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December 2012

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KEEPING THE END IN MIND

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aim at major sewer
and stormwater
system upgrades

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Charles Martin
Director of water quality
Lexington, Ky.



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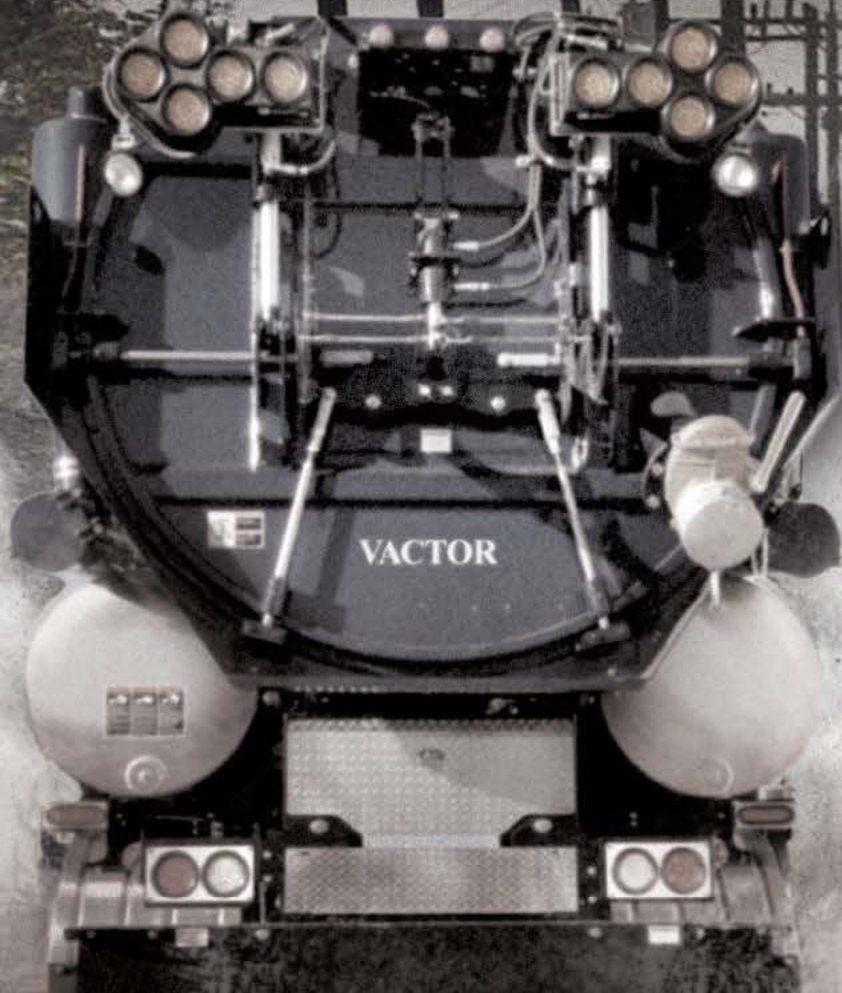
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INSIDE:

CLEANING AND MAINTENANCE STRATEGIES



ON THE COVER:

Lexington-Fayette Urban County Government director of water quality Charles Martin and his team are working toward meeting the terms of a 2011 consent decree requiring major upgrades to the utility's sanitary and stormwater systems. A new pump station and force main have already been completed, eliminating a major contributor to SSOs. (Photography by Shaun Ring)



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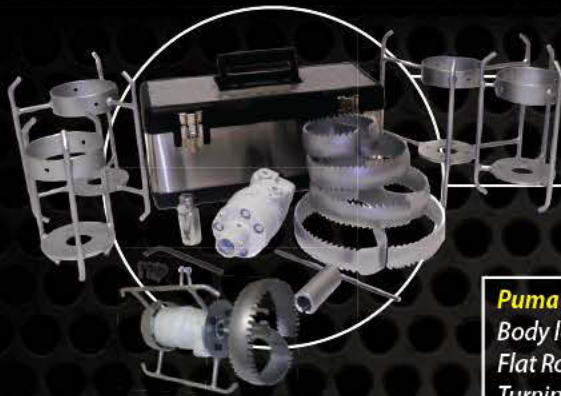


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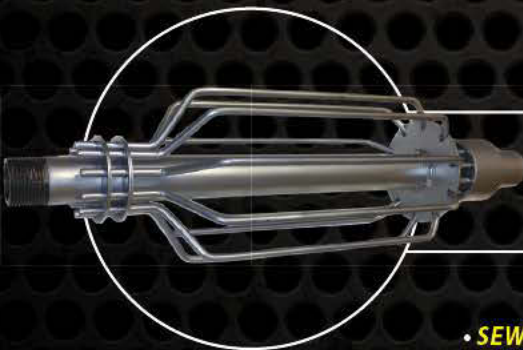
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MAKING CONNECTIONS

Pumper & Cleaner Environmental Expo provides opportunities for growth and improvement

This month marks the end of my first year with *Municipal Sewer & Water*. I've learned a lot over the past year, and I've met and talked to a lot of great people. That's really what this magazine is all about: learning about the industry and making new connections for professional growth.

You'll see a couple stories in this month's issue related to the Pumper & Cleaner Environmental Expo, which pertains directly to those objectives. The Expo presents countless opportunities for municipal sewer and water professionals. There are excellent networking and educational opportunities, and all the tools and technology you need to maintain and

improve your collection and distribution systems are on display.

The learning opportunities are perhaps the easiest way to justify a trip to Indianapolis for the 2013 Expo. The show kicks off with Education Day on Feb. 25, a full day dedicated to sharing knowledge and growing within the industry. Educational seminars are also slated for Tuesday and Wednesday, and Roundtable discussions will be held Thursday morning. In fact, this year's Expo features one of the most expansive lineups of educational opportunities in the event's 33-year history. And on top of it all, Expo education courses count toward continuing education credits in many states. Check out the Expo website (www.pumpershow.com) for specific information on your state.

When class lets out, the massive display of tools, trucks and technology will take center stage. You can do all the research when you're looking to buy a new truck or jetting equipment, but until you get a chance to kick the tires on that truck or see the manufacturers' new lines of nozzles, it's difficult to really know what equipment is best-suited to your needs. The Expo gives you that opportunity.

I attended the Expo for the first time in 2012 and I'm looking forward to returning. It's a great chance to meet more of the people who are pushing the industry forward. Building relationships with operators, contractors and manufacturers helps us make this

magazine a better resource for our readers, just as building those relationships with your peers makes your utilities better.

If you haven't been to the Expo, jump on the website and check out everything it can offer. You'll walk away with a better per-

You can do all the research when you're looking to buy a new truck or jetting equipment, but until you get a chance to kick the tires on that truck or see the manufacturers' new lines of nozzles, it's difficult to really get a handle on it. The Expo gives you that opportunity.

spective on your operations and the industry as a whole.

Take a look at this month's stories on the Roundtable discussions at the Expo and some of the other reasons to visit Indy, and consider making the trip. You're sure to come away with fresh perspectives and insights that will help your utility become more efficient and effective.

Enjoy this month's issue. ♦

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



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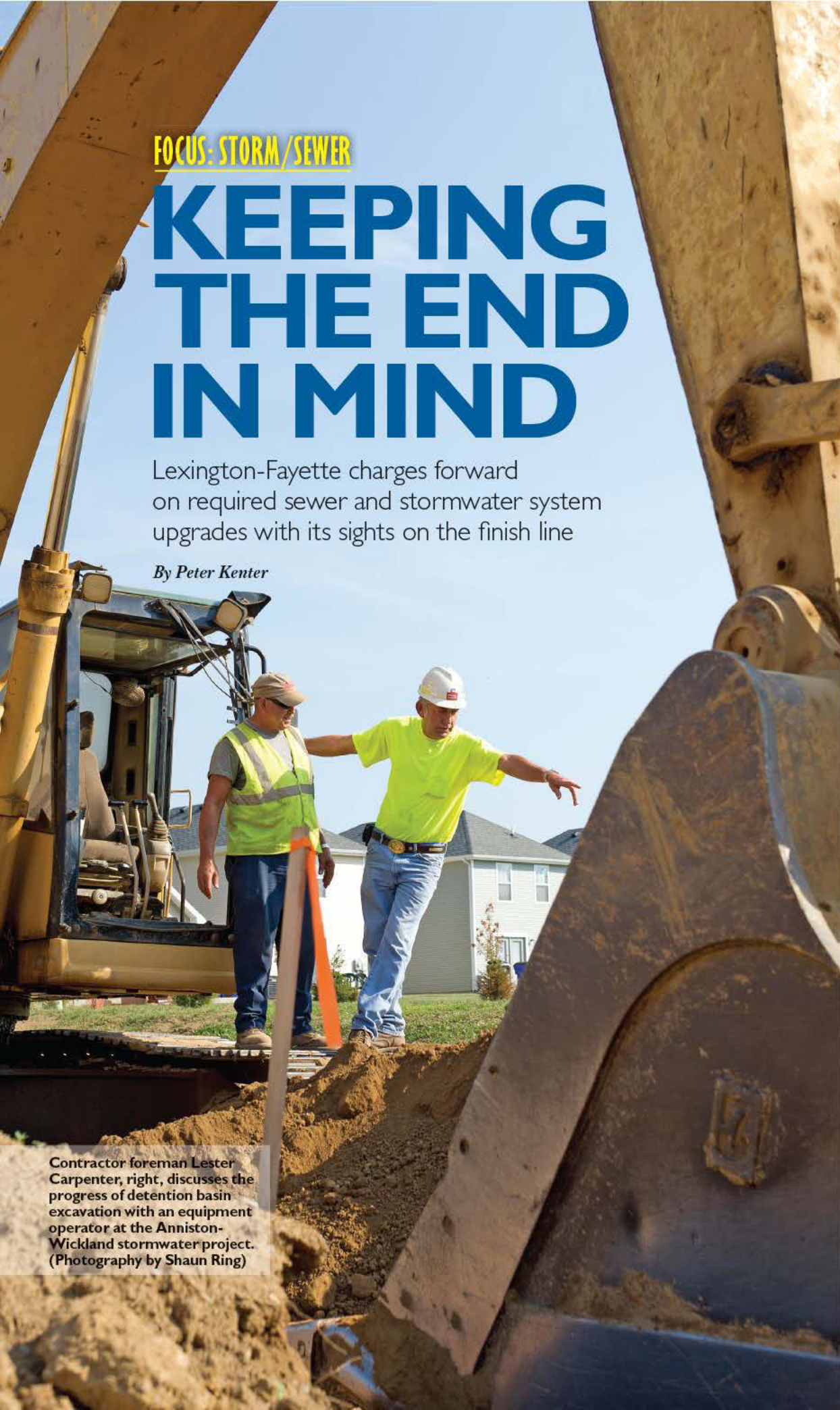
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FOCUS: STORM/SEWER

KEEPING THE END IN MIND

Lexington-Fayette charges forward on required sewer and stormwater system upgrades with its sights on the finish line

By Peter Kenter



Contractor foreman Lester Carpenter, right, discusses the progress of detention basin excavation with an equipment operator at the Anniston-Wickland stormwater project. (Photography by Shaun Ring)

Lexington, Ky., is the thoroughbred equestrian capital of the U.S. — possibly the world. The Division of Water Quality of the Lexington-Fayette Urban County Government (LFUCG) is engaged in a race of a different sort, working against time to upgrade its sanitary sewer and stormwater systems.

Having succumbed to age, changing regulations and equipment failures related to deferred maintenance, the system had previously discharged sewage into local streams in violation of the Clean Water Act. A consent decree, finalized in early 2011 by the U.S. Environmental Protection Agency and the Commonwealth of Kentucky, requires Lexington's stormwater and sanitary sewer system to undergo major upgrades within the next 11 to 13 years. The system falls under the responsibilities of the unified county/city government of the LFUCG.

"We started fast and are moving faster," says Charles Martin, director of the LFUCG Division of Water Quality.

Approximately 60 percent of the city's 1,300 miles of sanitary sewer pipeline was built prior to 1964 and is primarily built of vitrified clay. Pipes range from 8 to 72 inches in diameter. Force mains are 18 inches in diameter and are primarily made of ductile iron, with some HDPE construction. The lines are buried between 30 inches and 30 feet deep, depending on topography.

"The transition to PVC started in the 1970s and now everything is PVC except where site conditions require ductile iron," says Martin. "We recently completed the consent decree's requirement for Sewer System Assessments (SSAs) and we've found plenty to keep us busy. Most of the system rates average to poor. Our oldest treatment

(continued)

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The Lexington team includes, from left, director of water quality Charles Martin, contractor foreman Lester Carpenter, senior engineering technician Jeff Baumgardner, construction manager Rick Day, principal engineering technician Richard Hall and senior engineering technician Bill Warren.

“We’re looking at up to 105 MG of offline storage at up to seven different locations within the system. Construction will be phased and plant site storage will be created in cells so that, as we eliminate I&I, potential capital savings can be achieved by eliminating the need for the final cells.”

Charles Martin

plant site dates to 1918, so like other cities, older areas have greater degradation issues.”

Mapping the stormwater system

The last effort to map the stormwater system occurred in the 1980s. “When responsibility for the stormwater system was shifted to me in 2007, there was no real map of the current system available,” says Martin. “We’re positioning ourselves to begin a system-wide assessment, with mapping needing to be done first, similar to what was just completed on the sanitary side.”

The division plans to use Esri ArcView GIS mapping software to produce X-Y coordinates for the infrastructure, but will outsource the mapping of infrastructure depth and elevation.

The age of the stormwater system mirrors that of the sanitary sewers,

although the lines are generally not buried as deep. The oldest materials are brick, which transitioned into corrugated metal after World War II. Post-1970 construction is largely concrete and PVC, with some ABS and truss pipe.

The division’s repair budget for both systems amounts to about \$2 million annually, although that budget will rise to \$5 million in the next fiscal year. Repair efforts are currently focused on neighborhood sewers that meet certain criteria of age, condition or high R-value results from flow monitoring.

HDPE problematic

The division’s HDPE force mains, which have suffered from longitudinal cracks, are particularly problematic.

“Some of them have failed a dozen times in 10 years, and they’re difficult to fix because standard

PROFILE:

Division of Water Quality, Lexington-Fayette Urban County Government, Lexington, Ky.



YEAR CITY ESTABLISHED:
1775

POPULATION SERVED:
107,000 sewer accounts

AREA SERVED:
85 sq. mi.

DEPARTMENT STAFF:
170 Full Time Equivalents (FTEs) in sanitary sewer, 33 FTEs in stormwater

INFRASTRUCTURE:
Approximately 1,300 miles of sewer pipeline, 82 pumping stations and three wastewater treatment plants

ANNUAL DEPARTMENT BUDGET:
\$50.8 million for sanitary sewer, \$11.9 million for stormwater (2011)

ASSOCIATIONS:
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repair clamps don’t fit around the pipe,” says Martin. “When we replace HDPE with ductile iron, we know we can repair those lines in the



SEWER POLICY HELPS KEEP HORSE FARMS RURAL

The stately horse farms surrounding the city of Lexington, Ky., form part of the heritage that informs the city’s unique character.

Recognizing that the extension of sewer service inevitably leads to development, the city has created a special zoning restriction on the farm area.

“If we lose the historic horse farms surrounding the city, we’ll look like any other city,” says Charles Martin, director of the Lexington-Fayette Urban County Government’s Division of Water Quality. “Recognizing that if you put them in, they will come, we’ve extended no sanitary sewer lines that connect our system to the area. They have their own system and the law prevents our system from connecting to it.”

The city’s Rural Service Area Land Management Plan also places a minimum 40-acre lot size requirement on any developments in the area.

“It’s hotly contested by the development community every six years because it’s less expensive to develop raw land than redevelop existing areas and build infill developments,” Martin says. “So far we’ve been able to protect the farms against urban sprawl.”

future without bringing in outside contractors.”

The division uses internal crews to make point repairs to mainlines

(continued)



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Pirhana Green 4000 psi / 10,000 burst	\$2.28/ft	-	-	-
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“During the SSA, contractors smoke-tested over 4.9 million linear feet of the system, but I don’t anticipate any extensive smoke work over the next couple of years because the earlier work gave us plenty of defects to focus on for now.”

Charles Martin



Senior engineering technician Bill Warren reads construction drawings at the Anniston-Wickland stormwater project.



The Lexington management team includes, from left, senior engineering technician Jeff Baumgardner, principal engineering technician Richard Hall, construction manager Rick Day and director of water quality Charles Martin.

and service laterals. It contracts out for larger repairs, including dig-and-replace and cured-in-place repair projects on main lines. Mechanical root cutting and chemical root treatment are also outsourced.

“We do not reline pipe internally or complete pipe replacements longer than 10 linear feet because it ties up the crews too much and there is ample contractor supply in the area to outsource these jobs,” says Martin.

Manhole rehabilitation is currently on deferral.

“The lining products used in the past didn’t seem to perform,” notes Martin. “Manhole replacement is the primary method cur-

rently used, performed both by internal crews and outside contractors, but we know we’re going to have to move back to in-place rehab methods at some point.”

Routine sewer maintenance is performed by internal crews with a budget of about \$1 million annually. The division fields three Vactor trucks and one basic jet truck.

“The Vactor trucks do the preventive maintenance work while the jet truck does mostly service interruption calls,” says Martin.

Scoping the system

Since 2008, the LFUCG has invested over \$10 million in system assessments as part of the imple-



Charles Martin, left, Bill Warren and Jeff Baumgardner review construction drawings for the Anniston-Wickland stormwater project (pipe manufactured by Sherman-Dixie).

mentation of the consent decree.

Internal crews perform CCTV inspections with two CUES-equipped inspection trucks operating with the company’s Granite XP software. The crews use a push camera to scope service laterals.

“Our crews will start using Red-Zone Robotics Solo cameras next fiscal year,” says Martin. “We had a demonstration last year and liked the product.”

The division also conducts its own routine smoke testing using two liquid smoke units by Hurco.

“During the SSA, contractors

smoke-tested over 4.9 million linear feet of the system, but I don’t anticipate any extensive smoke work over the next couple of years because the earlier work gave us plenty of defects to focus on for now,” says Martin. “Further into the master plan, we will do more smoke testing as we complete current repairs and establish the connectivity of the stormwater system.”

Capital construction projects have also shifted into high gear. One of the division’s significant achievements is the construction of its South Elkhorn pump station

and force main, which eliminated Lexington's major contributor to sanitary sewer overflow.

A Remedial Measures Plan (RMP) capital works program, scheduled to begin this fiscal year, is projected to invest more than \$550 million in trunk sewer replacements, pump station rehabilitation, wet weather storage and treatment plant reliability improvements.

"We're looking at up to 105 MG of offline storage at up to seven different locations within the system," says Martin. "Construction will be phased and plant site storage will be created in cells so that, as we eliminate I&I, potential capital savings can be achieved by eliminating the need for the final cells."

Program development, which required a significant public expenditure, involved a series of public meetings and community outreach efforts. Martin appeared at public events asking the community exactly what sort of system ratepayers wanted to invest in, pointing out that higher quality costs more money.

Martin explained, for example, that an overhaul of the sewer system in the Wolf Run watershed would require a \$40-million investment to protect against the type of flooding caused by a 24-hour storm of the severity that might occur every two years, but \$65 million for a 10-year storm.

"Generally, ratepayers tell us to give them the cheapest system possible, even though that choice may not give them the system they want," says Martin. "They're very concerned about escalation of their rates."

Acquiring easements

One of the biggest challenges in completing the RMP involves easement and right-of-way acquisition, since much of the infrastructure is now located in rear and side yard easements in established neighborhoods. "That makes for tough construction in what is often a politically charged environment," says Martin. "Landowners aren't always cooperative."

The massive construction projects may also challenge the limits of local contractor capacity. "Once the RMP projects start, we'll be doing between 10

"Generally, ratepayers tell us to give them the cheapest system possible, even though that choice may not give them the system they want. They're very concerned about escalation of their rates."

Charles Martin

and 15 projects a year — considerably more than the current market is used to," says Martin. "We're often competing with larger, nearby markets, including Cincinnati and Louisville, that are also operating under consent decrees with aggressive construction schedules."

While the division is set to undertake the most ambitious construction and rehabilitation program it has ever overseen, the region faces continued economic pressure and staffing levels remain static.

"However, our motto here is, 'begin with the end in mind,'" says Martin. "Working toward our ultimate goals keeps us on task for the things we need to do." ♦

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FOCUS: WATER

FOCUS ON THE FUTURE

Holland, Mich., ensures a safe water supply with a forward-looking approach to system improvements and water protection plans

By Erik Gunn

The City of Holland, Mich., hasn't had any water crises over the years, but that hasn't kept it from making important investments to improve its system and guard against disaster.

Holland is deep into a cooperative project connecting its water system with that of a next-door community as a way to cope with possible future emergencies. It has repair and replacement projects worth millions of dollars lined up for the coming years.

“We have a long history of high quality and high standards. We have a very low rate of unaccounted-for water loss — about 2 percent — and we want to keep it that way. We want to stay ahead of the curve. We want to be proactive as opposed to reactive.”

Dan Sorek

A focus on reliability, aggressive maintenance, innovation and strong employee relations all have contributed to the system's success, says Dan Sorek, superintendent of water/wastewater services for the Holland Board of Public Works.

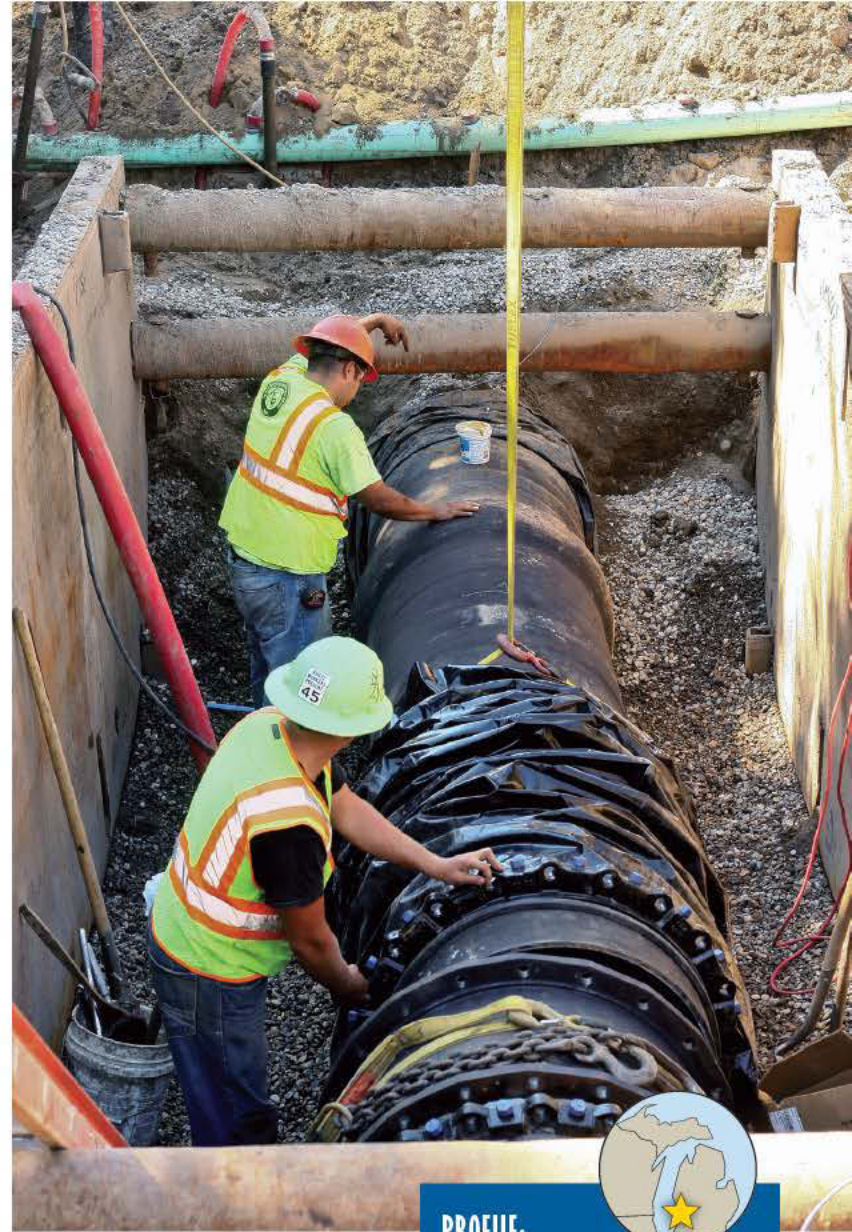
“We have a long history of high

quality and high standards,” he says. “We have a very low rate of unaccounted-for water loss — about 2 percent — and we want to keep it that way. We want to stay ahead of the curve. We want to be proactive as opposed to reactive.”

That's paid off, in rates competitive even with much newer systems, and also in bragging rights. Earlier in 2012, the city's progressive approach helped it earn Water Utility of the Year honors from the Michigan Rural Water Association.

City-owned utility

The Holland Board of Public Works is a not-for-profit, city-owned utility chartered 130 years ago. In addition to water service, the utility also provides sewer collection and treatment and electric power generation and distribution.



K&R crew members Craig Schram (foreground) and Carlos Gonzalez align a 30-inch water main for tie-in. (Photography by Tim LaDuke)

Located about 30 miles southwest of Grand Rapids and just east of the Lake Michigan shoreline along Lake Macatawa, Holland was founded only 10 years after Michigan was admitted to the union and is now a thriving city.

While the city itself has a population of about 35,000, the BPW serves more than 50,000 water customers in the area, including the entire nearby city of Zeeland (pop. 5,400), which buys Holland water wholesale, and portions of four surrounding townships. Under contracts with those communities, the townships install their own water distribution systems; Holland then conducts routine maintenance and metering of the lines where it distributes water, Sorek explains.



PROFILE:
Holland Board of Public Works/Water Distribution System

POPULATION SERVED:
50,000+

SERVICE AREA:
Holland, Mich., Zeeland, Mich., and portions of adjacent townships

WATER TREATMENT (FILTRATION) VOLUME:
38.5 mgd capacity

INFRASTRUCTURE:
240 miles of water mains

ANNUAL OPERATING BUDGET:
\$5.3 million (2010)
(excludes capital improvements)

WEBSITE:
www.hollandbpw.com/Water/Pages/Home.aspx

(continued)

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The Holland, Mich., team includes, from left, back row, Mike Helder, water treatment plant operator; RB Harrison, service and maintenance; Bill Wynes, service and maintenance; Ross DeVries, lead water plant maintenance; Matt Johnson, lead service and maintenance; front row, Mike Doorn, water treatment intern; Braden Scharlow, water treatment intern; and Dave Broene, water treatment maintenance.

Holland industries include furniture makers, food manufacturers and automobile parts suppliers, among them makers of advanced battery technologies to be used in electric and hybrid vehicles. "There's a lot of entrepreneurial spirit here," says Sorek. And all that industry adds to the demand for water.

Although the area relied mostly on groundwater until the early 1950s and then blended that with Lake Michigan water into the 1970s, Sorek says, Holland has taken all of its water from the lake for more than 35 years.

Strong record

To date, the community has never seen its water supply threatened, Sorek says. A 2003 Source Water Assessment Report for the city by the U.S. Geological Survey noted that while area land use and potential contaminant sources in the region gave the city's source water "moderately high susceptibility" to problems, the Holland BPW water treatment plant has a record of effective water treatment.

But Holland's leaders don't believe in resting on their laurels. In 2010, the city adopted a Surface Water Intake Protection Program



COMPATIBLE SYSTEMS HELP EFFORT

In teaming up to build a 4.5-mile, 30-inch interconnect pipeline to allow them to exchange water in emergencies, the Michigan cities of Holland and Wyoming haven't encountered difficulty in working together.

"Our treatment processes are virtually identical," notes James Van De Wege, superintendent of the Holland water treatment plant. That ensures mixing water from the two systems won't cause water quality problems.

The two communities had already laid extensive groundwork for collaboration. "We've been building our relationships with area utilities for over 30 years," says Van De Wege, noting those relationships extend beyond Wyoming to other communities as well. Communities join together to do things like buy treatment chemicals at bulk discounts, work together to repair equipment, and other shared tasks and interests.

The two municipalities negotiated a legal contract that calls for the

interconnect to be used for emergencies, at least initially. The area it traverses is fairly rural, but is likely to become a site for future development, notes Dan Sorek, superintendent of water/wastewater services for the Holland Board of Public Works.

The cities have worked out ways to reconcile their different rate systems. That way they will take water from the interconnect on an equal basis. And they've also developed procedures to keep the water in the pipeline fresh.

The interconnect will be filled at all times. The risk, Sorek says, is that as it ages, chemical disinfection byproducts could build up in the water. That won't make it hazardous, but it could contribute to unpleasant tastes or smells.

To avoid that, the entire half-a-million gallons of water in the interconnect pipeline will be exchanged weekly.

(continued)

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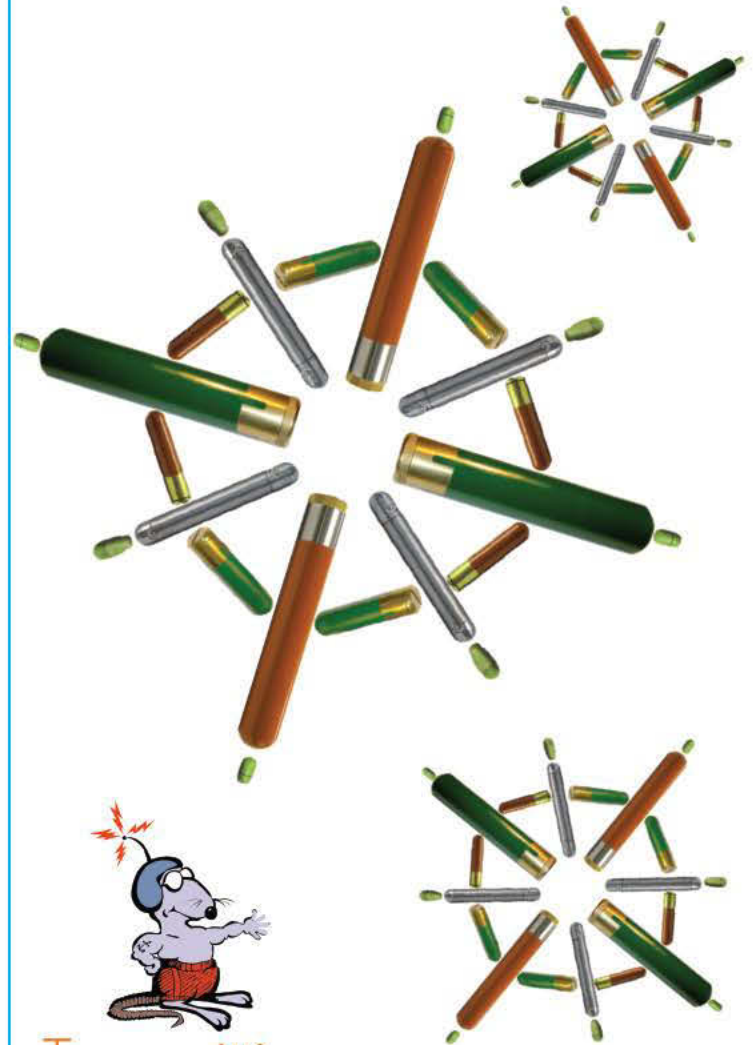
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K&R crew members Craig Schram, right, and Carlos Gonzalez guide a 30-inch sleeve into the trench and prepare the pipe for tie-in.

(SWIPP) — an acronym that Sorek and his colleagues pronounce “Swippee.”

Communities can put together SWIPPs under a voluntary program through the Michigan Department of Environmental Quality. A SWIPP must define the roles and duties of government units and water suppliers; delineate a source water protection area for the community’s water supply source; identify potential contaminant sources in the protection area; outline educational, regulatory and other management approaches to protect the source water; create contingency plans for public water supply sources, including alternate sources of drinking water; ensure that new water sources will be sited so as to minimize potential contamination;

and encourage public participation in water protection efforts.

Holland’s SWIPP fills 90 pages, not including references and appendices, and was the reason the community was recognized as Water Utility of the Year by the Michigan RWA, which advised city officials during the document’s drafting. Among the alternative water sources included in the SWIPP document is a plan to exchange water with the adjacent city of Wyoming, Mich., a 70,000-population community with a water system that serves more than 200,000 in its own surrounding communities.

Interconnect pipeline

To that end, Holland and Wyoming are constructing a 4.5-mile, 30-inch interconnect pipeline link-



Dave Broene, water treatment maintenance worker, left, reviews a preventive maintenance checklist with Braden Scharlow, water treatment intern, on one of the high-service centrifugal pumps.

ing the water systems of the two communities. The pipeline was approved for a low-interest loan under the state’s Drinking Water Revolving Funds program.

Often, the loan program favors communities where there’s been an urgent water quality problem. Applications for the loans are qualified under a point system that awards more points based on the severity and urgency of the proposed repairs.

Holland’s record of good performance meant that the community was actually at a disadvantage under that point system in seeking the revolving funds loan, Sorek says. But the loan application got a big enough boost to qualify because Holland had created its SWIPP, and because of the total population served by the two water systems — well over 250,000. The project is seen as likely to significantly enhance the reliability of both systems, Sorek says. “It also expands the water distribution sys-

tem to an area that is not currently served by public water.”

Holland and Wyoming already had smaller interconnects in place. They began exploring a much larger interconnect a decade ago to allow the two communities to be able to reliably turn to each other in an emergency, or even to help foster a possible regional water system sometime in the future. Now it’s under construction and could do just that, Sorek says.

Not only has the \$6 million project qualified for the low-interest state loan, but because of the American Recovery and Reinvestment Act, 15 percent of the loan principal will be forgiven, cutting the cost to 85 cents on the dollar. “That helped us out tremendously,” Sorek says.

Replacement plans

Repairing or replacing about 15 miles of distribution lines over the next several years is also on the utility’s agenda.

Mains will be targeted for work based on how severely they leak. Holland generally prefers polywrapped ductile iron for new pipes, although they sometimes use PVC pipe instead. In most instances, Sorek says, the city has found that all-out replacement will be more cost-effective than alternatives such as CIPP lining.

One reason may be that whenever possible, the city replaces or repairs its mains when streets are being repaired or replaced, which reduces repeated disruptions. "We want to make sure that the customer is only affected once," Sorek says. Sewer work is likely to be undertaken on those areas at the same time.

"Where the street is being resurfaced or replaced, we try to take a holistic approach with the utilities underneath and replace those as necessary as well," he continues.

"By partnering with the road agencies, it affords them and us the opportunity to save on restoration costs. Instead of the road agency picking up the whole bill on the restoration, or the utility picking up the whole bill, the restoration cost can be shared between the two agencies."

In 2010 alone, the city replaced 11,785 feet of water mains, according to the Holland BPW annual report.

Water treatment plant capital improvements are also on the horizon: replacing pumps, motors, chemical feed and storage equipment, an upgrade in computer control systems, a rebuild of filter piping structures, new valves, flow transmitters and flow measuring devices, and new electrical actuators are all part of those plans, says James Van De Wege, superintendent of the Holland water treatment plant. The cost is to be spread over the decade so as to avoid a huge hit to budgets at any one time.



Ross Devries, lead water plant maintenance worker, performs routine maintenance on the new Generac generator.

Among the technological advances Holland hopes to take advantage of are new, higher-efficiency motors and improved chemicals that can reduce chemical costs and sludge production by as much as 30 percent. New turbidity meters that don't require frequent recalibration are also on the shopping list.

Innovation meets cooperation

Meanwhile, the SWIPP is about a lot more than just helping Holland score well enough to get a low-interest building loan, Sorek and Van De Wege say. It's about much, much more.

"We're eager to see the SWIPP get going a little bit more, because it touches on educating the public,

"We're eager to see the SWIPP get going a little bit more, because it touches on educating the public, and it touches on partnering with other agencies that we have historically not partnered with."

Dan Sorek

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James Van De Wege, water treatment plant superintendent, left, and Dan Sorek, water/wastewater services superintendent.

“By partnering with the road agencies, it affords them and us the opportunity to save on restoration costs. Instead of the road agency picking up the whole bill on the restoration, or the utility picking up the whole bill, the restoration cost can be shared between the two agencies.”

Dan Sorek

and it touches on partnering with other agencies that we have historically not partnered with,” Sorek says.

The SWIPP, he continues, “is not a document that we produced just to get points to build a project. It is living and breathing, not just to be placed on the shelf. It is to be looked at, revised and kept up to date; it wasn’t just a checklist that we got done.”

With Lake Michigan so close at hand, offering a major source of water for a variety of uses, it’s easy to become complacent, Sorek says. Holland officials guard against that.

“We were one of the first utilities to put in infrastructure for a water re-use system in Michigan,” he says. That project enabled the safe re-use of water from the wastewater treatment plant, rather than simply returning it to the lake.

Such innovation is par for the course in Holland’s water operations, along with strong labor-management relations with unionized employees and high-quality service.

“We have a very good working relationship with the employees,” Sorek says. “We’ve been very careful in our selection. We have high standards. That permeates throughout both our management team and our employees, and it shows up in our customer service and in our product.” ♦

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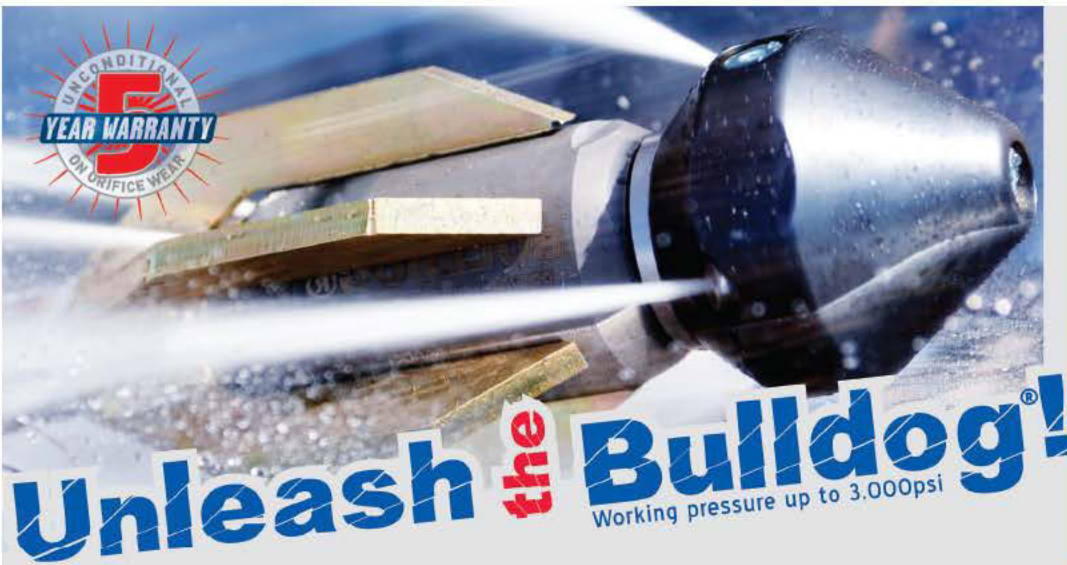
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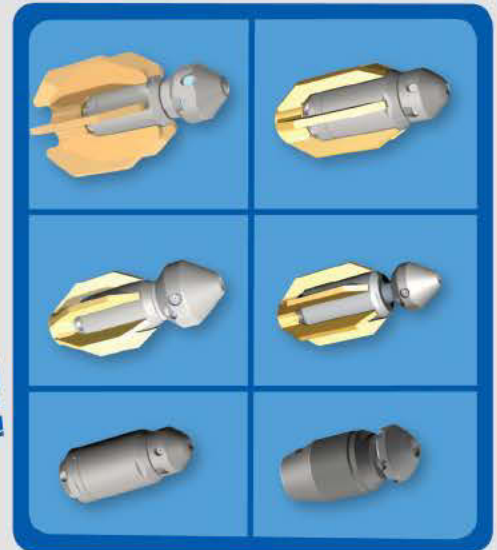
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CULTURE CLUB

Six historic Indianapolis neighborhood districts showcase thriving art and music scenes

By Sharon Verbeten

The 2013 Pumper & Cleaner Environmental Expo kicks off its four-day run in Indianapolis on Feb. 25. The Expo will keep you plenty busy during the day, but a different side of Indy will vie for your attention when evening arrives.

Founded and platted in 1821, Indianapolis (population 876,804) is known for being located at the “Crossroads of America.” Its unique and varied tourist attractions are just part of what makes Indy, well, Indy.

According to Visit Indy conventions and meetings communications manager Lisa Wallace, “Visitor favorites include the green space, canal and attractions conveniently located in White River State Park steps away from hotels. Two new attractions include the Dallara IndyCar Factory and our

Cultural Trail, an innovative project connecting visitors on bike or foot with hotels, restaurants and eclectic neighborhoods throughout the city. The Indianapolis Museum of Art is also popular with prominent works of art inside and 152 acres of gardens and grounds outside that house the original (Robert Indiana) LOVE sculpture.”

Those are just some of the attractions located in the city’s six distinct cultural districts. These include Broad Ripple Village, The Canal and White River State Park, Fountain Square, Indiana Avenue, Mass Ave. and the Wholesale District. Nestled in these districts are public art, galleries, museums, shops and recreation. Four of the six districts are conveniently located downtown, the site of the Pumper & Cleaner Environmental Expo.

See it all

Broad Ripple Village is set against the backdrop of public art, graffiti murals and green spaces. It’s the ideal venue for those adventuresome souls who enjoy art, creative spaces and ethnic foods. Shopping options include works by local artisans, as well as vintage furniture and collectibles. The Indianapolis Art Center and the ARTSPARK outdoor laboratory are located in Broad Ripple.

The **Canal and White River State Park** are more for history and outdoor lovers. Limestone walkways and American Indian art are part of the experience in this district.

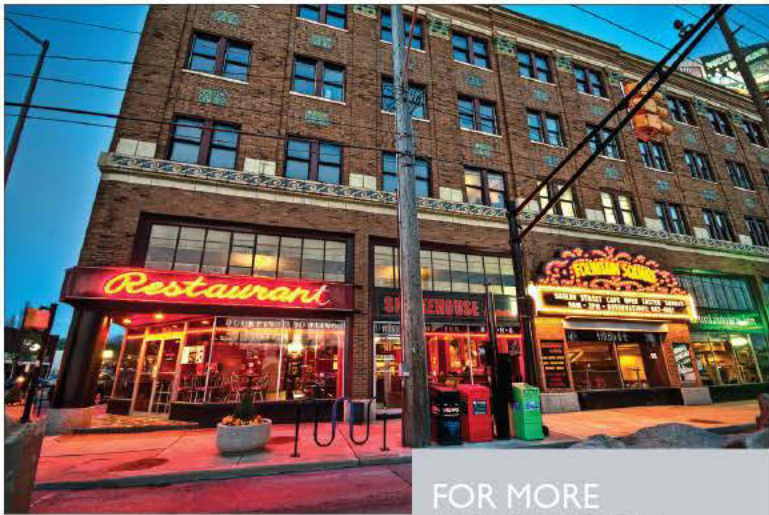
Scattered throughout the Canal and 250-acre White River State Park are some of the city’s most inspiring museums and attractions.

The **Canal Walk** — on the “waterfront” — provides an urban respite for fitness enthusiasts and serenity seekers. This district is also home to the Indianapolis Zoo, the Eiteljorg Museum of American Indians and Western Art, the Glick Indiana History Center, the Indiana State Museum and the NCAA Hall of Champions.

Fountain Square is a historic community spotlighted by a town square and central fountain, evoking images of a European city. It is a literary and artistic haven and home to more offbeat activities like duckpin bowling and swing dancing. More than 75 artists call the Wheeler Arts Community or Murphy Art Center home.

Indiana Avenue anchors the district that spans the Central Canal and White River. Here history, jazz, restored neighborhoods

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Fountain Square Theater Building



Fountain Square duckpin bowling



Broad Ripple Village

and spirituality embrace the city's rich African-American heritage. Several venues are on the National Register of Historic Places.

Mass Ave. is the city's arts and theater district, including five performing arts theaters. Shops feature local artists' works, and an array of original outdoor art greets visitors.

The Wholesale District brings an urban excitement to the city with marquee, tuxedoed doormen and a mall to delight shoppers — the two-block, four-story Circle Centre mall. This is the heart of the business district, home to historic buildings, mas-

FOR MORE INFORMATION

Broad Ripple Village, 6311 Westfield Blvd.; 317/251-2782; www.DiscoverBroadRippleVillage.com

Canal and White River State Park, 801 W. Washington St.; 317/233-2434; www.DiscoverCanal.com

Fountain Square, Fountain Square Merchants Association, www.DiscoverFountainSquare.com

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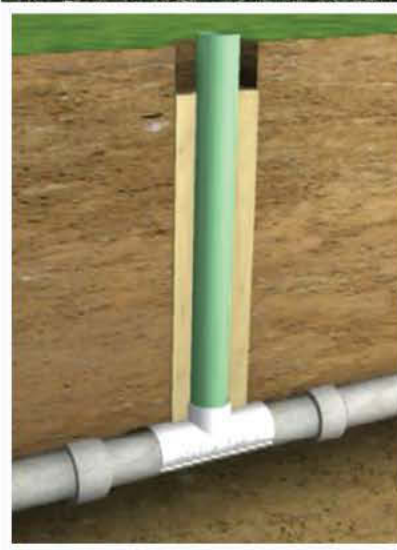
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Complainers create a toxic work environment, but you can make them stop — and save a few brain cells, too

By Ken Wysocky

It seems as though every workplace has a resident griper. Everyone has dealt with it — that person who's perpetually unhappy about everything from the vending machine coffee to the weather to his or her supervisor to management's business strategy.

At the very least, it's annoying when Carl or Cathy Complainer corners you in your cubicle, but-tonholes you at the water cooler or sets up shop inside your truck in between sewer inspections. A productivity killer? You bet. And it easily spreads into a downward spiral for everyone involved; after all, few things unite people better than a common dislike.

But according to Trevor Blake, you should be equally concerned about an insidious physical side effect: all that negativity harms your brain, too.

Citing research performed at Stanford University by Robert Sapolsky, a professor of neuroendocrinology, Blake says that listening to complaining actually kills brain cells. In a nutshell, Sapolsky has proven that long-term exposure to hormones like cortisol — produced when people feel fearful or stressed — actually decreases the size of the hippocampus, the part of the brain that helps connect neurons and generate new neurons. This, in turn, can lead to declines in cognitive function.

In short, gossip and complaining are toxic to mental health; you're not in your most productive state — or poised for success — when you're surrounded by negativity.

"Listening to complainers basi-

cally turns your brain to mush," says Blake, a self-made millionaire businessman and author of a new best-selling book, *Three Simple Steps: A Map to Success in Business and Life*. "And it's not just people in the workplace. It's also social media, talk radio, television ... it's hard to stay focused when you let your brain stay passively focused on all that.

"Just spend a day counting the number of complaints you hear," he adds. "Being aware of it is illuminating. In a couple hours, you're well over 100 ... that's just the world we live in. But if you're aware of it, you can do something about it."

Break the connection

So how should you handle chronic complainers — and save your brain? The first step is to step away and break the negativity connection, which Blake compares to secondhand smoke.

"If your manager and you know that it (chronic complaining) is bad for you and the company, then you have a responsibility to treat it like smoking," he explains. "If you catch employees lighting up again, you have to get them to stop. It's so toxic you just can't allow it."

So when the complaining starts, tell the offender you have to go the bathroom, even if you really don't have to. Feign an appointment for which you're late. In short, do what it takes to get away. Blake says he often challenges people to try it for one day, and people tell him they're amazed at how much more energy they have by not being "hard-wired" into the complaining mentality.

If there's no way to escape, then push back, Blake suggests. When the griper starts complaining about something, ask him or her to recommend a solution.

"It's amazing what happens," he says. "Nine times out of 10, they aren't expecting that. They might get huffy because you aren't acting the way they expect you to. But every so often someone agrees and goes out and develops a solution."

Blake recalls a situation that occurred while he was working for a large corporation. A national account manager was always complaining about things such as the heavy travel schedule, the size of her sales territory and general stress. "I kept asking, 'What are you going to do about it?'," he recalls.

One day, the manager came to Blake with a surprise: a plan to split customers into specific niches and realign sales territories.

"To be honest, it was a plan of genius," he says. "I wondered why I hadn't thought of it myself. It saved the company money, reduced everyone's travel and increased productivity. It was good for her too, because she was no longer perceived as a constant moaner, but someone who was creative and smart. It was actually a turning point in her career."

Get tough mentally

If all else fails, Blake suggests that people develop what he calls an "invisibility shield" that allows them to mentally repel complaints.

"People smile when they hear that, but it works," he says. "It sounds 'new agey', but there's nothing new about it. It's all based on ancient

We invite readers to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets for building and maintaining a cohesive, productive team. Or ask a question about a specific issue on which you would like advice. Call editor Luke Laggis at 800/257-7222, or email editor@mswmag.com.

principles. Sometimes we find it difficult to do things without scientific verification, but you should give it a try."

Blake says he's used this strategy to great effect, and points out others who've done the same, from giants of industry to professional sports heroes. Henry Ford, he points out, called it a "deflection spell," which he used to mentally protect himself from all the naysayers who said automobiles would never replace horses.

"I was bullied a lot as a child, so I'd hide out in the library and read up on great people ... who learned how to shut out negativity," Blake says. "If you're consistent enough, it becomes a lifelong habit.

"If it works for them, who's to say it won't work for me?" he adds. "I tried it myself and it worked. It was profound."

Of course, complaints are justified in some instances. The trick is to find legitimate solutions instead of falling into the fruitless cycle of endless complaining.

"The thing about complainers is that they usually don't want a solution," he says. "They just want to unload that energy ... and it's amazing how it perpetuates. And if you spend too much time complaining, you can't find solutions because you're shutting down the part of the brain that creates solutions. If you can eradicate that and allow your brain to do what it does best, you'll find the solution." ♦


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MONDAY
FEBRUARY 25TH

NAWT

National Association of Wastewater Technicians

- 8 a.m. Introduction to Pressure Distribution
- 9:30 a.m. Designing Systems, Boundaries and Barriers from a Soils Perspective
- 11 a.m. Pump Choices and Settings: Decisions for Proper Operation
- 1:30 p.m. Operation and Maintenance of Pressure Distribution Laterals
- 3 p.m. Installing with Management in Mind: How to Get the Most out of Your System
- 4:30 p.m. Design and Maintenance of Grease Interceptors

NEHA

National Environmental Health Association

- 8 a.m. What Makes a Professional in Onsite Wastewater Systems?
- 9:30 a.m. Part One: The Science and Engineering of Onsite Wastewater Treatment
- 11 a.m. Part Two: The Science and Engineering of Onsite Wastewater Treatment
- 1:30 p.m. Education and Training: Professionalization of the Practitioners
- 3 p.m. Management Models: Management and Becoming a Management Entity
- 4:30 p.m. The Future of the Onsite Wastewater Industry: How to Make it Work for You!

SSCSC

Southern Section Collection Systems Committee

- 8 a.m. Seven Powerful Tools for CCTV Inspection Perfection
- 9:30 a.m. Easements – A Collection System Maintenance Nightmare
- 11 a.m. Nozzle Science – The Next Generation of Tier 3 Nozzles and Beyond
- 1:30 p.m. Pass or Fail – Is Your Company Going To Make It? How to Ensure Success
- 3 p.m. Social Media and Web-Based Promotion: Is it Right for Your Business?
- 4:30 p.m. Pipeline Relining and Rehabilitation Solutions

NASSCO

National Association of Sewer Service Companies

- 8 a.m. Ultraviolet Manhole Rehabilitation
- 9:30 a.m. Convey Your Stormwater and Plug Your Holes!
- 11 a.m. Jet Up! Sewer and Storm Water Cleaning
- 1:30 p.m. Rethinking Collection Maintenance with Sewer Line Rapid Assessment Tool or SL-RAT
- 3 p.m. Case Study of Cleaning Large Diameter Sanitary Sewers and Siphons
- 4:30 p.m. Pipeline Assessment Certification Program (PACP) 2013 Update Workshop

NOWRA

National Onsite Wastewater Recycling Association

- 8 a.m. Time Dosing ... Why? How? And How Much?
- 9:30 a.m. Loading Rates – How Much Can the Soil Take?
- 11 a.m. Troubleshooting Pumps, Floats and Panels
- 1:30 p.m. The Dirty Dozen – Toxins That Kill Septics
- 3 p.m. How Installers Can Use the Poor Economy to Increase Profits
- 4:30 p.m. Are Seepage Pits Really Bad?

- 8 a.m. Designing Drip Dispersal Systems
- 9:30 a.m. Soil Erosion Control During and After Septic System Installation
- 11 a.m. Decentralized Wastewater Collection System Maintenance

NOWRA Room 2

SCOTT HUNTER

Business Coach

- 8 a.m. - 5:30 p.m. | 2013 - Your Best Year Ever

WJTA/IMCA

WaterJet Technology Association

- 8 a.m. Safety and Efficiency – You Don't Have to Choose!
- 9:30 a.m. Selecting the Best Jetting Tip Doesn't Have to Be Scary
- 11 a.m. Hydroexcavation – The Non-Destructive Solution

PHIL STEIN

Vacuum System Information

- 1:30 p.m. | Understanding the Power: Physics of Vacuum and How it Works

NEXSTAR

Independent Residential Service Contractors Association

- 1:30 p.m. | The Art and Science of Business Management
- 3 p.m. | The Business of Contracting

PSAI

Portable Sanitation Association International

- 4:30 p.m. | GAP: Good Agricultural Practices



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TUESDAY TRACKS

FEBRUARY 26TH, 2013

TRANSPORTATION AND LAND APPLICATION

- 8 a.m. Driver Compliance and Certification: How to Meet DOT Requirements
- 9:30 a.m. Staying in Compliance with 503 Regulations for Land Application
- 11 a.m. Land Application: Case Study of a Long-Term Operation

INDUSTRY SAFETY

- 8 a.m. One Piece Nozzles Enhance Performance and Safety
- 9:30 a.m. Confined Space Entry Permit and Equipment Review
- 11 a.m. Utility Line Locating

SSCSC

- 8 a.m. Making Emergency Response Your Business
- 9:30 a.m. How to Protect and Maintain Sewer Hose From Mini Jetters to Combination Units
- 11 a.m. How to be Successful in the Cleaning/CCTV Business

GENERAL BUSINESS

- 8 a.m. New Untapped Techniques to Capture Today's Customers
- 9:30 a.m. 10 Steps to Marketing Success
- 11 a.m. Cloud Computing for Small Business and the Field Service Industry
- 8 a.m. Don't Win the Price Game
- 9:30 a.m. Make the Phone Ring with Low-Cost Marketing
- 11 a.m. Local Marketing on the World Wide Web

Business Room 2

SEWER COLLECTION & REHABILITATION

- 8 a.m. Chemical Grouts and Grouting Methods
- 9:30 a.m. Watch Your Assets – Remote Monitoring Can Save You Big Bucks
- 11 a.m. Lateral Connection Rehabilitation: Biggest Bang for the Rehabilitation Buck

SPANISH/ESPAÑOL

- 8 a.m. Floods in Mexico City
- 9:30 a.m. Best Practices for Working in Confined Spaces
- 11 a.m. How to Overcome the Difficulties of Doing Business in South America

WEDNESDAY TRACKS

FEBRUARY 27TH, 2013

SEWER COLLECTION & REHABILITATION

- 8 a.m. Cash for Compliance: The New Boom in Home Sewer Replacement
- 9:30 a.m. Trenchless Point Repairs, a Low Cost Permanent Solution
- 11 a.m. Penn State University Performs Manhole-to-Manhole Lining In-House

GAS, OIL & MINING

- 8 a.m. How to Decide What Dewatering Option is Best for You
- 9:30 a.m. Blower 101: The Basic Operation of the Positive Displacement Blower
- 11 a.m. Principles and Equipment of Hydro-Pneumatic Vacuum Excavation

GENERAL BUSINESS

- 8 a.m. Save Money – Move Your Business to the Cloud
- 9:30 a.m. Morally Bankrupt
- 11 a.m. Measuring Success Matters: Your Ads, Your Agents, Your Technicians

MUNICIPAL

- 8 a.m. Benefits of Digital Side Scanning Inspection Camera Systems
- 9:30 a.m. Application for Sewer and Storm Nozzles
- 11 a.m. Grinder Pumps & Application

PORTABLE LIQUID WASTE

- 8 a.m. A View from the Receiving End: Regulatory Challenges in FOG Programs
- 11 a.m. Now You Smell Me, Now You Don't: Deodorants

NEW TECHNOLOGY

- 8 a.m. Improving Safety and Technology with Wireless Technology
- 9:30 a.m. New Technology for Locating Sewer Line Leaks
- 11 a.m. Solve Decentralized System Malfunction Issues and Site Challenges

ADVANCED INSTALLER COURSE

- 8 a.m. - 5 p.m. Presenters: Jim Anderson and Dave Gustafson
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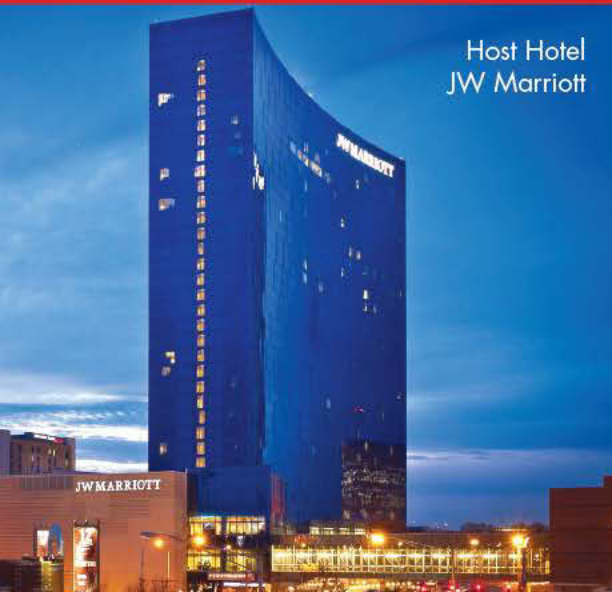
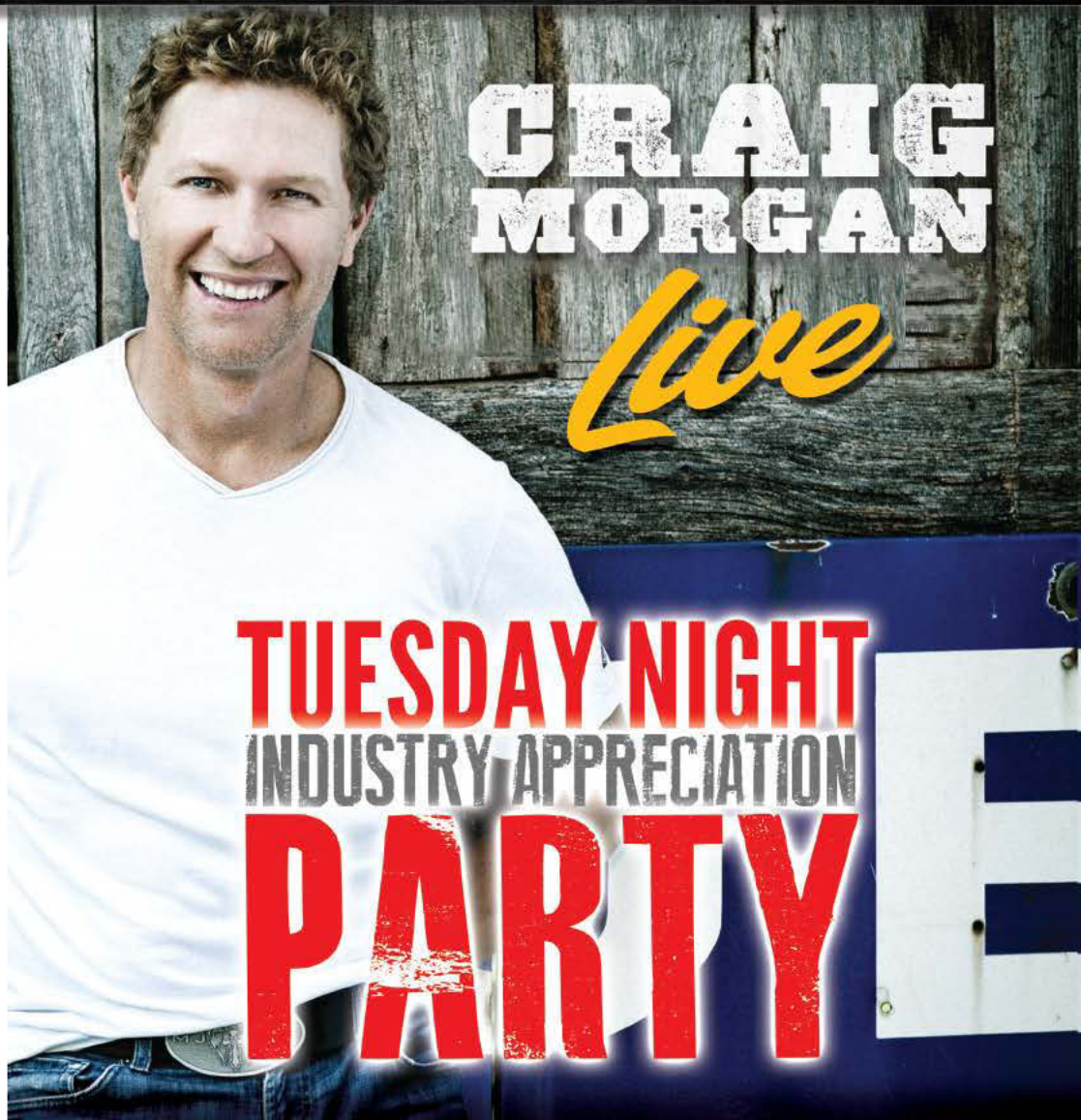
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25¢ Tap Beer: 5 - 7 p.m.

Craig Morgan: ... 7 p.m.

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Attendees enjoying the live concert at last year's event

From left, water capital projects manager Jamaal Charlton, GIS/IT coordinator Rodney Steele and instrumentation and electrical technician Daryl Shafer check details of the Evansville sewer system on a large computer screen. (Photography by Curtis Hustace)

FOCUS: SEWER

FACING CHALLENGES AS A TEAM

Evansville, Ind., takes back control of its water and sewer utility and focuses on system improvements

By Jim Force

In life, they say money can't buy happiness. When it comes to infrastructure, money can't solve everything either. A successful collections system needs care, attention, and a long-term commitment to maintenance.

Just ask Evansville, Ind. Faced with massive overflow issues that date back more than 50 years, the city has spent hundreds of millions of dollars to rectify the situation. But until the Evansville Water and Sewer Utility (EWSU) took back management control from a private contractor and implemented what deputy director of utilities – engineering Mike Labitzke calls a “team approach” to caring for the system, results were marginal at best.

Labitzke says the biggest challenge has been changing the culture of how the department works. “That’s the hardest thing to do, changing how we do things

after people have become used to doing what they’ve been doing for 19 or 20 years,” he says.

“There are no black boxes,” he says of the solutions. “It just takes time as we all work together, talking things through, and working as one.”

A stormy history

The city has been working to solve combined and raw sewage overflows, some of which entered the Ohio River, for a long time. In 1996, Evansville experienced two 50-year storm events in the same week. “The flooding impact of the rain storms was extensive,” Labitzke says. “Standing water was evident all across the city, and in some areas, the water was the result of combination sewer hydraulic overload.”

In news reports, residents described basements flooded with up to 7 feet of water, water above finish floor elevation, impassable

streets, and homes that couldn't be sold because of a history of drainage problems in the neighborhood.

“I remember seeing people in small boats going down a street ... it was scary,” says Allen Mounts, EWSU director.

“I remember seeing people in small boats going down a street ... it was scary.”

Allen Mounts

The flooding — most serious in the southeast section of Evansville — prompted the city to develop its first stormwater master plan in 1997, identifying 39 projects to be completed at a total cost of \$80 million. The EWSU and the city's Board of Public Works jointly completed nearly \$30 million of the improvements over the next few years. The work included



PROFILE:
Evansville, Ind.,
Water and
Sewer Utility

FOUNDED:
Water utility dates to 1800s;
sewer utility to the 1950s

SERVICE AREA:
Combination and sanitary
sewer system covers 17 and
33 square miles, respectively

POPULATION SERVED:
65,000 customers

INFRASTRUCTURE:
800 miles of sewers
(60 percent sanitary,
40 percent combined),
92 lift stations, two waste-
water treatment plants
(approximately 66 mgd wet
weather capacity combined)

EMPLOYEES:
81 in collections

ANNUAL BUDGET:
\$45 million

WEBSITES:
www.evansville.org;
www.renewevansville.com

Truck driver Reggie Sutton uses the Vactor 2100 Series hydroexcavator to flush a secondary sewer line prior to TV inspections.



construction of a 96-inch stormwater relief tunnel in the Weinbach Avenue area, as well as several flooding relief sewers and separation of storm and sanitary sewers in a number of critical areas. The last of the first phase of these projects are expected to be completed in 2014.

Then in 2006, more heavy rains forced the city to update the master plan. Another 30 projects were identified, estimated at more than \$115 million. During the implementation of the second round of stormwater projects, the capacity of the city's two wastewater treatment plants was also expanded (see sidebar).

Money for the improvements came from three sources: low-interest loans from the state revolving loan fund, a bond issue, and rate increases. Despite these investments, the city continued to release an estimated 3.4 billion gallons of

combined sewer overflow each year into the Ohio River and Pigeon Creek from 22 different overflow locations. Under a 2011 consent decree with the EPA and U.S. Department of Justice, the city has preliminary plans to spend an additional \$227 million over the next 20 years to increase the amount of wastewater treated and significantly reduce the overflows. The draft plan was submitted for EPA review and public input on July 31.

Change in operations

Since 1995, the Evansville water and wastewater utilities, including the collections systems, were managed by a private company. However, in 2010, the city decided — largely for economic reasons — to return operation of the systems to the local utility.

“Following a review process, the utility board and city administration concluded it could pro-

Evansville Water & Sewer Utility director Allen Mounts, left, and Westside Wastewater Treatment Plant superintendent Harry Lawson.



EXPANDING TREATMENT CAPACITY

Just as you can't pour 10 gallons of liquid into a 5-gallon container, Evansville faced capacity issues at its wastewater treatment plants: too much water for too little treatment capability.

Part of the effort to reduce overflows has involved expansion of the East and West Wastewater Treatment Plants. At the West plant, the improvements involved the addition of a 10 mgd biologically aerated filter (BAF) system. With other improvements, the capacity has been increased from just over 20 mgd to 40 mgd.

Similar improvements at the East facility have increased capacity from 18 to 26 mgd, and utilities director Mike Labitzke says there are plans to add another 2 mgd for a total treatment capacity of 68 mgd (East and West plants).

Harry Lawson, wastewater superintendent, says the improvements became possible once the EWSU regained operating control of the plants. “We've been very successful in expanding capacity,” he says. “Basically, a lot of repair work and cleaning needed to be done to get all the processes back online. And the addition of Sanford baffles in the secondary clarifiers has helped add capacity as well.”

Exclusive of the BAF system, Lawson says the utility invested about \$2.5 million in the other process improvements and netted a capacity gain that could have cost up to \$32 million if the plants had undergone major expansions.

vide better and more cost-effective service managing the systems in-house,” says Labitzke, noting they used organizational references from the cities of Fort Wayne and Indianapolis to create a management structure.

With the utility in charge, and with the consent decree and its accompanying Capacity, Management, Operation and Maintenance (CMOM) plan in place, Evansville has taken new, proactive efforts to clean, maintain and manage its sewer infrastructure:

- Over 100,000 feet of prelim-

inary smoke testing in key sanitary sewer areas

- Over 42 miles of sewer inspection
- CCTV work in certain areas as necessary
- Inspection of all 1,400 sanitary trunk line manholes for structural defects
- Purchase of additional combination jet vacuum trucks (Vactor)
- Use of two new CCTV trucks (CUES)

“We had three Vactors, 12 to 15 years old and one about 6 years

old,” says collections manager Travis Hildebrandt. “Our TV truck was in an old-style van and was 15 to 20 years old.

“We also purchased an easement machine. We track it back through easements to reach the manhole. It gives us access through right of way areas — gates, fences, pools, anything blocking the easement and accessibility to manholes,” he says.

“We’ve adopted an aggressive cleaning schedule. This year we plan to clean over 75 miles of sewer pipe (8 inches to 15 inches) and inspect another 75 miles, and inspect up to 2,000 manholes. We expect to repeat these quantities annually so we can complete the entire system in seven years.”

Labitzke adds, “We clean, then TV, making sure the pipe is clean enough to get the camera in. Two and a half years ago we couldn’t have done that. Those two things work hand-in-hand. Work of this nature and on this scale had not been done in decades.”

Starting in 2013, EWSU will also add flow monitoring, smoke testing and sump pump inspections to its list of CMOM activities, furthering its attempts to limit the amount of inflow and infiltration.

In addition to cleaning the system, the EWSU team is repairing and reconstructing lines as they go along — using lining and trenchless techniques (Insituform CIPP) where possible. “As we look at our sewers, we identify sections in need of repair,” says Hildebrandt.

randt. “Some of our lines are 100 years old. The combined area is all clay pipe or old brick construction.

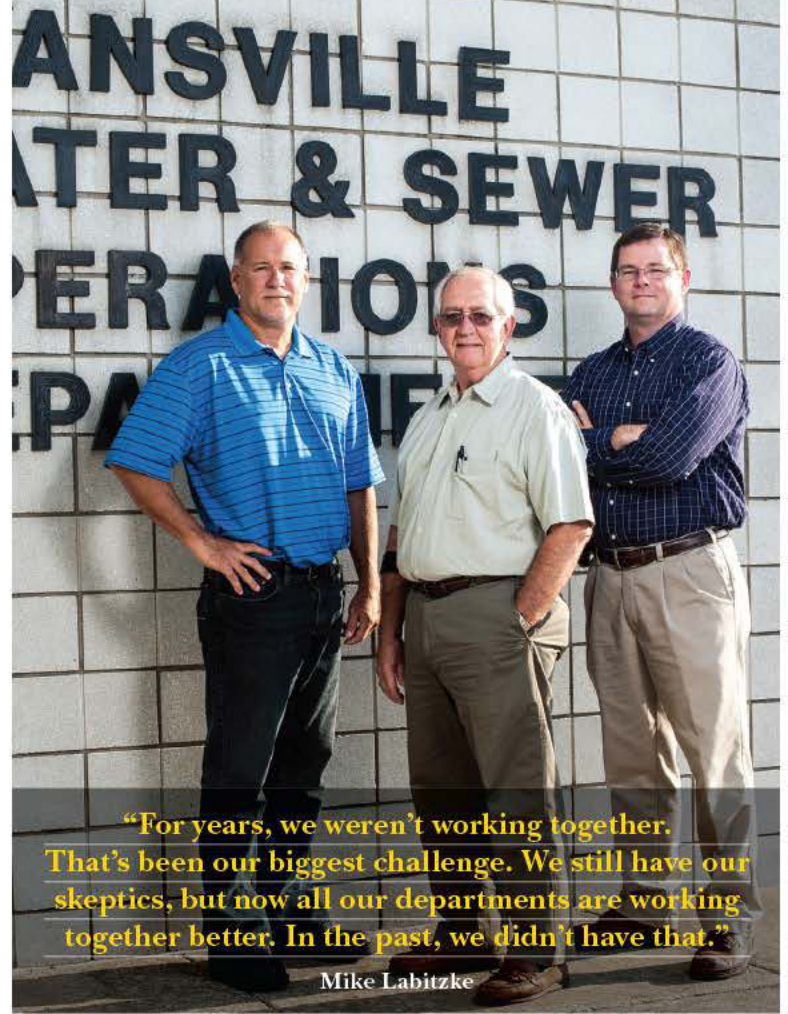
“Basically, we’re putting out fires. If we have extra time, we’re raising manholes. On a limited basis, we can be proactive (on repairs). One of the advantages of utility control is we added a second shift.” That has allowed the utility to reduce overtime labor expenses and increase responsiveness.

Another change involved modifications to the Seventh Avenue pump station along the river.

“Rated at 45 mgd, it’s the largest lift station outside of our treatment plants,” explains Labitzke. “We looked at rainfall on a monthly basis, along with the CSO amounts for those months, and plotted a CSO capture curve. Closing the CSO and maximizing the storage area available to us (in the interceptor) has allowed us to increase CSO capture by 50 percent.”

Wastewater superintendent Harry Lawson adds that additional capacity at the treatment plant also helped a lot.

EWSU is also improving its instrumentation and its ability to meter and monitor flow, working closely with the CH2M Hill and EmNet consulting firms. The utility completed the conversion of paper maps to GIS in 2011. Earlier this year, the utility updated an antiquated billing system and instituted a new work order system. “We now have a dashboard which helps us optimize and manage the system,” Labitzke says.



“For years, we weren’t working together. That’s been our biggest challenge. We still have our skeptics, but now all our departments are working together better. In the past, we didn’t have that.”

Mike Labitzke

The management team includes, from left, collection systems manager Travis Hildebrandt, deputy director of utilities – operations Edward Ziemer and deputy director utilities – engineering Mike Labitzke.



Operator Mike Maggard uses the Vector hydroexcavator to flush a secondary sewer line prior to TV inspections.

Last May, some members of the engineering department became certified to provide pipe and manhole inspections, assisted by specialty software (Granite XP) which scores and ranks the city’s infrastructure for asset management decision making. This crew has already collected data on 30 miles of pipe and hundreds of manholes.

“Wireless applications will give us more timely reporting of system defects,” says Labitzke. The new tools have “changed everything we do and how we do it.”

Results? The Evansville team reports less overflows and less lateral backups during this early period, but notes it’s been a dry summer in the area and throughout Indiana.

People factor

While getting the system back up to speed has presented significant challenges for the Evansville team, handling the culture change from private to public operations

has been daunting as well. Having and sharing common objectives has been a key.

“We have the same goal, clean and TV at the same time,” says Hildebrandt. “We’re working together to get there. Our philosophy is, ‘we don’t leave until it’s clean.’”

Labitzke points out that the utility had only four employees at the changeover, but they retained the existing hourly workforce and retrained the engineering workforce to inspect manholes and pipes and on TV camera work.

“For years, we weren’t working together,” Labitzke says. “That’s been our biggest challenge. We still have our skeptics, but now all our departments are working together better. In the past, we didn’t have that.”

It’s a change that the consent decree may actually have facilitated. “The consent decree certainly required the utility to think outside the box about how, when, and why work was completed. Our management team has stepped up

to the planning challenges while keeping our heads down on the day-to-day operations," says Labitzke.

"We have an amazing team of utility employees tackling problems 24 hours a day, seven days a week, 365 days a year maintaining a very old infrastructure ... the work will never end.

"All eyes are now on the system," he concludes. "Before, we simply weren't looking." ♦

The Evansville, Ind., team includes, front row, from left, Gary Lipps, Clint Woolsey, Danny Schroeder, Lisa Elder, Ardell Smith, Mike Maggard, Jeff Raymond, Darla Goodwin, Rich Walton, Daryl Schafer; second row, Bob Plymire, Bob Conner, Dave Senning, Derek Rohner, Marci Scheller, Tom Wigand, Travis Hildebrandt, Rick Seay, Gary Smith, Brad Pace, Randy Norman, Don Johnson, Brad Haskins, Rodney Steele, Mike Labitzke, Jamaal Charlton; third row, Jeremy Wilcox, Charlie Rogers, Joe Lassack, Kenny Doane, Ed Ziemer, Len Will, Reggie Sutton, Don Buchanan.

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PATH OF LEAST RESISTANCE

Electro Scan uses low-level electrical current to detect leaks in underground sewer pipes

By Erik Gunn

Closed-circuit television cameras and smoke and dye testing have been used to detect sewer leaks for years, but new technology is making its way into the field.

Electro Scan Inc., based in Sacramento, Calif., has introduced the Electro Scan ES-38 system, which uses low-level electrical current to pinpoint leaks. The Electro Scan system is controlled by and transmits data to smartphones and tablets, making use of various features on those devices.

The ES-38 system is designed and configured for use in 3- to 8-inch sewer laterals serving individual homes or businesses. It is the first in what the manufacturer expects to be a growing number of

products and configurations employing this technology.

Mark Grabowski of Electro Scan demonstrated the product's features and abilities during a sewer lateral inspection project in a residential neighborhood of Wauwatosa, Wis., a suburb of Milwaukee, on Aug. 14, 2012. Grabowski was working with the municipality and Elizabeth Gruell of the engineering firm Brown and Caldwell in Milwaukee.

Walk-around

The heart of the ES-38 system is a probe 1.5 inches in diameter and 6.5 inches long. The probe consists of three electrodes. The 1/2-centimeter-thick center electrode sends out electric current that emanates from the probe in a circular, highly focused band. The larger front and rear electrodes focus the electrical stream.

The probe is attached to a reel-mounted cable. The line to be inspected is flooded with water, and the probe sent through to the far end. As the probe is pulled back to the entry point, it measures the resistance to the electric current it sends out. High and generally constant resistance indicates that the pipe is intact. Sharp



The Electro Scan ES-38 probe, attached to its cable and ready for use. The reel of white hose behind it carries the inflatable sewer line plug used to block the line during the test. (Photography by Matt Gunn)

drops in resistance indicate the presence of a leak.

"Pipe walls have a high resistance; where they're leaking has low resistance," Grabowski explained. "The electricity that flows out with the leaking water into the ground completes an electric circuit. Those instances are graphed to create a profile of a pipe's leaks. Using water also allows for an effective simulation of a pipe's performance during a wet-weather event, such as a rainstorm."

Data from the probe is collected on a tablet or smartphone equipped with Electro Scan's system operating software. The probe transmits its readings to the device wirelessly via Bluetooth connection, eliminating the need for transmission cables or a slip-ring on the reel.

Data is transmitted to Electro Scan's Internet-based cloud through a WiFi or 3G or 4G cellphone data connection. There, software auto-

TECHNOLOGY TEST DRIVE

EQUIPMENT: ES-38 electrical leak detection probe, accessories and software

MANUFACTURER: Electro Scan Inc. 800/975-6149 www.electroscan.com

LOCATION OF DEMO: Wauwatosa, Wis.

DEMONSTRATED BY: Mark Grabowski, Electro Scan; Elizabeth Gruell, Brown and Caldwell

LIST PRICE AS DEMONSTRATED: \$22,300

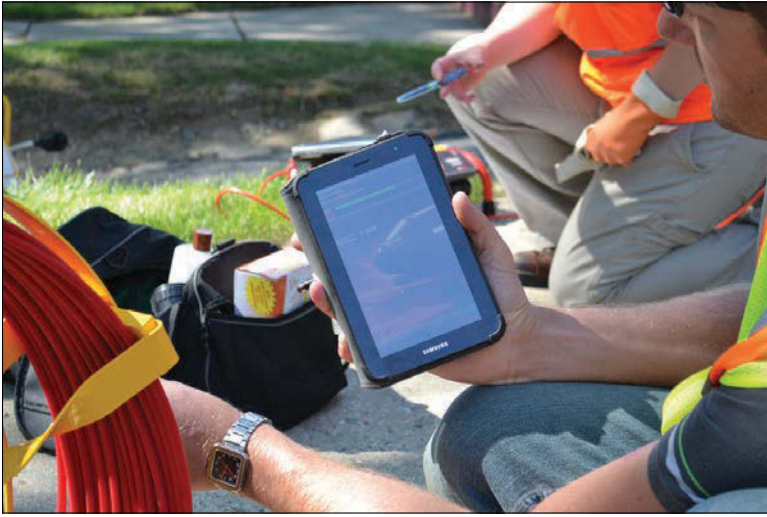
matically runs the raw data through a series of calculations to generate objective, quantitative data about leak locations and magnitude that is comprehensible to the user.

Grabowski says the system offers highly precise information, both for the location and magnitude of a leak, including calculations of estimated infiltration rates in gallons per minute (gpm).



A close-up of the cable reel for the ES-38 shows the control/battery pack module.

Mark Grabowski of Electro Scan shows how the probe, once inserted into the lateral through the cleanout, is calibrated before a scan.



Elizabeth Gruell of Brown and Caldwell inserts the probe into the lateral via the cleanout, pushing it to the end of the section of pipe to be scanned.

Users view reports of their inspections with the device by logging on to CriticalSewers.com, where customer firms or municipalities each have unique portals giving them access to their data.

The ES-38 system includes 200 feet of cable mounted on a reel that also contains a battery case equipped with a control switch. The case holds the eight AA batteries that power the probe, which plugs into the cable.

The system is used with inflatable rubber pipe plugs that block the pipe so it can be flooded with water.

Operation

The City of Wauwatosa is in the process of inspecting sewer laterals for leaks that enable the inflow and infiltration of stormwater. Television inspections of the laterals had already been completed.

Grabowski explained that, some years ago, the city lowered the sewer main in the street and made new connections between the existing clay sewer laterals and the new main. The new connecting pipes are PVC and run at a sharp downward angle between the old laterals and the new main. It is assumed that the new

“Pipe walls have a high resistance; where they’re leaking has low resistance. The electricity that flows out with the leaking water into the ground completes an electric circuit. Those instances are graphed to create a profile of a pipe’s leaks. Using water also allows for an effective simulation of a pipe’s performance during a wet-weather event, such as a rainstorm.”

Mark Grabowski

connecting lines are unlikely to have developed leaks, so inspections have focused on the older clay laterals.

Although the laterals date to the 1940s and prior, each one has recently had a new clean-out installed as part of another city project. The clean-outs are generally in the front yard of each residence.

The ES-38 leak inspection process began with the insertion of inflatable rubber pipe plugs into the laterals: the first, just upstream from the clean-out toward the house, and the second downstream to the point where the downward-connecting pipe began.

After the upstream plug was secured, the downstream plug was inserted at the end of a 100-foot rigid hose. Once it reached what appeared to be — based on distance and the feel in the pipe — the downward junction, Gruell and Grabowski used a small push camera to view the plug and confirm its location at the downward bend. The plug was deflated slightly so it could be easily pulled back about two feet from the bend, and was then fully inflated to block the flow.

Grabowski calibrated the probe, touching an electrical lead from the probe’s cable reel to the electrodes on the probe in a designated sequence. He used the Electro Scan software on his smartphone to complete the calibration.

He then took a metal screwdriver that was attached with a wire lead to the cable reel and stuck the blade into the ground up to the handle. He also poured a small amount of a saturated salt solution around it to ensure maximum conductivity. Grounding the circuit ensures that when the probe sends electricity out to the pipe — or

through leaks in the pipe — it will have a complete circuit to enable measurement of the changes in the electrical resistance.

Grabowski explained that the system runs with 10 volts AC and at 40 milliamps — a very low level of electric current. “If you have your hand in the water as it goes by, you’ll feel a slight tingle, but nothing more,” he said.



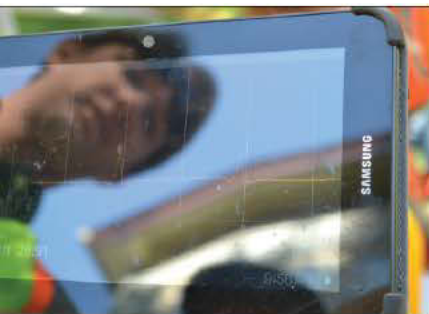
This push camera image shows the probe up at the inflatable plug. This is where the scan will start. The camera will be removed, water put in the pipe, and then the probe will be withdrawn through the water as it completes its scan.

At this point, the probe was ready for use. Grabowski entered the details of the inspection — the address, the lateral pipe material, the municipality and other information — into a header form using the Electro Scan app on his smartphone. At the entrance to the clean-out, he zeroed the distance on the app’s inspection records.

Then, Gruell sent the probe into the lateral all the way to the downstream inflatable pipe block. Viewing the image from the push camera on a laptop computer, she could easily confirm that the probe had indeed reached the pipe block before removing the camera.

Grabowski noted that the camera itself is not an essential part of the

As the probe is withdrawn, Mark Grabowski (reflected in tablet computer screen) watches the raw signal of the electrical current as it is displayed on the tablet screen.



process, but was simply employed by Brown and Caldwell as part of the engineering firm's study of the system, and because of the unusual configuration of the lateral/sewer main connections.

"Typically we don't use the camera," he said. "We just push it in until we feel it stop, then verify that the distance read [on the control app] matches up with the other data we have."

With the camera free and the probe still at the far end, water was pumped from a combination truck into the lateral.

Once the lateral was full up to the clean-out, the hose was shut off. Brown and Caldwell also wanted to measure the rate of exfiltration from the laterals, so Gruell stood a measuring stick up in the clean-out to measure how fast water was leaking from the lateral. Because water was descending fairly rapidly, more water was pumped in to fill the lateral again, and the hose was allowed to run continuously to make sure that the lateral stayed filled.

When Gruell was ready to reel the probe back from the far end of its transit, Grabowski used the tablet controls to start recording the findings. The probe data is recorded on pull-back rather than on push-in because it's likely to be more accurate and easier to pace steadily.

"Our ideal rate is around 30 feet per minute," says Grabowski.

Gruell then reeled the probe back from the opposite end at a steady pace. As she did so, Grabowski fol-

lowed the progress by looking at the image on the tablet computer depicting long stretches of high resistance (intact pipe) and brief, high spikes depicting low resistance (leaks, or at least seams, in the pipe). The entire inspection run on the lateral — less than 200 feet — took less than 10 minutes.

Grabowski explained that the data on the tablet was still raw and, while it made for a dramatic image, still required uploading and detailed interpretation with the Electro Scan software.

Observer's comments

The Electro Scan device appears notable for its small size and professed ability to be precise.

The fact that data and images it records cannot be interpreted directly on site offers both advantages and disadvantages. The user cannot immediately interpret the data on the tablet screen; instead, it is processed immediately in the Electro Scan cloud.

As Grabowski pointed out, however, within a minute of the scan being uploaded in the field, an engineer back at the office can see and begin analyzing it.

Additionally, the operator can focus completely on the process of collecting data without being responsible for interpreting it on the fly; instead, while the operator collects the data, the engineer can analyze it as the situation dictates.

Brown and Caldwell took scans of more than 100 Wauwatosa laterals using the equipment and planned to compare the information collected from the ES-38 system with CCTV inspection records and other sources of information on leaks in the area inspected. That research was still under way at press time, but if the ES-38 proves to be reliable for finding major sources of lateral infiltration, "I think we would consider using it again," said Andy Lukas, a Brown and Caldwell vice president and the engineering firm's wet weather solutions leader.

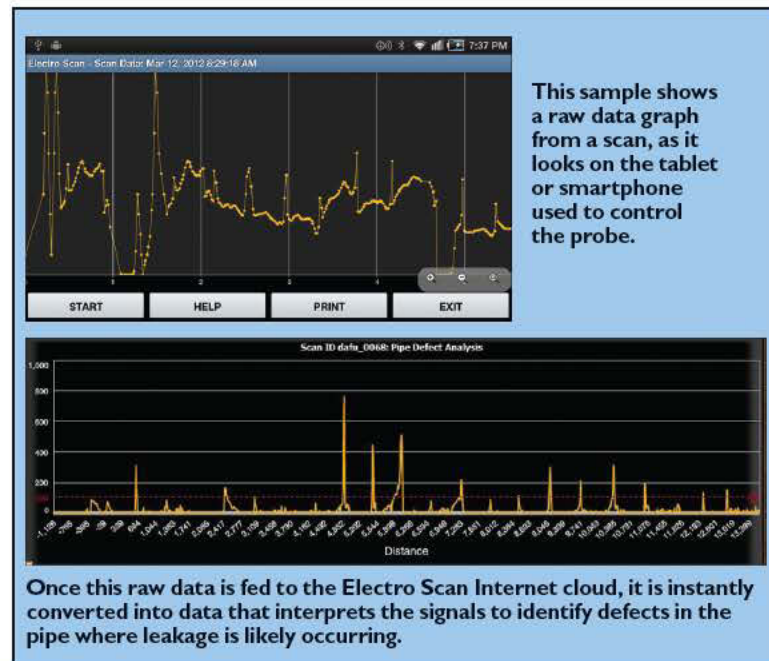
The city's recent installation of clean-outs on the laterals out-

side homes — which was done to make a cured-in-place lateral lining project easier — made the use of the ES-38 much easier. Testing from basement clean-outs "would have brought a number of challenges, such as how to fill the laterals with water for the Electro Scan without overflowing it and flooding the part of the basement," Lukas said.

Among the things the firm hopes to learn as it studies the system is

own cable, he noted, and thus could be easily integrated with a municipality's or business's CCTV truck. The unit was unveiled at WEFTEC at the end of September. The ES-620 uses a sliding funnel plug attached to a jetter hose that provides a constant — but moving — column of water in the pipe, rather than flooding the entire mainline pipe, Grabowski said.

While using conventional AA



whether it's best used just to find leaky laterals, or whether it can guide decisions regarding how much of a lateral to replace or repair.

Lukas said Electro Scan was responsive to its needs when difficulties arose uploading data to the cloud and making it available for viewing. "It seemed like Electro Scan was working hard to address the issues we brought to them in a timely manner."

Manufacturer's comments

The ES-38 is the first in Electro Scan's product line to reach the market. A similar system for mainline sewers 6 to 21 inches in diameter uses a probe 32 inches long and 3 inches in diameter, Grabowski said.

That device, the ES-620, is designed to use CCTV lines to power it instead of coming with its

batteries might seem unusual as more and more devices are using rechargeables, Grabowski noted that the simpler batteries are going to be much easier to replace in the field, and that rechargeable battery systems sometimes pose problems if users aren't recharging properly.

A fresh set of 8 AA batteries can usually power up to 40 scans with the device — enough to last two or three days. The device also signals when battery power is getting low, speeding up the normal every-two-minute beeping that the system makes when it is powered on.

Grabowski also noted that, with smartphones and tablets equipped with GPS positioning software, GPS data can be recorded for each inspection to keep a precise record of its location. ♦

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PRODUCT:
Multiplexx PVCP-F

MANUFACTURER:
Terre Hill Composites
717/738-9164
www.thcomposites.com

APPLICATION:
Cured-in-place manhole
lining system

BENEFITS:
Prevents inflow and infiltration,
stops corrosion, maintenance-free,
expected 50-year minimum life

USER:
Lower Frederick Township,
Zieglerville, Pa.

Bill Kissinger from Terre Hill Composites uses a reciprocating saw with a 6-inch blade to reinstate the flow channel. (Photos courtesy of Terre Hill Composites)

STEMMING THE FLOW

Cured-in-place lining system helps a Pennsylvania township cut manhole I&I and save big on treatment costs

By *Scottie Dayton*

Mortar missing between manhole risers in Zieglerville, Pa., created large gaps through which Perkiomen Creek poured when flooded. Flows frequently exceeded the 200,000 gpd discharge limit at the sewage treatment plant.

“Surprisingly, we didn’t have overflows or manholes backing up,” says Public Works director Tom Manning. “By speeding up the treatment process, all the water went through the plant, but it was touch and go.”

Lower Frederick Township, the municipality governing the village, had limited success in reducing inflow and infiltration (I&I). Without substantial improvement, the 4,800 residents faced constructing a larger treatment plant, a solution they couldn’t afford.

While attending a state wastewater conference, Manning found the Multiplexx PVCP cured-in-place manhole lining system from Terre Hill Composites. Between 2006 and 2011, the township spent \$228,000 to install 40 liners, patch

14 leaks, and replace risers, frames and covers on 40 more manholes.

The efforts reduced average flows by 30,000 gpd and three-month peak average flows by 50,000 gpd. Based on an estimated treatment cost of 0.6 cents per gallon, the reductions represent an annual savings of \$70,000.

Initial efforts

The township has 25 miles of 8- to 12-inch PVC sanitary sewers, installed in 1978, and 350 48-inch brick cone and precast manholes

“Liners cost \$3,470 each, but last 10 years or more.

Besides the annual savings in treatment costs, they saved us \$8 million by delaying the necessity for a new treatment plant.”

Carol Schuehler, P.E.

3 to 15 feet deep. The sewage plant, which was upgraded in 2003, treats an average of 150,000 gpd using Purestream AER-O-FLO extended aeration tanks and a Schreiber clarifier.

The upgrade also required a new lift station at the plant. During a high water episode, Manning opened the wet well and noticed huge maple leaves floating on the surface. "That got us looking at five manholes along the creek where we found the grout missing between the covers and structures," he says.

In December 2006, a contractor rehabilitated the manholes with PAMTIGHT watertight ductile iron covers and polyethylene seating rings. Workers also grouted frames to risers. "For five years, the area didn't flood and we never knew if the covers worked," says Manning. "In 2011, two back-to-back tropical storms proved that they did."

In most manholes, however, infiltration was the problem. High groundwater pressure caused 5/8-inch-diameter streams of water to jet across some structures, bringing in 10,000 gpd. "From 2000 to 2005, a contractor grouted all the manholes and repaired bad saddle connections on the PVC pipes," says Manning. "We learned that grouting just moved the leaks somewhere else."

Long-term solution

Manning took the manhole lin-

ing system literature from the conference to Carol Schuehler, P.E., the township engineer with Urwiler and Walter. "A big selling point for us was the 10-year non-prorated warranty on the liners against failure, including leaks and corrosion," she says. "Standard contracted leak repairs have a one-year maintenance bond."

In 2007, the township issued one contract for standard repairs and another for 10 liners installed by Terre Hill Composites. "The following year, the grouted manholes were leaking again, so we switched completely to the PVC-P liners," says Manning.

According to Terre Hill president William Oberti, PVC-P stands for PolyVinyl Chloride with Polyester fleece and Fused seams (the plastic is welded into a monolithic structure). The composite liners have 25 mils of PVC on the exposed side fused with fleece on the back side, and layers of woven roving fiberglass mat between the PVC-P and structure substrate. The liners for Lower Frederick averaged 139 mils thick.

Workers from Terre Hill Composites measured the manholes from the top casting to the flow-channel invert before fabricating the custom liners. They arrived onsite in the installation truck housing a 1,000-gallon water tank, air compressor, 5,000 psi/4 gpm pressure washer, 17 kW generator, 15



Terry Smith from Terre Hill Composites operates the crane as Bill Kissinger helps guide the liner into the manhole.

hp electric blower, and a 400,000 Btu, 2.7 gpm oil-fired water heater producing 320-degree water.

Under pressure

Workers cleaned the manholes, cut away protrusions and steps, patched as needed, and plugged above bench inlets. They sealed infiltration points using non-shrink cementitious grouts, hydraulic cements, and, for heavy leaks, pump Aqua Seal, a dual-component hydrophobic polyurethane chemical grout.

"The walls don't have to be dry before we line," says Oberti. "Under pressure, the 100-percent solids, VOC-free hydrophobic epoxies we use will force residual moisture out of the way."

After laying plastic on the ground, the crew impregnated a liner with the epoxy blend, attached it to an installation manifold, and used a crane on the back of the truck to lift and lower it into the manhole. Although the liner could hold air and pressure on its own, workers inserted an inflation bladder as a fail-safe measure through the manifold, which resembles an inverted tuna can. Ratchet straps sealed the liner around the can, which has ports for air and heat, an outlet pipe, and gauges in the lid.

"Inflating and pressurizing the



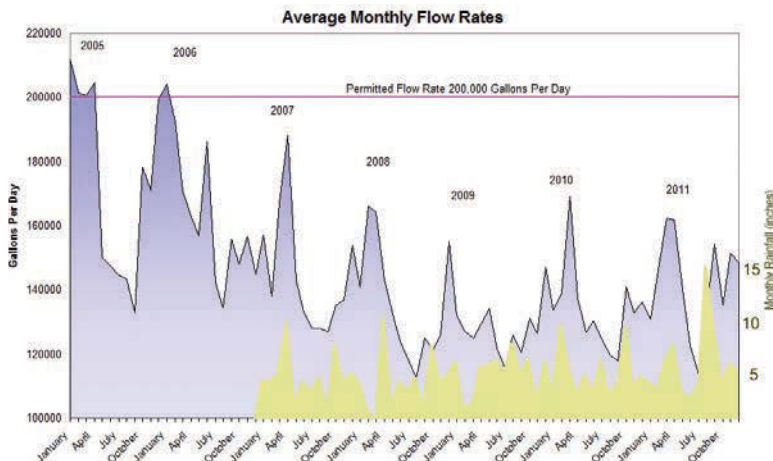
Corrosion and missing mortar in Lower Frederick Township manholes allowed 40,000 gpd or more of inflow and infiltration to reach the 200,000 gpd (design) sewage treatment plant.

liner forces the epoxy into the substrate, creating mechanical anchors in the substrate so the liner becomes one with the host as the epoxy cures," says Oberti. Introducing vaporous water into the bladder at 200 degrees F and holding the pressure at 3 psi cured the epoxies in about 60 minutes. A valve controlled pressure and heat by limiting the vapor escaping through the outlet pipe.

Professional touches

Once the liner cured, workers removed the lid and lowered a submersible pump to remove 300 to 400 gallons of condensate. They reinstated the inlets and outlets

(continued on page 43)



The Multiplexx PVC-P cured-in-place manhole lining system from Terre Hill Composites cut Lower Frederick Township's infiltration volume by 40,000 gpd, delaying the need for a new \$8 million treatment plant.



The Pumper & Cleaner Environmental Expo hosts Breakfast Roundtable discussions where attendees share their thoughts on a variety of important issues.

The Pumper & Cleaner Expo Breakfast Roundtable discussions will be held from 8 to 10 a.m. on Thursday, Feb. 28.

For updates and more details visit www.pumpershow.com

SHARING FOR SUCCESS

Expo Roundtable discussions help contractors network their way to better use of emerging technologies, improved customer service and marketing ideas that produce results

By *Jim Kneiszel*

You make the annual pilgrimage to the Pumper & Cleaner Environmental Expo for a variety of reasons ... surely to see the latest equipment the industry has to offer and to learn the latest technologies through Education Day seminars.

Effective networking with your industry colleagues is another key to making the most of your visit to the 2013 Pumper & Cleaner Expo in Indianapolis. Taking part in the Breakfast Roundtable discussions — set for 8 to 10 a.m. on Thursday, Feb. 28 — is the best way to accomplish that goal.

Just ask Mike Stephens, of SCS Stephens LLC in Haslett, Mich., who participated in a Roundtable discussion about maintenance contracts for wastewater treatment systems at the 2012 Expo. He'll tell you he came away with practi-

cal advice from fellow service providers who work across the country.

"I was able to exchange maintenance agreements with other contractors from the Roundtable discussion. We showed each other what we use for contracts and that was really beneficial," Stephens says. "If somebody else is doing something that's working, why do we have to reinvent the wheel? If someone's already drafted a really good service contract and good marketing — or a clever idea in another state — why not use it?"

Stephens and other contractors at his table explored some of the ideas they've used to promote maintenance contracts among their customers. Then they exchanged business cards and delved deeper into the topic in the weeks following the Expo. Eventually they were faxing their agreements to each

other for critique, looking for ways to improve the documents.

The result is improved service for customers through regular system checks, and an improved environment for everyone, Stephens says. He would like to stay on the topic of maintenance at the upcoming Expo.

"All of them have something to share with the group. All perspectives are helpful to come up with a good answer. I think sometimes the guys who don't think they have something to offer, we don't give them the credit they deserve."

Dave Gustafson

"Different people have different perspectives," he says. "I enjoyed being able to talk to companies that were maintaining twice as many systems as I do and those doing a smaller number. It was a really good experience."

Maintenance contracts were one of many timely business topics explored at the 2012 Roundtable discussions. And many more are in the works for 2013. After grabbing a buffet breakfast, participants will choose a topic and start networking. You are invited to move from table to table to discuss a host of topics ranging from providing services to social media marketing.

Hot topics

Dave Gustafson, a University of Minnesota Extension Service engineer and regular speaker at Pumper & Cleaner Expo seminars, led a 2012 Roundtable that veered into a fascinating hot topic: hydrogen sulfide deterioration in concrete tanks.

The discussion wasn't what Gustafson expected, but it brought to light valuable information about

an issue that helped inform his table participants from California, Ohio, New Jersey, New York and Virginia.

"Part of the value of the Roundtable discussions is trying to deal with topics that contractors are

working on right now. What are the issues we're wrestling with today?" he says. "I was able to talk to contractors about what they were seeing and interpret it from the research standpoint."

Pinpointing important trends in service and maintenance helps participating contractors keep pace with an evolving industry, Gustafson says. As technologies to treat and transport wastewater change and improve, a well-informed contractor will provide better customer service and become a more effective steward of the environment, he says.

And Gustafson says the networking efforts he begins at the Expo Roundtables continue throughout the year, adding tremendous value to his work and, he hopes, to the advancement of the contractors he's befriended.

Gustafson and other industry

educators take part in the Roundtables as moderators, keeping the discussions on topic and adding their expertise wherever possible. As a moderator, Gustafson has a message for all Expo attendees considering taking part in the Roundtables in 2013: The more the merrier.

"Sometimes guys are worried they're not going to have anything to say. But everyone has a perspective. They've all been involved in the industry, so all of them have something to share with the group," Gustafson says. "All perspectives are helpful to come up with a good answer. I think sometimes the guys who don't think they have something to offer, we don't give them the credit they deserve. If you don't come, your reference is missed. We don't have your insights, experiences and understanding." ♦

BETTER MOUSETRAPS

(continued from page 41)

with a 6-inch blade on a reciprocating saw. "Laying the blade flat gives us a tapered cut," says Oberti. "Although it's a sealed interface, we still dress the edges with a silica mastic we manufacture. It's heavy in glass to ensure the edges are as robust against hydrogen sulfide as the PVC interior."

Installations took four to five hours, and Terre Hill inserted two liners per day. Afterward, Manning noticed infiltration drop by 40,000 gpd.

The township originally requested the non-invert lining system in which the channel remained open and flow continued under the liner. Workers plugged the main inlet line and bypassed the flow as needed. "We found leaks in the channels when we inspected them the following spring," says Manning. "From then on, we went with invert lining."

According to Oberti, the invert

lining system has enough material for workers to shape the liner around the channel and down to the invert, then up and across the bench to the walls. Manning found no more leaks.

The results the township has seen since the installations have justified the expense. In 2010, plant flows exceeded the permit level on 12 days; a 62.5 percent reduction from 32 days in 2006. In 2011, rainfall was more than 50 percent higher than normal and included Hurricane Irene and Tropical Storm Lee, yet only 14 days were over the limit.

"Standard leak repairs cost \$925 per manhole and must be repeated every two or three years," says Schuehler. "Liners cost \$3,470 each, but last 10 years or more. Besides the annual savings in treatment costs, they saved us \$8 million by delaying the necessity for a new treatment plant." ♦

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CLEANING AND MAINTENANCE STRATEGIES

By Briana Jones

Skid-mount jettters

RCJ series skid-mount jettters from **Cam Spray** are available in flows and pressures of 12 gpm at 2,700 psi, 8 gpm at 3,500 psi and 7 gpm at 4,000 psi. Jettters include a three-plunger industrial pump with pulse feature powered by a 688 cc Honda engine. Units include 200 feet of jetter hose that can also be used to supply an optional portable reel cart available with 200 or 300 feet of jet hose. They include a 35-gallon buffer water tank with float control, powder-coated heavy-tube frame, washdown gun and four-nozzle set. Jettters easily mount in the side door of a cargo van or on a truck bed. **800/648-5011; www.camspray.com.**



Dual cable drain cleaner

The **Model C** dual cable sectional drain cleaner from **Electric Eel Mfg.** runs up to 200 feet of 1 1/4-inch self-feeding dual cable in 8- or 10-foot sections that require no handling when rotating. The unit spins cable fast to clean 3- to 10-inch-diameter lines for distances up to 200 feet. A heavy-duty 1/2 hp Baldor motor comes standard, and 3/4 hp and 1 hp motors are available. A custom-designed and manufactured gearbox ensures high quality, low cost and parts availability.

The heavy-duty, fully adjustable safety clutch keeps cable and tool breakage to a minimum and provides overload protection. A fold-down handle allows for easy transportation, storage and use in crawl spaces. A unique carry handle provides balance and easy transport. The unit cleans tough blockages such as tree roots and is designed for long runs in main sewer lines. **800/833-1212; www.electriceel.com.**



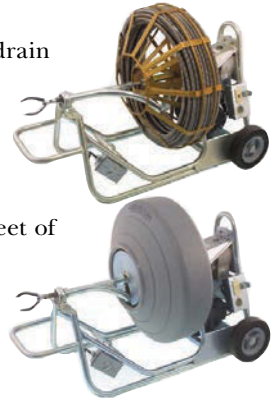
Rotating nozzle

The golden jet **Bulldog** rotating nozzle from **Enz USA** is designed for operation with recycled and fresh water. An integrated oil-free braking system results in low wear and tear, and in controlled numbers of rotation. The nozzle cleans root intrusions, grease, solids and heavy debris. It is available in 1/2- to 1 1/4-inch connecting threads. The cleaning pipe diameter ranges from 2.5 to 24 inches. **877/369-8721; www.enzusa.com.**



Heavy-duty drain cleaner

The **Model GO 68HD** heavy-duty electric drain cleaning machine from **Gorlitz Sewer & Drain** cleans pipes from 3 to 8 inches in diameter. It is available in two versions with an open steel reel or enclosed polyethylene drum and can be outfitted with an optional Power Feeder. Units come standard with 150 feet of 11/16-inch hollow core cable, which can reach most blockages with a single reel. The unit weighs 185 pounds. Adding a loading ramp and electric winch to any vehicle makes transporting the unit quick and simple. **562/944-3060; www.gorlitz.com.**



Monitoring control system

The **MC Advanced Series** combination vacuum and jetting machine from **GapVax** has a system control that includes a monitoring system allowing the operator to observe and troubleshoot the entire system. The display screen (one inside/one outside) will control hydraulics, blower and water pump operations with a complete complement of gauges. All body, boom and hose reel functions, vacuum break, throttle, area and safety lighting are wirelessly controlled, while still maintaining proportional boom and hose reel control. The job card feature allows users to keep track of blower and water pump hours and logs the time of each job, among other things.

Features include 3/16-inch ASTM A572 Grade 50 Exten steel, 5- to 12-cubic-yard (stainless steel also available) debris body, and stainless steel water tank with 2,000-gallon capacity. Vacuum pump options range from 3,000 to 5,000 cfm with up to 27 inches Hg. The heavy-duty, double-acting, single-lift cylinder provides a stable 50-degree dump angle. The 8-foot, front-mounted telescopic boom includes dual-lift cylinders, reaching 26 feet with a 270-degree rotation. **888/442-7829; www.gapvax.com.**



Sled-style machine

The **M81 Big Workhorse** from **MyTana Mfg. Company** is a mainline, sled-style machine with the option of easily adding additional reels of cable when runs of more than 125 feet are encountered. The unit is equipped with a capacitor smart



motor that is quieter than universal motors commonly found on shop vacs or hand drills. The quiet operation allows users to listen to the cable as it works its way down the pipe, and helps the operator react quickly when cable torque starts to build.

The machine is suitable for 3- to 10-inch sewer mainlines. It is available with 11/16- or 3/4-inch sewer cable up to 125 feet long. The gearbox drive mechanism can drive up to 400 feet of cable. Reels can be added or changed in seconds. The optional Automatic Feed Retriever saves wear and tear on the operator's body. It comes complete with a full set of 2- to 6-inch blades and a set of replacement blades. The open spoke reel with cover is standard, and a molded hard plastic reel is available. **800/328-8170; www.mytana.com.**

Turbojet nozzle

The **RR3000 Root Ranger** nozzle from **RIDGID** offers a single rear-facing turbojet. It blasts a concentrated stream of water that shears root obstructions from the drain wall. The nozzle can clear lines up to 8 inches, and can clear lines larger than the one it originally entered. For example, if the easiest access point for a 6-inch line is dropping into a 2 1/2-inch clean-out upstream, a traditional drain cleaner is limited by the cutter size that will fit. A jetter can clear up to its rated capacity regardless of how it got into the line. RIDGID's KJ-3100 jetter comes standard with 200 feet of hose, so users can reach blockages regardless of where they started. **800/769-7743; www.ridgid.com.**



Trailer jet

The high-flow **Ultimate Warrior** trailer jet from **Spartan Tool** features 3,000 psi coupled with 35 gpm of water flow to clean pipes up to 24 inches in diameter. The unit features a 600-gallon water tank, is fully compliant with all NATM standards, and meets or exceeds trailer standards in the U.S. and Canada. The full-body enclosure enhances company image while providing a quiet jetter and keeping all key components warm, dry and out of the elements. The unit includes an 84 hp turbo-charged Kubota engine and a Giant brand pump. **800/435-3866; www.spartantool.com.**



Combo sewer cleaners

AllJetVac P Series combination sewer cleaners from **Vacall** use a positive displacement blower system to create high-quality jetting and vacuum forces to efficiently open and maintain critical sewer lines. The blower system is powered by the chassis engine, reducing fuel consumption, cutting service time and eliminating extra harmful emissions while holding down overall costs. Units feature the AllSmartFlow CANbus control system that allows the operator to precisely control water flow



using only the proper quantity, reducing unnecessary refill trips.

Sustainability advantages include standard aluminum water tanks and optional galvanized debris tanks. Debris tanks have 6-, 8-, 10- and 12-cubic-yard capacities, while 1,000-, 1,200- and 1,500-gallon water tanks are available. P Series models have a front-mounted, pivoting hose reel and an 8-foot, 6-inch extending boom with 180-degree rotation. R Series models also are available with rear-mounted hose and reel. **330/339-2211; www.vacallindustries.**

Combo machines

Vac-Con combination machines are available in configurations from 3.5- to 16-cubic-yard capacities with hydrostatically driven two- and three-stage centrifugal compressors or several



optional positive displacement blowers with up to 27 inches Hg. High-pressure, smooth-flow water systems are available up to 120 gpm and 3,000 psi with cross-linked polyethylene water storage tanks with capacities up to 1,500 gallons to handle cleaning small- or large-diameter pipe. The machines can be equipped with a 180-degree articulating front-mounted hose reel in capacities up to 100 feet, and high-pressure hose diameters from 5/8 to 1 1/4 inches.

Front-mounted telescopic booms are available with up to 10 feet of extension and 8- and 10-inch tube diameter. The machines can double as vacuum excavators with the optional hydroexcavation package. This allows the operator to reduce the volume of water, maintain the pressure for digging, and direct the flow through a conventional excavation hand wand. The units are available with a variety of specialized pipe cleaning and excavation tools. **904/284-4200; www.vac-con.com.** ♦

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CASE STUDIES CLEANING AND MAINTENANCE STRATEGIES

By *Scottie Dayton*

Single-engine Camels increase fuel efficiency

Problem

The dual-engine combination sewer cleaners that Tampa-based VacVision Environmental used to service the Florida Department of Transportation were no longer reliable. "We spent hundreds of thousands of dollars each year for repairs," says managing partner Wes Kingery. "Because the machines used proprietary parts, we also faced extensive delays when trying to complete them." Besides repair costs, fuel prices and lost revenue from almost daily breakdowns were cutting into the company's profit margin.

Solution

VacVision replaced the old machines with **single-engine Camel sewer cleaners from Super Products**. The design reduces noise levels and maintenance.



RESULT

VacVision reduced fuel costs by more than a third. "The Camels are enhancing our reputation because customers know we will clean their sewers efficiently and promptly," says Kingery. 800/837-9711; www.superproductsllc.com. ♦

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Phil Webster

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MANAGER, WATER POLLUTION CONTROL DEPARTMENT
Alliance Water Resources, Sedalia, Mo.

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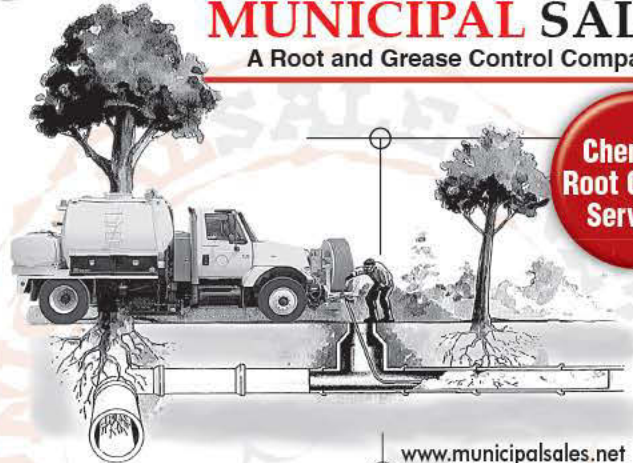
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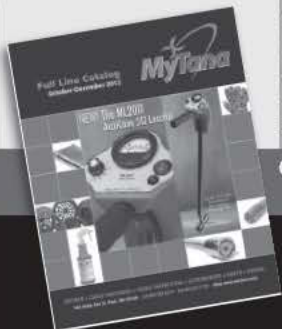


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CABLE MACHINES JETTORS PUSH CAMERAS FOR MAIN LINES & DRAIN LINES LOCATORS RELATED PARTS ACCESSORIES

Pipeline Renewal hires field operations manager

Pipeline Renewal Technologies named Sean Lipscomb field operations manager. He will be responsible for ensuring the success of PRT's Janssen Process licensees through service, training and support.



Sean Lipscomb

Aries names Southeastern Equipment Ohio distributor

Aries Industries named Southeastern Equipment Co. a distributor for its pipeline inspection and rehabilitation equipment in Ohio. The line includes pipeline and sewer cameras, deep well and bore hole cameras, lateral reinstatement cutters and sealing/grout systems, as well as surveying equipment.

Orenco launches multilingual Web portal

Orenco Systems added a multilingual Web portal, translated into Portuguese and Spanish and soon to include French, to its website, www.orenco.com. The Web portal includes links to translations of key product brochures.

Federal Signal opens rental store, adds online classes

Federal Signal Corp.'s Environmental Solutions Group opened a rental center at 9932 Express Drive, Highland, Ind., and added "Maxi-

mize Power of Water Jetter through Tip and Hose Selection," "Estimating the Vacuum Job" and "Fundamentals of Hydroexcavating Safety and Skills" to its online course offerings.

NLB opens Indiana branch

NLB Corp. opened a regional branch in Crown Point, Ind., to serve customers in the Chicago area and Upper Midwest with waterjet pump units, accessories, training and service. The branch is located at 1075 Breuckman Drive and is managed by Craig Houghtaling.

MSC Waterworks changes name to Fortiline

MSC Waterworks, distributor of underground utility products, changed its name to Fortiline, derived from the Latin word "fortis," meaning strong and steadfast. The company's website has changed to www.fortiline.com. All contacts, addresses and phone numbers remain the same.

Alfa Laval acquires Gamajet

Alfa Laval acquired Gamajet Cleaning Systems, forming a new company, Alfa Laval Tank Equipment Inc. It will operate as Gamajet Cleaning Systems and remain in Exton, Pa. Robert Delaney, president of Gamajet, was named president of the new company. Alfa Laval's existing line of tank cleaning equipment, Toftejorg, was absorbed by the new company for North America. Sales, support and service of Toftejorg equipment will be handled at Gamajet's Exton office.

Neenah Enterprises names vice presidents

Neenah Enterprises named Heidi Mitchell vice president of human resources and Karl Jerde vice president of information technology. Mitchell will focus on creating programs that develop leaders internally, while Jerde will focus on creating and implementing IT processes and infrastructure, applications development and IT strategy.

FCI analyzer receives Canadian approvals

The Model FS10A analyzer flow switch/monitor from Fluid Components International received FM and FMc Canadian approvals, making the device suitable for continuous flow verification applications that support process analyzer sampling systems operating in hazardous plant areas in the United States, Canada and elsewhere. The approvals include nonincendive Class I, Division 2 Groups A, B, C, D; Class II, Division 2 Groups E, F, G; and Class II T4@Ta=71 degrees C Type 4X.

Oldham launches expanded website

Oldham, an Industrial Scientific company, launched an expanded website, www.oldhamgas.com. The site offers information on products, applications, custom system design, support and sustainability.

UV Pure Technologies launches website

UV Pure Technologies launched a new website, www.uvpure.com. The site offers a company overview, product and technical information.

Mueller establishes technology center

Mueller Co. established a technology center in Chattanooga, Tenn. The Mueller Technology Center houses 30 engineers focusing on technologies to help utilities overcome current and future water infrastructure problems through improved conservation, safety and operational efficiency. ♦

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Product Spotlight

Sewer line assessment tool helps prioritize cleaning and inspection

By Ed Wodalski

The sewer line rapid assessment tool (SL-RAT) from InfoSense provides an acoustic assessment of pipeline blockage in gravity-fed collection systems in less than three minutes and for less cost than closed-circuit TV (CCTV). Based on the concept of yelling and listening between manholes, the transmitter and receiver weigh less than 30 pounds together and are powered by a rechargeable battery (a typical 2- to 3-hour charge lasts for several days or approximately 80-100 inspections). The system is also GIS-integratable and GPS-enabled.

"This is a device that's portable, so when you're out there doing the measurements, you're getting the results live in the field," says George Selembo, chief executive officer for InfoSense. "There's a map-grade GPS in the unit, which is nice for analyzing data later, but usually we expect the operators to have a map with them of where they're supposed to be, and they write down immediately what the score is they got, telling them where the blockages are in the pipe segment." The lower the score, the greater the blockage: 0 is blocked and 10 is completely open.

"Based on our relationship with utilities, they want to know what they need to do," he continues. "It's not as important to get specific information about the blockage; it's important to know which segments require further attention — either jetting, rodding or video inspection." A high score also tells utilities which pipe segments don't require immediate attention, saving valuable camera time for segments in greater need of repair or cleaning. Scores appear on the receiver in real time and can be downloaded at the office. InfoSense's customers are seeing that 40 to 60 percent of the pipes they would have cleaned in the past do not need it once they use the SL-RAT.

"Basically, it rapidly helps you figure out how to prioritize your cleaning and inspection," Selembo says. "It's very safe, very easy to use and there's no contact with flow."

Typically used for 6- to 12-inch-diameter pipe, the assessment tool can be used in pipe up to 30 inches in diameter. Readings are not appreciably affected by pipe material, manhole depth or the number of twists and turns a segment might take.

The tool does require an estimate of the pipe length — plus or minus 100 feet. "It isn't something you need to know dead accurately," Selembo says. "You can rerun the score later if you found the pipe length was incorrect. And the GPS feature will typically calculate the pipe length for you between the two components."

The test, which can be done for one-tenth the cost of a CCTV inspection, is not intended to replace cleaning or camera inspection, but provides a means to focus and maximize the use of cleaning and camera equipment. Selembo says it helps prioritize where to put a camera — a very expensive piece of equipment — down a pipe. "You'd rather save that camera for when you need it. You don't want to clean pipes that are already clean," he says.

To assess a pipe segment for blockage, an operator places the transmitter atop a manhole and a second operator places the receiver atop an adjacent manhole. The manhole cover only needs to be moved enough to allow the speaker and microphone down approximately a foot into the hole. With the tool in place, the user with the transmitter radios the user with the receiver notifying him that a test is beginning, then pushes a button on the transmitter. When the test is complete, a blockage assessment number will register on the receiver and the crew can move on to the next segment of pipe.

"To give you an example, I was working with Two Rivers Utilities in the Charlotte (N.C.) area and we inspected 12,000 feet of pipe in four hours and 50 minutes. The average test was about 80 seconds," says Alex Churchill, COO of InfoSense. "Putting the transmitter and the receiver in the manhole is about 70 percent of the effort. The inspection itself is actually quite trivial." 877/747-3245; www.infosenseinc.com.



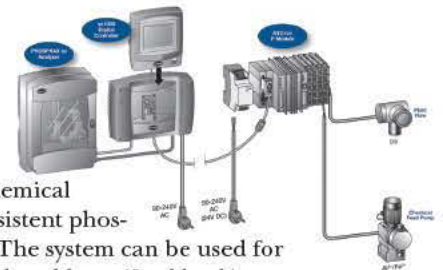
Orenco TCOM telemetry control panels

TCOM telemetry control panels from Orenco Systems are a simplified, affordable SCADA system for facility managers and operators who need to monitor/control equipment that requires no interface software. Features include access and control via phone line, cellular, RF or other remote devices, automatic call-out to pagers or email-capable devices during alarms, data logging with time and date stamp, industry standard Modbus device-to-device communication support, and networking for multiple panels. 800/348-9843; www.orenco.com.



Hach phosphorus control module

The RTC 101 phosphorus control system from Hach Co. provides real-time control of chemical dosing that helps maintain consistent phosphorus levels in effluent water. The system can be used for both open (feed forward) and closed loop (feed back) control of the chemical dose. The chemical feed pump is continuously controlled by a 4-20 mA signal or a dry contact relay. Both outputs can be utilized together. If the dose determined by the controller is below the pump minimum flow rate, the system automatically will switch from 4-20mA control to relay control. 800/227-4224; www.hach.com.



Endress+Hauser multichannel transmitters

Liquiline CM444 and CM448 multichannel transmitters from Endress+Hauser are designed for monitoring and controlling processes in water and wastewater industries. The transmitters accept inputs from up to eight Endress+Hauser Memosens digital sensors, including nitrate, special absorption coefficient (SAC), pH, ORP, conductivity, dissolved oxygen, turbidity, free-chlorine and ion selective sensors. The device recognizes any combination of Memosens sensors and starts operating immediately. The sensors can be field upgraded at any time to accept additional inputs by plugging in additional modules. 888/363-7377; www.us.endress.com.



Ditch Witch ride-on trencher, vibratory plow

The RT80 Quad heavy-duty, ride-on trencher and vibratory plow from Ditch Witch is designed to provide traction on rough and

uneven terrain. The 83 hp trencher features a three-speed, shift-on-the-fly ground drive, 39,000-pound static load rating and 30,742 pounds of break-out capacity. The track frames pivot around the centerline of the

axle for stability in muddy conditions or when applying high torque to pull through hard ground. Attachments include a vibratory plow, traversing trencher, saw and backhoe. 800/654-6481; www.ditchwitch.com.

Hayward WCV wafer check valves

WCV series wafer check valves from Hayward Flow Control feature all thermoplastic molded construction, including angle seat and disc design for high flow capacities. The valves fit both ANSI 150 and PN10 flanges and are available in PVC and CPVC in 2- to 8-inch diameters with a maximum pressure rating of 150 psi non-shock at 70 degrees F. 888/429-4635; www.haywardflowcontrol.com.



RIDGID PTEC 3000 tailpiece cutter

The PTEC 3000 tailpiece extension cutter from RIDGID provides the ability to cut, deburr and bevel thin-walled plastic tubing in one step without causing any change to the shape of the tube. The tool cuts single- and double-flanged 1 1/2-inch and single-flanged 1 1/4-inch thin-walled polyethylene (PE), polypropylene (PP) and PVC disposer kits, tailpieces and wall tubes. A built-in viewing window ensures cuts are on the mark. 800/769-7743; www.ridgid.com. *(continued)*



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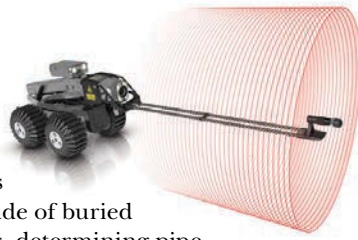
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Envirosight ROVER laser profiling accessory

The RedLine laser profiling accessory for the ROVER X inspection crawler from Envirosight captures and analyzes profile data from the inside of buried pipeline for planning relining projects, determining pipe life, monitoring erosion/corrosion, quantifying defects and analyzing partial collapses. The accessory attaches without tools and requires no electrical connections. A hinged mounting system makes it easy to deploy in tight spaces, while twin carbon fiber arms ensure rigidity. The accessory can be mounted to any ROVER X pan-tilt-zoom camera and operates up to 16 hours on a single AA battery. **866/936-8476; www.envirosight.com.**



Guzzler CL vacuum loader

The Guzzler Classic (CL) industrial vacuum loader from Guzzler Manufacturing features enhanced operator ergonomics and improved air routing,

filtration and maintenance. Hydraulic and electrical components mounted on the boom have been relocated to eye level for easier access. The unit has an 18-cubic-yard capacity and optional full-opening rear door. The bag house and cyclone clean-out access doors have been enlarged for easier access, and transition to the dump tubes has been widened for more effective dumping. The linear wall connection from the cyclone to the bag house has also been increased for more efficient airflow. **800/627-3171; www.guzzler.com.**



Griffin electric-driven wellpoint pump

The quiet operating Model 6WPRE electric wellpoint pump from Griffin Pump & Equipment is a fully automatic, dry priming and dry running, self-contained, portable dewatering pump. The unit is capable of pumping 1,500 gpm with 140 feet of head capacity. Diesel engines, other capacities and custom pumps are available. **866/770-8100; www.griffinpump.com.**



Generac gaseous fuel engines

The 9.0-liter, spark-ignited engine from Generac Industrial Power, used on Generac 80kW and 100kW generators, is made for use

with gaseous fuel in industrial applications. Features include stainless steel intake and exhaust valves for durability and long life, Stellite (a cobalt-based alloy) corrosion-resistant valve seats and reduced valve angles to minimize friction that can result from using dry fuel. Other features include hypereutectic cast aluminum pistons for thermal expansion resistance and tighter clearances for quieter operation and longer piston ring life. A 12.9-liter engine is made for use on Generac 150 kW through 300 kW generators. **888/436-3722; www.generac.com.**

Vanair Air N Arc power system

The Air N Arc 1300 power system from Vanair Manufacturing offers six forms of power in a single 48-inch unit, including 40 cfm rotary screw compressor, 7 kW AC generator, 300-amp welder, battery booster and charger, and 10.5 gpm hydraulic pump — all driven by a single engine. Small enough to fit behind the cab or on the side pack of a vehicle, the power system provides full functionality with the truck engine off. **800/526-8817; www.vanair.com.**

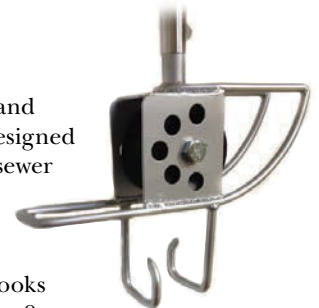


Nu Flow lateral cutter

The Mi-T-Cutter from Nu Flow Technologies is designed to cut open lateral reinstatements from the inside, as opposed to the branch line. It also can be used for opening trapped drains and cutting out hard debris. The unit requires 7-10 cfm of air and operates using a standard 110-volt outlet. The cutter is 32 inches long and is designed for use in 4- to 6-inch pipe. Features include 19-inch viewing screen, 100-foot cable (200- and 300-foot available), three unique cutting heads, separate air line to keep the lens free of debris, and 250-foot video cable for remote viewing. **800/834-9597; www.nuflowtech.com.**

Southland Tool hose grabber, guide roller

The HGR-1 combination hose grabber and guide roller from Southland Tool Mfg. is designed to grab and lower a hose and nozzle into a sewer and guide it into the line, especially drop manholes where the sewer line is above the bottom of the manhole floor. Made of steel with Delrin hose roller, the tool's bottom hooks are heat treated for extra strength. Weighing 9 pounds, the device connects to a fiberglass (available) or steel pole. **714/632-8198; www.southlandtool.com.**



ELAN Technologies level calibration tool

The QuickCal level calibration tool for water and wastewater use from ELAN Technologies has a 26-inch tapered aluminum ruler with 0.01-inch and 0.1-inch markings alongside an inset indicator strip. The ruler comes with an 8- to 16-foot extension power, enabling the ruler to be lowered into the flow and removed. No confined space entry is required. The non-wicking gray strip turns black when wet, providing an easy-to-read line for water level. Level increments correlate directly to primary device tables and flowmeters without a decimal conversion. **815/463-8105; www.elantechologies.net.**



TRU-Vu 18.5-inch HD monitor

The RMTR-18.5M 18.5-inch HD touch screen monitor in 19-inch rack mount housing from TRU-Vu Monitors is designed for industrial and control room applications. The LCD monitor features industrial-grade components to withstand demanding environments. Featuring a 16:9 widescreen format, the five-wire resistive touch screen can be

activated via bare or gloved fingers, stylus or other input devices. Other features include dual interface controller for USB or RS-232 connection and DVI connector (VGA and HDMI video inputs compatible via optical adapters). The included 90-240 VAC power brick enables direct connection to a 120 VAC outlet. A DVI cable also is included. 847/259-2344; www.tru-vumonitors.com.



CW Industries toggle safety cover

The CW GT-4X toggle safety cover from CW Industries features a spring-loaded design that provides protection against accidental actuation. Covers are available in white, black and red and designed to mate with CW Industries' GTS Series toggle switches. The mounting base faceplate is glossy black steel and the safety cover is an ABS-blended plastic resin. The 0.481-inch mounting hole accepts all standard toggles with 15/32-inch mounting stems. 215/355-7080; www.cwind.com.

McElroy TracStar Series 3 fusion machine

The TracStar 500 Series 3 fusion machine from McElroy Manufacturing features an indexer-mounted heater and facer, economy engine throttle setting and hydraulic clamping. The machine is capable of

fusing thermoplastic pipes from 6-inch IPS to 20-inch outer diameter. The carriage can be removed and lowered into a ditch for fusing in tight locations. Power for the heater is supplied by an onboard generator, while the engine-driven, hydraulic pump system provides power for the facer and dual-speed track system. Dual hydraulic pipe lifts help load and unload pipe into the carriage. 918/836-8611; www.mcelroy.com/fusion. ♦



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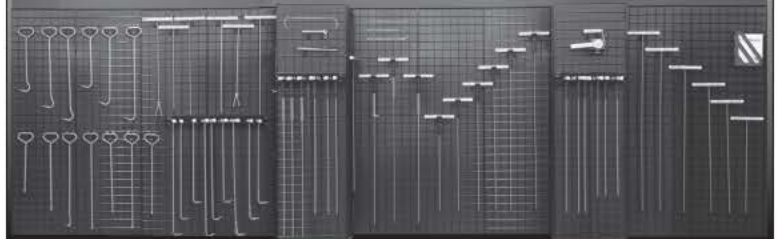


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General Wire models J-3055, J-3080, and J-2000; Spartan #717; Electric Eel gas jetters. The Cable Center: 800-257-7209. (CBM)

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Salesman needed to lead a sales force for storm retention cleaning company located in northern Virginia. At least 2 years experience in the industry and at least 1 year experience in sales industry. Email resume and salary requirements to qualitypipecleaning@gmail.com. (C01)

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WANTED

WANTED: I'll buy your sewer truck running or not. Any brand and any make. PH 305-509-0467, Juan. Email trucksformiami@gmail.com. (C12)

Wanted to Buy: Vactor 2100s and late model Guzzlers. Cash. 800-336-4369. (CPBM)

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NLB 36 psi waterblaster: Model #362000-660, 3,531 hours, Cummins engine, 174 hp. \$45,000. NLB electric: 150 hp, 3-phase model #10150E-11/4, 10,000 psi. \$25,000. 1-734-722-8922, MI. (C12)

Gardner Denver T-375M: 21 gpm @ 10,000 psi. Gardner Denver T-450M: 52 gpm @ 10,000 psi. NLB 10-200: 34 gpm @ 10,000 psi. NLB 20-600: 44 gpm @ 20,000 psi. Gardner Denver LC-1500: 390 gpm max, 15,000 psi max. NLB 10-200: 10k max, 34 gpm max. NLB 36-200 6 gpm @ 36,000 psi. Jetstream 4220: 20k psi @ 17 gpm, Allis-Chalmers 10x8x22, 700 hp Wheatley 125: 15 gpm @ 10,000 psi, Wheatley 165: 30 gpm @ 10,000 psi, Wheatley 165: 17 gpm @ 20,000 psi. Boatman Ind. 713-641-6006. View @ www.boatmanind.com. (CPBM)

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KEEPING TRACK OF PROGRESS

NASSCO made significant changes in 2012 to further its mission and achieve important goals

By Ted DeBoda, P.E.

Our mission at NASSCO (the National Association of Sewer Service Companies) is to set industry standards for the assessment and evaluation of underground pipelines and to assure the continued acceptance and growth of trenchless technologies. Every year around this time we like to take a step back and appreciate everything our members have collectively accomplished to help achieve these important goals.

Most notably, 2012 was a big year for the Pipeline Assessment and Certification Program (PACP). As the North American standard for pipeline defect identification and assessment, NASSCO is vigilant in keeping PACP relevant and the data and other information technically sound. Changes this year include:

- Implementation of PACP user recertification to maintain a high level of data reliability
- Addition of free online PACP training materials available

- on our website
- Implementation of a PACP trainer recertification board and revised trainer recertification process
- Improvement of training materials for trainers
- Initiation of PACP Version 7.0 development
- Establishment of technical bulletins for the PACP Manual
- Translation of the PACP manual into Spanish and coordination of the first PACP class in Colombia last October
- Coordination with Quebec Province to begin the translation of PACP Version 6.0.1 into French

We will continue our quest to keep PACP on the cutting edge in 2013. In doing so, NASSCO will hold PACP workshops — Jan. 30, 2013, at the Underground Construction Technology Conference, and Feb. 26, 2013, at the Pumper & Cleaner Environmental Expo — to provide industry professionals

with the opportunity to share ideas to continually improve PACP.

This year, we added Manhole Rehabilitation to the Inspector Training Certification Program (ITCP) after extensive peer review from manhole rehabilitation experts throughout the country. We are now prepared to begin teaching this as a new ITCP topic.

This past year also brought changes in the way we structure and manage our various NASSCO committees. Following our annual meeting last February, we conducted research to identify the main reasons people join (or continue to belong to) NASSCO. Aside from education and networking with peers, the ability to participate in one of our many committees also ranks very high. In order to continue to stir the waters and bring fresh thinking to each of our committees, we established a biennial restructuring of leadership. Moving forward, individuals will be able to hold a chair

position on a committee for a maximum of two years. This will allow the committees to build traction, make positive changes, and then turn over the reins to new leaders to build upon prior successes.

Finally, NASSCO has been fortunate to partner with a number of leading industry publications, such as *Municipal Sewer & Water*. These features include technical tips, ongoing articles for NASSCO and its committees, as well as case studies for the International Pipe Bursting Association, a division of NASSCO. This article, in fact, is a result of our ongoing partnership with MSW. The industry media have come together to help NASSCO share industry information, trends and updates to further promote our mission. ♦

Ted DeBoda is executive director of NASSCO. He can be reached at director@nassco.org.

NASSCO (National Association of Sewer Service Companies) is located at 11521 Cronridge Drive, Suite J, Owings Mills, MD 21117; 410/486-3500; www.nassco.org

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Training and Continuing Education Courses

PACP TRAINING

January 8-10, 2013
Antioch (San Francisco), CA
 Includes Manholes and Laterals!
 Trainer: Brandon Conley
 For more information or to register contact Kay Doheny at 248-939-3220 or email pacp@dohenysupplies.com

March 8-10, 2013
Twinsburg (Cleveland), OH
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May 6-8, 2013
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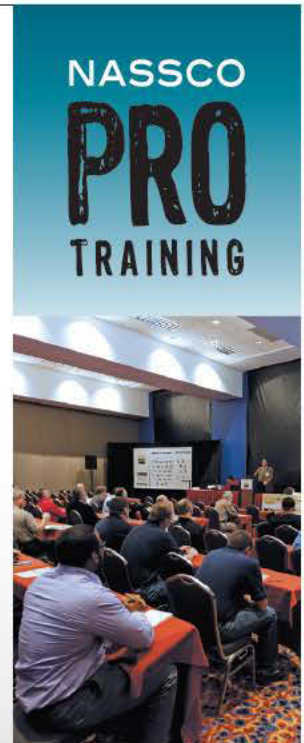
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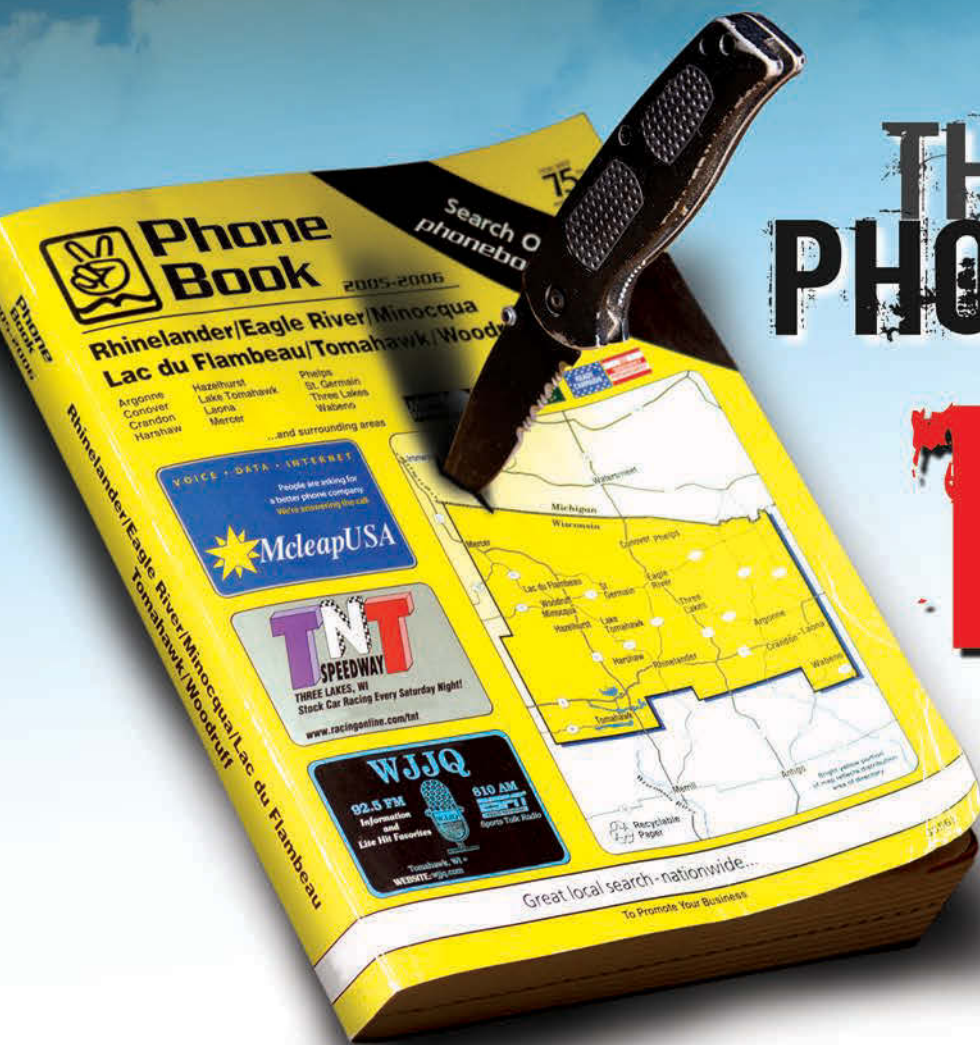
June 3-5, 2013
Whitestown (Indianapolis), IN
 Includes Manholes and Laterals!
 Jack Doheny Companies Open House
 Equipment/Training Show

(Thurs. June 6, 2013 - ALL INVITED)
 Trainer: Brandon Conley
 For more information or to register contact Kay Doheny at 248-939-3220 or email pacp@dohenysupplies.com

PACP RECERTIFICATION
March 7, 2013
Sacramento, CA
 PACP User Recertification
 For more information or to register contact Dawn Jaworski at 410-486-3500 or email dawn@nassco.org

ITCP TRAINING
 If you are interested in having a class at your facility or in your area, contact Gerry Muenchmeyer at 252-626-9930 or gmuenchmeyer@suddenlink.net

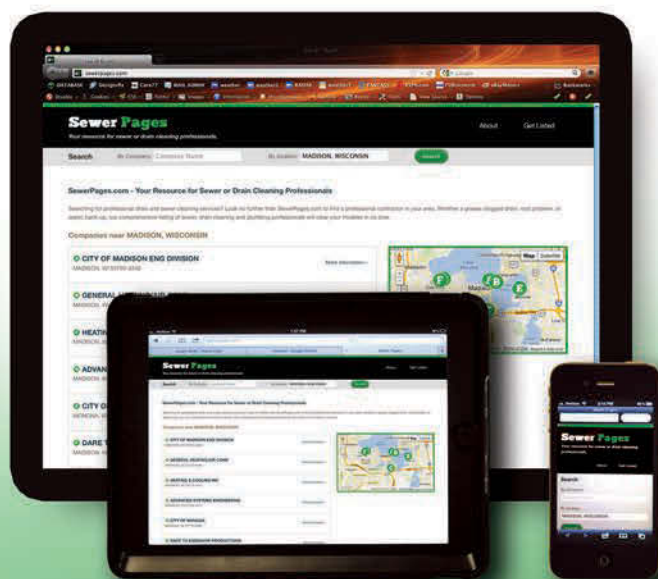




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PEOPLE/AWARDS

The City of Pensacola's Admiral Mason Park received the Florida Stormwater Association 2012 Project Excellence Award, which is given annually to projects that demonstrate creativity and excellence.

The Canadian Public Works Association has re-elected **Darwin K. Durnie**, president of Stantec Consulting Ltd. (Red Deer, Alberta), as its president.

Randall S. Over, the Ohio Department of Transportation District 12 construction engineer, was chosen as president-elect for the American Society of Civil Engineers.

The American Water Resources Association announced results of its officer elections. They include:

- **Mark Dunning**, president-elect, senior project manager with CDM Federal Programs
- **David Watt**, secretary-treasurer, manager of the Engineering Division at St. Johns River, Fla.
- **Rafael Frias**, director, senior project manager at Black & Veatch Corp.
- **Noel Gollehon**, director, senior economist, Natural Resources Conservation Service, USDA

The Illinois Association for Floodplain and Stormwater Management announced the following Stormwater Management Award recipients:

- **Dundee Township**, Best Project (Jelkes Creek Quarry Restoration Project in Kane County)
- **Robert Murdock**, Manager (IAFSM Stormwater Committee Chair)

MSW welcomes your contribution to this listing. Please send notices of new hires, promotions, service milestones, certifications or achievements to editor@mswmag.com

CALENDAR

Feb. 11-15

National Utility Contractors Association Convention, Sheraton Phoenix Downtown Hotel, Phoenix, Ariz. Call 703/358-9300 or visit www.nuca.com.

Feb. 24-March 8

Water Environment Federation 2013 Water & Wastewater Leadership Center, University of North Carolina Kenan-Flagler Business School, Chapel Hill, N.C. Visit www.wef.org.

Feb. 25-28

Pumper & Cleaner Environmental Expo International, Indiana Convention Center, Indianapolis. Call 866/933-2653 or visit www.pumpershow.com.

March 10-13

Water Environment Federation Utility Management Conference 2013, Renaissance Phoenix Glendale Hotel & Spa, Phoenix, Ariz. Visit www.wef.org.

April 7-10

American Public Works Association North American Snow Conference, Charlotte Convention Center, Charlotte, N.C. Visit www.apwa.net.

LEARNING OPPORTUNITIES

American Society of Civil Engineers

The ASCE has these courses:

- Dec. 6-7 – Storm Sewer System Design Using SWMM, Atlanta
- Dec. 13 – Sustainable Stormwater Hydrology: Concepts to Reduce Hydrologic Footprint, online
- Jan. 8 – Preparing and Implementing Construction Site Stormwater Pollution Prevention Plans, online
- Jan. 9-11 – Pumping Systems Design for Civil Engineers, Las Vegas
- Jan. 11 – Construction Stormwater BMPs, online
- Jan. 17-18 – Financial Management for the Professional Engineer, Minneapolis
- Jan. 31 – Cold-Weather Stormwater BMPs That Work, online
- March 7-8 – Leadership Development for the Engineer, Chicago
- March 7-8 – NPDES Stormwater Permit Compliance, Pittsburgh
- March 7-8 – Stormwater BMPs That Work: Effective Analysis, Design and Maintenance, Chicago
- March 12 – Stormwater BMPs: What Works, What Doesn't and What About Maintenance, online
- March 14-15 – Financial Management for the Professional Engineer, Secaucus, N.J.

Visit www.asce.org.

American Water Works Association

The AWWA has a Regulatory Update Webcast on Dec. 5.

The AWWA also announced that its second edition of the AWWA Water Operator Field Guide is now available.

Visit www.awwa.org.

Wisconsin

The Wisconsin Department of Natural Resources has these courses:

- Dec. 4 – Permit-Required Confined Space Entry, Plover
- Feb. 28 – Government Affairs Seminar (location TBD)

Visit dnr.wi.gov.

The University of Wisconsin Department of Engineering-Professional Development has these courses:

- April 8-9 – Using WinSLAMM v. 10: Meeting Urban Stormwater Management Goals, Madison
- May 1-3 – Using HEC-HMS to Model Watersheds, Madison
- May 6-8 – Using HEC-RAS to Model Bridges, Culverts and Floodplains, Madison

Visit epdweb.engr.wisc.edu. ♦



UPCOMING TRAINING & EVENTS

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February 23-24, 2013 - Indianapolis, IN
Pre-Expo NAWT
info@nawt.org

NAWT Vacuum Truck Technician:

January 8, 2013 - East Lansing, MI
MI & NAWT - Contact Mark Scott at (989) 275-5011 or msscott@i2k.com

February 24, 2013 - Indianapolis, IN
Pre-Expo NAWT
info@nawt.org

Operation and Maintenance Training Certification:

January 2013 (TBA), Colorado
CHURCH Onsite Wastewater Consultants
Contact Kim Seipp at (303) 622-4126 or highplains@tds.net

February 6, 2013 Kearney, NE
NOWWA - Contact: Jason Orton at (402) 476-0162 or jason@h2oboy.net

February 23-24, 2013 - Indianapolis, IN
Principles of Septic System Design
Pre-Expo NAWT
info@nawt.org

March 1-2, 2013 Helena, MT
Lewis and Clark County - Contact: Beth Norberg at (406) 447-8385 or bnorberg@co.lewis-clark.mt.us

-- Watch the NAWT website and industry publications for updates --

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