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January 2010

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NO VALVE LEFT BEHIND

Proactive valve maintenance
pays dividends in
Rutherford County, Tenn.

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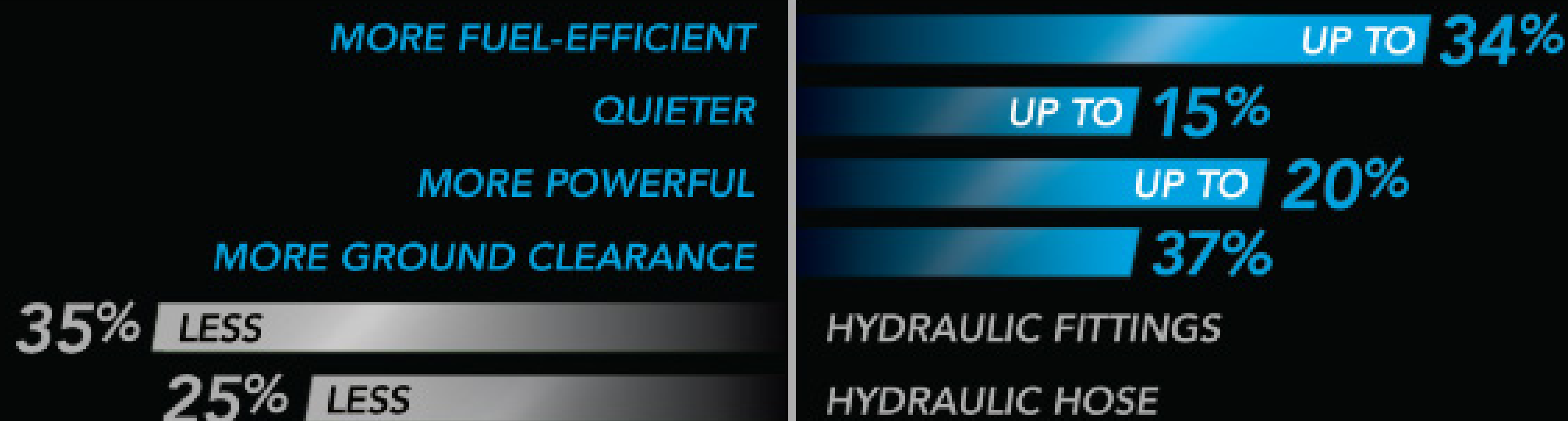
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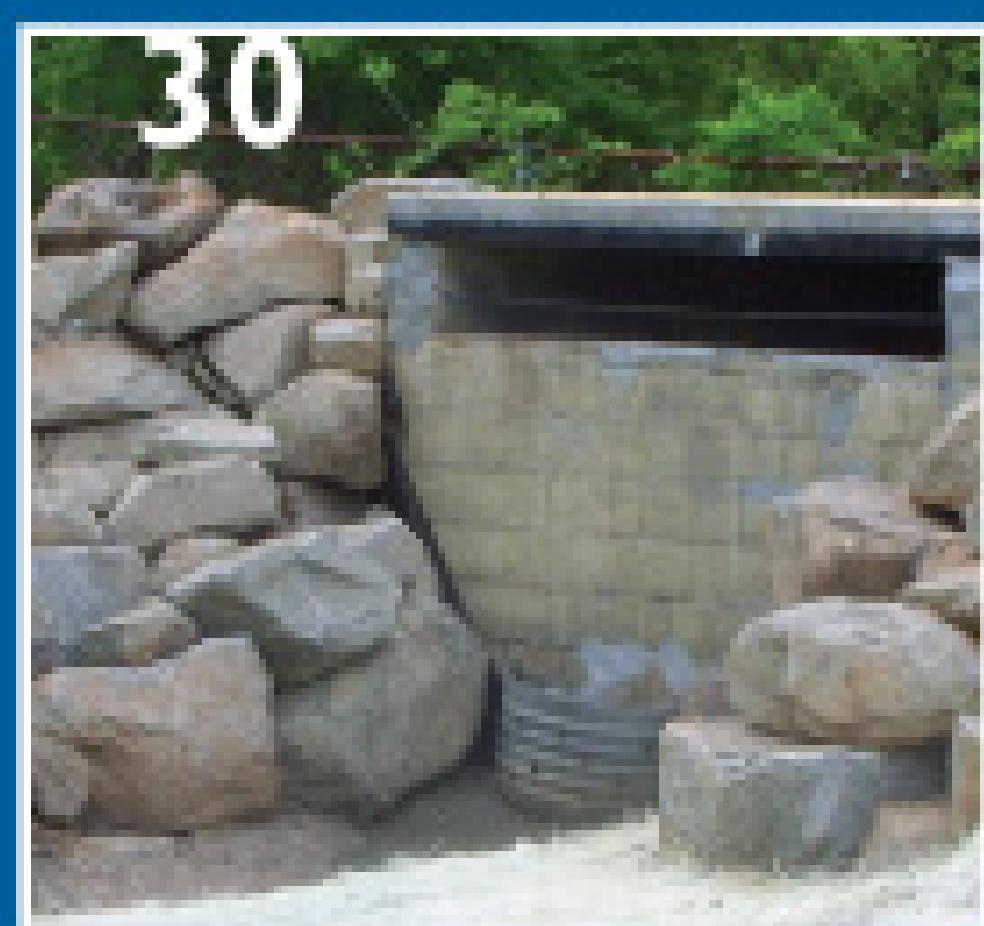
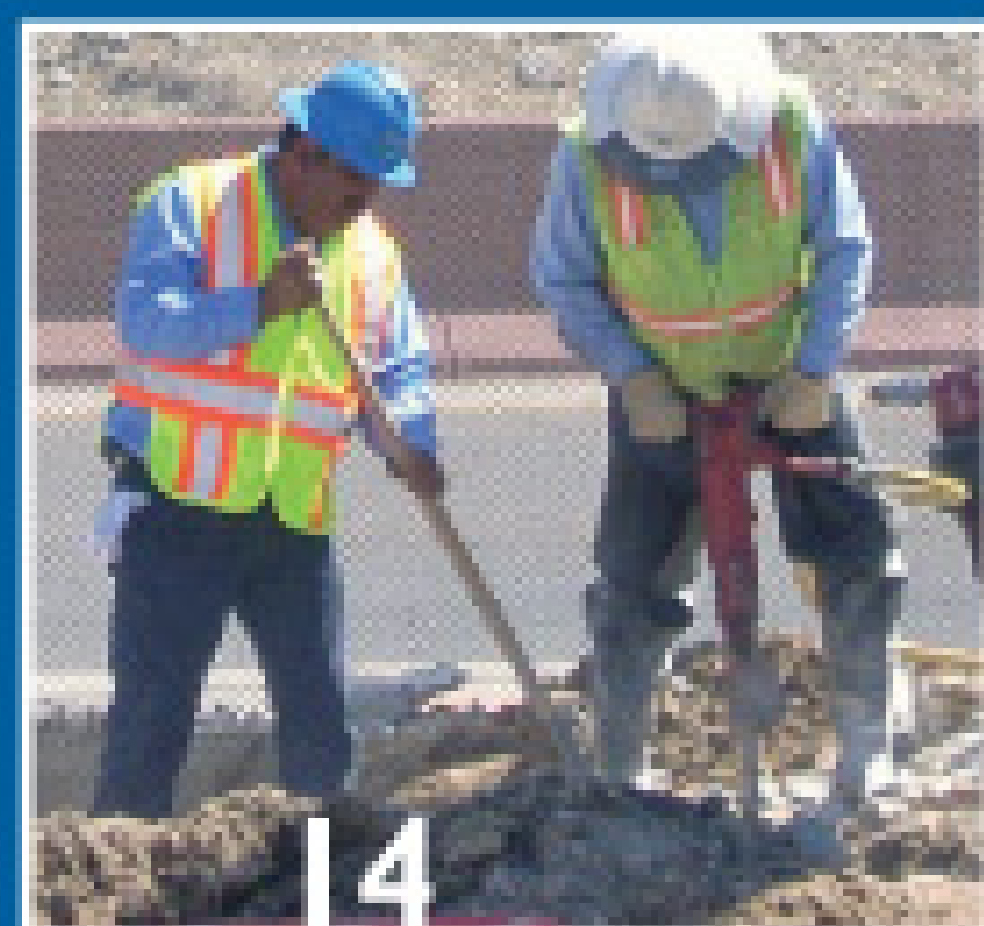
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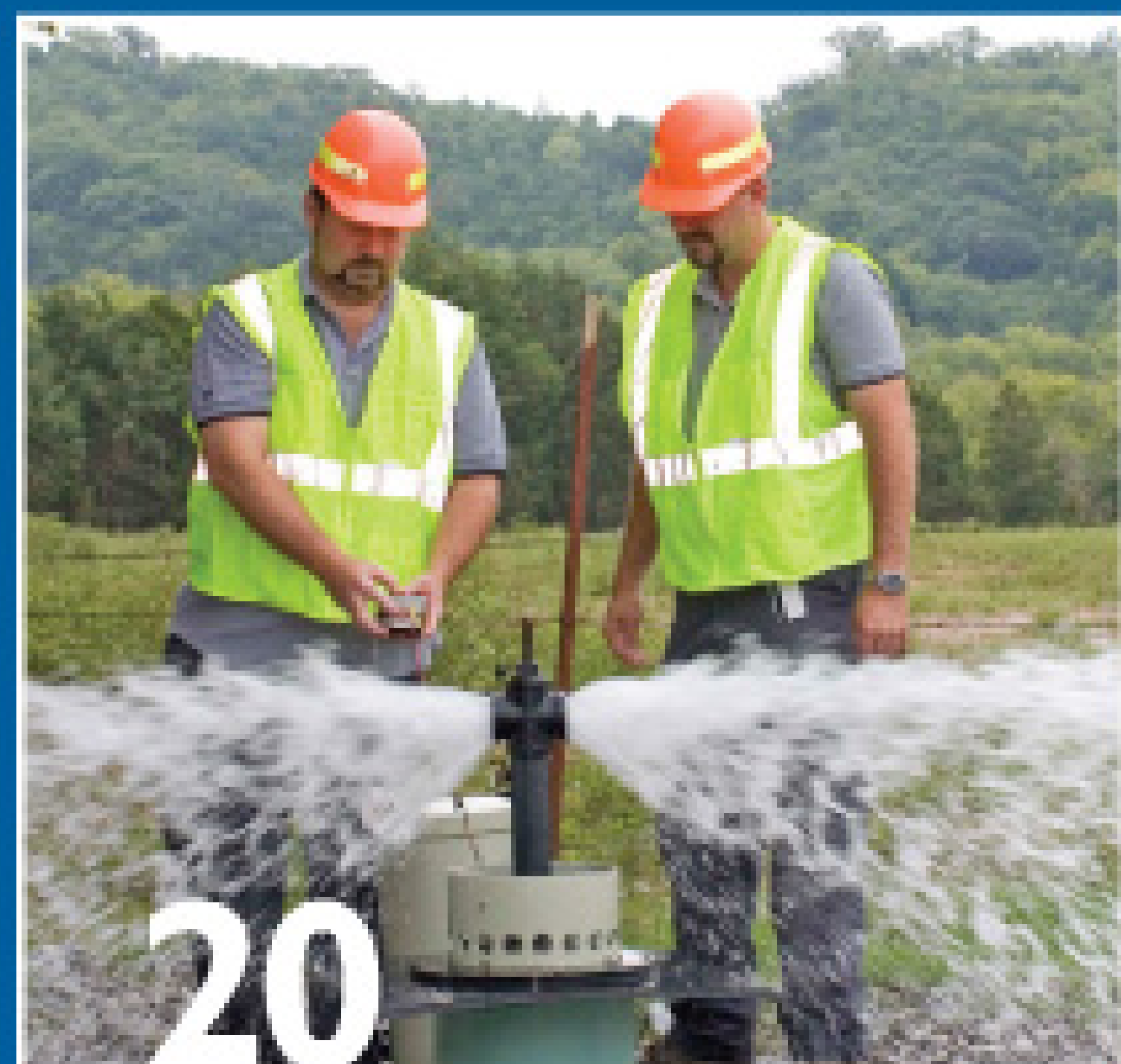
INSIDE:

WATER SYSTEM MAINTENANCE AND REHABILITATION



COVER:

The Consolidated Utility District of Rutherford County, Tenn., has invested in a comprehensive maintenance program to locate, identify, clean, and exercise more than 16,000 valves along 1,300 miles of water mains. Here, Mark Lee and Randy Harrell flush a water main. (Photo by Joy Dement)



COMING IN FEBRUARY 2010

Expo Pre-Show Issue/Exhibit Preview

- ◆ Sewer: Innovative FOG management in San Francisco, Calif.
- ◆ Sewer: Trenchless repairs and rehabilitation in Nampa, Idaho
- ◆ Storm: Education and communication in James City County, Va.
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JANUARY 2010

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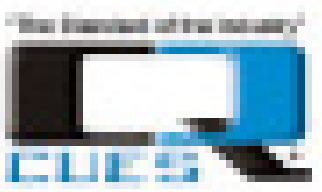

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FOR SANITARY, STORM AND
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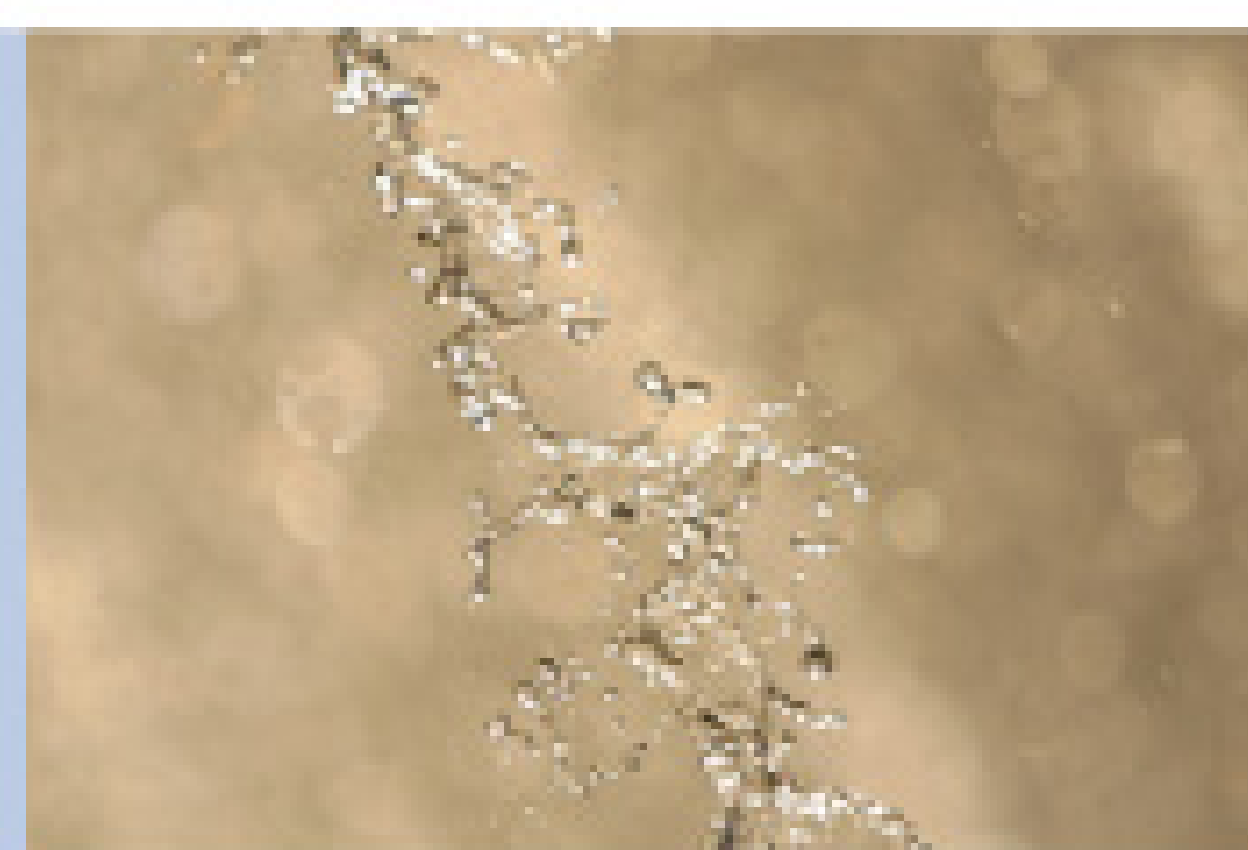
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14. Manually increase torque valve value again
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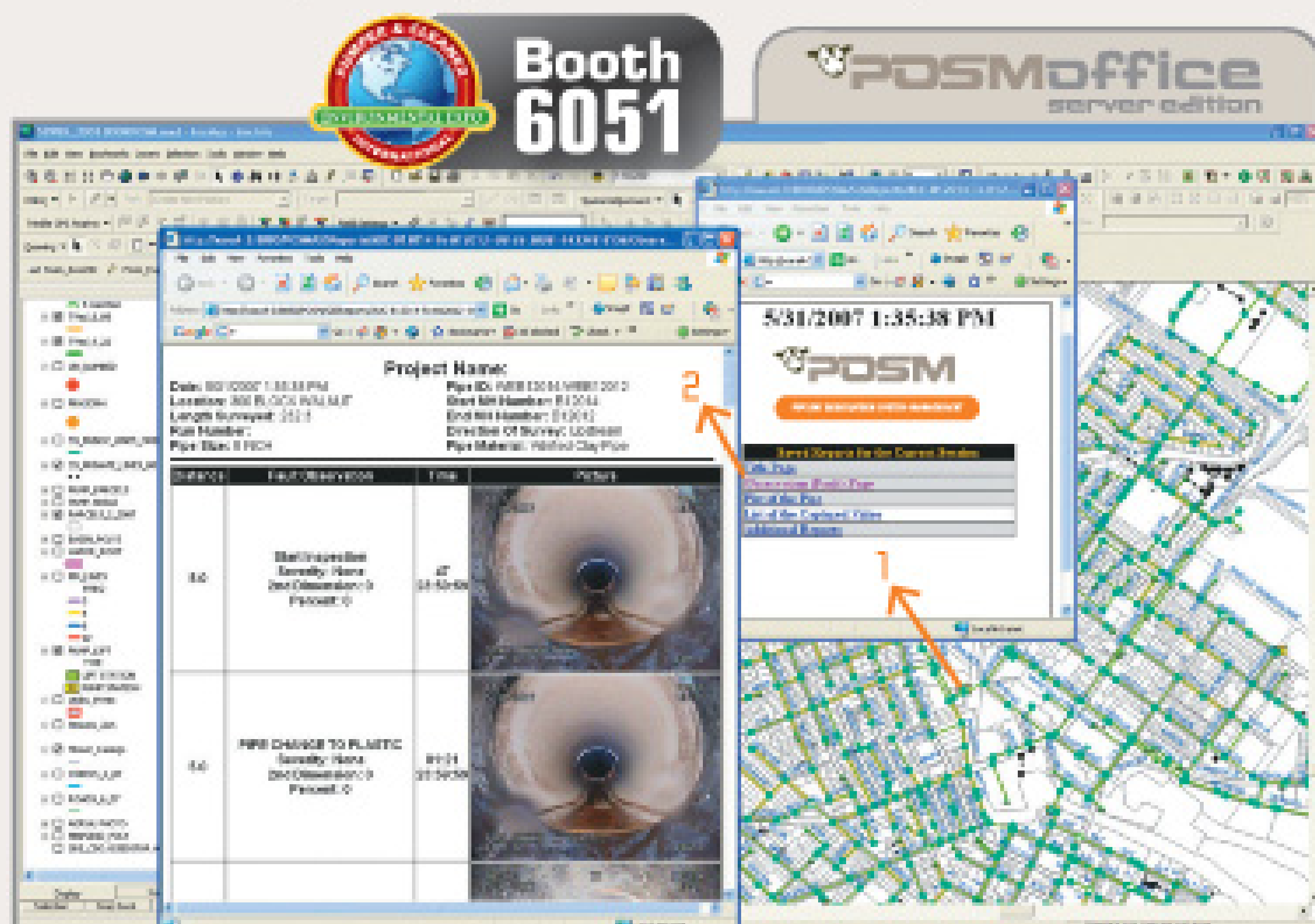




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LETTERS

TO THE EDITOR

Certification Has Value

To the Editor:

In response to the editor's column in the November 2009 edition of *Municipal Sewer & Water* ("Are You Certified?"), the Association of Boards of Certification (ABC) agrees that wastewater collection system operator certification is beneficial to the industry. However, it also ensures the integrity of the profession.

As mentioned in the article, while the U.S. EPA does not require national collections certification, it has used the CMOM (Capacity, Management, Operation and Maintenance) program as a way to get utilities to operate correctly. ABC concurs that certification in collections systems goes a long way for utilities in meeting EPA requirements under CMOM.

ABC is an international, non-profit association founded in 1972 to facilitate the transfer of certification between certifying authorities to and promote certification as a means of ensuring effective operation. Today, our membership is comprised of nearly 100 certifying authorities, representing more than 40 states, nine Canadian provinces and several international programs.

Almost 30 member programs currently use ABC's Testing Services

to offer collection system certification in their state, province or region. ABC's national and international voluntary certification program includes the area of wastewater collection. Approximately 3,000 operators take an ABC collection system exam each year.

As an organization dedicated to advancing water quality and integrity through certification, we know the benefits of collection system certification are numerous. Operators certified in collection are often presented with career advancement and higher wage-earning opportunities. Employers can use certification to make informed hiring decisions, help ensure ongoing continuing education for employees, and screen potential new hires.

Growing interest in wastewater collection system operator certification can only strengthen the industry by providing increased professionalism and prestige to the field, and ultimately ensure the protection of public health and the environment.

Robert "Bob" Hoyt
2009 President
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A CHANGE IN THINKING?

Are taxes a nuisance that take too big a bite out of discretionary income? Or a way to pay for things we need and want for ourselves and our families?

I caught myself in an old habit recently — a habit I know many people share.

As I paid the monthly bills, going through the stack one by one, I kept laying the medical and dental bills aside. Why? So I could see how much money I had left after paying for everything else, and then decide how much to pay the doctors.

See, the phone company or the power company may shut me off if I get behind. The credit card company will charge me interest. The mortgage company will tack on a penalty. But the doctors won't do anything. So maybe sometimes I'll pay half what I owe a doctor and catch up next month.

And then there's the other reason that maybe I don't pay the medical bills in full automatically. I go through life pretending I should be healthy all the time, that medical bills are an "extra expense" — something that really doesn't belong in my budget.

So while I treat the mortgage payment, the car payment, the gas bill, the cable TV bill, as inevitable, as things to pay as a matter of course, as a cost of living, I treat the medical bills differently.

A root cause?

Think about it. How many of us regard paying medical bills in the same way we regard paying the mortgage? We act as if those bills are an extra burden, the added expenses that bust our budget.

We decide how much house we want, how much car we want, how many dinners out we want, what kind of clothes, what premium TV channels. Then we chafe at the doctor bills that cut into our discretionary income.

The reality is that we, and our families, need medical care. We want our kids to get better fast when they catch strep throat. We want them to

have the right eyeglasses and to have straight teeth. We know we need our own preventive tests that come when we reach certain ages. All those things are not only necessary but valuable.

So, what if we changed our way of thinking? We'd put medical and dental expenses in the column with all manner of other necessities, like food, telephone, water, heat, haircuts, school supplies — ordinary costs of living. And *then* we'd decide how much house, how much car, and so on. And we wouldn't lay aside that pile of doctor bills at monthly check-writing time. We would lower our level of stress.

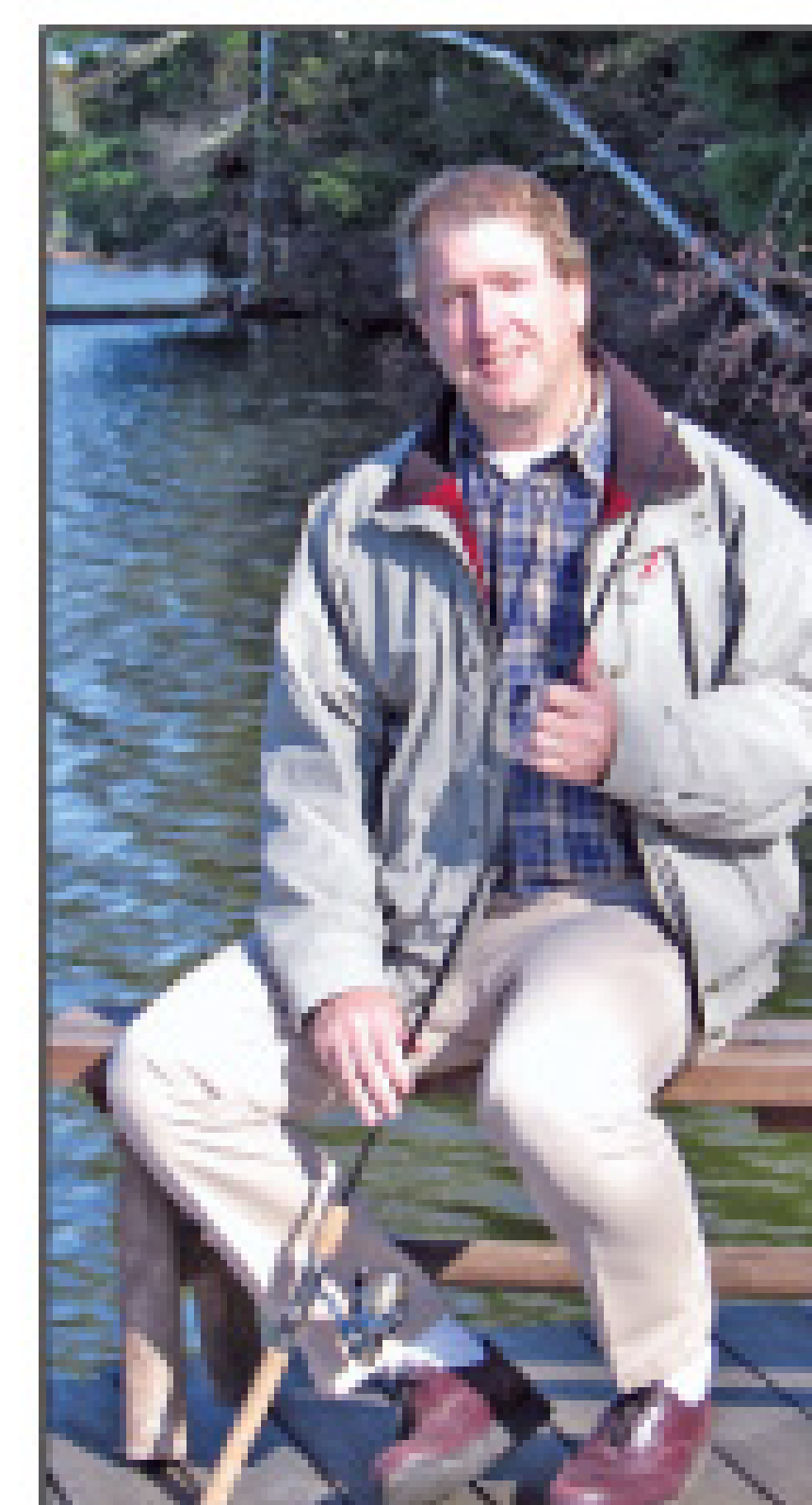
New attitude

Couldn't the same thought process change our attitude toward taxes? They're a cost of liv-

If we could just learn to think about taxes differently — not as a nuisance, not even as a necessary evil, but as money we spend willingly for important services we can't imagine being without — then maybe we could look more kindly on increased government spending when it's for a worthwhile purpose.

ing; something we pay for services we want and in many cases couldn't live as well — or at all — without. Fire and police protection. Clean drinking water. Wastewater treatment, trash pickup. Safe roads. Good schools for our kids with broad curriculums, sports, clubs, activities.

If we thought of taxes that way, we'd mentally factor that into the family budget. And then, when it came time to vote on a school referendum, we wouldn't vote "no" on reflex because that would "raise taxes." We'd look at it and say, "I can handle an extra \$10 or \$20 a month on my property tax bill — if I'm convinced it means my kids go to a better-equipped, more pleasant school that enhances their ability to learn."



FROM THE EDITOR

Ted J. Rulseh

I know, I know, we can't just lie down and accept any new program or any new tax any government body wants to pass. There have been abuses, there has been waste, there have been government programs that failed.

But the bald truth is that many of us who rail against any tax increase can easily afford to pay more. We simply don't want to, and we are so stubborn about it that we don't even ask, when a tax increase is proposed, what it will be for. If it raises my taxes, then the answer is no. Full stop.

Paying consequences

It's one thing to be an alert and critical citizen who asks local governments to justify what they spend. It's quite another to just dig in our heels, listen to the bile-spewers on talk radio, and reject any tax increase — while our water and wastewater infrastructure crumbles, our roads deteriorate, and our schools fire teachers and cut programs in art, music and drama.

If we could just learn to think about taxes differently — not as a nuisance, not even as a necessary evil, but as money we spend willingly for important services we can't imagine being without — then maybe we could look more kindly on increased government spending when it's for a worthwhile purpose.

Should we give governments a blank check? Of course not. But neither should we greet every prospect of higher taxes with a snarl. Try a different attitude. Listen to the plan. Have the debate. Then decide. And write that check with a smile. ♦

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

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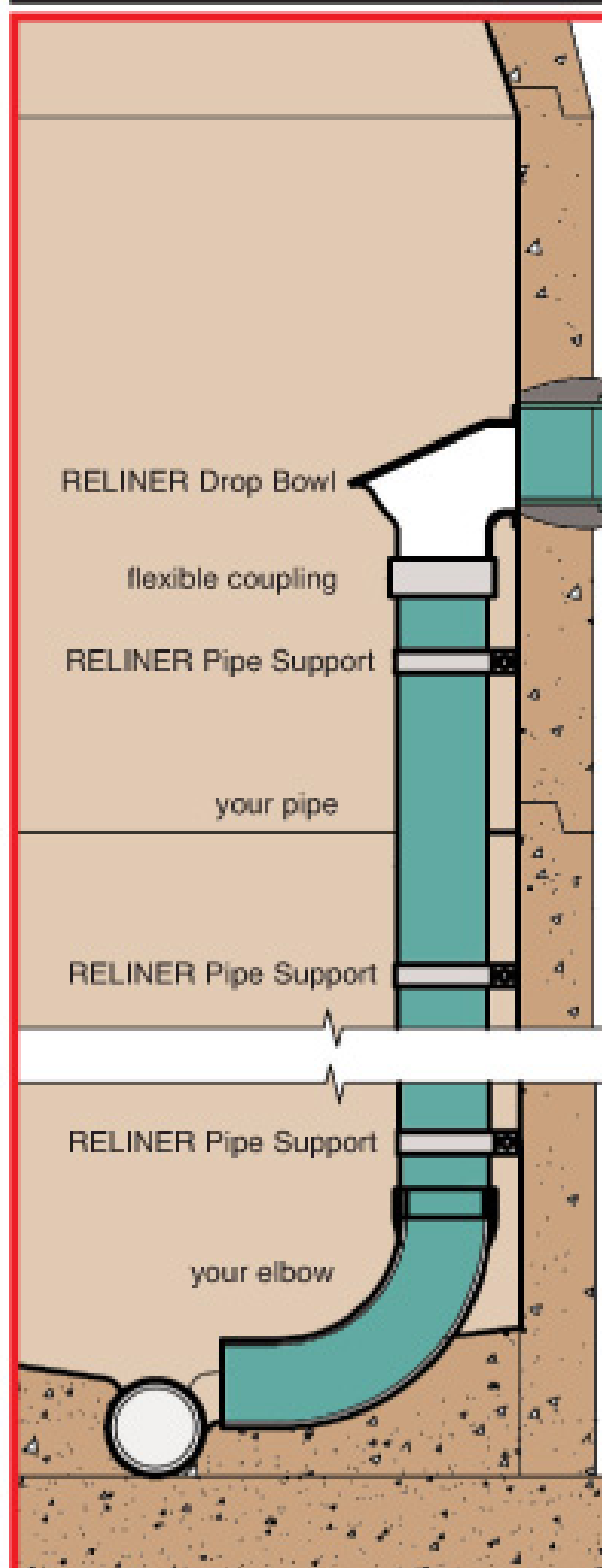
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YEAR BY YEAR

El Paso keeps building on success in its water conservation efforts, protecting water supplies for users while keeping costs well in line

By Suzan Marie Chin

When looking for ways to conserve water, the desert community of El Paso, Texas, knew it would take more than just getting residents to be more water conscious.

With an evolving program of community outreach, product incentives and rebates for residents, system-wide leak detection, asset tracking, and a dynamic shift

in thinking on how to make water system improvements, El Paso Water Utilities has reduced water demand by 40 percent and is able to put its capital improvement resources to the most effective uses.

Give and take

Conservation is vital in a dry city like El Paso. Although the Rio Grande River runs next to this metropolis of 750,000 residents, water from the river and other sur-

face sources is only available seasonally. From March through October, surface water is diverted for the region's agricultural industry, and the city must rely on groundwater supplied by two aquifers during the remainder of the year.

A significant drop in the surface water supply was forecast in 2004 based on an extended drought, and that prompted the city to act aggressively. "We have

PROFILE:
El Paso
(Texas) Water
Utilities



POPULATION SERVED:
750,000

INFRASTRUCTURE:
2,500 miles of water mains

EMPLOYEES:
800

ANNUAL BUDGET:
\$55.5 million (improvements)

WEB SITE:
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Crew members from El Paso Water Utilities break concrete to repair a leak in a 36-inch concrete water pipe. (Photos courtesy of El Paso Water Utilities Public Affairs Department)

developed an evolutionary process here," says John Balliew, vice president of engineering and operations for El Paso Water Utilities. "We started with educating our customers about water issues, how water can be conserved, and how they could contribute to our conservation measures. We then added product giveaways and rebates, reclaimed water, and rate incentive programs. Both sides have to give and take to make it work."

Incentive programs for residents were extremely well received, and the utility provided everyday, necessary items that customers could incorporate quickly to start saving water. The first rebate program was for water-saving toilets. It paid \$100 for each 3.5-gallon or 6-gallon commode that was





El Paso Water Utilities has aggressively clamped down on leaks, like this break in a 4-inch main.

the program, and last year it was down to 150 mgd.

“Second, increase conservation per capita. We went from 240 gallons per person per day to 135 gallons, so our investment of giving to receive has paid off.”

Listen and learn

Once community involvement efforts were underway, the utility began a comprehensive leak detection program. For its distribution system, acoustic-based listening devices were used to monitor all key valves in the system. All leaks were then repaired. That worked well for lines of 16 inches or less, but larger pipes required a different approach.

For larger lines, El Paso contracts for non-destructive acoustic inspection and testing utilizing a Sahara Pipeline Inspection System by PPIC (The Pressure Pipe Inspection Company). Inspections are conducted while the main remains in service. A sensor is inserted into a tap 2 inches or larger, and a small parachute uses the water’s flow to draw the sensor through the pipeline. The sensor is tethered to the surface, giving crews real-time results. A tracking device on the surface locates the position of leaks and other pipeline features to within 18 inches.

Detailed reports of the inspection findings give staff members the decision-making tools to plan replacement or rehabilitation.

For repairing water lines, El Paso sometimes uses carbon fiber,

externally and internally. In the area’s highly alkaline and corrosive soil, utility officials have found that carbon fibers in an epoxy matrix wrapped around the exterior of a damaged pipe provides the strength to create a sound and lasting repair. The material is also applied to pipe interiors when appropriate and possible. Before application, the pipe must be clean and dry. That means draining the pipe and applying the material by hand, in a manner similar to painting.

The city also looked at its concrete reservoirs as potential sources of water loss. To measure losses,



Tools in the utility’s water conservation arsenal include Permalog (Palmer Environmental) acoustic leak detectors.

the reservoir valves were closed and the elevation of water in the reservoir was measured over time. “As you start lowering the water level foot-by-foot and measure the amount of water loss, you can pinpoint at what level of the structure

“We started with educating our customers about water issues, how water can be conserved, and how they could contribute to our conservation measures. We then added product giveaways and rebates, reclaimed water, and rate incentive programs. Both sides have to give and take to make it work.”

John Balliew

replaced by a new 1.6-gallon-per-flush unit.

The second conservation program involved a giveaway of water-saving showerheads. Distribution centers were set up, and the utility gave away more than 200,000 units to residents who asked for them.

Another initiative was to encourage efficient use of evaporative cooling (swamp cooling) systems, common in dry climates. That kind of cooling saves electricity, but it can consume large amounts of water. In El Paso, evaporative coolers could account for

up to 30 percent of water demand at the height of summer. To counteract this, the utility educated customers on how to make swamp coolers save water by installing free restrictor clamps that control flow through the units.

“We wanted to accomplish two things with these programs,” Balliew says. “First, reduce the difference between the average pumping and peak pumping — effectively bring the peak down and reduce the gallons per person per day. For our pumping, we had a peak of 195 mgd at the start of

A DIFFERENT KIND OF WATER

Reclaimed water has turned out to be an excellent conservation method for the West Texas community of El Paso. With only seasonal access to its main surface water source, landscaping irrigation was a big drain on the community’s water reserves.

To take advantage of reclaimed water, El Paso Water Utilities assesses the water usage of its larger customers carefully. Not all large customers are good candidates, and a number of factors need to be considered. For example:

- Is the property using the water for irrigation or some industrial purpose?
- Can the customer use reclaimed water safely and effectively?
- Can a reclaimed water system be brought to the property cost-effectively?

Using reclaimed water is not without challenges, especially in landscape

irrigation. For communities in the Southwest, water starts with a relatively high salt concentration, and when it goes through its cycle of use, that concentration rises.

To help its customers wanting to switch to reclaimed water, El Paso provides guidelines for selecting suitable plants and for choosing nutrient additives, such as gypsum, that can be used to help sustain existing plants in a high-salt-content environment.

By working together, the utility and “power-user” customers have made the initial reclaimed water sites a success, and more locations are under consideration.

significant leakage may be occurring,” Balliew says. “By doing it this way, you can concentrate your rehabilitation and remediation efforts on the specific sections of the structure that are experiencing the heaviest degrees of loss.”

As part of the process, leaking expansion joints were replaced. Where structures had settled, crews excavated and replaced sections with new concrete. If there were no obvious large points for leakage and loss was occurring from surface age or wear, those surfaces were lined. In some cases, lining consisted of large sheets of plastic placed inside the reservoir and seamed together to form a solid barrier. In other cases, crews used a spray-applied layered polyurethane coating.

Track and measure

As it implements water conservation and leak detection initiatives, El Paso tracks its activities with Hansen Asset Management software and ESRI geographic information system. “We keep track of anything related to a pipe’s condition, its inspections, assessments



“Our previous paradigm stated simply that a pipe should be replaced after a fixed number of years in service. I think that approach is shared among many utilities and needs to go away and be replaced. The new paradigm should be: if you have a pipe that isn’t leaking and is structurally sound, you don’t have to replace it.”

John Balliew

and repairs,” Balliew says. “At any time, we can view any section of the system or a particular length of

pipe and analyze it.

“So anything that happened along that pipe in terms of a leak, a repair or a structural defect or something else that was noted by our field crew shows up, along with its geographic relationship. With that information, we’re able to make informed decisions. Do we do some sort of further condition assessment? Do we schedule it for a replacement? Does it need to be replaced now or does it need to be replaced 10 years from now?”

With detailed documentation on hand, El Paso has been able to delay capital improvements and use its budget to the best advantage. In one case, an aging pipeline that was thought to be a candidate for complete replacement proved to have only five defective joints that could be repaired at relatively low cost.

Incidents like this have created a switch in the utility’s paradigm for viewing asset life expectancy. “Our previous paradigm stated simply that a pipe should be replaced after a fixed number of years in service. I think that approach is shared among many utilities and needs to go away and be replaced,” Balliew says. “The new paradigm should be: if you have a pipe that isn’t leaking and is

Workers break concrete and excavate to repair a service line leak.

structurally sound, you don’t have to replace it.”

“We have some pipes that are over 100 years old with no problems, and others that are just a few years old and are experiencing abnormal issues. Base your repairs and capital improvements on the system’s actual conditions, and not what ‘should be’ or is typical.”

Expand and grow

Each year, the utility has added a new element to its conservation program. Some have shown more dramatic results than others, but the net result is resounding success.




A microphone for the Sahara Pipeline Inspection System is deployed in the field. The utility uses the system for non-destructive acoustic inspection and testing.

The staff will keep adding new facets based on knowledge gained as the program progresses.

From one community outreach program to an ever-expanding inspection and rehabilitation program, El Paso has shown that by strategically blending different technologies and methods, the common goals of community and utility can be achieved. ♦

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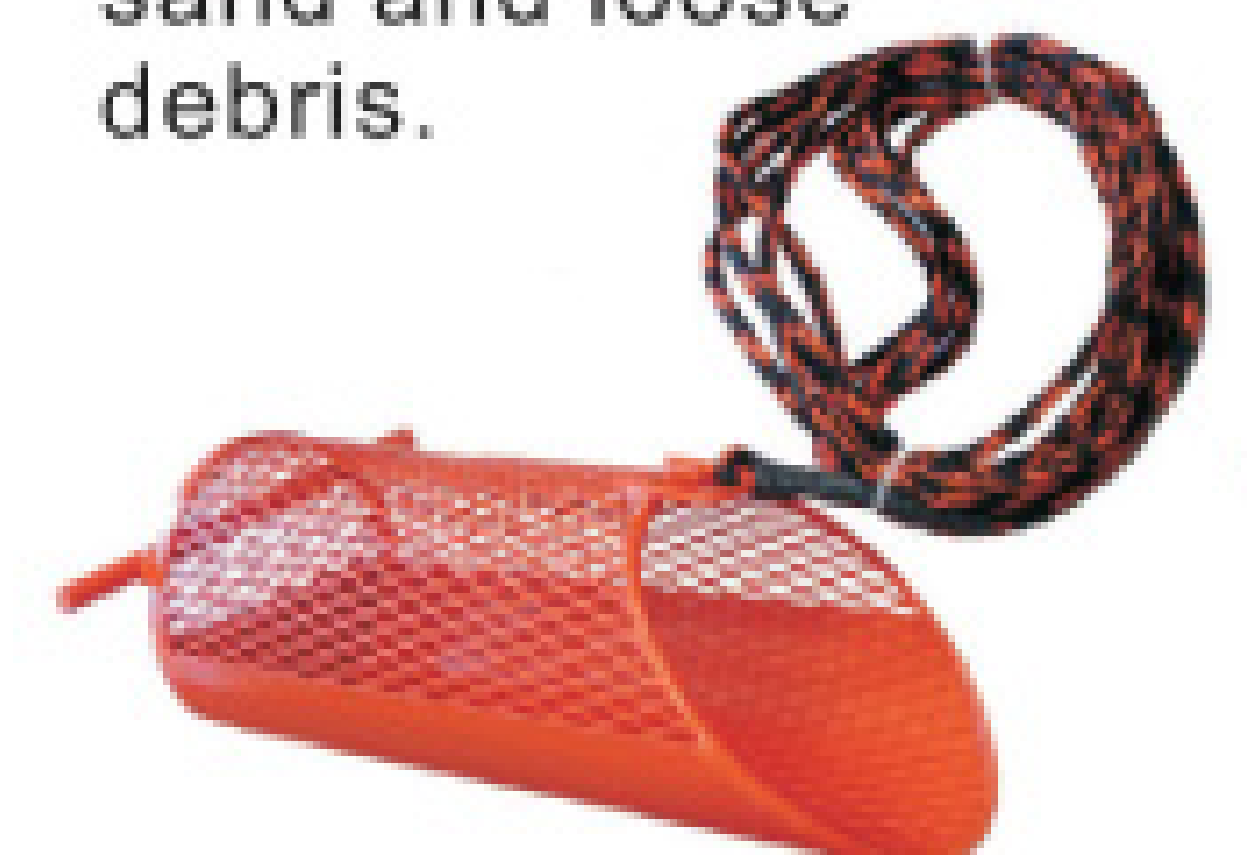
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Comes with 22' of Poly Rope. Available from 6" to 24".

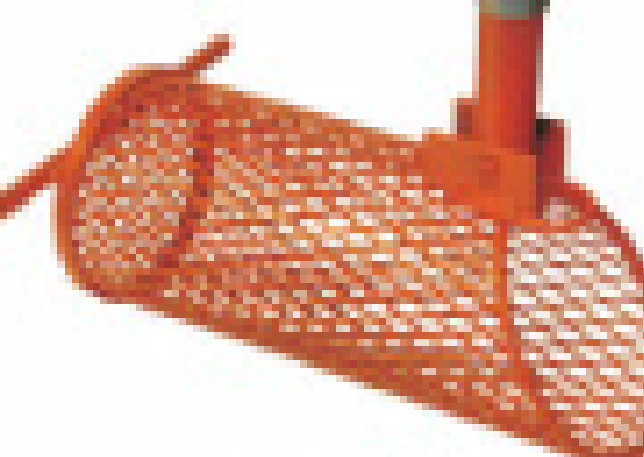


Grit Catchers

MDC-6CW Stops finer grit, black sand and loose debris.



Debris Catcher With Poles

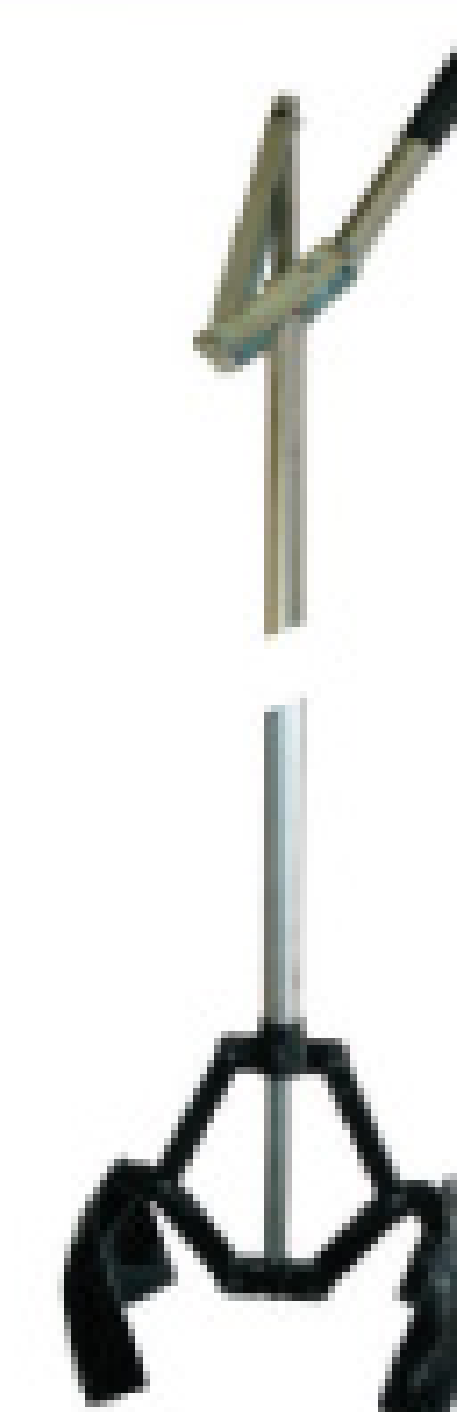


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Grit Catcher for use with Poles

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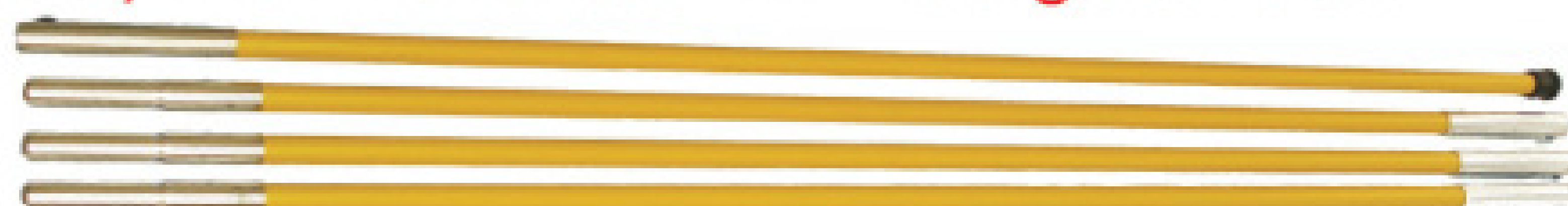
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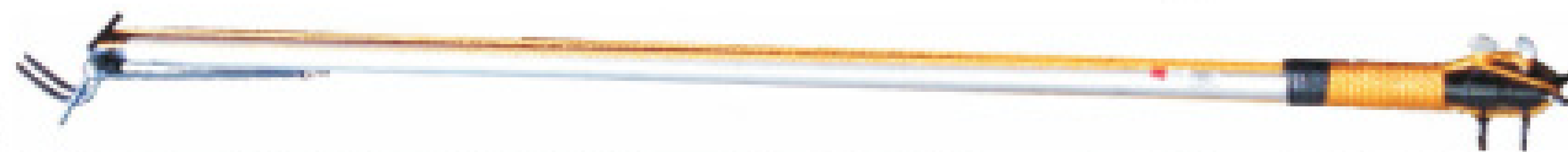


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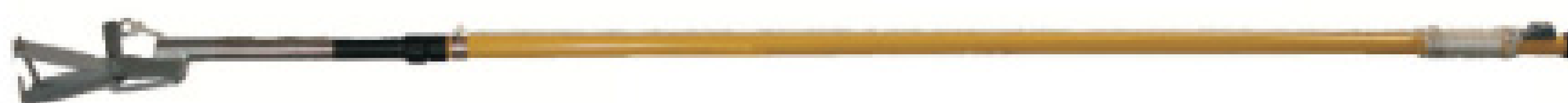


MPF-24 Quick Connect Fiberglass Poles

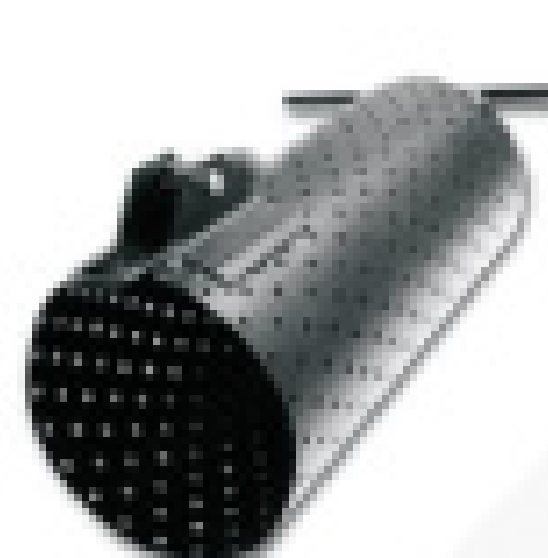
24' pole set used with above Tools and Debris Catchers. Each set includes 3 ea. 6' male x female and 1 x 6' end pole.



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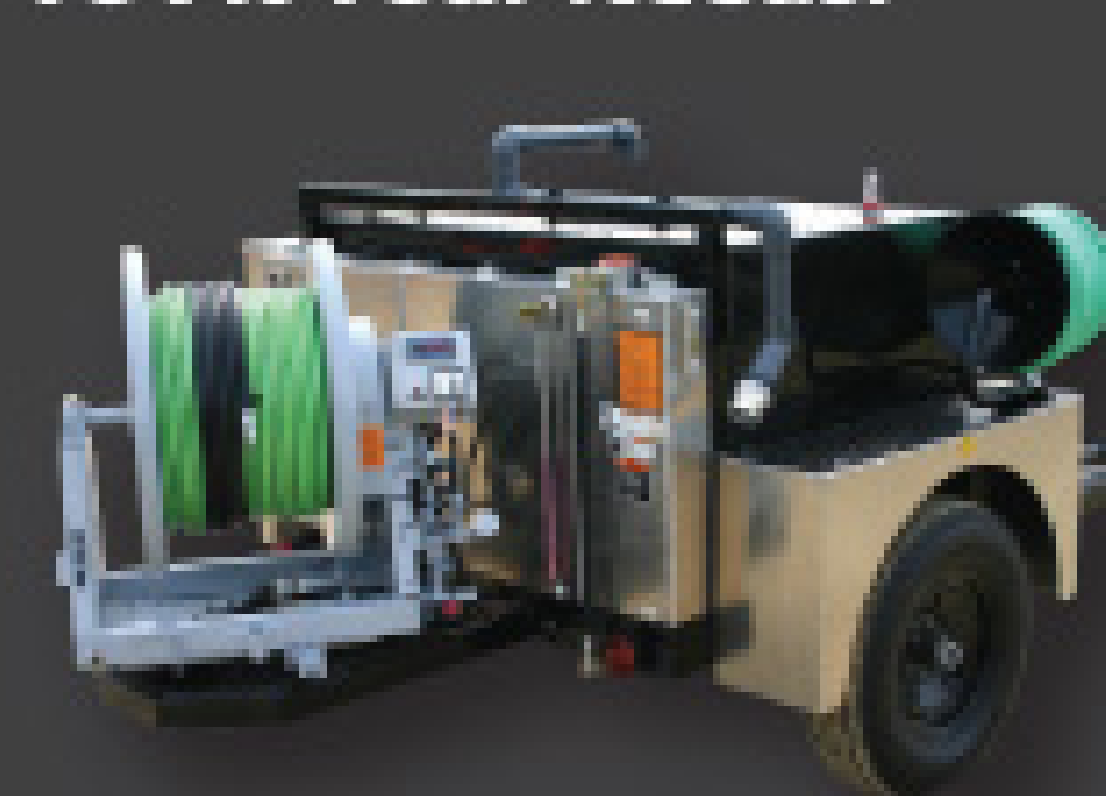
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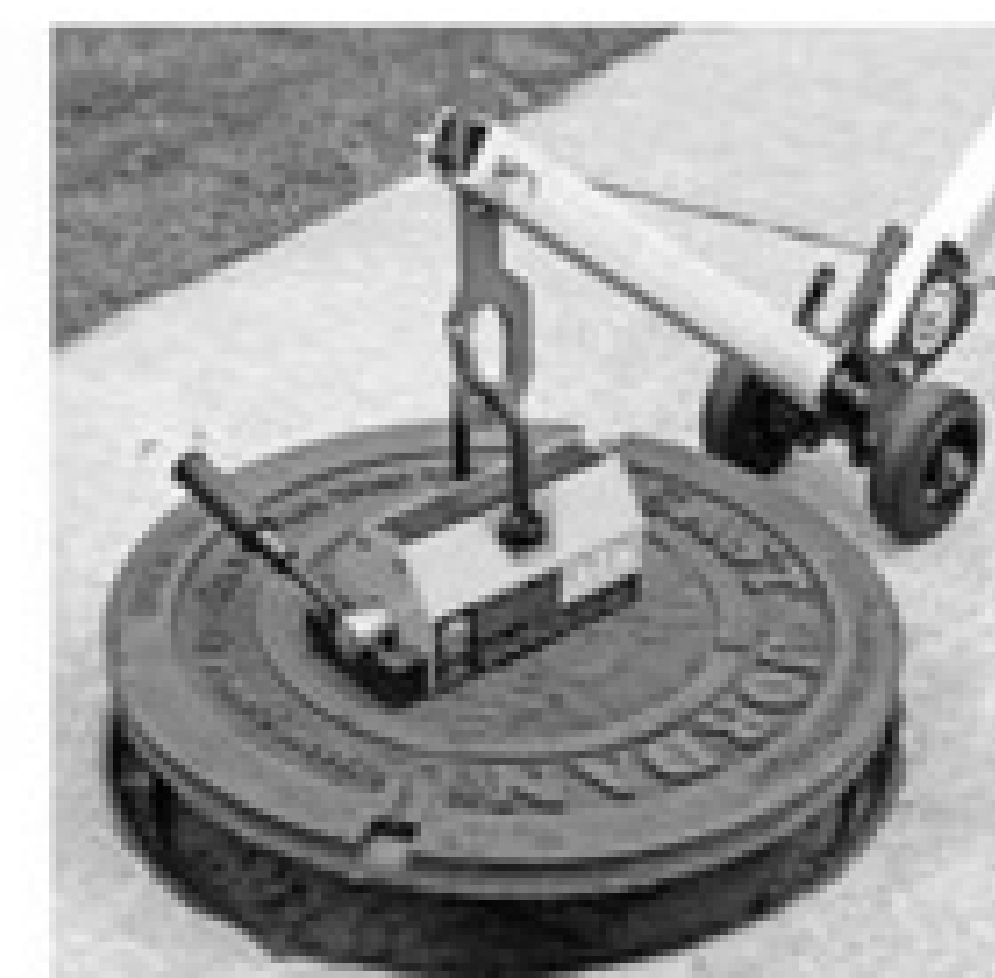
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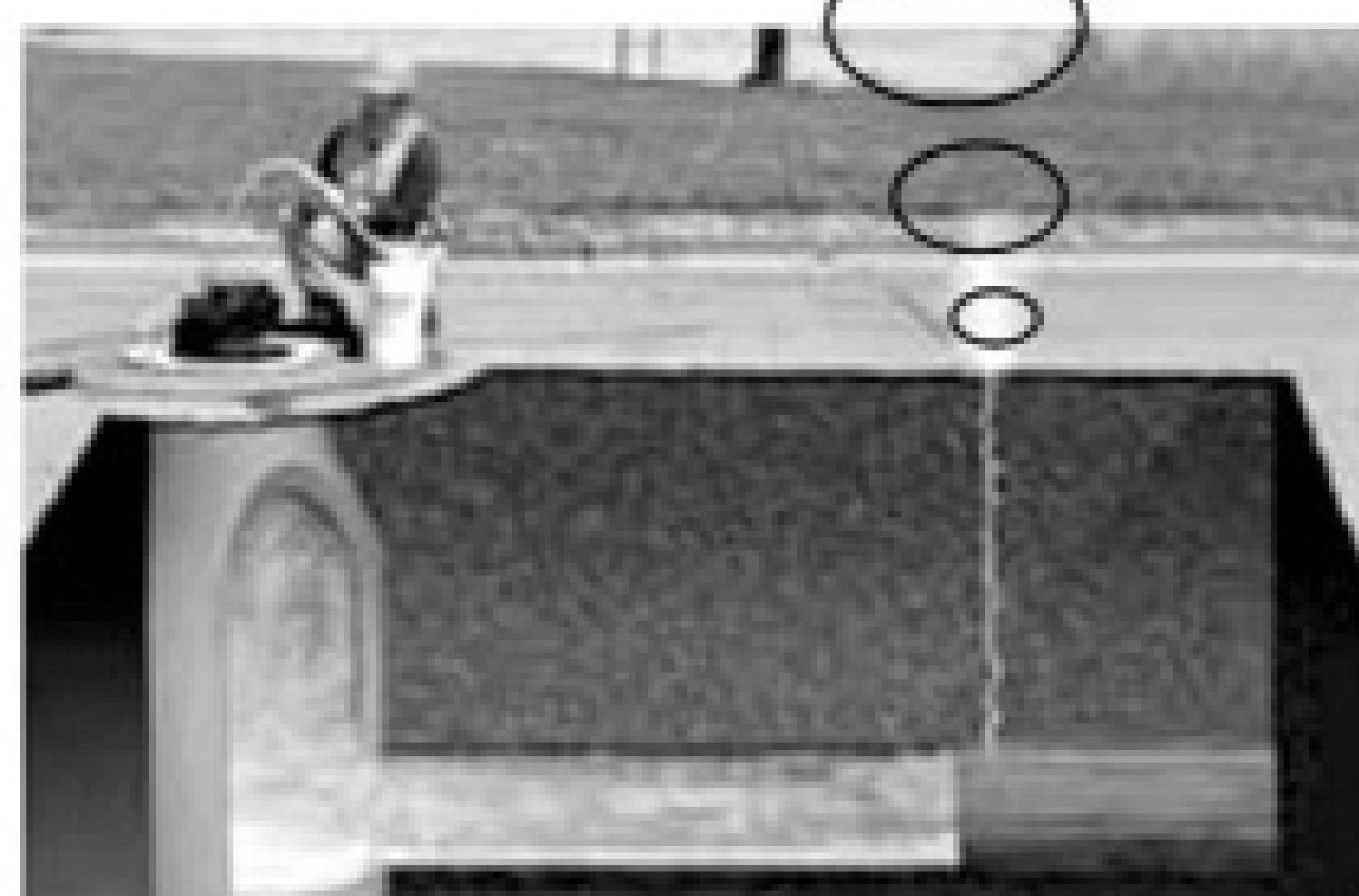
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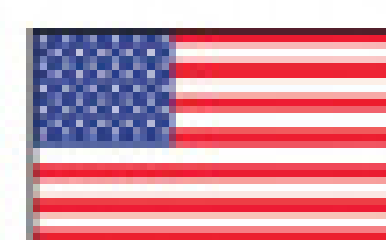
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Glenn McCarty (right) and Bill Dunnill of the Consolidated Utility District of Rutherford County use an ERV-750 extended-reach valve exerciser from E.H. Wachs as part of the district's comprehensive valve maintenance program. (Photography by Joy Dement)

FOCUS: WATER

NO VALVE LEFT BEHIND

A Tennessee utility's proactive valve maintenance program quickly pays dividends in reduced manual labor, reduced leakage, and better asset data

By Jim Force

The water distribution crew at the Consolidated Utility District of Rutherford County, Tenn., is starting to sleep a little easier these nights.

That's because they've launched a comprehensive maintenance program to locate, identify, clean, and exercise over 16,000 valves along the district's 1,300 miles of water mains, and fix those in need of repair. It's a planned, proactive program.

"We want to get to a point where we don't have to send three people out in the middle of the night to find a valve and try to open or close it," says Jennifer Wood, engineer-in-training with the district who is helping develop the program. Assistant general manager Bill Dunnill puts it another way: "We call it 'No Valve Left Behind.'"

No ordinary district

The Consolidated Utility District

of Rutherford County is not your ordinary water utility. It is one of the later arrivals on the Tennessee scene, created in the 1960s as an amalgamation of several smaller water districts in response to rapid growth in a formerly rural area outside of Nashville.

In 1978, the utility's Board of Commissioners authorized plans for a new water treatment plant, and the K. Thomas Hutchinson plant began operation in 1981, with a capacity of 4 mgd, drawing from the East Fork of the Stones River, which is fed by J. Percy Priest Lake. In 1988, the plant was expanded to 8-mgd capacity, and it has since been expanded to 16 mgd. Plans are in motion to increase capacity to 30 mgd.

The CUDRC is the largest water utility district in Tennessee, and its far-flung network of water mains presents some unique challenges. In some cases, lines extend more than 30 miles from the water treat-

ment plant to customers at the other end of the county. It was becoming common for crews to shut down more and more valves to contain leaks in the system, and that was increasing the number of water customers affected by an outage.

In response, the district has implemented a number of innovative programs to solve problems and continue to serve high-quality water to its more than 130,000 customers.

Keeping valves in shape

A first step was to establish a sound valve maintenance program built on regular valve exercising. In early 2009, after issuing a Request for Proposals and testing four valve exercise machines, the district purchased a VMT-1 valve maintenance trailer supplied by E.H. Wachs.

"We hadn't had a proactive valve maintenance program in the past, and we knew we needed a valve exercise machine to begin



PROFILE:
Consolidated Utility
District of
Rutherford County,
Tenn.

POPULATION SERVED:
130,000 (44,000 meters)

SERVICE AREA:
Rutherford County in
suburban Nashville

WATER CAPACITY:
16 mgd

INFRASTRUCTURE:
1,300 miles of water mains

EMPLOYEES:
88

ANNUAL BUDGET:
\$20 million

WEB SITE:
www.cudrc.com

THE VALVE EXERCISER

The Consolidated Utility District of Rutherford County uses a VMT-I platform-mounted valve exerciser on a single-axle trailer rated at 7,000 pounds.

Supplied by E.H. Wachs, the unit includes the ERV-750 extended-reach valve exerciser, as well as vacuum tools to clean out valve boxes. The exerciser develops up to 750 foot-pounds of torque and operates on a hinged arm that can extend as far as 13 feet.

The arm swivels 270 degrees so that it can reach valves from curbside. An onboard Recon control unit (Trimble) also acts as a data logger and microprocessor. Although the system can include a GPS, the district deferred on that option, choosing to use its existing GPS.

The vacuum apparatus contains a 500-cfm blower, a 2,500-psi/2.5-gpm pressure washer pump, and tanks for water and debris. A water hose reel, two jetting rods, and a hydraulic hose reel for connecting pneumatic tools are also included.

"Startup went very well," says assistant general manager William Dunnill. "There was a learning curve as there is with any equipment, but the process wasn't complicated."



A valve key connected to the district's trailer-mounted valve maintenance system is turned to exercise a valve.

the program," says Dunnill. The utility took delivery of the valve trailer in April, while sending staff members Stanley Beason, Glenn McCarty and George Jones to special training at the Pipe and Valve Institute near Chicago.

Once acclimated to the technology, the district got started checking valves right away, but not in random fashion. "We knew that ultimately we wanted to review our entire valve system, but we didn't want to just start jumping all over the place," Wood says. At her direction, the utility laid out a work plan containing a grid pattern, based on the pressure zones around the water treatment plant, and starting with the zone nearest the plant.

"We located and exercised all valves and hydrants in a particular grid, hundreds of valves in some cases, before moving on to the next grid," she says. "Our plan is to make it through the entire system, as much time as it takes."

Dunnill adds, "We want to locate every valve in the system, box it, turn it, shoot it, and if necessary, fix it, even if it only has pres-

sure on one side." After startup of the exerciser, the district assigned two full-time operators to the task on a 40-hour-per-week schedule.

After six weeks, Dunnill added two summer interns and began operating the unit for six 12-hour shifts per week. This virtually doubled the number of valves exercised in one week, and by the end of the summer, the crew had covered over 1,650 valves, about 10 percent of the total.

And what did they find? Dunnill says almost 30 percent of the valves needed attention. "It wasn't always critical," he explains, "but they needed something — mapping, cleanout or exercising." His records show that 1.5 percent of the valves were closed when they should have been open; 4.1 percent were partially closed, restricting flow; and 5.8 percent were inoperable.

That means that 10 percent had significant problems. On a less critical note, in 2.5 percent of the cases, valve data was errant or the mapping was inaccurate. Another 5 percent of the valves needed other repairs, such as box leveling,

Seeing the benefits

With a majority of the valves still to be reviewed, Rutherford County is already seeing benefits. Wood recalls one case where an old 30-inch valve required 370 turns to fully open or close it. "In the old days, operators performing so many turns would have thought something was wrong and might not have had the patience to fully exercise it," she says. "With the valve exerciser, we are able not only to exercise the valves but also to add the collected data to the map for future operators."

Dunnill mentions another case where the valve program located a 24-inch valve that was not sealing. "The parts required to rebuild the valve were about \$9,000," he says. "We pulled the lid and looked inside before ordering them. The inspection revealed that the valve was full of tuberculation. We used the pressure washer and vacuum on our new valve exercise machine to clean it out and restored the valve to full service at the cost of labor alone."

There's one other benefit of the valve exercise machine. "Lots of times we have a good chance of washing stuff out of the valve seat by simply operating the valve up and down," says Dunnill. "In most cases we won't have to pull the lid and manually clean the valve to

assure a good seal."

He also sees value in the data being collected. "Data is a critical tool," he says. "This is a great way to gather and store data for future reference." Although the utility uses its own Trimble GPS units for accurate recording of valve locations, "The new machine enables us to interface field data, such as torque curves, the number of turns required to operate, and maintenance history, directly with our GIS system," Dunnill observes.

That makes the system stronger. "When we leave, we know whether that valve is operable," he says. "If

The district uses an Elster AMCO sonic meter for flow testing.



Mark Lee uses a portable automatic flusher from Kupferle Foundry.

not, a work order is issued and maintenance corrects the problem.”

Finding and fixing leaks

Leaks waste water, cost money, and generally drive water managers crazy. At the CUDRC, leaks were wasting up to 30 percent of the treated water — about 3.0 mgd.

The problem is aggravated by the rock structure that underlies the area: The water simply disappears into underground rock fractures. “That’s production capacity we can’t sell,” says Dunnill. His staff is making an extra effort to find and prevent leaks.

“Once a week on Wednesdays,

“Data is a critical tool. This is a great way to gather and store data for future reference. The new machine enables us to interface field data such as torque curves, the number of turns required to operate and maintenance history directly with our GIS system.”

Bill Dunnill

We’re identifying lines that are no longer needed and abandoning them. We’re valving off new lines with no customers, such as in new subdivisions that are sitting idle. We want to eliminate all risks that we don’t need to accept.”

The leak detection crew is employing several leak detection protocols. Using small portable

unmetered fire lines in its sprawling system. “We recently purchased a strap-on meter manufactured by GE Sensors,” says Dunnill. “We use it to occasionally monitor specific sections of large-diameter pipe, but more often fire lines to see if there’s any flow where there shouldn’t be.”

In addition, the newer unmetered fire lines are equipped with double detector checks. In those cases, crews have exchanged the customer’s low-flow detection meter with one of the district’s Badger Orion AMR meters (Badger Meter Inc.). This allows the district to monitor those lines monthly in conjunction with running normal meter routes.

All of these efforts are paying off. “We’ve seen a tremendous improvement over this past summer,” Dunnill reports. Unaccounted-for water dropped from the high 20s to the low teens. “And, knock on wood, it will be even lower in the future,” he says.

Flushing out old water

Hydrant flushing is another major initiative. It takes time to move water from one side of the system to the other, especially in the farthest reaches where water demand may be low. Chlorine residuals can drop and disinfection byproducts can rise, particularly in summer.

For those reasons, the district has installed some 30 automatic flushing units manufactured by Kupferle Foundry. They turn themselves off and on at night when demand is low to minimize any hydraulic effects. “By flushing, we maintain fresh quality water at the end of the system,” Dunnill says.

In addition, the automatic flushing units have been married to the district’s automatic meter reading (AMR) system so that water consumed for flushing can be accounted for. “We have an accurate record, and our water-quality personnel can reference this information to ensure the quantity they need to maintain chlorine



A PDA included with the valve maintenance trailer lets Glenn McCarty enter data on a valve.



Forest Hill (left) and Glenn McCarty use the vacuum function on the valve exercising trailer to clean a valve box.

managers and field personnel from all areas — leak technicians, flushing, valve exercise, customer service, disinfection, engineering, construction, maintenance — all get together to discuss problems in the system,” Dunnill says.

“We learn from each other, and we’re focused on water loss. We’re listening for leaks. We’re flushing,

mag meters from Elster AMCO Water, they are isolating various portions of the system, and then comparing actual flow rates with calculated flows from the hydraulic modeling software. If the flow is significantly greater than the model, a leak is likely.

The district is becoming meticulous on monitoring the many

residuals is sufficient,” he says.

The district’s total program, from valve exercising and repair to leak detection and flushing, is designed to be proactive. “Everybody ought to have a proactive maintenance program,” says Wood. She reports that the district is experiencing fewer outages, less manual labor, lower leakage, and an increased comfort level.

“It’s not just about fixing problems we know about,” she says. “It’s about avoiding problems in the future.” Especially on those dark and rainy nights. ♦

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www.badgermeter.com
- 307 E.H. Wachs**
847/537-8800
www.ehwachs.com
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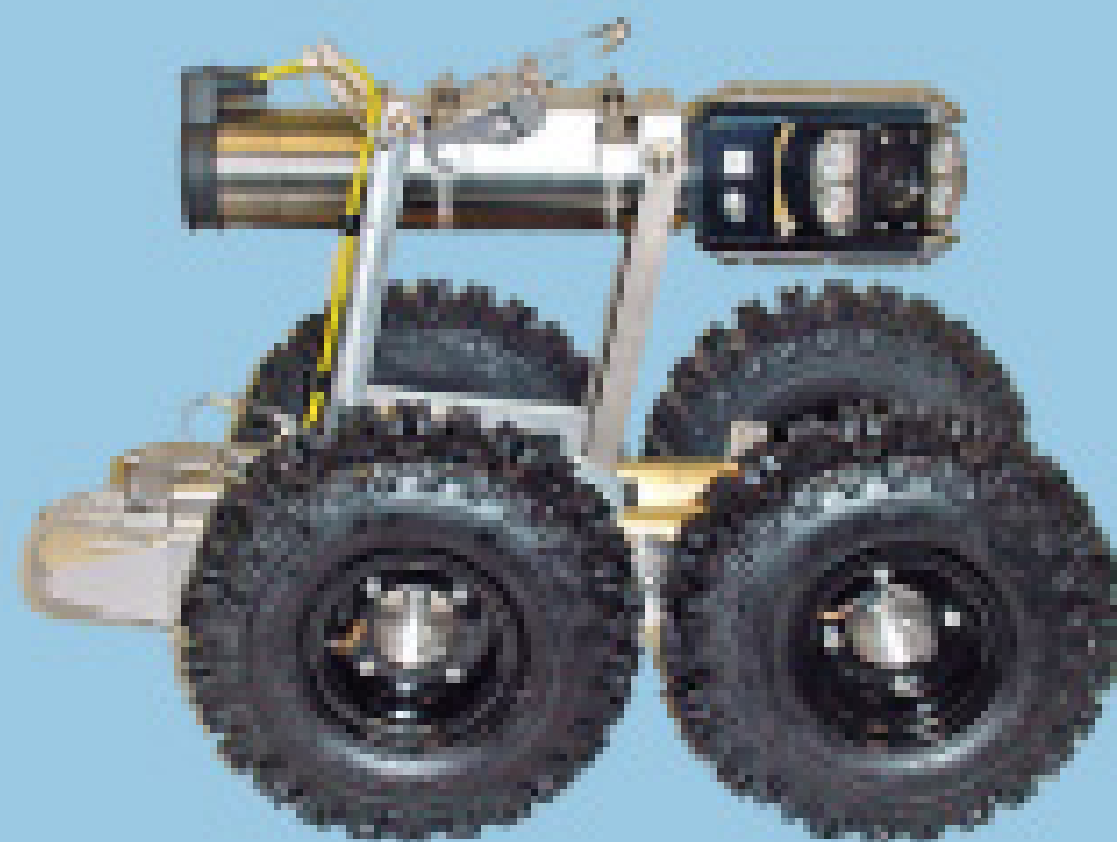
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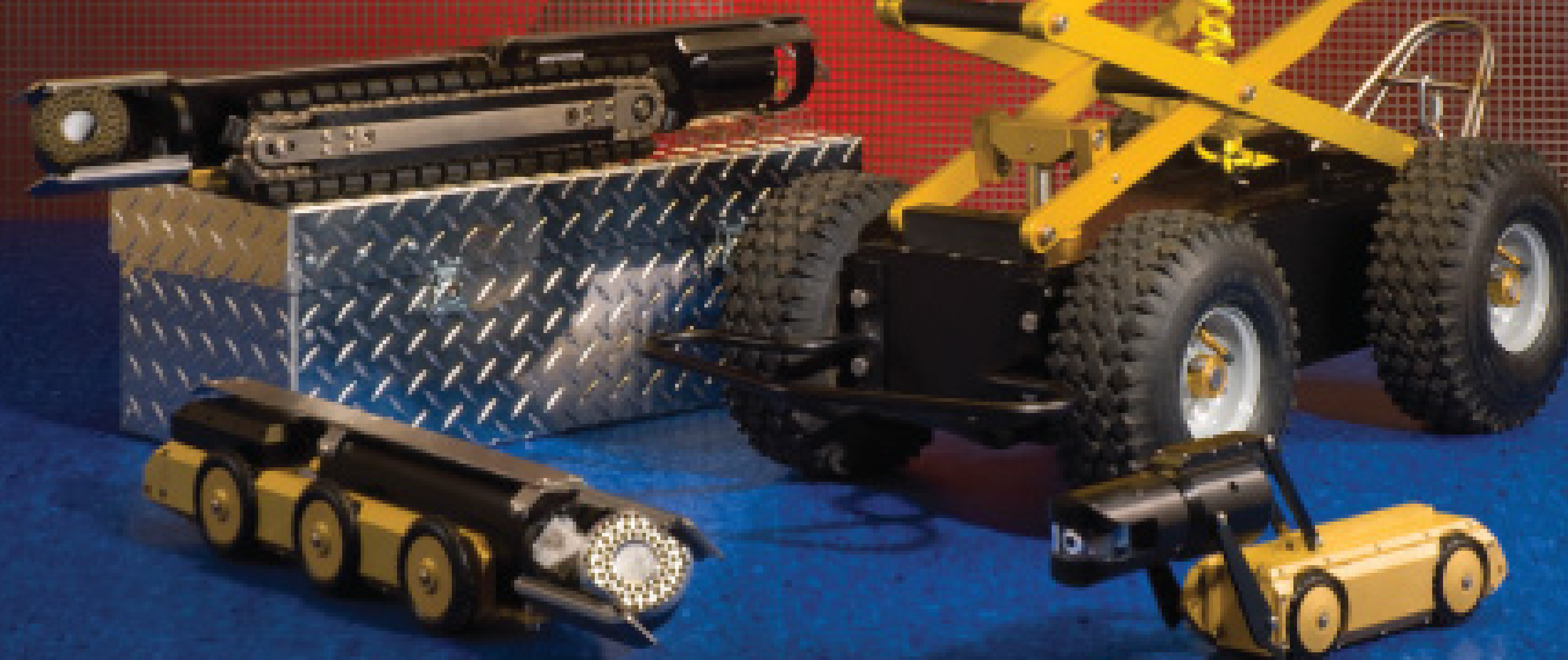
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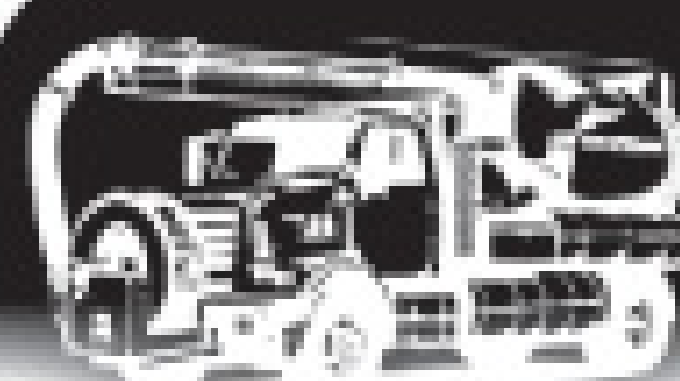


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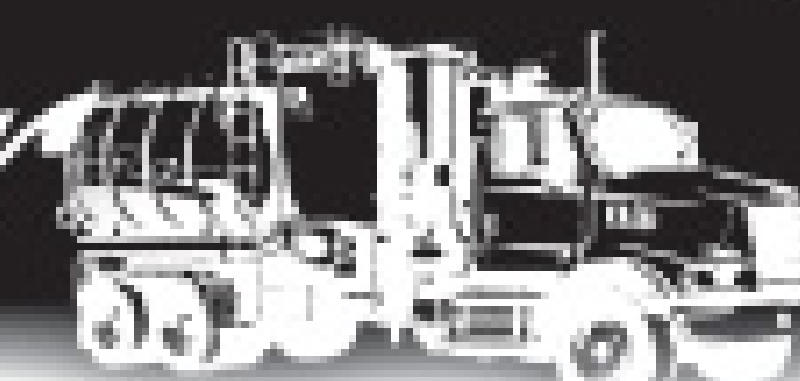
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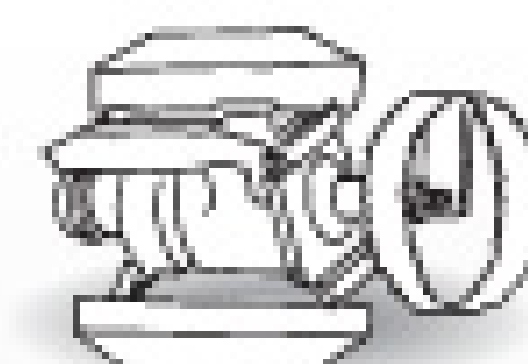
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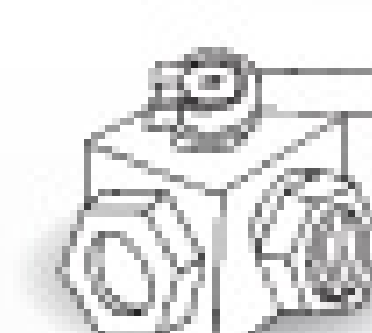
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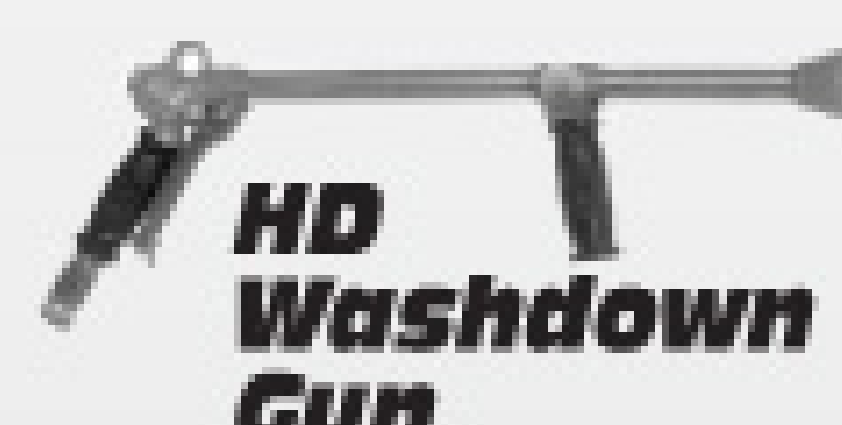
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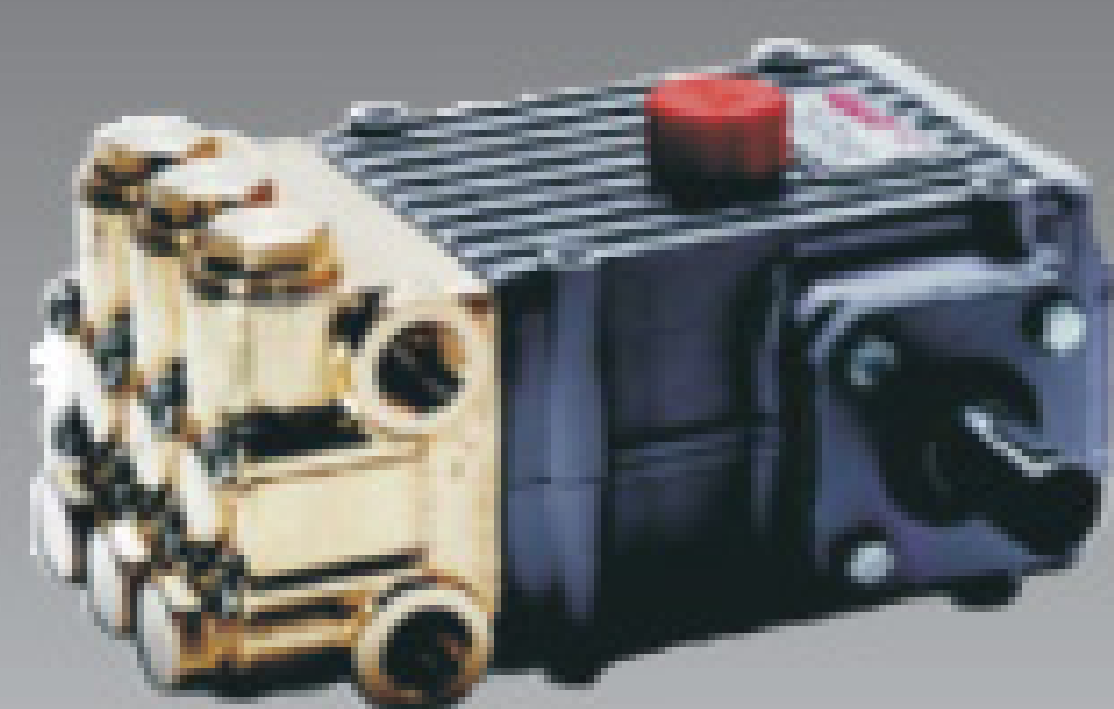
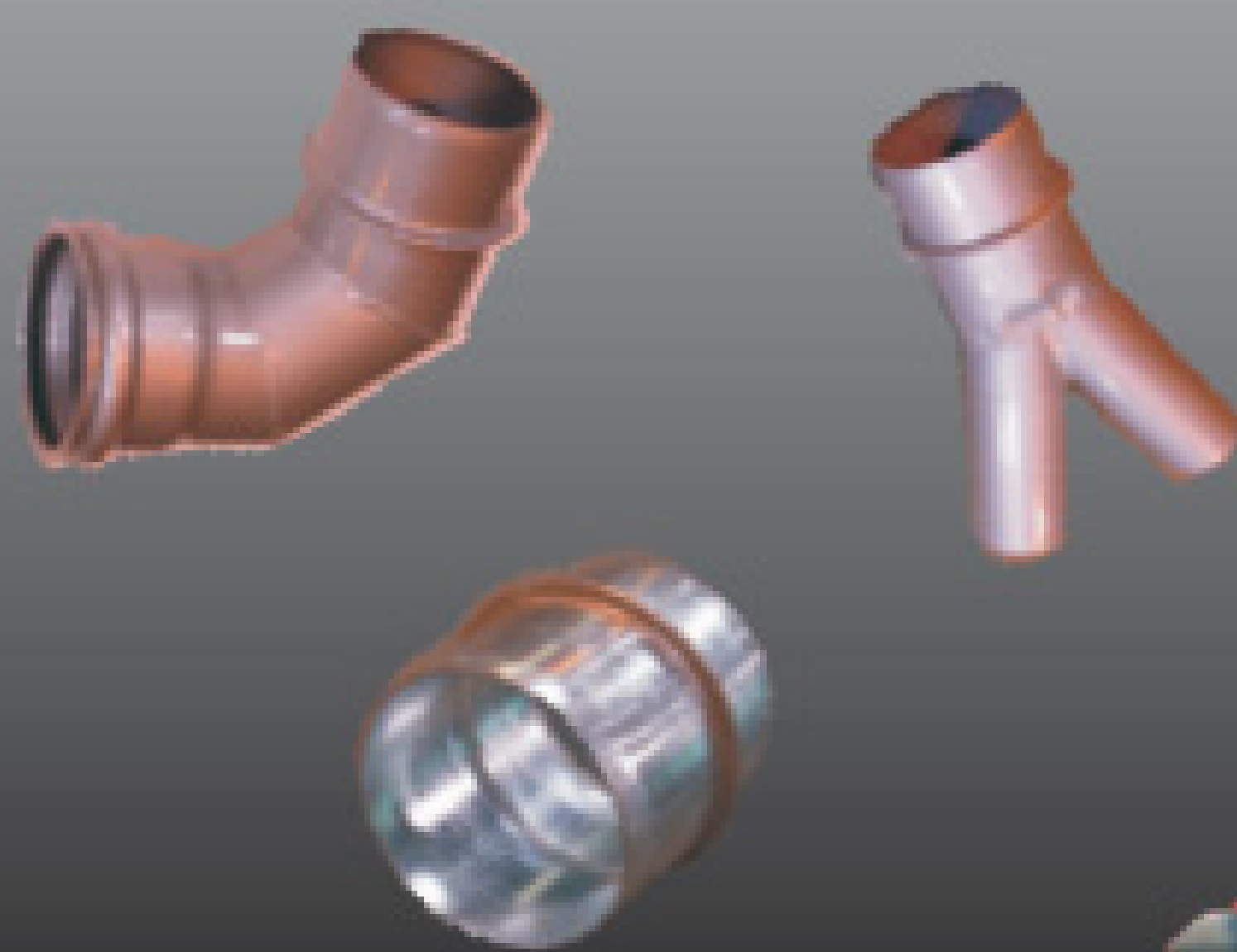
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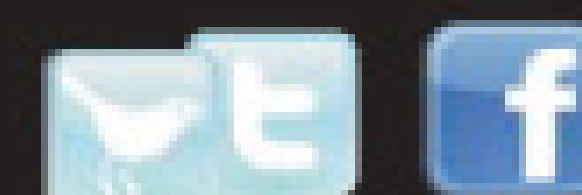


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EDUCATION DAY

Wednesday, February 24th, 2010

SOUTHERN SECTION COLLECTION SYSTEMS COMMITTEE

ROOM C204-C205 - SSCSC

- 8:00 - 9:00 Manhole Inspections 'The Need'
- 9:30 - 10:30 Combination Truck Maintenance and Safety, Sewer Hose Maintenance and Nozzle Technology
- 11:00 - 12:00 Jetting Nozzles - Their Design, Technology and Effective Usage
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Elevating the Quality of Your CCTV Inspection Program
- 2:30 - 3:30 Critical Steps in Prioritizing Sewer Rehabilitation
- 4:00 - 5:00 Traffic Control - The Critical Factor in Pipeline Inspection

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

ROOM C105-C108 - NEHA

- 8:00 - 9:00 Decentralized Systems - The Next Wave in Our Industry
- 9:30 - 10:30 Septic Tanks: A Gift That Keeps on Giving
- 11:00 - 12:00 Selling CLOWTS Certification to Installers and Regulators
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Softeners and Onsite Systems
- 2:30 - 3:30 Advanced Wastewater Treatment Systems
- 4:00 - 5:00 Maximize Efficiency by Working Closely with Regulators and Within the Regulatory System

NATIONAL ASSOCIATION OF WASTEWATER TRANSPORTERS

ROOM B101-B102 - NAWT

- 8:00 - 9:00 Sampling Protocols and Methods for Alternative Technologies
- 9:30 - 10:30 Dealing with Restaurant or High-Strength Waste
- 11:00 - 12:00 O & M for ATUs
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 O & M for Drip Irrigation
- 2:30 - 3:30 What to Expect When the EPA Comes A-Callin'
- 4:00 - 5:00 A Template for Keeping Your Employees Trained

NATIONAL ASSOCIATION OF SEWER SERVICE COMPANIES

ROOM C101-C104 - NASSCO

- 8:00 - 9:00 Pipe Inspections without an Operator?
- 9:30 - 10:30 Ways to Increase Your Daily Sewer Cleaning Production Rates without Increasing Your Costs
- 11:00 - 12:00 Proper Preparation of the Substrate Results in Coating Longevity
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Collection System Asset Management - Getting from Reactive to Proactive
- 2:30 - 3:30 Trenchless Lateral Renewal Technologies - Lessons to be Learned
- 4:00 - 5:00 Zoom Camera Technologies: The Next Level of Infrastructure Inspection

WATERJET TECHNOLOGY ASSOCIATION

ROOM C203 - WJTA

- 8:00 - 9:00 The Impact of OSHA's Combustible Dust National Emphasis Program on Industrial Vacuuming
- 9:30 - 10:30 Waterblast Safety
- 11:00 - 12:00 Waterjet Applications and Business and Financial Considerations

PORTABLE SANITATION ASSOCIATION INTERNATIONAL

ROOM C203 - PSAI

- 1:00 - 2:00 Understanding Your True Cost Analysis to Ensure Profitability - Part 1
- 2:30 - 3:30 Understanding Your True Cost Analysis to Ensure Profitability - Part 2

LEADERS RESOURCE NETWORK

ROOM C201-C202 - LRN

- 8:00 - 9:00 Creating Your Vision for Success
- 9:30 - 10:30 Getting Your Team On Board
- 11:00 - 12:00 Working Effectively in a Family Business Culture
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Creating Your Own Competitive Edge
- 2:30 - 3:30 Winning More Sales
- 4:00 - 5:00 Women in Business: Panel Discussion

NATIONAL ONSITE WASTEWATER RECYCLING ASSOCIATION

ROOM B103-B104 - NOWRA

- 8:00 - 9:00 Wastewater Characteristics
- 9:30 - 10:30 Soils and Site Evaluation Overview
- 11:00 - 12:00 Septic Tank Overview: Function, Design, Construction, Inspection and Troubleshooting
- 12:00 - 1:00 **LUNCH BREAK**
- 1:00 - 2:00 Seminar on Aerobic Treatment Units
- 2:30 - 3:30 Seminar on Media Filters
- 4:00 - 5:00 Seminar on Pumps and Controls

SCOTT HUNTER

ROOM C109-C112

- 9:30 - 10:30 Relationship is the Key!
- 11:00 - 12:00 The Art of Customer Service
- 12:00 - 1:00 **LUNCH BREAK/BOOK SALES**
- 2:30 - 3:30 Creating an Outrageously Successful Company - Part 1
- 4:00 - 5:00 Creating an Outrageously Successful Company - Part 2

THURSDAY

February 25th, 2010

BUSINESS TRACK

ROOM C101-C104

- 8:00 - 9:00 New 4 P's of Marketing
Jerard Nighorn/Lenzyme Trap-Cleer Inc.
- 9:30 - 10:30 Quit Learning and Start Doing
Bill Raymond/Nexstar Network
- 11:00 - 12:00 5 Secrets of Winners
Kenny Chapman/Nexstar Network

INSTALLER TRACK

ROOM B102

- 8:00 - 9:00 Risk Assessment for Determining SVC Frequency
Colin Bishop/Bord na Mona
- 9:30 - 10:30 From Theory to Reality
Roger Lacasse/Premier Tech
- 11:00 - 12:00 Timed Dosing and Controls
Mark Gross/Orenco

LIQUID WASTE TRACK

ROOM B103

- 8:00 - 9:00 Understanding the Biology and Function of an ATU
Doug Dent/Ecological Laboratories
- 9:30 - 10:30 Permit Required Confined Space
Ed Fitzgerald/Jack Doherty Co.
- 11:00 - 12:00 Keep Profit Margins High
Joel Smith/Clear Computing Inc

PORTABLE TOILET TRACK

ROOM B104

- 8:00 - 9:00 Up-Selling: How to Thrive During a Recession
Ray Luden Jr./PolyJohn
- 9:30 - 10:30 Portable Sanitation Business Overview
Deric Boggs, Phil LaRoche/Satellite
- 11:00 - 12:00 Routing Efficiency and Analysis
Greg Muth /UPS Logistics Technologies

MUNICIPAL TRACK

ROOM C105-C108

- 8:00 - 9:00 Pipe Cleaning Tools
Dana Hicks/ENZ USA Inc.
- 9:30 - 10:30 Increase Revenues Through Pipeline Laser & Sonar
Doc Bennet/CUES
- 11:00 - 12:00 How to Prevent I/I in the Manhole Chimney Area
William Goff/Sealing Systems Inc.

SPANISH TRACK

ROOM C109-C112

- 8:00 - 9:00 Limpieza de Drenajes y Tuberías y la Elección de Boquillas
Jim Aanderud/SSCSC
- 9:30 - 10:30 Formando un Programa Eficaz de Inspecciones CCTV
Jim Aanderud/SSCSC

WOMEN IN THE INDUSTRY

ROOM C203

- 9:00 - 12:00 The Regeneration Process: How to Re-energize, Re-purpose, Re-invent and Handle Everything!
Ann Fry

FRIDAY

February 26th, 2010

MUNICIPAL TRACK

ROOM C105-C108

- 8:00 - 9:00 Identifying Manhole I/I Sources and Cost-Effective Repair Methods
Lee Haessig/Cretex Specialty Products
- 9:30 - 10:30 Jet Up! Taking Science to the Sewer
Scott Paquet/NozzTeq Inc.
- 11:00 - 12:00 Cured in Place Pipe vs. Digging and Replacing
Travis Bohm/Perma-Liner

BUSINESS TRACK

ROOM C101-C104

- 8:00 - 9:00 Quality and the True Cost of Ownership
Matt Sutton/Rapid View
- 9:30 - 10:30 Vision and Direction: Leading your Service Company to Prosperity
Victoria Finley/One Biotechnology
- 11:00 - 12:00 How to Shop Your Insurance Effectively
Mark Herring/Heffernan Insurance

INSTALLER TRACK

ROOM C109-C112

- 8:00 - 9:00 Safety in Excavation
Gary Hooks/Safety Corporation of America
- 9:30 - 10:30 Comprehensive Control Panel Training
Joe Zimmerman, Scott Rietsema/SJE Rhombus
- 11:00 - 12:00 Onsite Wastewater Effluent Disinfection
Jim Cruver/Salcor

LIQUID WASTE TRACK

ROOM B103

- 8:00 - 9:00 Dewatering Alternatives
Kelly Brown/BDP Industries
- 9:30 - 10:30 Convert a Liability to an Asset
Emily Landsburg/Black Gold Biofuels
- 11:00 - 12:00 The Role of Bacteria and Bioaugmentation in Grease Traps and Septic Systems
Dr. Clarence Baugh/Custom Biologicals

SEWER & DRAIN TRACK

ROOM B102

- 8:00 - 9:00 Drain Cable Technology and Their Real World Applications
Keith Nesky/Spartan Tool
- 9:30 - 10:30 OSHA Procedures Regarding Confined Space
Chris Cira/M Tech
- 11:00 - 12:00 Sonde and Utility Line Locating Techniques
Rob Trefz/RIDGID

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Cape Cod Biochemical Co.
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FOCUS: STORM

KEEPING THEM CLEAN

Installing stormwater BMPs is only half the battle. Progressive communities build sound maintenance programs to keep those facilities functioning properly

By Curtis Mitchell

Stormwater NPDES permits require post-construction runoff controls for new developments. Getting those Best Management Practices (BMPs) in place can be a challenge, but it can be even more difficult to meet another permit requirement: inspecting and maintaining those BMPs to make sure they keep doing the job.

Forward-thinking municipalities have developed programs to keep BMPs clean and functional on public as well as private properties. For example, Montgomery County, Md., hires contractors to maintain BMPs on public land and follows up to make sure private landowners take proper care of their runoff-control facilities.

Meanwhile, the City of Redmond, Wash., inspects BMPs on private lands to ensure compliance, and uses the city's own maintenance crew to maintain publicly-

owned BMPs. Both approaches have proven effective in extending the life of BMPs and helping to reduce runoff pollution.

Importance of care

NPDES permit requirements state that each permitted municipality must develop, implement, and enforce a Stormwater Management Program to reduce pollutants entering receiving waters. The program must include six minimum control measures:

- Public education and outreach
 - Public participation/involvement
 - Illicit discharge detection and elimination
 - Construction site runoff control
 - Post-construction runoff control
 - Pollution prevention/good housekeeping
- Post-construction runoff con-



Once installed, stormwater best management practices (BMPs) require maintenance. This eroded outfall in Montgomery County, Md., is an example of defects found in inspections of BMPs. (Photo courtesy of Charles P. Johnson & Associates)

“The city does the inspections and requires the owners to have the maintenance completed. We inspect and verify that the maintenance work was done, and we also receive a dump receipt from the maintenance contractor. We have one full-time employee who has been with the inspection and maintenance program since its inception in 1995.”

Andy Rheume
City of Redmond, Wash.

control includes the installation of structural BMPs, such as wet ponds, constructed wetlands, underground detention and manufactured practices. Pollution prevention/good housekeeping included the inspection and maintenance of the structural BMPs.

In July 2008, the Center for Watershed Protection released *Managing Stormwater in Your Community – A Guide for Building an Effective Post-Construction Program* (EPA Publication No. 833-R-08-001), written by David J. Hirschman and

John Kosco, P.E. This guide helps municipalities develop their stormwater management program.

“A great deal of effort is involved at the front end of developing a stormwater program,” the authors state. “Getting stormwater BMPs included on design plans and constructed properly in the field is a major accomplishment, but it is only the beginning of the actual life of the BMPs.

“Ongoing maintenance is needed to ensure that the BMPs will continue to perform as designed.



Deteriorated BMPs often require repairs. These photos taken in Montgomery County show a riser before and after remediation work. (Photos courtesy of Stormwater Maintenance LLC)



In fact, lack of adequate maintenance is the primary shortcoming for most local stormwater programs across the country ... (A)s with any infrastructure, deferred maintenance can increase costs and negatively affect receiving waters; unmaintained BMPs will ultimately fail to perform their design functions and might become a nuisance or pose safety problems ... Therefore, developing and implementing an effective maintenance program is essential."

The center has also identified several challenges that limited municipalities' ability to establish effective inspection and maintenance programs. The challenges include:

- Lack of funding
- Uncertainty about the physical locations of BMPs
- Inability to track responsible parties
- Lack of dedicated inspection staff
- Designs that are not conducive to easy maintenance
- Lack of compliance and enforcement authority
- Owners unaware of their maintenance responsibilities

Despite these challenges, municipalities across the country are establishing effective inspection and maintenance programs.

Different approaches

Montgomery County has 4,082 structural BMPs, of which 1,506 are maintained by the Department of Environmental Protection and 2,576 by private entities. "All of our

inspection and maintenance work is handled by a contractor," notes Amy Stevens, stormwater facility maintenance program manager. "We've been doing maintenance on privately-owned facilities since about 2003 when the program was started."

The county maintains BMPs in rights-of-way, on county properties (such as libraries), on public school grounds and in local parks, along with residential BMPs that have been transferred to the county for structural maintenance. Two contractors handle all that maintenance, one covering facilities above-ground and the other underground.

"We issue work orders to them for maintenance, and they get paid under the stormwater utility," says Stevens. "The remaining facilities are privately owned and privately maintained. When private contractors are paid by the private owners of the facilities, all we do is follow through to make sure the facility is brought back as close as possible to as-built standards."

The City of Redmond is also at the forefront with its maintenance program for privately-owned stormwater systems. The city has 1,238 public and private stormwater facilities to be maintained. "Since the program started, it has been limited to private stormwater systems — the ones the city doesn't own — to keep the private systems up to city standards," says Andy Rheame, environmental planner.

"The city does the inspections and requires the owners to have the maintenance completed. We

inspect and verify that the maintenance work was done, and we also receive a dump receipt from the maintenance contractor. We have one full-time employee who has been with the inspection and maintenance program since its inception in 1995."

Counting benefits

Inspection and maintenance procedures for post-construction

especially in a very urban environment. We found that once per year is what we need to do. It also ensures that any repairs needed get completed."

Redmond requires inspections and maintenance for private systems twice a year. "For public systems, we must inspect every single catch basin by the permit cycle (five years) and clean them as appropriate," Rheame says. "All



Before-and-after pictures of a sand filter in Montgomery County used to treat sheet flow from a parking lot. (Photos courtesy of Stormwater Maintenance LLC)

structural BMPs are prescribed in each municipality's NPDES permit and therefore can vary. In Montgomery County, Stevens observes, "For all belowground stormwater facilities, we recommend that they are maintained on an annual basis to ensure structural integrity. We then do an inspection of the maintenance once it is completed."

"We only do a full inspection every three years. Once-per-year maintenance is pretty rigorous. It provides for better water quality,

permittees are required to inspect and clean all the flow and water-quality treatment facilities on an annual basis, or more frequently if they recognize that they need to have them cleaned after major storm events."

Both entities have seen a number of positive trends as a result of their efforts. "Our number of inspections is going up, and we would expect that, but our actual amount of repairs is going down," Stevens says. "We believe there's a direct correlation with the fact



Remediation work restored the appearance and function of this concrete channel in Montgomery County. (Photos courtesy of Stormwater Maintenance LLC)

we're doing routine maintenance.

"We'll always have to do maintenance — it's like any other kind of infrastructure, to ensure that it doesn't depreciate. You want the BMPs to keep their value, so they

put a stormwater facility in, you have the initial up-front capital costs. But if you don't do your maintenance on a routine basis, your upkeep will far exceed your capital costs, because you will ultimately

is an ongoing process. Even established programs continue to enhance and refine their scope to meet water-quality objectives. "Next year, we're going to have a formal schedule of maintenance of public systems, and an inspection program to go along with that," Rheume says. "We're tracking everything on GIS now, and that has been helpful.

"The private system inspection program has been limited to commercial, industrial and multi-family properties up until now. We're going to expand that to include single-family, and essentially any other land use that has stormwater infrastructure that is not owned by the city. A lot more smaller projects are triggering stormwater controls and facilities that need to be inspected and maintained at an appropriate level."

Montgomery County is fine-tuning, as well. "Right now, we're learning about how we can access the facilities so we can do the maintenance," Stevens says. That includes providing access to the facilities so that maintenance workers can get their vehicles into position.

A successful inspection and maintenance program addresses each of the challenges identified by Hirschman and Kosco. The challenges can be systematically addressed over time.

"To start a program like this, you need to have an adequate funding mechanism that can increase as the number of BMPs grows," Stevens says. "You need adequate regulations, codes, ordinances and manuals that support what you do. Your guidance is then established.

You need data, such as maps, drawings and plans, to know where the facilities are located.

"A lot of times, this information is kept with the engineer and then transferred to the property manager. We require that drainage areas are drawn on the plans, obtain copies of all plans for all stormwater facilities that are released to us, take GIS coordinates of facilities to map their location and a drainage area, and always require as-built plans. Data management is your unglamorous aspect of this job. You can't do your work without the supporting documentation."

Rheume identifies education as a critical component of program success. "Most property owners don't know they own a storm system, let alone that they have to maintain it," he says. "When you create a program, you have to be accommodating to that lack of knowledge of what stormwater is and where it goes."

Stevens notes that education of contractors is an ongoing issue. "Educating contractors was extremely crucial for us," she says. "People doing the maintenance work have to know how to do it. You have to educate the landscape companies, too." ♦

Curtis Mitchell is an account manager with BMPClean.org, a company in Raleigh, N.C., that maintains a directory to help municipalities and property owners locate stormwater inspection and maintenance contractors. He can be reached at 919/665-4186 or CMitchell@BMPClean.org.

"To start a program like this, you need to have an adequate funding mechanism that can increase as the number of BMPs grows. You need adequate regulations, codes, ordinances and manuals that support what you do. Your guidance is then established. You need data, such as maps, drawings and plans, to know where the facilities are located."

Amy Stevens

Montgomery County, Md.

have a long lifecycle. If you do the maintenance, you ensure the facilities have a lifecycle that is indefinite. If you don't do the maintenance, the facility will fail, and then you will have to completely rebuild it or abandon it.

"A lot of jurisdictions are beginning to realize that when you

have to rebuild the facility, or you'll have to abandon it. So you keep your costs lower if you do it on a regular basis. Then you get the added benefits: you see your water quality improving."

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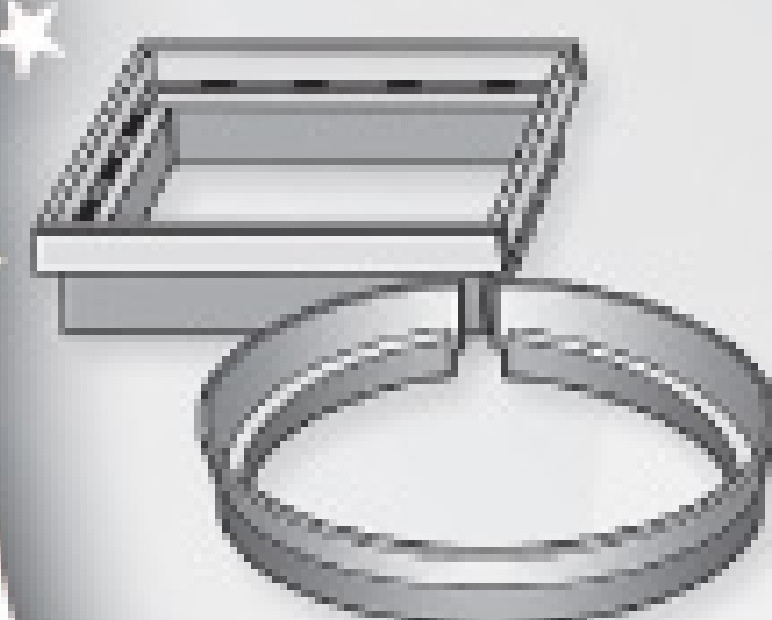
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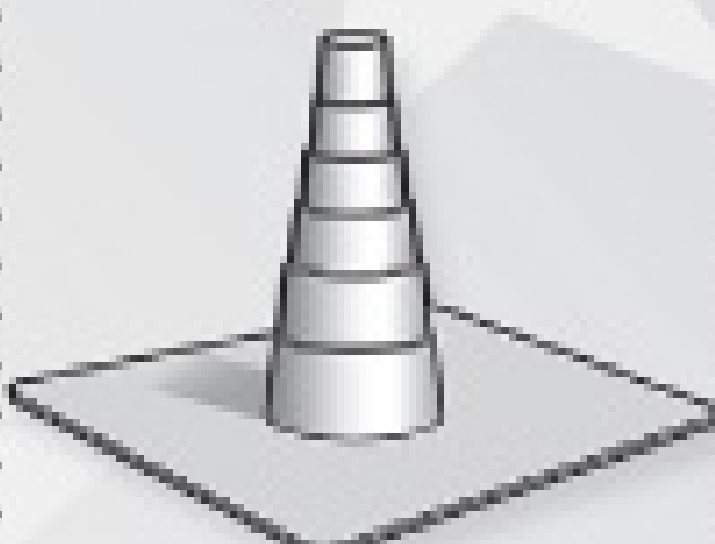
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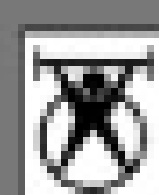


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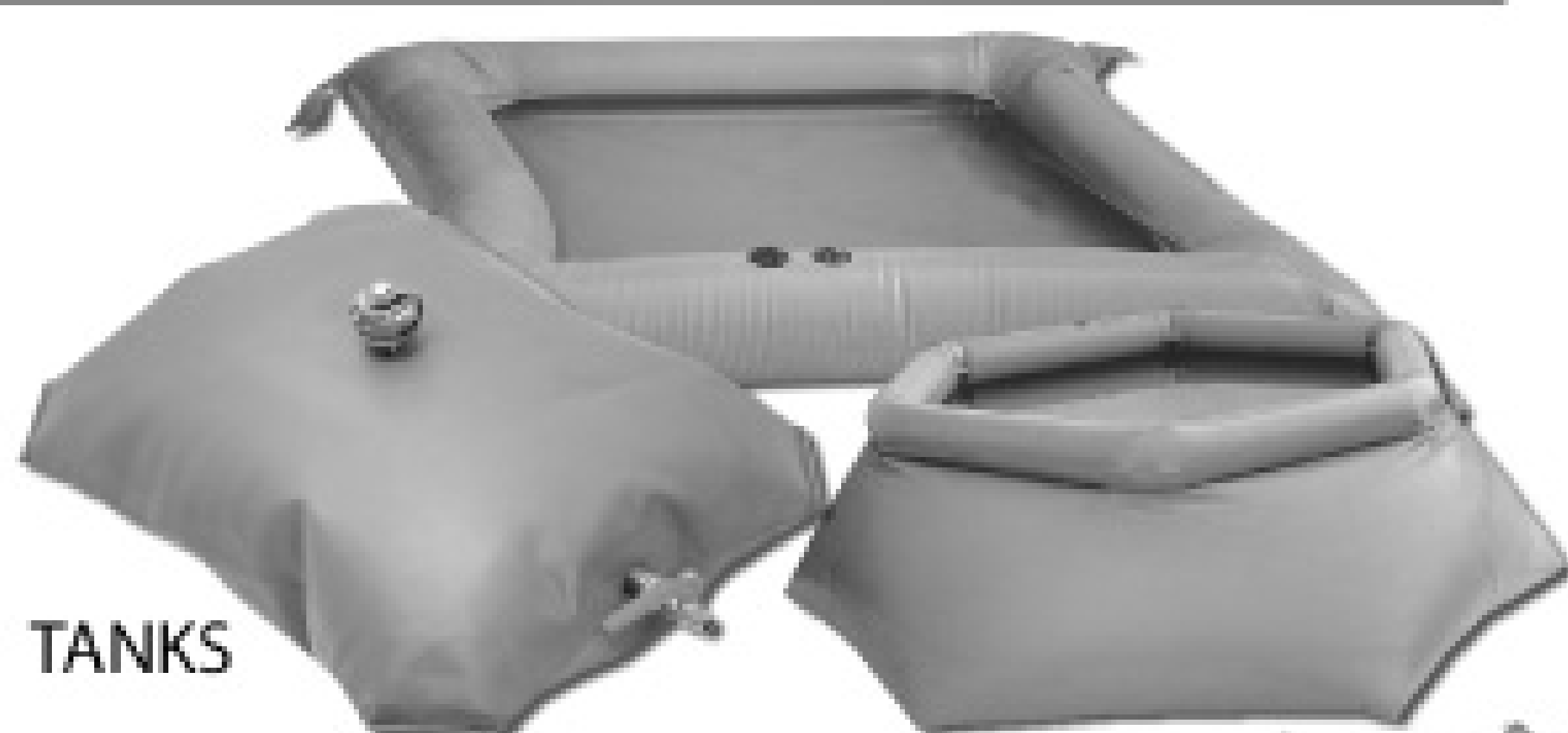
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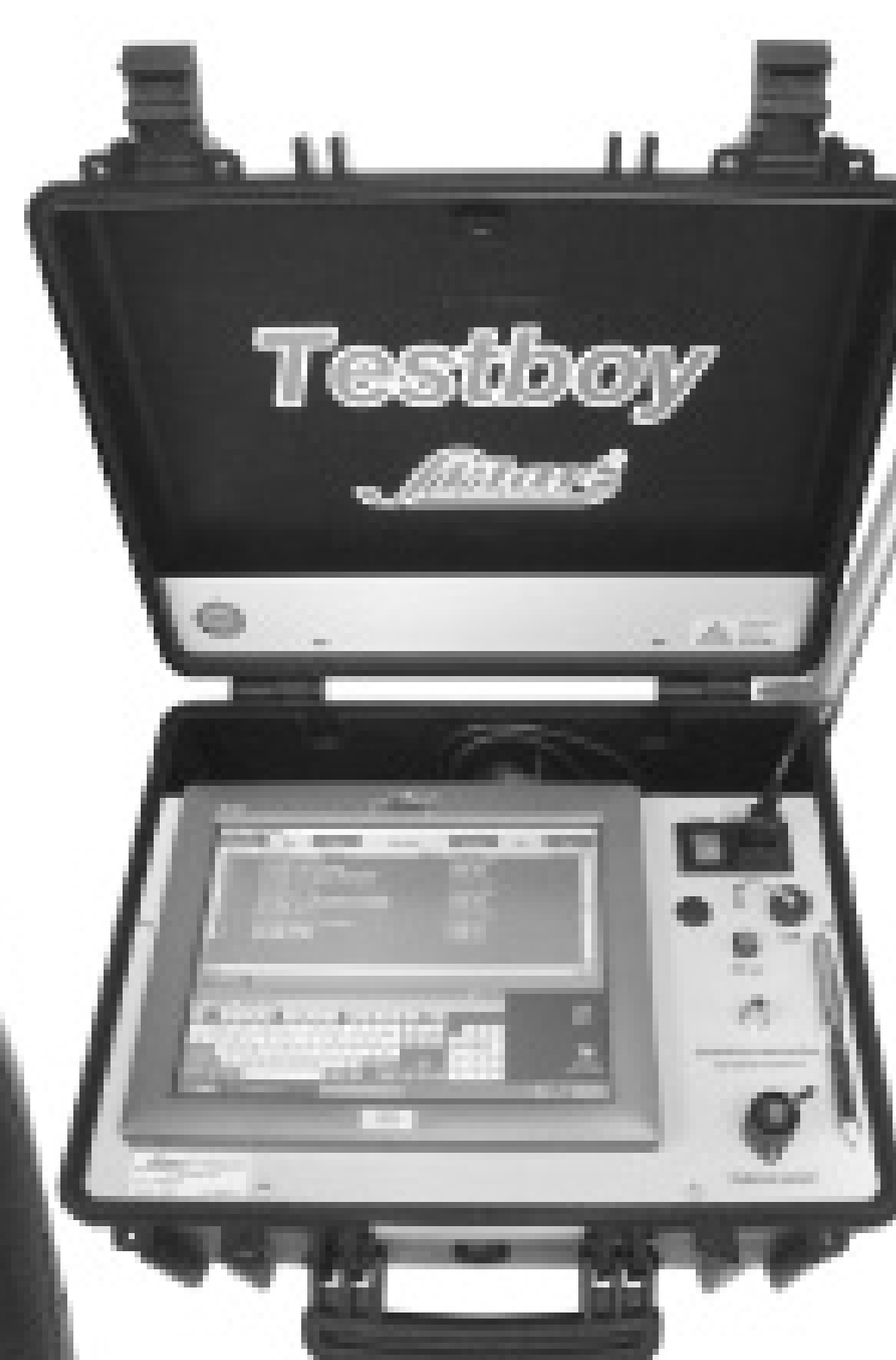
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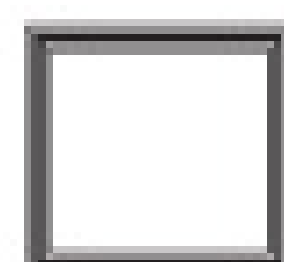
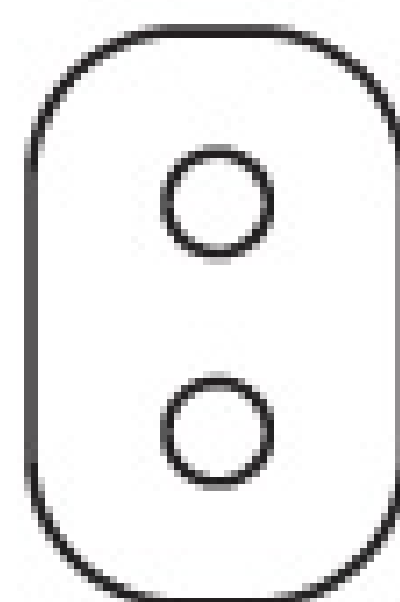
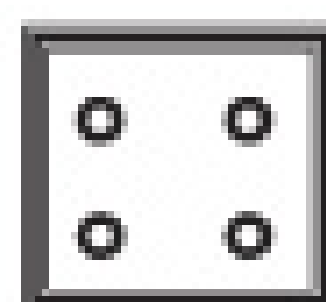
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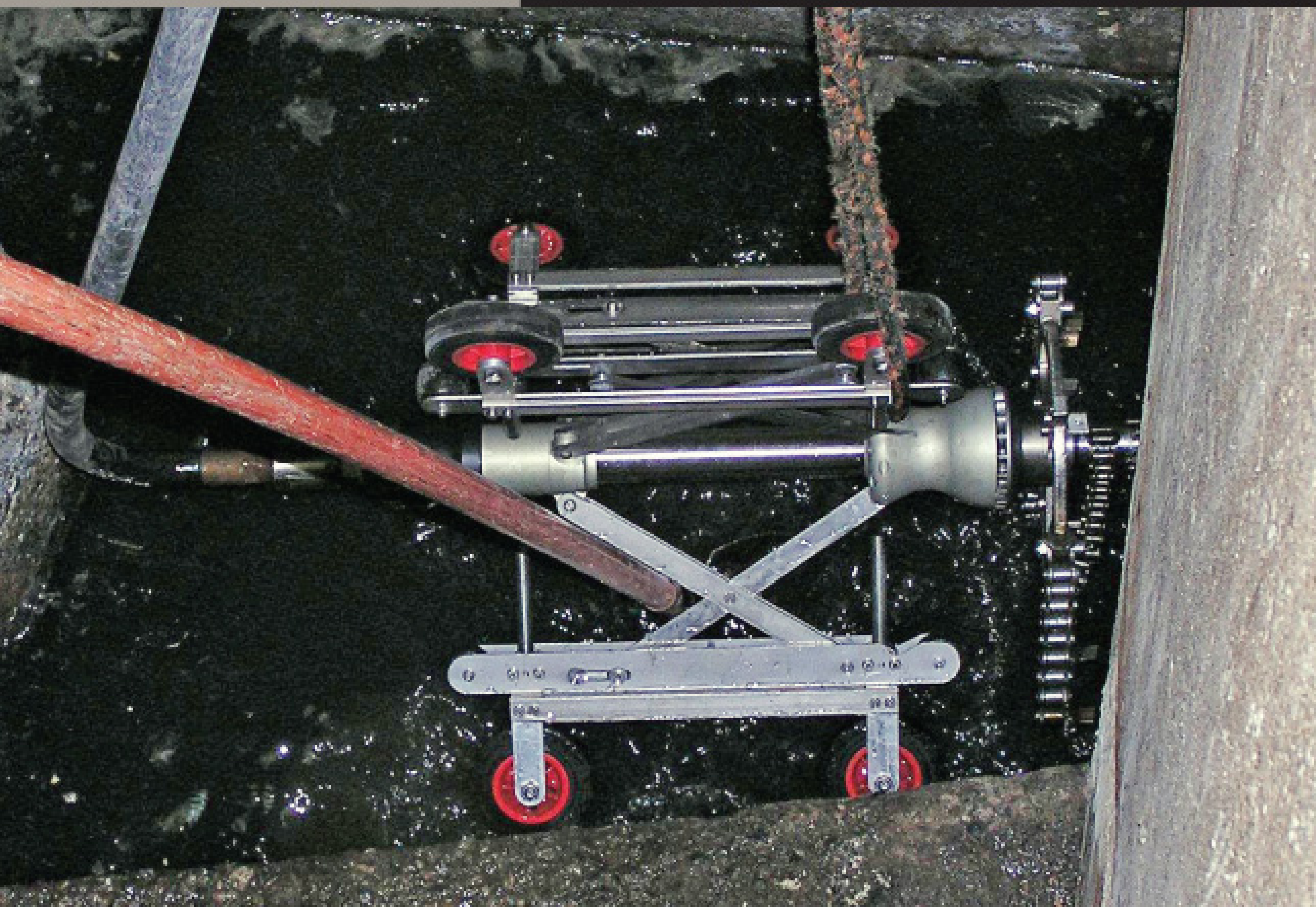
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The Turbo III chain cutter helps clear roots from pipes such as this 30-inch sanitary sewer. (Photos courtesy of Ypsilanti Community Utilities Authority)

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Turbo III chain cutter

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NOBLE SAVAGE

A heavy-duty chain cutter helps a Michigan authority clear a severe root blockage from a 30-inch main and restore normal flow

By *Scottie Dayton*

“The difference it made in the performance of our sewer system was phenomenal. The Turbo III has opened other avenues, too, which will enable us to better maintain our lines and serve our customers.”

Mike Shaffer

Heavy rains were causing infiltration at the Factory Street Pump Station in Ypsilanti, Mich., which receives all the city’s sewage flows.

The Ypsilanti Community Utilities Authority (YCUA), an independent agency that owns the water and sewer mains, began a systematic inspection of the city’s 800 manholes. Inspections included documenting flows on dry and wet days to pinpoint infiltration sources, then televising four areas where the mains ran under the Huron River.

“One river crossing in particular seemed to be the culprit,” says Mike Shaffer, transmission and distribution foreman for the YCUA service

department. “When we inspected the line, we found four root masses within 130 feet, each 8 to 12 feet long and each blocking 90 percent of the 30-inch concrete pipe.”

The service department didn’t have a tool to remove such a dense mass, so Shaffer called Gary Guillian of Great Lakes Service and Supplies Inc., a distributor in Petersburg. He brought the Turbo III chain cutter, made by USB Sewer Equipment Corp. in Marietta, Ga. After learning how to launch and handle the tool, Shaffer and his crew worked 60 hours to clear the roots.

“The difference it made in the performance of our sewer system was phenomenal,” says Shaffer. “The Turbo III has opened other

avenues, too, which will enable us to better maintain our lines and serve our customers.”

Alarming situation

The average daily flow through the 30-inch main is 1 mgd with a velocity of 2.2 feet per second. The 90-year-old sewer had never been video inspected. In 2007, YCUA purchased a PE 2000 pan-and-tilt Illuminator camera on a TR 3000 tractor, and a CCTV van from Aries Industries Inc.

Upon inspecting the suspect sewer, Shaffer’s team was alarmed to find the root masses and an ancient bypass handling much of the flow. One root had entered through an abandoned 4-inch lateral. The

other roots had slipped through joints that shifted with the ground. The root masses were confined between the upstream and downstream manholes 130 feet apart.

"The bypass really helped us," says Shaffer. "We plugged the main upstream and diverted all the flow into it." Shaffer and line service technicians Tom Everard and Ryan Stetler couldn't lower a 30-inch Turbo III into the downstream manhole because the chimney was too small, so they launched from the vault upstream and adjusted the sliding rails to the pipe diame-

The Turbo III chain cutter is lowered into a sanitary sewer vault. The tool was powered by a Vactor 2100 Series hydroexcavator supplying water at 70 to 80 gpm.



Line service technicians Tom Everard (left) and Ryan Stetler adjust the expandable frame on the cutter.

ter. The rails adjust in 1/16-inch increments.

"Adjusting the rails was the biggest thing," says Shaffer. "We made two confined-space entries to test-fit the cutter to the main." Once they locked the rails to the proper distances, Everard and Stetler launched the tool from the top of the vault.

"The cutter weighs 49 pounds before attaching the hoses and chains, so it was heavy and cumbersome for my two guys to wrestle down the hole," says Shaffer. "Our cutter also has the larger, 4-inch wheels and adapters for them, adding more weight." Although the Turbo III looked complicated, the team found it simple to operate.

At first, the men shuttled 5,000 gallons of water a day to fill the 1,000-gallon freshwater tank on the Vactor 2100 Series hydroexcavator powering the cutter. "Then we wised up and hooked to a hydrant 350 feet away," says Shaffer. "The continuous flow enabled us to work nonstop for six hours." They used 7,000 to 8,000 gallons per day.

Angle of attack

Two men at the upstream manhole operated the cutter and Vactor supplying water to the tool through a 1-inch hose. The water shoots onto the cutter's angled fan blades at 70 to 80 gpm, spinning the turbine at 6,000 to 10,000 rpm. The water is channeled separately and has no contact with the cutter's internal bearings. Waterjets at the back of the tool propel it forward.

Two men downstream vacuumed debris at 2,500 psi using another Vactor 2100, and monitored the cutter's progress in the OCTV van. "The camera technician is the eyes for the man running the cutter," says Shaffer. "They communicate on two-way radios."

When approaching a root mass, the tool's tapered cross-cutter (nose) makes the first penetration. Behind the cross-cutter is a 10-inch single-riveted roller chain (2.5 inches on either side of the shaft) with bits on both ends, followed by 20-inch and 30-inch chains. The last

chain is mounted on the turbine. The penetration is cone-shaped.

"Seeing the Turbo III work is incredible," says Shaffer. "It's so savage. People watching the video are really impressed." Nevertheless, it took 10 days to remove the roots. At the end of each day, the men sprayed the tool with a commercial cleaner, then hosed it off with water. It does not require lubrication.

Versatile difference

The Turbo III works in 8- to 36-inch lines and removes protruding laterals in 8- to 15-inch mains. "Such versatility is really helpful and cost effective, and we have a slew of projects waiting for this tool," says Shaffer. Next on his list is cutting laterals flush with the host pipes, because the protrusions obstruct the camera's forward progress. For that job, the root-cutting head on the Turbo III is replaced with USB's barrel cutter.

"We're also removing calcium buildups in mains using a diamond face cutter or a chain with fixed bolts on the Turbo III," says Shaffer. "Both are much more powerful than the soap nozzle we have, yet won't damage the walls."

This year, YCUA will hire a contractor to install a CIPP liner in the 30-inch main to keep out roots and stop infiltration from bad joints. ♦

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DOWN THE TUBE

The Panorama SI 3D optical manhole scanner brings a "virtual reality" experience to the routine task of inspecting manholes and other vertical cavities

By Dan Heim

Accurate visual assessment of the interiors of manholes, boreholes, drilled shafts, or other vertical cavities is essential for efficient planning, maintenance, rehabilitation, and replacement.

On-site inspection can be accomplished by lowering a trained inspector into the confined space, but more often requires deployment of a pan-and-zoom pole camera

to capture the needed images for onsite or later analysis.

The Panorama SI 3D Optical Manhole Scanner by RapidView provides an alternative method of inspecting. The system creates a digital 3D visual model of the structure that can be rotated, panned, zoomed, and measured on a computer screen. The Viewer software puts users into the shaft space by creating a fully interactive virtual reality 3D environment based on the digital model.

Images are acquired simply by lowering a special optical scanner to the bottom of the shaft and retrieving it again. Matt Sutton, vice president of sales and marketing at RapidView, guided a demonstration via telephone using a CD with data from a manhole previously scanned. A scanning demonstration was not observed because that process is extremely simple and takes only a few minutes.

RapidView LLC, based in Rochester, Ind., is the U.S. distributor of the system. The manufacturer is IBAK Helmut Hunger GmbH & Co. KG of Kiel, Germany.



The Panorama SI optics (upper) and scanner (lower).



The Panorama SI system quickly captures images as a camera is lowered down the shaft. Images are streamed via fiber optic cable to the controller and display. (Photos by Dan Heim)

Walk-around

The Panorama 3D pipe inspection system from RapidView was the subject of a Technology Test Drive in the July 2008 issue of *Municipal Sewer & Water*. "The manhole inspection system was a logical extension of that same hardware and software," says Sutton. "We just realized that if we rotated

TECHNOLOGY TEST DRIVE

EQUIPMENT:
Panorama SI 3D Manhole Inspection System

U.S. DISTRIBUTOR:
RapidView LLC, Rochester, Ind.
800/656-4225
www.rapidview.com

MANUFACTURER:
IBAK Helmut Hunger GmbH & Co. KG, Kiel, Germany

LOCATION OF DEMO:
Via telephone using a software demonstration CD

DEMONSTRATED BY:
Matt Sutton

LIST PRICE:
\$165,000 (includes all components except van)



A winch operated by a truck-mounted controller is used to lower and retrieve the scanner.

One pair of images is captured for every 2 inches of vertical travel. Illumination is provided by two onboard xenon strobes that produce bright, pure, white light and render colors with high accuracy. Accurate color rendition is essential for the correct identification of asset composition, corrosion states, and biological intrusions.

the pipe inspection camera by 90 degrees, we'd have the perfect solution for inspecting vertical cavities like manholes."

The full package includes the camera (3D optical scanner), fiber-optic camera cable, KW505 winch, BS5 controller, and a computer with a sufficiently powerful processor and video card to support the 3D Viewer software.

A community could use an existing computer to trim the cost slightly, but the machine needs to meet the software's system require-

ments: Windows XP or Vista, and a fast video card. Since a single manhole generates about 20 Mb of video data, a large hard drive is also required for data storage with any significant numbers of assets.

Mechanically, the heart of the system is the scanner, which uses two opposite-facing wide-angle lenses to image the cavity interior. Each lens has a 186-degree field of view, enabling the system to cover 360 degrees with a slight overlap.

One pair of images is captured for every 2 inches of vertical travel. Illumination is provided by two onboard xenon strobes that produce bright, pure, white light and render colors with high accuracy. Accurate color rendition is essential for the correct identification of asset composition, corrosion states, and biological intrusions.

Images have high enough resolution to allow zooming by a factor of nine, handy for taking a closer look at a bent ladder rung or cracked wall. Images are streamed via fiber optic camera cable to the controller and display. There, the operator can view acquired images in real time, or generate a Panorama film for later off-site review and

analysis by engineers.

The scanner fits any vertical cavity 16 inches or greater in diameter. It is 7 inches long and weighs 16 pounds. It must be lowered by the RapidView winch and controller to move the camera at its design speed of about one foot per second.

The digital magic happens in real time, as visual data is processed by the Viewer software. It stitches the individual images into a seamless representation of the entire cavity interior, providing

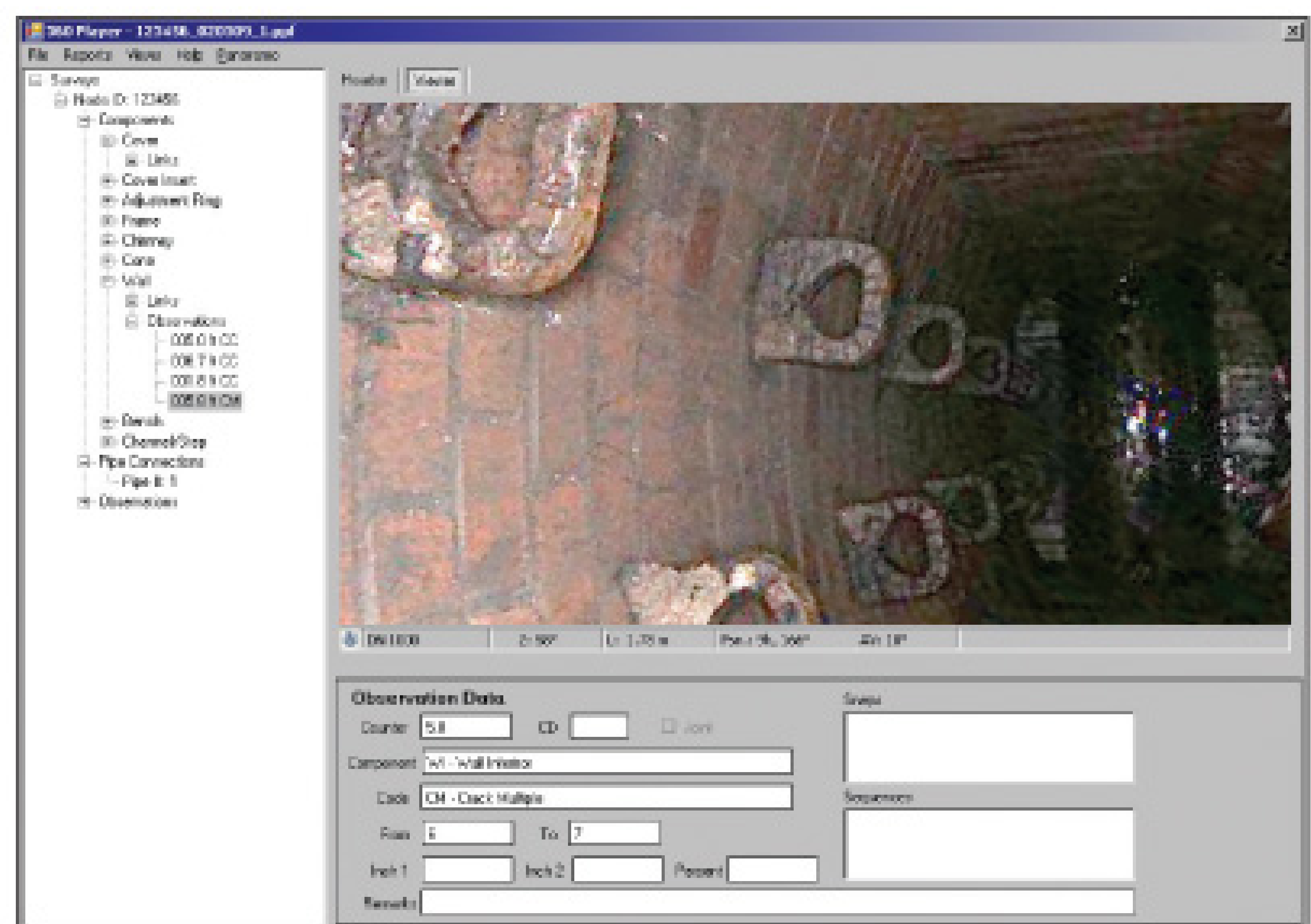


Figure 1. Panorama viewer.

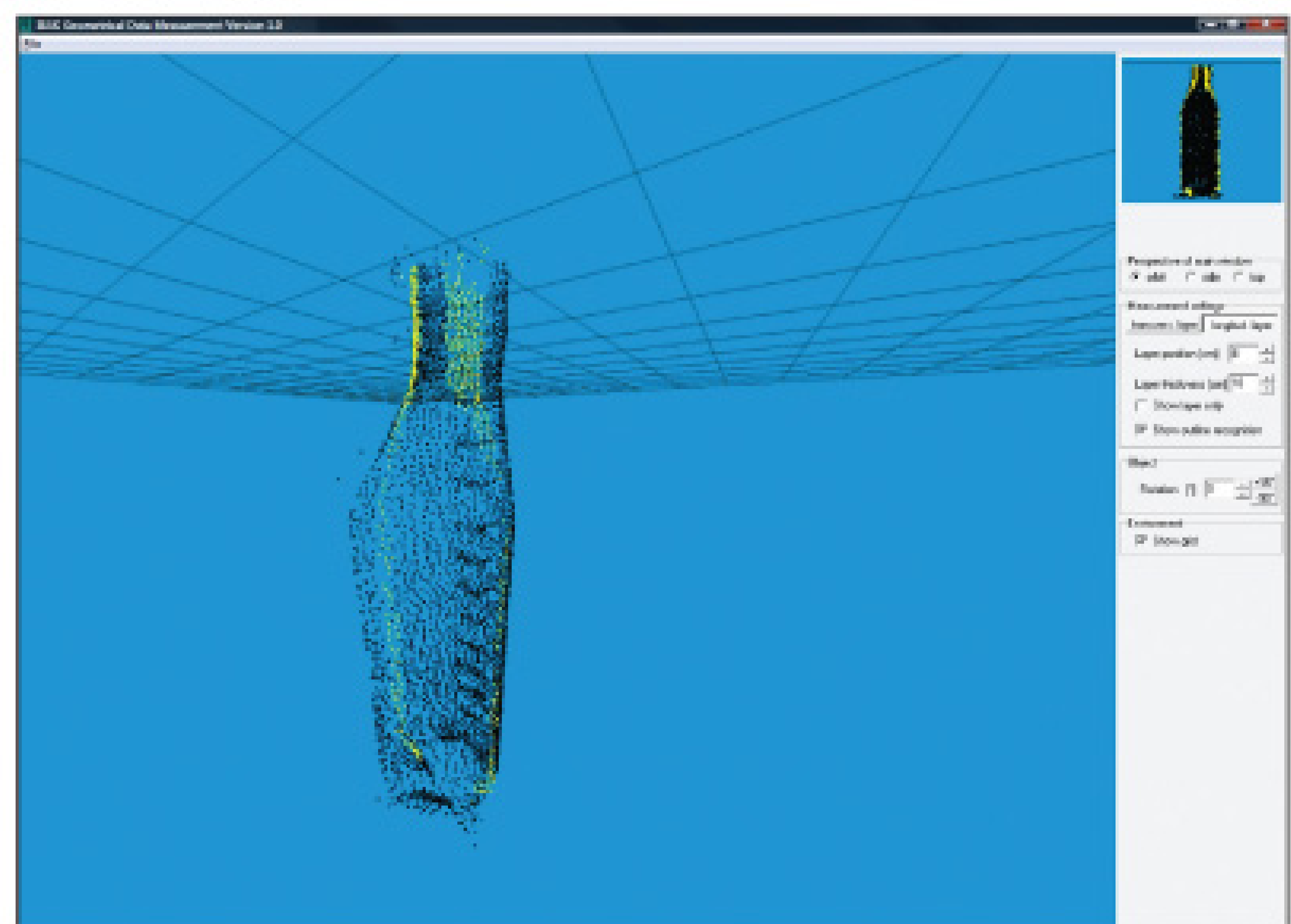


Figure 2. Panorama model.

a "virtual reality" experience that essentially places the operator inside the cavity.

Operation

A single average-depth manhole can be scanned in less than four minutes. The scanner is simply lowered to the bottom of the manhole and activated by the controller. It then rises at a controlled rate, taking a pair of still images for every 2 inches of vertical travel. That translates to a productivity of 50 to 75 manholes per day versus the 10 per day that is more typical

using manned entry.

The scanner need not be exactly centered in the cavity. The optics provide clear images from surfaces as close as 2 inches, and so as long as that margin is maintained, the camera can be anywhere inside.

An internal gyroscope functioning as an accelerometer is used to acquire positional data needed to create the 3D model. Overlapping visual data from the two cameras is then triangulated to set the spatial scale of the model. The gyro is not required for leveling — that is taken care of by the support



Figure 3. An unfolded view of images gathered by the Panorama camera.

cable and gravity.

The Viewer software first creates a 3D spatial point model (Figure 1) using data from the

scanner. If needed, that point model can be exported as an AutoCad (*.dxf) file, from which a wire frame can be meshed.

Next, the point model is processed as a grid on which to overlay camera images, creating the visual model (Figure 2). Later, when the Viewer is launched, it draws the required images from that database to create the 3D model.

All views are fully interactive, allowing the user to zoom, pan, rotate, measure, and annotate according to standard NASSCO inspection templates. Sutton notes, "The visual data is of such high quality that anything you could see by actually being in the manhole, you see just as easily onscreen."

Visual data can be viewed and used on site, but it is typically transferred to the engineers responsible for assessment and analysis in an office setting.

Observer comments

With the software launched, the user's immediate impression is that of indeed being inside the manhole. The functionality is similar to what is experienced when using the 3D viewers provided by many resorts and realty companies to move around inside rooms or buildings. With the motion con-

(observing defects and taking measurements), and the other for logging data manually in a database. "This is by no means difficult," says Sutton, "but there's an easier way, thanks to third-party developers."

The flexidata software program from PipeLogix integrates with the Panorama SI, displaying images,

The user has control over image brightness and gamma, both of which need to be adjusted to best match the type of monitor used for viewing. At any point, individual images can be saved to disc or sent to a printer. In the unfolded view, the entire manhole interior is unrolled from its cylindrical or rectilinear shape into a flat 2D image.

trolled by either mouse or shortcut keys, the user quickly develops an intuitive feel for the interface.

The user also has control over image brightness and gamma, both of which need to be adjusted to best match the type of monitor used for viewing. At any point, individual images can be saved to disc or sent to a printer. Of particular note is the option for an unfolded view (Figure 3), where the entire manhole interior is unrolled from its cylindrical or rectilinear shape into a flat 2D image. Size and distance measurements are easily accomplished with a few mouse clicks.

Supplier comments


The Panorama SI was designed from an engineer's perspective, and is designed to represent the best engineering solution to the problem of efficiently and accurately acquiring visual and geometric pipe and cavity data, Sutton notes.

If the Panorama SI is purchased in Europe, IBAK provides its own data logging software to serve as an integrated database. That software is not available in the United States. Without it, it is still possible to use the system, but it requires two windows open on the monitor: one for the actual image

numerical data, and comments in a single window. "What actually happens is that the flexidata software integrates with the IBAK software, storing the images generated by the IBAK scanner and making them available to the user for condition rating the pipe," says Joan Stone, president of PipeLogix.

"The database is available in NASSCO format, so most operators will already be familiar with its layout. Features have been added to take advantage of the survey detail available from the 3D model to make entering the condition assessment fast and easy."


Pipelogix was the first third-party developer to integrate its data-logging software with the Panorama SI. Sutton says RapidView is seeking to integrate with other third-party developers as well. ♦




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STRENGTH IN NUMBERS

Seattle-area water utilities form a partnership to promote water conservation and find the approach appealing to consumers

By Ken Wysocky

Big-box retailers cut costs by using their buying power to get volume discounts. In Seattle, Wash., the city's water and sewerage utility and surrounding municipal water customers apply the same strategy to reduce the expenses of water-conservation programs and, in the bargain, make them more effective.

As a result, Seattle Public Utilities (SPU) and 17 others in the Saving Water Partnership (SWP) are near their goal of reducing regional water usage by 10 percent from 2000 to 2010. They did it with a well-crafted, cohesive marketing effort that reached customers better than 18 different programs ever could, says Al Dietmann, the consortium's program leader for water conservation.

"The public doesn't relate well to a multitude of messages from a multitude of utilities, all with different rebates and incentives," he says. "A single, regional message makes sense to the public. It's more effective if they all work together as a single entity."

"In addition, a partnership leverages the purchasing power of many utilities doing the same thing. For example, if one utility goes to a radio station to buy 10 ads during prime commuting time, it'll pay quite a bit more per spot than if a consortium of utilities buys 100 ads. Or if you buy 2,000 reduced-flow showerheads, you'll pay a lot more per unit than if you buy 10,000."

A single message

Dietmann says the consortium also saves money and time by avoiding duplication of services, such as developing marketing messages, buying ads, and administering rebate programs. SPU customer surveys, and others performed by consortium partners, support his assertion that a single message is more effective. The surveys show that customers recognize the program and its activities.

Further proof lies in water-usage statistics. SPU and its partners aim to reduce personal and business water consumption by one percent each year for 10 years. That would save some 14.5 million gallons of drinking water per day, enough to offset estimated new demand for water from the utility, which services 1.3 million customers in King County (and runs the sanitary and storm sewer systems for Seattle proper).

"In effect, by reducing demand by one percent a year, we'll be withdrawing no more water in 2010 than we were in 2000, despite population and economic growth," Dietmann says. According to the consortium's annual report, the program has achieved an 8.38 percent reduction in water usage, representing millions of gallons per day, from 2000 through 2008. That puts the 10 percent goal by the end of 2010 clearly within range.

The consortium can't take full credit because the recession has curtailed business growth, which

reduced water demand to some extent. But even before the recession hit, the program still was achieving about a one percent annual reduction.

Achieving the goal will have saved SPU about \$60 million by avoiding construction of new supply facilities. "There's a three- or four-to-one cost-benefit ratio," Dietmann says. "In other words, it's three or four times more cost effective to save the water than to build new facilities."

All aboard

In 1999, as SPU planners began meeting with officials from the numerous surrounding municipalities and small water utilities that buy water wholesale, the biggest hurdle to a partnership was

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 e-mail editor@mswmag.com.

remain, mostly smaller utilities that don't spend much money on water conservation.

"But there was a point where the program reached critical mass and the rest of the 17 decided to join in," Dietmann says. "It wasn't the result of one particular thing. It just became fairly obvious it was going to come together, so the rest felt they should get on board — sort of a let's-give-it-a-try attitude. It didn't hurt that we had early success. I'm sure that had it not been successful, the consortium would have dissolved and everyone would have gone back to doing their own things."

To bypass potential political dogfights over who should run the water-conservation programs and

"We started with showerheads because they're a low-cost item with a quick consumer payback in terms of water and energy costs. We gravitate toward items with relatively quick paybacks of under two years."

Al Dietmann

parochialism. But financial savings and shared power proved to be powerful motivators.

"A lot of folks don't want to hand over power, purse strings and decision-making to a larger group," Dietmann notes. "But ultimately, the utilities felt that joining together could be more effective than going it alone. And the real driver for most folks is financial." Not all the 17 partners joined the SPU right away, and a few holdouts still

its finances, the consortium was created as a "contractual creature," as Dietmann puts it. An operating board runs it, and each partner has at least one representative.

"It was the most effective way to move money around and retain organizational goals," Dietmann notes. "The City of Seattle does not have majority control. The key is giving all partners power. All members can provide input, as well as make decisions about how money is spent."

Each consortium member kicks in money. The share is based on the number of new water connections made in the municipality, and how much water those customers buy. The more water bought and the more new connections made, the higher the annual fee. "Most of the cost of the program is funded by charges for new water connections and a wholesale commodity charge," Dietmann says.

Step by step

The Saving Water Partnership's first venture centered on a \$1.5 million effort to dispense free water-saving showerheads, which use less than 2.5 gallons of water per minute. "We would have paid twice as much if everyone had done it individually," Dietmann says. "We started with showerheads because they're a low-cost item with a quick consumer payback in terms of water and energy costs. We gravitate toward items with relatively quick paybacks of under two years."

About 300,000 households took part in the original program, which one month later had reduced water usage by three million gallons a day. The utility lost revenue as a result, but the anticipated decrease had been built into the rate schedule.

Another successful venture launched in 2003 involved washing-machine rebates. The goal was to motivate consumers to buy high-efficiency machines that use less hot water and less energy.

Over the years, the rebates have ranged from \$25 to \$150 per machine — larger rebates for more efficient models. At last count, the program was close to issuing its 80,000th rebate, which means about 22 percent of 360,000 eligible households have signed on, Dietmann says.

Clear benefits

A key advantage of the partnership approach to rebates is that it makes the programs less complicated for consumers and the product vendors and makes it easier to administer.

"If 17 utilities came to one appliance vendor with rebate offers, you can imagine what the reaction would be versus one group approaching the vendor," Dietmann says. "That's where the power of combined marketing comes through. Appliance salesmen can easily identify what models are eligible for rebates, and it's simpler for customers, too."

In addition, Dietmann says, consumers generally trust a collective effort by several utilities more than efforts by individual utilities, which can appear financially self-serving for utilities that are privately owned, for-profit entities. Dietmann says SPU is exploring partnerships with other entities beyond the water sector, such as solid-waste disposal and wastewater. And why not? There clearly is strength in numbers.

To learn more about Seattle's Saving Water Partnership, visit www.savingwater.org. ♦

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A FUTURE GOODBYE AND NEW BEGINNINGS

By Irvin Gemora

The English proverb, "All good things must come to an end," is as true as it is misunderstood. While I believe good things do end, they are so often replaced by other good things in life. That perspective is important to remember.

I write these words because the many years of hard work and good times here at NASSCO are coming to an end for me in the not-too-distant future. During the October WEFTEC show in Orlando I announced my plans to retire beginning in February 2011, after NASSCO's annual meeting in Puerto Rico.

I thoughtfully made this decision and announcement to give myself and NASSCO ample opportunity to plan for my departure and, most important, to secure a new executive director. I will proudly pass the torch and share the knowledge I've gained over the years to help NASSCO continue to grow on its successful path.

Many changes

As executive director of the industry's leading trade association, I've been honored to learn and grow during the past eight years. Our industry is still young, and watching it grow has been exciting. As I look back, I think about all that has changed since I was a young sewer rat, literally getting down and dirty to learn on the job.

Most of the resources we have today existed in concept more than reality — it was trial and error and a lot of hard work. Training classes, guidelines and certifications existed, but not at today's levels. The many products and processes for rehabilitation of the infrastructure are exciting and promise a bright future for the industry and all who work in it.

We're still working diligently as an industry, and we have a long way to go to get the support we need for initiatives such as securing funding and building ongoing public awareness, but we've come a long way.

In the past year alone, we've seen our industry on the front page of leading newspapers, particularly in articles about the need for funding. I can't think of anything more important, from a public health perspective, than to spend federal dollars on our nation's most vital asset — public sewer systems and clean water. I hope this funding will become a reality.

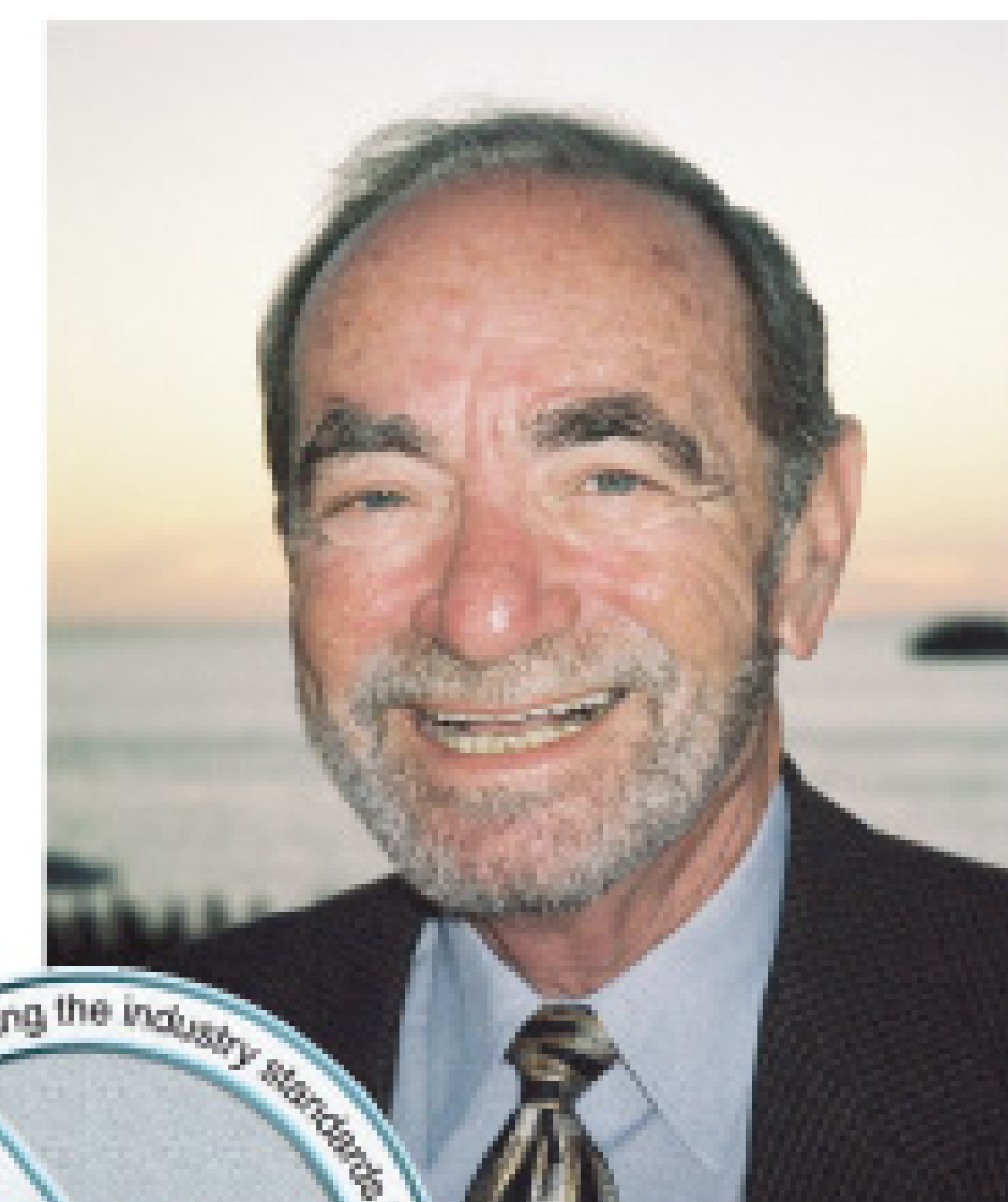
Glad to contribute

I've enjoyed my career, and I'm so lucky to have had this opportunity to serve the industry and contribute to the growth of a powerful membership-based association where networking, training and education keep members coming back year after year. For decades now, we've come together to learn, grow, share stories, see old friends, and make new ones.

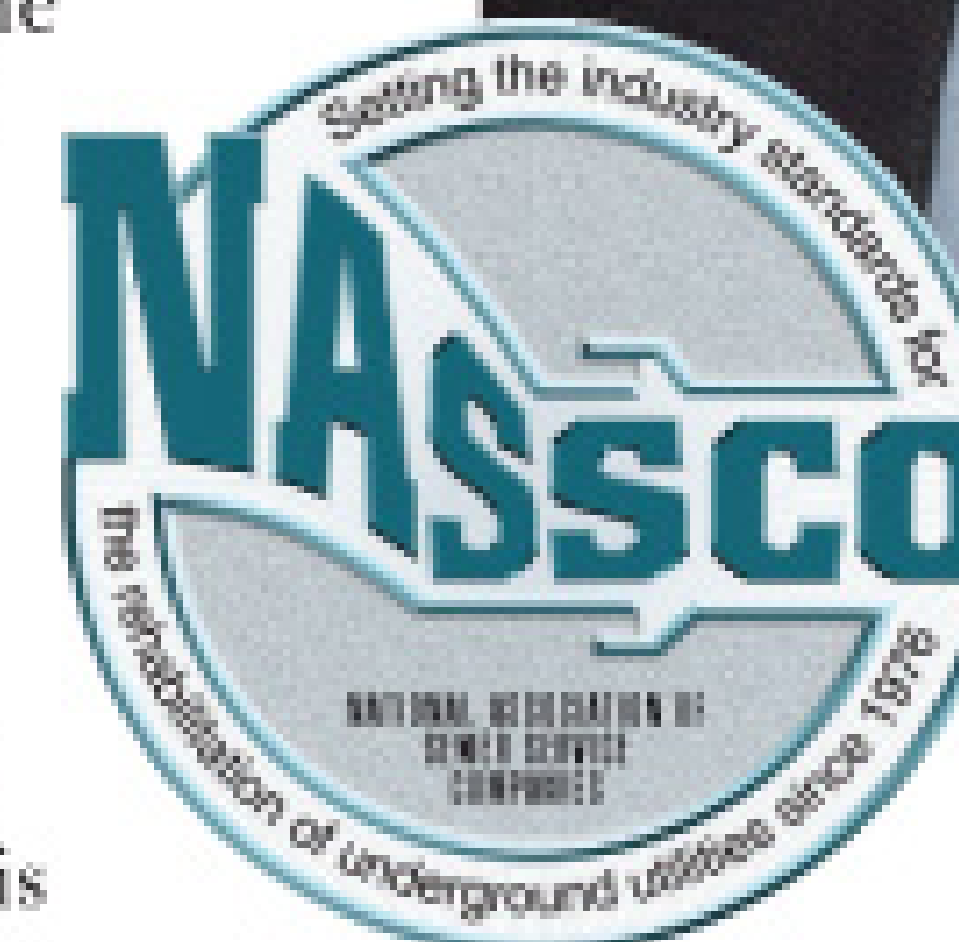
I'm proud of all we've done and of the resources now available to everyone. NASSCO is holding true to its mission set more than 30 years ago by a small group of dedicated people who had a passion and a vision for our industry. NASSCO's mission to set the standards for rehabilitation for underground utilities remains unchanged.

While I hold the title of executive director, the engine of this organization is truly my colleagues: Heather Myers, operations manager, and Gerry Muenchmeyer, technical director. I'm grateful to have been able to work with them and the many volunteers, including board members, who are key to NASSCO's success.

This wonderful team and I have a lot of work ahead of us. The search is on to find an executive director who can take this organization to the next level. If you want to be considered for the job, please send your resume to director@nassco.org or call 410/486-3500.



Irvin Gemora



Your inquiry will be held in the strictest confidence.

It is an honor to serve in this role but it is not honorary. Significant work still needs to be done for the industry, and NASSCO is the logical organization to do it. The work is challenging, satisfying and sometimes frustrating, but always interesting.

Good things ahead

Many good things will end for me when I leave NASSCO. I will greatly miss the work, the people I've been so grateful to work with daily, and the industry events I enjoy. But I know more good things are ahead for me, including more time with my family, my dear wife Paula, and of course, golf.

I also look forward to new challenges, such as exploring some life long ambitions, like playing the piano and learning a foreign language. Doing nothing is not my definition of retirement. I will continue to teach the PACP and will consider becoming involved with interesting projects from time to time.

For NASSCO, more good things are in the future too: A new executive director, fresh energy, ideas and continued growth. Until my retirement I'm committed and look forward to helping pave the path for NASSCO's continued success. Thank you. ♦

Irvin Gemora is executive director of NASSCO. He can be reached at director@nassco.org. The NASSCO headquarters is at 11521 Cronridge Dr., Suite J, Owings Mills, MD 21117.

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Ralston, NASSCO Past-President, Dies at 71

Trent H. Ralston, past-president of the National Association of Sewer Service Companies (NASSCO) and past-chairman of the North American Society for Trenchless Technology (NASTT) died Nov. 9. He was 71. Ralston also received the lifetime achievement award from both associations.

An insightful, innovative and dedicated entrepreneur and business leader, Ralston enjoyed creating opportunities for others and contributing to his community.

Known for his sense of humor, Ralston always had a witty, folksy or clever comment at hand. "He was a gentleman and a good friend to all of us in this industry," said Irv Gemora, NASSCO executive director.

Ralston was founder and president of TRB Specialty Rehabilitation Inc. of Gambrills, Md. He retired in 1999 after 30 years in the pipeline construction and infrastructure rehabilitation industry and moved to Nashua, N.H.

Ralston is survived by Rita Ralston, his wife of 45 years, and daughter and son-in-law, Stephanie and Rakesh Khurana. Funeral services were held Nov. 13 at St. John Neumann Catholic Church.

Fluid Conservation Systems Names Distributor

Fluid Conservation Systems has named Matchpoint Inc. distributor for customers in Tennessee, Georgia, Arkansas, Mississippi, Alabama, Florida and the U.S. territories of St. Thomas, Puerto Rico and the Bahamas. Matchpoint will offer the full range of FCS water leak detection products.

UEMSI Adds 3T Equipment as West Coast Service Center

UEMSI has added 3T Equipment as an authorized West Coast service center for pipeline inspection and camera systems. 3T has locations in Santa Rosa and LaVerne, Calif.

Northeast Trenchless Hosts Annual Meeting, January Mud School

BAROID and the Northeast Trenchless Association will hold a horizontal directional drilling and pipe bursting Mud School in conjunction with NTA's annual meeting, Jan. 25-26, at the Holiday Inn Hotel and Conference Center in Boxborough, Mass. The meeting is open to all association members and employees as well as potential new members.

Training seminars will focus on business management, field operations and new technologies. New products also will be on display. The day-and-a-half Mud School, Jan. 26-27, will focus on applications and practices for a variety of geologic environments, including sand and gravel, sticky and swelling clay, rock drilling, geothermal drilling and grouting, lubricating fluids and pipe bursting, HDD fluids testing. Instructors are Frank Canon, Tom Tibor, Dennis Duty and Mike West of BAROID. Cost for the school is \$50 per NTA member and \$75 for non-members. Discounted hotel rates are available. To register or for more information, e-mail Bill King, NTA executive director, at info@northeasttrenchless.com, call 508/498-3811 or visit www.northeasttrenchless.com. ♦

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PEOPLE / AWARDS

Larry T. Koehle, director of public works and engineering for the town of Caledon, Ontario, was elected president of the American Public Works Association.

Robert O. Evans Jr. of Edenton, N.C., received the Hancor Soil & Water Engineering Award from the American Society of Agricultural and Biological Engineers.

Ritchie Handley of Putnam received the Collection System Operator of the Year Award from the West Virginia Rural Water Association.

Russell Mathers, Wilton (Maine) wastewater and water superintendent, received an Operator Award from the Department of Environmental Protection.

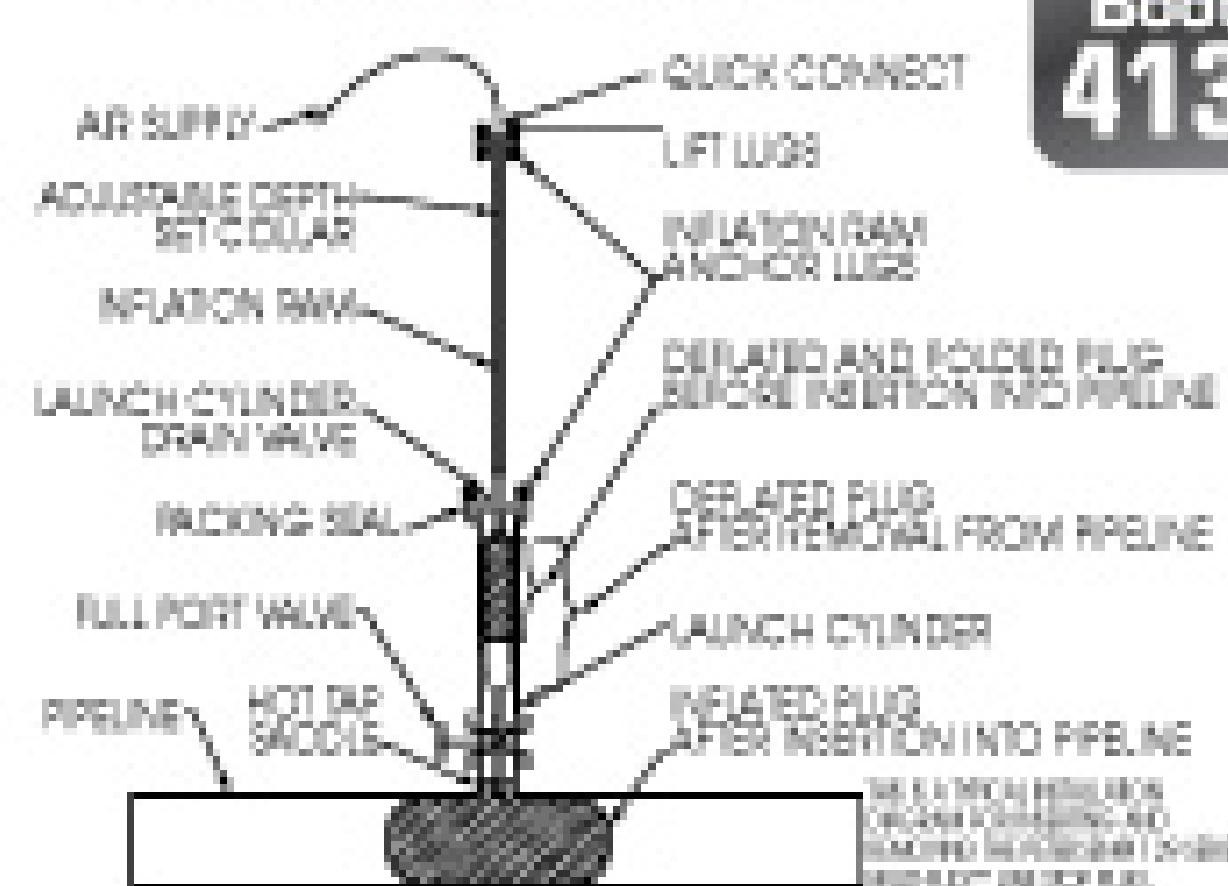
The National Rural Water Association named the following award recipients:

- **Illinois Rural Water Association**, State Association of the Year
- **Minnesota Rural Water Association** and **West Virginia Rural Water Association**, Member Services Excellence Award
- **South Dakota Association of Rural Water Systems**, Innovation in Member Services Award
- **Evergreen Rural Water of Washington**, Training and Technical Assistance Excellence Award
- **Susan Breau-Kelly** (Maine Rural Water Association), **Chris Lovelace** (Alabama Rural Water Association), **Terry Ingham** (Oklahoma Rural Water Association), **Janice Gibbs** (Texas Rural Water Association) and **Rene Koback** (Wisconsin Rural Water Association), Peer Leadership Awards.

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CALENDAR

Jan. 10-13

National Utility Contractors Association Utility Construction Expo 2010, Walt Disney World Dolphin Hotel, Orlando, Fla. Call 703/358-9300 or visit www.nuoca.com.

Feb. 21-24

The Utility Management Conference, InterContinental San Francisco, San Francisco. Call 703/684-2441 or visit www.wef.org.

Feb. 24-27

Pumper & Cleaner Environmental Expo International, Kentucky Exposition Center, Louisville, Ky. Call 800/257-7222 or visit www.pumpershow.com.

LEARNING OPPORTUNITIES

Northeast Trenchless Association

The Northeast Trenchless Association will hold its 2010 Annual Meeting and Conference Jan. 25-26 at the Holiday Inn, Boxborough, Mass. Topics will include construction safety, horizontal directional drilling, pipe bursting and tunneling, and HDPE fusion. There will be product exhibits, roundtable discussions, hands-on equipment training, and networking opportunities.

BAROID and the Northeast Trenchless Association will hold an HDD and Pipe Bursting Mud School in conjunction with the meeting. Call 508/498-3811 or visit www.northeasttrenchless.com.

American Water Works Association

The AWWA is offering a Los Angeles Water Sustainability and Management Forum Jan. 14 in Los Angeles. Visit www.awwa.org.

Kansas Water Environment Association

The KWEA is offering these courses:

- Jan. 12 – Basics of Water Operation, Enterprise
- Jan. 14 – Small Water Systems, Goodland
- Jan. 20-21 – Advanced Electrical, Salina
- Jan. 21 – Small Water Systems, Hays
- Jan. 27 – Small Water Systems, Kickapoo Nation
- Jan. 28 – Small Water Systems, Medicine Lodge
- Feb. 2-3 – Basic Water Laboratory, Abilene
- Feb. 2-3 – Cross Connection/Backflow Informational, Great Bend
- Feb. 2-5 – Cross Connection/Backflow Certification, Great Bend
- Feb. 4-5 – Cross Connection/Backflow Recertification, Great Bend
- Feb. 9 – Safety, Dodge City
- Feb. 10-11 – Advanced Operator School, Kansas City
- Feb. 17-18 – Basic Electrical, Medicine Lodge
- Feb. 23 – Ethics, Liberal
- Feb. 25 – Small Water Systems, Dodge City

Visit www.kwea.net.

University of Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering a course in Cross-Connection Control and Backflow Prevention in Madison Jan. 5-7. Visit <http://epdweb.engr.wisc.edu>.

Wisconsin Department of Natural Resources

The Wisconsin DNR has these courses:

- Jan. 27-28 – Distribution, West Bend
- Feb. 17 – Preventive Maintenance, Chippewa Falls

Visit www.dnr.state.wi.us/org/es/science/opcert/training.htm. ♦

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.

Product Spotlight

System Helps Prevent Manhole Cover Thefts and Illegal Dumping

By Ken Wysocky

The manhole security system from SewerLock thwarts terrorists, vandals and illegal dumping and increases safety for municipal crews, contractors and pedestrians.

The product consists of a heavy-gauge, stainless steel sub-ring that fits below the existing manhole frame and cover, independent of existing lips or edges; and a padlocked stainless steel pan that rests atop the sub-ring. The pan is slightly concave and can be flipped over to create a small dome, depending on the application. It's easily removed for maintenance, says Dave Ross, company co-owner.

The pan weighs eight pounds. Tiny holes prevent standing nuisance water and allow gas diffusion, but the pans also can be fabricated without holes if needed. The device prevents accidents that occur when manhole covers are stolen or accidentally left off by workers. "Workers step backward and fall into an open manhole," Ross says. "When the SewerLock pan is in, no one can fall into the manhole."

To install the unit in an existing manhole, a stainless steel sub-ring is affixed to the manhole barrel with fiberglass. Next, the sub-ring is secured to the barrel with anchor bolts. Then the entire assembly is sealed with more fiberglass.

For new manhole construction, the sub-ring barrier is placed between grade rings during manhole assembly, immediately securing the manhole.

The pan fits onto the sub-ring over 1/2-inch eyebolts attached to the sub-ring, opposite each other. The pan is secured to the sub-ring with tamper-proof padlocks that fit through the eyebolts. The eyebolts can be tightened to prevent lid blowoffs or set to allow the pan to rise in case of overflow.

"Each sub-ring and pan is custom-made," Ross says. "We measure the inside diameter of the manholes to manufacture a custom-fit product." The system decreases liability by preventing injuries to pedestrians who could fall into manholes left open by cover theft. It also prevents unauthorized access to manholes by terrorists and vandals, and prevents illegal dumping of grease, construction debris, and other materials that can clog sewers and create backups. Agencies avoid fines and penalties from SSOs and comply with recent mandates to lock manholes, Ross notes.

Optional stainless steel cables secure manhole covers to the SewerLock assembly. **For information:** www.sewerlock.com; 408/761-5882.



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Manhole security system from SewerLock

McLaughlin Unveils Steering Head for Auger Bores

The ON Target auger boring system from McLaughlin enables contractors to control horizontal on-grade (up and down) changes as well as lateral (left to right) direction changes. A control station with hydraulic power pack controls the movement of the head, while a built-in water level helps monitor grade throughout the bore. Two halogen lights in the control station indicate lateral steering head movements. **800/435-9340; www.mightymole.com.**



StoneAge Replaces BC 505 Cartridge 11

StoneAge Inc. has replaced the BC 505 cartridge used in the 40,000-psi Barracuda, Gopher and SL swivel assemblies with part BC 505-S. The upgrade is designed to eliminate leaks over the life of the seal. **866/795-1586; www.stoneagetools.com; Expo booth 4133.**

General Pipe Offers Hot-Shot Pipe Thawing Machines

The Hot-Shot 320 and Hot-Shot 400 pipe-thawing machines from General Pipe Cleaners are designed to thaw frozen pipes in minutes, eliminating the need to tear up floors and break through walls. Model 320 generates 320 amps, thawing up to 100 feet of 1 1/2-inch pipe. Model 400 has a dual-level output. With 400 amps of power, it can thaw up to 175 feet of 1 1/2-inch pipe. The unit also can be switched down to 320 amps when needed. Both machines can be plugged into a standard 115-volt outlet. **800/245-6200; www.drainbrain.com.** ♦



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BETTER WATER

Seminars tailored specifically for municipal pipe maintenance and repair professionals will be featured on Education Day at the 2010 Pumper & Cleaner Expo.

BETTER WAYS

Seminars at the 2010 Pumper & Cleaner Environmental Expo cover pipe inspection and cleaning, equipment upgrades, and other topics for municipal managers

By *Scottie Dayton*

A track of seminars presented by the Southern Section Collection Systems Committee (SSCSC) highlights the education lineup for municipal and utility professionals at the 2010 Pumper & Cleaner Environmental Expo International, Feb. 24-27 in Louisville, Ky.

The SSCSC program is part of Education Day on Wednesday, Feb. 24. The complete Education Day program includes 45 seminars presented by industry experts across the full range of environmental service industries. Seminars are also offered on Thursday and Friday mornings. A summary of the SSCSC program follows. For a complete seminar schedule, see the Expo pages in this issue of *MSW*.

Manhole Inspections – The Need

Denis Pollak, former president, California Water Environment Association

Sewer collection systems are a wastewater utility's largest investment, with a replacement value greater than that of a wastewater treatment plant. Up to \$90 billion is spent each year on pipeline and manhole replacement in the United States. Manholes are among the largest sources for maintenance problems in collection systems.

Pollak will discuss why manholes were over-

looked for so long, and the urgent need to inspect them. Attendees will receive an in-depth look at inspection processes, the various technologies available, how municipalities use inspection information, and why that information is important to rehabilitation planning.

Combination Truck Maintenance and Safety, Sewer Hose Maintenance and Nozzle Technology

Rick Lewis, OSHA-certified outreach program trainer

Lewis will present an overview of essential combination truck maintenance that tells how to preserve and maintain vacuum equipment, pumps, high-pressure hoses, and nozzles. He will discuss how maintaining these components can pay big dividends and deliver long-term savings. Safety issues will feature prominently in the presentation.

Jetting Nozzles: Their Design, Technology, and Effective Usage

Duane Johnson, vice president, Affordable Pipeline Services

Pipeline cleaning technologies have advanced dramatically, and none more than the design and use of jetter nozzles. Johnson will focus on ways attendees can optimize the nozzles they own and introduce them to new nozzle tech-

nologies. He will explain how the equipment cleans pipelines and why it is critical for operators to understand the principles of nozzle performance. The visual presentation will give owners and users important knowledge for getting the most from cleaning trucks and equipment.

Elevating the Quality of Your CCTV Inspection Program

Jim Aanderud, president, Innerline Engineering

CCTV pipeline inspection continues to grow in importance as accurate data on pipeline conditions becomes critical to setting rehabilitation priorities. Aanderud will challenge pipeline inspection professionals with techniques and approaches that will improve the quality of their work immediately. Participants will learn how to organize data and video and properly care for computers and storage devices to ensure their efficient operation. Frontline CCTV operators, managers, and owners will gain valuable insights that will help elevate the quality of pipeline inspections.

Critical Steps in Prioritizing Sewer Rehabilitation

Mark Hill, project manager, RBF Consulting

Hill will walk through the critical decisions

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made at the beginning of inspection programs and will discuss strategies for setting repair priorities and determining the most cost-effective repair methods. CCTV inspection operators will learn how the data they collect is used and the importance of consistent inspections. Collection systems managers will learn what to consider when deciding how to invest capital budgets.

Traffic Control: The Critical Factor in Pipeline Inspection

*Duane Johnson, vice president,
Affordable Pipeline Services*

Johnson's presentation on the importance of proper traffic control will cover the correct placement of signs and delineation, necessary traffic control equipment, and approaches to coping with traffic conditions. Attendees will learn ways to achieve high production rates while maintaining proper traffic control and worker safety.

NASSCO program

The Education Day lineup also includes a track of seminars from the National Association of Sewer Service Contractors (NASSCO):

- **Pipe Inspections Without an Operator?** – Scott Thayer, Ph.D., chief technology officer, RedZone Robotics
- **Ways to Increase Your Daily Sewer Cleaning Production Rates Without**

Increasing Your Costs – Malvin (Rusty) Nezat, director, Nezat Training and Consulting Inc.

- **Proper Preparation of the Substrate Results in Coating Longevity** – E.F. Chip Johnson, business development director, Sprayroq Inc.
- **Collection System Asset Management – Getting from Reactive to Proactive** – Darryl Macy, manager, Macon Water Authority
- **Trenchless Lateral Renewal Technologies: Lessons to be Learned and the Relevance of Standards, Materials, and Installation Practices** – Larry Kiest Jr., president and CEO, LMK Enterprises Inc.
- **Zoom Camera Technologies: The Next Level of Infrastructure Inspection** – Alain Lortie, CEO, CTZOOM

Other seminars

The Thursday and Friday programs include these additional seminars of special interest to sanitary sewer, stormwater, and drinking water system professionals:

Thursday, Feb. 25

- **Pipe Cleaning Tools** – Dana Hicks, sales manager, ENZ USA Inc.
- **Increasing Your Revenue Stream through Pipeline Laser and Sonar**

Profiling – Neville "Doc" Bennett, BSAE, MBA, international vice president, CUES Inc.

- **How to Prevent I/I in the Manhole Chimney Area** – William Goff, national sales manager, Sealing Systems Inc.

Friday, Feb. 26

- **Identifying Manhole I/I Sources and Cost-Effective Repair Methods** – Lee Haessig, Cretex Specialty Products
- **Jet Up! Taking Science to the Sewer** – Scott Paquet, president and CEO, NozzTeq Inc.
- **Cured-in-Place Pipe vs. Digging and Replacing** – Travis Bohm, business development manager, Perma-Liner Industries Inc.
- **Safety in Excavation** – Gary Hooks, master trainer, Safety Corporation of America
- **Drain Cable Technology and Their Real World Applications** – Keith Nesky, vice president of sales, Spartan Tool LLC
- **OSHA Procedures Regarding Confined Space** – Chris Cira, president, MTech
- **Sonde and Utility Line Locating Techniques** – Rob Trefz, P.E., marketing and locating technologies director, RIDGID

To find out more about the education program or any other Expo offering, visit www.pumper.show.com. Register online or by calling 800/257-7222. ♦

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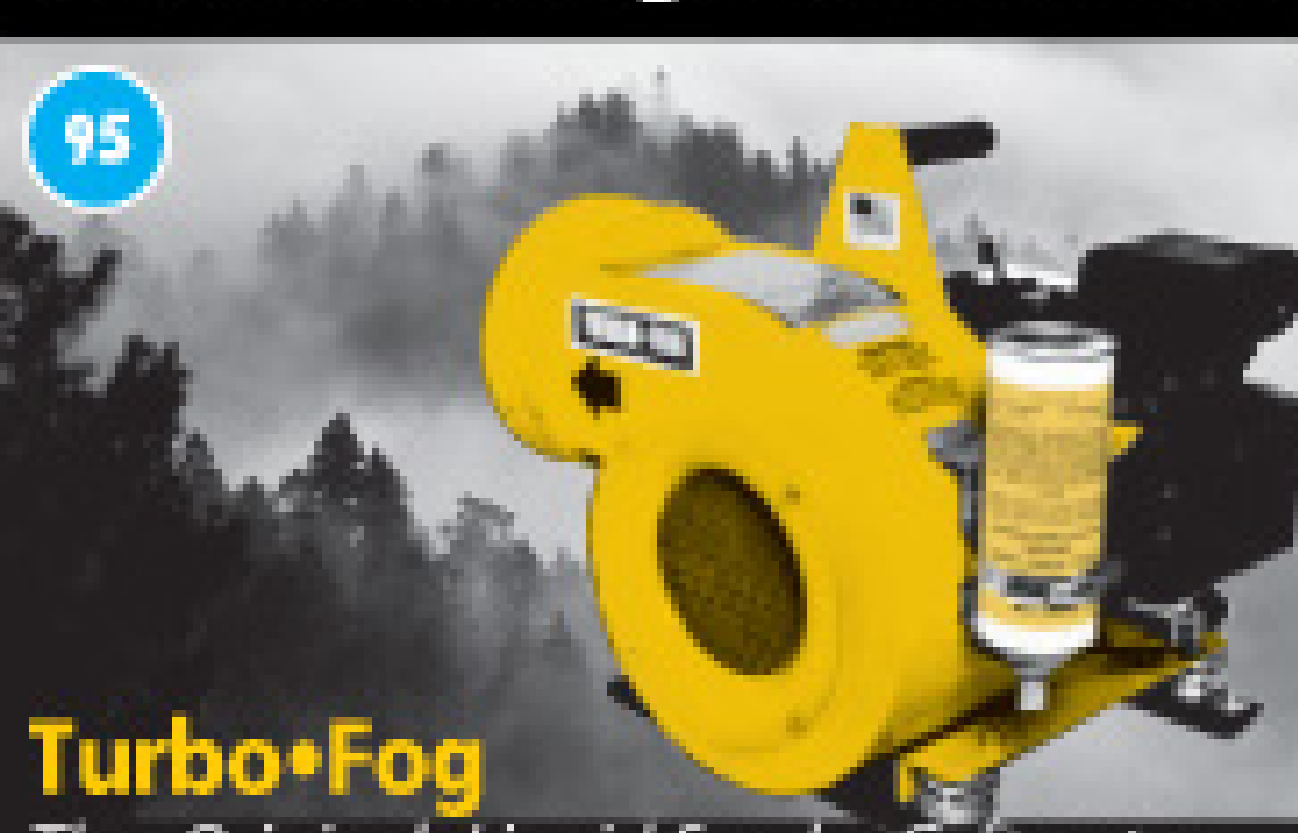
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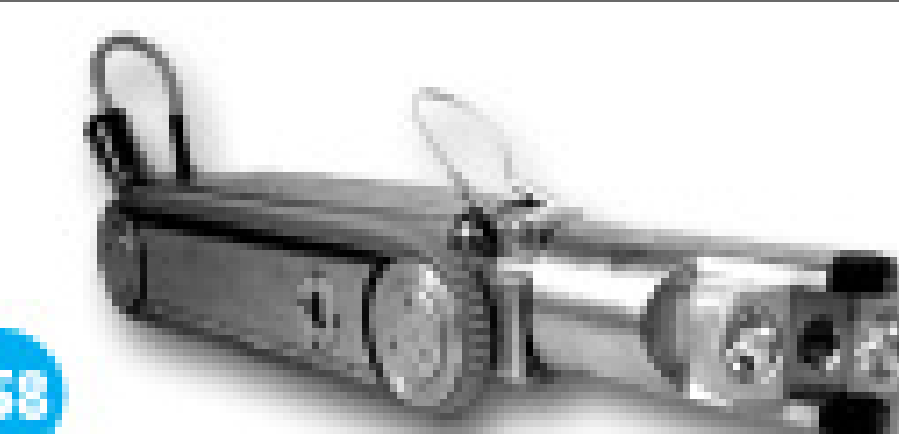
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Aries Industries, a leading manufacturer of Pipeline Inspection and Rehabilitation Equipment for Sewer, Water and Natural Gas Industries, is seeking two talented sales professionals for career opportunities. Ideal candidates are dynamic, outgoing individuals with strong communication skills and charismatic demonstration abilities. A minimum five years of outside sales is required, with experience working with contractors, municipalities or capital equipment a plus. Territory positions will be based at Aries offices in Waukesha, WI and Fresno, CA. If you have passion for a fast paced selling environment, and want to realize your personal financial goals, send your information to: E-mail: hr@ariesindustries.com; www.ariesindustries.com. EOE. (CM1)

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WE REBUILD ALL BRANDS of high pressure sewer jetter pumps; Myers, Giant, NLB and all of the rest. Call 251-610-0061 or e-mail sales@tomadent.com. (M4)

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