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Director of Public Works and Utilities
Port Angeles, Wash.

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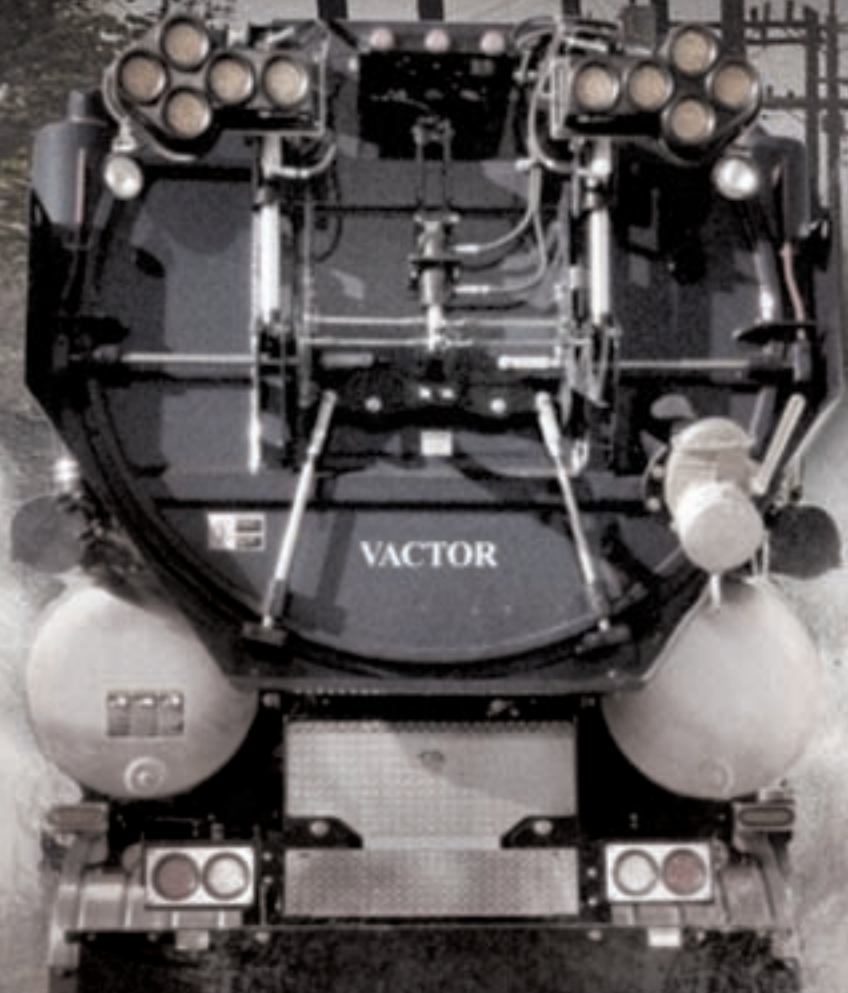
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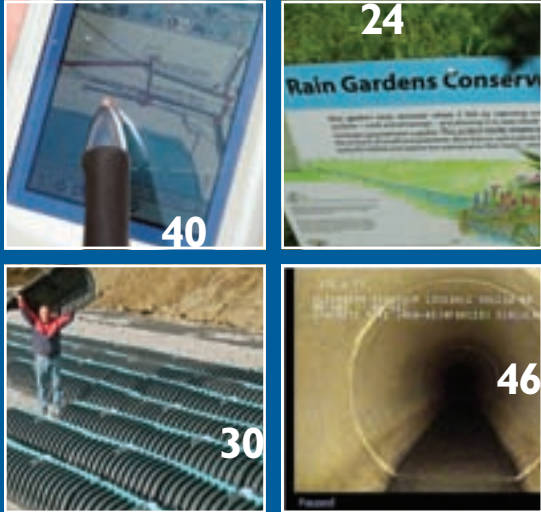
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INSIDE:

LOCATION AND LEAK DETECTION



COVER:

Through in-house leak detection, meter replacement, system rehabilitation and a dam removal, Port Angeles, Wash., is protecting and conserving its water supplies. Each segment of the program works in harmony with the others, striking a balance in meeting residents' needs, protecting the environment, and providing sustainable water-quality excellence. (Photography by Patricia Huff)



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

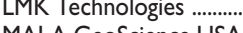



























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FOR SANITARY, STORM AND WATER
SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

COLE publishing

1720 Maple Lake Dam Rd.,
PO Box 220, Three Lakes WI 54562

www.mswmag.com

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In U.S. or Canad a call toll-free 800-257-7222

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Office hours Mon.-Fri., 7:30 a.m.-5 p.m. CST

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EDITORIAL CORRESPONDENCE: Send to Editor, Municipal Sewer & Water, P.O. Box 220, Three Lakes, WI, 54562 or email editor@mswmag.com.

REPRINTS AND BACK ISSUES: Visit www.mswmag.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email jeffl@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicolel@colepublishing.com.

CIRCULATION: 2010 average circulation was 37,808 copies per month (U.S. and international distribution).



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BLAME AND PUNISH? OR JOIN FORCES?

The fundamental point behind efforts to resolve our nation's and cities' fiscal problems must be to remember that we are all in this together

In the 1940s, this country faced a formidable challenge — defeating Hitler and the Axis powers. We the people didn't cause World War II, yet as a nation we united to win it. Young men went off to fight. At home we put up with inconveniences like rationing — because it just plain had to be done.

Now we face a challenge that while different in kind is also critical — pulling our nation out of its unsustainable debt. This time the approach is very different as well: Instead of pulling together as one, we want to blame and punish.

Some want to blame public unions and punish them with pay and benefit reductions. Others want to blame wealthy people and punish them with tax increases. Still others want to blame people who are impoverished or disabled or out of work and punish them with denial of or reductions in government benefits. What does that get us? A country ripped apart at the seams and without enough collective resources to win.

Facts to face

As we look at the fiscal issues that now face our nation, states and cities, we might as well accept a few facts.

First, the deficits and debt we face were rung up by both parties in our collective name. We fought (and still fight) wars on the credit card. We charged a Medicare drug plan. We bailed out banks and ran a stimulus program

**Right now, we seem to believe in shared sacrifice —
but only as long as someone else makes it.
What we need is shared sacrifice from everyone.
That means private- and public-sector entities
alike. It means people from one end of the
economic scale to the other.**

with borrowed money. Whether we happen to approve of these actions is now immaterial. They are done, we have the bill, and we own it collectively, as a nation.

Second, we're going deeper into debt not solely because of government policies but also because of a lingering recession that, again, as individuals, we did not create.

Third, our "entitlement" programs, notably Medicare, are not sustainable as now structured, and were known not to be even before the recession hit. To think both can survive without change of some kind is to engage in wishful thinking.

Fourth, we both spent *and* tax-cut our-



FROM THE EDITOR

Ted J. Rulseh

selves into this hole. Endlessly repeating the phrase, "We don't have a revenue problem, we have a spending problem," doesn't make it true. We have both, and we will have to spend-cut *and* tax-raise our way out.

Toward solutions

If we accept those fairly incontrovertible facts, we have a start toward solving the problem. The rest of the solution depends on each of us *owning* the problem. No, we didn't cause it, but the burden now rests on all of us. Who's going to fix it if not us?

Right now, we seem to believe in shared sacrifice — but only as long as someone else makes it. What we need is shared sacrifice from everyone. That means private- and public-sector entities alike. It means people from one end of the economic scale to the other. That includes people who have very little, even if their contributions are token and largely symbolic.

As was true during World War II, helping with the effort in proportion to one's ability is part and parcel of being a citizen of this county. If our collective attitude is, "How can I help?" then we will be well on the way toward getting the job done.

Of course, that inevitably leads to the long, difficult and messy discussion of exactly what kind of a country we want to live in, and how much we are willing to pay for it. But in the end, that's more productive and better for the national soul than lying back and trying to figure out whom to blame and punish. ♦

Comments on this column or about any article in this publication may be directed to editor Ted J. Rulseh, 877/953-3301; editor@mswmag.com.

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FOCUS: WATER

A DELICATE BALANCE

The Port Angeles water utility crew includes, from left, back row, Ernie Klimek, water superintendent; Jason Holbrook, utility 2 technician; Dennis Edgington, water distribution lead technician; Ray Doty, utility 1 technician; Mindie Hart, utility 2 technician; Glenn Cutler, director of public works and utilities; front row, Ron Anderson and Jeff Groves, utility 2 technicians. (Photography by Patricia Huff)

Port Angeles embarks on a multifaceted program to conserve drinking water, protect its source, safeguard the environment, and serve residents cost-effectively

By *Suzan Marie Chin*

When you're located in a remote, pristine region like the Pacific Northwest, self-sufficiency is vital. The city of Port Angeles, on Washington's North Olympic Peninsula, has set some high bars to meet its water conservation goals.

Through a multifaceted program of in-house leak detection, meter replacement, system rehabilitation and a dam removal, this community of 20,000 is making a positive impact on its region while benefiting its customers. Each segment of its program is carefully designed to work in harmony with and support the others. The pro-

gram strikes an excellent balance in meeting residents' needs, protecting the environment, and providing sustainable water-quality excellence.

Looking inside

Port Angeles lies 70 miles northwest of Seattle. Although it is close to a metropolitan area, it is separated from its closest big-city neighbor by a three-hour drive along Puget Sound. That means Port Angeles had to become a full-service city, providing utilities and other services in an area where private service options were not available.

The city's Public Works and Util-

ities department is responsible for the water, wastewater, stormwater, solid waste collection and electricity. Water comes from the Elwha River, fed by glaciers in the Olympic Mountain Range. To protect and ensure sustainability of this key resource, Port Angeles has launched a program to reduce and ideally eliminate water loss from its distribution system in conjunction with mandated Water Use Efficiency (WUE) guidelines.

The city has always had a leak detection program, but it has become more aggressive over the last decade. Until recently, the city used consultants from the Seattle area for leak detection services



PROFILE:

Port Angeles, Wash.,
Department of Public
Works and Utilities,
Water Utility

POPULATION SERVED:
20,000

INFRASTRUCTURE:
200 miles of water distribu-
tion lines, 800 hydrants

EMPLOYEES:
13 (water distribution)

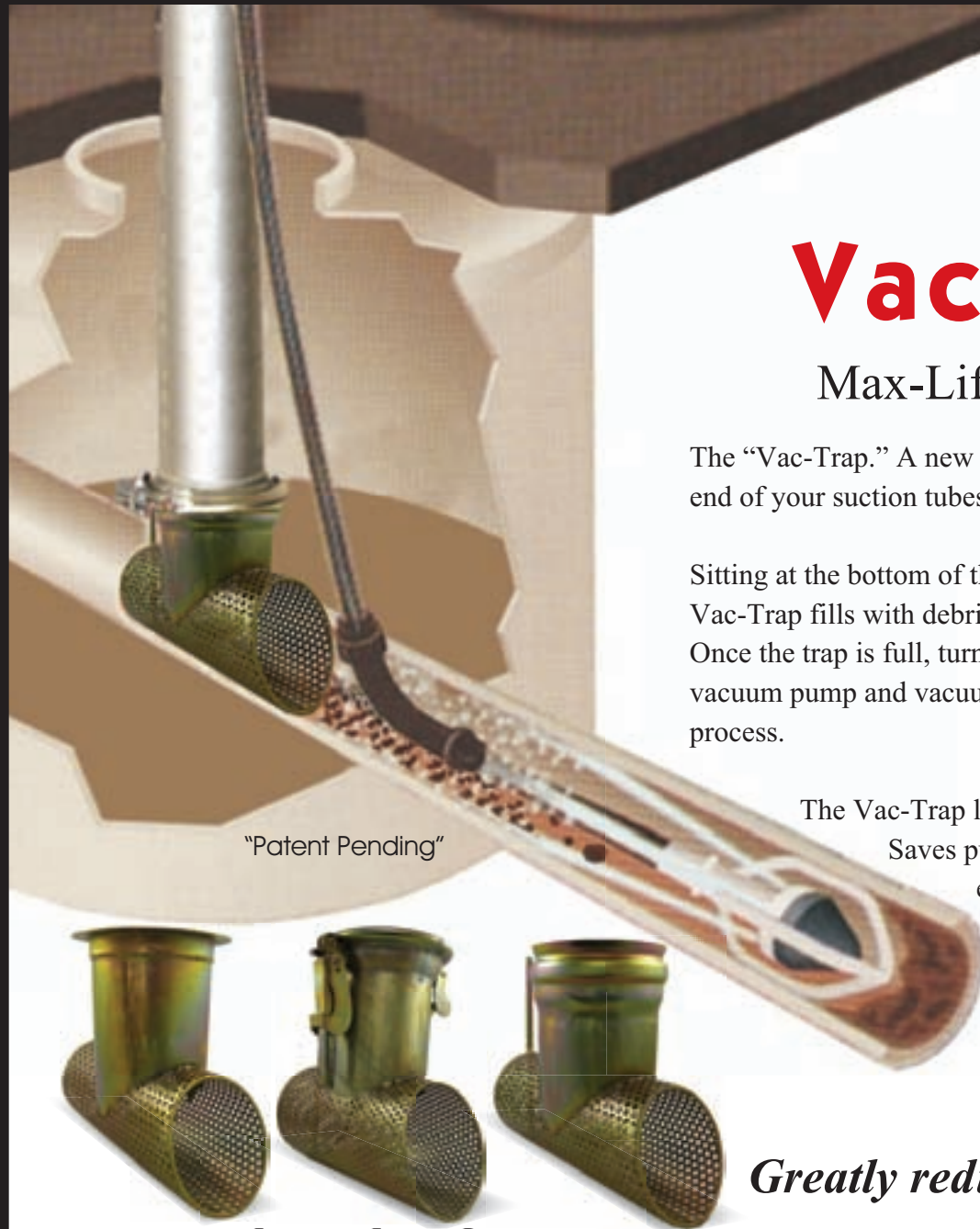
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The Port Angeles water utility crew uses the Vector 2100 to hydroexcavate and expose the source of a water leak.

“Our overall goal is not just to conserve a natural resource. It’s also to help lower our operating costs, because if we can reduce our losses, that means we don’t have to pump as much water.”

Glenn Cutler, P.E.

that included “listening” to the lines, correlating, and reporting findings. The consultant worked once a year, typically for one week.

“Since we are a fairly small, compact community, we were able to do roughly about a fifth of our system each year that way,” says Glenn Cutler, P.E., director of Public Works and Utilities. “Although the firm did an excellent job, our water superintendent, Ernie Klimek, evaluated the value we were getting from the firm.

“He felt that if we purchased the equipment and enabled our crews to do the leak detection, it would be more cost effective for us. In addition, when emergency issues came up, we wouldn’t have to wait hours or even days for somebody to come in from outside of the area.”

More coverage

The annual contract service cost \$5,000, and the investment in new equipment was \$10,000. Seeing that the payback period was relatively short, the city moved forward and brought that piece of



A water leak is viewed using the ZCorr leak detection system from Itron.

the program in-house. The shift to in-house service was simple and straightforward for the Port Angeles crews.

“The outside firms had been using our crews as a resource on what to look for, how to look, and where the problem areas existed, so the idea was to take our ideas back home, use the same tools and equipment and solve the problems in-house,” says Klimek. “The crews took ownership and liked the results they saw, so it was an easy transition, and the desire to keep up the momentum is strong.”

The crews now cover two to three times more of the system annually and respond to suspected problems more rapidly. They are dispatched weekly or biweekly, depending upon the workload, to a specific area where problems are suspected. For preventive leak detection, crews are typically deployed for the full day and can assess three to five blocks on average.

In the past, the city tried to “save up” a group of points with suspected problems before calling the contractor. Now, since there are no restrictions on time and contract costs, the in-house agency crews can address problems immediately on a case-by-case basis.

Glenn Cutler, director of Public Works and Utilities, explains the customer display at city hall showing the advanced metering infrastructure from Mueller Systems.



BETTER METERING

Along with its leak detection and water conservation initiatives, the city of Port Angeles is replacing its utility meters systemwide. About 5,000 of the city’s meters will be replaced with wireless-transmission-capable meters that will interface with the city’s advanced metering infrastructure/automated meter reading (AMI/AMR) system from Mueller Systems.

The new meters will read remotely on demand, in place of the current procedure of monthly manual field reads by staff personnel. This will enable Port Angeles to spot fraudulent activity, unusual usage levels or leaks present at any given time.

As the water meters are replaced, the city will replace its electric meters as well. In addition to the remote reading, the new water meters will transmit information to the electric meter, which in turn will transmit the combined data to a node that shares the data with the city’s financial system. All the data will give the two utilities operational information they can use to help manage their infrastructure more efficiently.

The leak detection process involves visual and listening observations. Upon arrival at the site, crews walk the area to look for visual signs of leaks. Then they listen, using ground microphones, following the same path as the walking visual inspection and staying alert for unusual sounds that could signal leaks.

Zeroing in

If crew members observe a potential leak, they correlate it using a ZCorr portable leak detection system by Itron. The unit allows them to strategically target a section of the distribution line and pinpoint leak locations by

capturing sounds over a short period with a series of digital correlating loggers (DCLs), placed at intervals along the line.

No excavation is required, and crews can perform listening and correlating from the meter box or from valves. The DCL data is shared with the unit’s digital mapping and analysis software, and the sound data is then processed and uploaded to a laptop computer.

The software provides a graphical readout that portrays the line’s health, detailing leaks and their exact location and severity. The system also tracks the line’s history as assessments are performed, helping the city create an

(continued)

EASYLOCATOR



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accurate baseline for the system. During the first year of its in-house program, the city documented and eliminated 3 percent of its water loss.

When leaks are found, staff members follow up with immediate and appropriate action. For smaller leaks, crews unearth the lines by hydroexcavation, using a Vactor unit, then install a repair band, or replace the leaking pipe section if required. “We aren’t doing a lot of large major digging these days,” says Klimek. “Our hydroexcavator really is an asset — a great tool for these small repairs. The way we think of it, instead of doing an invasive surgery, we can perform delicate arthroscopic procedures on our system.”

More than location

Aggressive leak detection has helped pinpoint some losses, but Cutler and Klimek felt some unaccounted-for water loss could relate to old and faulty meters. Most of the city’s water meters are approaching end of life, and as part of WUE, all water meters (about 8,600) will be replaced at residential, commercial and industrial sites with units equipped with automated meter reading features that include leak detection.

Funding is being split between existing water and wastewater rates, and customers will not see any special fees or rate increases. “If we have cost increases in the future, or if we can keep all other costs the same, the rate may actually come down because metering will be more equitable across the system,” says Cutler.

“Visualize a brand-new meter being 100 percent accurate, and another meter running at, say, 75 percent. Well, the resident who has a slow-running meter is paying the same cost per cubic foot of water, but they’re not being billed for their full consumption. With the new equipment, these discrepancies are eliminated and cost burdens are accurately shared by all.”

Port Angeles shares consumption history with its customers so they can better manage their water use and learn how to use the resource better. Other conservation measures for customers include high-efficiency showerhead and



Seasonal employees Mike Vernon and Vern Hagerman test the pH and temperature of the water at the Elwha River Treatment Plant.

aerator giveaways.

Under the WUE guidelines, the electric utility has helped cover the cost of energy-efficient appliances that also save water, like washing machines and dishwashers. “The water utility has been able to benefit from those efforts,” says Cutler. “Our overall goal is not just to conserve a natural

in a way that benefits the local environment and ecosystems.

Port Angeles derives its water from a well fed by the Elwha River, a major tributary in the North Olympic Peninsula that empties into the Strait of Juan de Fuca. At one time, the Elwha was a major rearing site for many varieties of salmon. In the early 1900s, two

“Conservation, efficiency, quality, water loss reductions, these aren’t something that will change overnight. People often lose sight that positive and impactful changes take time.”

Ernie Klimek

resource. It’s also to help lower our operating costs, because if we can reduce our losses, that means we don’t have to pump as much water.

“And if you pump less water, there’s less chemicals, less wear and tear on equipment, and less energy consumption. By adopting a ‘help me, help you’ attitude, we’re making conservation painless and easy for customers to get involved in and embrace.”

Protecting the source

Meeting residents’ water and power needs sustainably requires not only aggressive conservation but also a long-term vision of how to protect the drinking water source

hydroelectric dams were built on the river to help supply power for the region.

The dams had no fish ladders, although a rearing channel on the lower dam helped sustain natural salmon habits and procreation. Over the years, fish populations declined, and the dams’ structural integrity came into question. As a result, in 1992, the U.S. Congress passed the Elwha River Ecosystem and Fisheries Restoration Act, calling for the dams’ removal.

A key provision was to protect water quality against adverse impacts of dam removal. Work has begun on a project costing \$325 million that includes studies, per-

mits, and building of water treatment facilities for Port Angeles and other water purveyors that depend on the Elwha for water. A ceremony for deconstruction of the dams was held Sept. 16, 2011. It will take three to five years for the river to regain a steady-state condition.

The plan also includes construction of a greenhouse and a fish hatchery, and the replanting of native material in areas exposed when the lakes behind the dams are drained.

Sediment is a big concern for Port Angeles, as when dam removal begins, turbidity in the river will increase. It is also possible that when the dams are removed, the river will migrate away from the city’s well. To compensate, a new water treatment plant will house two processes: direct filtration and a new Actiflo rapid-settling system (Kruger USA).

The Actiflo plant, the first in the state for drinking water, will settle out particles rapidly so that large volumes of water can be processed. During high turbidity after dam removal, the state Department of Ecology will allow the city to harvest surface water. The entire process will take several years with an open-ended timetable for assessment of water-quality impact.

(continued)

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Patience and persistence

Balancing all its projects has been challenging for the city. Some staff members were skeptical at first about bringing some of the work in-house. Would it be beneficial? Would it be cost effective? Would the equipment really be used or just sit on a shelf?

By involving the staff, keeping communication lines open, and being patient and persistent, leadership made it easy for the staff to buy in. That means cost savings for the utility and satisfaction for the team. "The staff lives here too," says Cutler. "We're all part of this community, and a sense of pride has developed over what we're doing, how we're helping the community, and how we're doing things in our town to make it better."

That attitude has helped Port Angeles create a program that works harmoniously and equitably serves residents, the environment and the agency. For those looking to develop a strong conservation and resource protection program, Klimek offers advice.

"Conservation, efficiency, qual-

ity, water loss reductions, these aren't something that will change overnight. People often lose sight that positive and impactful changes take time. Look for solutions not in a short timeframe but in ranges of three to five years. It takes patience. Don't rush for results. Study your findings, monitor your data, and build baselines. Do that and you'll truly be able to put your data to work for you and achieve your program goals." ♦

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A DAY TO LEARN

Education Day at the Pumper & Cleaner Expo delivers an array of knowledge-building programs for municipal infrastructure professionals

By *Ted J. Rulseh*

Education Day at the 2012 Pumper & Cleaner Environmental Expo moves to Monday (Feb. 27) with a full lineup of seminars given by representatives from the industry's leading trade association.

You can learn about new tools, technologies and methods for solving specific problems, fine-tune your knowledge of basic in-the-field practices, and learn leadership practices that can help transform your department. Here is a list of seminars of special interest to pipe cleaning, inspection and repair professionals and industrial cleaning contractors.

The Expo runs Feb. 27 to March 1 at the Indiana Convention Center in Indianapolis. For a complete list of Education Day and other seminars and other information about the Expo, visit www.pumpershow.com. The early registration price through Jan. 20 is \$50, a savings of \$20.

Southern Sections Collection Systems Committee

8 to 9 a.m.: Mark Hill, Rust into Gold

Communities that installed corrugated metal pipe (CMP) storm drain systems need expertise to evaluate and renew failing assets. This presentation tells how to overcome the hazards of cleaning and inspecting deteriorated CMP pipes, how to assess their condition, and how to repair and rehabilitate them.

9:30 to 10:30 a.m.: Denis Pollak, Maintaining Collection System Easements

Sewers in easements off roadways make upkeep challenging, and so these assets are often over-

looked, possibly leading to sewer overflows. This course covers easements from design to construction and explores how to access and service sewers in these areas.

11 a.m. to noon: Duane Johnson, Sanitary Sewer Overflows

This presentation will help you prepare for sewer overflows and respond effectively. The content will cover the decision-making process, the proper use of equipment, the most efficient ways to relieve blockages, and how to develop an emergency response plan.

1:30 to 2:30 p.m.: Jim Aanderud, Finding Success and Growth in Pipeline Cleaning

This class will examine why cleaning companies succeed or fail. It will list steps to take to ensure steady and long-term growth, point out opportunities for expansion into alternative markets, and look at ways to take a secure position as an elite company.

3 to 4 p.m.: Rick Lewis, Evaluating and Optimizing the Efficiency of a Combination Truck

As budgets tighten up, more agencies and contractors are being forced to keep their combination units longer. This class looks at how to evaluate trucks objectively and take steps to extend their lives. Content covers maintenance issues, proper operating practices, and the process of buying a new combination unit.

4:30 to 5:30 p.m.: Duane Johnson, CCTV Inspection Essentials

Technology is advancing in the CCTV industry. This course covers topics designed to enhance

Education Day at the 2011 Pumper & Cleaner Environmental Expo.

You can learn about new tools, technologies and methods for solving specific problems ... and learn leadership practices that can help transform your department.

the skills of veteran technicians while helping newer operators become more proficient. It covers standard inspections, how to exceed expectations, and tools to help operators and companies meet increasing challenges in the pipeline assessment industry.

WaterJet Technology Association (WJTA)

8 to 9 a.m.: Gary Toothe, Accessorizing Your Vacuum Unit

Selecting the right hoses and nozzles for your vacuum truck will not only make it look good. It will promote safety and save time and fuel. Toothe will discuss how to increase safety and efficiency by understanding how various hoses and nozzles affect airflow and the suspension of materials in the airstream.

9:30 to 10:30 a.m.: Gary Toothe, Good Craftsmen Have Heavy Toolboxes

The proper usage of tips is critical to performing a quality waterblast job in an efficient manner. This course explores the variety of tips on the market, from automated tips to the most basic shotgun tips, and where each has

its place in a well-stocked toolbox.

11 a.m. to noon: Bill Shires, Waterjet Technology: Applications and Equipment

The high-pressure waterblast industry has infinite applications. This presentation focuses on the wide range of equipment available for surface preparation; sewer jetting; and pipe, tube, vessel and tank cleaning.

Northwest Michigan Onsite Wastewater Task Force

8 to 9 a.m.: Social Media – Friend or Foe

You have in your pocket an indispensable tool — a wireless phone or even a smartphone. But are you really using it to its full potential? Does the world of social media seem too nerdy to even consider? This session will teach you how to tweet effectively, make Facebook your true friend, and more.

9:30 to 10:30 a.m.: Social Media – Taking it to the Web, Infinity and Beyond!

Do you need to be a graphics wizard to have a cool website? No, but a few basic design rules and a simple free Web service like

Wordpress.com can help you get a website up and running in very little time. This session looks at how COLE Publishing organizes its Web content and how a city agency can incorporate the social media tools reviewed in the previous session.

National Association of Sewer Service Companies (NASSCO)

8 to 9 a.m.: Jim Shelton, Sewer Ops and CMOM

This presentation explains the role operations plays in developing a CMOM plan, including what to expect when the consultant asks questions, and how to respond and interact effectively. It tells how one utility used the CMOM process to rethink its operations and reinvent itself as a more focused, better-equipped, better-trained team with much higher productivity.

9:30 to 10:30 a.m.: Developments in Water Main Linings

Water main linings have significantly improved. Cured-in-place pipe processes dominate the market with capabilities to address working pressures, drinking water certifications and sealing/reinstating of service line connections without excavation. This class explores current and emerging technologies for renewing waterlines.

11 a.m. to noon: Culvert Rehabilitation – Have it Your Way

This presentation covers the various methods of culvert rehabilitation available to municipalities and highway departments. Methods include invert repair, cement mortar lining, sliplining, CIPP, and spiral-wound pipe installation.

1:30 to 2:30 p.m.: Manhole Lining – The Secret to a Successful Installation

This session reviews the importance of confined-space safety, proper surface preparation and application techniques, and inspection protocols for manhole lining projects. It focuses on five industrial lining projects as examples to illustrate the importance of each component of the installation process.

3 to 4 p.m.: Inspection of Pipelines Under Full-Flow Conditions

This class reviews high-resolution color and fast-scanning sonar inspection technology. The sonar unit profiles the pipe every second and can be deployed in pipes from 8 inches to larger than 12 feet. It can stand alone in surcharged pipes or work with a CCTV camera in semi-surcharged lines. Case studies and CCTV/sonar images are included.

4:30 to 5:30 p.m.: Sewer and Industrial Equipment Rental – What are the Options?

Rental equipment options in the municipal and industrial sewer cleaning markets are rapidly changing. This class covers the many options available, such as using rentals to grow the business, renting versus buying, long-term versus short-term rentals, and rent-to-purchase.

Scott Hunter, Business Coach

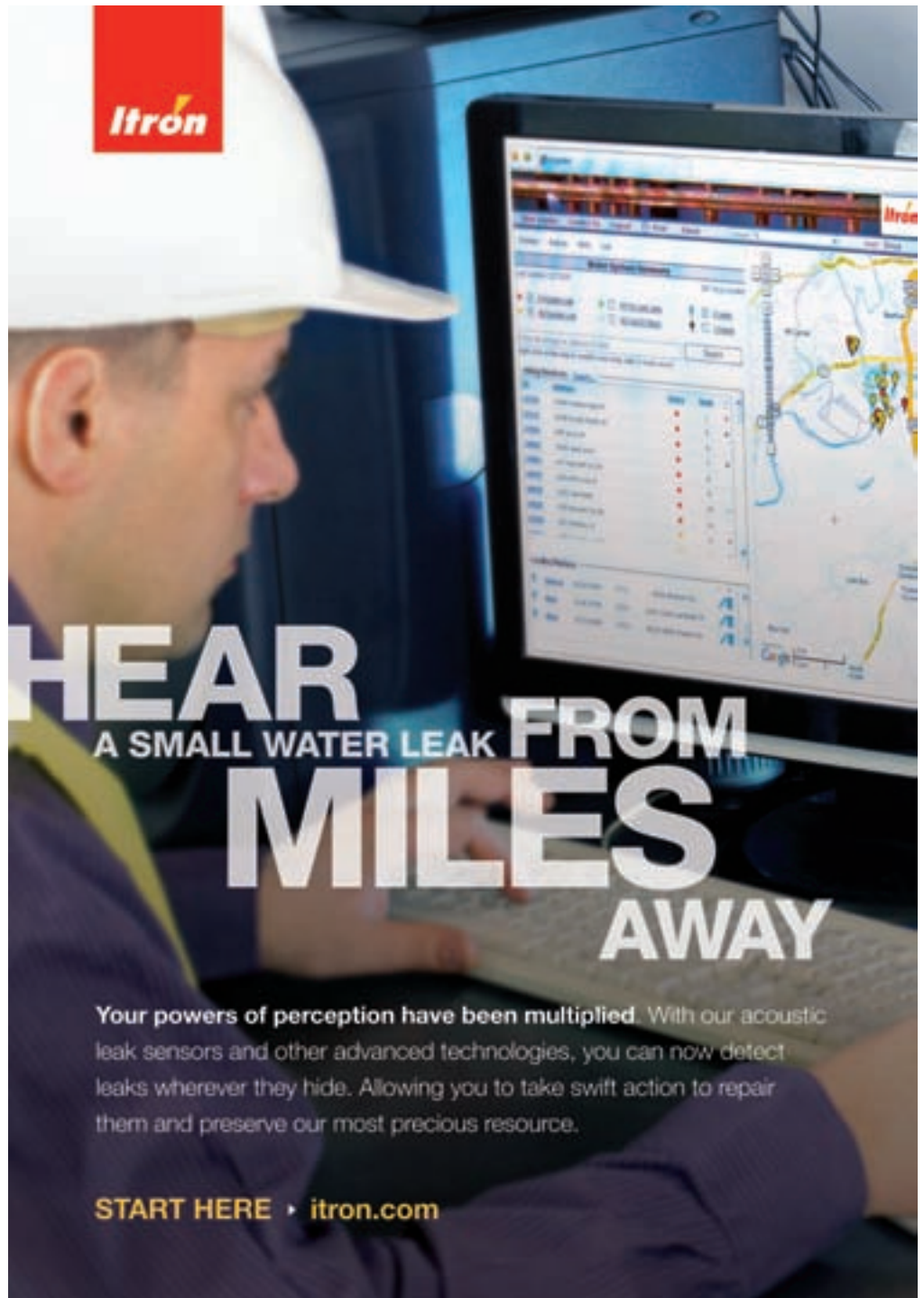
While this seminar series focuses on businesses, many of the leadership principles presented apply in the public sector, as well.

8 a.m. to noon: Keeping Employees and Customers Happy

Ninety percent of new companies fail within 10 years. One key reason: unhappy employees or unhappy customers. It takes leadership to create and keep a winning atmosphere at work. This three-part session teaches how to do exactly that. It tells why people become unhappy and customers get disappointed — and how to produce the opposite result.

3 to 5:30 p.m.: How to Be Successful and Profitable in Any Economy

Many companies fail because their owners run them by the seat of their pants and have never learned what it takes for a company to succeed. This program tells what it takes, day in and day out, no matter what is going on in the economy, to have a company that is profitable and fulfills the owner's vision and objectives. ♦



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WORTH NOTING

PEOPLE/AWARDS

The **University of Notre Dame** received a Certificate of Recognition from the Indiana Department of Environmental Management for its stormwater management program.

Alison Bick (Short Hills, N.J.) won the 2011 International Stockholm Junior Water Prize.

LEARNING OPPORTUNITIES

ASCE

The American Society of Civil Engineers has these courses:

- Nov. 3-4 – Stormwater BMPs That Work: Effective Analysis, Design and Maintenance, Atlanta
 - Nov. 17-18 – Pumping Systems Design for Civil Engineers, Syracuse, N.Y.
 - Dec. 8-9 – Storm Sewer System Design Using SWMM, Nashville
 - Dec. 13 – Facility Damage Assessments: Differences in Perceptions of Damage Severity, online
 - Dec. 19 – Construction of Stormwater BMPs, online
 - Jan. 4-6 – Pumping Systems Design for Civil Engineers, Las Vegas
- Visit www.asce.org.

APWA

The American Public Works Association is offering these Audio/Web courses:

- Nov. 15 – How to Train Your Fleet
- Dec. 8 – Clients and Consultants: How to Work Together for the Best Possible Project

- Dec. 15 – Reality Check on Leadership: Systems Thinking for Leaders
 - Jan. 17 – How the Effective Utility Management Tool Will Significantly Improve Your Public Works Department
 - Jan. 19 – Self Assessment: A Checklist for Improvement
- Visit www.apwa.net.

Wisconsin

The Wisconsin Department of Natural Resources is offering these courses:

- Nov. 3 – Utility Management Training, Burlington
- Nov. 8 – Utility Management Training, Ashwaubenon
- Nov. 10 – Safety, Madison

Visit www.dnr.state.wi.us.

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

- Dec. 5-6 – Municipal Engineering Fundamentals for Non-Engineers, Las Vegas
- Dec. 7-8 – Improving Public Works Construction Inspection Skills, Las Vegas
- Jan. 11-13 – Improving Public Works Construction Inspection Skills, Las Vegas

Visit www.epdweb.engr.wisc.edu. ♦

CALENDAR

Oct. 31-Nov. 3

National Association of Flood and Stormwater Management Agencies Annual Meeting, St. Petersburg, Fla. Visit www.nafsmag.org.

Nov. 7-10

American Water Resources Association Annual Water Resources Conference, Hyatt Regency, Albuquerque, N.M. Visit www.awra.org.

Dec. 7-9

Florida Stormwater Association Winter Conference, Hyatt Regency Tampa. Call 888/221-3124 or visit www.florida-stormwater.org.

Jan. 30-Feb. 2

Utility Management Conference, Hyatt Regency Miami. Call 703/684-2441 or visit www.wef.org.

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

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| Big Blue Bio-Block, 10-lb | MS-49829 | 199.95 | 179.96 |
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MANY HANDS MAKE LIGHT WORK

The Flint Creek Watershed Partnership demonstrates the effectiveness of nonprofit groups working side by side with municipal professionals

By Dan Heim

Patsy Mortimer is not a municipal employee, but she does work closely with several municipal organizations. Mortimer, coordinator for the Flint Creek Watershed Partnership (FCWP), won the 2010 Stewardship of the Year Award from the Lake County Stormwater Management Commission (LCSMC).

With the humility typical of a civic volunteer, she notes, “Well, sure, my name is on the certificate, but the award is really a testament to all of us here at FCWP.”

Mike Warner, executive director of LCSMC disagrees. “Patsy’s

integrity and compassion are hallmarks of a true steward of the land,” he said during the award presentation. He and Mortimer agree the award was based on years of service toward their mutual goals – restoring and renovating the watershed to its predevelopment state, and protecting groundwater recharge areas.

“There wasn’t really any single project or accomplishment that triggered the award,” Mortimer says. “It was more a cumulative recognition for all that we’ve done since the FCWP was created back in 2005.” She runs the FCWP out of a home office, moonlighting as

an independent general contractor, but that leaves enough discretionary time to make the FCWP into the success it has become.

Development impacts

The Flint Creek watershed was originally a combination of pristine savanna, prairie and wetlands. As the area developed, things began to change. Invasive species were altering the ecosystem for the worse, and groundwater recharge areas were showing signs of contamination from agricultural and urban runoff.

The Barrington Area Development Council, which goes back to

PROFILE:
Flint Creek Watershed Partnership, Barrington, Ill.



FOUNDED:
2005

WATERSHED AREA:
36.5 square miles

WATERSHED POPULATION:
40,000

ANNUAL RAINFALL:
36 inches

ANNUAL BUDGET:
\$17,000 (excluding grants)

EMPLOYEES:
All volunteers

WEBSITE:
www.flintcreekwatershed.org

Patsy Mortimer is coordinator for the Flint Creek Watershed Partnership (FCWP), an organization dedicated to restoring the vitality of some of the streams, lakes and prairies in Chicago’s northwest suburbs. (Photography by Brian Morowczynski)



the early 1960s, first identified the issues affecting Flint Creek. They called on several organizations for proposals, and one of them was Citizens for Conservation (CFC), on which Mortimer holds a board position.

CFC proposed the creation of the FCWP to address the problems, pointing out that Flint Creek could not be dealt with in isolation — it was necessary to look at the watershed as an ecosystem. The Development Council agreed, and the FCWP was born.

Initial funding came in part from the Governor of Illinois and the state Environmental Protection Agency under the Clean Water Act. Additional funding came from the Barrington Area Council of Governments, Barrington Area Development Council, Barrington Hills Conservation Trust, CFC, the townships of Barrington and Cuba, and the villages of Barrington, Barrington Hills, Hawthorn Woods, Lake Barrington, Lake Zurich and North Barrington.

CFC is a nonprofit organization that acts as fiscal agent for the FCWP. It's a convenient arrangement that allows the FCWP to focus on actual projects instead of funding and legal matters.

"We take care of all financial transactions for the FCWP, including grants, dues, and audits, as well as correspondence, legal questions, and contracts," says Sam Oliver, CFC staff director. CFC is also fiscal agent for the Spring Creek Watershed Project, which has interests similar to those of the FCWP.

First rain garden

One of the FCWP's first major projects was a demonstration rain garden at the Barrington Area Library. Installed, and still maintained at no charge by Trillium Native Landscape, it serves as an educational resource while mitigating runoff from a facility with a large impervious area.

The rain garden was designed to handle runoff from 2,000 square feet of roof and is built around a 3-inch riser into a storm drain. "Normally, we want the water to seep into the ground instead of going right into the storm drain, but that riser is a backup for when heavy rains exceed the garden's capacity," says Trillium co-owner Kevin Rische.

Construction meant excavating 300 square feet of soil to a depth of 30 inches, as some of the



One of the FCWP's first major projects was a demonstration rain garden at the Barrington Area Library. Installed and maintained at no charge by Trillium Native Landscape, it serves as an educational resource while mitigating runoff from a facility with a large impervious area.

subsoil was not well suited for drainage. "We added about 30 percent decomposed leaf litter to that soil," notes Rische. "That not only improves the drainage, but also creates a good planting medium."

Plants were selected based on moisture tolerance. Near the edges of the garden, where conditions are typically dryer, Rische used butterfly milkweed, prairie dropseed, and nodding wild onion. In the deeper areas, where water often pools, plants included blue flag iris, cardinal flower, and a variety of sedges.

"Well, sure, my name is on the certificate, but the award is really a testament to all of us here at the Flint Creek Watershed Partnership."

Patsy Mortimer

Workshop payoff

Citizens who attend FCWP workshops are offered free consultations, done by Trillium, to solve drainage issues on their properties. Sometimes

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That's how we define The Complete Package.

The Flint Creek watershed was originally a combination of pristine savanna, prairie and wetlands. As the area developed, things began to change. Invasive species were altering the ecosystem for the worse, and groundwater recharge areas were showing signs of contamination from agricultural and urban runoff.



SMALL BUT IMPORTANT

Nestled in the northeast corner of Illinois, about 10 miles inland from Lake Michigan, the Flint Creek Watershed drains 36.5 square miles of what originally was and still largely consists of wetlands.

Topography spans from 916 to 713 feet above sea level, a difference of only 203 feet. Its lowest point is at the confluence with the Fox River. Local topography is a result of the Lake Michigan Lobe of the last glacial retreat, 14,000 years ago, that sculpted the characteristic moraine features, including knobby hills, ridges, and kettle holes. It also deposited soil made up mainly of sand and gravel, with some clay at higher elevations.

Flint Creek itself is not large: It averages 15 to 30 feet wide and one foot deep. During floods, those figures can triple. Illinois Riverwatch estimates an average flow rate of 40 to 50 cubic feet per second near the Fox River confluence.

During drought years, as in 2005, the upper tributary known as North Flint Creek dried up. During years with heavy rains, as in 2007, which were the worst on record, Flint Creek sees significant erosion, some rechanneling, and frequent debris jams.

Silt is a big problem in Flint Creek, both from flooding runoff and erosion. The creek's bountiful catfish population doesn't help: Those bottom scavengers stir up sediments as they feed, increasing waterborne particulates.

Phosphates are also a problem, not only from fertilizer, but from minerals in the native soil. The State of Illinois banned commercial use of phosphate-based fertilizers, but some people still buy and use them.

Within the watershed are 10 Advance Identification (ADID) wetlands, designated by the state as critical for wildlife habitat, water quality, and susceptibility to stormwater runoff problems. Likewise, four locations are designated in the Illinois Natural Areas Inventory for concerns that include the restoration of presettlement flora and fauna.



ABOVE AND BELOW: Patsy Mortimer (purple blouse) leads participants in an invasive plant species seminar near the Lake Barrington Village Hall in Chicago's northwest suburbs.



the homeowners are interested purely in aesthetics, but in other cases there are water problems. "In all cases, these people want to contribute in some way, whether to help restore groundwater supplies or provide habitat for local fauna," Rische says.

After an on-site inspection, Trillium makes recommendations about where to locate the rain garden, how large it needs to be, and what types of plants to incorporate. Sometimes the solution is as simple as using a rain barrel or bioswale.

Says Mortimer, "You wouldn't think a single 55-gallon rain barrel would make that much difference, but that's 55 gallons of water that can be used for irrigation, and 55 gallons less you have to pull up out of the aquifer. I have three rain barrels at my house."

Rische notes, "In the past two

years we've done 25 consultations. About half of those resulted in some kind of project. Seven have resulted in full-blown rain gardens."

The FCWP's other work has included detention basin retrofits, prescribed burns, and spot herbicide treatments targeting invasive plants. Much of the work is focused on the restoration of natural prairie areas to their original native prairie state.

Trouble with recharge

Public feedback shows that many residents of the watershed think their drinking water comes from Lake Michigan. The actual source is the local aquifer, and that's why groundwater recharge areas, rain gardens, and runoff mitigation matter so much.

Notes Mortimer, "The Flint Creek Watershed is really a subwatershed of the larger Fox River,

and there are people downstream who use the Fox River for their potable water supply, so what we do here affects more than just area residents. A large part of the problem is we've been getting hundred-year storms here pretty much every year. Last May we had three inches of rain that came in at a rate of 12 inches per hour, and that caused significant runoff issues."

The FCWP has so far focused its educational programs at adults. These have included workshops on the proper location and construction of rain gardens, effective use of rain barrels, and general programs relating to public awareness and stewardship.

Mortimer observes, "There are a lot of people who, when you use the term watershed, don't really know what that means. It seems amazing to people in our business, but it's true. So we've added some vocabulary education to our programs."

The FCWP would like to expand its outreach to schools and younger residents, but at present only a few such programs have been run. "They say if you really want to be effective at changing public thinking, you should educate the kids, and then they'll teach their parents," Mortimer says.

The partnership has worked

"If you don't get that stormwater back into the ground, it just heads downstream to the Fox River, and ultimately to the Gulf of Mexico. We'd much rather keep it here and use it for our own purposes."

Patsy Mortimer

with local high school students on stream bank restoration, and in 2009 conducted a Family Festival focused on raising awareness of watershed issues. It was quite successful, and more such events are planned.

Also of note is the "demo home" exhibit, a private property that incorporates a green roof, rain garden, rain barrels, a cistern, native plants, and permeable pavers. "It's a wonderful example of how all these components can come together effectively, and the owner has totally bought into the concept, providing tours for interested parties," Mortimer says.

Action plans

The FCWP has an ambitious itinerary of Action Plans for the watershed, in a variety of categories. They include:

Programmatic. Protect water resources and enhance water quality, protect natural areas and open space, reduce flooding, improve habitat, increase coordination among stakeholders, enhance stewardship and education.

Site-specific. Detention basin retrofits to improve water quality and reduce flooding, flood mitigation to reduce flood problem areas, lake shoreline and stream bank restoration in erosion problem areas (nine lakes and 24 stream miles), potential regional storage locations, and wetland restoration sites to reduce flood problem areas and improve water quality and wildlife habitat.

Green infrastructure. Identifies an interconnected network of open space and water resources that help sustain the watershed.

Groundwater recharge. Identifies open space and recharge areas on a map that stakeholders can use to protect groundwater recharge areas.

Water-quality monitoring. Assesses the current state of water quality in streams and lakes, changes in water quality after best management practices are imple-

mented to remove pollutants, and the public's behavior about water-quality issues.

Information and education. Raise public awareness of watershed issues. Some of these represent commitments that will always be works in progress, but Mortimer is pleased with what the FCWP has accomplished to date.

Plans for the future

The FCWP has ambitious goals. Of course, the recent economic downturn has affected budgets in all sectors, though perhaps less so with nonmunicipal entities that thrive on grant money

and the generosity of volunteers. Continued collaboration with local municipalities is a given. Agencies like the LCSMC benefit from the efforts of nonprofits, as well as from concerned and involved citizens.

Mortimer is also working closely with the Barrington Area Council of Governments, which 10 years ago commissioned an ongoing groundwater study. "I feel very lucky to have them in the loop," she says. "When you get all your drinking water from the

ground, you need to make sure the recharge areas are protected, so having all these towns and municipalities on your side is a huge benefit.

"If you don't get that stormwater back into the ground, it just heads downstream to the Fox River, and ultimately to the Gulf of Mexico. We'd much rather keep it here and use it for our own purposes." The FCWP is helping make that happen. ♦

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Reduces and recovers lost water

Problem

Operators at Mooresville (N.C.) Public Services Department had a 10 percent nonmetered water rate in their 240 miles of distribution mains. The leaks damaged roads and caused heavy traffic congestion during emergency open-trench repairs. Legislation requiring water conservation and the arrival of new industry motivated the city to upgrade its distribution maintenance program.

Solution

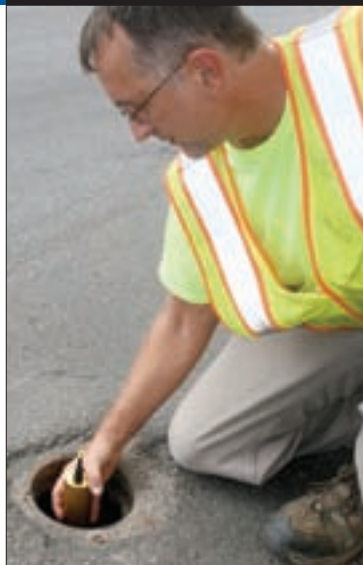
Public Services director John Vest purchased **Permalog loggers, L-Mic and X-Mic microphones, an AC digital correlator, and a Patroller II system** from Carolina Meter and Supply, a Hampstead-based distributor for **Fluid Conservation Systems**. "The equipment is compatible with our recordkeeping system and simple enough for our team to use," says Vest. "They feel confident that they are collecting accurate results."

The loggers store 29 days of level and spread history, present noise trends in graph format, and have changeable alarm threshold settings. The L-Mic combines an electronic listening stick and a ground microphone to perform general leak sounding operations. The X-Mic electronic ground microphone amplifies the noise of escaping water. An analogue-style moving meter gives noise-level trends, while the digital noise-level system pinpoints leak locations.

The digital radio in the correlator allows two-way communication with the base to display and control outstation status. The PDA-based Bluetooth Patroller transmits data via radio to moving vehicles for remote multiple logger programming and downloads.

RESULT

Within six months of installation, the city located and repaired 24 major leaks, saving \$80,000 annually. "The equipment enhanced our planning, allowing us to schedule maintenance with public notification to avoid traffic congestion," said field operations supervisor W.D. Bumgarner. **800/531-5465; www.fluidconservation.com.**



Free-swimming inspection system

Problem

The Grand Forks (N.D.) Wastewater Collection Utility wanted to assess its force mains without internal inspections and avoid replacing the entire system with estimated costs of up to \$5 million.

Solution

The utility chose the **SmartBall untethered acoustic leak and gas pocket detection system from Pure Technologies**. Using two insertion and extraction points, operators launched the sensor-filled aluminum core surrounded by a protective foam shell into the pipeline, where the flow propelled it until caught in a net downstream.

Various sensors pinpointed leaks as small as 0.10 gpm. An accelerometer determined leak locations, as did acoustic pulses emitted by the ball. Receivers were attached to pipe appurtenances. The collected data was graphically represented in a position versus time profile.

The ball travels up to 15 hours before reaching memory capacity and depleting its rechargeable battery. Once it is retrieved, the data is analyzed for acoustic anomalies. The technology can be used for most pipe materials including steel, ductile iron, and PVC.

RESULT

After the device identified acoustic anomalies as possible hydrogen sulfide pockets, areas of corrosion were validated with an inspection camera. The utility set repair priorities, reducing the total inspection and replacement costs to an estimated \$1.5 million. **800/537-2806; www.puretechltd.com.**



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At 18.5 inches high, Recharger 150HD lower-profile chambers are used for sites with depth restrictions or when larger infiltrative areas are required. (Photo courtesy of CULTEC)

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800/428-5832
www.cultec.com

APPLICATION:

Stormwater conveyance

BENEFITS:

Prevents surcharges; increases storage capacity

USER:

Winchester, Mass.

UNDERGROUND STORAGE

A chamber system helps relieve problems caused by a severely undersized stormwater system and end flooding at an athletic field and neighborhood

By *Scottie Dayton*

“We’re happy to provide some relief to this neighborhood.”

Beth Rudolph, P.E.

Even a two-year storm surcharged the stormwater system in Winchester, Mass., flooding the main athletic field and its neighborhood. The system drains about 67 acres of the Aberjona River watershed.

Portions of the town, originally named Waterfield, lie in a 100-year floodplain, and seasonal high groundwater in the project area averages 9.2 feet. The river ran through what became the athletic field until it was relocated in the 1950s.

In 2007, the town contracted the AECOM Environment engi-

neering firm to study the drainage problem before replacing some of the field with synthetic turf. Engineers found that four separate stormwater systems collected runoff that discharged into the river through a 27-inch outfall. The system was so undersized that it backed up even when there was no resistance from river flooding.

Jacob San Antonio, P.E., AECOM water resource engineer, recommended upgrading the system for storms up to and including a 25-year, 24-hour storm. Since the 4-acre site had no room for aboveground retention or deten-

tion ponds, he selected underground stormwater chambers from CULTEC Inc. to prevent surcharges and increase storage when the river rose.

The first phase of the project ended in March. “We’re happy to provide some relief to this neighborhood,” says Beth Rudolph, P.E., town engineer. “We won’t know how well the system works until it is completed and we have a significant storm, but so far we haven’t had any flooding.”

Convoluting conveyance

Winchester, eight miles north

of Boston, has a multi-year flood mitigation program with projects in the Aberjona River to reduce flooding. "Our stormwater upgrade tied right in because it reduces runoff to the river," says Rudolph.

The greatest challenge was untangling the Manchester Road drainage system. Two separate 12-inch reinforced concrete pipes conveying water to the main trunk line under Manchester Field formed a loop that backed up runoff and flooded the road. One line flowed through a siphon that crossed below a 48-inch sewer main owned by the Massachusetts Water Resources Authority (MWRA).

"Green Acres Landscape & Construction Co. abandoned the

Amaral Jr., assistant project manager. "We built the beds in stages, laying only as many laterals as we could backfill with stone." To keep the chambers from moving, workers slowly distributed stone over the crowns, allowing it to build up between the rows and cover them by six inches.

They covered the installation with another sheet of fabric, overlapping the edges by 24 inches, before backfilling with soil in 6-inch lifts, then compacting the soil.

River runs through it

Connecting the Manchester Road drainage system to the detention chambers required

"We dealt with an enormous amount of groundwater because we were working where the river used to run. The siphon alone was in 10 feet of groundwater."

Anthony Amaral Jr.

looped drainage system, increased the size of the drainage pipes in Manchester Road, and increased the slope for better drainage," says Rudolph. "They upsized the pipe crossing the sewer to 30 inches and installed a check valve at the tie-in so runoff can drain as river levels rise."

Meanwhile, other crews from the Lakeville-based company installed 1,356 Recharger 150HD detention chambers in three zones fed by two 24-inch HDPE headers. The system occupies 36,000 square feet of the athletic field and provides nearly 500,000 cubic feet of storage. The low-profile chambers are 33 inches wide and 18.5 inches tall and offer 4.89 cubic feet of storage per foot.

After workers excavated, dewatered, and prepared the subgrade, they laid down nonwoven filter fabric, spread and compacted six inches of 1- to 2-inch washed stone, and assembled the chambers.

"They have a fully formed end wall and an open large rib with a closed smaller rib for an easy interlocking connection," says Anthony

replacing and relocating the siphon, adding two manholes, upgrading the 12-inch line to 30-inch RCP, dewatering, and pipe jacking.

"We dealt with an enormous amount of groundwater because we were working where the river used to run," says Amaral. "The siphon alone was in 10 feet of groundwater. Excavations required numerous large pumps with filtration tanks running around the clock."

Dewatering also included sumps at the bottoms of the pits, well-point dewatering around the pipe-jacking area, and a 12-inch-wide, 30-foot-deep well between pits. Workers pipe-jacked 45 feet of 30-inch pipe under the sewer to connect the two manholes. The 24-inch HDPE pipe connecting the first manhole to the siphon had a flanged inline check valve to prevent backflow.

The second phase of the project began in July. Workers installed 556 Recharger V8 chambers in two zones fed by one header. The 32-inch-high by 60-



Aerial view of the Manchester Field project. (Courtesy of AECOM)

inch-wide units store 8.68 cubic feet per foot. The 22,000-square-foot system, installed under a parking lot behind a school, has 527,000 cubic feet of storage. The

entire project took about 10 months, including a two-month suspension during winter. ♦

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LOCATION AND LEAK DETECTION

By Briana Jones

Water loss control

Water loss control products from ADS include leak locators, flow measurement systems and data logging systems. The Enigma digital logging correlation system combines noise logging and noise correlation into one operation. The location products are powered by technology from Primayer Ltd. **800/633-7246; www.adsenv.com.**



Cable locator

The Pro871 cable locator from Armada Technologies incorporates a dual-frequency transmitter and sensitive receiver. The unit tracks CATV, electrical, telephone and lighting cable, then transmits a beep signal. The transmitter needs to be connected to ground at the wire to be tracked. The locator features high and low frequency and either null or peak tracking. The included IC871 inductive clamp allows nonmetallic connection to wires and cables. **616/536-2038; www.armadatech.com.**



Defect software

MuniXS entry-level data collection software from PipeLogix captures and analyzes leaks, inflow and infiltration and other pipeline defects. The survey mode is certified to PACP and NASSCO 6.0 standard. The software interfaces with most CCTV controllers. The survey wizard guides the user through creating a survey and filling in the required entry fields.



The data collection software records digital WMV video files with a USB 2.0 recording device. Still videos can be captured from live or previously recorded video. A built-in CD/DVD burner provides quick distribution of surveys. Users can import/export to the PACP standard and print or save basic reports in PDF format. **866/299-3150; www.pipelogix.com.**

Acoustic leak detection

An acoustic asbestos cement pipe condition assessment and leak detection solution from Echologics Engineering offers a noninvasive means of detecting leaks and measuring the remaining wall thickness of AC pipe in water systems, without breaking ground or disrupting service. The Windows-based solution uses two hydrophones attached to the outside of a span of pipe with a correlator that listens for variations of acoustic signals. **866/324-6564; www.echologics.com.**



Smoke generators

The Power Smoker and Power Smoker 2 from Hurco Technologies allow users to test new plumbing installations and identify leaks before final inspections. The systems are safe for indoor use, as all exhaust goes through the plumbing and out the roof vent. The LiquiSmoke used in the smokers will not harm people or pets, and will not stain or cause odor. **800/888-1436; www.gethurco.com.**



Valve insertion

Insta-Valve Plus from Hydra-Stop is a permanent, resilient seat wedge valve that provides trouble-free operation and easy insertion. Available in 4- to 16-inch sizes, it can be installed in lines with pressures up to 150 psi and operates with a standard valve key. The valve insertion system is durable and resistant to breakage and leakage. **800/538-7867; www.hydra-stop.com.**



Detectable rodders

Duct Hunter detectable rodders from Jameson have copper wire in the rod to trace or map underground conduit or pipe without digging or trenching. Connecting a signal transmitter energizes the unit with alternating currents of a specific frequency. When the energized unit is pushed into the underground pipe, the signal radiates outward through the soil to the surface. A signal receiver then detects the frequency applied to the unit by the transmitter. The entire buried utility pipe can be traced and marked from above ground by one person. The unit's ferrule attaches to a sonde, roller guide or pulling eye. It is available with rod lengths of 300 to 1,000 feet. **803/222-6400; www.jamesonllc.com.**



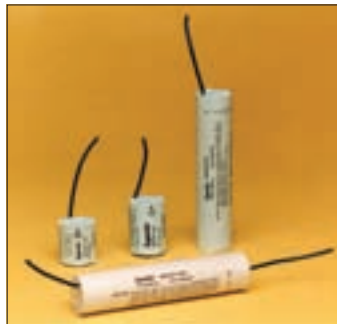
Water tracing dyes

FLT orange fluorescent water tracing dye products from Bright Dyes work for leak detection, input metering and septic system analysis. The dyes act as vivid labels for water and are easily detectable at 1 ppm. They are available in tablet, liquid, powder and wax forms and come in three fluorescent colors (yellow/green, red, orange). **800/394-0678; www.brightdyes.com.**



Smoke testing

Smoke generators from Superior Signal Company help find sources of inflow and infiltration causing wet-weather sanitary sewer overflows. The generators come in candles, fluid systems and blowers. The candles provide visible smoke to find faults at long distances, while the fluid systems use an insulated heating chamber with stainless steel injector to maximize dry output. The generators meet WEF and NASSCO standards. **800/945-8378; www.superiorsignal.com.**



Radar location

The Seeker SPR subsurface penetrating radar system from US Radar is an easy-to-operate unit that can infiltrate surfaces such as soil, clay, concrete and brick. Using a touch screen operating system and a range of antenna frequency options, it integrates a complete imaging system in a portable unit.

By transmitting energy pulses through a variety of media, the system can display an image of the subsurface on the operator interface. Users can set a variety of parameters before each unique survey to maximize efficiency. Parameters including soil settings, algorithms, and color palette can be adjusted using the touch screen. The system can be set to focus on a particular depth range. **732/566-2035; www.usradar.com.**



Manhole smoker

The self-contained TURBO-FOG MH-75 manhole smoke blower from Kingscote Industries uses liquid smoke cartridges to create dense, white smoke. Made of 11 gauge steel with a powder-coat finish, the blower generates over 7,500 cfm. No additional smoke bombs or garden sprayers are necessary. The unit is available with a Briggs & Stratton or Honda engine. **800/394-0678; www.turbo-fog.com.**



Locator kit

The single-frequency pipe and cable locator kit from Radiodetection includes the RD5000WL locator and RD5000WLT transmitter. The locator has a guidance mode that uses directional arrows and audio tones to guide the operator to the pipe or cable and a single-strength mode that displays the field strength given by the located pipe or cable. Both locator and transmitter are controlled using a single button. **877/247-3797; www.radiodetection.com.**



Digital locator

The LD-18 digital water leak detector from SubSurface Locators reduces ambient intermittent noises. Digital electronics sample, detect and suppress sounds every few thousandths of a second. The leak detector comes with amplifier with LCD display, controls and USB connection for PCs. Aviation-grade stereo headphones, PC software and USB cable, heavy-duty ABS plastic carrying case, and magnet base and nutdriver are included. Optional accessories include a sensor with strong magnet and a 9.75-foot cable for valves and hydrants. **877/778-0763; www.subsurfaceleak.com.**



Water leak detector

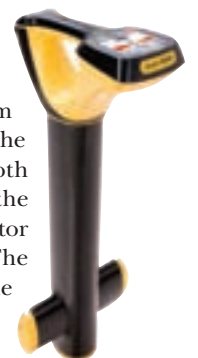
The LD-12 leak detector from SubSurface Instruments has a large meter display with six filters split into three low-side filters (100 Hz, 200 Hz, 300 Hz) and three high-side filters (600 Hz, 800 Hz, 1,200 Hz). A limiter switch cuts off all loud noises greater than 110 dBA, while the filter-through switch turns off all filters allowing users to hear sounds from 50 to 15,000 Hz. The unit includes ground plate, magnet base and contact rod. **855/422-6346; www.ssilocators.com.**



Range of locators

The vLoc2 range of cable and pipe locators from Vivax-Metrotech include a shorter, lighter version of the vLoc. Battery life is improved and plug-and-play Bluetooth is available for GPS compatibility. The range includes the general purpose vLoc2, combined marker locator vLocML2, and pipeline defect mapper vLocDM2. The addition of overload protection makes the range suitable for all applications.

The vLoc is Web-enabled with lockable features, allowing users to fully configure the unit to their requirements. The vLoc-9800 replaces the Metrotech 9800 series. Features include enhanced color display, ultrasmooth and responsive left/right display, a separate display for peak and sonde locating, and A-Frame fault-find compatibility. **800/446-3392; www.vivax-metrotech.com.**



(continued)



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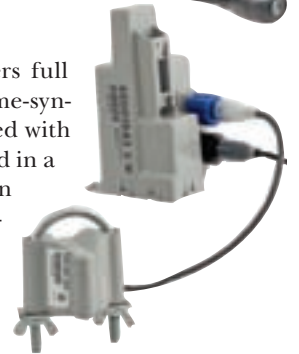
Micro gas detector

The micro CD-100 combustible gas detector from RIDGID offers adjustable sensitivity with a range from 0 to 6,400 ppm (methane). Alerts include visual, audible or vibration with Tri-Mode detection based on the environment. The unit also features a 16-inch flexible detection probe and sensor that automatically calibrates. **800/769-7743; www.ridgid.com.**



Communication module

The 100W ERT module from Itron offers full two-way communications to the meter and time-synchronized interval meter data. When deployed with an integrated leak sensor, the unit can be used in a stand-alone leak detection environment or in concert with Itron's AMI networks. The module stores 40 days of hourly reads and offers customer-side leak, reverse-flow and tamper alarms. The leak sensor is connected to a dual-input 100W endpoint via a three-conductor cable and inline connector and is completely waterproof. Data can be collected using an FC300SR handheld for walk-by downloading, Mobile Collector 3 (MC3), or Mobile Collector Lite (MCLite) for mobile AMR or via AMI fixed networks. **866/374-8766; www.itron.com.** ♦



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ALWAYS A STEP AHEAD

Orange County Sanitation District keeps costs down with an approach based on aggressive planning and maintenance and life extension

By *Scottie Dayton*

The Collection Facilities Operation and Maintenance Division of the Orange County Sanitation District in Fountain Valley, Calif., holds the enviable position of having only a minor backlog of sewer repairs. That is quite an accomplishment for the third largest regional wastewater agency west of the Mississippi River.

The district stays on top of problems by relying on strong collaboration with 21 cities and three

for a sewer management plan that would extend the life of its assets rather than just replace them through large capital projects. The program involved aggressive inspection and maintenance, chemical dosing to control corrosion and odors, and public education on best management practices.

Regulatory driver

The district's two wastewater treatment plants handle dry-weather flows of 207 mgd generated by 2.6 million people in central



Lead mechanic Peter Cheffs points to the map location of a pipe that needs to be jetted and cleaned. (Photography by George Katzenberger)

“We told restaurant owners that if they adopted BMPs, we would not require them to install more hardware or interceptors. Many saw the wisdom of how compliance could save them money, and we’re beginning to see success.”

Nick Arhontes

special districts representing 27 satellite utilities within a 480-square-mile service area. Its successful practices include outsourcing repairs to local contractors who use the latest technologies, allowing its own workforce to remain at 25 people.

In 2001, the district prepared

and northwest Orange County. Almost half the treated water is recycled for aquifer recharge and half is returned to the ocean. In low elevations, 15 regional pumping facilities help convey the wastewater.

The district also owns 176 miles of small-diameter sewers in the

city of Tustin and surrounding unincorporated areas, and 403 miles of regional interceptor and trunk lines. Small- and some medium-diameter vitrified clay lines are almost 50 years old. Lines 42 inches and larger are corrosion-resistant PVC-lined T-Lock concrete pipe (Ameron International Protective Lining Products). The replacement value of the collection system is estimated at more than \$3 billion.

In 2002, a regional Waste Discharge Requirement Order required the district and satellite utilities to adopt sewer system management plans and FOG reduction programs to combat sanitary sewer overflows (SSOs).

“The order expanded our collaborative efforts,” says Nick Arhontes, P.E., director of the Facilities Support Services department. “We still meet monthly to share information and improve regulatory compliance, and for staff education and training.”

District staff and a consultant worked with the cities to develop best management practices. During the process, officials learned that most restaurants did not have



PROFILE:

Orange County Sanitation District, Collection Facilities (Operation and Maintenance Division) Fountain Valley, Calif.

FOUNDED:
1948

POPULATION SERVED:
2.6 million

AREA SERVED:
480 square miles

EMPLOYEES:
25

INFRASTRUCTURE:
579 miles of sewer pipe;
15 pump stations;
8,187 manholes

ANNUAL BUDGET:
\$25.6 million

WEBSITE:
www.ocsd.com



Mechanic Bryan Blair, left, and lead mechanic Peter Cheffs use the Vector 2100 to jet a manhole. Cheffs holds a mirror to assess the progress.

grease traps or interceptors. “Once we discovered the omission, we met with other agencies’ plan checkers and regulatory people to stress the importance of following the plumbing code and requiring them where specified,” says Arhontes. “That was one big quick win.”

Educational endeavors

The other quick win was providing educational materials and best management practices to food-service establishments through the Orange County restaurant inspection program. The BMPs listed easy-to-do requirements such as posting pumper manifests, installing screens in sink and floor drains, removing grinders, reclaiming oils and grease, and educating staff with posters on how to follow the guidelines.

“We told restaurant owners that if they adopted BMPs, we would

not require them to install more hardware or interceptors,” says Arhontes. “Many saw the wisdom of how compliance could save them money, and we’re beginning to see success.”

High-density residential communities such as apartment and condominium complexes have their own grease problems. The district, health departments, and occasionally regulators work with property owners to implement better management and education programs for residents.

“The big wins have come through education,” says Arhontes. “One such effort was the Drain Is Not A Dump campaign, which told how to properly dispose of FOG, pharmaceuticals, and other products that should not be poured down drains.”

The district still has some grease

FLUSHABLE, NOT DISPERSIBLE

In 2010, satellite utilities and the Orange County Sanitation District saw significant clogging problems with flushable wipes in pump stations. Labor costs for pump cleaning increased, and one blockage almost caused an SSO in a satellite system. Technicians also saw a major increase of flushable products in gravity sewers and inverted siphons.

Nick Arhontes, director of the Facilities Support Services Department, spearheaded a local, then regional effort to collaborate with agencies statewide. He also belongs to the Water Environment Federation Collection Systems Committee’s Technical Advisory Group, for which flushable products are a key concern.

“Thus far, the group has collaborated with the nonwoven fabrics trade association to understand the products better and to try to resolve the problem,” he says. “One solution we proposed is better labeling that explains the difference between flushable and dispersible. Another may be adopting a national campaign similar to No Drugs Down the Drain.”

Based on knowledge the district gained about the problem, the National Association of Clean Water Agencies asked Arhontes to present a paper at a 2010 annual meeting of an operating committee. He gave it to six other groups last year.

One recommendation is to ask manufacturers to consider reformulating products for more rapid dispersibility. Another is for the municipal wastewater treatment industry to put a dollar amount on the problem by tracking operation and maintenance ragging costs more closely.

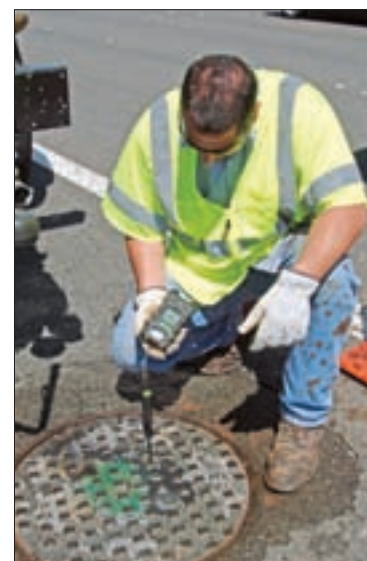
“We haven’t begun to focus on public education, but I believe the opportunities will be similar to the best management practices we initiated in our FOG reduction programs,” says Arhontes. “We must drive home the message that just because a product is flushable doesn’t mean it is dispersible.”

Bryan Blair uses an ALTAIR gas detector from MSA to check for gas in a manhole before opening it for jetting.

hot spots, but the recurrence rate is declining with the use of modern tools and a regular cleaning schedule. Small-diameter pipe in root-prone hilly areas is on a 12-month cycle, while an 18-month cycle is appropriate for flatter sections. District staff manages the hot spots using one of two Vector 2100 combination cleaning trucks, while contractors do inspections and production cleaning. “It’s a good mix,” says Arhontes. “That’s why we’re seeing fewer spills.”

Quality specifications

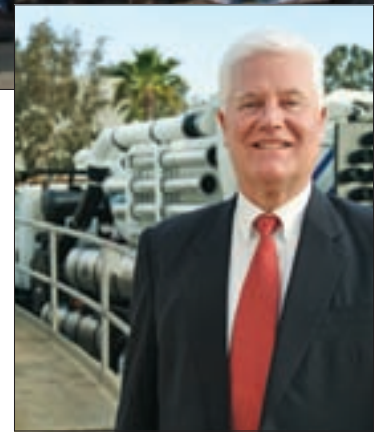
Arhontes believes the district is a leader in adapting programs to site-specific circumstances. “Operators have to understand their infrastructure, what is caus-



ing the problem, and what is the appropriate method and frequency to remove debris,” he says. Since 2004, contractors have inspected all of the small- and medium-size pipe system and about 80 percent



The Orange County Sanitation District collections division O&M team includes, from left, Chad Martinez, Ian Brown, Tim Hopkins, Ruly Olaiz, Steve Grande, John Gonzalez, Doug Rech, Jeff Peterson, Gilbert Padilla, Bryan Blair, Ray Navarro, Peter Cheffs, Aurelio Jamie, Matt Worthy, Kevin Schuler, David Andrade and Don Cleveland. In front are senior supervisor of collection facilities O&M William Cassidy and director of the Facilities Support Services department Nick Arhontes. Not shown are James Cabral, Eik Stratmoen, Mike Bolster, Darren Schuler and Rober Solis.



Nick Arhontes, P.E., director of the Facilities Support Services department.

of the trunk and interceptor lines.

“The vitrified clay pipe is durable with minimal cracking, so we specify cured-in-place pipe or Am-Liner fold-and-form PVC liners (Sancon Engineering) from manhole to manhole or for spot repairs,” says Arhontes. Contractors have rehabilitated or spot-repaired five miles of the 175-mile

accordance with engineering department standards. “Good specifications enable us to hold contractors accountable,” says Arhontes. “We review the manufacturer’s specifications, then specify any options. Our specifications state exactly how we want the work done.” Pipe and coating inspectors from the engineering department visit proj-

gyback agreement allows the City of Los Angeles to treat some district lines with RootX chemical formulation.

Custom-built solution

While blockages are the main risk in small-diameter pipes, odor, corrosion, grease, and grit are the major ones in large- and medium-diameter pipes, in some wet wells, and in the district’s 110 inverted siphons. Workers clean the siphons using custom cable-rigged equipment built by Morgan Co. in Fontana, Calif.

The chassis-mounted units have a hydrostatic drive for the cable reel system instead of a rear auxiliary engine. Rather than buckets or clamshells, the cleaning device is a tire pulled horizontally from the upstream to the downstream manhole. The tire helps scour grit and some grease chunks from siphon inverts and gravity sewers.

Initially, a district worker did a confined-space entry of a manhole, then used a shovel and 5-gallon bucket to collect grit that was hoisted out and dumped into specially designed trailers. The O&M

staff then developed a more effective process using a Vactor combination sewer cleaner with positive displacement blowers to vacuum grit from the water. The method minimized confined-space entries.

Success with the older truck led to the delivery of a new Vactor 2100 Plus combination unit in March 2011. Its Intelliview electronic system allows operators to monitor blower temperature, flow, pressure, and system diagnostics so that the machine runs safely and at peak productivity.

Routine site-specific cleaning keeps the debris minimal and easier to remove. The most problematic inverted siphons are cleaned monthly. The frequency decreases to quarterly and semiannually depending on the asset’s history.

“Our goal is not to replace all sewers.

Our goal is to inspect and repair them to extend service life. That is the best way to demonstrate fiscal responsibility to our customers.”

Nick Arhontes

system. They rehabilitate manholes with sprayed-on high-built Sancon 100 or 200 coating systems.

“Adequate surface preparation is the key to any successful liner or coating process,” says Arhontes. “If pipes have significant structural damage, they are repaired with Ameron Arrow Lock, a heat-welded bonded sheet liner, or Linabond, a polymer-adhered PVC sheet liner.”

Even the simplest repairs have material-based specifications in

ects frequently to ensure that contractors take no shortcuts.

In 1991, the district had 12 SSOs due to roots in homeowner laterals or in local sewer pipe joints and structural cracks. After the start of an aggressive root cutting and chemical abatement program, the district had three SSOs in 8-inch pipes in 2010 — one from grease and two from roots. Every year, contractors treat two miles of pipe with Sanafoam herbicide from Vaporooter. A pig-



A Wayne Ball from Sidu Company is used for cleaning a pipe.



The Orange County Sanitation District uses the GeoXT GPS unit from Trimble.

Life extension plans

The district fought a running battle with major corrosion and odor problems in medium- and large-diameter trunk lines more than 20 miles long. In 1987, it began slug-dosing them with sodium hydroxide (caustic soda) from tanker trucks. In the early 1990s, the team developed an odor and corrosion management program that evolved into today's chemical dosing program.

Nine liquid chemical feed stations, furnished, installed and maintained by Hill Brothers Chemical Co. and US Peroxide, cumulatively dose 3,000 gpd of ferric chloride, 400 gpd of calcium nitrate, and 2,500 gpd of magnesium hydroxide. The package systems store the chemicals in 2,000- to 12,000-gallon tanks and dose them at controlled rates into lines leading to the large sewers. "If you look at the physics, we're minimizing odors by controlling corro-

sion," says Arhontes. The program costs \$6.5 million, or 32.5 percent of the collection system's annual \$25.6 million budget.

In 2011, the district began its first design-build project: sliplining five miles of the 48-inch PVC-lined concrete Magnolia trunk line to rehabilitate failed welds in the 60-year-old vinyl pipe and stop corrosion. The O&M staff is using centrifugally cast fiberglass-reinforced polymer mortar pipe from HOBAS Pipe USA. "The district's engineering department decided that the design-build process should save time and be less expensive as compared to its traditional design-bid-build process," says Arhontes.

The district has a 100-year approach to asset management with a 20-year forecast. Its staff collaborates with 25 board members to develop progressive five-year strategic plans, while the engineering department manages a five-year capital improvement program. It uses the Esri GIS system to map assets, but the coordinates are from the state's land-based survey. Technicians can acquire coordinates in the field using handheld Trimble GeoExplorer GPS units. Other advances include upgrading the maintenance management software to IBM Maximo and providing field crews with Wi-Fi laptops.

Arhontes believes the district's greatest challenge will be maintaining a sustainable revenue stream. "Our goal is not to replace all sewers," he says. "Our goal is to inspect and repair them to extend service life. That is the best way to demonstrate fiscal responsibility to our customers." ♦

"Operators have to understand their infrastructure, what is causing the problem, and what is the appropriate method and frequency to remove debris."

Nick Arhontes

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Indy 2012

GET REVVED UP FOR INDIANAPOLIS

From the excitement of the Indy 500 to the best tacos in the city, nearby attractions add to your visit during the Pumper & Cleaner Expo

By Ted J. Rulseh

The 32nd annual Pumper & Cleaner Environmental Expo International, the biggest annual trade show for the environmental services industry, is moving to Indianapolis in 2012, a city that has much to offer to visitors.

Few Indianapolis 500 races have been as exciting as this year's, when Dan Wheldon took the checkered flag after rookie JR Hildebrand crashed on the last turn. You can relive the entire history of what is called "The Greatest Spectacle in Racing" at the **Indianapolis Motor Speedway Hall of Fame Museum**.

The museum, five miles northwest of downtown Indianapolis on the speedway grounds, houses one

of the world's largest collection of racecars, including more than 30 Indy 500 winners. They include:

- The Marmon Wasp, which won the first Indy 500 in 1911 with Ray Harroun at the wheel
- The four cars driven to victory by A.J. Foyt Jr.
- The Duesenberg #12 Murphy Special, the only car ever to win both the Indianapolis 500 (1922) and the French Grand Prix at Le Mans (1921)

The Borg-Warner Trophy, which honors the winner of each Indianapolis 500, is also on display. Visitors also can see the equipment and methods used to time and score the race. A computer presentation explains the progress through the years. To feel the excitement of

the race, you can visit the 48-seat Tony Hulman Theater, which offers 20 minutes of rare historic footage and Indianapolis 500 highlights.

Built as a test track for local automakers, the Indianapolis Motor Speedway opened in 1909. Two years later, the 2.5-mile oval hosted its first 500-mile race. The original Hall of Fame Museum was built in 1956. In 1987, the museum and speedway grounds were honored with the designation of National Historic Landmark.

The museum will be open daily during the Pumper & Cleaner Expo. Bus tours around the racetrack are available except when the track is in use for testing or racing. *Visit www.indianapolismotorspeedway.com/about/35204-Museum.*

Delicacy

A favorite winter delight for Hoosiers is hot chocolate from **South Bend Chocolate Company's Chocolate Café**, six blocks from the Convention Center at 20 N. Meridian St. At Christmastime, locals like to take their hot chocolate and walk around Monument Circle, enjoying the Circle of Lights and toy soldiers. *Visit www.sbchocolate.com.*

Shopping

For downtown shopping in Indianapolis, nothing tops **Circle Centre**, connected to the Convention Center via skywalk. Anchored by Carson Pirie Scott, the mall offers more than 100 specialty stores, plus a wide array of restau-



rants. Stores include the Colts Pro Shop, Pacers Home Court II, Lane Bryant, Coach and Godiva Chocolatier. Favorite dining spots include PF Chang's China Bistro, Ruth's Chris Steak House and the Weber Grill.

Dining

La Revolucion, a new Mexican cantina on Fountain Square, serves some of the city's best tacos with a variety of drinks (insiders recommend the red chili pepper margarita). The atmosphere inside is relaxing. In nice weather, customers can take a drink to the outdoor tiki bar in back. The restaurant is at 1132 Prospect St., a two-minute cab ride from the Convention Center.

Arts/Entertainment

Two blocks from the Convention Center, the **Eiteljorg Museum** contains one of the world's top collections of Native American and Western Art and is one of only two such museums east of the Mississippi. The Mihtohseenionki (The People's Place) gallery explores Indiana's indigenous peoples — the Delaware, Miami and Potawatomi Indians — through rare objects, historical photos, and interactive displays. Other galleries show Native American art and artifacts including pottery, basketry, woodcarvings, beadwork and apparel. The Nina Mason Pulliam Education Center offers demonstrations, workshops and other hands-on activities. *Visit www.eiteljorg.org.* ♦

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CONNECTING PIPE DATA TO GIS

The WinCan GIS Module from Pipeline Analytics maps pipe inspection findings to enable better asset management and project planning

By Doug Day

Data management is becoming more important as municipalities continue to see budgets tighten. A new module for WinCan infrastructure inspection and asset management software ties inspection data and CCTV results to a geographic information system (GIS) to help municipal staff manage the infrastructure, create mapped projects, easily dispatch work crews, and view more complete infrastructure detail in GIS maps. The software was created by

CD Lab AG of Switzerland and is distributed by Pipeline Analytics, the exclusive sales, training and support organization for WinCan software in North and South America. "It visualizes your CCTV data in GIS," says George Brown, GIS manager for Pipeline Analytics, who helped develop the software. "You can plot observations to make GIS data more accurate and even add more data into GIS." Brown demonstrated the GIS software model via Internet meeting on Aug. 23.

Walk-around

An older version of the GIS module required municipalities to have WinCan installed in the office, according to Pipeline Analytics account manager Mike Russin. That is no longer the case. "You can load WinCan data from the field into this utility in the office," he says. "You do not need a WinCan license or WinCan Viewer."

The software is ArcGIS 10 and 9.3 compliant and is designed to be used with dual computer screens. "It is set up for the person who

TECHNOLOGY TEST DRIVE

PRODUCT:

GIS Module for WinCan pipe inspection and asset management software

OFFERED BY:

Pipeline Analytics
877/626-8386
www.pipelineanalytics.com

LOCATION OF DEMO:

Via Web meeting

DEMONSTRATED BY:

George Brown, GISP, GIS Manager, Pipeline Analytics

LIST PRICE:

\$5,000

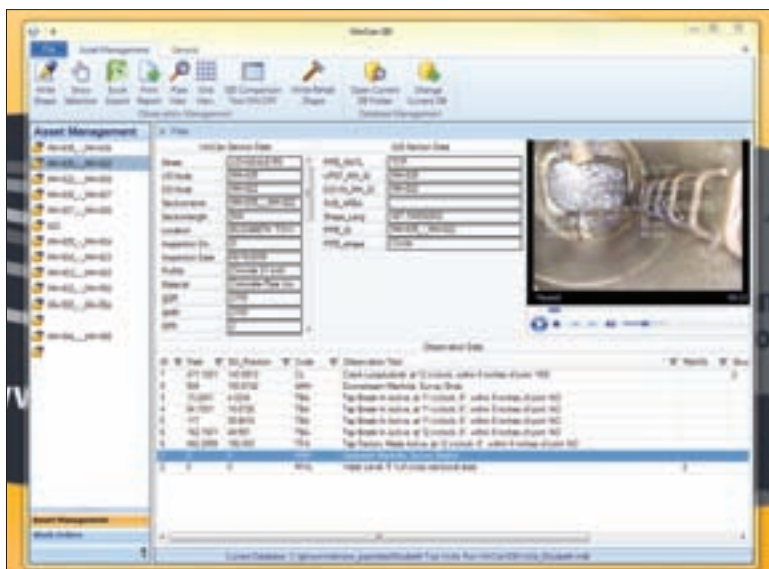


FIGURE 1 – The main display page for each pipe contains all information about that asset, along with survey findings and videos. (Photos courtesy of Pipeline Analytics)

“CCTV data is collected on lines in the field. It comes back to the office on a hard drive or thumb drive and is loaded into the GIS.”

Mike Russin

maintains the GIS system,” says Russin. “CCTV data is collected on lines in the field. It comes back to the office on a hard drive or thumb drive and is loaded into the GIS.”

WinCan GIS can export and integrate to most database programs, as well, including Access, SQL and Oracle. One customer of Pipeline Analytics connects the GIS data with an ArcGIS Server intranet site so that the information can be viewed online.

Operation

The WinCan GIS module cre-

ates a toolbar within the GIS system, such as ArcGIS. That is what Brown, a former consulting engineer and certified GIS professional, used for the demonstration.

A click on the toolbar brought up the WinCan data showing pipe information such as upstream and downstream manholes, pipe segment length, taps, and all inspection observations. (Figure 1)

Videos and pictures are also displayed on screen. One click will bring up the video or pictures alongside the inspection findings. “Engineers need to see this data

“Infiltrations, broken taps, they all have a location along a pipe. I want to be able to visualize them, and WinCan GIS has a tool to do just that.”

George Brown, GISP

visually,” says Brown. “Instead of watching videos for hours and hours, we integrated it with GIS to create a tool to do everything that engineers were doing by hand.”

Brown selected one specific pipe in the WinCan GIS module, and it was immediately highlighted on the GIS map on one screen while the pipe’s inspection findings and other details were displayed on the other screen. He then demonstrated how it works in reverse; selecting a section of pipe on the GIS map brought up that pipe’s information on the WinCan module. (Figure 2)

There is also a tool to compare pipe information in WinCan to that in the GIS system to assure accuracy. “The guys collecting the WinCan data have the freshest information,” says Brown. “They know if the pipe is 8 inches or 10 inches, and if it is made of terracotta or reinforced concrete.”

Selecting the comparison tool brings up the data from both, such as location, street, and date installed. In the demonstration, the WinCan data said the pipe was concrete, while the GIS data said it was terracotta. “The WinCan tool does not automatically change the GIS, but it highlights the disparity,” notes Brown. “It’s set up so a GIS operator decides whether to make the changes.”

Brown noted that with his GIS background, he would not want any software tool automatically changing data he had gathered and entered. “The GIS operator can look at the pictures and videos from WinCan to confirm the information before changing data in the GIS,” he says.

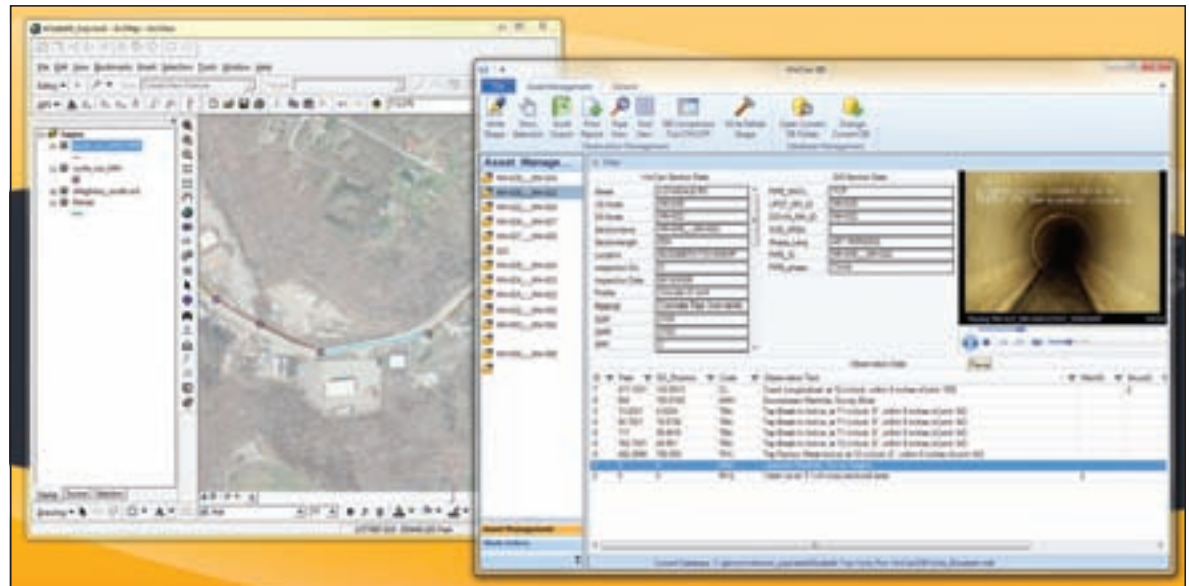


FIGURE 2 – In the dual screen environment, an engineer can look at pipe details on one screen (right) while seeing the pipe’s location on the GIS map.

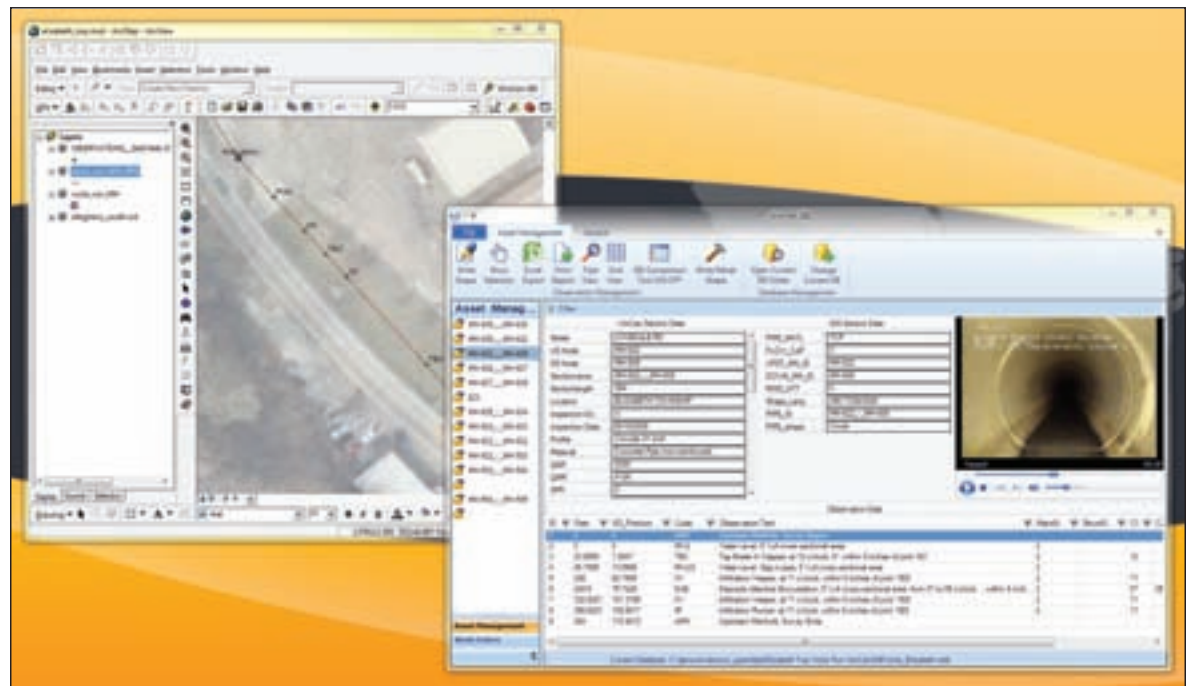


FIGURE 3 – Planning a repair strategy is easier when the user can visualize the location of survey findings (right) on a GIS map showing the actual location of each finding (left).

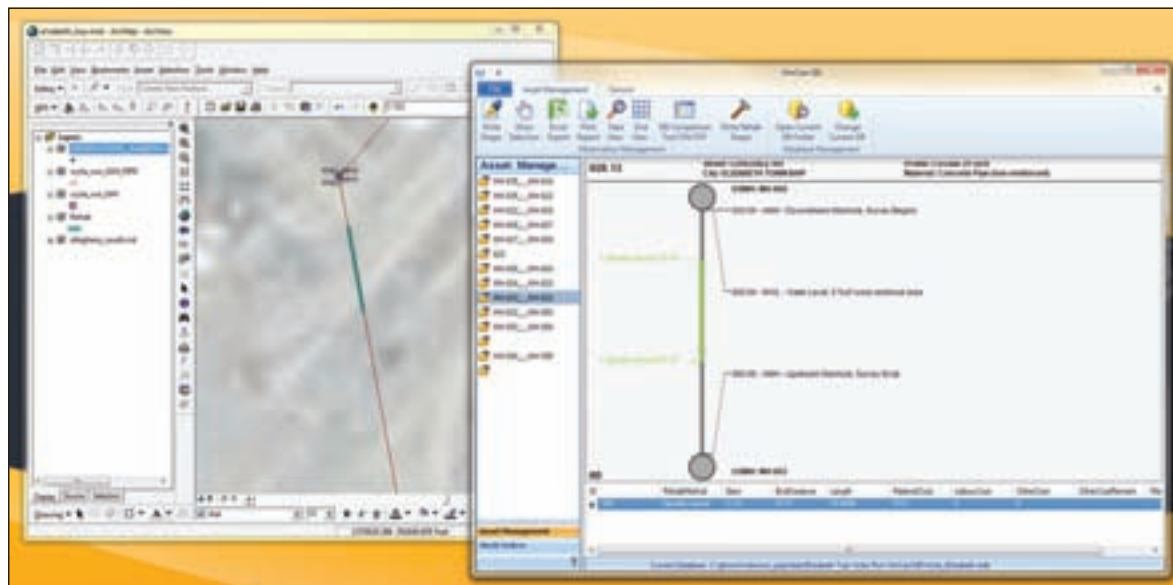
The tool allows the GIS operator to see the inspection findings in WinCan. It also will map the location of each finding on the GIS map. “Infiltrations, broken taps, they all have a location along a pipe,” says Brown. “I want to be able to visualize them, and WinCan GIS has a tool to do just that,” said Brown.

With a single click, Brown chose that tool, and the GIS map displayed labels for the upstream and downstream manholes for that length of pipe, along with the specific location of each inspection observation, and a label. “That takes a lot of programming and was one of the hardest things to do,” he notes. “The findings are vis-

ible with a single click.” (Figure 3)

If, for example, a city was planning a project to clean roots from all sewer lines, the data for all pipes could be searched to show just inspection findings dealing with root intrusion, and that data could be saved as a separate file. “It creates new GIS data from the WinCan data with all of the Win-

FIGURE 4 – A planned repair strategy can be viewed in a graphs mode on one screen while an engineer can also see the location of the area to be repaired on the GIS map.



Can attributes, and you could set up a root program for the summer,” he notes.

An engineer could use the integrated data to plan a repair strategy for a pipe. Brown selected a pipe that needed a CIPP repair. The GIS map displayed its location, including the associated manholes and the location of the area needing the repair. On the other screen, the inspection findings were visible along with the inspection video.

With a click, a repair strategy page is displayed to facilitate planning of the work. The engineer can choose where to begin and end the specific repair. (Figure 4) If the operator knows about how

much CIPP, pipe bursting and other repairs cost per foot, it is possible to create a rough estimate of the project cost. The location of the repair can be represented as a feature in the GIS and incorporated into an organization’s GIS.

Using a filter button in the WinCan module, Brown filtered all the pipes by criteria such as maintenance grade and structural grade. Selecting Maintenance Grade 2, he brought up every such pipe in the database. By selecting the list and clicking a button, he exported the data to an Excel spreadsheet showing all the information for each pipe in that category and the location of inspection videos and pictures.

Once the inspection data is integrated with GIS, it is possible to create a WinCan mission plan for pipe inspection that can be saved for future inspections. Brown selected all the pipes on

one street. “This will produce a prepopulated WinCan database,” he notes. “When it’s exported, all the pipe information will be filled out so the people in the field only have to collect observations.”

If an error in the database is found, such as incorrect pipe diameter, it can be corrected in WinCan. That error will then be visible when the inspection data is imported back into GIS. “Manhole numbers can be anywhere from six to 10 characters long,” adds Russin. “Reading that off a map and typing it in the field can generate a lot of errors, so this eliminates that problem.”

This saves time in the field and it aids in the management of CCTV projects while preventing the introduction of bad data to the inspection database and GIS maps.

Observer comments

With some training and practice, the WinCan GIS module is an intuitive program that integrates a lot of information into a format that is both easy to understand and easy to navigate.

GIS is a powerful tool in itself. Being able to visualize pipe information and repair needs in such an environment can simplify the process of managing important infrastructure.

Manufacturer comments

“People have made a big investment in CCTV data,” says Brown. “This is a powerful way to mine information from that data and get it into your GIS.” He notes that WinCan GIS helps municipalities be more efficient in turning that data into repair plans and budgets.

The software also helps engineers make better decisions about repair strategies. The pre- and

“Instead of watching videos for hours and hours, we integrated it with GIS to create a tool to do everything that engineers were doing by hand.”

George Brown, GISP

post-inspection data is suitable for submission to regulatory agencies to provide visual and electronic evidence that the proper repairs have been completed, Brown states.

Contractors can also offer the data as a deliverable for customers. “You deliver WinCan data, and you can take all that information and create a GIS file of your observations,” says Brown. Not only is it a better product with more information, it has more value for the customer, so they will be willing to pay more.

“It’s simple and clean, yet very powerful,” adds Russin. ♦



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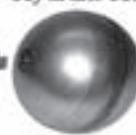
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CROSS-TRAINING PAYS

An Ohio county trains technicians in both mechanical and electrical maintenance and sees results in greater efficiency and better team morale

By Ken Wysocky

It may sound counterintuitive, but two heads aren't always better than one. At Montgomery County Water Services in Dayton, Ohio, officials found that sometimes one head is better than two, and proved it with a cross-training program that improved efficiency, saved money, boosted morale and better protected customers from events like flooded basements.

The program centered on the duties of nine maintenance mechanics and six electrical and instrumentation technicians who service 60 facilities, mostly water booster stations, sewage lift stations and underground water storage facilities.

By combining the two positions into one multitasking position, the department dramatically improved the odds of having an employee with the proper skills responding to alarms. Before that, "We'd send out an electrician to troubleshoot a problem during off hours, only to find it was a mechanical problem," says David Hackett, manager of maintenance services.

"So then we'd have to call out a mechanic and end up wasting time and doubling the effort. By combining the two positions, we could send out just one person who is qualified to handle electrical or mechanical problems."

Union approval

Initially, employees had mixed reactions to the program, which was completely voluntary. Some were excited about the chance to learn new skills, while others were skeptical, apprehensive or hesitant.

"There was some mistrust, which is to be expected," says Stephanie Smith, communications and training manager. "We had to underscore that the program would only succeed if they succeeded."

The plan also required buy-in from a union, which was concerned about pay equity. There was a good chance that new hires would be needed because of impending retirements, and union officials didn't want a new hire to receive higher pay than long-time employees.

"So we created an entry-level position for new hires," Hackett says. "We also adjusted the pay scale to make sure someone from the outside wasn't immediately making more money than mechanics and electricians who had been here 10 or 15 years." Officials implemented the program in 2009, and 11 of the 15 employees took part. Eventually, three new employees were hired.

Comprehensive training

The department established three tiers of training for the new positions. First, electricians needed 500 hours of hands-on mechanical training, and mechanics 500 hours of hands-on electrical training. Immediate supervisors coordinated all training.

For the first 200 to 300 hours of training, employees paired up with veterans from the opposite discipline and focused on preventive maintenance. After they were deemed qualified, the trainees could perform simpler corrective maintenance by themselves, while

being trained on progressively more complex tasks, including emergency work.

All the training hours were documented through the department's computerized work-order maintenance management system. "They couldn't get all the hands-on training from doing the same things," Hackett notes. "They had to be exposed to a full gamut of situations."

The second tier involved 14 self-testing modules that covered electrical and mechanical topics. Employees could skip a module by taking a pretest and posting a score of at least 70 percent. They also had to complete at least one module every 90 days with a test score of 70 percent or better and finish the 14 courses within three years.

"Self-study is better because making time for classes is diffi-

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 Ted Rulseh at 800/257-7222, or email editor@mswmag.com.

collection — the same course water system operators must pass to get an operator's license. The employees could take the class through self-study or attend off-site classes for two nights a week for about 12 weeks. "We felt this class would be good because it provides a fundamental, big-picture look at how everything in water and wastewater systems fits together," Hackett says.

As an incentive, employees received a \$1,500 bonus after completing the three training tiers. Department officials expected employees would need about three years to finish the modules alone, but 11 of the 13 completed them in less than one year.

"To be honest, that's a reflection on the caliber of people we

"No matter what you do, whether it's manufacturing or treating wastewater, you need to look at how you can be more efficient and productive."

David Hackett

cult," Hackett says. "You're at the mercy of a local college that may not hold a class if there aren't enough enrollees to justify it. Plus, a lot of people have families and can't get away for classes. With self-study, they could do it at their own pace and fit it into their family life."

One final course

The last training component was a class on water and wastewater distribution, treatment and

have working here and the materials selected for the training," Smith says. "They helped each other out, which was especially good for those who hadn't been at school for years and found the thought of learning again and taking tests almost paralyzing."

Paying dividends

The department benefits from the cross-training in several ways. The response time for resolving many emergencies is shorter now

that the employee responding can handle either mechanical or electrical problems. That greatly reduces the risk of things like flooded basements or unacceptably low water pressure that might have occurred when it took longer for the right person to respond.

"We've also seen an overall 30 percent reduction in overtime over the last two years," Hackett says. "I can't equate all of that to these positions, but they contribute substantially. If you want to put a dollar sign to that, we've saved about \$30,000 a year over the last two years and expect that to continue."

Hackett also notes that the cross-trained employees are better at troubleshooting. "As a result, we're finding the root cause of problems sooner," he says. "Before, you may have thought you found the cause of a problem, but it may have been just a symptom."

"It's hard to analyze and put into numbers, but I think going back to school made our technicians think more analytically and look at things in different ways. They even come up with recommendations to modify equipment so we run more efficiently."

For example, technicians suggested changing the pump operating sequence at a pump station, improving efficiency, saving electricity, and eliminating a clogging issue.

More ownership

In addition, Hackett believes the employees take more ownership and pride in their work. They are more likely to make sound in-the-field decisions, thus spending less time routinely lubricating a piece of equipment in favor of paying more attention to a facility with persistent problems.

"They saw that Montgomery County was willing to make an investment in their future," says Smith. "They have a higher degree of professionalism and confidence in themselves. And we have a more flexible workforce, which is good for us and good for them. When a position opens, we have more people qualified to fill it."

In Hackett's eyes, the program is an example of what utilities need to do as they confront budget cuts, threats of privatization and public pressure to reduce expenses.

"No matter what you do, whether it's manufacturing or treating wastewater, you need to look at how you can be more efficient and productive," he says. "Governments have to provide the best possible service at the most affordable rates. The only way to do that is to be more efficient — and never sit back like fat cats and rest on our laurels." ♦




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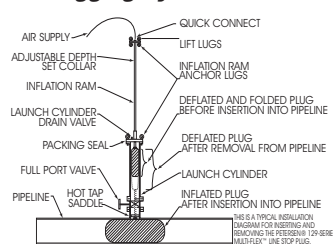
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Education Day

Monday, February 27th

SSCSC

Southern Sections Collection Systems Committee

- 8 a.m. Rust into Gold
- 9:30 a.m. Maintaining Collection System Easements
- 11 a.m. Sanitary Sewer Overflows: What To Do When It Is Flowing Down the Street
- 1:30 p.m. Finding Success and Growth in the Pipeline Cleaning Business
- 3 p.m. Evaluating and Optimizing the Efficiency of a Combination Truck
- 4:30 p.m. CCTV Inspection Essentials

NOWRA

National Onsite Wastewater Recycling Association

- 8 a.m. Aerobic or Anaerobic - Which One Is Better?
- 9:30 a.m. Mound Systems – Not Just for Wisconsin!
- 11 a.m. Dead Bacteria - How Overuse of Cleaners and Household Products KILL
- 1:30 p.m. Onsite Electrical
- 3 p.m. Managing Commercial Wastewater Treatments
- 4:30 p.m. Choosing the Right Float to Control Your Pump

NAWT

National Association of Wastewater Transporters

- 8 a.m. What I Need to Know About Trucking Safety
- 9:30 a.m. Setting the Dose, Establishing the Pump Delivery Rate & Relative Control Sensor Adjustment
- 11 a.m. Certification and Septic System Inspections
- 1:30 p.m. Is There Value in Processing My Own Sludge?
- 3 p.m. Maintenance Frequency Standards and Requirements
- 4:30 p.m. Working with Small Communities: System Management

NEHA

National Environmental Health Association

- 8 a.m. Promoting Competence: What's in It for Me?
- 9:30 a.m. Septic Tank Science
- 11 a.m. Advanced Treatment - What Does That Mean?
- 1:30 p.m. Successfully Dosing Pipe Networks
- 3 p.m. Pump Replacement
- 4:30 p.m. T.B.D.

NASSCO

National Association of Sewer Service Companies

- 8 a.m. Sewer Ops and CMOM - Leveraging the CMOM Process for Operational Benefit
- 9:30 a.m. Larry Keist - Developments in Water Main Linings
- 11 a.m. Culvert Rehabilitation: Have It Your Way
- 1:30 p.m. Manhole Lining: The Secret to a Successful Installation
- 3 p.m. Inspection of Pipelines Under Full Flow Conditions
- 4:30 p.m. Sewer and Industrial Equipment Rental - What are the Options?

SCOTT HUNTER

Business Track

- 8 a.m. Keeping Employees and Customers Happy - Part 1
- 9:30 a.m. Keeping Employees and Customers Happy - Part 2
- 11 a.m. Keeping Employees and Customers Happy - Part 3
- 3 p.m. How to be Successful and Profitable in Any Economy - Part 1
- 4:30 p.m. How to be Successful and Profitable in Any Economy - Part 2

WJTA

WaterJet Technology Association

- 8 a.m. Accessorizing Your Vacuum Unit
- 9:30 a.m. Good Craftsmen Have Heavy Toolboxes
- 11 a.m. Waterjet Technology: Applications and Equipment

PSAI

Portable Sanitation Association International

- 1:30 p.m. Cost Analysis: Delivery, Removal, Moves and Tip-Overs - Part 1
- 3 p.m. Cost Analysis: Delivery, Removal, Moves and Tip-Overs - Part 2



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Tuesday Sessions

February 28, 2012

MUNICIPAL TRACK

- 8 a.m.** Inspecting and Locating Laterals
Edward A. "Digger" Diggs - CUES, Inc.
- 9:30 a.m.** Get Quality Results From Your Inspection Management Program!
Rod Thornhill, Cori Criss - Infrastructure Technologies
- 11 a.m.** Using Chemical Grouts to Protect Mainlines, Laterals, Manholes and Lift Stations
Daniel Magill - Avanti International

SEWER AND DRAIN TRACK

- 8 a.m.** Contractors Need to Improve Jetting Sales
Nick Woodhead, Ken Bryson - US Jetting
- 9:30 a.m.** Lift Station Backup Pumping
Majid Tavakoli - Thompson Pump
- 11 a.m.** Optical Advancements Improve Range and Clarity of Pipeline Zoom Inspection
Richard Lindner - EnviroSight

BUSINESS TRACK

- 8 a.m.** Market Like the Green Bay Packers
Jerard Nighorn - Lenzyme, Inc.
- 9:30 a.m.** Training is the Key to Unclogging a Messy Business
William Raymond - Nexstar Network
- 11 a.m.** How to Make Profits That Drop Straight to the Bottom Line
Jenny Alday - One Biotechnology

PORTABLE RESTROOM TRACK

- 8 a.m.** T.B.D.
- 9:30 a.m.** New Emission Standards for Service Trucks
John Olson - Satellite Industries
- 11 a.m.** New Portable Restroom Products
David Roncadori - J&J Chemical Co.

LIQUID WASTE TRACK

- 8 a.m.** What You Should Know About ATUs and How to Evaluate and Service Them
Doug Dent - Ecological Labs
- 9:30 a.m.** From the Kitchen to the Grease Trap to the Landfill
Dennis Brunetti - FloTrend
- 11 a.m.** The Evolution of Effluent Filters
Theo Terry - Bear Onsite

Wednesday Sessions

February 29, 2012

PIPE RELINING TRACK

- 8 a.m.** Advances in Monitoring Technology Help Ensure Proper Liner Cure
Jake Wells - Pipeline Renewal Technologies
- 9:30 a.m.** UV Cured Fiberglass Pressure Liner
Richard Montemarano - LightStream
- 11 a.m.** New Braunfels Utilities Performs Manhole-to-Manhole Lining in-House
Travis Bohm - Perma-Liner Industries

INSTALLER TRACK

- 8 a.m.** Installation and Operation of Float Switches
Brett Wilfong - SJE-Rhombus
- 9:30 a.m.** STEPPing Up
Dennis Hallahan P.E. - Infiltrator Systems

BUSINESS TRACK

- 8 a.m.** Septic, Sewer & Portable Business Valuation Basics
Jeff Bruss - COLE Publishing
- 9:30 a.m.** Inexpensive Marketing, Promotion & Advertising Ideas for Septic, Sewer & Portable Companies
Jeff Bruss - COLE Publishing
- 11 a.m.** Mobile Marketing - Making Smartphones Work for Smart Business People
Jeff Bruss - COLE Publishing

GAS, OIL AND MINING TRACK

- 8 a.m.** Vacuum Equipment in the Marcellus Shale Region
Mark Nixon - MORO USA
- 9:30 a.m.** How to Vacuum More Efficiently with a Positive Displacement Blower
Jeff Peterson - Higon, Inc., a division of Ingersoll Rand
- 11 a.m.** Why Choose Hydroexcavation? Opportunities in the Oil and Gas Exploration Industry
Neil McLean - Hydro Excavation Consulting Unlimited

INDUSTRY SAFETY TRACK

- 8 a.m.** Cross Bores, Deadly but Preventable - Your Actions Can Save Your Life
Mark Bruce - Can Clay
- 9:30 a.m.** Is the Air in Your Manhole or Confined Space Safe to Breathe?
Ed Fitzgerald - Jack Doherty Companies
- 11 a.m.** OSHA: Introduction to Soil Analysis
Gary Hooks



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Patrick Connell

Spartan Names Connell Territory Manager

Spartan Tool named Patrick Connell territory manager, responsible for sales, service and customer support in the New York City metro area.

DYK, Natgun Form DN Tanks Inc.

DYK Inc. of El Cajon, Calif., and Natgun Corp. of Wakefield, Mass., merged to form new parent company DN Tanks Inc. Both companies specialize in the design and construction of prestressed concrete storage tanks. The merger results in expanded construction capacity and new technical expertise.

Federal Signal Opens South Carolina Store

Federal Signal Environmental Corp.'s Environmental Solutions Group opened an FS Solutions center in Lexington, S.C. The center will stock high-performance parts and accessories for the company's Jetstream brand of waterblasters, along with other makes and models, as well as rent a full line of waterblasters and tools.

Rock Mills Launches Website

Rock Mills Enterprises Inc. launched a product website, www.rockmillsent.com. The site provides information on the company's Lifter and Locking Cover manhole cover safety and security along with animated video of the products in operation.

Wachs Water Receives \$9.4 Million Contract

Wachs Water Services received a \$9.4 million contract extension to continue supporting the City of Atlanta, Ga., in its efforts to assess, test and survey thousands of valves and fire hydrants throughout the city's water network.



Peerless Raises \$60,000 for Hospital Camp

Employees, suppliers, customers, family and friends of Peerless Pump Co. raised more than \$60,000 for Riley Hospital's camp for children at the 12th Annual Camp Riley Golf Outing.

Pump Solutions Opens Singapore Office

Pump Solutions Group opened a regional office in Singapore. The office will primarily operate as a competency center to assist in marketing all PSG brands in Asia as well as distributor training. ♦



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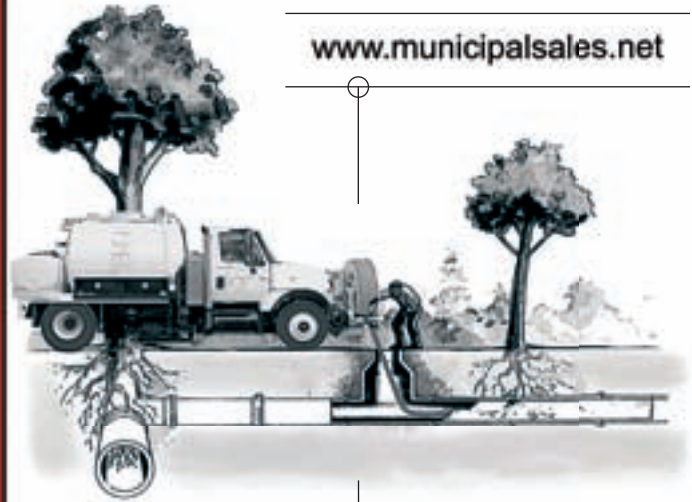
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Product Spotlight

Tamper-Proof Curb Box Offers Ground-Level Operation

By Ed Wodalski

The KURB T.O.P. curb box from E-Z Innovations allows ground-level operation without removing the top cap or plug. A quarter-turn of the pentagon key turns the valve on or off. Dennis White, co-inventor and company co-owner, says the idea came out of frustration while covering for an operator on vacation. "I had the bad luck of being there on shut-off day," he says. "The city clerk handed me 30-some turnoffs, and by the end of the day I had only gotten eight of them done because of having to fight with the curb boxes."

White says typical boxes can include tops or plugs that are difficult to remove or full of dirt or debris from pipe erosion or from workers removing the top and tampering with the valve. With the new design, operators simply put the pentagon wrench on the pentagon key and give it a quarter-turn right or left.

The 3-pound cast-iron top (three times heavier than conventional tops) is painted utility blue for easy identification. It has a tracer wire terminal for line locating. The Minneapolis pattern box accepts 3/4-, 1- and 1 1/4-inch curb stop valves. An increaser for 1 1/2- and 2-inch valves is available along with an Arch pattern adapter.

Other features include an easy-to-install, tamper-proof stainless steel cap that snaps into place over the pentagon key. "Once you have that cap in place, the only way to remove it is to destroy it," White says. If the cap is gone, someone likely has tampered with the valve. The curb box is available in three telescoping models, allowing users to keep fewer sizes in inventory. Model 3 adjusts from 3 to 5 1/2 feet, Model 4 from 4 to 7 1/2 feet, Model 5 from 5 to 9 1/2 feet.

"Most curb boxes only adjust up and down one foot," White says. "With ours you don't have to carry parts or have them sitting by the ditch wondering which size to use." The adjustable box also has a red line indicating the suggested length of extension. "We give a 6-inch safety zone so you don't overextend it," White says.

The curb box has a Schedule 40 PVC outer barrel to resist corrosive soils. The PVC pipe also makes the curb box lighter (Model 4 weighs 18 pounds). The box has a telescoping stainless steel inner rod system connected to a stainless steel valve receiver that connects to the curb stop valve. The top section of the box easily separates from the bottom section if accidentally hooked by a backhoe bucket, reducing damage to the water line or valve. **319/859-0761; www.e-zinnovations.com.**



KURB T.O.P. curb box from E-Z Innovations



Kano Offers Rust-Dissolving Penetrating Oil

Kroil rust-dissolving penetrating oil from Kano Laboratories loosens frozen metal parts. Available in eight sizes, the oil is made to break bonds due to corrosion or compression. **800/311-3374; www.kanolabs.com.**



Vacall Introduces AllSweep Cleaner

The AllSweep cleaner from Vacall features a sweep system that's wider than the vehicle, an intelligent control system

and single-engine design. Using either a single- or dual-sweep system, all units have full-width nozzles and gutter brooms along with a 16,500 cfm centrifugal fan to collect litter, stones, asphalt millings and debris. Position memory enables operators to raise and restore nozzle height when encountering obstacles. Options include a catch basin attachment and various-sized high-power vacuum tubes to remove leaves, rocks and debris from roadside catch basins, ditches and curb strips. **330/339-2211; www.vacallindustries.com.**

Ruhrpumpen Introduces Low-Flow Pump

A low-flow version of the CPP-21, the model CPP-L end-suction low-flow centrifugal pump from Ruhrpumpen complies with ANSI B73.1 standard and can be used to replace existing equipment without piping or base changes. Features include radial vane impellers for hydraulic control. **800/334-2553; www.ruhrpumpen.com.**



Gamajet Introduces Intrepid Rinsing Machine

The Intrepid tank rinsing machine from Gamajet Cleaning Systems is designed for fast and thorough cleaning without the use of chemicals, while using 80 percent less water than a standard spray ball at the same pressure. The rinsing machine features a direct-drive design that requires no gear reduction, while applying a concentrated stream in a 360-degree pattern. Average operating conditions are between 10-80 psi and 5-20 gpm. **877/426-2538; www.gamajet.com.**



Dust Control Introduces Long-Throw Evaporator

The DBE-1000 long-throw evaporator from Dust Control Technology is designed to dissipate excess water in large areas. The unit features Teflon spiral nozzles for efficient droplet dispersal, minimal fouling and clogging. It can launch mist up to 200 feet and achieve evaporation rates up to 75 percent. Standard configuration includes a 25 hp motor wired for three-phase, 480-volt, 60-cycle service or three-phase, 400-volt, 50-cycle power. The stainless steel manifold is designed for a flow rate of 66 gpm and water pressure of 100 psi. **800/707-2204; www.driboss.com.**

Powerblanket Offers Wraparound DEF Heaters

Wraparound diesel exhaust fluid (DEF) heaters from Powerblanket offer temperature control for totes, pumps and dispensing units. Utilizing GreenHeat technology, the heaters enable equipment to be safely and consistently warmed without compromising the chemical integrity of the DEF. By applying heat externally to a DEF container, the heaters eliminate the potential for contamination, localized boiling and purity failures. Standard blankets are rated to -10 degrees F, while Arctic versions are rated to -40 degrees F. Certified to UL, CSA and ETL safety standards, the blankets are available for 275- to 330-gallon tote sizes. Custom sizes are available. **801/506-0198; www.powerblanket.com.**



Myers Seth Pump Offers Trash Pump

The DP-150 6-inch Dry Prime Series, vacuum-assisted trash pump from Myers Seth Pump Inc. delivers fully automatic dry priming to 28 feet, moderate heads to 145 feet and maximum flows to 1,850 gpm. Designed for pumping neutralized sludges, cleaning cesspools, septic tanks and force mains, the unit can handle up to 3-inch solids. Features include maximum operation time of 40 hours at 1,800 rpm, 65-gallon fuel capacity, 42.3 hp diesel engine and maximum operating temperature of 212 degrees F. The pump measures 78.5 inches tall, 72 inches wide, 129.5 inches long and weighs 2,595 pounds. Options include Bauer fittings, engine auto-start, locking battery bar, skid version and hose rack. **904/389-6114; www.myersseth.com.**

TRU-Vu Introduces Sunlight Readable Monitor

SRM-10.4 Series 10.4-inch sunlight readable LCD monitors from TRU-Vu Monitors Inc. are designed to produce clear, sharp images, even with direct, bright sunlight on the face of the screen. The monitor features High-Bright LED backlights that produce 1,000 nits of brilliant white light, without the excess heat of



older CCFL backlights. The monitors are available with VGA, S-Video, Composite Video inputs, BNC loop-through output and optional touch screen. **847/259-2344; www.tru-vumonitors.com.**



Hot Jet Introduces Drain Line Jetter

The drain line jetter from Hot Jet delivers 18 gpm at 4,000 psi. Features include two onboard hose reels: one with 300 feet of 3/8-inch Piranha hose and one with 300 feet of 1/2-inch Piranha hose. Designed to clean drains from 2 to 18 inches in diameter, the unit features manual controls and offers the option of running one system with a 38 hp Kohler engine or both with a 76 hp engine. **800/213-3272; www.hotjetusa.com.**

Wheeler-Rex Offers Pipe Splitting Tool

Model 8600 and 8601 pipe tools from Wheeler-Rex are designed to split or pull out old service lines in the same operation. Model 8600 features 1-inch NPT male thread and three blades, designed to split 3/4- to 2-inch poly and copper pipe and pull out 3/4- to 2-inch lead or galvanized service. Model 8601 features 1 1/2-inch 12 straight thread and one blade, made to split 3/4- to 1-inch poly or copper pipe and pull out 1-inch lead or galvanized service. **800/321-7950; www.wheelerrex.com.**



Steril-Koni Offers Wireless Mobile Lift

The Earthlift wireless mobile column lift from Steril-Koni has an 18,000-pound load capacity and comes with 14-inch pickup forks. The lift is designed to provide a 10-inch clearance between the column and the vehicle. The battery-operated lift has no connecting cable or wires. Features include a variable-speed controller, graphical user interface and self-regenerating power supply. **800/336-6637; www.steril-koni.com.**

Phoenix Contact Offers Industrial PC

The VL BPC MINI embedded box PC from Phoenix Contact has an operating range of -40 to 149 degrees F. The Valueline Mini BPC family features a fanless design in a compact, DIN rail-mountable package. The line is based on specially selected Intel Atom CPUs that consume less energy and produce less heat. The wide temperature model uses the Intel Atom Z510PT processor (1.1 GHz). Interfaces include six USB 2.0 ports, one VGA port and one RS232/422/485 port. **800/888-7388; www.phoenixcontact.com/perfectfit.**



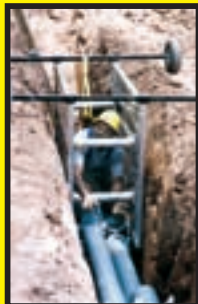
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PRODUCT NEWS

NOVEMBER 2011



McElroy Releases Anniversary Fusion Machine

The Pit Bull 26 pipe fusion machine from McElroy, introduced to celebrate the 15th anniversary of the company's Pit Bull line, is designed to fuse pipe from 2-inch IPS to 6-inch DIPS and comes with 2-inch IPS inserts. **918/836-8611; www.mcelroy.com/fusion.**

EJW Introduces Hinged Hatch Line

The hinged hatch line from East Jordan Iron Works is available in heavy duty for standard traffic applications and extra heavy duty for excessive load requirements. Hatches can be opened with less than 50 pounds of lifting force, while the camlock deters unauthorized access. Single cover units range from 24 to 48 inches, while double cover units allow for sizes up to 48 by 96 inches. **800/626-4653; www.ejiw.com.** ♦



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PACP PREVIEW

A training module now available online is a useful tool for professionals who want a better understanding of pipeline assessment

By *Ted DeBoda, P.E.*

Part of NASSCO's mission is to assure the continued acceptance and growth of trenchless technologies. That means we must educate and make information available to all trenchless industry professionals — NASSCO members and nonmembers alike.

Developing an overview of the Pipeline Assessment Certification Program (PACP) is a major part of that initiative. Now available online, the PACP Preview takes about 45 minutes to an hour to review. The training module includes images and CCTV video clips for most PACP codes and is based on the more extensive PACP recertification training modules. Its peer-reviewed content gives a concise

review of PACP. The preview, now offered free to anyone, is an excellent tool for:

- Professionals preparing for the PACP class who want a jumpstart on the program.
- Government agencies that want to obtain general knowledge of PACP without taking the entire course.
- Participants in the Water Environment Federation Operations Challenge who want to understand PACP and gain a competitive edge.
- Certified users who want a refresher on the PACP curriculum.
- Others aligned to the industry who want to better understand pipeline assessment.

The preview covers a high-

level view of the content in the PACP course. Topics include reasons for TV inspection, technical items of concern, loss of pipe support, hydrogen sulfide attack, root intrusion, FOG, examples of defective pipe conditions, and much more.

To access the preview, visit www.nassco.org, choose Training and Recertification from the list on the left, and select PACP Preview from the list on the right. The intuitive instructions will guide you to the preview, which is self-timed for convenience.

Another important PACP note concerns NASSCO's new recertification requirements. Users need to recertify every three years to keep their certification active. All certified PACP users will receive a



six-month notice of expiration by mail.

If you are a current PACP user, please check with us to make sure we have your current contact information. You can also check your certification status on the PACP section of the website. To streamline the process, recertification is available online as well as through a Master Trainer. Please visit the website to learn more, or call us at 410/486-3500. ♦

Ted DeBoda is executive director of NASSCO. He can be reached at director@nassco.org. NASSCO is located at 11521 Cronridge Drive, Suite J, Owings Mills, MD 21117

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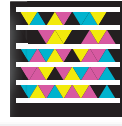
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