil Stadium and the Expo overlap by two days, you can expect to see coaches, general managers and athletes out and about.**

NFL Network and ESPN. Last year, more than 7 million watched.

There aren't too many outdoor activities centered around the NFL Combine, but if you're attending the Pumper & Cleaner Expo and book your hotel room early, you have a chance to stay in the expo's host hotel the JW Marriott — which is also the host hotel for the NFL Scouting Combine.

"Fans will see coaches, general managers and college athletes walking around the hotel, through the convention center and around that area of Indianapolis," Rush said.

The NFL Combine will be held from Feb. 18-25 this year, while the first day of the Pumper & Cleaner Expo is Monday, Feb. 24 with Education Day.

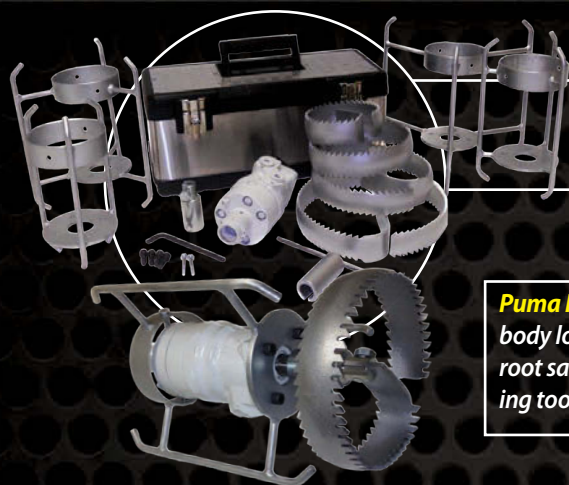
The Expo will return to the Indiana Convention Center — connected to the JW Marriott — Feb. 24-27, 2014, again showing off the latest products and technologies in the environmental services industry.

Early registration costs just \$50 until Jan. 24. At-the-door registration is \$70 for the full program. To find out more, visit [www.pumpershow.com](http://www.pumpershow.com) or call 866/933-2653. ♦



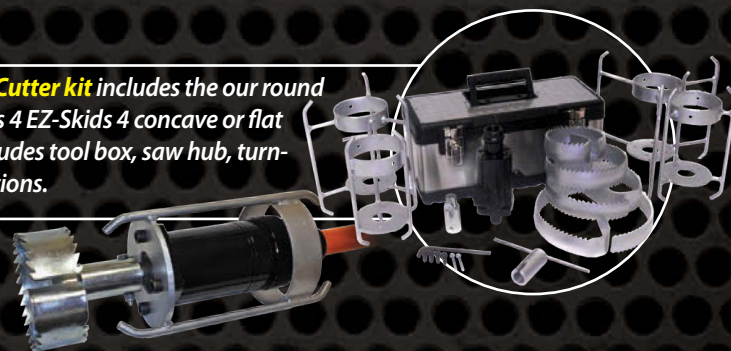
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# AWARD-WINNING PERFORMANCE

Peachtree City cuts out FOG problems and gets a clear view of its collections system

By Cory Dellenbach

**T**he Peachtree City Water and Sewerage Authority in Peachtree City, Ga., is a relatively small utility with only 30 employees, but it is taking on some pretty big projects.

There is a full survey of the whole collections system — all 181.62 miles of pipe. The authority also just completed its 36th lift station in September and its FOG (Fats, Oils & Grease) Program is receiving state awards.

**“I really try to make our program the best that it can be. Not only to serve our community here in Peachtree City, but also to be a model example of what a FOG program should be, especially with the small wastewater authority that we have.”**

**Xavier Davis**

“We are such a small outfit here, it requires everyone to do their job and kind of do multiple jobs and I think that is what makes us unique,” says Keisha Thorpe, technical services division manager with PCWASA.

The authority is governed by a

board of five members who are responsible for ensuring that PCWASA is financially sound and that the authority is moving forward with system improvements and enhancing sewer service in the Peachtree City area.

“We only manage the wastewater within Peachtree City limits, so our name is kind of a misnomer with water and sewer in there because that would indicate that we do manage the water system, but we don’t,” Thorpe says. “The water system is actually managed by the Fayette County Water System.”

The Peachtree City community is also unique, according to Thorpe. It is a planned community and a golf-cart community. “We have many miles of cart paths and if you come down and visit us one day, there are golf carts everywhere.”

The authority celebrated its 25th anniversary in 2011, but up until 1997 had been operated by Georgia Utilities, a private company.

“The authority purchased the assets of the system from Georgia Utilities for about \$34 million. They utilized bonds to purchase it,” says Stephen Hogan, general manager of PCWASA. “From that point we took over operations, day-to-day operations, management and so forth of the entire system.”



**Xavier Davis, GIS specialist/FOG program coordinator of the Peachtree City Water and Sewerage Authority, measures levels in the sampling device. (Photography by Kaylenn Gilstrap)**

(continued)





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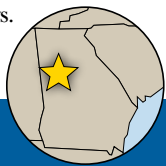
## A working FOG program

The United States Environmental Protection Agency (EPA) has noted in studies that the most common cause of sanitary sewer overflows is “grease from restaurants, homes and industrial sources.” The EPA’s estimate is that 47 percent of all SSOs are caused by grease.

Because of that, the PCWASA began a FOG program in 1997 that has only grown stronger over the last several years under the leadership of program coordinator Xavier Davis.

“I’d say in the past 10 years we have really developed our program,” Davis says.

“Doing grease trap



### PROFILE:

## Peachtree City (Ga.) Water and Sewerage Authority

**AREA SERVED:**  
Peachtree City, Ga.

**MILES OF PIPE:**  
818.62

**NUMBER OF MANHOLES:**  
4,223

**NUMBER OF LIFT STATIONS:**  
36

**POPULATION SERVED:**  
10,594

**ANNUAL BUDGET:**  
8.7 million

**NUMBER OF EMPLOYEES:**  
25 full time, 5 part time

inspections, making sure that our generators are in compliance with the PCWASA ordinance for proper grease trap installation and accurate FOG inspections.”

Davis, who joined the authority seven years ago, says PCWASA has approximately 190 FOG generators, which include restaurants, hair salons and pet grooming salons. They also inspect grit/sand interceptors located in the six car wash facilities in their area and have begun inspections on oil-water separators as well.

“If you add up the FOG generators with the grit/sand generators and the oil-water separators and grease interceptors, there are approximately 200 to 205 generators within the PCWASA,” Davis says.

Besides making sure commercial customers are in compliance with the authority’s sewer use ordinance, Davis also works with residential customers in FOG prevention.

“We educate the public basically through our Peachtree City website at [www.pcwasa.org](http://www.pcwasa.org),” Davis says. “We

**PCWASA’s thorough and long-running FOG program has earned the utility a state Award of Excellence.**



also hold several workshops on how to control FOG with the Fayette County school system and local nursing homes and we provide door hangers and brochures.”

The authority also distributes a newsletter twice a year to its customers to educate them on several matters, including FOG.

Because of the work the authority has done with its FOG Program, the Georgia F.O.G. Alliance, in January 2013, presented the PCWASA an Award of Excellence as one of the state’s most outstanding programs.

“I really try to make our program the best that it can be,” Davis says. “Not only to serve our community here in Peachtree City, but also to be a model example of what a FOG program should be, especially with the small wastewater authority that we have.”

Thorpe adds that the PCWASA Board and general manager have been extremely supportive and have helped acquire some of the tools necessary to operate the FOG Program. “We’ve enhanced and upgraded our databases that we keep all of our FOG files in and we plan to get a dedicated vehicle for our FOG program now, a dedicated truck for Xavier so that he can get to customers and inspect them as he needs to.”

There’s still plenty of work to do to eliminate blockages, however, and that next step is better informing the general public and residential customers on what they can do to assist.

“One of the challenges that any FOG program has these days is control of residential FOG. I tend to look at a lot of sewer video and have identified a number of lines through-

## NOT THE USUAL SUSPECTS

If you are a hair salon operator or have plans to open one up in Peachtree City, Ga., you better get ready to install grease traps.

“It’s a little unique in our FOG Program,” says Keisha Thorpe, technical services division manager at the Peachtree City Water and Sewerage Authority. “We do require hair salons and pet grooming stores to install grease traps and that’s something you might not see across a lot of FOG Programs.”

Xavier Davis, FOG program coordinator for the authority, said the requirement was put in place about 10 years ago after a severe grease blockage was discovered in a residential area of Peachtree City and was linked to a resident who was testing various shampoos and kept pouring them down the drain.

“Hair salon owners and managers are very surprised and usually ask ‘Why do I need a grease trap, do I use that much shampoo and conditioners when I’m servicing customers?’” Davis said. “When I open up a grease trap in a hair salon and the owners, managers and employees see it, they’re surprised at how much grease is actually generated from the products.”

Davis encourages hair salons and pet grooming salons to better manage the use of shampoos and conditioners. He also puts them on a pumping schedule to have their grease traps cleaned on a regular basis.

“There is a lot of grease that comes from those places, not just from the hair, but from the amounts of oils in the products themselves,” Thorpe said. “I think it has been a great move on our part.”

Xavier said it is an added expense, but most of the hair salon and pet grooming operators have been following the ordinance. “If you want to open that type of business here in Peachtree City and you’re on the sewer system, you have to have a trap in. At the end of the day, I think they see it as being beneficial to the community.”

Those salons that were operating prior to 2003 were grandfathered in, but Davis notes that if they undergo any remodeling or change of ownership, the authority requires them to install a grease trap at that time.



**Keisha Thorpe, technical services division manager, reviews video footage of pipes using the ICOM3 computer software (RedZone Robotics).**

(continued)



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out our system that do have extreme blockages,” says Thorpe. “We want to extend our public education more to residents. We do have literature going out and we just need to think of some creative ways to reach those customers, such as open house events, videos and pictures of grease clogs, and just continue educating them about the importance of not pouring grease down the drain whenever an opportunity presents itself.”

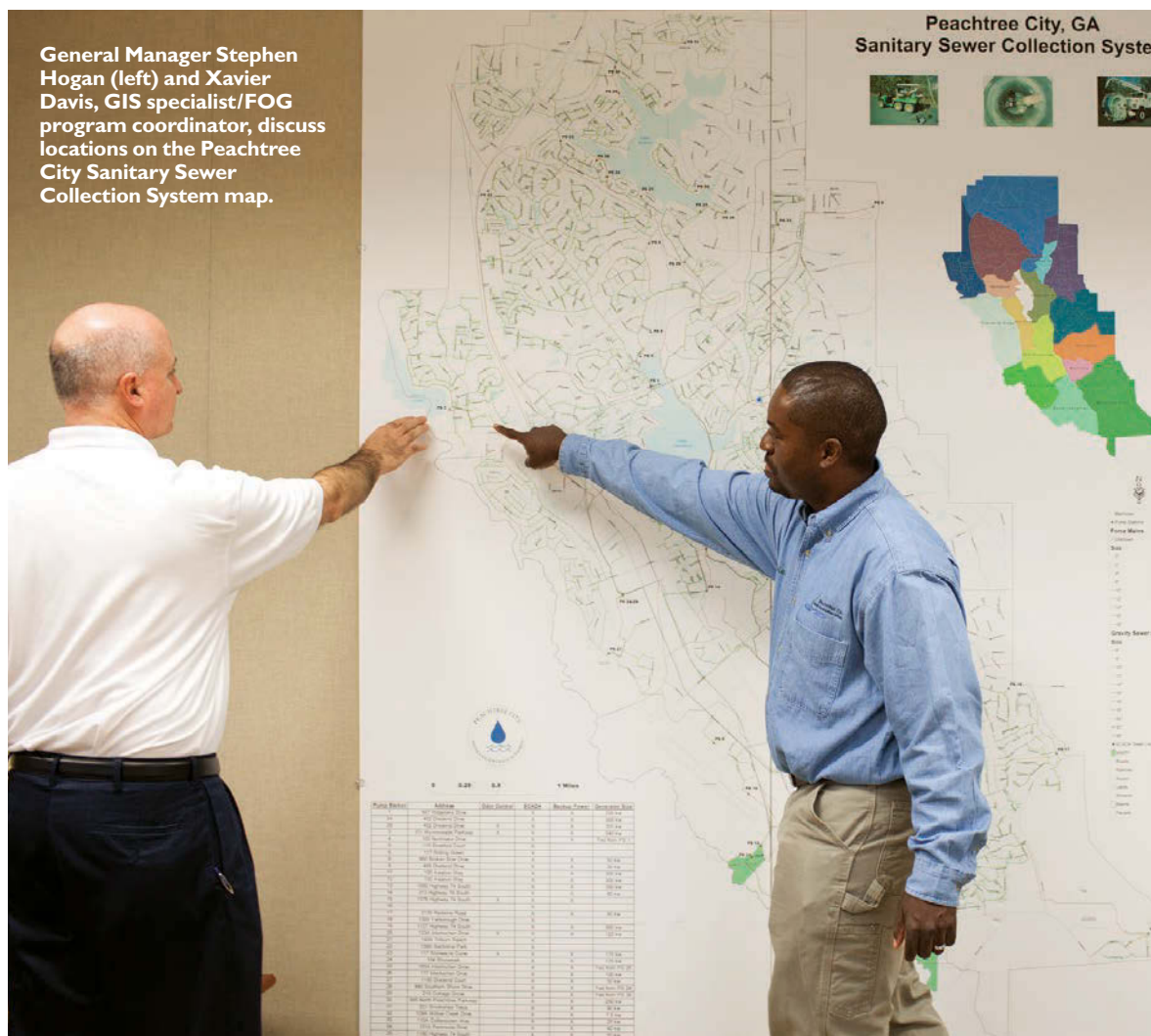
### Assessing pipe conditions

Like many other utilities around the country, Peachtree City has a mix of pipes throughout its system — most of it PVC, but there is also spirolite, truss, vitrified clay pipe and ductile iron.

“We have a variety of pipe here,” Thorpe says. “Our oldest pipe is about 50 or 60 years old.”

Thorpe adds that most of the pipe is in fairly good condition; however the pipe that is not in good condition is pretty bad.

“We do have quite a bit of clay pipe still remaining in our system and clay is a pretty sturdy pipe material. However, if it’s not installed correctly and if there is soil movement, the pipe is not going to last, and we’ve seen some defects throughout our clay pipe.”



**The Peachtree City Water and Sewerage Authority team includes, from left, Johnny Postell, equipment operator; Xavier Davis, GIS specialist/FOG program coordinator; Eugene Tucker, senior maintenance technician; Keisha Thorpe, technical services division manager; Ernest Ross, Charles Cooper and Timothy Puckett, senior maintenance technicians; and Stephen Hogan, general manager.**



PCWASA recently contracted with RedZone Robotics, a wastewater and sewer inspection company out of Pennsylvania, to conduct a review of the authority's entire collections system.

"We're proactively seeking out any issue we have with our collection," Hogan says. "Our major goal is to evaluate the collections system."

The \$1.25 million project is currently in its second phase.

"It's one of the biggest projects that we've undertaken," Thorpe says. "This was important because when the Authority acquired the system from Georgia Utilities, plans were scarce and the crews would begin to go out and work on pipelines not knowing the types of materials or the condition of them. For budgeting and planning purposes, we really needed to determine the true condition of our system."

The authority used to have an in-house CCTV crew that would inspect sewer lines, but it wasn't the most efficient way of getting through the entire system. At the rate they were going, it would have taken five years or more to inspect the entire system, Thorpe says.

**"The staff here makes my job easy. They take on the challenges, they identify the issues and look for different ways up, down, left, right and sideways to solve the issues."**

**Stephen Hogan**

After that, the authority instituted an annual cleaning and inspection program with a contractor, but after two years they hadn't made enough headway.

"RedZone Robotics came in and video inspected our entire system in 15 months and now we're in Phase II, which is a data review and data acceptance process," Thorpe says. "Now we have a good sense of our pipe conditions and we can begin to plan effectively on how we would need to repair, replace or rehabilitate our pipes. Hopefully we'll be finished with that phase by next spring."

#### Planning for growth

In a sign of growth coming to the Peachtree City community, the PCWASA's 36th lift station went online in September, after 120 days of work to build it.

"It was a partnership between two developers and PCWASA here," Hogan says. "What we were able to do was put a \$500,000 project in place to service an assisted living facility, an upcoming 90-home subdivision and the city's recreational facilities."

The existing customers that were in that area were on septic tanks in low areas and were having issues with those tanks.

"This project finishes out, as we know it, the southern part of the city that allows for future development in unoccupied areas now," Hogan said.

Another project that has kept Thorpe busy the last several months has been an upgrade to the authority's SCADA system, which was designed and built by Universal Controls Inc. "We upgraded to the latest and greatest SCADA software, changed all of our computers over to Windows 7 and instituted new SCADA radios."

Hogan knows there are still challenges ahead — rate changes and restructuring due to a struggling economy and aging equipment.

"The economic downturn has been one of the biggest challenges and will continue to be going forward. As we find issues with our pipes, our plants are

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aging as well," Hogan said. "One plant is over 25 years old, so the machinery in the plant is reaching design life and we'll have to address those issues as they come along."

Hogan says he's proud of his small staff of 25 full-time and five part-time employees.

"The staff here makes my job easy," he says. "They take on the challenges, they identify the issues and look for different ways up, down, left, right and sideways to solve the issues. I like the attitudes of the employees here and the ability to do things outside the norm." ♦

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# NEW RULES OF ENGAGEMENT

Stay interviews allow managers to better engage employees and reduce turnover

By Ken Wysocky

For decades, companies and organizations have relied on two traditional and time-honored tools — engagement surveys and exit interviews — to improve workplace morale and reduce costly employee turnover.

Here's a truth bomb from author and business consultant Dick Finnegan: They might as well believe in unicorns and the power of pixie dust, too.

To achieve dramatic gains in retention and engagement, companies would be much better served by using a more meaningful tool called a stay interview, says Finnegan, the chief executive officer of C-Suite Analytics, a management-consulting firm. He's also a noted corporate speaker and the author of two books, *The Power of Stay Interviews for Engagement and Retention*, which currently is the top-selling book published by the Society for Human Resource Management, and *Rethinking Retention in Good Times and Bad*.

"The exit interview and engagement survey models are broken," Finnegan asserts. "They're flawed methods because employees don't tell the truth in exit interviews and companies don't make changes as a result of their findings."

"I speak in front of groups often, and over the years, I've asked people from about 6,000 companies whether they've significantly improved their company because of exit interviews," he continues. "Only 12 responded positively. The fact is that once you tell an

employer you're quitting, your credibility is reduced by half. Employees aren't truthful and nobody reacts to the reports."

Ditto for engagement surveys, Finnegan says, which typically result in nothing more than new one-size-fits-all programs that are nothing more than corporate window dressing, such as an employee-appreciation week.

Unfortunately for employers, this is not a great time to use failing methods to improve employee engagement and give workers good reasons to stick around. Finnegan points out that since 2000, Gallup surveys show that the number of employees who feel engaged at work has never risen higher than 30 percent. Moreover, he says that while doing research for his next book, he found a consultant's

the same search results in 350 million hits. "It's definitely a trend," he notes.

The premise behind stay interviews is simple: It's better to obtain quality, insightful workplace intel from employees who believe they can benefit from changes, as opposed to interviewing disgruntled soon-to-be-ex-employees who no longer give a rip about the organization. The process is fairly simple, too; managers merely hold structured, one-on-one meetings with their direct reports, and learn what they can further do to retain and better engage them.

"Stay interviews work because they're not all about company programs or human resources departments," Finnegan explains. "They put direct supervisors in the solution seat. Supervisors get to ask

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

OK, fair enough — sounds great in practice, right? But is there concrete proof that stay interviews actually work? You bet, Finnegan says. In one instance, he points to a hospital that cut employee turnover by up to 70 percent. In another instance, he cites a technology company that was about to announce a large round of layoffs, but wanted to minimize the odds of losing any remaining valued employees.

"So we trained all their managers to do stay interviews, which were performed within a week after the layoffs," he says. "The company ended up keeping all the employees they really wanted to keep."

Don't confuse stay interviews with performance reviews, however. Performance reviews should be performed separately and focus

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**"The exit interview and engagement survey models are broken. They're flawed methods because employees don't tell the truth in exit interviews and companies don't make changes as a result of their findings."**

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Dick Finnegan

report that estimates companies spend \$720 million annually to improve employee engagement — and plan to spend up to \$1.5 billion in coming years. Money well spent? You be the judge.

Stay interviews provide a much better return on investment and are growing in popularity. Finnegan says that when he wrote *The Power of Stay Interviews* two years ago, a Google search of stay interviews turned up just 1,000 hits. Today,

employees probing questions and then find answers to their problems, such as how to reduce overwhelming workloads, get them the skills they want to learn or allow a flexible work schedule for day-care arrangements.

"It's funny that when managers find out why people quit jobs, they often say, 'If I'd have known that, I could've fixed it.' With stay interviews, they get to the things that can be fixed before people quit."

on how employees do their jobs. Stay interviews should center on what managers can do to make employees like their job more, Finnegan says.

"Some people [we work with] say they ask questions like that at the end of performance reviews, but it's not the same thing," he emphasizes. "We recommend that managers hold a stay interview once a year, roughly six months after a performance review, and do them



twice for new hires — once after 30 days on the job and again after 90 days. That's because new employees are more vulnerable [to leaving]. Too often they get hand-held when they're recruited, hired and onboarded, then they walk off the end of the dock alone. You need a process in which managers can keep holding their hands."

Finnegan offers the following tips for doing effective stay interviews:

- Develop a firm schedule for holding them, so they don't get lost in the daily shuffle.
- Train managers how to conduct them, with an emphasis on developing the skill of asking probing questions. "Managers need to get deeper into whatever employees tell them — ask them to explain more about a certain issue, provide examples and so forth," he says.
- Do stay interviews with people at the top of the org chart first, so they can see the first-hand benefits of doing them. "Then they'll feel more empowered when they interview their own employees — believe in the process more," Finnegan says.
- Ask managers to use a forecasting tool (C-Suite provides one) to predict how long they believe each of their employees will stay with the company.

"If they have a high-perform-

ing employee who's in the red column [indicating they're a flight-risk], the manager's job is to move them from the red column to the yellow column to the green column," Finnegan says. "Plus, this holds managers accountable and provides them with a goal [of retaining employees]. They become much better supervisors because there's a goal they're getting measured against."

Is it really realistic, though, to ask already-harried and over-burdened managers and supervisors to find time to also do stay interviews? After all, performance reviews alone, if done correctly, are big time sucks.

"It's only realistic if you know how much turnover costs and you understand how much engagement drives profitability," Finnegan replies. "With every client, we begin with a cost-of-turnover study. For instance, at one company that had about a 30 percent turnover rate among its 1,000 truck drivers, we found it cost \$6,700 every time they lost an employee.

"It's hard for a company to grow when it's so busy hiring 300 new drivers every year — and spending \$2 million a year to do so," he adds. "So a better question is this: How can companies not afford to do stay interviews?"

*To learn more about stay interviews, contact Dick Finnegan at [dfinnegan@theretentionfirm.com](mailto:dfinnegan@theretentionfirm.com).* ♦

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# LET'S MAKE IT GREAT



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Taking it all in at the Pumper & Cleaner Expo can be overwhelming. Here is some advice to ensure you make the most of your trip to the industry's best trade show.

By *Briana Jones*

Marking my fifth Pumper & Cleaner Environmental Expo International in February, I still remember my first show, walking into the vastness of the exhibit hall when I couldn't tell a vacuum truck from a portable restroom. (Don't worry, I figured it out pretty quickly.)

The Expo can feel overwhelming for first-time attendees, but the experience and knowledge gained are well worth the time and money spent.

I've been lucky enough to meet many of you because part of my job involves interviewing attendees, sem-

on the Expo website ([www.pumpershow.com](http://www.pumpershow.com)), to our Facebook pages and on exhibitor websites.

And I've also learned a lot from you during my years at the Expo, which runs this year from Feb. 24-27 at the Indiana Convention Center in Indianapolis, Ind. Now it's my turn to pass along some helpful tips to make your show more enjoyable. Here's some advice for Expo goers, whether you're a seasoned pro or a first-time attendee:

## Plan of action

As North America's largest trade show for the environmental services

website — will help you plan each day so you don't miss anything.

The floor plan offers a quick and easy way to find exhibits and products. A graphic layout shows where each company is exhibiting and provides booth number, website, and phone number and address.

Look up companies and products with the "Search the Show" option in the upper left-hand corner of the floor plan page. For example, a search for "Pipeline Rehabilitation/Lining" will highlight all the exhibits on the floor plan that have those products.

You can also create a show planner to save personal information, company and product information, and keep a schedule of educational seminars.

The mobile website on your smartphone is another helpful tool for planning your time at the Expo. You can search exhibitors to quickly find booth numbers, click the calendar icon to see educational seminar schedules and locations, or use the map of Indianapolis to find local restaurants.



Sign up for Facebook and Twitter updates on the mobile site to stay informed on everything happening at the show.

## Daily dose

Ensure you have the most current seminar schedules and company list with the complimentary Expo Daily, the official daily publication of the Pumper & Cleaner Expo.

The publication is available each

**Whether you're strolling the show floor or sitting down for lunch, introduce yourself to someone new. You're all there for the same reasons — to gain some knowledge, buy a new piece of equipment and network with your peers.**

inar leaders and exhibitors for videos. You've probably seen me with a camera guy wandering around the show floor. We're the video crew, and we create videos and post them

industry — with 500,000 square feet of exhibits and new technology — using a virtual floor plan is a great way to ensure you see it all. The online tool — available on the Expo



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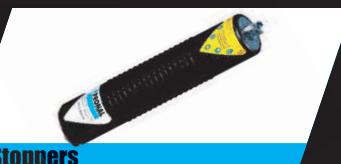
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day on stands at the main registration entrance, and includes daily events, news, features and photos from the show floor, seminar tracks, COLE Pub hours and lunch options in the hall.

Articles offer tips and tricks for how to make the most out of your time at the show, including night-life options, Indy attractions and restaurant suggestions. Exhibitors also like to include specific times for product demonstrations and special offers in their booths.

## Meet and greet

The Expo is the best place to meet other contractors and municipal managers from across the nation and around the world who face similar industry issues. Whether you're strolling the show floor or sitting down for lunch, introduce yourself to someone new. You're all there for the same reasons — to gain some knowledge, buy a new piece of equipment and network with your peers.

If you're not the type to just walk up to someone and start a conversation, maybe now is the time to give it a try. What's the worst that could happen? You meet a new friend or

colleague who helps you figure out how to make more money or expand your business.

The COLE Pub, located in the back of the hall next to the main concession area, is another great place to build your professional network. Open Monday from 11 a.m. to 2 p.m., and Tuesday and Wednesday from 11 a.m. to 4:30 p.m. during the Expo, the COLE Pub is a fun way to relax, have a drink and make a new acquaintance.

As part of the video crew, I interview attendees, which usually involves randomly walking up to some of you. I've learned a lot from having candid conversations about why you enjoy the Expo. I've heard so many words of appreciation from attendees for the COLE staff and the overall show, and I can't thank you all enough for making the show a great and informative experience.

We couldn't do it without you. If you have suggestions or questions for me or any of the editors, stop by and see us at the editors' booth located between registration and the main exhibit hall entrance. See you in February!



**The Expo is the best place to meet other contractors and municipal managers from across the nation and around the world who face similar industry issues.**

Early registration costs \$50 until Jan. 24. At-the-door registration is \$70 for the full program. To find out more, visit [www.pumpershow.com](http://www.pumpershow.com) or call 866/933-2653. ♦





# BEATING CSOs IN SEATOWN

Seattle has negotiated a unique consent decree that allows it to target stormwater runoff projects ahead of CSOs and SSOs

By Peter Kenter

**L**ike many cities, Seattle, Wash., has had its share of problems with combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs). In 2012, more than 154 million gallons of raw sewage and stormwater spilled into the water bodies around the city.

However, a unique consent decree lodged in July 2013 integrates stormwater control into the plan to address water-quality improvements. That agreement allows Seattle Public Utilities the discretion to address stormwater control projects ahead of some CSO projects where it can

2. Keep stormwater out of the system.

3. Store whatever water is left.

The consent decree between the city, the Environmental Protection Agency (EPA), the Department of Justice, and the Washington State Department of Ecology will substantially reduce CSOs. Under the decree, Seattle is committed to spending \$500 million on capital improvements between 2010 and 2025 to reduce CSOs to meet current water quality standards.

At the helm is Seattle Public Utilities (SPU), established in 1997 as a merger between four city depart-

on CSOs,” says Susan Stoltzfus, strategic advisor, communications and public involvement, SPU. “In Seattle, the magnitude of the effect of stormwater runoff on the water environment can be 100 times greater than the effect of the relatively small volumes of CSOs entering the same water body. By using this approach, it gives SPU more flexibility in meeting the intent of the Clean Water Act and the terms of the consent decree.”

Seattle CSOs usually occur following several days of rain or during very intense storms, while stormwater runoff discharges happen every time it rains and in much higher volumes.

“As many as 6 million gallons of stormwater runoff can discharge into local waterways in a 24-hour period,” says Stoltzfus. “And in Seattle, CSOs are often 90 percent stormwater. By assessing the environmental impact of stormwater runoff, we can demonstrate which projects make the most sense for us to pursue first.”

SPU’s analysis indicates that stormwater runoff could introduce more fecal coliform bacteria into the environment than many CSOs. Roadway pollution and contaminants only add to the problems.

“The sources of contamination include polluted runoff, leaky side

**“As many as 6 million gallons of stormwater runoff can discharge into local waterways in a 24-hour period. And in Seattle, CSOs are often 90 percent stormwater. By assessing the environmental impact of stormwater runoff, we can demonstrate which projects make the most sense for us to pursue first.”**

Susan Stoltzfus

demonstrate greater environmental benefit.

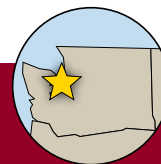
Seattle has been actively battling CSOs since the 1960s. In simple terms, this is the city’s current strategy to control CSOs, SSOs and stormwater:

1. Fix it first — repair damaged infrastructure that’s causing problems.

ments, Water, Solid Waste, Drainage and Wastewater, and Engineering Services.

## Stormwater versus CSOs

“Before this consent decree, nobody had compared the effectiveness of controlling stormwater runoff as compared to working directly



**PROFILE:**  
Seattle  
Public Utilities,  
Seattle, Wash.

**YEAR UTILITY ESTABLISHED:**  
1997

**CUSTOMERS SERVED:**  
1.3 million regional drinking water customers; 620,000 wastewater customers

**DIRECT SERVICE AREA SERVED:**  
85 square miles

**DEPARTMENT STAFF:**  
1,150

**INFRASTRUCTURE:**  
1,873 miles of drinking water pipelines; 1,795 miles of sewer and drainage pipelines

**TOTAL INFRASTRUCTURE ASSETS:**  
\$7.5 billion

**ANNUAL DEPARTMENT OPERATING BUDGET:**  
\$800 million

**ASSOCIATIONS:**  
American Water Works Assoc., American Public Works Assoc., Water Research Foundation, Water Environment Research Foundation, Western Urban Water Coalition

**WEBSITE:**  
[www.seattle.gov/util](http://www.seattle.gov/util)





Construction continues on the Windermere combined sewer overflow project in Magnuson Park in Seattle. (Photography by Mark Mulligan)





**Tevita Vaakakala (left) and Bobby Hayes, both with Seattle Public Utilities, finish cleaning a combined sewer along Main Street in downtown Seattle using a Vac-Con combination sewer cleaning truck.**

sewers and even homeless campers emptying sewage holding tanks into storm drains,” said Stoltzfus. “Seattle also has more dogs than children and failing to pick up after pets appears to be a huge contribution.”

The consent decree requires the development of a methodology and benchmarks that will compare the effects of targeting CSOs versus targeting stormwater alone on both humans and the environment. A draft plan, which models and estimates total suspended solids and other typical water-quality parameters, is due in 2014.

### Fixing it first

The three-part strategy for dealing with CSOs, SSOs and stormwater predates the consent decree. SPU remains committed to “fixing it first.”

“The worst CSO offender in the city is at Salmon Bay with 88 overflows and 57 million gallons of untreated stormwater and sewage overflowing in 2012,” says Stoltzfus. “Obviously we’re going to fix that first, while possibly deferring the

smaller projects.”

The Seattle consent decree explicitly references SPU’s Capacity, Management, Operation and Maintenance (CMOM) program, which represents part of the “fix it first” strategy. The utility must file an annual CMOM report to the EPA.

“We have a very advanced asset

**“We’ve collected a lot of data on various asset classes and have a good knowledge of how we expect those assets to perform, according to pipe material, pipe diameter, manufacturer, age and how and where the pipe was installed.”**

**Frank McDonald**

management program and establishing its effectiveness was part of the consent decree negotiation,” says Frank McDonald, maintenance planning & scheduling manager, SPU. “We had to demonstrate that we were getting the same or better results than other utilities regarding CSOs and SSOs, and that allowed us the flexibility to continue with our current program.”

McDonald’s group is responsible for wastewater system assessment, including CCTV work and inspection and analyzing inspection results. The group prepares repair or rehabilitation work orders for in-house crews and work packages for public works contracting. It maintains an active program to keep inflow and

infiltration under control.

“We’ve collected a lot of data on various asset classes and have a good knowledge of how we expect those assets to perform, according to pipe material, pipe diameter, manufacturer, age and how and where the pipe was installed,” says McDonald. “Some asset classes are in better shape than others and we’re looking at how to address any gaps.”

SPU utilizes five in-house CCTV trucks outfitted with CUES cameras employing Granite XP software. Four are committed to regular inspection, while a fifth is used by first responders for system emergencies. SPU crews perform about 90 percent of all CCTV work.

Between Granite XP and the city’s Maximo CMMS/EAM software, the team prioritizes the work that needs to be done on wastewater assets.

“We have three crews devoted to repair and rehabilitation, who complete about one-third of our rehab work,” says McDonald.

Outside contractors perform work 18 feet or deeper requiring specialized shoring and work occurring near high-pressure gas and steam lines, or fiber optic cables. Cured-in-place and trenchless work is contracted out, while in-house crews perform most manhole maintenance, including grout work and relining.

“Ultimately, it’s our job to know whether we’re cleaning pipes at the right intervals, focusing our main-

*(continued)*



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The Windermere combined sewer overflow project is one of several CSO projects Seattle Public Utilities is tackling under an EPA consent decree.



From left, Madelene Puloka, Tevita Vaokakala and Bobby Hayes, with Seattle Public Utilities, finish cleaning a combined sewer along Main Street.

tenance effectively and doing the right amount of replacement and rehabilitation,” says McDonald. “We’re doing what we can to reduce contributions to SSOs and CSOs that are within our control.”

### Keeping stormwater out

Seattle is engineering natural drainage and water retention features at several locations around the city. Green stormwater infrastructure includes trees, bio-retention facilities, permeable pavement, green roofs, rainwater harvesting and bio-retention planters. These features allow stormwater to be absorbed rather than taking up capacity in the sewage system or creating polluted runoff.

Developers often work with SPU to maximize the effectiveness of green stormwater infrastructure according to the City of Seattle Storm-

water Code. City departments are required to meet the same code if its requirements are triggered by their projects.

The city recently worked with developer Vulcan Real Estate to add stormwater control features to a new development along Lake Union, including a series of rain gardens planted along the street. Vulcan is paying \$1.2 million of the \$4.12 million price tag of the “Swale on Yale” project, which will filter up to 180 million gallons of stormwater annually.

### Storing what’s left

Lake Washington is a recreational lake, frequently used for swimming and boating. Because of its potential for human contact, the water body has been identified as a high priority for action.



Frank McDonald oversees field operations and maintenance for Seattle Public Utilities.

Work is already underway to protect Lake Washington by constructing five underground sewage storage tanks. The Windermere Basin Sewage Overflow Prevention Project involves the construction of a 2-million-gallon concrete underground storage tank. A new 2,250-foot-long gravity sewer and a parallel force main are being installed using a combination of open cut and trenchless construction techniques.

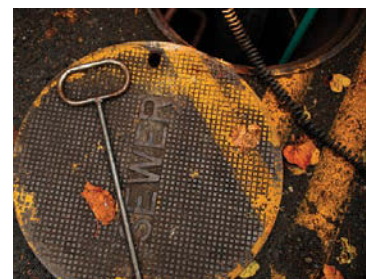
“We had a difficult time finding a location for this massive tank,” says Stoltzfus. “We were constrained by the need to be as close to the shoreline as possible and the desire to minimize construction impacts on a busy arterial street.”

The storage tank is scheduled to go online between two and five years from now.

### Engaging the public

One of the further requirements of the consent decree is public education. SPU offers citizens the opportunity to monitor CSO activity on its website, with alerts and estimated discharge volumes updated every 10 minutes.

“It’s a way to raise public awareness,” says Stoltzfus. “It’s very difficult to make



## FEAT OF CLAY

The battle against combined sewer overflows includes choosing the best sewer pipe material for an individual system to prevent inflow and infiltration. In the City of Seattle, where clay and concrete pipe each represent about half the material used in the sewer system, vitrified clay is now gaining the upper hand.

“We used clay pipe predominantly into the mid- to late 1950s, sourcing clay pipe from suppliers in northern California,” says Frank McDonald, maintenance planning & scheduling manager, Seattle Public Utilities (SPU).

The utility has examined historical failure and repair data on both clay and concrete pipe and found that clay has offered a better performance profile than concrete pipe used in its system.

“In the old days, clay came in 3-foot sections, but it’s now available in sections as long as 6 and 9 feet in 12-inch-diameter profiles connected by polyethylene gaskets,” says McDonald. “Clay is slightly more expensive than concrete pipe, but in Seattle, the life expectancy we’re getting out of clay gives it the edge.”

people aware of overflows that are happening underwater, 100 yards offshore. This brings the fight against CSOs home to them in real time.” ♦

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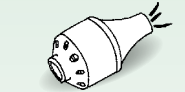


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3/8"-15°	\$33.00
1/2"-25°	\$46.00
1/2"-25°LT	\$49.00
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3/4"-12°LT	\$69.00
1"-12°	\$72.00
1"-12°LT	\$84.00

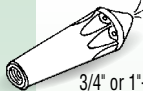


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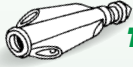


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T-M® Style	
90° or Straight, 6000 psi	
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1-1/2"	\$560.00
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### Swivel Joints

3/4" or 1"-17° .....\$125.00



### Truder

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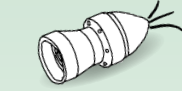
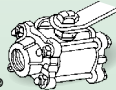
1" .....\$495.00  
1" Big Shark .....\$610.00

### Stainless Steel Nozzles

1/8"	\$37.00
1/4"	\$41.00
3/8"	\$45.00
1/2"	\$57.00
3/4"	\$91.00
1"	\$116.00

### Ball Valves

<b>Dyna Quip® Style</b>	
3000 psi	
1"	\$227.00



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1-1/4"-18 or 35°	\$85.00



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1"-12° .....\$73.00

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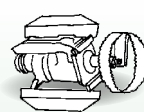
1/8"-1-1/4"



### Swivel Joints

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w/flat blades	\$1125.00
w/concave blades	\$1160.00
w/spiral blades	\$1160.00
<b>Lateral Mounted</b>	
w/flat blades	\$1020.00
w/concave blades	\$1075.00
Assemblies come with one ea. of 6, 8, 10 and 12" blades, saw blades, hub, skids, etc.	

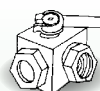
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3" x 36"	\$40.00
2" x 36"	\$34.00
with 24" rope	



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1-1/4" 2-way	\$226.00
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1/2" 3-way	\$160.00
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SaniTite HP pipe is rugged and lightweight, and is easily handled with minimal equipment and crew. Its stick length reduces the number of joints, which also saves time and labor. (Photos courtesy of Stephen C. Cooper)

**“The ADS pipe made the job easier. The pipe isn’t heavy, and you can drop it from 20 feet in the air and it’s not going to break, even in the winter.”**

**Darin Keller**

# QUICK AND EFFICIENT INSTALLATION

Polypropylene pipe helps Iowa utility add capacity to collections system in harsh winter conditions

*By Stephen C. Cooper*

Heavy rainfall and increased demands overloaded the existing sanitary sewer system in Grimes, Iowa, and forced the municipality to add a new sanitary sewer line to its system. Rather than go the traditional route, engineers chose polypropylene pipe for the project, which reduced costs and sped up the installation.

“The project had to be done quickly and efficiently,” says John Gade, P.E., of FOX Engineering, and Grimes’ city engineer. “The actual work started in January and was completed in March 2012, not

usually the ideal time of the year to be installing pipe in Iowa. Fortunately, we had two things going for us — the pipe itself and unusually mild weather.”

In late 2011, Grimes, located just west of Des Moines, experienced three consecutive days of heavy rain that overloaded the city’s existing sanitary system. The 24-inch outfall line carrying wastewater to the treatment plant backed up into the rest of the collections system, pushing graywater into residential basements. Grimes asked FOX Engineering to develop a plan

to immediately address the overflow issue and add capacity to accommodate increased demands on the system attributed to a 67 percent growth in population between 2000 and 2010.

“Growth placed a lot of stress on the capacity of Grimes’ sanitary sewer system,” Gade says. “It is one of the most rapidly growing communities in the state and region. To provide for increasing industrial and residential development, the system was analyzed to determine which trunk mains needed to be replaced.

### BETTER MOUSETRAPS

**PRODUCT:**

SaniTite HP polypropylene pipe

**MANUFACTURER:**

Advanced Drainage Systems Inc. (ADS)

800/821-6710

[www.ads-pipe.com](http://www.ads-pipe.com)

**APPLICATION:**

Gravity flow sanitary sewer projects

**BENEFITS:**

Reduces costs through quick and easy installation

**USER:**

City of Grimes, Iowa





**Grimes, Iowa, added a sanitary sewer line due to the overloading of its existing system from heavy rainfall events. Using pipe made from polypropylene reduced project costs and sped up installation.**

"We looked at the sanitary sewer that runs through a development corridor in Grimes and found that the 24-inch outfall line was near capacity and subject to added inflow and infiltration. Therefore, FOX Engineering recommended a new line be installed."

The existing sewer line was made of clay and had been in the ground for nearly 40 years. The sanitary sewer improvement plan called for a new line to be installed parallel to the old one. Although the old line would be plugged, it could be temporarily unplugged in the future to accommodate maintenance on the new line.

#### **Picking the pipe**

In selecting the pipe, FOX Engineering considered materials it had worked with in the past, including reinforced concrete, PVC, ductile iron and fiberglass. Engi-

neers then met with Jim Merchlewitz and Paul Hutton of Advanced Drainage Systems Inc. (ADS) to review the company's SaniTite HP polypropylene pipe and learn more about projects in which the product had been used.

Based on an analysis of the product, FOX Engineering determined it was durable enough to meet all the needs for the new outfall line. While not part of the original analysis, it also turned out that the ADS pipe had a price advantage over other products evaluated.

A total of 1,857 feet of 48-inch-diameter and 3,000 feet of 36-inch-diameter SaniTite HP pipe was used for the project, along with A-LOK connections to the concrete manholes.

Manufactured in 30- to 60-inch diameters, SaniTite HP pipe is available in triple-wall construction that provides a smooth interior



**Connecting the triple-wall SaniTite HP pipe to precast concrete manholes was done without grout using an A-LOK mount with no additional adapters.**

and exterior wall design supported by a corrugated structural core for improved stiffness and greater beam strength to minimize deflection and enhance long-term performance. It meets ASTM F2736, ASTM F2764 and also exceeds the requirements of ASTM D3212 for water tightness with dual-gaskets and banded reinforced bells.

The lightweight pipe is easily handled with minimal equipment and crew. Its stick length reduces the number of joints, which also saves time and labor and makes for a more secure system versus the shorter, heavier sections of some other pipe.

#### **Convenience and flexibility**

The sanitary sewer line was installed by Keller Construction Inc. of Boone, Iowa. "I like the product," says owner Darin Keller. "It's the first time we used triple-wall SaniTite HP, but we have used a lot of the black ADS corrugated HDPE pipe for stormwater projects, most recently 5,000 feet.

"Merchlewitz and Hutton also told me about using the A-LOK mount. For the triple wall, SaniTite HP pipe, which is smoother than the corrugated HDPE pipe, fits really tight and there's no need to grout," Keller continues. "The pipe does not need any additional adapters to fit into the precast manhole with A-LOK Premium gaskets, making our installation fast, and still giving us flexibility in the

field. We had no leaks, no problems. The A-LOK units work well with the precast concrete manholes and the polypropylene pipe."

Keller says the convenient pipe length also made installation easier. "We used a 13-foot-long pipe instead of a 20-foot pipe because the trench box is 25 feet long. The shorter pipe gave us room on each side for safety. When we're 20 feet deep, it's too much of a reach for our excavator. We used a John Deere 450, 110,000-class machine."

Backfill consisted of a bed of rock over the top of the pipe, followed by the native soil.

"The ADS pipe made the job easier. The pipe isn't heavy, and you can drop it from 20 feet in the air and it's not going to break, even in the winter," Keller says. He also noted there was no worry about installing the pipe in cold weather, or chipping or cracking the pipe or any components.

During the installation in Grimes, on-site visits were conducted by representatives from the Iowa DOT and Iowa's Statewide Urban Design and Specifications (SUDAS), the organization responsible for developing common design standards and specifications for public improvements such as sanitary sewers.

"After the job was finished we vacuum and pressure tested," Keller says. He also put his 10 years of knowledge into a true hands-on effort. "I actually went inside and mandrelled the pipe. I crawled through the run to see if there were any issues with the pipe. Overall, the pipe went in good and tested good. We saw very little deflection. We also tested the joints, all of which were fine." ♦



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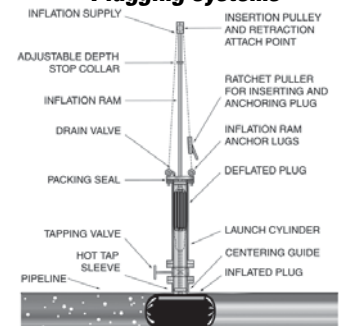
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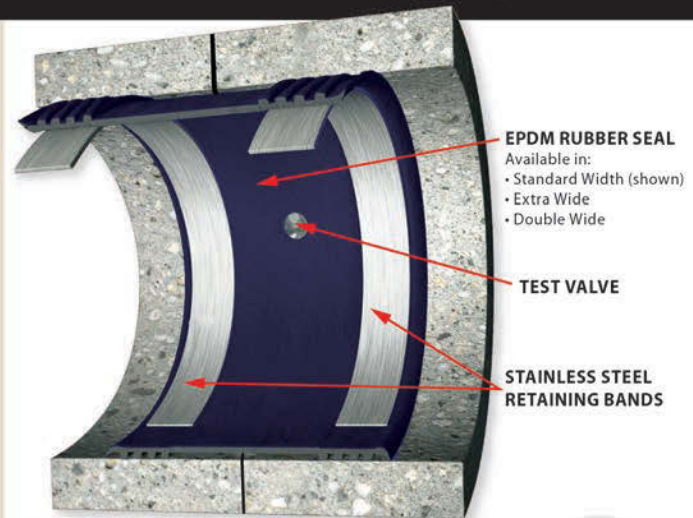
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## PIPELINE REHABILITATION AND RELINING

By Craig Mandli

Pipe bursting and cured-in-place pipe lining are proven methods for renewing aging and deteriorated pipes. Here are several systems and tools that employ these technologies, along with excavation, pipe piercing and cutting, shoring, and horizontal directional drilling tools used to expose entry points and install new pipe.

### Pipe Bursting Tools

#### Lateral pipe bursting machine

The **Model PD-33** pipe bursting machine from **Pow-r Mole Sales** is a pipe replacement system featuring a long 24-inch stroke. Its nonslip cylinder-activated jaws are designed to prevent cable damage, while developing 60,000 pounds of pulling force at a rate of 6 feet per minute. It offers a cost-effective alternative to open-cut by reducing excavation up to 85 percent. Pipe bursting installs new pipe, giving the operator the ability to increase the pipe size when needed. The system is capable of bursting cast iron, concrete, HDPE, asbestos cement, PVC, ductile iron, orangeburg and clay pipe from 2 to 6 inches. It is a modular machine and can be disassembled into easily transported pieces with no single part weighing over 98 pounds. Modular construction enables the operator to access any location, including manholes. **800/344-6653; www.powrmole.com.**



#### Pipe bursting puller

The **Model 7000** pipe bursting puller from **Poweram** is designed to replace existing utilities by pulling pipe splitting and/or bursting tools through the old pipe and pulling a new pipe into the same space. The new pipe can be the same size or larger than the old pipe. With over 118,000 pounds of pulling force, it can split or burst up to 12-inch pipe and pull back up to 16-inch pipe in most soil conditions. The longest practical distance depends on the type of pipe to be replaced, terrain (grade changes), soil conditions, and repair couplings or splice pieces encountered. **715/537-9050; www.poweram.com.**



#### Lateral pipe bursting machine

The lightweight lateral pipe bursting machine from **RODDIE Inc.** slides apart into two components of 50 and 60 pounds that can be lowered and reassembled by hand in the excavated pulling pit. In most cases this machine is powered and operated by a mini-excavator or bobcat tractor. It is capable of a 30- to 50-ton pulling force and can be used in 4-, 6- and 8-inch sewer laterals, but can also replace 1- to 4-inch water services. **888/406-3821; www.pipeburstingamerica.com.**



#### Pipe bursting system

The **UnderTaker** from **Spartan Tool** replaces existing sewer laterals with new, seamless, high-flow high-density polyethylene pipe from 2 to 6 inches in diameter. It sets up quickly without any tools, and handles up to three 45-degree bends in the existing pipe. No component weighs over 70 pounds, so it's easy to position. All is done with minimal disruption to the yard or business. **800/435-3866; www.spartantool.com.**



#### Lateral bursting power pack

The **Hi-Flow 13HP** from **TRIC Tools Inc.** is a lightweight power pack geared to the lateral bursting market, with greatly increased flow (tool speed) at higher working pressure (tool power). Features include a Honda GX390 13 hp engine, maximum fluid flow of 4 gpm, a maximum hydraulic pressure of 5,000 psi and a 10-gallon hydraulic fluid reservoir. It comes with a folding handle, folding pick-point frame bracket, removable hoses (25 feet of 1/2-inch I.D.), and heavy-duty pendant remote control. **888/883-8742; www.trictools.com.**



#### Tension winch

The **TT Technologies** 3-ton **Grundowinch** hydrostatic constant-tension winch is suited for underground utility applications including pipe bursting, underground cable pulling, sliplining, pipe pulling and swage lining. It features protective cable storage and is available with an air-cooled diesel or gas engine, as well as an adjustable boom. The constant-tension design means any cable slack is immediately sensed and quickly taken up automatically. Features include single-lever tension control (no gears to engage), power-assisted winch line feed and winch controls located at the rear of the unit to provide a safe view of the job while operating. It can pull up to 3,280 feet of 3/8-inch cable at speeds of up to 160 feet per minute. **630/851-8200; www.tttechnologies.com.**



### CIPP

#### Centrifugally cast liner

The **CentriPipe** pipe lining system from **AP/M Permaform** provides a cost-effective, no dig solution for structural lining of culverts using a bidirectional spincaster to centrifugally compact a precision liner at the best design thickness for the size, shape and conditions of deteriorated pipe. It inhibits rust and is highly resistant to abrasion. It waterproofs, seals, structurally reinforces and protects round, arched and elliptical pipe. It is professionally applied through a global network of certified applicators. **800/662-6465; www.centripipe.com.**





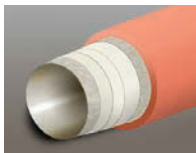
### Acrylamide grout

**AV-100** acrylamide grout from **Avanti International** is a chemically reactive gel with the same viscosity as water that permeates anywhere water can travel with adjustable cure times from 5 seconds to plus or minus 10 hours. Used to rehabilitate and sustain sanitary collection systems, it eliminates infiltration in mainline joints, manholes, laterals and lateral connections. With a remote packer, it can be injected through the defect to the outside of the pipe structure to form a gel-soil matrix and long-lasting water barrier while stabilizing the soil in the sewer trench. **800/877-2570; www.avantigrout.com.**



### CIPP liner

**AquaCure RP** from **Applied Felts Inc.** combines fiberglass reinforcement with the company's existing felt liner design and construction. It fully integrates and blends the properties of each, providing superior physical and mechanical properties while eliminating a learning curve because it installs just like the company's nonreinforced liners. It is impregnated on the same roller beds, using the same vacuums, and can be installed with the same equipment and techniques. It stretches up to 10 percent to the existing pipe wall and delivers ideal resin saturation and retention properties. **276/656-1904; www.appliedfelts.com.**



### Internal joint seal system

The **HydraTite** internal pipe joint seal system from **Cretex Specialty Products** is trenchless remediation for the repair of pipe joints. It eliminates infiltration and exfiltration with a mechanical rubber seal (EPDM or nitrile) spanning the joint and steel retaining bands. Each seal is custom-made to ensure compliance with project specifications. The system can be used in almost any type of pipe (iron, concrete, clay or plastic) from 24 to 216 inches in diameter. Seals are available in 11-, 14- and 21-inch widths. Retaining bands are made from carbon steel, 304 stainless, 316L stainless or AL-6XN. The thickness of the bands varies with the size of the seal. A stainless steel backing plate can be added for added support when spanning voids in the pipe wall, such as the remediation of expansion joints, sealing off abandoned laterals or when repairing deteriorated joints. It can withstand the corrosive effects of hydrogen sulfide. **800/345-3764; www.cretexseals.com.**



### Epoxy resin lining

**DURAPOX** epoxy resin from **Formadrain** can be relied on for 60 days open time. That much work time means no liners lost over time restraints or unforeseen difficulties. The crew can focus on their work without stress. Liners can be shipped pre-wet. The system is a steam-cured pull-in-place lining used for laterals, spot repairs, industrial process pipes and LMC Lateral-Main-Connections. Pipe diameters range from 2 to 48 inches. **888/337-6764; www.formadrain.com.**



### Composite inversion drums

**HydraLiner** composite inversion drums from **HammerHead Trenchless Equipment** are lightweight, high-capacity inversion drums that allow technicians to use steam, hot water or ambient temperature to cure with

one drum. They withstand the higher temperatures needed for steam curing. They are easily maintained, corrosion free and are seamless, eliminating a common failure point in other drums. Three drum sizes are available — the Mini-Hydra, Hydra and the Super-Hydra. **800/331-6653; www.hammerheadtrenchless.com.**



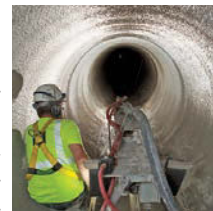
### Point repair system

The **Infrastructure Point Repair System** from **Infrastructure Repair Systems** is a no-dig system to spot repair any size pipe with no interruption of service. An epoxy-impregnated fiberglass and felt liner is wrapped and secured on a bladder, then inserted through the manhole and pulled to the leaking joint, pipe crack, or missing piece of pipe location. This no-shrink, corrosion-resistant repair will prevent infiltration and exfiltration, and can be used as a seal at the end of a lining system or as a presealer because it can be applied over active inflow. It is available for 3- to 48-inch-plus pipe diameter in lengths of 15 or more feet in four liner thickness options. **877/327-4216; www.irsnet.net.**



### Structural lining system

**EcoCast** from **Inland Pipe Rehabilitation** is an environmentally friendly, precision-applied, centrifugally cast structural lining system that combines the most advanced application equipment with a custom formulated geopolymer for consistent application and long-term performance. It will successfully restore concrete, brick or corrugated metal storm and sewer pipes, and noncircular infrastructure. It is a particularly cost-effective solution for large-diameter pipe sections starting at 36 inches. Applications include storm drainage culvert renewal, manholes, wet wells, junction boxes, DOT and airport projects. **281/362-1131; www.teamipr.com.**



### CIPP renewal service

**Inliner Technologies** provides **CIPP renewal solutions** for deteriorating pipes and culverts ranging in diameter from 4 to 120 inches. Licensees are contracted by municipalities and industrial companies to renew storm, waste and process sewer piping that have been damaged by corrosion and/or structural deterioration. The company has installed over 18 million feet of pipe lining in the U.S. and Canada. With five licensees and approximately 400 employed within the Inliner network, the company's technology has been utilized to perform pipe renewal projects in the U.S. and Canada since 1989. In-house tube manufacturing capabilities and an extensive network allow for competitive pricing with short lead times. **812/723-0704; www.inliner.com.**



### Main and lateral CIPP connection liner

The **T-Liner** from **LMK Technologies** is a one-piece homogenous main and lateral CIPP connection liner that is ASTM F2561 compliant. It has a uniform wall thickness and incorporates compressible lining material at the upstream and downstream ends, creating a smooth, tapered transition to the host pipe. Both the mainline and lateral sections are formed as a structural cylinder that renews 18 inches and 360 degrees of the mainline and extends up the



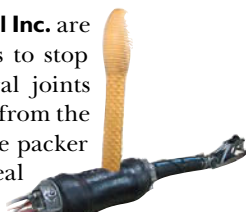
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lateral pipe as one continuous lining. Combining it with Insignia compression gasket-sealing technology provides a verifiable nonleaking system. These compression gaskets are embedded between the host pipe and the liner and are compatible with all pipe types including polyethylene. A permanent Lateral Identification Indicia is placed on the mainline lining, which includes the building address and other pertinent information regarding the raw materials and other pertinent manufacturing details. 815/433-1275; [www.lmktechnologies.com](http://www.lmktechnologies.com).

### Grouting packer

**Test and Seal Grouting Packers** from **Logiball Inc.** are used by specialty contractors and municipalities to stop infiltration at lateral connections and in lateral joints from the mainline sewer access to as far as 30 feet from the mainline. Chemical grout is pumped through the packer and forced out through existing pipe defects to seal and stabilize the soil around the injection points, preventing washout of backfill into the sewer and sealing off infiltration. 800/246-5988; [www.logiball.com](http://www.logiball.com).



### Flexible CIPP liner

The flexible **CIPP liner** from **MaxLiner USA** can work in up to 90 degree bends and handle diameter changes from 4 to 6 inches. The company's CIPP system has received code compliancy from the International Code Council (ICC-ES). 276/656-1225; [www.maxlinerusa.com](http://www.maxlinerusa.com).



### CIPP lateral liner

**MTube** CIPP lateral liner from **MTC** is flexible, easy to invert and ideal for rehabilitating gravity-fed pipelines. The butted ends of the felt are sewn together to produce a smooth, uniform pipe wall around the circumference of the tube. A heat-bonded coating is then extruded over the seam to create a permanent connection at the butt-end seam joint. They are available in 6-, 8-, 10- and 12-inch diameters. 662/978-7797; [www.mtubeonline.com](http://www.mtubeonline.com).



### Continuous inversion system

The **Top Gun** continuous inversion system from **Perma-Liner Industries** allows the CIPP liner tube to invert utilizing low air pressure. The liner inverts continuously without the need for above-ground water column towers, tall scaffold or the need for excess water in order to invert the CIPP liner. It allows the liner to invert easily and consistently without having to stop and start throughout the inversion installation. Most installs take less than 10 minutes, based on 500 feet of CIPP inversion from manhole to manhole. During the installation, no pressure is lost in the inverted liner. The liner is fully inflated at all times and held tightly against the existing pipe. Units range in different sizes to accommodate 6- to 36-inch diameters. 866/336-2568; [www.perma-liner.com](http://www.perma-liner.com).



### Lateral connection seals

The **Interfit CIP** lateral sealing system from **Quadex/Interfit** rehabilitates and seals lateral connections to lined sewer mains, eliminating infiltration and root intrusion. Depending on lateral defects/bends, the system extends from 1 to 20 inches into the lateral, sealing three critical

problem areas — the annular space between a main liner and the host pipe, the lateral connection and the first joint. It includes a "full main wrap" (360 degrees) one-piece CIP fiberglass sock in the main that helps anchor the lateral portion of the sock. By using 25 to 30 psi inflation pressure, the nonshrinking resin attains superior migration into pipe defects, which yields superior mechanical adhesion and long-term performance. 870/688-7100; [www.interfitusa.com](http://www.interfitusa.com).



### Sewer lateral lining system

**Quik Lining Systems** is an advanced **CIPP sewer lateral lining system** that simplifies the process, giving the operator a lower cost per foot of lined pipe. It is lightweight, and a single operator can complete a job in about four hours. It gives crews the ability to install up to 8 or more lines per day. The unit can be operated from rooftops, basements or the street. The system's design eliminates multiple handlings of materials and can line pipe at over 100 linear feet per minute. 714/296-5262; [www.quiklining.com](http://www.quiklining.com).



### Life-extending lining system

The **Raven 405 Series** from **Raven Lining Systems** provides long-term performance in harsh, damp wastewater environments. Its 100 percent solids, zero VOC polymers demonstrate superior adhesion, low porosity and high chemical and abrasion resistance. It is a proven solution to stop recurring inflow and infiltration, featuring ultra-high build properties that make it ideal for overhead and vertical application. It is used on new concrete to protect against corrosion and extend the life of the structure, and can be used on old deteriorated structures such as brick, concrete or steel through a network of certified applicators. 800/324-2810; [www.ravenlining.com](http://www.ravenlining.com).



### Pipe transition lining

**DrainPlus Liner** from **Trelleborg Pipe Seals Milford Inc.** are comprised of a polyester needle fleece with a TPU coating designed to overcome lateral pipes with multiple bends and pipe diameter transitions and reduced wall thickness when the liner covers a change in internal diameter. They have great flexibility and are able to negotiate multiple 90 degree bends with minimal wrinkles. They are also designed to bridge transitions in pipe diameter up to two dimensions while retaining the minimum required wall thickness in the larger size pipe section. The TPU coating allows high-temperature resistance, and when used in combination with epoxy resins can be steam cured, allowing fast processing time. 800/626-2180; [www.trelleborg.com/npc](http://www.trelleborg.com/npc).



### Controlled Water Pressure Inversion Unit

The **Controlled Water Pressure (CWP) Inversion Unit** from **TRY TEK Machine Works Inc.** installs 6- to 18-inch CIPP liner from manhole to manhole. With water's superior heat retention, groundwater infiltration into host pipe is less likely to prematurely cool the liner causing incomplete curing and lifts. Incompressible water reacts instantly when unit is jogged, resulting in easier navigation of bends





and irregularities. The liner remains constantly inflated from inversion through curing, eliminating host-pipe damage caused by multiple inflations. It can operate in places not accessible to high scaffolds or lift trucks. 717/428-1477; [www.trytek.com](http://www.trytek.com).

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## Pipe Fusion

### Pipe fusion machine

The **McElroy Manufacturing Super 28** is capable of fusing 2-inch IPS to 8-inch DIPS polyethylene pipe. The machine features a diesel-powered, 28-fusion carriage on a TracStar 412/618 chassis. The configuration allows contractors to have a diesel-powered fusion machine on job sites where gasoline is unavailable or not allowed. It can be ordered as a combination unit that allows fusion of branch saddles with a maximum base diameter of 9.63 inches onto any size pipe main. It comes standard with a facer, heater, insulated heater stand and lifting assembly. 918/836-8611; [www.mcelroy.com/fusion](http://www.mcelroy.com/fusion).



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## Underground Piercing Tools

### Portable piercing tool

The **BigShot** underground pneumatic piercing tool from **Footage Tools Inc.** can be run with a small portable air compressor that delivers up to 75 cfm and 110 psi. New service lines can be pulled in behind it during the bore, or by reversing the tool with the service line attached to the nose pin. It can bore holes from 2 up to 5.5 inches to allow contractors to install a variety of pipe up to 4 inches in diameter. This method results in time and cost savings, along with reduced disruption to property. 888/737-3668; [www.footagetools.com](http://www.footagetools.com).



### Moving-head pneumatic piercing tool

The **Vermeer Hole Hammer** pneumatic piercing tool features a moving-head design that provides full striking force of the piston to the head of the tool, pulverizing stones into the surrounding soil. The residual energy generated is used to help the tool body travel through the compacted bore path. This results in more accuracy and reduced tool deflection in tough soil conditions. It also incorporates a mechanical reset for the head assembly, helping ensure each blow delivered compacts soil in front of the tool to increase production and accuracy. Because it features a mechanical spring reset design, the head fits tightly to the body of the tool, resulting in an easy and smooth-starting tool. A ribbed tool body provides additional tool grip for traction in loose soils, helping achieve forward impact on each blow. It is available in 2-, 2 1/2- and 3-inch sizes. 888/837-6337; [www.vermeer.com](http://www.vermeer.com).



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## Horizontal Directional Drilling

### Mid-size horizontal directional drill

Designed for the underground utility contractor, the **JT25 HDD** from **Ditch Witch** offers 27,000 pounds of thrust and pullback, a rotational drive with 4,000 foot-pounds of torque, and quiet drill operation. It is

ideal for installing utility pipe and cables of up to 12 inches in diameter at lengths of up to 500 feet. It features a 130 hp, Tier 4i Cummins diesel engine. 800/654-6481; [www.ditchwitch.com](http://www.ditchwitch.com).



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## Directional drilling pipe

**Directional drilling pipe** from **Underground Tools, Inc.** fits all drill rig sizes from mini through maxi. It is made from high-quality materials, with consideration given to precise threaded connections. Integral forged drill pipe and forged/inertia-welded pipe are available. In addition, HIWS drill stems Versions I and II are available through manufacturer-direct distribution. All products come with DirtSmart technical service. 866/488-3478; [www.undergroundtools.com](http://www.undergroundtools.com).



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## Excavation Equipment

### Hydroexcavator

The **HV56** hydroexcavator from **GapVax** is a multipurpose unit ideal for virtually any wet/dry vacuum project. It has a 15-cubic-yard debris body and water tank options from 350 to 1,200 gallons. Features include a positive displacement vacuum pump rated at 3,500 cfm with 28 inches Hg. The design prolongs the life of the filter bags and eliminates the threat of material entering the vacuum pump. Options include a cold-weather recirculation package, sludge pump, auger unloading system, body pressurization system, remote pendants and wireless remotes, high rail package, washdown system, stainless steel body and a high-dump option. 888/442-7829; [www.gapvax.com](http://www.gapvax.com).



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### Air-excitation tool

The **Utility Air-Spade 4000 Series** from **Guardair Corporation** harnesses the power of compressed air to safely uncover underground utility lines without harm. Its supersonic nozzle generates a laser-like jet that moves at twice the speed. It features a nonsparking brass nozzle and components, electrically insulated 4-foot barrel rated to 300 kV and a lightweight, ergonomic handle. The aluminum handle features a full-size grip opening to accommodate linesman's gloves. A dead-man trigger ensures safe operation, and a trigger guard prevents accidental activation. A retractable stabilizer bar provides superior operator control. An integral pressure gauge ensures optimal digging performance. 800/482-7324; [www.air-spade.com](http://www.air-spade.com).



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### Combination jet/vac truck

The **Aquatech F-10** from **Hi-Vac** features a front-mounted reel designed by Aquatech. The 180-degree rotating front-mounted reel facilitates easy unit placement. Reel capacity is designed and engineered for up to 800 feet of 1-inch hose. The top-loading boom powers up and down and extends to 26 feet from the pivot point. The single-engine drive dramatically decreases fuel consumption, maintenance expense, weight on the chassis and the initial chassis price. The water pump consists of a continuous flow, triplex reciprocating



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design and is rated up to 80 gpm at 2,000 psi. An optional unloader valve allows for complete control of water flow and pressure independent of the vacuum power. Tanks are constructed of high-strength, UV stabilized polyethylene, with optional fixed internal baffled aluminum tanks. **800/752-2400; [www.aquatechinc.com](http://www.aquatechinc.com).**

### Construction-class crawler excavator

The 86,200-pound **R380LC-9A** construction-class crawler excavator from **Hyundai Construction Equipment Americas** is powered with a low-emission, low-noise, 290 hp Cummins Interim Tier 4/Stage IIIB QSB6.7 engine. Complimented by Cummins' VGT Turbocharger, the airflow boost continuously varies to precisely match engine rpm and load demands. It comes with a redesigned hydraulic system that provides super-fine touch and improved controllability. It features the Hi-mate Remote Management System, which allows operators and dealer service personnel to access vital service and diagnostic information from anywhere with internet access. It boasts a bucket breakout force of 49,300 pounds, a maximum dig depth of 27 feet, and a 1.88- to 3.03-cubic-yard bucket. **877/509-2254; [www.hceamericas.com](http://www.hceamericas.com).**



### Mini-excavator

**TMX** mini-excavators from **Innovative Equipment** feature a quick-hitch system that can be hooked behind a standard 1/2-ton pickup, van or light-duty tow vehicle. They eliminate tracks by utilizing zero-turn technology for access to tight locations and lawns. Weighing only 2,941 pounds, they feature an 8-foot digging depth and 6,600-pound digging force. The unit features a 7-foot-2-inch loading height with a swing radius of 140 degrees, allowing access next to walls and other obstructions. An auxiliary hydraulic tool circuit has the ability to power hydraulic tools including jackhammers, pumps and saws. **888/359-3002; [www.iequipt.com](http://www.iequipt.com).**



### Hydroexcavating tool

The **Soil Surgeon** hydroexcavating tool from **The Soil Surgeon Inc.** is designed to fit any sewer combination truck equipped with a telescopic 6- or 8-inch boom. The tool has a 1-inch water connection. The operator controls water pressure and power with truck controls. Features include 6-foot Tuff Tube with handles fabricated to the tube to guide the unit down for potholing or side to side for trenching. Six jets boring inward cut the soil, while six jets boring outward bring the tube down. Bumpers on the bottom protect the jets and lines the tool might contact. **949/363-1401; [www.soilsurgeoninc.com](http://www.soilsurgeoninc.com).**



### Combination vacuum truck

The **Mud Dog 1600** vacuum/hydroexcavator combo from **Super Products** features a 16-cubic-yard debris body, standard 1,500-gallon water capacity and a rear-mounted boom that offers 335-degree rotation, 27-foot reach and upward/downward pivot that enables operators to achieve greater work area access and deeper digging without the need to halt production to reposition the truck. It can deliver up to 18 gpm of flow and 3,000 psi of pressure, while its 8-inch positive displacement vacuum system provides airflow up to



5,800 cfm and 28 inches of vacuum to ensure the thorough removal of a wide variety of materials. An ejector plate system smoothly pushes the load out of the collector body and into the disposal site. It has the ability to raise and tilt its collector body to unload into disposal areas with barriers or berms. **800/837-9711; [www.muddogeasy.com](http://www.muddogeasy.com).**

### Hydrovac unit

The **F4** hydrovac unit from **Tornado Hydrovacs** carries 13 cubic yards of mud and more than 2,000 gallons of freshwater. Components include a water tank from which you excavate, a mud tank in which the excavated spoils are held, a water pump, a boiler to heat the water and a positive displacement vacuum blower to pull the spoils to the tank via a boom. **877/340-8141; [www.tornadotrucks.com](http://www.tornadotrucks.com).**



### Excavation unit

The **X-Cavator** from **Vac-Con** is available in configurations from 5- to 16-cubic-yard capacities, with hydrostatically driven three-stage centrifugal compressors. A variety of hydrostatically or mechanically driven positive-displacement blowers up to 28-inches Hg are also available. It can also be configured with dual positive-displacement blowers with airflow up to 7,000 cfm. Low-volume, high-pressure water systems with up to 4,000 psi are available with cross-linked polyethylene water storage tanks with up to 1,500 gallons of capacity. It is available with a Power Flex Boom that extends up to 28.5 feet from the machine and rotates up to 315 degrees. The boom articulates up to 110 degrees and will lift up to 34 feet into the air. Booms are available with up to a 10-foot extension, and 8- and 10-inch tube diameter. **904/284-4200; [www.vac-con.com](http://www.vac-con.com).**



### Dumping hydroexcavator

The **Vacall AllExcavate** hydroexcavation truck features a high-dump option that allows the operator to use a wireless remote control to raise the debris tank as much as 76 inches above ground level, and then shift the tank horizontally 21 inches beyond the rear bumper. That enables it to dump debris into roll-off containers, typically with an edge that's 60 inches above ground level. It uses just one engine for mobility and to generate water flow at 10 to 25 gpm and pressures up to 3,000 psi. Used in combination with strong vacuum, it can loosen and remove dirt, rocks and other material from around utility lines and foundations. Standard and optional debris bodies and water tanks are available. The AllSmartFlow CANbus intelligent control system is standard, monitoring water usage and minimizing downtime for water tank refills. **800/382-8302; [www.vacallindustries.com](http://www.vacallindustries.com).**



## Pipe Cutters

### Reinstatement cutter

The **Dominator 430** reinstatement cutter from **Bowman Tool Company & Systems** is designed to operate in 6- to 30-inch relined pipe. Its streamlined design features no external air tube and is stable in the pipe

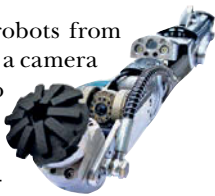




due to its 72-pound construction from a solid billet of stainless steel. The head assembly incorporates a pinionless, quick-change design and only one adjustable gib. Lateral reinstatement is achieved with the 0.8 or 1.2 hp cross-flow air motor, but for optimum cutting performance in 8-inch and larger pipe, the 2.5 hp geared air motor can decrease reinstatement time by approximately 80 percent. It can be disassembled and reassembled in approximately 30 minutes due to its eight-moving-parts design. All the electric motors are isolated at the end of the cutter in a watertight chamber, eliminating water-damaged motors and allowing for easy and quick access. It is manufactured from temper-hardened stainless steel and bronze. **717/432-1403; [www.bowmantool.com](http://www.bowmantool.com).**

### Pipe-milling robot

**HydroCut 150** and **200** self-propelled milling robots from **IBG Hydro-Tech** feature milling arms equipped with a camera (480 TV lines) that can rotate 360 degrees. They also feature improved high-resolution LED lighting, allowing users to gain a better perspective on precise work. It has a hydraulic feed-through for high-pressure water up to 3,600 psi with a slip ring on the milling arm that increases mobility, making it swiveling endless. **[www.ibg-hydro-tech.de](http://www.ibg-hydro-tech.de).**



### Pipe-cutting chainsaw

The **Utility** chainsaw from **ICS - PowerGrit** addresses operator safety with grinding technology that eliminates rotational kickback and offers improved operator positioning when cutting pipe. Utilized by public and private water and wastewater departments worldwide, it is designed to cut a variety of materials from ductile iron to plastic pipe with far less excavation. The ability to cut up to 24-inch pipe without changing position reduces the difficulty of the job. **800/797-4748; [www.powergrit.com](http://www.powergrit.com).**



### Reinstatement and drain cleaning lateral cutter

The **Maxi Miller** lateral cutter and two-step drain cleaning system from **Picote Oy Ltd** features a range of 75 feet, which can be expanded another 32 feet with a connector. Its Servo motor allows an efficient removal of hard materials from 3- to 10-inch drains and sewers with stainless steel grinding chains. It also powers Picote's Smart Cutter and Twister lateral cutters, enabling a quick reinstatement of connections. The motor features an adjusted torque limiter and shaft protection. Its aluminum frame has powder coating frame protection, a two-way moving system, and stair glides to ease up or down stairs. **219/440-1404; [www.picotesolutions.com](http://www.picotesolutions.com).**



### Lateral cutter

The **Micro Premium** lateral cutter from **Pipeline Renewal Technologies** features a touch-screen interface, a large reservoir for flushing water, and easy connection/monitoring of supply air. In addition, the form factor of the reel broadens options for installing and transporting the system. Using remote-inflated air bladders, the arm of the cutter positions itself remotely by creeping and climbing;



clamps itself for precise cutting in vertical or horizontal orientation; and feeds the cutting head a full 4 inches. Just 72 mm in diameter, the arm fits through small openings, and its articulation (400-degree rotation and 90-degree swivel) facilitates precision cutting, as well as maneuvering through 90-degree bends in 4-inch lines. Detachable operator controls consist of twin joysticks, a touch-screen control interface, full QWERTY keyboard and a 10-inch video display. **866/936-8476; [www.pipelinert.com](http://www.pipelinert.com).**

## Shoring

### Slide rail system

The **Slide Rail Shoring System** from **American Shoring** can be used in a number of configurations, including for the bore pits commonly used to bore under roadways, streams or other obstacles. The sheeting system can be used at depths up to 30 feet and is installed with an excavator with no need for special equipment. The system can also be equipped with a doghouse panel to accommodate the casing pipe. **800/407-4674; [www.americanshoring.com](http://www.americanshoring.com).**



### Lightweight shoring system

The **FlexShore** shoring system from **Pronal-USA Inc.** is PE certified to be in compliance with OSHA Standard 29 CFR part 1926, subpart P. It is approved for type A, B and C60 soils at depths up to 6.5 feet. It is made of puncture-resistant material and is easy to handle at only 28 pounds. Its design allows two people to set up a trench box in under 10 minutes. It requires minimum storage space, and is flexible and adaptable to most types of excavations. **386/310-1558; [www.pronal-usa.com](http://www.pronal-usa.com).**



### Pneumatic shoring

**Pneumatic shoring** from **Prospan Manufacturing Co.** is designed to meet the OSHA excavation standard 29CFR 1926.650 that governs the safety of workers in trenches. It is an air-driven telescoping aluminum shoring device that delivers compressive forces to the trench wall preventing collapse. Made of anodized aluminum and stainless steel, it weighs 15 to 32 pounds and is available in four sizes spanning 21.5 to 105 inches. A variety of extensions and end attachments are available. **888/413-8100; [www.prospanshoring.com](http://www.prospanshoring.com).**



### Trench shoring system

The corrugated aluminum **ultraSHORE** trench shoring system from **Safety Corporation of America** features stackable panels that can be used horizontally or vertically for bury depths to 12 feet in Class C soils. Extra features include leg and wheel kits for OSHA regulations. Easily transported in a pickup, the system can be closed off on one or both ends with quick-release, spring-loaded end-closure panels. **800/746-7464; [www.shoring.com](http://www.shoring.com).** ♦





## Noninvasive liner quickly installed in municipal drainage pipe

### Problem

The Louisville/Jefferson County (Ky.) Metropolitan Sewer District needed a noninvasive option to rehabilitate an existing 150-foot-8-inch steel sewer pipe that was part of a large sewer treatment plant renovation project. The district didn't want the newly renovated treatment plant and other underground utilities disturbed. The contractor, Dugan & Meyers, was also on a tight timeframe to complete the project.

### Solution

The district chose a certified **Flow-Liner Systems** installer to line the existing pipe utilizing **Pre-Wet-Out (PWO) liner**. The liner was shipped to the project site impregnated with resin, then steam cured to save time. The drainage pipe was lined successfully and the curing time was less than three hours.

### RESULT

The contractor and MSD were very happy with the result and the time-saving efficiency. The company received a letter from the Project Engineer that stated, "We were very impressed and pleased with the Flow-Liner installation. The pipe lining saved us from digging up the pipe and disturbing buried utilities. We would certainly use Flow-Liner for future projects." 800/348-0020; [www.flow-liner.com](http://www.flow-liner.com).



## Large-diameter lift station fusion performed in-ditch

### Problem

Sunroc Corporation needed specialty help to fuse two 42-inch pipe flange adapters to tie-in 160 feet of pipe to existing HDPE pipelines at a sewer lift station in South Jordan, Utah. With very limited space and time, there were few options. The job required both large-diameter off-carriage fusions and large-diameter electrofusion.

### Solution

**ISCO Industries** initially sold 14 miles of 42-inch HDPE pipe for the sewer lift station. When the initial contractor did not fuse the pipe to the lift station, ISCO stepped in to offer an answer. Going off-carriage with a 42-inch TD Williams fusion machine, ISCO field technician Courtney Evans and Steve Holpp, with Integrity Fusion Products LLC, performed the large-diameter fusions in-ditch. They also eliminated the need for mechanical joints by using electrofusion for the HDPE couplings.



### RESULT

The approach saved Sunroc \$20,000. The customer was very satisfied with the repair, the project timeline and the cost-savings offered by ISCO. 800/345-4726; [www.isco-pipe.com](http://www.isco-pipe.com).

## Fast-curing polymer lining system rehabilitates corroded concrete pipe

### Problem

The SD342 Wood Street, Phase II Project from the East Bay Municipal Utility District (EBMUD) in Oakland, Calif., includes rehabilitating approximately 6,200 feet of a severely corroded 105-inch-diameter concrete pipe, which has lost its structural integrity. This pipeline conveys most of the influent flow into the 168 mgd treatment plant, which serves approximately 650,000 residents along the eastern shore of San Francisco Bay. It is also used as wastewater storage for flow equalization purposes.

### Solution

Due to budget, risk and schedule concerns, the work had to be performed at night, during low flows and without bypassing. Furthermore, since the pipeline runs under a residential area, the installation had to proceed without disturbing the neighbors, keep noise levels at or below 65 dB and keep hydrogen sulfide emissions undetectable. EBMUD and their consulting engineer, Brown and Caldwell, chose to continue the rehabilitation with the same fast-curing **Pipeline Structural Polymer Co-Lining System from Linabond Inc.** that was used successfully in 2000 for Phase I, which won the International Society for Trenchless Technology award for that year.



### RESULT

The Phase II Project was awarded to J.R. Pipeline, who has now completed the first section, achieving liner installation rates of up to 1 linear foot per minute. The remainder of the project is to be completed this year. 805/484-7373; [www.linabond.com](http://www.linabond.com).

## Structural lining system reduces inflow and infiltration

### Problem

Sarasota County, Fla., needed to rehabilitate 95 percent of their sewer laterals. Infiltration during the area's rainy season revealed that many of these clay pipes had developed cracks, which resulted in the county increased costs to haul the excess water from wastewater facilities. The laterals have 6-inch diameters, range from 15 to 25 feet in length and are located several feet below the homeowners' and businesses' front yards, driveways, city sidewalks and streets throughout the county.

### Solution

The customer chose **Nu Flow Technologies** because they wanted a nondestructive solution as opposed to a traditional repipe. The company installed its **Nu Drain system**. A structural liner was installed using Pull-in-Place technology, which utilizes existing access points and prevents digging or destruction to landscape or hardscape. The





epoxy-saturated liner cured within hours to form a seamless pipe-within-a-pipe, which will prevent cracks, root intrusion, groundwater infiltration, blockages and other common failures.

#### RESULT

The customer was satisfied with Nu Flow's solution. The early results of the lining project show a large reduction of inflow and infiltration in the sanitary sewer system. **800/834-9597; www.nuflowtech.com.**

## Centrifugal spincast lining prevents discoloration issues

#### Problem

The water department in Sac City, Iowa, was bombarded with complaints from residents with severely discolored water. Along with this, flows from existing fire hydrants along the 4- and 6-inch cast-iron water lines were low. The piping system was approximately 2,800 feet in length, serving 41 homes. The city tried traditional methods of flushing the lines, but this only offered a temporary reprieve. A long-term solution was required while keeping cost to a minimum.

#### Solution

The city contracted with **Triton Lining Systems LLC** to clean the inside of the pipes, removing all tuberculation, scale and buildup. An above-ground bypass system was installed to feed all properties. The

pipes were dried and CCTV inspected. They were then internally lined with the company's centrifugal spincast process. The process applies an NSF61 certified epoxy resin, at a computer-controlled rate, ensuring the lining is applied evenly around the full circumference and along the entire length of the pipe section being lined. Following the resin cure time, the lining was inspected for quality assurance, chlorinated and returned to service.



#### RESULT

The entire project was complete in six weeks. All complaints have ceased, and fire flows have been restored. The city realized a cost savings of approximately \$1.58 million. **407/928-9339; www.tritonpipelining.com.** ♦

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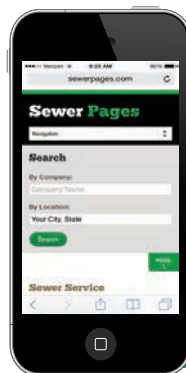
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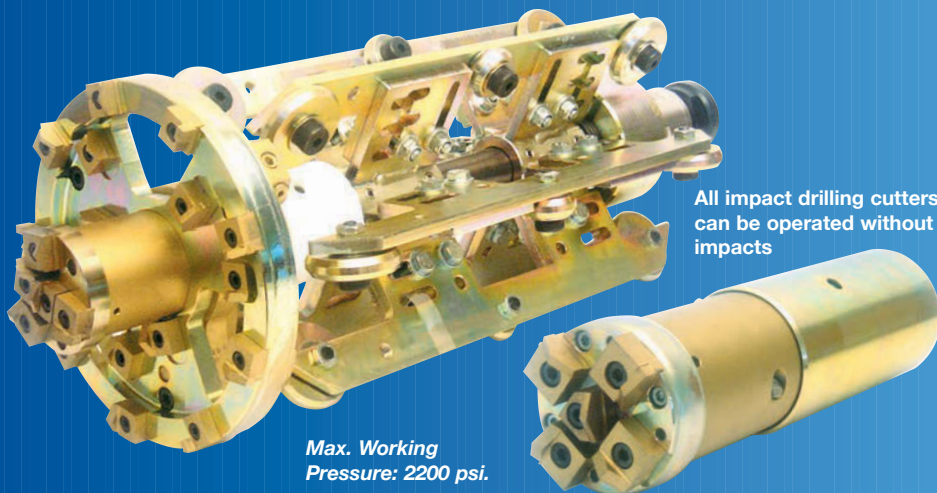


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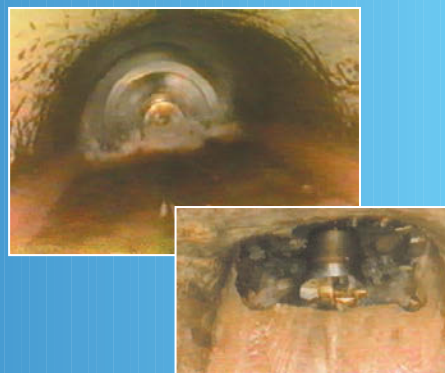
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FEBRUARY 24, 2014

	SESSION	DESCRIPTION	RECOMMENDED
	<b>Preventing Tank Truck Rollovers</b> 8:00 AM - 9:00 AM <b>Room:</b> 136-138 <b>Speaker:</b> John Conley	One of the most important tools in the liquid waste industry is the tanker truck, and the most important person is the one who drives it. While the tank truck industry, including the liquid waste sector, has a very good safety record, it does face a special challenge in eliminating tanker rollovers. According to a study conducted for the Federal Motor Carrier Safety Administration, straight tanker trucks account for over 25 percent of all cargo tank rollovers. That same study found that over 75 percent of rollovers are the result of a driver action. Most rollovers are preventable. John Conley, Past President of National Tank Truck Carriers, will discuss efforts by industry and government to eliminate tanker rollovers and other trucking safety and operations issues.	    
PSAI	<b>Visions of the PSAI and the Education Initiative</b> 9:30 AM - 10:30 AM <b>Room:</b> 136-138 <b>Speakers:</b> Jeff Wigley, Owner, Pit Stop Todd Hilde, President and CEO, Satellite Industries	The Education Initiative exists within the PSAI to advance the use of portable sanitation around the world through education regarding its benefits to humanity. Todd Hilde, President of Satellite Industries, will present an overall vision for this important effort. It is an excellent opportunity to gain a new perspective on the portable sanitation industry, and learn how you can participate in spreading this important message. In addition, Jeff Wigley, the Immediate Past President of the PSAI, will provide operators with an overview of the activities, advancements and changes within the association over the past two years.	
PSAI	<b>Industry Image</b> 11:00 AM - 12:00 PM <b>Room:</b> 136-138 <b>Speakers:</b> Nancy Gump, Owner, Andy Gump, Inc. Sarah Nasby, Vice President, S & B Porta-Bowl Restrooms	There is a growing effort among operators and the PSAI to change the public's perception of portable restrooms, because a negative public image does reduce rental fees and ultimately profits. This effort is well underway, as operators and suppliers belonging to the PSAI have joined together to actively promote a healthy, positive image of the industry through the use of press releases, professional marketing materials, partnering with other associations and working to establish an official Portable Sanitation Day to combat the negative press usually associated with this industry. Come learn what the Education Initiative is all about, and how it can help you increase your reputation and profitability.	
PSAI	<b>State of Global Sanitation</b> 1:30 PM - 2:30 PM <b>Room:</b> 136-138 <b>Speakers:</b> Rajeev Kher, Founder, 3S Shramik Steve Brinton, VP of Sales, Satellite Industries	It is clear that portable sanitation protects billions of people around the world from sickness and deadly diseases. However, there are many areas of the world where portable sanitation is underused or non-existent, and billions of people suffer on a daily basis. Thankfully, there are operators in these regions who are making a difference. Come hear their stories, and be inspired as you learn how valuable your business is to the community you live in.	 
PSAI	<b>What's New with OSHA Safety Requirements</b> 3:00 PM - 4:00 PM <b>Room:</b> 136-138 <b>Speaker:</b> Anthony Kuritz, Compliance Officer, OSHA	Anthony Kuritz is an Industrial Hygiene Consultant working for the Bureau of Safety Education and Training within the Indiana Department of Labor as an INSafe Training Instructor. In this session he will provide important information on OSHA's new GHS requirements for all businesses, truck and driver safety guidelines and other regulations pertaining to workplace safety. There will be time for questions and answers at the end of the presentation.	    





	SESSION	DESCRIPTION	RECOMMENDED
PSAI	<b>An Introduction to Entering the Federal Government Contracting Arena</b> 4:30 PM - 5:30 PM <b>Room:</b> 136-138 <b>Speaker:</b> Terri Baldwin Flanigan, Consultant, Phoenix Site Solutions	You've made the decision to enter the world of government contracting. Now what? First, we will help you understand the contract and its requirements to determine if the contract is right for you. Second, we will walk you through the process of putting a bid together. Finally, we will provide you with a list of beneficial websites pertaining to government contracts.	
NOWRA	<b>Why Do We Care About Soils?</b> 8:00 AM - 9:00 AM <b>Room:</b> 240-242 <b>Speaker:</b> Randy Miles, Soil Scientist, University of MO	Soil is a valuable component of decentralized wastewater systems, as it provides the ability to disperse large volumes of effluent, and serves as a treatment component to assure public health and environmental quality while fostering recycling and reuse of water and nutrients. A discussion of critical soil properties such as color, texture, and structure, and their direct or indicator role in treating, dispersing and recycling will be presented. This session will explore why specific technologies and associated designs may need to be employed in unique soil-site scenarios.	
NOWRA	<b>Design for Dummies</b> 9:30 AM - 10:30 AM <b>Room:</b> 240-242 <b>Speaker:</b> John R. Buchanan, Ph.D., P.E., Assoc. Professor, University of TN	Onsite wastewater system design must be based on the volume and characteristics of the wastewater, and the hydraulic properties of the soil. This session will focus on evaluating the wastewater source to determine the area of soil required for final treatment and dispersal. Specific discussion issues include wastewater strength, daily volume, long-term acceptance rate, and boundary conditions.	
NOWRA	<b>How to do a Good Site Evaluation</b> 11:00 AM - 12:00 PM <b>Room:</b> 240-242 <b>Speaker:</b> Randy Miles, Soil Scientist, University of MO	Site evaluation is the most critical input into the design and installation of an onsite wastewater system. The site evaluator must provide a prediction of the hydrological flow characteristics within the soil landscape. This session will focus on evaluation of the internal soil properties relative to their occurrence in the landscape. Discussion will include the iterative process that the site evaluator should have with the installer and homeowner.	
NOWRA	<b>Designing for Tough Sites</b> 1:30 PM - 2:30 PM <b>Room:</b> 240-242 <b>Speaker:</b> John R. Buchanan, Ph.D., P.E., Assoc. Professor, University of TN	Onsite wastewater systems must be designed to match the conditions of the soil and site. Frequently sites are limited by wet soils and shallow restrictive layers. This session will discuss the decision process to determine the appropriate system configuration for various site and soil conditions. Further, this session will explore various site modifications to improve the site acceptability.	
NOWRA	<b>Wastewater and Soils: Clean It Up AND Get It To Go Away</b> 3:00 PM - 4:00 PM <b>Room:</b> 240-242	The primary goal in dispersing effluent in the soil treatment component is to encourage unsaturated flow. Unsaturated flow provides the ability for greater contact with soil particle surfaces while allowing oxygen in the larger soil pores, thus greater treatment than under saturated flow conditions. Specific discussion will include dispersal technologies, soil properties, and water management strategies and devices.	
NOWRA	<b>Good Installation for Long-Term User Satisfaction</b> 4:30 PM - 5:00 PM <b>Room:</b> 240-242 <b>Speaker:</b> John R. Buchanan, Ph.D., P.E., Assoc. Professor, University of TN	The primary goal when installing an onsite wastewater system is to protect public and environmental health. However, installers should also consider ease of maintenance and landscaping as the system is installed. The system is more likely to be maintained if the components are readily accessible. Appropriate landscaping can divert surface water away from system components. This session will focus on these important issues that can make the installation a long-term success.	
NOWRA	<b>Look Out for Gophers! Taking Care of Mound Systems</b> 8:00 AM - 9:00 AM <b>Room:</b> 243-245 <b>Speaker:</b> Sara Heger, Engineer, University of MN	This presentation will cover providing maintenance for mound systems. It will cover the tasks related to septic tanks, pump tanks, pumps, pressure distribution, inspection pipes, the soil treatment system itself and landscaping, including those troublesome gophers.	





	SESSION	DESCRIPTION	RECOMMENDED
NOWRA	<b>ATUs - How to Make Them Work</b> 9:30 AM - 10:30 AM <b>Room:</b> 243-245 <b>Speaker:</b> Tom Fritts, Vice President, Residential Sewage Treatment Co.	Aerobic treatment units were first introduced in the mid 1950s, and have become a reliable technology when properly maintained. There are no longer just a handful of ATU manufacturers out there, and they all need qualified service providers to maintain the many different systems being sold today. We will review the basics of servicing these systems and some of the responsibilities that come with the NSF Standard 40 certification.	
	<b>Rest Stops: A Case Study of Challenging Wastewater</b> 11:00 AM - 12:00 PM <b>Room:</b> 243-245 <b>Speaker:</b> Sara Heger, Engineer, University of MN	The University of Minnesota's Onsite Sewage Treatment Program is working with the Minnesota Department of Transportation to evaluate the 51 septic systems serving the rest stops and truck garages across Minnesota at MnDOT facilities. Many of these systems are more than 30 years old, and the lack of information makes managing these systems, prioritizing replacement and designing replacement systems very difficult. It is generally understood that these systems are subject to challenging site conditions and wastewater characteristics. This presentation will cover protocol for investigation and the field data.	
	<b>Troubleshooting Onsite Systems</b> 1:30 PM - 2:30 PM <b>Room:</b> 243-245 <b>Speaker:</b> Tom Fritts, Vice President, Residential Sewage Treatment Co.	Understanding the "treatment train" and learning how to "run the rope" are skills you should have to be a proficient troubleshooter. Troubleshooting is more than just the importance of knowing how the system works. Many troubleshooting skills are no different than those used by your family physician or Mission Control. Having a good understanding of the system and following known procedures will allow your troubleshooting visit to be efficient and effective.	
NOWRA	<b>Installation Mistakes: How to Avoid and Fix Them</b> 3:00 PM - 4:00 PM <b>Room:</b> 243-245 <b>Speaker:</b> Sara Heger, Engineer, University of MN	Installing systems right from the beginning will save you time and money. Key aspects of proper installation will be discussed, including protecting the natural soil conditions, proper bedding of piping, tanks and treatment units and working on difficult sites. But what do you do when it is already been messed up? Potential remedies will be covered.	
	<b>Marketing &amp; Customer Service for Small Business Owners</b> 4:30 PM - 5:30 PM <b>Room:</b> 243-245 <b>Speaker:</b> Tom Fritts, Vice President, Residential Sewage Treatment Co.	Designing, installing, pumping and servicing ... is that enough? NO! Our businesses are not run by executives in penthouse offices ... we are the executives ... we are the entrepreneurs. Learning easy ways to market your company and effective customer service can take your profits to the next level. You may be surprised how many tools you already have that you are just not using.	
SSCSC	<b>Personal Safety</b> 8:00 AM - 9:00 AM <b>Room:</b> 231-233 <b>Speaker:</b> John Chadwell, Western Regional Manager, EHS International	This is a fascinating, high-energy class that's applicable to challenges encountered in today's workplace. It will provide an overview of industry safety issues such as workplace violence and personal safety, as well as the tools necessary to deal with the challenges of working with the public and with fellow employees. Throughout attendees will be presented with concepts on how to develop a survival mindset that could help improve their overall safety through personal awareness training. Attendees will leave with a better understanding of personal safety at the workplace or worksite, and valuable lessons that can be applied to their lives outside of work.	       
SSCSC	<b>Understanding the Nuances of a Quality CCTV Inspection Program</b> 9:30 AM - 10:30 AM <b>Room:</b> 231-233 <b>Speaker:</b> Jim Aanderud, Owner/President, Innerline Engineering	The success or failure of any pipeline inspection program comes down to two important factors – the quality of the videos and the quantity of footage inspected. Falling short in either one can prove fatal for the contractor and the public agency alike. This class will clearly define the makeup of a quality pipeline inspection, and discuss the steps that must be taken to produce a superior video. We will also look at specific and proven ways in which we can increase production and profitability. This class will help define a successful CCTV inspection program.	 





	SESSION	DESCRIPTION	RECOMMENDED
SSCSC	<b>In the Trenches with Trenchless Pipeline Repair and Renewal</b> 11:00 AM - 12:00 PM <b>Room:</b> 231-233 <b>Speaker:</b> <b>Mark Hill</b> , P.E., Civil Engineer, Michael Baker Corp.	Trenchless pipeline repair and renewal is a growing industry with new innovative processes being offered. This class takes a look at the benefits and drawbacks of some of the most common and some of the innovative pipeline repair and renewal technologies currently on the market. We will look at the specific site conditions that are a challenge for trenchless rehabilitation, what has been successful, and what has fallen short.	<b>Cleaner</b> 
SSCSC	<b>Nozzle Application: What, Why, Where, When and How?</b> 1:30 PM - 2:30 PM <b>Room:</b> 231-233 <b>Speaker:</b> <b>Duane Johnson</b> , Vice President, Affordable Pipeline Services	Too often cleaning truck operators believe that only one or two nozzles are sufficient to complete any project. Just because they have had great results with one nozzle in certain cleaning applications, they unfortunately continue to use the same nozzle in every other cleaning condition. This class will look at a variety of cleaning situations and discuss the various options available for cleaning. We will focus on specific pipeline conditions, and then discuss the precise type of nozzle needed to efficiently clean in each of these situations. Our goal will be for each attendee to learn a new approach to pipeline cleaning, and to begin thinking outside of the box when it comes to encountering new and challenging cleaning situations. Our ultimate goal is to increase effectiveness and productivity for each operator by always using the correct nozzle in any given cleaning condition.	<b>Cleaner</b> 
SSCSC	<b>Stop It!</b> 3:00 PM - 4:00 PM <b>Room:</b> 231-233 <b>Speaker:</b> <b>Denis Pollak</b>	The ins and outs of plugging and line stopping of sanitary sewers can be very challenging, and a sizable risk to say the least. There are many ways of controlling flow with the use of inflatable and mechanical pipe plugs. The standard of care and safety when plugging is sometimes overlooked or misunderstood. In this class we will take a close look at plugging, and discuss their advantages and practical uses. We will also look at alternative methods of controlling flow, such as line stopping, pipe freezing and bypassing. Plugging can be a very effective tool in a variety of applications. For example, by controlling the flow, lines that would otherwise be inaccessible can be accessed and inspected by conventional CCTV inspection equipment. We will look at how plugging can be a valuable tool for CCTV, cleaning and rehabilitation projects.	<b>Cleaner</b> 
SSCSC	<b>Getting the Most out of your Combination Unit</b> 4:30 PM - 5:30 PM <b>Room:</b> 231-233 <b>Speaker:</b> <b>Rick Lewis</b>	During today's economic times, agencies and contractors are keeping their combination units much longer. In order to extend the life of these units, there are critical steps that must be taken in order to guarantee that they continue to function at the optimum level. In this class we will define the key components of a combination unit and provide the necessary tools to maintain the truck and maximize its efficiency. We will discuss procedures and tricks of the trade that are needed in order to maintain its proficiency while ensuring its safety.	<b>Cleaner</b>  <b>Pumper</b> 
WJTA-IMCA	<b>Preparing for Your First High Pressure Waterjetting Job</b> 8:00 AM - 9:00 AM <b>Room:</b> 133-135 <b>Speaker:</b> <b>Gary Toothe</b>	Waterblaster? Check. High-pressure hose? Check. Let's do some waterblasting. Hold on there, partner. There is a lot more to successful waterblasting than just loading up the truck. Let's start with, "What are you trying to do?" Now be careful, this may be a question with more than one answer! In this session we will explore what needs to happen before the wheels ever start rolling for that first (or any) waterblasting job.	<b>Cleaner</b>  
WJTA-IMCA	<b>Vacuum Truck Operation and Safety</b> 9:30 AM - 10:30 AM <b>Room:</b> 133-135 <b>Speaker:</b> <b>Gary Toothe</b>	One of the bigger myths in the industrial cleaning industry is that there is nothing to operating a liquid vacuum truck. Nothing could be further from the truth. What you don't know about proper vacuum truck operation and safety could cost you a job, a truck, or a life. In this session we will explore the basics of liquid vacuum truck operation and safety on materials from water up to flammable liquids, and what your people need to know before they fire that unit up.	<b>Cleaner</b>  <b>Pumper</b> 



### Hydroexcavation: Getting the Best Bang for Your Buck

11:00 AM - 12:00 PM

Room: 133-135

Speaker: Neil McLean

Learn how to dial your hydroexcavation truck in to make your company look professional to your customers while increasing production, performance and safety. This program will discuss options like multiple wands and the right nozzle design to increase your performance. You will also learn how to use proper water management for the best production outcome.



### Marketing on a Shoestring

1:30 PM - 2:30 PM

Room: 133-135

Speaker: Suzan Chin, Founder and Chief Marketing Officer, Creative Raven

What you are experiencing in your business today is not because of what you are doing at this moment in time, but rather a direct result of what you did or failed to do six to nine months ago. This session will review five important marketing activities that can be accomplished on a modest budget in a relatively short period of time: 1. The World's Smallest Brochure: How to make your business card one of your most powerful marketing and advertising tools 2. Networking: Tips and tricks for tapping into your personal and professional networks and creating a powerful 15 or 30 second "elevator pitch" for networking events and meeting key strategic influencers and gatekeepers 3. Website Auditing: Performing an in-depth review of your online presence, developing a plan for making your website a better marketing or sales tool for your business 4. E-Newsletters: Using the power of e-based communication to nurture prospects into customers and keep existing customers wanting more 5. Press Power: Getting positive publicity and your name in the headlines and leveraging positive press exposure. Participants will leave with instructions, resources and samples on how to implement these budget-friendly marketing activities quickly and easily for their business.



### Getting Some.....

3:00 PM - 4:00 PM

Room: 133-135

Speaker: Suzan Chin, Founder and Chief Marketing Officer, Creative Raven

Brand recognition and positive publicity ... how do those big companies do it? This session will provide an interactive view of branding, its core components, what goes into creating a great brand and marketplace recognition. We will review why consistency is key, how color and presentation can set a company apart, as well as "personal branding." For many small to medium-sized businesses, personal branding is crucial to developing customer loyalty and powerful word-of-mouth referral business. Participants will learn: What goes into creating a great logo and memorable visual branding identity; Key components of establishing a brand and market perception; Essentials for developing your "personal brand" and engaging your customer. Publicity also plays a vital role in establishing a brand and keeping a company in the forefront of the target customer's mind. Often more powerful than paid advertising, it is a frequently overlooked and underused form of marketing, and this session will demonstrate how participants can tap into this inexpensive form of marketing that has incredible return on investment. Take aways include: Basics of developing a great news release; Insider tips for writing your own feature news articles; and idea generators for publicity and positive PR.



### The Online Marketing Toolbox

4:30 PM - 5:30 PM

Room: 133-135

Speaker: Suzan Chin, Founder and Chief Marketing Officer, Creative Raven

Be present and present ... navigating and exploiting the world of online marketing. Like it or not, online media is now a part of our daily lives. Smart phones, tablets, laptops, WIFI – we are a society that is "wired-in" so business owners need to take advantage of all this new and ever-evolving platform for communication. Today's online marketing toolbox needs to include many components: an engaging website with great content, social media, SEO and blogging. But how as a busy business owner do you develop these and ride the digital marketing wave? This session will review: The nuts and bolts of developing a responsive website; What business owners need to plan for and be ready to implement; Creating compelling content; How, when and why to use social media and the basic skills needed for getting involved. As SEO rules and algorithms have changed dramatically, we will share what can impact a site's rankings and the use of blogging to boost traffic, visibility and higher placement in search results including: How to set up a blog; Creating an editorial calendar; Ongoing maintenance tips; Connecting it to social media efforts. At the end of the session, participants will have a greater understanding of how all the different forms of digital communication work together, what tools are best suited for helping them achieve their goals and how to start incorporating e-based communication methods into their overall marketing strategy.





	SESSION	DESCRIPTION	RECOMMENDED
NAWT	<b>CSA 2010 Implementation/ Impact on Carriers/Drivers</b> 8:00 AM - 9:00 AM <b>Room:</b> 234-236 <b>Speaker:</b> <b>Buddy Mauger</b> , Compliance and Training Specialist	This training will discuss the implementation of CAS 2010 and what it will mean for companies and drivers. We will cover what you will need to stay out of trouble with the new requirements of CSA 2010. We will show you how to check your CSA 2010 "BASIC" scores to see where any problems may be. We will also create a DOT Portal Access and review data via the U.S. DOT Portal.	<b>Pumper</b> 
NAWT	<b>DataQ's: When and How to Challenge</b> 9:30 AM - 10:30 AM <b>Room:</b> 234-236 <b>Speaker:</b> <b>Buddy Mauger</b> , Compliance and Training Specialist	In this session we will take a look at the U.S. DOT's DataQ Challenge Protocol, and how and what to look for when reviewing roadside inspections. The training will cover the following; DataQ's how to log on and create a user profile, submitting a challenge to an inspection, how to review your data to find changes and what to do to challenge an error, and how to request reports via DataQ.	<b>Pumper Cleaner</b> 
NAWT	<b>US DOT Update/Recent, Upcoming and Proposed Regulations</b> 11:00 AM - 12:00 PM <b>Room:</b> 234-236 <b>Speaker:</b> <b>Buddy Mauger</b> , Compliance and Training Specialist	This training will cover recent changes, updates and proposed regulations. It will cover hours of service regulations (changes and court challenges), electronic logs (scheduled 2015), entry-level driver training requirements (scheduled 2014), National Registry of Medical Examiners (May 2014) and Skill Performance Standards (July 2014).	<b>Pumper Cleaner</b> 
NAWT	<b>What is a Good Septic System Inspection?</b> 1:30 PM - 2:30 PM <b>Room:</b> 234-236	This seminar will discuss the basics of a septic system inspection, including why it is important to locate and open all components of the system. It will provide information on locating techniques, evaluation of drainfields, and interacting with homeowners or other clients about scope of services and results.	<b>Pumper</b> 
NAWT	<b>The History of the PSMA Hydraulic Load Process</b> 3:00 PM - 4:00 PM <b>Room:</b> 234-236 <b>Speaker:</b> <b>Ray Erb</b> , Consultant, Thomas Erb & Sons, Inc.	The development of the Pennsylvania Hydraulic Load Test will be presented. This will include the background on why the test was developed, and what problems were hoped to be solved by conducting the test during a septic system inspection. The current procedures will be discussed, with an introduction to some of the problems with the test and potential solutions.	<b>Pumper</b> 
NAWT	<b>Improving Arizona's Inspection Program to Meet Modern Challenges</b> 4:30 PM - 5:30 PM <b>Room:</b> 234-236 <b>Speakers:</b> <b>Dawn Long</b> <b>Kitt Farrell – Poe</b> , Ph.D, Professor, University of AZ	The Arizona Transfer of Ownership Inspection Program began in 2001. In the past 13 years, it has become evident that improved inspection procedures are needed for determining the physical and operational condition of seepage pits and for properties that have been vacated for extended periods of time. Arizona is looking at the NAWT Hydraulic Loading Test as a standard operating procedure to address these issues.	 <b>Pumper</b>
NEHA	<b>DEER in the Headlights</b> 8:00 AM - 9:00 AM <b>Room:</b> 237-239 <b>Speaker:</b> <b>Doug Lassiter</b> , Executive Director, North Carolina Septic Tank Association	Downsized Effective Efficient Regulation (DEER) should be on everyone's minds. Most states and jurisdictions developed their regulations concerning onsite permitting and septage over decades of efforts, creating a piecemeal document that is cumbersome and confusing to the normal person. Many times it's a prescriptive standard and because of its mass, is slow to react and embrace the accelerated rate of technologies in our field. This discussion may step on some toes, but the industry is changing and we must change with it. DEER is essentially creating less bulk, more adaptability in the regulations bringing better returns in the commerce of residential and commercial building. This presentation will help you make positive change in how regulations affect you — the onsite wastewater professional.	 <b>Pumper</b>



	SESSION	DESCRIPTION	RECOMMENDED
NEHA	<b>Basic Chemistry of Onsite Wastewater Treatment Systems</b> 9:30 AM - 10:30 AM <b>Room:</b> 237-239 <b>Speaker:</b> A. Robert Rubin, Emeritus Professor, North Carolina State University	<p>For onsite wastewater professionals, understanding the chemistry of wastewater is essential to understanding the technology needed for each situation. This presentation will provide a basic overview of the chemical reactions that take place in onsite wastewater systems, and how those reactions are influenced by outside factors. Alkalinity, water hardness, and the effects of temperature and time will all be discussed. By the end of this session, attendees will have a basic understanding of the chemical reactions that take place in onsite systems, and their relationship to technology that is used. Additionally, this will provide background material to support management requirements, an element of any successful system.</p>	<b>Pumper</b> 
NEHA	<b>Making the Most of Your Experience: Training and Credentials for the Onsite Wastewater Professional</b> 11:00 AM - 12:00 PM <b>Room:</b> 237-239 <b>Speaker:</b> Anthony Smithson, Consultant	<p>Historically, training in the onsite wastewater industry has been on-the-job and code-specific, or a notch better for those lucky enough to have training center in their state. National organizations like NAWT and NOWRA are working to change that by bringing training developed by the respected members of the Consortiums of Institutes for Decentralized Wastewater Treatment to areas that have been underserved in getting a more comprehensive view at onsite technologies and strategies. To further advance the profession, the NEHA certified installer of onsite wastewater systems credential examination will be offered with the training as applicable. This presentation will focus on how training and credentialing can develop stronger onsite programs, and on the positive impacts that training and credentialing can have on all levels of the onsite wastewater industry.</p>	
NEHA	<b>Winners Communicate!</b> 1:30 PM - 2:30 PM <b>Room:</b> 237-239 <b>Speaker:</b> Doug Lassiter, Executive Director, North Carolina Septic Tank Association	<p>As onsite wastewater systems evolve and get more complicated, communication is needed – especially when the management of systems is required. This is a discussion on the essential nature of constantly improving communication lines within a business, whether it's with regulators, customers, employees, or the public. The leaders in any field of industry, in the community, or in government are always the persons that can communicate with their target audience. This presentation gives some common traits of successful people, how they improve their talents, and how they are rewarded for their efforts. Sometimes, it's not the shiny, new truck that people remember. It's the memory that the person took the time to communicate, and that's what separates them from their competition.</p>	
NEHA	<b>Best Available New Technology</b> 3:00 PM - 4:00 PM <b>Room:</b> 237-239 <b>Speaker:</b> A. Robert Rubin, Emeritus Professor, North Carolina State University	<p>Amazing new technology for onsite wastewater systems is being developed all the time. But how do you know what works for what situation? This presentation will provide information on new technologies that incorporate disinfection, nutrient removal and water re-use. Included will be how these systems work, and what environments are best suited for their use as well as advantages and pitfalls of new technologies. The presentation will wrap up with a discussion of the management responsibilities that go hand-in-hand with new technology. Please note: it is recommended that you attend the Basic Chemistry presentation prior to this presentation to make the most of the material presented.</p>	
NEHA	<b>Best Available New Technology: How to Get Your Regulator On Board</b> 4:30 PM - 5:30 PM <b>Room:</b> 237-239 <b>Speaker:</b> Anthony Smithson, Consultant	<p>Every year new technologies are developed for the onsite wastewater industry. But fitting the new technology into old regulations takes a bit of work. This presentation will focus on taking new technology and ways to make it work within constrictive regulatory frameworks. Understanding how the regulatory process works and how new technologies are approved make the whole process a bit easier. Included will be a discussion of how regulations can be designed to foster new technology and improve practices across the industry.</p>	



NASSCO

### Lessons Learned During Sewer Rehabilitation on Public and Private Property

8:00 AM - 9:00 AM

Room: 130-132

#### Speakers:

**Robert Kelly**, P.E., Director of Engineering,

City of Westlake

**Scott Belz**, URS Corporation

In 2001, the City of Westlake implemented an Inflow and Infiltration (I & I) program to eliminate excessive storm water from entering their sanitary sewer system during rain events. They hired URS Corporation of Cleveland, Ohio, to conduct the I & I testing portion of the program. Each area used similar rehabilitation techniques; however, through the course of each project, certain lessons were identified from the testing, to the bidding and finally during the construction phase. Various rehabilitation techniques, materials and methods have been conducted in each area. The city modified their program in the subsequent phases based on the lessons learned in each previous phase. Even though different rehabilitation methods have been used, all reduced I & I. The areas and year of completion are Salem-Radcliffe Subdivision (2001), Berkeley Estates (2004) and Canterbury Area (2007), and Melrose Area (2011). Through this program, the city has successfully eliminated I & I from each area tested, reduced basement flooding and improved overall storm drainage.



Cleaner



NASSCO

### Pipe Bursting a Mature and Diverse Trenchless Technology

9:30 AM - 10:30 AM

Room: 130-132

#### Speakers:

**Matt Timberlake**, Vice President,

Ted Berry Company Inc.

**Matt Werth**

Pipe bursting is a mature and widely used trenchless method for renewal of deteriorated and undersized gas, water, sewer, utility conduits and other pipelines throughout the world. Pipe bursting is an economic pipe replacement alternative that reduces social disturbance to business and residents when it is compared to the open cut technique or pipeline rehabilitation techniques. This presentation will describe current pipe bursting practices used successfully throughout the world, and will assist those involved in pipeline replacement and/or rehabilitation projects to evaluate the capabilities of pipe bursting and its practical application. Information shared will be consistent with the IPBA guidelines for pipe bursting, which is widely recognized as the most current and factual pipe-bursting document available.



Cleaner

NASSCO

### Resurgence of Chemical Grout Industry: Niche Business Opportunities

11:00 AM - 12:00 PM

Room: 130-132

#### Speakers:

**Donald Rigby**, Director of Marketing, Avanti International**Richard Schantz**, P.E., Consulting

This presentation will include an overview of small business opportunities doing specialty grouting in the utility and construction industry. It also covers the various major market segments, overall soil, pipe trench and structure considerations, types of grouts available, how to develop your know-how and building a sound business reputation.



Cleaner

NASSCO

### Chemical & Biological Control of F.O.G. in a 2,500-Mile Collection System

1:30 PM - 2:30 PM

Room: 130-132

#### Speakers:

**Brian Conroy**, Duke's**Jim Elliott**, Vice President of Sales, In-Pipe**Rich Schici**, In-Pipe

This session will review a treatment plant-friendly method of grease elimination from a sewer collection system. The technique causes the grease to be liquefied, allowing it to be flushed downstream without re-coagulating. This technique will be illustrated for the control of fats, oils and grease in a 2,500-mile collection system.



Cleaner



NASSCO

### Lateral Rehabilitation, What's Available?

3:00 PM - 4:00 PM

Room: 130-132

#### Speaker:

**Jacob Trapani**

In this session we will offer a complete overview of all lateral and main/lateral connection rehabilitation technologies available today. In an effort to seek a viable, cost-effective solution to one of the most significant contributors to our failing sewer infrastructure, technology providers have developed several methods to structurally repair and/or seal lateral pipes and their connection to the main sewer. Individual lateral pipes often have multiple bends, diameter changes, shifted joints, cracks, deposits, and roots, which create considerable challenges to repair or seal. The lateral pipe connection to the sewer main also poses problems due to leaks, cracks and poor alignment. Accessibility of lateral pipe is another issue, since one end is located in the sewer main and the other in a building. In some cases, a clean-out exists either in or outside of the building. It is critical that the methods developed cope with the existing conditions to provide an effective product and installation method that can be installed efficiently.



Cleaner



### Fiber Optic Temperature Sensing Technology for CIPP Cure Quality Control

4:30 PM - 5:30 PM

Room: 130-132

Speaker: Don Barnhart,  
Product Manager, Janssen Technology

For cured-in-place pipe installation, fiber optic technology offers a quantum leap in temperature resolution over conventional practice to assist contractors in revealing and overcoming heat sinks inhibiting cure and for better control of the cooldown process as well. With temperature knowledge every inch along the liner, contractors also avoid costly labor and fuel costs associated with over-cooking the liner.



### Be Always Profitable: Setting up the Sale

8:00 AM - 9:00 AM

Room: 140-142

Speaker: Frank Taciak

This session teaches participants methods and guidelines for a successful sales call. Sales, whether we want them to or not, drive business. They either make our profit, or kill our success. Making a profit always starts before the job begins because "if it wasn't planned at the beginning it won't be found at the end." Participants will learn: How Sales = Profit; Implementing effective sales techniques and concepts; How to set up sales for business potential. Figuring what your costs are so that you charge for it. How to stop worrying about the competition. Setting up sales for maximum success. Participants will leave this session with key strategies to set up their sales process for maximum success.



### Be Always Profitable – Your Best Sales Presentation

9:30 AM - 10:30 AM

Room: 140-142

Speaker: Frank Taciak

This session provides an overview of the actual sales process. Participants will learn a step-by-step method of presenting their business and creating a win-win outcome for both contractor and customer. Participants will learn: Where the sales presentation starts; How to handle calls, emails, and communication; Methods for setting up the appointment; Guidelines for meeting with customers; Effectively using selling options; How to close the sale. Participants will take home methods, ideas, and concepts that they can immediately use in making their sales process more successful.



### Be Always Profitable – Servicing Your Sale

11:00 AM - 12:00 PM

Room: 140-142

Speaker: Frank Taciak

This session teaches participants how to both manage job fulfillment in their sales process, as well as create positive customer attitudes about their work. Customer service is key in effective business and making sure customers are happy is no longer an option in our marketplace. Participants will learn: Guidelines for setting up the work schedule; Basics of structuring man power on the job; Rules for managing contact with the customer; Strategies for guaranteeing payment. Participants will leave with a thorough understanding of customer service skills and how to best use these in all aspects of their work.



### Be Always Profitable – Our Attitude to Success

1:30 PM - 2:30 PM

Room: 140-142

Speaker: Frank Taciak

Can YOU have a successful life and business? This session answers that question, and gives participants the tools they need to make their life ... WORK! Never before have there been as many tools and strategies available to make a business successful, but are we implementing them? Participants will learn: How to implement an effective plan; How to turn a successful business into a successful life; Learn to envision what winners look like. At the end of this session, participants will leave with the knowledge, skills, and motivation they need to achieve success in their life's work.



### 7 Things you Should Know About Design, Installation and Maintenance of Precast Concrete Septic Tanks

3:00 PM - 4:00 PM

Room: 140-142

Speaker: Claude Goguen P.E.

As population in the U.S. continues to migrate away from cities and into rural areas, and as municipalities struggle with limited infrastructure budgets, there has been a larger demand for high-quality, efficient and durable onsite wastewater systems. In order for those systems to successfully treat residential wastewater, all the components must work efficiently to allow for the chemical and biological reactions to occur. This includes the proper design and performance of the structures that house and convey the wastewater as it's being treated. Precast concrete manufacturers are tasked with providing reliable structures that will be subjected to a variety of loads and extreme exposure conditions. At the same time, they must be easily installed, watertight, and able to house the evolving



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NPCA

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### 7 Things you Should Know About Design, Installation and Maintenance of Precast Concrete Septic Tanks

treatment technologies that serve to reduce nutrient loading into the soil and groundwater. This course will explore the stresses that precast concrete tanks are subjected to in service, and how they are designed to counter those stresses. The course will also include discussion on watertightness, proper installation practices and testing. The attendee will be able to describe stresses on an underground wastewater treatment tank in service, identify the main keys to a watertight precast concrete septic tank, and give three examples of poor tank installation practices that could jeopardize the effectiveness of the septic system.



NPCA

### Grease Interceptors: A Slick Solution to a Greasy Problem

4:30 PM - 5:30 PM

Room: 140-142

Speaker:

**Cyndi Glascock**, Design Consultant,  
Gainey's Concrete Products

As communities across America are struggling to maintain aging sewers, it is more important than ever to manage harmful discharges that may compromise the effectiveness of the system. Precast concrete grease interceptors play a major role in pretreating grease-laden waste streams and protecting the sewer systems. They must be designed to provide easy access for maintenance and be sized to hold large quantities of grease to reduce pumping/cleanout costs. This course will cover elements of proper design of grease interceptors, including sizing and placement of baffling tees and filters. That design must also take into account anticipated loading conditions. The course will also include best practices in selecting the location for the grease interceptor as well as proper installation. Attendees will be able to: Size large outdoor precast grease interceptors; Differentiate between hydrodynamic and gravity-fed grease interceptors and their sizing charts; Define the key factors to designing grease interceptors for site loading requirements; Identify the considerations required for properly installing a grease interceptor.







## FEBRUARY 25, 2014

SSCSC

### Don't Fear the Shapefile

8:00 AM - 9:00 AM

Room: 231-233

Speaker:

**Mark Hill, P.E.**, Civil Engineer, Michael Baker Corp.

More and more agencies and companies have implemented GIS mapping and want to provide that data to their contractors performing work. This class will address what to do with the data, what it looks like, how to import it into common CCTV inspection software, and how to link data to it for a submittal.





SSCSC

### What's Important for Your Company; Is it Size, or Profit or Both?

9:30 AM - 10:30 AM

Room: 231-233

Speaker:

**Duane Johnson**, Vice President,  
Affordable Pipeline Services

It is often said that most small businesses fail to have a plan and most often tend to operate reactively. As they get busier, they add more employees and more equipment in order to meet the added workload. Without a plan, this approach can have devastating effects on a company by destroying their financial solvency. It's important to understand the true meaning of growth and the real costs associated with it. This class will look at some of the important questions that must be asked and analyzed before embarking in any future growth. Participants will help bring into focus the proper approach for making correct business decisions. As an owner and manager of two distinct businesses (a drain cleaning company and a pipeline cleaning and inspection company), Johnson will take on a unique approach as he discusses some of the challenges that come from growth and the need to stay focused on profitability. Remember that bigger is not always better, sometimes it is just bigger.








SSCSC

### 1 + 1 = 14: Cleaning and Inspection Equipment Working as one Entity

11:00 AM - 12:00 PM

Room: 231-233

Speaker:

**Jim Aanderud**, Owner/President,  
Innerline Engineering

Whether it's cleaning and video projects or specialized cleaning applications, the way in which combination units and CCTV inspection vehicles work together will determine ongoing success. In this class participants will look at the relationship between these two pieces of equipment, and discuss the importance of the working relationship between their crews. They will focus on the importance of planning, communication, organization and execution, then will look closely at the keys to success in cleaning and video projects, and the methods for maximizing production and profitability. They will also look at the proper use of CCTV cameras during high-end cleaning and cutting applications and discuss their importance for safety and cleaning effectiveness.





	SESSION	DESCRIPTION	RECOMMENDED
NAWT	<b>Be Ready to Land Apply</b> 8:00 AM - 9:00 AM <b>Room:</b> 234-236 <b>Speaker:</b> <b>Bill Toffey</b> , Owner, Effluential Synergies LLC	The purpose of this session is to start at the beginning when a decision is made to land apply septage. Local community and site conditions will be discussed; along with what equipment is needed to properly land apply under different conditions, agreements with landowners, scheduling application times, and what it takes to meet the Federal 503 regulations on pathogen control, including lime stabilization and reporting requirements.	 
	<b>Soils and Cropping Systems</b> 9:30 AM - 10:30 AM <b>Room:</b> 234-236 <b>Speakers:</b> <b>Bruce Fox</b> , Partner, Allstate Septic Systems LLP <b>Dave Gustafson</b> , UW MN	This session will concentrate on the land-application site from the perspective of the soil and slope conditions and how they impact application rates. Erosion and runoff control measures and oil separation requirements will be discussed. The identification of sensitive areas that need to be addressed, along with setback requirements from sensitive areas, buildings, and roads will be highlighted.	 
NAWT	<b>Land Application Rates and Nutrient Management</b> 11:00 AM - 12:00 PM <b>Room:</b> 234-236 <b>Speakers:</b> <b>Bruce Fox</b> , Partner, Allstate Septic Systems LLP <b>Jim Anderson</b> , Education Coordinator, NAWT	This session will look at both daily and yearly application rates. Establishing a nutrient management plan will be discussed. How to stay within the nitrogen application rate requirements while balancing crop nutrient needs will be discussed. Crop selection will be discussed from both an application rate perspective as well as crop usage for animal feed.	 
	<b>Gen Y + Gen X + Baby Boomers = #@\$%???</b> 8:00 AM - 9:00 AM <b>Room:</b> 237-239 <b>Speaker:</b> <b>Jerard Nighorn</b> , Lenzyme	Solve this equation ... this seminar will be packed with generation laughter. Attendees will learn how to solve hiring problems, keep customers, collect receivables and communicate across generations. The answer to this equation will help all business owners solve problems they may not even know are happening, and create a new way of looking at customers, workers, co-workers and generations in whole. Knowing the answer or knowledge will sure help to increase your overall business profits and take you and your business to the next level.	       
Customer Service & Employee Development	<b>Get and Keep the Best Coworkers</b> 9:30 AM - 10:30 AM <b>Room:</b> 237-239 <b>Speaker:</b> <b>David Heimer</b> , Chief Operating Officer, Service Roundtable	You can't grow your business if you can't find, hire and keep the right people. Why is it that some companies can't find qualified personnel, while other companies always have a flood of applicants and get to pick and choose? Why are some companies always fighting turnover battles, while other companies routinely keep their best employee for 20-30 years? Heimer will show attendees how to build a recruiting pipeline, attract the kind of employees they want, and keep them for years. He will share real-life positive and negative experiences from service business owners, and the lessons learned. You CAN find and keep the coworkers you want; you just need to learn how.	       
	<b>Win, Win, Win in Residential Service Contracting</b> 11:00 AM - 12:00 PM <b>Room:</b> 237-239 <b>Speaker:</b> <b>Bill Raymond</b> , Co-Owner, Frank and Lindy Plumbing Heating and Cooling	Learn how to create a well-balanced company that wows its customers, nurtures employees and achieves their financial goals. So often one or more of the three are missing. This workshop will focus on fundamentals from each area, bringing a better understanding of business planning, customer expectations and employee development and retention.	   





**OSHA Confined Space and Fall Protection Untangled**

8:00 AM - 9:00 AM

**Room:** 240-242**Speaker:** Chris Cira, Partner, MTech

This session presents a different and unique high-level overview of confined space, air monitoring and fall protection regulations. We will untangle the multitude of regulations regarding these topics and bring it down to a practical and understandable approach and most important an approach that can actually be implemented in the field. We will also touch on the differences related to general industry, construction, agriculture and maritime regulations, and which one impacts you in the field.

**Air Monitoring Application for the Liquid Waste Industry**

9:30 AM - 10:30 AM

**Room:** 240-242**Speaker:** Ed Fitzgerald, Jack Doherty Companies

This program will outline the application and use of air monitoring equipment for confined space and area monitors as it applies to the liquid waste industry. It will be in layman's terms, and will include a review of terminology such as PPM, LEL, TWA and % X Volume. All alarm points, as they apply to the industry, will be compared to day-to-day exposures that we all experience so that the employee will understand that they are protected and will not feel any effects when the alarm sounds.

**Vacuum Loaders**

9:30 AM - 10:30 AM

**Room:** 243-245**Speaker:** William Akins, Manger, Vac-Con Services Inc.

This program will outline the different applications of various vacuum trucks (combination machines, hydroexcavators, and industrial machines). It will also outline use cases for determining necessary equipment. This program will then give a detailed overview of industrial vacuum trucks, their components, and capabilities. It is intended to be interactive with active Q&A throughout.

**The Value of DOT Certification for Vacuum Trucks**

11:00 AM - 12:00 PM

**Room:** 243-245**Speaker:** Anne Brantley, Director of Product Development, Wastequip Cusco

In this session attendees will discuss the purpose of DOT certification to strengthen a truck's tank and bumper to prevent spillage of hazardous materials during rollover accidents or rear-end collisions. Trends indicate that DOT certification is being required for more types of materials – not just hazardous material. DOT certification can increase the price of vacuum truck by as much as 20 percent, so when should fleet owners make that extra investment? What are the requirements for truck DOT certification, and how can you choose a reputable manufacturer to ensure your fleet is in compliance with evolving regulations?

**Take Control of Inflow & Infiltration in Manholes**

8:00 AM - 9:00 AM

**Room:** 130-132**Speaker:** William Goff, Sealing Systems

Many people are aware of the challenges inflow and infiltration bring to any utility. However, they may not be fully aware of how easy it is to identify the problems, and what methods are recommended to fix them. This presentation will give attendee a closer look at infiltration identification, and methods and products to use for correction and remediation of infiltration and rehabilitation. It will also address proactive efforts and products to reduce or deny infiltration and thus eliminate the need for rehabilitation. Prevention is always less costly than remediation.

**DC Water is Utilizing CIPP to Rehabilitate the Nation's Capital**

9:30 AM - 10:30 AM

**Room:** 130-132**Speaker:** Muminu Badmus, Projects Manger, Perma-Liner Industries, LLC.

DC Water provides critical water and sewer services to the nation's capital; the infrastructure that supports these services is old and deteriorating. The median age of the 1,800 miles of sewer pipe is 86 years old, with some in-service trunk mains installed before the Civil War. One of DC Water's strategic initiatives is to evaluate different technologies to improve service delivery while lowering asset life cycle costs. The lateral program seemed a likely candidate to evaluate trenchless solutions, since over 20 percent of the project costs were related to restoration. DC Water staff were interested in a trenchless solution, specifically a cured in place pipe (CIPP) solution, as a possible alternative to the traditional open-trench method.



**Nozzle Explanation and Selections**

11:00 AM - 12:00 PM

**Room:** 130-132**Speaker:****Scott Paquet**, President/CEO, NozzTeq Inc.

In this session participants will discuss the different types of nozzles available on the market today, including how you make your selection and what to look for in a nozzle. Paquet will examine hose-line loss and what this means when setting a nozzle up properly. Participants will look at the design of nozzles and why some are more effective than others. This will give the end user an education in determining what nozzles to purchase and in the selection of nozzles. A supplied hose-line loss chart will explain why the end of the hose pressure is the most important. Participants will also cover how to test nozzles with a cost-effective test kit. This will also include complete instructions to make the proper selection and an understanding that one nozzle does not do it all.

**Cleaner****Septic Tank Bells and Whistles**

8:00 AM - 9:00 AM

**Room:** 133-135**Speaker:****Bob Smith**, Engineer, Orenco Systems, Inc.

There are a number of different accessories for installation with a residential septic tank. The broad categories include equipment for ease of access, equipment for improvement of effluent quality, equipment for ease of operation and maintenance and equipment for improving dispersal distribution. This presentation will go over these four classes of septic tank accessories and how they can benefit the function and maintenance of an onsite system.

**ONSITE installer****Aeration Units for Onsite Septic Systems**

9:30 AM - 10:30 AM

**Room:** 133-135**Speaker: David Flagg**, President/CEO  
Septic Services, Inc.

This session will touch on the history of aeration, and the difference between aerobic and anaerobic digestion. It will move along to the many types of tanks, aerators and features and benefits of each design, along with diffuser types, filtering, electrical requirements, and safety and maintenance of the system, effects on the adsorption field, including both pictures and video. Aeration is not a new process, as its use began at the turn of the century in municipalities, and began to be used on residential sites as far back as the 1940s. However, because of the high cost and less concern for the environment, the process did not become popular until many years later. In a septic tank, anaerobic bacteria digest the sewage and require little to no oxygen to break down the waste material. In an aeration tank, aerobic bacteria require lots of oxygen to survive to break down and digest the sewage, so consider anaerobic bacteria at the speed of Wile E. Coyote and aerobic bacteria like the Roadrunner. By aerating a tank, it allows you to process more sewage in a smaller space, producing a cleaner effluent to the adsorption system. The benefits in the adsorption field will also be discussed.

**ONSITE installer****Understanding ATUs, their Service Requirement, and Maintenance**

11:00 AM - 12:00 PM

**Room:** 133-135**Speaker: Doug Dent**, Ecological Labs

The presentation provides detailed information on how to service ATU systems, how to evaluate problems from influent to effluent, and the equipment needed to assure correct identification of system problems from as simple as; when to pump an ATU, the need to check pH levels from time to time, dealing with odor issues, to understanding the good guys in biology to the bad guys, this referring to sludge bulking caused by filamentous microorganisms. The presentation reviews ATU design and comparison to standard onsite septic systems, with adequate attention to the importance of the ATU's relationship with biology presented in an easy to understand technical format that will satisfy both new and seasoned operators, and service personal. The program covers the ATU biological process, factors that effect ATU performance, and methods and tools necessary to identify, correct, and resolve many ATU problems. The session includes hand-out materials and information to meet the session's goal of achieving a level of knowledge and understanding that will allow proper service of ATU systems by those that attend the session.

**ONSITE installer****The Best of Both Worlds**

8:00 AM - 9:00 AM

**Room:** 243-245**Speaker: David Roncadori**, J & J Chemical Co.

In this session participants will discuss liquids vs. portion control deodorizers. Liquids can be non-formaldehyde, formaldehyde or biological. The discussion will include how liquid deodorizers can be applied; direct charge, dilute, or premix – controlling the use of liquid deodorizer utilizing a blend system; and what strength is best for you. Portion control includes tablets or packets. Discussed will be choosing the right portion control method for your needs; one-size-doesn't-fit-all requirements; how seasons and environment can influence your choice of product; and the pros and cons of liquid and portion control, including storage, transport, spillage, cost, and limitations.

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FEBRUARY 26, 2014

## INSTALLER

**COLE Publishing's  
Onsite Installer Course**

8:00 AM - 5:00 PM

**Room:** 234-236**Speakers:****Dave Gustafson**, UW MN**Jim Anderson**, Education Coordinator, NAWT

This 8-hour course will train participants on the basics of installing onsite wastewater treatment systems. It will include discussion on installing sewage tanks, trenches, pumps and pump stations, above-ground systems, and media filters.



## PORT. SANITATION

**Deodorizers and Making  
the Right Choices**

8:00 AM - 9:00 AM

**Room:** 237-239**Speaker:****Dale Wallace**, GM, Green Way Products  
division of PolyPortables, LLC

This seminar will cover a number of questions and decisions to be made that will help guide new and or established operators on how to properly service and maintain their investment, "The Portable Toilet." The decisions you make will impact the success of your business. Why do we do what we do? What governs your choices when you decide how and how much to service your customer? This discussion addresses: Why this business? How do you grow your business? How do you make the most of your business? How do I take care of a toilet? What about urine scale and bio films? What should you use as a deodorizer with so many choices out there? And should you detail your toilets, and if so, how?



## PORT. SANITATION

**Oh Shift! Six Future Trends You  
Must Gear Up For to Compete  
and Succeed**

9:30 AM - 10:30 AM

**Room:** 237-239**Speaker:****Beverly Lewis**, President, Beverly Lewis Group

Several global trends on the horizon will have a major impact on your sanitation business. This session will discuss six epic shifts that will change the face of portable sanitation. The seminar will raise awareness and create long-range visibility for these trends, and discuss specific strategies to turn these changes to your advantage. Topics include technology, workforce demographics, communication, consolidation and sustainability.



## PORT. SANITATION

**Portable Restroom Service Units**

11:00 AM - 12:00 PM

**Room:** 237-239**Speaker:** **Randy Tischendorf**, Sales,  
Imperial Industries, Inc.

This seminar will cover the proper selection of chassis in correspondence with weight distribution and the Bridge Law. It will supply the attendee with both the maximum capacities allowable on a given chassis, taking into consideration if a trailer is being pulled. The seminar will cover the estimated overall weight of tanks manufactured in aluminum, steel and stainless steel and the proper chassis selection for each basic tank capacity. Also discussed will be the various styles of tanks used in the portable restroom industry, and their uses.


Business Training  
and Marketing**Improving Profitability  
through Tracking**

8:00 AM - 9:00 AM

**Room:** 240-242**Speaker:** **Clint Smith**, CallSource

In a sea of competing companies, what makes your company stand out from the rest? Callers are looking for precisely this answer, and how you communicate this will separate you from your competition. Learn how to get the best "bang for your buck" on the thousands you spend to get the phone to ring. While call volume is a key component, you're still ultimately as good as you book. Timing, tone, and confidence all play large roles in earning the caller's trust. In order to get more techs to more doors, you must first improve your current situation. Knowing how to find these improvement areas is crucial since you cannot improve what you don't measure.




	SESSION	DESCRIPTION	RECOMMENDED
Business Training and Marketing	<b>Advertising and Marketing for Service Companies</b> 8:00 AM - 9:00 AM <b>Room:</b> 243-245 <b>Speaker:</b> Jeff Bruss, President, COLE Publishing	Often overlooked by service companies, a strong marketing and advertising program will keep your business in front of both customers and the competition. Topics covered include phone book advertising, social media, Internet, newspapers and more. Learn how to develop your brand and the most economical and intelligent places to put it.	    
	<b>How Anywhere, Anytime Paperless Operations Save Time and Money</b> 9:30 AM - 10:30 AM <b>Room:</b> 240-242 <b>Speaker:</b> Joel Smith, Business Consultant	This presentation will go over a typical business cycle for portables and liquid waste services (brown, yellow, black oil, septic, graywater) from first customer contact through verification of service. It includes how changes can save from 15 to 45 percent; invoices, route sheets, receivables, customer contact, marketing, and order taking; implementations for the field; how to get the greatest benefits; how to handle exception customers; and services to differentiate your company from the competition.	      
Business Training and Marketing	<b>Achieving Financial Balance in Your Business</b> 9:30 AM - 10:30 AM <b>Room:</b> 243-245 <b>Speaker:</b> Russ Decker, CEO, Trade-Serve	This session will teach attendees how to properly price sewer, septic and plumbing services, and how to market using discounts without losing your profits. It will include how to easily plan for retirement, depreciation, taxes and retained earning while having sufficient money for the owners' draws. Achieve financial balance between your production employees, customers and the shareholder(s), and get access to software that will help you. This session will be hands-on practice with take-home handouts that you will be able to use in your business immediately.	    
	<b>Book More Calls – Wow More Customers</b> 11:00 AM - 12:00 PM <b>Room:</b> 240-242 <b>Speaker:</b> Brigham Dickinson, Founder, Power Selling Pros	In this class, owners will learn to master a set of principles that will help them and their call-handling team book more calls and wow more customers over the phone. What better way is there to keep your dispatch board full than to book the calls that are already coming in to your office? With this class, you'll learn how your call-handling team can become more passionate in their interaction with your customers; they'll not only book more calls, but also become fundamentally great at taking care of customers. For business owners looking to book more calls and wow more customers, your attendance at this class is a must.	   
Business Training and Marketing	<b>7 Incredibly Effective Ways to Improve Your Sales</b> 11:00 AM - 12:00 PM <b>Room:</b> 243-245 <b>Speaker:</b> Ara Mahdessian, CEO, ServiceTitan	In this session attendees will take a look at the simple yet incredibly effective methods that the most successful contractors use to improve their sales. They will discuss how they motivate technicians, ensure satisfaction, generate more repeat business and other secrets that you can quickly and easily implement when you return to your office.	    
	<b>Sewer Cleaning 101</b> 8:00 AM - 9:00 AM <b>Room:</b> 130-132 <b>Speaker:</b> Ken Billingham, KEG Technologies	This session discusses the understanding of how the crew, equipment and nozzles are integral to the successful completion of the task at hand. Topics discussed include pressure drop, cleaning procedures, and nozzle selection, and how they are related to each other. Learn how to effectively clean sewer and storm lines using minimal fuel, water and time. This class will be of interest to owners, managers and operators alike.	 



## MUNICIPAL

**SEALING: Underground Coatings – Restore Deteriorated Infrastructure**

9:30 AM - 10:30 AM

**Room:** 130-132**Speaker:** Stewart Nance,  
Sales & Marketing Manager, Interfit USA

Infiltration into sewer systems is insidious, pervasive and monumentally expensive. Collection systems develop increasingly worse infiltration over time due to defective and deteriorating components. Cementitious and epoxy liners, and the combination of both, have proven effective in permanently and economically restoring and protecting deteriorated structures, and thus eliminating infiltration.



## MUNICIPAL

**Rehabilitation: How Small Contractors Can Make Big Money Doing Manhole Rehabilitation**

11:00 AM - 12:00 PM

**Room:** 130-132**Speaker:** Bill Shook, President and Founder,  
AP/M Permaform

There are more than 20 million manholes in America, and more than half are over 50 years old and in need of serious repair. This session discusses the variety of techniques that are presently available to seal, reinforce and protect old block, brick/mortar and corroded precast manholes to better than new condition without digging. For a small investment, contractors can net big returns. Case studies will be shared.



## PUMPER

**Right Sizing Your Pump System**

8:00 AM - 9:00 AM

**Room:** 133-135**Speaker:** Jason Reading, Sales Manager,  
National Vacuum Equipment

Attendees will discuss the process for evaluating an application and determining what would be the correct system for use. It will provide attendees with a takeaway that includes a list of "Rules of Thumb," pitfalls to avoid and confirmation of steps that the end user will find helpful to ensure they have the right system for their job.



## PUMPER

**Make More Money by Using a Biological Product with your Services**

9:30 AM - 10:30 AM

**Room:** 133-135**Speaker:** Mireya Eavey, One Biotechnology

Using a biological product adds beneficial bacteria needed for a healthy tank. The product will continue to flow through the drainfield and breakdown the biomat. Subjected to bleaches, detergents, and other chemicals, naturally occurring bacteria struggle to survive and keep up with the influx of waste in residential and commercial septic systems. Adding a biological product formulated to work in the harsh conditions that requires no pH neutralizing and is performance ready, will decrease the amount of times a system has to be pumped, while giving a customer lasting results.



## PUMPER

**Septic Drainfield Restoration**

11:00 AM - 12:00 PM

**Room:** 133-135**Speaker:** Mark Reynolds, CEO/President,  
RCS II and Municipal Sales, Inc.

According to the US EPA 90 percent of all septic failures occur in the drainfield. It's important to understand the system your working with, and to take the time to see if your building department has an as built drawing of the system. What are the reasons systems fail? This session will discuss the steps to solve these issues.



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# JOIN THE CONVERSATION

NASSCO's 2014 Annual Conference will highlight technical innovations across the trenchless industry

By Ted DeBoda, P.E.

**N**ASSCO is dedicated to assuring the continued acceptance and growth of trenchless technologies, and education is a big part of that mission.

Next month NASSCO members will come together for the 2014 Annual Conference in San Diego, which will feature a high-powered day of technical presentations and discussions. This is not a sales event; it is designed to inform and educate our members on everything that's new in trenchless technologies in a neutral, educational setting. Some highlights of the technical presentations will include:

- A continuation of our program on pressure pipe, with updated presentations on pipeline assessment and rehabilitation followed by an ask-the-experts forum for interactive questions and answers

about pressure pipe rehabilitation.

- An update on acoustic sewer tools, including a report by Jerry Weimer of Cincinnati Municipal Sewer District on their findings from the current EPA study.
- A presentation from Southern California Gas (SCG) about using CCTV inspection to locate and eliminate cross bores. This work impacts both our contractor members who perform the work and municipal members who should be educated in the benefits of these investigations. A representative of the organization will provide a presentation and be available for questions and answers.
- Formation of a panel of municipal and utility managers from

California who will discuss their experience, challenges and expectations with pipeline rehabilitation technologies for their ongoing programs. The panel will interact with the membership to discuss common issues and solutions.

The Annual Conference, scheduled for Feb. 12-15 at the Marriott Gaslight in San Diego, will include a general meeting where members can learn about everything new at NASSCO. Members will also have the opportunity to contribute their knowledge and experience to one or more of our many influential committees including asset management, CIPP, government relations, health and safety, industry relations, industry standards, infrastructure condition assessment, lateral rehabilitation, Latin America, manholes, pressure pipe, RehabZone, software

vendors and more. By participating in one of our committees, NASSCO members have a voice, lend their expertise and make a difference for our industry.

Networking with other professionals can be just as important as the technical aspects of our industry, and the golf tournament, welcome reception and awards banquet associated with the conference will provide plenty of time for networking with your peers. If you are a NASSCO member in good standing, please mark your calendar for this important meeting. If you aren't yet a NASSCO member, start the year out right. Visit [www.nassco.org](http://www.nassco.org) and apply for membership today. ♦

Ted DeBoda is executive director of NASSCO. He can be reached at [director@nassco.org](mailto:director@nassco.org).

## Get the EDge Training and Continuing Education Courses

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Trainer: Ted DeBoda

For more information or to register contact Dawn Jaworski at 410-442-7473 or [dawn@nassco.org](mailto:dawn@nassco.org)

**January 21-23, 2014**

**Northville, MI**

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Trainer: Brandon Conley

For more information or to register contact the Jack Doheny Camera Department at 248-349-0905 or [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

**February 4-6, 2014**

**Whitestown, IN**

Includes Manholes and Laterals!

Trainer: Brandon Conley

For more information or to register contact the Jack Doheny Camera Department at 248-349-0905 or [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

**February 12-13 & 18, 2014**

**Millbury, MA**

Includes Manholes and Laterals!

Trainer: Justin deMello

For more information or to register contact Lynn Foisy at 774-276-9722 or [jdemello@woodardcurran.com](mailto:jdemello@woodardcurran.com)

**February 28-March 1, 2014**

**Indianapolis, IN**

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A limited number of PACP Recertification seats available. For more information or to register contact Marilyn Shepard at 916-899-8961 or [mshepard1@hotmail.com](mailto:mshepard1@hotmail.com)

### ITCP (CIPP and Manhole)

**January 15-16, 2014**

**Pima County, AZ**

Manhole Rehabilitation

8 a.m. - 5 p.m. Day One

8 a.m. - 1 p.m. Day Two

Trainer: Gerry Muenchmeyer

For more information contact Gerry Muenchmeyer at 252-626-9930 or [gerry@muenchmeyerassoc.com](mailto:gerry@muenchmeyerassoc.com)

**January 31-February 1, 2014**

**Houston, TX - UCT Convention**

Manhole Rehabilitation

8 a.m. - 5 p.m. Day One

8 a.m. - 1 p.m. Day Two

Trainer: Gerry Muenchmeyer

For more information contact Gerry Muenchmeyer at 252-626-9930 or [gerry@muenchmeyerassoc.com](mailto:gerry@muenchmeyerassoc.com)

**February 19-20, 2014**

**Orange County, CA**

Manhole Rehabilitation

8 a.m. - 5 p.m. daily

Trainer: Rocky Capehart

For more information contact Rocky Capehart at 916-834-2712 or [rcapehart@sprayroq.com](mailto:rcapehart@sprayroq.com)

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

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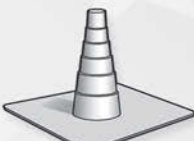
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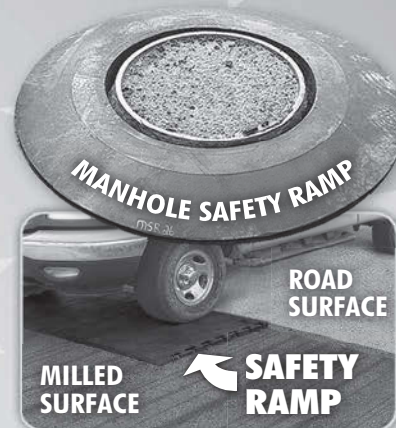


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# Product Spotlight

Icon-rich locator lessens learning curve

By Ed Wodalski

**T**he Gen-Eye Hot-Spot pipe locator from General Pipe Cleaners is designed to lessen the learning curve. On-screen arrows and icons enable first-time users to locate inspection cameras, sondes, active power lines and utility lines without having to interpret numbers and graphs.

"It used to be you'd get a series of numbers and a bar graph on a screen and you would have to figure out where the camera was," says Marty Silverman, vice president of marketing. "With this, there's an arrow on the screen that says, 'Go that way.' And when you get there, a target comes on and says, 'You're here.'" So it's much more intuitive, much easier for someone who is new to locating."

Signal strength and bar graph also are displayed for more experienced users along with battery strength, sonde, antenna and frequency. "We made this for someone who is new to locating as well as someone who is experienced," he says.

Upon locating the target, four arrows point toward each other to indicate the null point. The direction compass indicates which way to rotate the locator to be in line with the pipe. When the locator is directly over the camera a diamond inside a circle appears on the screen along with the depth of the object.

Total field antenna array enables users to work from any direction. The locator can pinpoint plastic and clay pipe down to 20 feet, cast iron to 10 feet, camera and sonde frequencies of 512 Hz and 33 kHz, and line and utility frequencies of 1 kHz, 8 kHz, 33 kHz and 65 kHz, as well as active power line frequencies of 60/50 Hz and 180/150 Hz.

Built for rugged use, the locator is dust and dirt proof, water resistant and IP65 rated.

"It's been dropped from a 1-meter height at every angle of the unit," Silverman says. "And a metal ball has been dropped from 18 inches on the screen. All these things are done to make sure it's durable enough to

Hot-Spot transmitter



survive the usual abuse in the field."

Powered by two D-cell alkaline batteries, the locator provides approximately 30 hours of usage. For municipalities, simplicity and durability are its two key features, Silverman says.

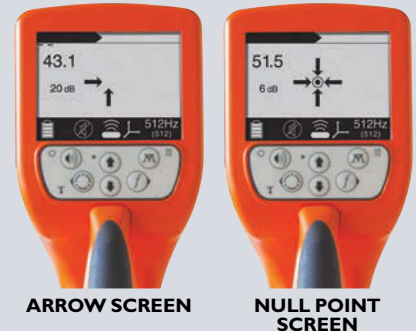
The locator can be used in tandem with the 5-watt, 4-frequency (1 kHz, 8 kHz, 33 kHz, 65 kHz) Hot-Spot transmitter (10 by 12 by 8 inches) that can be used above pipes or clamped to tracer wires or gas lines.

"Instead of again looking for the numbers, you walk a circle around the utility until a line pops up with the diamond in the middle, and you're there," Silverman says. "Both the locator and transmitter have a mini USB port that you can use to save screen shots. The software updates online."

The 8-pound transmitter has an operating range of -4 to 122 degrees F, five power settings and uses 10 D-cell batteries for approximately 100 hours of life. **800/245-6200; [www.drainbrain.com/hotspot](http://www.drainbrain.com/hotspot).**



Gen-Eye Hot-Spot from General Pipe Cleaners



## Dialight LED flood light

DuroSite and SafeSite LED flood lights from Dialight are designed for hazardous and industrial applications. The 14- by 14-inch lights deliver 10,750 lumens at 107 watts and are available in various NEMA optical configurations. Features include 20 kV surge protection, tempered glass lens and powder-coated aluminum housing. **732/919-3119; [www.dialight.com](http://www.dialight.com).**



## Wacker Neuson indirect-fired heaters

HIF 690 and HIF 1200 flameless indirect-fired heaters from Wacker Neuson Climate Technology feature a Cummins Tier 4i diesel engine that generates heat up to 250 degrees F air output. The heaters have a maximum input of 686,000 (690 model) and 1.2 million (1200 model) Btu/hour, heating up to 1 million (690)

and 1.7 million (1,200) square feet. Cool, ambient and/or recirculated air is drawn into the heater body and pulled through an exhaust heat exchanger and radiator. Air temperature increases as it is drawn across the engine and heat plate. At the final heating stage, air is pushed through the shear plate oil heat exchanger. **800/770-0957; [www.wackerneuson.com](http://www.wackerneuson.com).**

## Galbreath 200 Series roll-off trailer

The A5-200 Series roll-off trailer from Galbreath, a Wastequip brand, has a container size capacity up to 26 feet for handling payloads from 33,000 to 39,000 pounds. The trailer is available in outside rail, extendable tail, inside/outside rail and deadlift configurations. Features include two telescoping cylinders that handle up to 60,000 pounds. Options include tarp systems, aluminum hubs, aluminum or poly fenders, work lights, inside cab controls, automatic grease systems and tool boxes. **877/468-9278; [www.wastequip.com](http://www.wastequip.com).**





## Singer Valve automated pilot control

The 420-DC or 420-AC automated pilot control from Singer Valve features over-volt protection, 4-20 mA feedback, O-ring sealed, explosion-proof housing and modular design. Valves require less than 2 amps of power and are controlled by the 4-20 mA signal from the water distribution SCADA system. The pilot control offers programmable span and speed control via USB cable and software. **888/764-7858; [www.singervalue.com](http://www.singervalue.com).**



## Badger Meter flow monitor

The ER-500 series flow monitor from Badger Meter is designed for challenging environments. Meters can be connected to a network for remote monitoring and process automation. They support multiport linearization tables for increased accuracy, and alarm parameters warn of changes in the process or pipeline. **800/876-3837; [www.badgermeter.com](http://www.badgermeter.com).**



## Vacuworx concrete road barrier lifter

The RC concrete road barrier lifter from Vacuworx Global is designed to lift, position and install various-size concrete road barriers weighing up to 44,000 pounds. The lifter, manufactured to meet or exceed the ASME/ANSI safety standards, increases productivity and reduces operating expenses. **866/664-3450; [www.vacuworx.com](http://www.vacuworx.com).**



## FLIR E-Series thermal cameras

E-Series (E4, E5, E6, E8) thermal cameras from FLIR Systems are designed to track down electrical and mechanical overheating, moisture ingress, missing insulation, air leaks and other thermal issues. The camera features a 3-inch color LCD display, wide-angle focus-free lens, intuitive on-camera button controls, onboard digital camera and MSX (multispectral dynamic imaging), which integrates visible details from digital photos onto IR images. **866/477-3687; [www.flir.com](http://www.flir.com).**



## RODDIE R2 lateral bursting system

The R2 lateral bursting system from RODDIE has a pulling rate of 8 feet per minute. Available in 30- and 50-ton units, the system is made from high-intensity aluminum for lighter weight and separates into two components (50 and 60 pounds) with the removal of two pins. **888/406-3821; [www.rododieunderground.com](http://www.rododieunderground.com).** ♦



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## Trelleborg acquires cryogenic technology

Trelleborg's Industrial Solutions business area acquired SBM Offshore's cryogenic hose system technology. The acquisition will enable the company to expand its equipment offerings for the floating liquefied natural gas (FLNG) market.

## Franklin Electric relocates headquarters

Franklin Electric relocated to its new World Headquarters and Engineering Center in Fort Wayne, Ind. The 118,800-square-foot facility houses the company's 245 employees with room for future growth, as well as a 24,000-square-foot testing lab.



## FCS names leak detection distributor

Fluid Conservation Systems named Utility Services Association its distributor for leak detection products in Alaska, Washington, Idaho, Oregon and Montana.

## HD Supply Waterworks launches website

HD Supply Waterworks launched its redesigned website at [www.hdwaterworks.com](http://www.hdwaterworks.com). The product site is mobile enabled.

## Brown and Caldwell names executive vice president

Brown and Caldwell named Richard D'Amato executive vice president and private sector enterprise leader. He will be based at the company's Denver, Colo., office.



Richard D'Amato

## Hanson names vice presidents, engineer honored

Scott Szejbka was named senior vice president of Hanson Pipe & Precast, manufacturer of concrete pipe and precast products. He replaces Mark Carpenter, who was promoted to lead Hanson Engineered Products, a division of Hanson Building Products North America. Hanson Pressure Pipe also named Ken Primavera, P.E., vice president of sales and engineering. Oliver Delery, Louisiana and Mississippi sales manager and engineer for Hanson Pipe & Precast, received ASTM's Award of Merit and fellowship for leadership and service to Committee C13 (concrete pipe) and his contributions to the development of standards for concrete pipe.

## Jack Doheny merges with Jet-Vac

Jack Doheny Companies completed its merger with business affiliate Jet-Vac of Wharton, N.J. The merger provides financial and managerial support, enabling the company to be more responsive to customers in the Northeast. Ty Rose was named general manager for the 15,000-square-foot, eight-bay Wharton facility. Groundbreaking is scheduled for spring. The facility will double the size of the service center and triple the size of the parts department. JDC has sold sewer cleaning, DOT-certified vacuum trucks, pipeline inspection and other related equipment since 1972.

## GapVax launches anniversary website

GapVax launched its redesigned website, [www.gapvax.com](http://www.gapvax.com), in celebration of its 25th anniversary. The easy-to-navigate site includes equipment, parts and contact information.



## HOBAS Pipe adds field support representatives

HOBAS Pipe USA added Michael Jensen and David Tisdale as field support representatives. They will be based in Houston, Texas.

## Dewberry adds project manager

Dewberry named Edward Umbrell, P.E., project manager of its water resources service line in Gainesville, Va. He will be responsible for leading water resources design projects in the mid-Atlantic region for both private- and public-sector clients.

## Vac2Go names manager, adds to fleet

Vac2Go named Jason Harville Southeast territory manager and added 2014 Guzzler Classics with HXX hydroexcavation packages to its fleet. The trucks, with 28-inch HG blower for wet/dry industrial cleaning, 18-yard debris body, telescoping boom and 600-gallon water tank will service the company's Rock Hill, S.C., Hopewell, Va., and LaGrange, Ky., locations. ♦

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## PEOPLE/AWARDS

**Browning Day Mullins Dierdorf Architects** (Indianapolis, Ind.) received an INASLA Merit Award for the Alcoa Stormwater Runoff Reduction Project.

**Geosyntec's Santa Susana Field Laboratory** biofilter project received the 2013 Outstanding Stormwater BMP Implementation Award from the California Stormwater Quality Association.

The **Minnesota Rural Water Association** was named 2013 Association of the Year by the National Rural Water Association.

The **Florida Rural Water Association** received two awards from the National Rural Water Association – Outstanding Achievement in Legislative Initiatives, and Outstanding Achievement in Technical Assistance.

The **City of Shoreview (Minn.)** received a Blue Star Award for its stormwater management efforts.

The **Hawaii Department of Health** was awarded a \$1.1 million grant from the Environmental Protection Agency to implement its Polluted Runoff Control Program and to support water quality improvement projects.

The **Kentucky Rural Water Association** earned the 2013 Outstanding Achievement in Member Services Award from the National Rural Water Association.

The **Wisconsin Rural Water Association** earned the 2013 Outstanding Achievement in Training Award from the National Rural Water Association.

The **University of Nebraska-Lincoln's Stormwater Management Education Team** received the 2013 Outstanding Team Gold Award from the Association of Natural Resources Extension Professionals for its stormwater management programming.

The Water Environment Federation announced the winners of the 2013 StormTV Project competition. The goal of the StormTV Project is to share creative ways of managing stormwater, improving water quality and informing the public about stormwater management. The winners include:

- For-Profit Projects: **LandStudies Inc.**, "Landis Home Restoration"
- Nonprofit and Government Programs: **Portland Bureau of Environmental Services**, "Working for Clean Rivers: Portland's CSO Program 1991-2001"
- Public Education and Informational Pieces: **Chesapeake Bay Program**, "Chesapeake Unscripted: What Happens to Stormwater Runoff After It Rains?"
- Stormwater Equipment: **WesTech Engineering, Inc.**, "WWETCO Flexfilter: The Stormwater Solution"
- Innovative Solutions Award: **Washington Stormwater Center**, "Innovative Stormwater BMP: The Grattix"

## LEARNING OPPORTUNITIES

### American Society of Civil Engineers

The ASCE has these courses:

- Jan. 7-8 – Construction Plans, Specifications and Ethics for Civil Engineers, Las Vegas, Nev.
- Jan. 23-24 – Leadership Development for the Engineer, Colorado Springs, Colo.
- Jan. 23-24 – Financial Management for the Professional Engineer, Alexandria, Va.
- Jan. 24 – Stormwater Constructed Wetland Design, online

## CALENDAR

### Feb. 24-27

Pumper & Cleaner Environmental Expo International, Indiana Convention Center, Indianapolis. Call 866/933-2653 or visit [www.pumpershow.com](http://www.pumpershow.com).

### Feb. 25-28

Water Environment Federation Utility Management Conference, Hyatt Regency, Savannah, Ga. Visit [www.wef.org](http://www.wef.org).

### March 1-3

National Utility Contractors Association National Convention, Rio Las Vegas Hotel, Las Vegas, Nev. Visit [www.nuca.com](http://www.nuca.com).

### May 4-7

American Public Works Association 2014 North American Snow Conference, Duke Energy Convention Center, Cincinnati, Ohio. Visit [www.apwa.net/snow](http://www.apwa.net/snow).

### May 12-14

American Water Resources Association 2014 Spring Specialty Conference, Snowbird Resort, Salt Lake City, Utah. Visit [www.awra.org](http://www.awra.org).

### June 8-12

American Water Works Association Annual Conference & Exposition (ACE) 2014, Boston, Mass. Visit [www.awwa.org](http://www.awwa.org).

### July 13-16

American Society of Agricultural and Biological Engineers, Annual International Meeting, Montreal, Quebec, Canada. Visit [www.asabe.org](http://www.asabe.org).

### Aug. 3-7

StormCon, Oregon Convention Center, Portland, Ore. Visit [www.stormcon.com](http://www.stormcon.com).

- Feb. 6 – Integrating Stormwater Harvesting into Low Impact Development, online
  - Feb. 6-7 – Pumping Systems Design for Civil Engineers, Grand Rapids, Mich.
  - Feb. 11 – The First Three Rules of Construction: Document, Document, Document, online
  - Feb. 12 – Curve Number and Vegetative Techniques to Manage Stormwater Runoff Sustainably, online
  - Feb. 21 – Preparing and Implementing Construction Site Stormwater Pollution Prevention Plans, online
  - Feb. 27 – Cold-Weather Stormwater BMPs That Work, online
  - March 3 – Sustainable Stormwater Hydrology: Concepts to Reduce Hydrologic Footprint, online
  - March 14-15 – Stormwater BMPs That Work: Effective Analysis, Design and Maintenance, Cambridge, Mass.
  - March 26 – Stormwater BMPs: What Works, What Doesn't and What About Maintenance, online
- Visit [www.asce.org](http://www.asce.org).

## Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering the following courses in Madison:

- April 3-4 – Using WinSLAMM v.10.0.1: Meeting Urban Stormwater Management Goals
  - May 28-30 – Unsteady Flow Modeling Using HEC-RAS
  - June 5-6 – Advance Modeling Using HEC-RAS
- Visit <http://epdweb.engr.wisc.edu>.

The Wisconsin Department of Natural Resources has a Pumps and Motors seminar on May 6-8 in Madison. Visit <http://dnr.wi.gov>. ♦

MSW 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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