

MUNICIPAL

SEWER  
&

WATER™

FOR SANITARY, STORM AND WATERWORKS PROFESSIONALS

June 2016

HUMAN SIDE: UNCONSCIOUS  
BIASES ARE AKIN  
TO HEART DISEASE  
PAGE 24

PUMPS DIRECTORY  
PAGE 32

TECH TALK: CALCULATING  
PUMP STATION CAPACITY  
PAGE 36

# STEPPING INTO THE FUTURE

Santa Clara invests in a new  
SCADA system and builds  
distribution efficiency with  
in-house repair and replacement

PAGE 12

Justin Pinheiro  
City of Santa Clara  
Water and Sewer Utilities



# An instant, wireless View into any sewer.



Sewer assessment—it's essential to prioritizing CCTV and maintenance work, planning cleaning and rehab, and achieving compliance. Controlled wirelessly with a touchscreen tablet, the patented new **Quickview airHD** camera lets you look inside any sewer with:

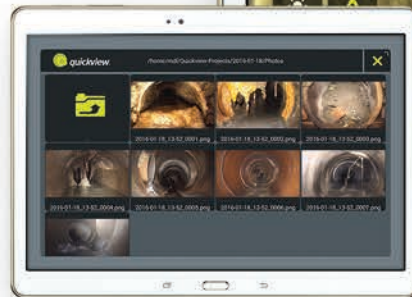
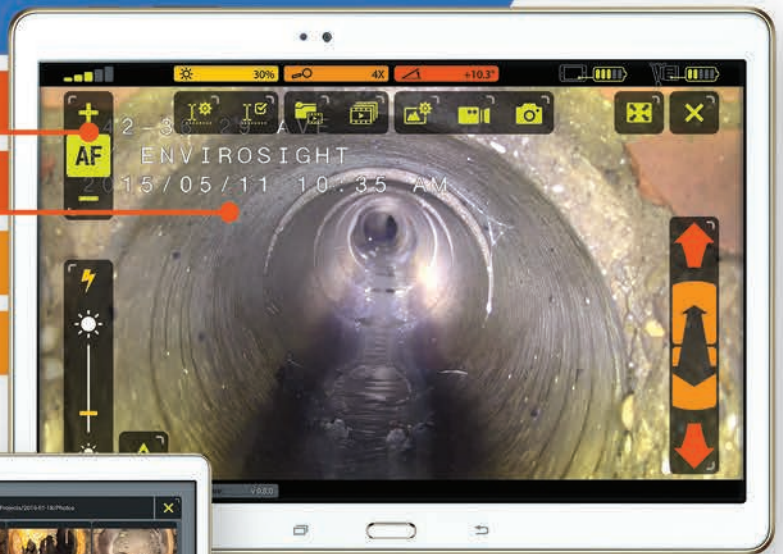
**No cables at all!**

**Touchscreen control**

**Detailed HD video**

**In-manhole centering**

**Motorized tilt**



Full wireless control, viewing, recording, annotation, playback and sharing capabilities.

©2016 EnviroSight. All rights reserved. Quickview and EnviroSight names/logos are trademarks of EnviroSight. Patents 6,538,732 and 7,009,698; others pending. Specifications subject to change without notice.

Phased Assessment Strategy for Sewers (PASS) starts with zoom assessment. This FREE white paper explains why: [envirosight.com/pass](http://envirosight.com/pass)



get a **demo**

**EnviroSight**

[envirosight.com/airhd](http://envirosight.com/airhd) • (973) 252-6700

Full range of underground infrastructure inspection equipment, service and rentals.

# PERFECT STORM. SIMPLE SOLUTION.

**VACTOR**  
Subsidiary of Federal Signal Corporation

## COUNT ON US AS YOUR SOLUTION.

Featuring the 2100 Plus Combination Sewer Cleaner line, the Vactor Factor is the only way to describe the proven service our clients have come to expect from us. Experience the easy operation, exceptional efficiency and unmatched quality and support for yourself.

## SCHEDULE A DEMO TODAY!

Visit [Vactor.com](http://Vactor.com) or call 815.672.3171

©2016 Vactor Manufacturing

**VACTOR**  
Subsidiary of Federal Signal Corporation

# INSIDE:

PUMPS, LIFT STATIONS AND CONVEYANCE



## ON THE COVER:

City of Santa Clara Water and Sewer worker Justin Pinheiro checks the clamps on a Mission repair coupling during a sewer main repair project in Santa Clara, California. (Photography by Lezlie Sterling)



## COMING IN JULY 2016

### Chemical & Mechanical Root Control

- ◆ BETTER MOUSETRAPS: Herbicidal solution to root problems
- ◆ SPECIAL: Hydroturbines turn pressure into power
- ◆ TECH TALK: Wet wells vs. dry wells

## FEATURES

- 12 SEWER: Stepping Into the Future**  
Santa Clara invests in a new SCADA system and builds distribution efficiency with in-house repair and replacement.  
By Jim Force
- 20 SEWER: Winning the Fight**  
Cobb County Water System earns string of honors for its performance, but focuses on doing right by its customers.  
By Erik Gunn
- 26 SEWER: Taking the Lead**  
Fayetteville tightens up its system and eliminates SSOs while keeping a mindful eye on the future.  
By Erik Gunn

## COLUMNS

- 8 FROM THE EDITOR: Educate, Inform and Engage**  
Recent news stories present an opportunity to draw attention and support.  
By Luke Laggis
- 10 @mswmag.com**  
Visit daily for news, features and blogs. Get the most from *Municipal Sewer & Water* magazine.
- 24 HUMAN SIDE: The Unconscious Bias Effect**  
Inadvertent biases in the workplace are inevitable, but you can minimize the damaging side effects.  
By Ken Wysocky
- 32 PUMPS DIRECTORY**
- 36 TECH TALK: Flow, Pressure and Pump Performance**  
Operators and managers should play a role in the design of collections system pump stations.  
By Thomas E. Jenkins, P.E.
- 42 PRODUCT FOCUS: Pumps, Lift Stations and Conveyance**  
By Craig Mandli
- 48 CASE STUDY: Pumps, Lift Stations and Conveyance**  
By Craig Mandli
- 50 NASSCO CORNER: Share Your Experience**  
Opportunities to lead educational presentations are available at two major events.  
By Ted DeBoda
- 52 WWETT SPOTLIGHT: A Green Cleaning Option**  
NozzTeq's MANTA bottom cleaner engineered to clean effectively with recycled water.  
By Craig Mandli
- 54 PRODUCT NEWS**  
Product Spotlight: MyTana's midsize camera features built-in Wi-Fi.  
By Craig Mandli
- 58 INDUSTRY NEWS**
- 60 WORTH NOTING**  
People/Awards; Learning Opportunities; Calendar

JUNE 2016

MUNICIPAL  
**SEWER  
&  
WATER**

Providing CIPP Rehabilitation Products Since 1999

# TWO SOLUTIONS FOR MAIN LINE REHABILITATION

## SECTIONAL POINT REPAIR

REHABILITATING SECTIONS OF THE MAIN SEWER LINE. COMPLETE START-UP SYSTEMS FOR LESS THAN \$15,000. INCLUDES ON-SITE TRAINING, KITS AND ALL EQUIPMENT.



## PERMA-MAIN™

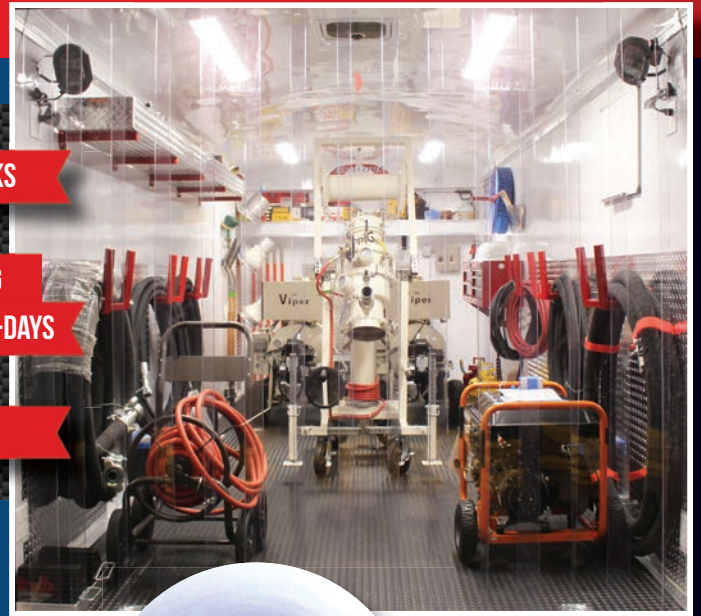
REHABILITATING THE MAIN SEWER LINE WITH CONTINUOUS MANHOLE TO MANHOLE LINING. PATENT PENDING.



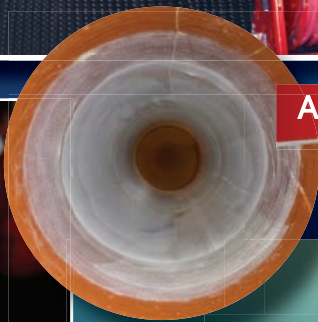
TURN-KEY BOX TRUCKS

ZERO DOWN FINANCING  
NO PAYMENTS FOR 90-DAYS

TURN-KEY TRAILERS



AFTER



AFTER



LIVE DEMONSTRATIONS

# FLORIDA

JUNE 8TH & 9TH

## PERMA-LINER™ INDUSTRIES, LLC.


















[www.perma-liner.com](http://www.perma-liner.com)



CALL  
**1-866-336-2568**  
TO LEARN MORE



# ADVERTISER INDEX

COMPANY	PAGE
Advanced Infrastructure Technologies.....8	
 American Highway Products, Ltd. ....60	
 AMT Pump Company ..... 18	
 Aries Industries, Inc. ....13	
 Cam Spray .....47	
 Chempace Corporation .....51	
 Cloverleaf Tool Co. ....53	
 Cobra Technologies .....41	
 CUES .....62	
Doug Meadows Co., LLC .....55	
 Electro Scan Inc. ....35	
 Envirosight .....2	
 Enz USA, Inc. ....34	
Ferguson Waterworks ..... 11	
 GapVax, Inc. ....63	
Helix Laboratories, Inc. ....15	
 InfoSense, Inc. ....55	
IPEX Inc. ....19	
JWC Environmental.....53	
Lee Supply Company.....15	
Matchpoint Water Asset Management, Inc. ....27	
NCFI Polyurethanes .....29	
 NozzTeq, Inc. ....40	
Pearpoint/SPX .....51	
 Perma-Liner Industries, LLC .....5	
Petersen Products Co. ....40	
Pipe-Robo-Tec USA.....21, 23, 25	
 Pipeline Analytics .....18	
 PipeLogix, Inc. ....48	

COMPANY	PAGE
PRIMEX® .....34	
Proco Products, Inc. ....25	
 R.S. Technical Services, Inc. ....31	
 RapidView IBAK North America .....45	
Red Valve Co. / Tideflex Technologies.....17	
RELINER/Duran Inc. ....40	
Rental Tools Online .....34	
Sealing Systems, Inc. ....53	
Sewer Equipment .....37	
 Southland Tool Mfg. Inc. ....49	
Sunbelt Rentals.....7	
 Super Products LLC .....9	
 T&T Tools, Inc. ....47	
Thompson Pipe Group – Flowtite.....55	
Trumbull Industries, Inc. ....15	
 Ultra Shore .....51	
 Vac-Con, Inc. ....64	
 Vactor Manufacturing .....3	
Vaughan Company, Inc. ....47	
VEGA Americas, Inc. ....39	
CLASSIFIEDS .....61	
MARKETPLACE .....59	



**SUBSCRIBE TO MSW FOR FREE!**

SCAN THE QR CODE WITH YOUR SMARTPHONE



## MUNICIPAL SEWER & WATER

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:



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



[www.mswmag.com](http://www.mswmag.com)

© Copyright 2016, COLE Publishing Inc.

Non part may be reproduced without permission of publisher.

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

Elsewhere call 715-546-3346

Email: [info@mswmag.com](mailto:info@mswmag.com) / Fax: 715-546-3786

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

**SUBSCRIPTIONS:** A one year (12 issue) subscription to Municipal Sewer & Water™ in the United States, Canada and Mexico is free to qualified subscribers. A qualified subscriber is any individual or company in the United States, Canada and Mexico that maintains, manages, designs or installs municipal or commercial sewer, water and storm infrastructures. To qualify, visit [www.mswmag.com](http://www.mswmag.com) or call 800-257-7222.

Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico. Subscriptions to all other foreign countries cost \$150 per year. To subscribe, visit [www.mswmag.com](http://www.mswmag.com) or send company name, mailing address, phone number and check or money order (U.S. funds payable to COLE Publishing Inc.) to the address above. MasterCard, VISA, American Express and Discover are also accepted. Include credit card information with your order.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact Nicole at [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com).

**CLASSIFIED ADVERTISING:** Submit classified ads online at [www.mswmag.com/classifieds](http://www.mswmag.com/classifieds). Minimum rate of \$25 for 20 words; \$1 per each additional word. All classified advertising must be paid in advance. DEADLINE: Classified ads must be received by the first of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Fax to 715-546-3786 only if charging to MasterCard, VISA, Discover or AmEx. Include all credit card information and your phone number (with area code). Mail with check payable to COLE Publishing Inc. to the address above. CLASSIFIED ADVERTISING APPEARS NATIONWIDE AND ON THE INTERNET. Not responsible for errors beyond first insertion.

**DISPLAY ADVERTISING:** Contact Jim Koshuta or Kayla Bisnette at 800-994-7990. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.



Jim Koshuta








Kayla Bisnette

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

**REPRINTS AND BACK ISSUES:** Visit [www.mswmag.com](http://www.mswmag.com) for options and pricing. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com). To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email [jeff.lane@colepublishing.com](mailto:jeff.lane@colepublishing.com).

**CIRCULATION:** 2015 average circulation was 37,623 copies per month (U.S. and international distribution).

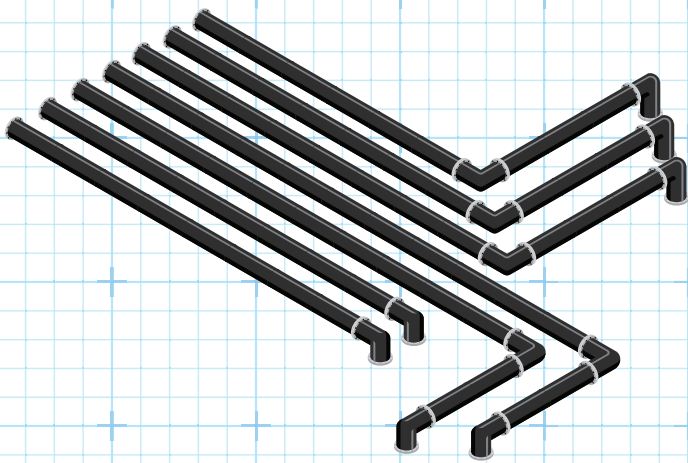
 [www.facebook.com/MSWmag](http://www.facebook.com/MSWmag)  
 [www.twitter.com/MSWmagazine](http://www.twitter.com/MSWmagazine)  
 [www.plus.google.com](http://www.plus.google.com)  
 [www.youtube.com/MunicipalSewerWater](http://www.youtube.com/MunicipalSewerWater)  
 [www.linkedin.com/company/municipal-sewer-&-water-magazine](http://www.linkedin.com/company/municipal-sewer-&-water-magazine)



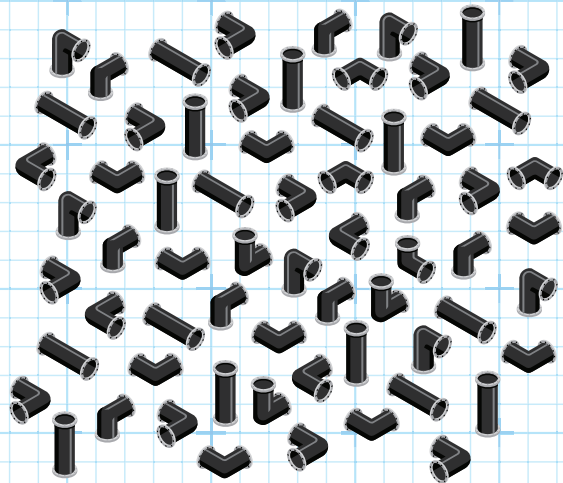
Water & Wastewater Equipment, Treatment & Transport Show  
[www.wwettshow.com](http://www.wwettshow.com)

Education Day: Wed., Feb. 22, 2017  
Exhibits: Thurs.-Sat., Feb. 23 - 25, 2017  
Indiana Convention Center, Indianapolis, Ind.

# Our experience and knowledge elevates us heads and shoulders above the competition.



**US**



**THEM**

## FITTING SOLUTIONS FOR BYPASSES OF ALL SHAPES AND SIZES

When it comes to fluid handling, sometimes more simply is better. More projects. More experience. More variety. Whether for a pipe-only project or a more traditional sewer bypass, we rise to the challenge, delivering right-sized solutions for your application. From engineered design to on-site setup, management and teardown, we've got you covered. For your next project, turn to the experts who can offer you more.

**24/7 EMERGENCY RESPONSE | 800-736-2504 | [SUNBELTRENTALS.COM](http://SUNBELTRENTALS.COM)**



# EDUCATE, INFORM AND ENGAGE

Recent news stories present an opportunity to draw attention and support



## FROM THE EDITOR

Luke Laggis

Everyone on this earth has to deal with water and wastewater to some degree. Most don't have the relationship with it that you do, but we all consume water and produce wastewater. And sometimes we're even chased out of our homes by stormwater.

All three play an intimate role in each of our lives, yet most of us in the general public choose to pay as little attention as possible. It has to be tough serving a customer base that largely takes what you do for granted, and it's easy to take it for granted. Turn on the faucet and the water is there. Flush the toilet and the waste is whisked away. Even when the rain is pouring down, we drive through the puddles focused on our destination without a thought given to where that stormwater is going.

If you lived in Cambodia and were among the 84 percent who don't have access to freshwater, you probably wouldn't take it for granted. And if you were Haitian, you probably wouldn't take access to a sanitary toilet for granted, because only one in five have that luxury. But it's easy to take things for granted in the U.S. It's what we do.

One thing I know for sure, the ubiquitous supply of clean, fresh drinking water isn't being taken for granted in Flint, Michigan, anymore. Perspectives changed rather quickly when residents learned poison was being piped directly into their homes and there was no quick fix. But before the crisis in Flint surfaced, and even in the months since, unsafe levels of lead have been found in the drinking water of many communities across the U.S.

The problem was a shock to the average citizen, but I don't suspect it was too big a surprise to those who've built their careers in the water industry. Our infrastructure is not in great shape. That doesn't come as any surprise either. You've been fighting for more funding to repair and rehabilitate your systems for years, even decades in some cases. The public, taking water and wastewater services for granted as it does, has demanded better infrastructure. And with those utilities buried below the surface of everyday life, it's been easy to bury the need.

I'm not using this space to call out the decisions made in Flint. Instead, I'm calling out the rest of you. Turn this terrible situation into something positive. Use it to rally support for your utilities. Make sure the powers that be are aware that all utilities are susceptible, if not to lead, than to other significant threats. Make sure your customers know what goes into delivering a clean supply of water. The faucets in their kitchens aren't magic. They require an elaborate infrastructure to procure, treat and deliver that water. You're well aware, but are they?

Are they aware of what shape your system is in, or how much it will cost to bring it up to speed, and maybe more important, how much more expensive it will be if you wait? Get the word out. The work you do is vital to the health of your communities. Make sure your customers understand. And make sure your political leaders know their heads will roll if their failure to fund needed improvements leads to another situation like the one in Flint.

It's too important to just sit back and breathe a sigh of relief that it isn't you. It could be.

Enjoy this month's issue. ♦

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



**Advanced**  
Work Horse Nozzles

**Finally  
a fixed jet nozzle  
that will scour the pipe 360°**  
= reduced SSO's and longer  
periods between cleaning cycles

*"Ask for the Phantom by name"*

**Advanced Infrastructure Technologies, LLC**  
Toll Free: **1-844-NOZZLES**  
(1-844-669-9537)  
**www.advancedworld.com**

Advanced Workhorse Nozzles is signing **NEW** dealers. Some prime geographies still available. Email us at [jp@advancedworld.com](mailto:jp@advancedworld.com)

Advanced Workhorse Nozzles are manufactured in Germany and the USA

Looking for Dealers - Limited EXCLUSIVE geographies are still available.



**CAMEL 1200**  
**12 YARD SEWER CLEANER**

# CAMEL SAVES

**WATER • TIME • MONEY**



### **SAVE WATER!**

Clean 2,500 feet of pipe a day; save 50,000 gallons of water a week.  
Good for productivity. Good for the environment.

### **SAVE TIME!**

Longer on-site performance. Clean 78% more pipe a day.  
That's like adding two more days to the five day work week.

### **SAVE MONEY!**

Saving water, saving time: Saves money.  
Double your profits. Pay your unit off in months.



*Living up to our name.*

800.837.9711 • [www.superproductsllc.com](http://www.superproductsllc.com)

View the video. Request your demo today!

[www.camelsaves.com](http://www.camelsaves.com)

Visit the site daily for new, exclusive content. Read our blogs, find resources and get the most out of *Municipal Sewer & Water* magazine.

## OVERHEARD ONLINE

“You look back over the last 50 years, whenever there were fiscal pressures, the unseen world of the municipal water system is where weak city leaders turned to cut spending.”

— *New York Suspends Work on Crucial Water Tunnel*  
[mswmag.com/featured](http://mswmag.com/featured)

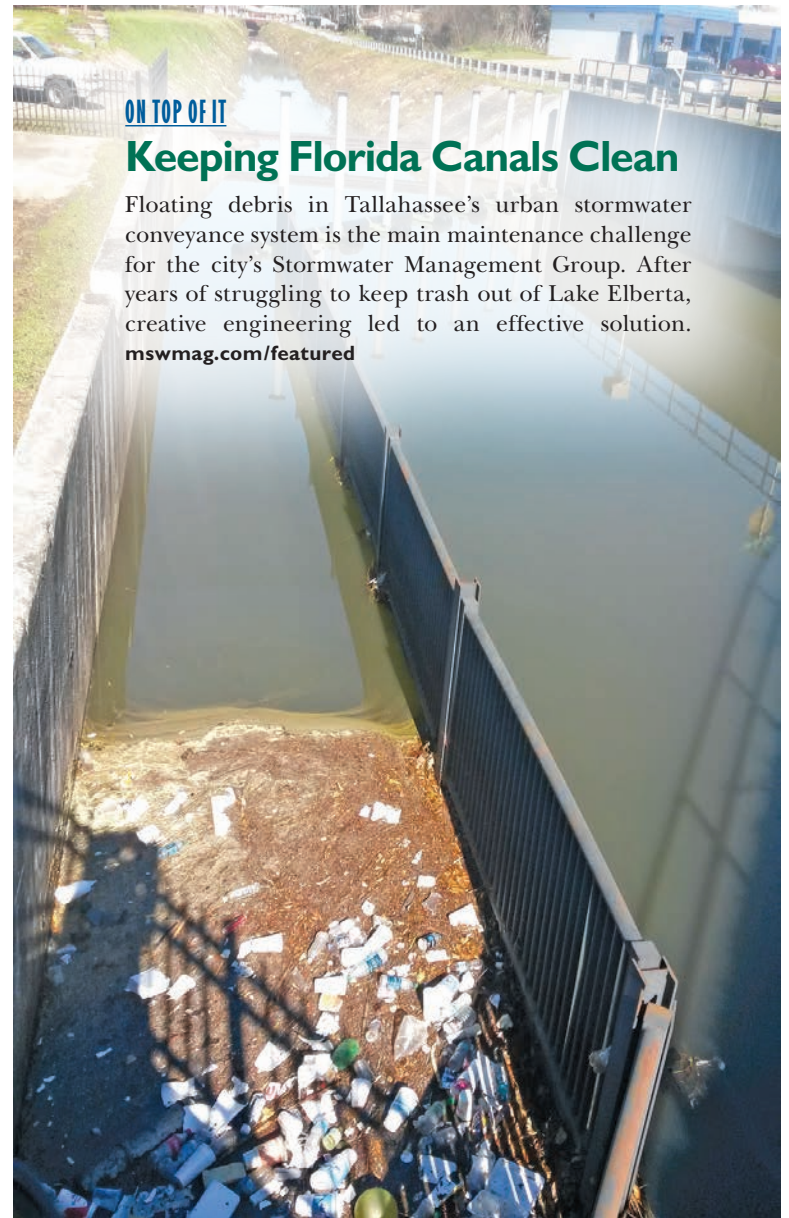


## FLOODING FARMLAND

### Aquifer Recharge Efforts Ramp Up

For decades, water has been removed from California aquifers faster than Mother Nature can refill them. Now, as groundwater continues to dwindle, scientists at UC Davis are helping the state replenish its parched aquifers and safeguard the water supply against future droughts.

[mswmag.com/featured](http://mswmag.com/featured)



## ON TOP OF IT

### Keeping Florida Canals Clean

Floating debris in Tallahassee's urban stormwater conveyance system is the main maintenance challenge for the city's Stormwater Management Group. After years of struggling to keep trash out of Lake Elberta, creative engineering led to an effective solution.

[mswmag.com/featured](http://mswmag.com/featured)

## WATER WINNER

### The King of Berkeley Springs

At the Berkeley Springs International Water Tasting event in Berkeley Springs, West Virginia, water producers from around the world gather each year for some friendly competition. Find out which water utility took home honors (again) for best tap water in the world. After all, a win at the annual competition is a distinction worth touting. [mswmag.com/featured](http://mswmag.com/featured)



## Emails & Alerts

Visit [MSWmag.com](http://MSWmag.com) and sign up for newsletters and alerts. You'll get exclusive content delivered right to your inbox, and you'll stay in the loop on topics important to you.



## Join the Discussion

Find us at:  
[facebook.com/MSWmag](https://facebook.com/MSWmag)  
[twitter.com/MSWmagazine](https://twitter.com/MSWmagazine)



Your customers expect water to flow without interruption. We expect the same performance from our meters.

Ferguson Waterworks is a leading national supplier of top water meter brands, providing agencies and departments with a steady flow of data and productivity. With the latest technology and product support for Automated Meter Reading and Advanced Metering Infrastructure solutions, we're ready to put our knowledgeable associates and expert installation capabilities to work for you.

We offer technology assistance, in-house installation, product accessories, and service after the sale to ensure your total satisfaction.

 **FERGUSON**<sup>®</sup>  
Waterworks

*Meter & Automation Group*

[FERGUSON.COM/WATERWORKS](http://FERGUSON.COM/WATERWORKS)

# STEPPING INTO THE FUTURE

Santa Clara invests in a new SCADA system and builds distribution efficiency with in-house repair and replacement

By Jim Force

**T**he Santa Clara, California, water system could serve as a snapshot of the history of water utilities in the United States.

In 1895, the utility began delivering water from two wells to 400 connections and 45 hydrants. Water was stored in four elevated redwood tanks.

Then, in 1906, the San Francisco earthquake destroyed the tanks. The city was without emergency water until a ground-level cistern was constructed along with three steam-driven turbines to pump water into the mains. The distribution system was improved through a bond issue approved by voters in 1920, and the system was further modernized through the 1930s and 40s.

Following World War II, the population skyrocketed and the area became host to the high-tech industries of Silicon Valley. Storage tanks, booster pumps, additional wells and imported water connections were added to the system to keep pace with growing demand.

Today, facing the challenges of aging infrastructure like other cities across the country, Santa Clara has invested in state-of-the-art SCADA technology to optimize operations while ensuring security.

The city has agreements with two other utilities for imported water if necessary, while reclaimed water now makes up 18 percent of the water usage in the system. Water reclamation, along with improved efficiencies, have reduced overall residential water consumption, forcing the utility to become very cost conscious as it moves ahead.

“Despite increases in population, we’re seeing a steady decrease in water sales — the turnover of older housing stock and more efficient plumbing,” says Chris de Groot, director of water and sewer utilities. “Plus, some of our more water-intensive industries have left the area.”

*(continued)*



**City of Santa Clara Water and Sewer Utilities Director Chris de Groot stands in front of the utility's new water storage tank under construction in Santa Clara, California. (Photography by Lezlie Sterling)**

**NEW!**

# MORE WITH LETS

**LETS6.0**



Now you can quickly inspect laterals with the new LETS 6.0 operating in 6-inch to 30-inch diameter mainlines. This completely upgraded system can increase your productivity and uptime:

- Fast camera launching with improved contoured chute
- Efficient 135-degree with-the-flow launch angle
- More power to traverse pipe against flow
- Pan & Tilt camera with self-cleaning lens
- Rear view camera

Keep your crews moving. Get more with LETS.

**ARIES**  
INDUSTRIES, INC.

See what you're missing.

[www.ariesindustries.com](http://www.ariesindustries.com)  
(800) 234-7205



The Tap Water Express is a truck designed to bring cold tap water into the community as part of an outreach program of the City of Santa Clara Water and Sewer Utilities.



**“Our water engineers hold certification in distribution, plus they work hand in hand with the construction crews. They know how the system operates. It’s not like a private company where the two groups may be off in separate departments somewhere.”**

– Chris de Groot

### System

Santa Clara operates 28 groundwater wells, which supply about 65 percent of the city’s water consumption. Agreements with the Santa Clara Valley Water District and the City of San Francisco supply the remainder. Average production

**City of Santa Clara Water and Sewer workers set up for a sewer main repair in a residential area of Santa Clara.**



is 15.7 mgd, although the system has a production capacity of 72 mgd if all wells are pumping and all turnouts are at full capacity.

The utility maintains six storage tanks with 26.8 million gallons of storage capacity, and is currently building a new 2-million-gallon storage tank and booster station. The distribution system consists of 334 miles of mains and three booster pumps. The connected population is just over 122,000.

Currently, 18 percent of the water used in Santa Clara is reclaimed water. The city is part owner of the South Bay Water Recycling system, which takes water from the San Jose Regional Wastewater Treatment Facility. The recycled water is used in paperboard manufacturing and irrigation. “It takes some of the pressure off our potable supply,” de Groot says. “It also cuts down on our peaking factor.” He adds, though, that the state-mandated recycled water target for the future is 30 percent.

### Cost cutting

Santa Clara works feverishly to keep costs low, especially where internal talents can help the utility avoid the need to bid work to outside contractors. “We rely a lot on keeping internal costs low,” de Groot says.

His department maintains its own engineering staff and construction crews. Main replacements — except those above 16 inches (O.D.)

### PROFILE:

City of Santa Clara, California, Municipal Water and Sewer Utilities



**ESTABLISHED:**  
1895

**STAFF:**  
70

**POPULATION SERVED:**  
122,192

**AREA SERVED:**  
City of Santa Clara

**RAW WATER SOURCE:**  
Groundwater, supplemented by treated water purchased from the Santa Clara Valley Water District and San Francisco Public Utilities Commission

**INFRASTRUCTURE:**  
334 miles of distribution mains, 28 wells, 3 booster pump stations, 6 storage tanks totaling 26.8 million gallons

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

— are done in-house. “Our engineering staff does all the design work for us,” de Groot explains. “Our water engineers hold certification in distribution, plus they work hand in hand with the construction crews. They know how the system operates. It’s not like a private company where the two groups may be off in separate departments somewhere.

(continued)

prevent SSOs

end odor complaints

improve safety

boost capacity

extend service life

# prescription for Healthy Sewers

When a sewer performs optimally, it lasts longer and functions more reliably—and it benefits the community and environment. See why cities trust Helix for affordable, high-potency, non-hazardous solutions to F.O.G. and sulfides.



FREE White Paper  
[www.helixlabs.com/healthysewers](http://www.helixlabs.com/healthysewers)

(877) 444-3549 • [helixlabs.com](http://helixlabs.com)



# MAKE THE CALL

Your  
**HDPE Experts**  
Pipe • Fabrication • Fusion



For Details!



353-3747

1-800-353-3747 • [www.lesupply.com](http://www.lesupply.com)

## No Worries.

Trumbull's **POLYMER**  
Manhole & Meter Lids . . .

See for yourself at  
**ACE16**  
Booth #2018



... **Road Worthy.**  
Load tested for 40,000 lbs.  
Strong, yet lightweight.

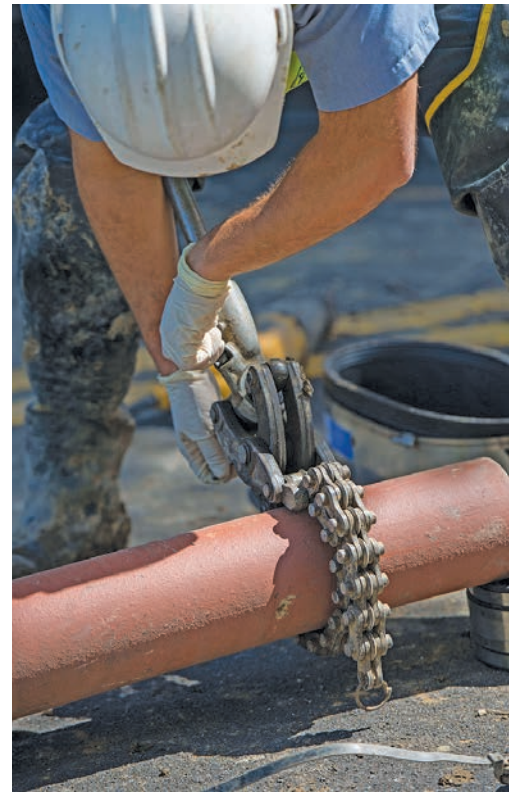
# TRUMBULL

Call us: 800.677.1799

[trumbull-mfg.com](http://trumbull-mfg.com)

“Our operators, engineers and construction crews all sat down in one room. We wiped the slate clean and started from scratch on a SCADA master plan.”

– Chris de Groot



**Left: Maintenance workers repair a damaged section of sewer main in the middle of a residential street while a Vac-Con jet/vac truck keeps the pit dry. Above: Justin Pinheiro cuts a new piece of pipe for a sewer main repair.**

“When developers come in and need main extensions, we’ll bid the job, but our crews generally undercut outside contractors by as much as 40 percent. Plus it’s quicker and it gets our crews paid.”

When a line leaks or breaks, Santa Clara’s team takes that on, too. “We fix it,” de Groot says. “Our two crews do really high-quality work, and there’s no issue of a one-year warranty.”

The use of internal staff has helped the utility save money and accomplish more work, de Groot

says. “We really have the best of both worlds.”

But cost cutting doesn’t solve the problem of needing to invest in aging infrastructure.

“A number of our wells are 60 years old. Currently we have plans for two new wells, and we have spaces for those,” he says, explaining that one well will be installed on property the utility already owns, and the second will be built at a fire station. Drilling depth will be between 600 and 1,000 feet.

“Land in Silicon Valley can go for as much

as \$4 million an acre. Finding land for new wells is very challenging,” de Groot adds, noting that the utility needs five new wells and has plans for developing a new well every two years for the next decade.

Total cost for the two new wells is approximately \$5 million and the new storage tank currently under construction is budgeted at \$3.5 million.

Another \$3 million is ticketed for open-cut main replacement, with all engineering and construction work to be done in-house. “We don’t do lining,” de Groot explains. “Most of our work is in-kind replacement, with upsizing where necessary.”

Approximately 70 percent of the pipe is cast iron, installed during the 1950s and ‘60s. Most of the pipe installed in the 1970s and ‘80s was ductile iron. ACP, or asbestos cement pipe, installed between 1940 and 1980 makes up 16 percent of the system, with the remainder a mixture of PVC, RCP and welded steel. Most of the system is 12-inch-diameter pipe or smaller.

### **Automation provides another answer**

In an even bigger project, Santa Clara is finishing up the installation of a state-of-the-art SCADA system that will serve its supervisory control and data needs for the next 25 years, while providing security that rivals that found



in nuclear facilities. Even better, the utility's operators played a major role in designing the \$10 million system.

"Our old SCADA was simply outdated," de Groot says, noting the utility continuously struggled to find parts for the system. It was also limited to monitoring various sites around the system. "We could not control our pump stations or modify existing parameters."

Security was a major concern, as well. "We don't want any outside party gaining control of the system," he says. The system is so tight there is no remote access; the only control points are the control room and the city's emergency response center.

"We looked at other examples," de Groot says. They also brought in a consultant. "Our operators, engineers and construction crews all sat down in one room. We wiped the slate clean and started from scratch on a SCADA master plan. 'What would you want it to do; what do you want to see?'"

Operators need to be able to drill down and run operational scenarios, de Groot says, while engineers want data, and management wants to be able to see the big picture all at once.

"Everybody in that room had input," he says. "As director, I just sign the checks. The operators are the ones who have to run the system. They have the operational expertise. We wanted their buy-in as well as their insight."

For example, when operators thought 24-inch screens might be adequate, they were challenged to think bigger. As a result, the new system has a pair of 60-inch screens that show the entire city and all the water and wastewater control and data points.

"Everybody can see everything," de Groot says.

The operators also recommended a larger than normal control room. It's 900 square feet, with space enough for half a dozen people in case of emergencies. "It's more expensive, but it's more functional."

Trimark/Westin Associates of Folsom, California, was awarded the contract for development and installation of the new system.

Construction started last year, and progress was halted temporarily while Santa Clara prepared for and hosted Super Bowl 50 in February.

When finished sometime later this year, the SCADA improvements will be deployed at 28 potable water well sites, seven sewer pump stations, three booster pump stations, one turnout, three operational control centers, and a kiosk at City Hall to display data in real time.

The system has a great degree of redundancy, with dual backup generators, dual HVAC systems and redundant encrypted communication systems.

### Future challenges

The improvements will certainly help Santa Clara provide high-quality water to the community for years to come. But de Groot and his team continue to wrestle with costs and rates, especially as water use continues to decline even as the population increases.

Since 2004, the population has risen from 109,000 to over 122,000. At the same time, however, residential water sales have dropped by about 35 percent — from 3,900 million gallons per year to 2,400 million gallons.

"Our modeling shows more efficient buildings, many with dual plumbed systems to provide recycled water for toilet flushing," de Groot says.

Nonetheless, the utility must recover fixed costs.

"It's a constant push and pull, but improving efficiencies through investments in technology and infrastructure will help us meet those challenges." ♦

# Red Valve



WATER	<p><b>The Professional's First Choice for the Toughest Applications.</b> Solving your most demanding flow control applications – this has been the single, driving force at Red Valve since our founding in 1953. Red Valve is the world's largest manufacturer and supplier of pinch valves and check valves and is the preferred provider for municipalities and industrial plants worldwide. Call us to find out how we can help solve your toughest challenges today.</p>
WASTEWATER	
CHEMICAL	
POWER	
MINING	

**FEATURED PRODUCTS FROM:**

**Vac-Con**  
 904/284-4200  
 www.vac-con.com  
 (See ad page 64)



[www.redvalve.com](http://www.redvalve.com) | 412.279.0044



ENGINE DRIVEN   DIAPHRAGM   HIGH PRESSURE/FIRE   SELF PRIMING ELECTRIC   STRAIGHT CENTRIFUGAL   HVAC/BOOSTER   COOLANT   SUBMERSIBLE   DRUM PUMPS



A Gorman-Rupp Company



*The Pump People.*

Please visit us at [www.amtpump.com](http://www.amtpump.com)

ENGINE DRIVEN   DIAPHRAGM   HIGH PRESSURE/FIRE   SELF PRIMING ELECTRIC   STRAIGHT CENTRIFUGAL   HVAC/BOOSTER   COOLANT   SUBMERSIBLE   DRUM PUMPS

collaborate · understand · deliver

## Demand More from Your Data.



It's what our industry has been waiting for—the power to share inspection results in real-time via the cloud, scale for big data, visualize system-wide condition with GIS, plan/track field operations via Google Maps, and generate high-level deliverables like heat maps, budgetary proposals and 3D system models.



real-time  
**insight**

sold & supported by:

[www.pipelineanalytics.com](http://www.pipelineanalytics.com) • (877) 626-8386



# THE PIPE THAT FITS IN SO MANY WAYS.



## NovaForm™ PVC Liner

**The sewer & culvert rehabilitation solution in the sizes you need.**

Aging sewer and water infrastructure has led to ever increasing maintenance costs for municipalities. The engineers at IPEX recognized this development and responded with NovaForm PVC Liner, a product that brings the benefits of factory-made PVC pipe to the North American trenchless pipe rehabilitation industry.

### **A Size for Every Job**

Available in the sizes you need: 6" to 30" and industry-standard dimension ratios DR 35 and DR 41.

### **Durability of PVC**

Useful life of 100 years, plus excellent chemical resistance properties.

### **Consistent Production**

Factory-made, quality-controlled and tested to stringent ASTM standards.

### **Peace of Mind**

IPEX has been a leading manufacturer of PVC piping systems for more than 50 years and developing trenchless PVC solutions for the past 20 years. Plus, we back everything we sell with in-field technical support throughout North America.

To learn more, call us toll free at **1-800-463-9572**  
or visit **[ipexna.com](http://ipexna.com)**

Products are manufactured by IPEX Inc. and distributed in the United States by IPEX USA LLC.  
NovaForm™ is a trademark of IPEX Branding Inc.





# WINNING THE FIGHT

Maintenance superintendent Jesse LeBoeuf (left) and equipment operator Darryl Priester set up 2-inch AMT and 3-inch Honda pumps to redirect water from a broken water main to prevent flooding a residence before the water could be turned off. (Photography by Kaylenn Gilstrap)



Cobb County Water System earns string of honors for its performance, but focuses on doing right by its customers

By Erik Gunn

**W**hat do you do after receiving five consecutive gold awards from your fellow utility professionals?

For the Cobb County Water System in suburban Atlanta, Georgia, one answer was simple: take home the platinum. And that's what the utility did in 2015. With five consecutive Gold Awards for Outstanding Operation of its wastewater collections system from the Georgia Association of Water Professionals Chapter of the American Water Works Association, the utility qualified for the association's Platinum Award last year.

But that's just a trophy. The real next step is just to keep on improving — every day, every week and every year.

"We want to serve our customers," says Kendall M. Jacob, the utility's operations manager. "We enjoy being good stewards of resources such as water. We're very proud of the county and proud of our customer base."

## Wide-ranging approach

The Cobb County Water System has taken a

wide-ranging approach to continuously improving and maintaining the quality of its operations. The utility — responsible for both wastewater collection and treatment as well as water distribution — strives for overall excellence that includes its Capacity Management, Operation and Maintenance (CMOM) program, and also encompasses conservation, watershed protection, public outreach efforts and much more.

Headquartered in the county seat of Marietta, Georgia, the Cobb County Water System — a unit of county government — is the second-largest utility in Georgia. The system employs 446 people, with 289 of them in operations.

The system gets its treated water from the Cobb County-Marietta Water Authority and accounts for 70 percent of the authority's wholesale customer base. It distributes that water to about 780,000 people in the county and parts of four surrounding counties. It also collects and treats all wastewater generated in the county — a customer base of about 1 million. And while the two sides obviously have their separate respon-

### PROFILE:

Cobb County  
(Georgia) Water System

#### POPULATION SERVED:

780,000 people; 176,000 accounts

#### SERVICE AREA:

350 square miles, including Cobb County and parts of four others

#### TREATMENT CAPACITY:

112 mgd permitted; 132 mgd total capacity

#### WATER VOLUME:

56 mgd average daily usage

#### EMPLOYEES:

446 (all divisions)

#### INFRASTRUCTURE:

3,025 miles water distribution mains;  
2,575 miles sewer collection mains;  
38 wastewater pump and lift stations;  
6 freshwater storage tanks

#### ANNUAL OPERATING REVENUES:

Water: \$91,752,406;  
Sewer: \$100,988,066;  
Other: \$6,638,657; Total: \$199,379,129

#### WEBSITE:

[www.cobbwater.org](http://www.cobbwater.org)



Utility worker Jeremiah Fennelly (in trench) and equipment operator Christopher Martin restore a connection to the repaired main.

**“We took on the Flint issue head on. We worked with our water wholesalers — Cobb County-Marietta Water Authority — on a brochure on how we test for lead and copper and what we as consumers need to do.”**

– Kathy Nguyen

sibilities, it’s one system. “From an operations standpoint, it’s all under one group,” Jacob says.

### Capital improvement

For the system’s intensive capital improvement program, a 16-member team with people from the operations and engineering groups reviews the CCWS capital improvement and rehabilitation project list every two weeks to monitor progress and review priorities, says Timmy Vaughn, the system’s maintenance division manager.

The system’s solid financial footing enables it to fund most of its capital improvements out of regular revenue rather than going to the bond markets, where it enjoys a triple-A bond rating.

While CCWS will replace pipe-lines when necessary, the utility is a

heavy user of rehabilitation technology for sewer lines. In addition to CIPP and spiral-wound pipe lining technology from Sekisui Chemical Group, it has also begun to use Tyfo Fiberwrap, an exterior carbon fiber wrap from Fyfe Co., for exposed lines, such as elevated sewer lines that cross streams in the hilly geography of northern metro Atlanta.

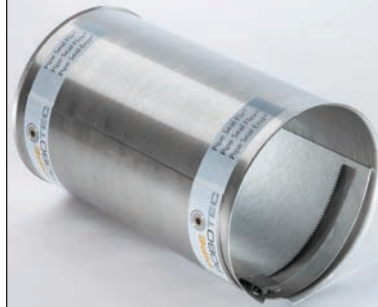
### Asset management

Cobb County has also taken on asset management using the SIMPLE — short for Sustainable Infrastructure Management Program Learning Environment — web-based asset management tool offered through the Water Environment Research Foundation.

The utility has no small number of assets to manage: 2,575 miles of wastewater collection mains, 3,025

Longitudinal Cracks In Your Sewer Line?

**FIX IT.**  
Permanently.

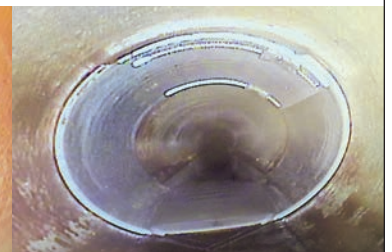
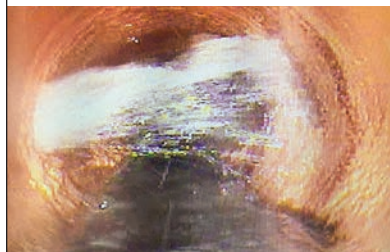
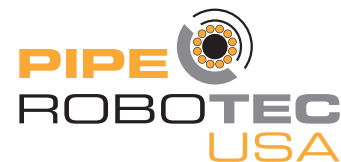


WITH  
Pipe-Seal-Fix®

FROM  
Pipe-Robo-Tec  
USA

Pipe-Seal-Fix is a continuous mechanical, internal pipe sealing system engineered to personally stop leaks caused by root intrusion, misalignment and longitudinal cracks. Install one, or string together a series to stop I/I.

Pipe-Seal-Fix features a stainless steel sleeve and EPDM for a long-lasting, leak free system; available in diameters from 8”-24”.



720 / 454 / 4866  
[www.piperobotecusa.com](http://www.piperobotecusa.com)

9155 Wallisville Road | Houston, TX 77029  
[info@piperobotecusa.com](mailto:info@piperobotecusa.com)

miles of water distribution lines, 38 wastewater pump and lift stations and six freshwater storage tanks.

“We face a growing problem that every utility in the world, particularly in the U.S., faces: aging infrastructure,” says Jacob. “That’s what we talk about almost constantly.”

Vaughn says the utility has shifted from reactive response to a more preventive approach. “Preventive maintenance schedules, for example, call for regularly checking and testing lift station pumps —

anywhere from once a quarter to once a month,” he says.

### In the field

For maintenance, the system is divided into four zones; employees in each zone meet regularly to report on equipment, training and other needs.

Maintenance operations are handled by 30 crews working across the system’s four maintenance zones. Repair crews each consist of three people, while landscaping and combination truck cleaning crews

**“We face a growing problem that every utility in the world, particularly in the U.S., faces: aging infrastructure. That’s what we talk about almost constantly.”**

– Kendall M. Jacob



**A Cobb County Water System crew excavates around a broken water main in the middle of a residential street.**

consist of two people. Additional crews are assigned to do pressure cleaning with a trailer jetter and to operate a pushrod system for clearing clogs.

Crews conduct CCTV inspections in each zone on a regular schedule in search of minor problems that can be documented and corrected before they become more significant, while contracting out the work for special projects. Outside contractors also step in for special projects, such as the system’s chemical root control effort to reduce sewer line blockages.

The crews are equipped with laptop computers they can use to call up virtually any asset information they need while on site. In respond-

ing to emergencies, the system’s central dispatch office uses locating devices on each vehicle to establish which crew is closest to the scene of a call.

### **Communication and outreach**

The county uses its CMOM program to keep an eye on everything. The program was implemented in 2003 in compliance with state and federal requirements to provide greater access to information about sanitary sewer overflows and other operations and maintenance questions for wastewater systems.

The program is essentially a communications platform on the web, at [www.cmom.cobbcountyga](http://www.cmom.cobbcountyga).

gov. County residents (or anyone, actually) can go to the site to learn about virtually every aspect of the system, from the progress of capital projects to emergency incidents such as overflows. There are also links for people to report problems directly to the utility.

CMOM isn’t the only means for CCWS to connect with its customers and the community. Outreach is an important part of the system, and outreach efforts include an annual report on watershed care.

There are also programs to teach elementary, middle and high school students about the importance of responsible stewardship of water resources, both through sound water conservation practices and careful

management of the wastewater stream, explains Jennifer McCoy, who heads the system’s watershed stewardship program.

The system works with a network of volunteers who collect stream data, clean up litter from local waterways and mark stormwater drains with no-dumping messages to curb pollution from careless discarding of old chemicals, for example.

### **Proactive attitude**

Additional outreach programs provide the public with information about water quality, the cost and funding of the water and wastewater systems, and conservation challenges in ways that are “accurate and understandable for the public,” explains Kathy Nguyen, manager of the CCWS conservation and efficiency program.

Since the conservation program launched in 2005, average daily demand has dropped by 10 mgd, Nguyen says — a decrease of about 15 percent over the 10-year period. Water system customers are doing things like repairing their leaks faster, collecting water in rain barrels for use in gardens, and turning to more efficient fixtures.

Outreach goes beyond just conservation. When the news broke



**The Cobb County Water System management team includes (from left) senior contract/project manager Kathy Nguyen, system maintenance division manager Timmy Vaughn, environmental program coordinator Jennifer McCoy, operations manager Kendall Jacob and environmental compliance tech Jamie Stones.**

## PRIZEWINNING FOG PROGRAM

There seems to be no shortage of prizes for the Cobb County Water System.

Besides its 2015 Platinum Award from the Georgia Association of Water Professionals that honored the long-running excellence of its wastewater collections system, CCWS has twice been recognized for its FOG management program.

The county has nearly 1,700 food service establishments, including day care centers, schools and hospitals in addition to commercial restaurants, says Jamie Stones, who heads the grease management program with two inspectors.

FOG management became a separate program in 2000 because of repeated sanitary sewer overflows attributed to grease clogs, Stones says. Taken together, grease and roots account for “probably 90 percent of our overflows,” adds Kendall M. Jacob, CCWS operations manager.

By adding customer education to its mission in addition to enforcement, “we’ve decreased sanitary sewer overflows by 40 percent since the early 2000s,” Stones says.

The CCWS program extends beyond ensuring grease traps are kept clean and are used effectively.

For example, large commercial outdoor trash containers must drain to a leachfield or tie into the sanitary sewer line to keep garbage pollution out of the storm sewers. And if there’s a sewer connection, there needs to be a trap, Stones explains.

Sewer overflows become teaching moments. “Anytime there is an overflow, it gets mapped in our GIS program,” Stones says. Restaurants and other kitchens in the overflow area then receive a door hanger and fact sheet that includes FOG management reminders.

The utility also inspects all new commercial-size kitchens to ensure that they’re complying with FOG regulations. The paperwork is entered into a database that Stones manages.

Keeping the industry informed can be a challenge. “We still get questions from people who say, ‘I don’t fry anything, I don’t produce any grease,’” Stones says. Those establishments can be shocked to learn how much FOG they generate.

“We spend a lot of time to educate them on what they can do to decrease their grease,” she adds.

And while CCWS has gotten the recognition, Jacob points out that other cities and the Cobb County-Marietta Water Authority also work together to combat the FOG problem. “It’s a team effort with the whole water system.”

about the lead contamination problem in the water supply of Flint, Michigan, the system didn’t wait for public inquiries. “We took on the Flint issue head on,” Nguyen says. “We worked with our water wholesalers — Cobb County-Marietta Water Authority — on a brochure on how we test for lead and copper and what we as consumers need to do” to ensure that water is safe to drink.

With its emphasis on continued improvement, keeping up

the skills of employees is a key priority. “We’ve written our job position descriptions so that at certain levels, they require certain certifications,” Jacob says. In turn, the utility makes sure they have access to education, certification and licensing opportunities on the job.

Through an in-house certification program offered in conjunction with Chattahoochee Technical College, CCWS employees can get advanced training and

state certification as they progress through their careers, Vaughn explains. The system stresses communication from entry-level workers to top management, Jacob says.

What drives it all? Pride, professionalism and the satisfaction of taking care of customers, says Jacob — values that can last long after the trophies are forgotten. ♦

### Offset Joints Causing I/I?

# FLEX IT.

Permanently.

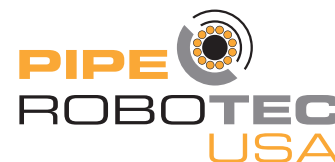


WITH  
Pipe-Seal-Flex®

FROM  
Pipe-Robo-Tec  
USA

Pipe-Seal-Flex is the most effective internal pipe seal on the market to correct pipe major misalignment and axial bending, without impeding flow.

Pipe-Seal-Flex features a patented flexible stainless steel sleeve and EPDM for a long-lasting, leak free system; available in diameters from 8”-12”.



**VORTEX**  
Infrastructure products  
A VORTEX IP TECHNOLOGY

720 / 454 / 4866  
[www.piperobotecusa.com](http://www.piperobotecusa.com)

9155 Wallisville Road | Houston, TX 77029  
[info@piperobotecusa.com](mailto:info@piperobotecusa.com)

### FEATURED PRODUCTS FROM:

**Aegion Corporation**  
800/234-2992  
[www.aegion.com](http://www.aegion.com)

**Honda Power Equipment**  
678/339-2600  
[www.powerequipment.honda.com](http://www.powerequipment.honda.com)

**AMT Pump Company**  
610/948-3800  
[www.amtpump.com](http://www.amtpump.com)  
(See ad page 18)

**Sekisui SPR Americas, LLC**  
866/627-7772  
[www.sekisui-spr.com](http://www.sekisui-spr.com)

# THE UNCONSCIOUS BIAS EFFECT

Inadvertent biases in the workplace are inevitable, but you can minimize the damaging side effects

By *Ken Wysocky*

**D**espite best intentions, everyone has biases. Even people who think they aren't prejudiced and who honestly believe that discrimination is wrong still have unconscious biases that, when carried into the workplace, can lead to damaging results.

In the workplace, these unconscious biases are akin to heart disease — a silent phenomenon that does its damage invisibly until brought to light. It can foster poor decision-making in a variety of areas, ranging from resume reviews and job interviews to talent reviews for succession planning and identifying which employees gets bonuses and promotions. In short, they can inadvertently undermine an organization's culture even as it diligently strives for more diversity, says Horace McCormick, the program director for executive development at the University of North Carolina Kenan-Flagler Business School.

"Employee diversity is one of the biggest pain points for organizations," McCormick says. "But if organizational leaders can't move beyond the desire

**"Unconscious biases prevent us from seeing the world as it is. Instead, we see the world as we are. Every rule we grew up with, what we learned about what success looks like, what good behavior looks like, what a great leader looks like ... it all stems from our own life experiences."**

— **Horace McCormick**

to hire people that remind them of themselves, they're excluding their organizations from an already shrinking talent pool — there's just not enough talent to go around.

"The other issue is that unconscious biases hamper organizations' opportunities to grow their business through innovation," he adds, noting that employees with diverse backgrounds bring with them unique and fresh perspectives and ideas. "The only way to do that in a systematic way, year after year, is to bring in creative and innovative people.

"And even if you become a diverse organization, you may not reap the benefits because of unconscious biases," he adds. "Data tells us that highly diverse organizations are just as likely to over-perform as they are to under-perform. The difference is leadership's ability to manage differences — not be dismissive of good ideas because of unconscious biases that prompt them to favor ideas more like their own. It's pointless to make good hires (to boost diversity) if you don't have the systems and behaviors that make people happy to stay."

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

## A pervasive problem

These unconscious biases extend much further than the usual suspects, such as race, gender and age. For example, studies show that tall men are more likely to get promotions. Women with blond hair typically earn more than brunettes or redheads. The higher a woman's body mass, the lower their income. Employees with "mature faces" enjoy more career advantages than those with "baby faces." Even a person's first and/or last name can influence hiring decisions, according to McCormick's research.

As evidence, he cites studies where groups of people are asked to review resumes of prospective employees with "normal" last names. Then they're asked to review another batch of resumes, which unbeknownst to them are the exact same resumes — only this time with ethnic-sounding names substituted for the normal names. The results? You guessed it: The resumes with the ethnic names are less likely to get selected for callbacks.

In fact, there are more than 150 identified unconscious biases, including some that cast a much, much wider shadow than stature, hair color or body mass. There is affinity bias, the tendency to like people who are similar to us; perception bias, in which certain stereotypes and assumptions about specific groups make it impossible to make impartial assessments about them; and confirmation bias, where people look for only information that confirms their beliefs and assumptions. Also consider the so-called "halo effect," in which people tend to believe that everything about a particular person is great, just because they happen to like the person.

The good news is that, aside from outright bigots, racists and sexists, most people's unconscious biases aren't intentional. The culprit? Our brains, specifically the amygdala, which controls fear and threats; the left temporal lobe, the home of social stereotypes; and the frontal lobe, which is linked to forming impressions of others, empathy and reasoning.

In short, without getting too deep in the weeds, our brains are hard-wired to group things together and try to make sense of things around us. The brain takes this barrage of impressions and categorizes them into easily sortable groups. Some of those groups are considered good. Others are considered bad. The result? Based on our experiences, we develop biases that help the brain quickly make decisions about threats — a survival mechanism that McCormick refers to as "fast-brain" thinking.



# Be PROCO-active.

Proflex® check valves prevent the leading causes of backflow.

Our quiet, cost-effective rubber duckbill design resists barnacles, algae, fungus, freezing, corrosion and more — all with very low head loss. No valve or water hammer.



800-344-3246 | [procoproducts.com](http://procoproducts.com)  
The Expansion Joint and Check Valve People

“Unconscious biases prevent us from seeing the world as it is,” McCormick explains. “Instead, we see the world as we are. Every rule we grew up with, what we learned about what success looks like, what good behavior looks like, what a great leader looks like ... it all stems from our own life experiences.”

## Surprising revelations

Most people are shocked when assessments reveal their unconscious biases. McCormick relates how he recently took the board of directors of a large organization through a series of exercises designed to display their inherent biases. “These were very seasoned and experienced people, and they were awestruck at what they learned, not only about how the brain works but at how it affects their individual and collective decision-making,” he says.

“Statistics tell us that when you have more powerful people in the room, the more likely you are to have biases at play,” he continues. “The higher the IQ, the more likely you are to be victimized by your own thinking. It’s almost a reflex to become more dependent on the fast-brain thinking when we’re the smartest people in the room. I’m not saying people do it by choice — they’re unaware of it when it happens. It’s the way the brain works, whether we choose to or not.”

So how can organizations eliminate unconscious biases? The bad news is they can’t. But the good news is they can minimize its insidious effects. Like with any problem, the first step is admitting that it actually exists. Then organizations should hire a professional facilitator that can explain not only the science behind it, but also lead exercises that reveal individuals’ unconscious biases, McCormick says. In addition, there are online tests that people can take to reveal their unconscious biases. ([www.implicit.harvard.edu/implicit/](http://www.implicit.harvard.edu/implicit/))

“After you’re aware of your biases, you have more choices in terms of how you want or don’t want to behave,” McCormick notes. “You can ask

Is your relined pipe leaking?

# END IT.

Permanently.

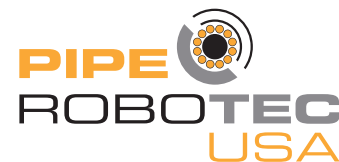


WITH  
Pipe-Seal-End®

FROM  
Pipe-Robo-Tec  
USA

Pipe-Seal-End eliminates infiltration between the host pipe and the liner, regardless of the liner’s thickness. The smooth transition from one pipe to the other also minimizes liner damage caused by cleaning equipment.

Pipe-Seal-End features a stainless steel sleeve and EPDM for a long-lasting, leak free system; available in diameters from 8”-32”.



720 / 454 / 4866  
[www.piperobotecusa.com](http://www.piperobotecusa.com)

9155 Wallisville Road | Houston, TX 77029  
[info@piperobotecusa.com](mailto:info@piperobotecusa.com)

yourself the tough questions about whether there are any biases in play with this group of new hires, this particular team or this person on my team.”

McCormick also suggests that leaders slow down their decision-making processes. Sometimes all it takes is a minute or two of reflection for a group of people to thoroughly consider whether there are any biases at play when it comes to hiring, say, a woman or a minority. “That’s much better than someone on a team saying no in three seconds ... because their authority, power and self-confidence are kicking in their biases,” he says.

“I see quick decision-making as a big red flag regarding unconscious biases,” he adds. “That fast-brain thinking is what gets us in trouble. We need to slow down and not let those reflexes kick in. When you slow down your thinking, it allows you and your organization enough time to see if biases are influencing decisions that may not serve the organization’s best interests.” ♦

# TAKING THE LEAD

Fayetteville tightens up its system and eliminates SSOs while keeping a mindful eye on the future

By Erik Gunn

Odell Ralston of Fayetteville Water & Sewer Utility cleans a clogged pipe with a Sewer Equipment Company of America jet/vac truck. (Photography by Bruce E. Stidham)

Less than 30 years ago, the sewer and water utility of Fayetteville, Arkansas, was dogged by negative headlines — and worse, fined by the Environmental Protection Agency — for generating hundreds of sanitary sewer overflows a year due to inflow and infiltration.

Today, the same utility has made a remarkable turnaround, cutting SSOs to zero.

Now Fayetteville faces a different sort of challenge — maintaining its positive record going forward under new leadership. With the transition in top management at the utility, it will be a test of how well the institutional lessons behind the achievement are baked into the utility's culture. At the same time, the new management knows the operation can't sink into complacency, but instead must remain open to new opportunities for improvement.

"It takes a certain kind of management style to come into an organization and, rather than put your legacy on the system, just keep it going and improve it every step of the way," says Fayetteville Water & Sewer director Tim Nyander.

"The employees reinforce that what we're doing is worthwhile," adds operations manager Mark Rogers.

The continued growth of the region adds to the utility's daily challenges.

## 'Slap in the face'

In 1989, Fayetteville experienced more than 1,600 SSOs — and of those, two-thirds weren't even discovered until well after the fact as the city analyzed the condition of its system. That year the utility received both a fine and an administrative order from the EPA.

The fine "was a cold slap in the face," says David Jurgens, Nyander's predecessor, who is now director of utilities for the City of Chesapeake, Virginia, and has written a 20-year retrospective paper on the Fayetteville experience.

Complying with the EPA's administrative order, Jurgens — who went to work for the city in 1992 after a 10-year Army combat engineering career — writes in his paper that Fayetteville installed flow monitors to identify the worst I&I sources in the system, undertook a sanitary sewer evaluation study to pinpoint faulty lines and manholes, and took additional measures to collect more data.

## Expanding operations

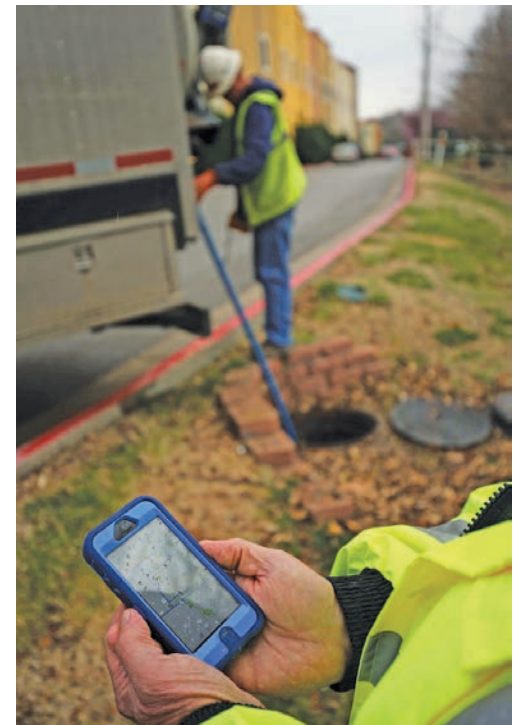
The water and sewer utility added crews and equipment for its field operations division. It acquired a fusion machine and slip-lined exten-

**Fayetteville Water Department Co-Director Mark Rogers confirms the location of sewer system assets with his GPS app out on the job site.**

sive stretches of sewer line. And it acquired a CCTV and grouting van and trained crews to use it.

Much of the sewer collections system consisted of clay pipe dating back to the early 20th century. So Fayetteville undertook an extensive pipeline rehab campaign, employing a variety of approaches that included cured-in-place pipe lin-

*(continued)*



# PHOCUS.



## Phocus your leak detection efforts with the new Phocus3m.

Deploy the Phocus3m fixed-base loggers throughout your distribution system and let the technology do the hard work. These acoustic noise loggers continuously monitor for leaks at night, and then send the visual and acoustic data directly to your web based viewing software, allowing you to focus your time, resources and energy elsewhere.

**We will be at ACE16!**  
**See us at Booth #2135**

[www.matchpointinc.us](http://www.matchpointinc.us) ~ [info@matchpointinc.us](mailto:info@matchpointinc.us)



**MATCHPOINT**  
Water. That's the point.

“Over 20 people are moving in per day to the area. The challenge that will be there for everybody is capacity. We’re in good shape there, but we just have to keep a mindful eye.”

– Tim Nyander



**Above: Wayne Smith of Fayetteville Water & Sewer Utility attaches Fernco couplings to a piece of 8-inch pipe for a sewer line repair. Left: Charlie Thompson, Matthew Childers and Smith (from left) install the replacement pipe.**

launched in the early 2000s and completed in 2008 expanded the system’s treatment capacity — including extensive pump station upgrades and a second treatment plant — to account for the continued persistence of I&I problems.

#### Continued attention

Sewer cleaning is now on a cycle that calls for every line to get washed at least once every five years. Chronic root problems are dealt with by lining or replacing affected pipes to make them root-proof instead of simply cutting roots time and again. And the rehabilitation program is ongoing, with every SSO — “even a single gallon out of clean-out,” Jurgens writes in his paper — targeted for CCTV inspection and analysis to eliminate overflows at the site.

The two-decade effort cost north of \$250 million, but it essentially eliminated SSOs. More is yet to come, though. “The rehab will never stop,” Jurgens says. “The system constantly evolves. Hopefully it gets easier with time because you have fewer things to do.”

ing, open-cut replacement, pipe bursting, point repairs and further manhole rehabilitation.

A wastewater system improvement project



#### PROFILE:

Fayetteville (Arkansas)  
Water & Sewer Utility

**POPULATION SERVED:**  
90,000

**SERVICE AREA:**  
City of Fayetteville

**TREATMENT CAPACITY (SEWER):**  
21.2 mgd capacity,  
14.8 mgd average daily flow

**EMPLOYEES:**  
120 (water and sewer)

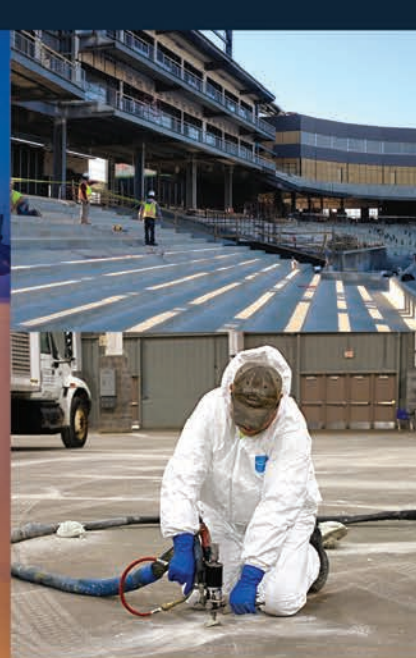
**INFRASTRUCTURE:**  
Approximately 600 miles of sewer main,  
2 treatment facilities, 37 lift stations

**ANNUAL OPERATING BUDGET (SEWER):**  
\$14.1 million

**WEBSITE:**  
[www.fayetteville-ar.gov](http://www.fayetteville-ar.gov)

#### Rebuilt system

Nyander worked with Jurgens for about a year before succeeding him when Jurgens went to Ches-  
(continued)



# TerraThane™ Geotechnical Polyurethane Foam

You name it and TerraThane™ has probably been used on the project.

NCFI Polyurethanes pioneered “foamjacking”— the use of high-density polyurethane foam as a lightweight and structurally strong replacement for conventional mudjacking for lifting, leveling, and stabilizing concrete foundations.

- Public utility plants**
- Office buildings**
- Meeting and exposition venues**
- Hospitals**
- Hotels**

- Sports venues**
- College/university landmarks**
- Visitor centers**
- Warehouses**
- Parking garages**



*Our TerraThane™ concrete-specific geotechnical foam systems are lighter, more durable, easier to apply, less intrusive and much simpler to clean up.*

Faster, Cleaner and More Affordable Concrete Slab Lifting, Leveling and Soil Stabilization



[www.NCFI.com](http://www.NCFI.com)





**“There’s a fine line between being a leader and being a guinea pig. We always want to use tried-and-true methods, but at the same time we want to be on the leading edge in technology.”**

– Tim Nyander

apeake. Nyander had previously worked for Joplin, Missouri, for 30 years.

Nyander says when he arrived in Fayetteville, he found a rebuilt wastewater system. “I was very pleased with the sewer collections system and the wastewater treatment facilities.”

Rogers is also relatively new to the city, having worked for Tulsa, Oklahoma, for 33 years. Coming to Fayetteville, he found “the major problems had been taken care of,” he says. “It was just making sure those routine things were done.”

Those included a strict routine for chemical root control, frequent cleaning in areas prone to clogging from sources such as grease and roots, and aggressive follow-through on overflows.

The city also continues to bring in a contractor each year for CIPP work and manhole rehabilitation. Inspections throughout the year keep the priorities fresh.

“We televise on a daily basis — not just when there’s a problem,” Nyander says. “That helps us find places that need to be repaired.”

Rogers notes that the key is having crews that are looking at every part of the system on a regular basis.

### **New opportunities**

The strong systems and routine already in place allow the utility to focus on the other side of its mission — distributing water. And across both the sewer and water divisions, Nyander says, Fayetteville is looking to make use of a wide range of new technological opportunities.

The city has given its GIS system a close review to make sure its records are accurate in identifying all utility elements and fixtures. But its embrace of technological aids has gone much further.

That includes bringing billing and metering into the smartphone age. It also includes employing software and new devices to improve inventory management. And the city is in the process of an extensive review of new leak detection solutions.

“We are researching the different software programs and services used for backflow devices,” adds Rogers. Currently, the backflow monitors are tested and inspected annually; the city is considering whether it could automate the process.

**Above: Ryan Evans of Black Hills Energy uses a directional boring machine to pilot a path for a new waterline under a road in Fayetteville. Left: The Black Hills Energy crew that tackled the boring job included (from left) Evans, Drew Wasson, Mark Rogers, Matt Walker, Sheldon Gaesswitz and Kyle Coggins.**



## DIGITAL RECOGNITION

Fayetteville has embraced technology throughout the city's operations — so much so that the city was cited as a leading example for using technology to improve services and boost efficiencies.

The Center for Digital Government awarded Fayetteville second place in the small city population category for the 2015 edition of its annual Digital Cities Survey. The survey reviews communities on 10 initiatives covering four categories: citizen engagement, policy, operations, and technology and data. The cities are judged on how well they implement various digital services across the entire city.

The city's new website and a GIS-based service that helps residents pinpoint local schools, recycling and trash pickup days, parks, libraries, hospitals, and other services contributed to the recognition.

The new website "allows us to get the public more in tune with the projects that we're doing," says Fayetteville Utilities Director Tim Nyander. "We always say that today's 13-year-old is going to be our future customer — they want to do everything with their smartphone."

It's part of the city's overall focus on customer service, a focus that is as important in the utilities as any aspect of city operation.

"The public takes underground utilities for granted," Nyander says. "We focus on excellent customer service — the quicker you can address a customer's problem, the more satisfied they're going to be."

### Persistent growth

Challenges remain.

"Northwest Arkansas is continuing to grow," Nyander points out. Fayetteville is one of four cities clustered in the area that together account for half a million people.

"Over 20 people are moving in per day to the area," he continues. "The challenge that will be there for everybody is capacity" — on both the water and sewer systems. "We're in good shape there, but we just have to keep a mindful eye."

### Commitment to technology

That's why keeping up with tech developments is so important.

"It's a commitment of the utility to incorporate new technology in our practices," Nyander says. "There's a fine line between being a leader and being a guinea pig. We always want to use tried-and-true methods, but at the same time we want to be on the leading edge in technology."

For example, just as Fayetteville embraced CIPP lining on the sewer side, it's looking at trenchless rehabilitation options on the water main side, says Rogers — most recently with the purchase of a directional boring machine from Vermeer.

"It saves a lot of time and a lot of money in some cases, especially in the historic district of the city where you can't really tear up the roads," Nyander adds.

Even as Fayetteville looks forward to continued improvement, it's also looking back to make sure the lessons it learned over 20 years of working to eliminate SSOs are not forgotten. As Nyander puts it, "There are a lot of places where we don't need to reinvent the wheel. We just need to continue going on." ♦

#### FEATURED PRODUCTS FROM:

**Fernco, Inc.**  
810/653-9626  
www.fernco.com

**Vermeer**  
641/628-3141  
www.vermeer.com

**Sewer Equipment**  
815/835-5566  
www.sewerequipment.com  
(See ad page 37)

**THE CUBE: PORTABLE MAINLINE SYSTEM**  
The power of a full mainline system in a free-standing, mobile solution












- Mainline system with up to 1,500' of cable
- Rack mount or laptop data collection system
- Fully self-contained with on-board generator and wash-down system

Want a field demo or more info on The CUBE System?  
Call or visit us online today.

**RS** Technical Services Inc.  
Design and Manufacture of Video Pipeline Inspection Systems








1800.767.1974  
@rstechserv.com

CENTRIFUGAL  
DE-WATERING / BYPASS  
EFFLUENT  
GRINDER / SUMP  
HIGH PRESSURE  
METERING  
PUMP CONTROLS  
PUMP PARTS / COMPONENTS  
PUMP REPAIR / SERVICE  
SOLIDS / SLUDGE  
STORMWATER  
SUBMERSIBLE  
TEST  
VACUUM PRESSURE  
VERTICAL / LIFT STATION  
WASHDOWN  
WATER  
OTHER

 <b>AMT</b> <small>A Gorman-Rupp Company</small> <small>See ad page 18</small>	<b>AMT Pump Company</b> 400 Spring St., Royersford, PA 19468 Phone: 610-948-3800 • Fax: 610-948-5300 Email: sales@amtpump.com Website: www.amtpump.com	YES	YES	YES	YES								YES	YES				YES	YES		
	<b>Blue-White Industries</b> 5300 Business Dr., Huntington Beach, CA 92649 Phone: 714-893-8529 • Fax: 714-894-9492 Email: sales@blue-white.com Website: www.blue-white.com					YES															
	<b>Boerger, LLC</b> 2860 Water Tower Pl., Chanhassen, MN 55317 Phone: 612-435-7300 • Fax: 612-435-7301 Email: mja@boerger.com Website: www.boerger.com		YES		YES					YES	YES				YES						
	<b>Crane Pumps &amp; Systems</b> 420 Third St., Piqua, OH 45356 Phone: 937-778-8947 • Fax: 937-773-7157 Email: cranepumps@cranepumps.com Website: www.cranepumps.com	YES	YES	YES	YES			YES	YES	YES	YES				YES			YES	YES		
	<b>Flowrox, Inc.</b> 808 Barkwood Ct., Ste. N, Linthicum, MD 21090 Phone: 410-636-2250 • Fax: 410-636-9062 Email: sales-us@flowrox.com Website: www.flowrox.us			YES	YES	YES													YES		
	<b>Gorman-Rupp Company</b> 600 S. Airport Rd., Mansfield, OH 44903 Phone: 419-755-1011 • Fax: 419-755-1251 Email: grsales@gormanrupp.com Website: www.GRpumps.com	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		YES	YES	YES	YES		
	<b>Lee Supply Co., Inc.</b> 305 1st St., PO Box 35, Charleroi, PA 15022 Toll Free: 800-353-3747 Phone: 724-483-3543 • Fax: 724-483-0577 Email: info@leesupply.com Website: www.leesupply.com			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES							
	<b>Pentair Fairbanks Nijhuis</b> 3601 Fairbanks Ave., Kansas City, KS 66106 Phone: 913-371-5000 • Fax: 913-748-4025 Email: fmproduct@pentair.com Website: www.fairbanksnijhuis.com	YES							YES	YES	YES	YES	YES	YES		YES		YES	YES		
	<b>Primex</b> PO Box 1708, Detroit Lakes, MN 56501 Toll Free: 844-477-4639 Phone: 888-342-5753 • Fax: 218-847-4617 Email: info@primexcontrols.com Website: www.primexcontrols.com					YES														Pump Control Panel	
	<b>ProMinent Fluid Controls, Inc.</b> 136 Industry Dr., Pittsburgh, PA 15275 Phone: 412-787-2484 • Fax: 412-787-0704 Email: sales@prominent.us Website: www.prominent.us				YES	YES			YES												
	<b>Red Valve Company</b> 600 N. Bell Ave., Carnegie, PA 15106 Toll Free: 800-756-0044 Phone: 462-279-0044 • Fax: 412-279-3180 Email: valves@redvalve.com Website: www.redvalve.com	YES								YES											



CENTRIFUGAL  
DEWATERING/BYPASS  
EFFLUENT  
GRINDER/SUMP  
HIGH PRESSURE  
METERING  
PUMP CONTROLS  
PUMP PARTS/COMPONENTS  
PUMP REPAIR/SERVICE  
SOLIDS/SLUDGE  
STORMWATER  
SUBMERSIBLE  
TEST  
VACUUM PRESSURE  
VERTICAL/LIFT STATION  
WASHDOWN  
WATER  
OTHER

	<p><b>Smith &amp; Loveless, Inc.</b> 14040 Santa Fe Trail Dr., Lenexa, KS 66215 Toll Free: 800-898-9122 Phone: 913-888-5201 • Fax: 913-888-2173 Email: answers@smithandloveless.com Website: www.smithandloveless.com</p>	YES						YES	YES	YES	YES	YES			YES				
 <p>See ad page 7</p>	<p><b>Sunbelt Rentals</b> 2341 Deerfield Dr., Fort Mill, SC 29715 Phone: 800-736-2504 Website: www.sunbeltrentals.com</p>	YES	YES	YES	YES	YES						YES	YES			YES	YES		
	<p><b>Vacuum Sales, Inc.</b> 51 Stone Rd., Lindenwold, NJ 08021 Toll Free: 800-547-7790 Phone: 856-627-7790 • Fax: 856-627-3044 Email: parts@vacuumsalesinc.com Website: www.vacuumsalesinc.com</p>				YES		YES	YES	YES				YES		YES	YES			
 <p>See ad page 147</p>	<p><b>Vaughan Company, Inc.</b> 364 Monte-Elma Rd., Montesano, WA 98563 Toll Free: 888-249-2467 Phone: 360-249-4042 • Fax: 360-249-6155 Email: info@chopperpumps.com Website: www.chopperpumps.com</p>	YES	YES	YES	YES					YES	YES	YES		YES					Chopper
	<p><b>Vertiflo Pump Company</b> 7807 Redsky Dr., Cincinnati, OH 45249 Phone: 513-530-0888 • Fax: 513-530-0893 Email: sales@vertiflopump.com Website: www.vertiflopump.com</p>	YES	YES	YES	YES					YES	YES	YES		YES		YES			
	<p><b>Wastecorp Pumps</b> PO Box 70, Grand Island NY 14072 Toll Free: 888-829-2783 Phone: 201-445-2882 • Fax: 888-888-3320 Email: info@wastecorp.com Website: www.wastecorp.com</p>	YES	YES	YES	YES		YES	YES		YES		YES		YES					
 <p>See ad page 59</p>	<p><b>Water Cannon Inc.</b> 4300 W Lake Mary Blvd., # 1010-424 Lake Mary, FL 32746 Toll Free: 800-333-9274 Fax: 888-928-9274 Email: sales@watercannon.com Website: www.watercannon.com</p>				YES			YES					YES		YES	YES			
	<p><b>Weir Specialty Pumps (WEMCO)</b> 440 West 800 S, Salt Lake City, UT 84101 Phone: 801-359-8731 • Fax: 801-530-7828 Email: wsprfq@weirgroup.com Website: www.global.weir</p>	YES		YES	YES					YES		YES		YES					
	<p><b>Zoeller Engineered Products</b> 3649 Cane Run Rd., Louisville, KY 40211 Toll Free: 800-928-7867 Phone: 502-778-2731 Email: susanv@zoeller.com Website: www.zoellerengprod.com</p>	YES	YES	YES	YES		YES					YES		YES					

**READY FOR ACTION!**

**PUT A NEW SPIN ON LIFT STATION CLEANING!**

- **ELIMINATES WASTEWATER DISPOSAL.** Emulsifying the grease allows the operator to pump the wastewater to a treatment plant.
- **FAST & EFFICIENT.** Just lower the nozzle into the wet well and reach all the spots you want to hit in a matter of minutes.
- **SCOURING FORCE & DEBRIS-FLUSHING.** Four radial rotating jets propel water, cleaning the walls, then act like a blender at the bottom liquefying grease chunks suitable for treatment.
- **5 models available to fit connections from 1/2" - 1-1/4"**



**CALL 877-ENZUSA1 FOR  
(369-8721)  
A DEALER NEAR YOU**

ENZ USA INC. • 1585 Beverly Ct., Unit 115 • Aurora, IL 60502

**www.enz.com**



Golden Jet Radial RotoJet  
RGS Nozzle (Type 01.100A/LS)

**EVERYTHING UNDER CONTROL**

PRIMEX<sup>®</sup> has everything under control by offering multiple production, engineering and sales facilities to ensure exceptional customer service through quick responsive quotes, submittals and delivery.

Our commitment to high standards in quality and new product development results in the broadest, most robust product line and services in the industry.

We design and build innovative solutions to meet your specific needs, no matter how unique:

- Arc Armor<sup>®</sup> control systems
- icontrol<sup>®</sup> SCADA solutions
- Complex system integration projects
- Premier and Express control panels
- 'View' and 'VPAC' family of pump controllers



ACE16 BOOTH 363



844-4PRIMEX (477-4639)

Ashland, OH | Clearwater, FL | Detroit Lakes, MN | Milford, OH | Plymouth, MN | Vacaville, CA

[WWW.PRIMEXCONTROLS.COM](http://WWW.PRIMEXCONTROLS.COM)

PRIMEX<sup>®</sup> and iControl<sup>®</sup> are trademarks of SJE-Rhombus<sup>®</sup>

**RTO**

[www.RentalToolsOnline.com](http://www.RentalToolsOnline.com)

**Worldwide Sales  
and Rentals**

**pipe plugs to 10'  
controllers  
hoses**



**www.RentalToolsOnline.com**

# Find & Measure Infiltration Missed by CCTV Inspection

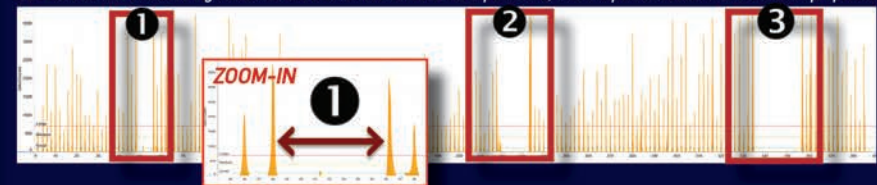


## 1. Asbestos, Brick, Clay, Concrete, PVC Assessments

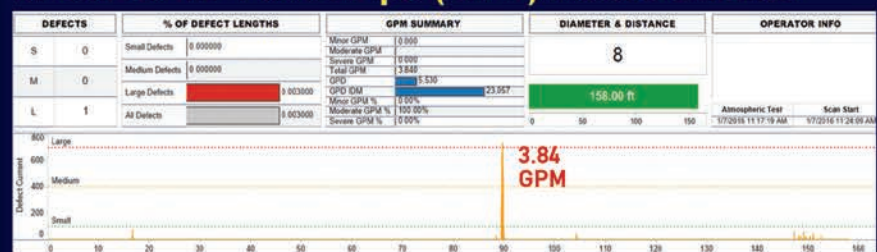


## 2. Point or Spot Repair Assessments

**Good News:** Three spot repairs (Circles 1, 2, and 3) completed on the same pipe were all 'Good' - no electrical current escapes.  
**Bad News:** CCTV missed big leaks that still exist on both ends of the repairs. And, 'Point Repairs' should never have been proposed.



## 3. Cured-In-Place Pipe (CIPP) Assessments



## Fast, Accurate, & Unbiased Results

As Featured in the SEVENTH EDITION, VOLUME 1 OPERATION & MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS.

Chapter 4. Inspecting and Testing Collection Systems  
 Lesson 4.4. Electro Scanning Inspections  
 Pages 231-257



In accordance with ASTM F2550-13.

US Patent #9143740 and International Patents Pending.

# electroscaninc.

916.779.0660 | info@electroscan.com | www.electroscan.com | 1745 Markston Road, Sacramento, CA 95825

**Editor's Note:** This is part one of a three-part series on pump station design.

# FLOW, PRESSURE AND PUMP PERFORMANCE

Operators and managers should play a role in the design of collections system pump stations

By Thomas E. Jenkins, P.E.

**P**ump station design is a common municipal project. Being common, however, should not be confused with being simple.

There is no single best design for pump stations. Capacity of pumps, station type, control strategy and a multitude of other factors contribute to variations in design. Operators and managers should be aware of the considerations of station design to provide guidance and oversight for the designers.

Pump stations should be considered as systems. Pumps may be the most critical items, but they won't function without electrical, structural and HVAC components. For the pump station to be successful, the relationships between these components must be coordinated.

There are similarities between potable water, stormwater and wastewater pump stations, but there are also differences. This article will concentrate on wastewater pumping.

## Identifying flow rate

The first design task is determining the flow rate the pump station must deliver. This generally means defining a range of flows since pump stations

must accommodate considerable variability in demand. Capacity is usually expressed as gallons per minute.

The design generally starts with an average daily flow. This is the nominal flow rate that the station is expected to deliver at the end of its design life. Few pump stations operate at average daily flow for an extended period of time. Most stations are designed for capacity exceeding the current ADF. The station design is intended to accommodate growth in capacity requirements — often 20 years into the future. During the early years of operation the flow required will necessarily be much lower — most pump stations operate at one-third of the design flow rate.

Diurnal flow variations are a fact of life in water and wastewater pumping. The peak dry weather flow is typically twice the average daily flow. The flow variations for water pumping stations are generally less than for wastewater or stormwater pumping.

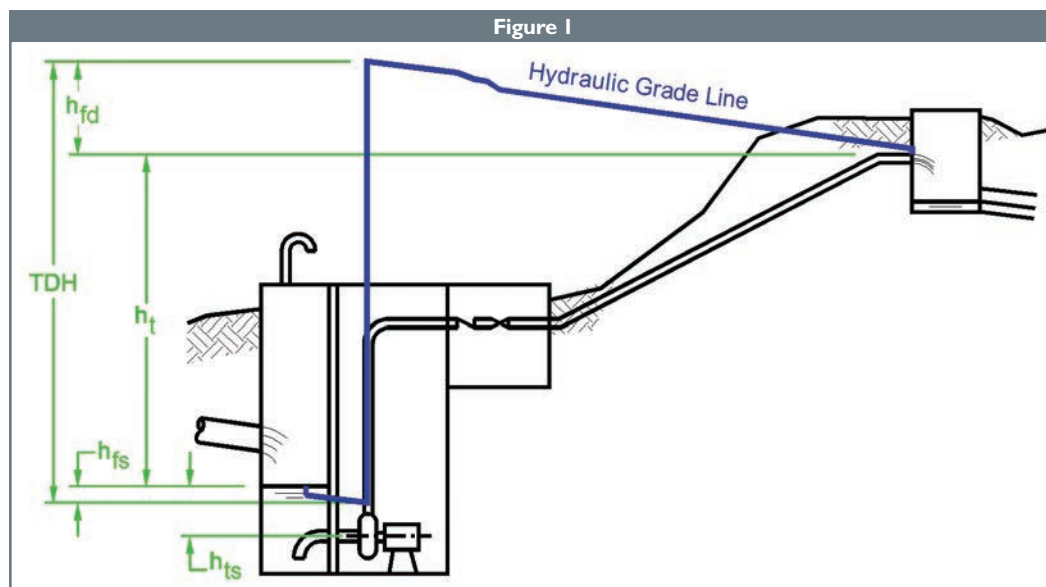
Rain and snowmelt obviously dictate sizing for stormwater pump stations, but they are also a major consideration in wastewater pumping. Inflow and infiltration usually dictate the maximum pumping capacity. The ratio between average daily flow and peak pumping capacity is called the peaking factor. Factors of four or five are common, and in communities with older or combined sewers, factors as high as eight are used.

Capacity turndown, or the minimum flow that the system can deliver as a percentage of maximum flow, can be critical. The flow evaluation should include ADF, daily minimum and maximum, and peak hourly flow. Variations can be accommodated by intermittent pump operation. However, oversized pumps should be avoided because they result in excessive start/stop cycles. Large pumps are more prone to damage from frequent starting.

## Number of pumps

Regulatory agencies require that the pump station include standby (redundant) pumps. This means that with the largest pump out of service the remaining pumps must have the capacity to meet peak hourly flow rates. Because a single pump is generally unable to achieve the needed

(continued)

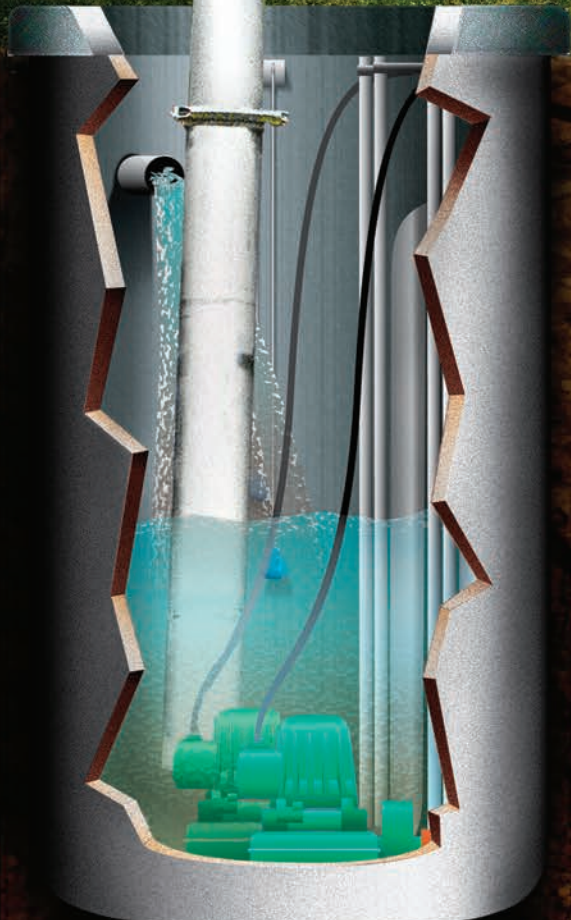


Operators often think of head as the discharge pressure at the pump, but many different aspects of head influence pump performance.

# SIMPLICITY COMES STANDARD.



MODEL 900 ECO



## OUR 2" MAKES ALL THE DIFFERENCE...

Standard equipment gets you to the bottom of the wet well utilizing an 18"Hg Positive Displacement Blower with 4400 CFM airflow.



turndown, most designs use a number of small pumps instead of a large pump and identical standby. The cost of multiple pumps is offset because each pump is less expensive than a large one.

Small pump stations are often “duplex,” with two constant speed pumps. Each pump is capable of handling peak hourly flow.

## Head pressure

The second characteristic for pump sizing is the pump head or discharge pressure. The term “head” derives from the height of water that the pump can overcome at a given flow, generally expressed as feet of water (1 foot water = 0.43 psi = 6.3 bar). Operators often think of head as the discharge pressure at the pump, but many different aspects of head influence pump performance (Figure 1).

The difference in head from suction to discharge determines the pump performance and power. This is referred to as total dynamic head.

$h_{f,s,d}$  = friction head loss in suction and discharge piping (feet)

$h_t$  = total static head; the difference in elevation of water on the discharge and suction sides of the pump (feet)

It is important to remember that pumps produce flow, but the system resistance to flow creates head. A pump with the discharge pipe disconnected will produce lots of flow but no pressure.

The two components of TDH receiving the most attention in pumping are static head and discharge friction head. Static head is the elevation of the water on the discharge side of the pump minus the elevation of water on the suction side of the pump. For most applications, the static head is nearly constant.

Friction head results from the resistance to water moving through pipe and fittings. Friction loss occurs on both the suction and discharge sides of the pump. Friction losses vary with water velocity squared and with the inverse of the pipe size to the fifth power.

In some applications, such as the headworks of a treatment plant, static head is the largest component of TDH. In other cases, such as pumping through a long force main, friction head is more important. The relative proportions of static head and friction head will affect the pump control strategy and the energy consumption characteristics of the system.

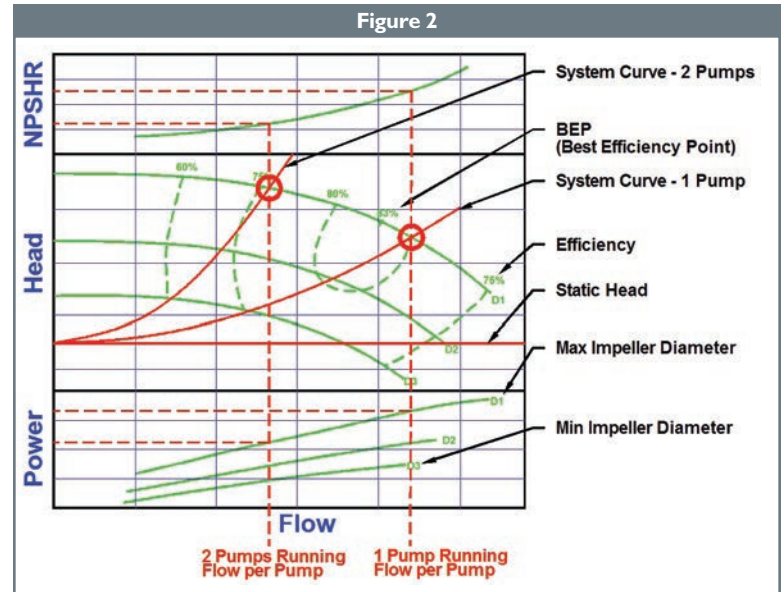
Two commonly neglected but important components of head on the suction side of the pump are the net positive suction head required and the net positive suction head available. Required head is a function of the pump design. It is established by the manufacturer’s tests and is displayed on the pump curve. Available and required head are absolute pressures — relative to a vacuum.

Most municipal pumping applications have a flooded pump suction. That means that the water level in the wet well is above the pump suction connection. This is one component of available head. Another is barometric pressure. At sea level this equals 14.7 psia (14.7 psia = 1.01 bar = 33.9 feet H<sub>2</sub>O). As the site elevation increases, barometric pressure decreases. Vapor pressure is the pressure at which water will boil at a given temperature. Vapor pressure increases as the water temperature rises, with a corresponding decrease in available head.

$p_a$  = barometric pressure (psia)

$Y$  = water specific weight, 62.4 lb<sub>f</sub>/ft<sup>3</sup>

$h_{fs}$  = friction loss in suction piping (feet)



The pump performance curve summarizes the capabilities and requirements of a given pump. There are a variety of formats used by manufacturers, but all pump curves show the most critical parameters. These include the head, required head and power requirement over the available flow range.

$h_s$  = height of water above (+) or below (-) pump suction (feet)

$p_v$  = vapor pressure of water at suction temperature (psia)

Operating a pump when the available head is lower than the required head can result in pump damage. A margin of safety between the calculated available head and the manufacturer’s required head values should always be provided.

## Pump performance curve

The pump performance curve summarizes the capabilities and requirements of a given pump (Figure 2). There are a variety of formats used by manufacturers, but all pump curves show the most critical parameters. These include the head, required head and power requirement over the available flow range. Most pump curves show the performance at several speeds or impeller diameters.

The pump curve does not identify the actual operating point of the pump. This requires plotting the system curve (TDH vs. flows) on the pump curve. The intersection of the two identifies the actual flow.

When two pumps operate in parallel the result is not twice the flow. The static head remains constant. However, the friction head increases, which “pushes” the operating flow lower. Plotting a system curve with the friction loss at twice the flow identifies the new operating point.

## Looking ahead

Identifying the pump capacity and performance is the first and most critical step in pump station design. Once the pump requirements have been determined it is possible to continue the design process for the station and its ancillary components. These will be covered in parts two and three of this series. ♦

## About the Author

Thomas Jenkins is a professional engineer and the owner of JenTech Inc. in Milwaukee, Wisconsin.

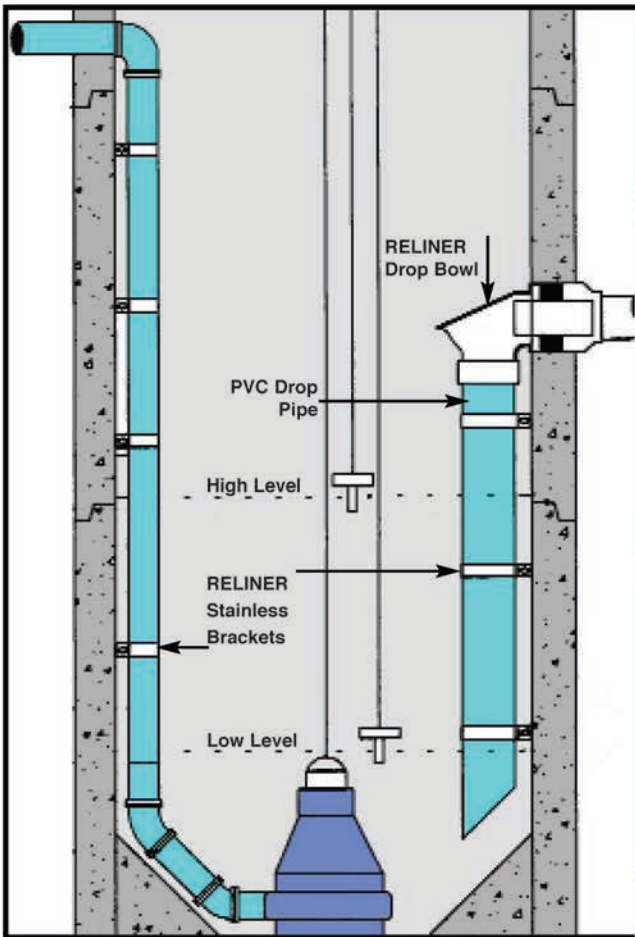
Looking Forward **VEGA**

High functionality.  
Low maintenance.

The VEGAPULS WL 61 radar sensor accurately measures water level without contact, saving users time and money in reduced maintenance.

[www.vega.com](http://www.vega.com)





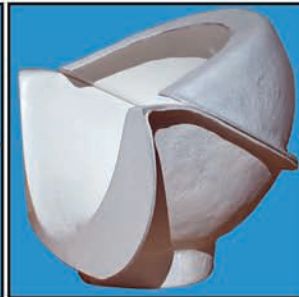
# Lift Station Inside Drop

Made in the U.S.A. by RELINER®/Duran Inc.

U.S. Patent 6074130 Canadian Patent 2269565



Drop Bowl



Drop Bowl with Hood



Stainless Pipe Support

## Inside Drop Bowl & Pipe Supports

- Eliminate uncontrolled drops
- Prevent aerated influent from being drawn into pumps
- Reduce maintenance
- Inspect and clean from above
- Extend pump life
- Simply bolts to manhole wall

[www.reliner.com](http://www.reliner.com) 800-508-6001

# Manhole Cleaner

NozzTeq  
Manhole/  
Lift Stations  
Cleaner™

Rentals Available

NozzTeq has added All Stainless steel manhole cleaner that hooks up to either 1/2", 3/4", 1" or 1 1/4" Trucks.

**Equipment Engineered for Long Lasting Performance™**



CALL FOR A FREE DVD



**NozzTeq®**  
Taking Science to the Sewer!®

[www.nozzteq.com](http://www.nozzteq.com)

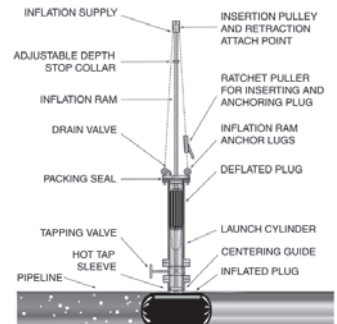
Toll Free 1.866.620.5915

# Petersen® Pipe Plugging Systems



Pipe Plugs and Packers for all your Pressure, Chemical, and Temperature Requirements. Call us to quickly customize a pipe plug or plugging system for your specific application.

## Economical Hot Tap Plugging Systems



[www.pipeplug.com](http://www.pipeplug.com)

**Petersen** PRODUCTS COMPANY  
Serving Professionals Since 1916

PHONE 800.769.4973 OR 262.692.2416  
FAX 800.669.1434 OR 262.692.2418



# Trio Vision LLC Acquires Cobra Tech



**Custom Built  
Vehicles, Trailers, ATVs**



**Fast, User Friendly  
PACP Software**

- > PACP, MACP, LACP Certified
- > Touch Screen
- > Quick Easy Entry
- > Grout Inspections
- > PACP Exporting
- > Inspection Reports with grading
- > Pipe Graphic Report
- > Image Report
- > Cobra View Export
- > Affordable Upgrade to GIS, Asset Management Modules



**Sonar Long Line  
Available up to  
6000 ft**

## NEW PRODUCTS INCLUDE:

- » **Portable Steerable Crawlers System**
- » **Manhole Camera**
- » **Jet Cam**

Contact our sales department at: 800-443-3716

**Cobra Technologies** is an authorized installer for the **Schwalm Robotic Cutter** system. Integrated Solutions utilizing the Cobra mainline system for a dual purpose inspection and Schwalm cutting/lining ready vehicle.

## Other Available Systems:

- > Rental Vehicles, Monthly or Yearly
- > Used Vehicles for Purchase
- > Used Inspection Vehicles
- > Used Grout Trucks
- > Used Lateral Inspection Systems
- > PACP Certified Software and Hardware for Rent



So Advanced... It's Simple!



**800.443.3761**  
**770.435.8991**

[www.cobratec.com](http://www.cobratec.com)

# PUMPS, LIFT STATIONS AND CONVEYANCE

By Craig Mandli

## CONTROL PANELS AND ACCESSORIES

### Cummins Power Generation PowerCommand

**PowerCommand** remote monitoring equipment from **Cummins Power Generation** provides a convenient and efficient means of remotely monitoring and controlling generator sets, transfer switches, sensors and output controls. Users can have visibility of multiple locations such as pumping stations in one screen, anywhere in the world, whether in the facility or offsite, through a web browser or mobile device. They minimize the possibility of downtime, increasing the reliability of the water plant power systems due to the real-time access and notifications. Customers can be aware of potential issues even before they happen, preventing downtime and costly ramifications. The monitoring system is flexible and connection can be either through LAN or cellular connection. 248/573-1600; [www.power.cummins.com](http://www.power.cummins.com).



### Flygt MultiSmart



The **Flygt MultiSmart** pump station manager combines PLCs, RTUs and pump controllers into a comprehensive and intuitive package. It integrates numerous control panel components, lowering control panel cost, and includes preprogrammed logic specifically designed to significantly reduce operating costs. It is easy to configure, with a setup wizard for commissioning of a new station. It includes built-in local SCADA without the added cost of HMI hardware and software. Remote control programming reduces maintenance cost and frequency of site visits. 855/995-4261; [www.xylem.com](http://www.xylem.com).

Remote control programming reduces maintenance cost and frequency of site visits. 855/995-4261; [www.xylem.com](http://www.xylem.com).

### Greyline Instruments PSL 5.0



The **PSL 5.0** pump station level controller from **Greyline Instruments** has redundant level sensing and includes a noncontacting ultrasonic sensor. The user can connect a loop-powered pressure sensor for redundant sensing in applications with foam or grease. It will continuously recalibrate the pressure sensor and automatically switch back and forth from ultrasonic to the pressure sensor as required. It is designed for sewage lift stations, wet wells and storage tanks.

888/473-9546; [www.greyline.com](http://www.greyline.com).

### PRIMEX MUNI float



The **MUNI float** from **PRIMEX** is internally weighted, mechanically activated and provides level control in municipal sewage pumping stations or applications with high grease content. Gold cross-point contacts provide precision and reliable control signals up to 1 amp. The CSA-certified unit can be used in water and sewage applications, as well as in low-current control panel alarms and with programmable

logic controllers. It has an SPDT cable that can be wired as normally open or normally closed, a large twin-wall teardrop float design offering increased buoyancy, and a two-tone colored float housing for easy identification. 844/477-4639; [www.primexcontrols.com](http://www.primexcontrols.com).

## LIFT STATIONS

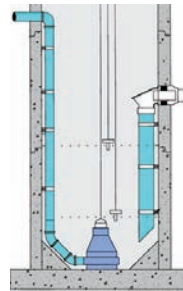
### Baker Water Systems Monitor Booster Station



The **Monitor Booster Station** from **Baker Water Systems** is an economical and safe solution for increasing waterline pressure or filling water storage tanks. It houses a submersible pump and motor belowground in the low-pressure suction tank reservoir. It eliminates the need for a pump house,

which reduces project cost, and removes the hazard of confined-space entry. It is controlled by intelligently designed variable frequency drive control systems. Simplex stations can accommodate flows ranging from as little as 5 to 5,000 gpm. Duplex stations add redundancy where required by code or where additional flow capacity is desired. Additional pitless boosters can be added as needed to accommodate flow rates as high as 30 mgd. An established system can be upgraded by increasing pump size and reprogramming the controls. It is SCADA system compatible. 800/356-5130; [www.bakerwatersystems.com](http://www.bakerwatersystems.com).

### RELINER/Duran Inside Drop



By using **Inside Drops** from **RELINER/Duran** in lift stations, pump life can be extended by preventing aerated influent from being directly drawn into the pumps. Their use can help dramatically reduce pump-related problems, as well as reduce general maintenance and odor complaints. The drop pipe should be extended below the low limit level and cut to follow the slope of the base fillet. If there is no fillet, cut the pipe at 45 degrees, one pipe diameter from the floor or fillet. This will create a diffuser by directing the flow back against the structure, thus de-aerating the influent. Do not direct

the incoming flow towards the pumps. This simple arrangement is easy to maintain, as there is nothing to collect debris. It can be cleaned from above. 800/508-6001; [www.reliner.com](http://www.reliner.com).

### Master Pumps & Power EPS system lift stations



Custom preassembled **EPS system lift stations** from **Master Pumps & Power** can be used for industrial construction, dock and facility work, and dewatering wastewater. They provide ease of pump installation and maintenance, with durable corrosion-resistant stainless steel guide rails. They are available in a variety of depths and diameters, and include easy-to-use touchpad controls for programming and system monitoring. They are preassembled for ease of installation, with

heavy-duty piping, adjustable float weights to set levels, and a removable check valve that offers ease of maintenance. **800/410-0045; www.masterpumps.com.**

### Park USA PumpTrooper

The **PumpTrooper** submersible pump lift station system from **Park USA** is used to receive sanitary wastewater or stormwater and move it through a collections system. It can be used to temporarily store the wastewater, but it is generally used to transfer liquid that cannot gravity-flow on its own. It is a reliable and cost-effective solution where a pump system is required. The submersible pump is a vertical, close-coupled electric pump that resides underwater. The pumps operate quietly and are cooled by the liquid, which maximizes their life span. Sanitary wastewater or stormwater enters the wet well basin through the inlet pipe. An electric liquid level control system monitors the water level and engages the pump at predetermined levels. The pumps then transfer the liquid up and out of the wet well basin into the sanitary or storm sewer system. **888/611-7275; www.park-usa.com.**

## METERS

### Blue-White Industries ProSeries-M M-2

Designed for smaller municipal water and wastewater systems, the **ProSeries-M M-2** peristaltic metering injector pump from **Blue-White Industries** is suited for injecting the aggressive and/or viscous chemicals often used in water treatment applications. It has an intelligent control system that permits connection to SCADA systems and other remote controllers. Optional advanced SCADA communications command and status capabilities include start, stop, prime, and setpoint speed, motor status and others. Available protocols include Profibus DPV1, Modbus RTU, Modbus-TCP, EtherNet/IP, and Profinet RT I/O. Built-in inputs include 4-20mA and pulse inputs for remote external speed control and either powered 6-24 VDC or non-powered dry contact closure for remote start/stop. Outputs include one 250-volt/6-amp relay to monitor the Tube Failure System and Flow Verification System, and 4-20mA analog signal scalable to the motor speed. It has feed rates from .01 to 17.2 gph, pressures to 125 psig, 200-to-1 turndown ratio, and is NSF Listed Standard 61. **714/893-8529; www.blue-white.com.**

### FLO-CORP Tracer Series Radar

The **Tracer Series Radar** from **FLO-CORP** helps make a reliable and accurate level measurement within the confines of tight spaces, outdoor elements and remote locations, where the surface area is commonly filled with foam, logs and debris that often make floats and ultrasonic sensors ineffective in making a reliable measurement. It eliminates outside influences such as condensing humidity and unreliable surface areas to make a measurement of sump level that is reliable and accurate. It also eliminates pumps starting and stopping when they shouldn't, and calls in the middle of the night because a float has malfunctioned. It is precise, durable and dependable. **877/356-5463; www.flo-corp.com.**

### VEGA Americas VEGAPULS WL 61

The **VEGAPULS WL 61** radar sensor for level measurement of water and wastewater from **VEGA Americas** overcomes many of the challenges lift stations present. It is effective even in applications with fats, oils, and grease; foam; and buildup present. The sensor operates without contact, saving operators from maintenance and time-consuming intervention. It has plus-or-minus 2 mm accuracy. **800/367-5383; www.vega.com.**

## PUMPS

### A.Y. McDonald Manufacturing Bottom Suction Pump

The **Bottom Suction Pump** from **A.Y. McDonald Manufacturing** was designed to provide maximum drawdown, and is available in 1/2 or 3/4 hp, along with a gpm of 15 and voltage of 115. It has quiet operation and is made of corrosion-resistant material for cisterns handling clean and dirty water, rainwater or pond water. **800/292-2737; www.aymcdonald.com.**

### BBA Pumps BA180E D315



The **BA180E D315** compact 8-inch dry self-priming pump from **BBA Pumps** provides a maximum capacity of 3,150 gpm and a maximum head of 135 feet at 59 psi. It is driven by a Caterpillar diesel engine that meets stringent global emission standards. It is built according

to strict U.S./EU emissions legislation and is suitable for use worldwide. A sound-attenuated enclosure ensures low noise levels and protection against dust, wind, rain and snow. It has a high-end LOFA control panel with support in 10 languages. Its light weight makes it easy to move around on site, or it can be mounted on a trailer. **843/849-3676; www.bbapumps.com.**

### Crane Pumps & Systems Barnes Solids Handling Series

The **Barnes Solids Handling Series** from **Crane Pumps & Systems** is a municipal-quality line of submersible non-clog pumps with 3- through 10-inch discharge sizes in 2 to 150 hp. It has three impeller styles available to match varying solids loads. In addition to vortex, monovane or dual vane impeller designs, they have a plug-and-play power cord that eliminates the need to pull power cords out of conduit in order to work on the pump. They provide flows up to 4,000 gpm and heads to over 240 feet, including low-flow, high-head pumps with steep performance curves designed for low-flow connections to existing pressure mains. **937/778-8947; www.cranepumps.com.**



### Environment One Corporation Upgrade

The **Upgrade** replacement grinder pump from **Environment One Corporation** is engineered to fit into virtually any grinder pump wet well. Universal design allows easy drop-in conversion, ready to connect. All solids including plastic, rubber, fiber and wood are ground into fine particles, allowing them to pass easily through the pump, check valve and small-diameter pipelines.

*(continued)*

See More Products and Information at [www.MSWMag.com](http://www.MSWMag.com)

The grinder is designed not to jam and for minimum wear to the grinding mechanism. It comes with a self-contained level control system, eliminating float switches. **518/346-6161; www.eone.com.**

## Godwin, a Xylem brand, Dri-Prime NC150

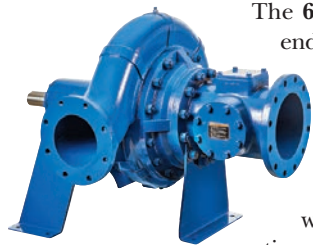


The **Dri-Prime NC150** effluent pump from **Godwin, a Xylem brand**, offers flows to 1,767 gpm and discharge heads to 195 feet. It has Flygt N-technology with a hard iron (60 HRC), self-cleaning, non-clog impeller and insert ring.

The Dri-Prime automatic priming system primes and re-primers from dry to 28 feet without operator assistance.

It has a dry-running high-pressure oil bath mechanical seal with highly abrasion-resistant silicon carbide faces. Its close-coupled centrifugal pump allows for easy pump end or engine/motor changeover in the field. It can be customized with a diesel engine or electric motor, and can be mounted on a skid, highway trailer or in a quiet enclosure. It is available as a Godwin DBS for pump station backup. **800/247-8674; www.godwinpumps.com.**

## Gorman-Rupp 6500 Series



The **6500 Series** solids- and clean-liquid-handling end suction centrifugal pump from **Gorman-Rupp** is available in model sizes from 3 to 16 inches, flows to 15,000 gpm, total dynamic head to 530 feet and solids-handling capabilities up to 4 inches. It provides a high level of performance and efficiency for applications in wastewater treatment plants, industrial facilities, construction, mining and agricultural uses. It comes standard with oversized bearings, an atmospheric vent, a side-access inspection port (on solids-handling models), and an indexable Smart Scroll discharge locator. **419/755-1011; www.grpumps.com.**

## Honda Power Equipment WT30X



The **WT30X** trash pump from **Honda Power Equipment** offers a commercial-grade engine, full-frame protection, a quick release clean-out and silicon carbide mechanical seals. The pump includes a conical-shaped cast iron impeller for improved priming and durability, replaceable stainless steel wear plates, silicon carbide water seals, lightweight cast aluminum pump housing, mounts to minimize vibration, and a multi-tool for on-site pump servicing and clean-out.

The pump features a Honda GX240 OHV engine (242 cc), pumps a maximum of 319 gpm, and can pump solids up to 1 1/16 inches in diameter. It features full-frame, 3-inch suction and discharge ports, standard oil alert, silicon carbide mechanical seal, and a replaceable stainless steel wear plate. **678/339-2600; www.powerequipment.honda.com.**



## National Oilwell Varco Process and Flow Technologies Moyno 2000 Series

The **Moyno 2000 Series** progressive cavity pump from **National Oilwell Varco Process and Flow Technologies** effectively handles radial and thrust loads for maximum performance and long life. The uni-

form design of the ring gear and gear ball components leads to less wear and better overall performance. Ideal for sewage lift stations and headworks, primary and tertiary sedimentation, grit removal, and nitrification, the pump steadily moves viscous products and heavy solids with minimal shear and crush damage to the pumped product. These rugged pumps are able to handle abrasive materials in excess of 80 percent solids and offer a performance range to 4,500 gpm with pressure to 1,500 psi. **713/335-6600; www.nov.com.**



## Pentair - Fairbanks Nijhuis VTSH-SCR

By using an induced flow impeller design, the **VTSH-SCR** from **Pentair - Fairbanks Nijhuis** provides a wider variable speed operating range than conventional solids-handling pumps. This provides flexibility to the operator to adjust for unanticipated flow demand or suspension velocities that could clog traditional pumps. **913/371-5000; www.fairbanksnijhuis.com.**

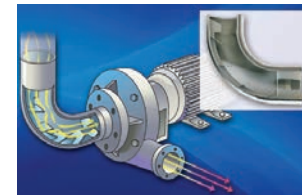
## Vertiflo Pump Company 2100 Series



The **2100 Series** trash and solids-handling self-priming pump from **Vertiflo Pump Company** is offered in a variety of materials, including cast iron, 316 stainless steel fitted, all 316 stainless steel, CD4MCu fitted, and CD4MCu. With several model sizes available, customer requirements for pumping clear and corrosive liquids can be satisfied with capacities ranging up to 1,300 gpm, heads

of 112 feet, suction lifts up to 25 feet and 3-inch spheres. **513/530-0888; www.vertiflopump.com.**

## Vortab Elbow Flow Conditioner



The **Vortab Elbow Flow Conditioner** is an effective solution to eliminate the turbulent fluid flows that result in pump cavitation, which can lead to line shutdowns, maintenance and shorter pump life. The preconditioned flow stream mimics the straight run needed for efficient pump operation and removes asymmetric velocity flow profiles. In addition to conditioning the flow stream, the fitting eliminates the straight pipe run cost and installation technician labor. It isolates the flow irregularities and conditions the flow stream into a swirl-free and symmetrical velocity profile. Swirl reduction and velocity profile correction occur naturally in long lengths of straight pipe due to diffusion and turbulent mixing. Its anti-swirl and inclined vortex-generating profile correction tabs, projecting from the inside pipe surface, generate vortices that accelerate these natural pipe effects to create a uniform, non-swirling, symmetrical flow profile in a much shorter section of pipe. **800/854-9959; www.vortab.com.**

## Zoeller Company submersible solids-handling pumps



Submersible solids-handling pumps from **Zoeller Company** are designed to provide a long service life. Their finned castings, oil-filled housings and non-overloading windings enable the motor to maintain a low operating temperature when facing harsh conditions. They are available in 1 to 60 hp, 3- or 4-inch solids-handling capacity, and two-vane or vortex impeller styles. They are available with either a standard or explosion-proof motor. **800/928-7867; www.zoellerengprod.com.**

(continued)



I was installed in 1963.

I have three bad cracks. | Two of my taps are backwards.

When I was installed they didn't backfill properly.

When it rains I overflow.

I haven't been cleaned in four years!

I am 532 feet long.

I have eight laterals.

Someone installed a tap with a hammer! | My joints are pulled.

I was low bid. | I will fail in two years!

I have ROOTS!

I sag in the middle.

Every pipe has a story.  
Let us help you discover it.



(800)-656-4225 | [www.rapidview.com](http://www.rapidview.com)

**SCADA SYSTEMS**



**Data Flow Systems  
TAC II SCADA System**

The **TAC II SCADA System** from **Data Flow Systems** has user-friendly HMI software, no-cost SCADA software licenses, a plug-and-play design, ease of integration, and durability in harsh environmental conditions. The system provides a true obsolescence-proof solution, in which all new products maintain downward compatibility with all older versions, allowing

a utility to maximize their investment in SCADA over the long term. An optional TCU pump controller includes monitoring and control of up to three pumps from one controller. Symphony - Harmonious Pump and Flow Management software is available. **321/259-5009; www.dataflowsys.com.**

**VALVES**



**Lined Valve Company bonneted metal-seated knife gate valve**

Bonneted metal-seated knife gate valves from **Lined Valve Company** have the ability of instant shut-off in solid materials without clogging. The design of a bonneted knife gate valve specifically addresses fugitive emissions and packing leakage, as its round stem is easier to seal, and the packing area is greatly reduced, producing a better seal. They are manufactured with a stainless steel body, gland and yoke, and stainless steel gate and stem for durability and corrosion resistance. They are certified to MSS SP-81 and AWWA C520. **888/256-5779; www.linedvci.com.**

**Smith & Loveless RapidJack**



**RapidJack** clean check valves from **Smith & Loveless** eliminate the need for time-consuming valve disassembly and interim piping realignment. Technicians can quickly access the pipe by opening the valve's top and pulling the arm assembly up and out. This simple process consists of removing four bolts, detaching the spring, and lifting it free from the check valve body. Once it is out, the technician can clear any obstructions and remove any stringy items from

around the arm. After a quick clean, they insert the top piece back into the body, replace the four bolts, and put the pipe back in service. The entire process typically takes less than 15 minutes. **913/888-5201; www.smithandloveless.com.**

**Smith Flow Control Easi-Drive**



The portable **Easi-Drive** valve operator from **Smith Flow Control** actuates hard-to-operate valves. It is adaptable and can operate many different valves, including the largest gate and butterfly valves, with a single tool. This versatility makes it a cost-effective alternative to installing permanent dedicated actuators for every valve. Its light-weight adaptor and reaction set provides

safe operation of valves by transferring reaction away from the operator. Its

variable torque outlet ensures that it will operate numerous valves with varying torque requirements from 350 to 75,000 ft-lbs, and the operator can select torque output to avoid over-torquing the valve. The tool has continuous drive, which doesn't damage valves like an impact wrench. It is available in electric and pneumatic power options. **859/578-2395; www.smithflowcontrol.com.**

**Victaulic AWWA valves**



The **Series 365 Vic-Plug** valve and the **Series 317** check valve from **Victaulic** offer fast, easy installation and maintenance.

They are quickly and easily installed with Victaulic Style 31 couplings. With just two bolts per coupling, the valves can be installed faster than flanged valves. The couplings also simplify access to the valve and piping system, enabling quicker maintenance and reducing system downtime. The check and plug valves are

designed to ANSI/AWWA standards. The end-to-end dimensions, materials and general design of the Series 317 check valve conform to AWWA C-508; the Series 365 Vic-Plug valve conforms to AWWA C-509 standard end-to-end dimensions. The grooved ends of both valves conform to AWWA C-606. They are available in 3- to 12-inch sizes, and can be used in applications with maximum working pressures of 175 psi. Bidirectional sealing to 25 psi is standard for the Series 365 plug valve; full bidirectional sealing to 175 psi is also available. A range of manual and automatic operators and accessories are available with the plug valve. The check valve is available with a spring and lever, weight and lever and adjustable air cushions. **610/559-3300; www.victaulic.com.** ♦

SEWER WATER  
MUNICIPAL SEWER WATER  
MUNICIPAL SEWER WATER  
MUNICIPAL SEWER WATER  
MUNICIPAL SEWER WATER  
MUNICIPAL SEWER WATER  
MUNICIPAL SEWER WATER  
MUNICIPAL SEWER WATER

# Socially Accepted

facebook.com/MSWmag

twitter.com/MSWmagazine

plus.google.com

youtube.com/MunicipalSewerWater

linkedin.com/company/municipal-sewer-&-water-magazine



# EFFICIENCY AT EVERY TURN

SINCE 1960

The Triton Screw Centrifugal Pump combines the benefits of Vaughan's UNMATCHED RELIABILITY with the advantages of highly efficient, non-clog performance. Triton's screw centrifugal impeller is ideal for handling thick sludges, large solids, shear sensitive fluids and delicate or highly abrasive material.

See videos, drawings, and details at [ChopperPumps.com](http://ChopperPumps.com) or call 888.249.CHOP



## The Rudy Tool



RT1

### Cover Remover

- Easily remove **Water Valve Box** and **Sewer Clean-out Box** Covers
- Eliminate the need for screw drivers
- Lifting handle creates gripping force
- Improved job safety and ergonomics
- Stand upright / Less bending
- Overall Length: 23.5"
- Bright color, easy to see



Tip Detail

Call for a FREE catalog  
**800.521.6893**

**T&T Tools, Inc.**  [www.MightyProbe.com](http://www.MightyProbe.com)  
[sales@mightyprobe.com](mailto:sales@mightyprobe.com)

Working well under pressure!



## Pressure Washers and Drain Jetting Equipment



Skid and truck mount models up to 7000 psi





Portable Hot and Cold Water Diesel Powered Models





Hot and Cold Trailer Models  
Up to 7000 psi  
Flows up to 40 gpm  
Powered Reels  
Diesel powered models

We will custom build to your specifications

[www.camspray.com](http://www.camspray.com)      800-648-5011



## Pressure-reducing valves help reduce water loss

**Problem:**

With aging infrastructure, the City of Melaka in Malaysia had significant nonrevenue water losses with leakage rates at 33.9 percent, accounting for 152,000 cubic meters of water loss per day and close to 3,000 burst pipes per year.

**Solution:**

The city did a water audit and determined that by putting in 168 district metered areas they would have better pressure management and control of flow throughout the system. For every 1 percent increase in pressure, leakage goes up by 1.15 percent, so by supplying just the right amount of pressure you can significantly reduce leakage. Each DMA was fitted with pressure-reducing valves from Singer Valve that maintained a steady setpoint of pressure regardless of fluctuations in flow. They also added altitude valves to accurately control the level of the water tanks and stop overflow.

**RESULT:**

Leakage has been reduced to 21.4 percent, which is a total savings of \$5,232,857 per year. Burst pipes are down by 93 percent to 200 a year, and reservoirs are maintaining their desired levels of water without overflowing, which will help delay water rations in the dry season. By managing water pressure, Melaka was able to realize significant savings so they can now provide more connections and upgrades to infrastructure. **604/594-5404**; [www.singervalve.com](http://www.singervalve.com). ♦

## XTremely Fast & Easy PACP Surveys

**MUNIXS**  
PACP SURVEY SOFTWARE

This Xtremely simple and affordable solution is an excellent choice for those new to pipe survey reporting and data collection.

Create data CDs and DVDs within the program to share your movies, pictures and reports without any installation of third party program.

A built-in wizard to guide the user through the required fields and survey process to eliminate the guesswork.



Call Today for a Free Online Demo or More Info **866.299.3150** | [www.munixs.com](http://www.munixs.com)



GET  
**EMAIL NEWS  
ALERTS** FOR



Go to [mswmag.com/alerts](http://mswmag.com/alerts) and get started today!



# SOUTHLAND TOOL MFG. INC.

*Building Innovative Tools for Municipalities*



## SOLUTIONS TO SEWER CLEANING THROUGH:

- **CONCEPT**
- **DESIGN**
- **PRODUCTION**

Manhole Tools • Debris Baskets • Vac-Traps • Root Saws  
Calcium Cutters • Sewer Rods • Handy Clams  
Nozzle Extensions • Deep Vac Tube Holder  
Grabbers Claws and Hooks • Diamond Tap Cutters  
Fiberglass Poles • Hydraulic Cutters • Top Manhole Rollers  
Sewer Spoons • Continuous Rod • Carbide Saws



1430 N. Hundley St  
Anaheim, CA 92806

ph: 714.632.8198  
fax: 714.632.8228

[www.SouthlandTool.com](http://www.SouthlandTool.com)



# SHARE YOUR EXPERIENCE

Opportunities to lead educational presentations are available at two major events

By *Ted DeBoda*

The exchange of information and knowledge is one of the most important ways NASSCO supports its mission to set industry standards for the assessment, maintenance and rehabilitation of underground infrastructure and to ensure the continued acceptance and growth of trenchless technologies.

This is accomplished through the dissemination of information to as many people as possible, including abstracts presented by industry professionals at large events.

NASSCO is currently soliciting calls for abstracts for two important 2017 events:

Technical Day at the 41st NASSCO Annual Conference, Feb. 13-16 in Naples, Florida. Presentations will be 20 minutes.

NASSCO's Education Day at the WWETT Show, Feb. 22 in Indianapolis, Indiana. These will be 50-minute presentations.

If you have a presentation that could benefit others in the trenchless community, please submit your abstract by June 30, 2016. The deadline has been extended to allow submittal of a wide range of topics, resulting in quality presentations that deliver high value to each audience. Presentation topics may include pipeline cleaning, inspection, assessment, rehabilitation, new technologies, case studies, laterals, manholes and other related sewer and trenchless technology topics.

If you are interested in making a presentation at either event (or maybe both!), please submit an abstract, along with the speaker's biography and the information below (all in MS Word format) to Lynn Osborn, NASSCO's technical director, at [technical@nassco.org](mailto:technical@nassco.org). If there are multiple speakers, please submit items one through four for each speaker:

- Name and title
- Company affiliation
- Contact information (physical address, telephone number and email address)
- Brief speaker bio — 100 words maximum.
- Presentation title
- Abstract describing the presentation objective and content (200 words maximum)

Abstracts will be reviewed by the NASSCO technical director and, for NASSCO's Annual Conference, the Technical Day Committee. Potential speakers will be notified of the status of their abstracts by July 29, 2016, for NASSCO's Education Day at WWETT and by Aug. 31, 2016, for NASSCO's Annual Conference. Speakers are required to pay all applicable conference registration fees and travel expenses.

For questions or additional information, please contact Lynn Osborn at [technical@nassco.org](mailto:technical@nassco.org). If you are not yet a member of NASSCO, visit [nassco.org](http://nassco.org) to apply. ♦

## Get the EDGE Training and Continuing Education Courses

### PACP TRAINING

**June 8-10**

**Seattle, WA**

Includes Manholes and Laterals! (if desired)  
PACP Recertification seats available  
Contact John Jurgens for more information, register or discuss in-house training:  
425/487-3325 or email [nodig@aol.com](mailto:nodig@aol.com)

**June 13-15**

**Marriottsville, MD**

Includes Manholes and Laterals!  
Trainer: Ted DeBoda  
Contact Dawn Jaworski for more information or to register:  
410/442-7473 or email [dawn@nassco.org](mailto:dawn@nassco.org)

**June 14-16**

**Northville, MI**

Includes Manholes and Laterals!  
Recertifications Welcome  
Trainer: Brandon Conley  
Contact Ashley Groves for more information or to register:  
248/349-0904 or email [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

**June 15-17**

**Conyers, GA**

Includes Manhole and Laterals!  
Recertifications Welcome  
Contact John Jones for more information or to register:  
404/431-5584 or email [plumblineconsultant@gmail.com](mailto:plumblineconsultant@gmail.com)

**June 17**

**Northville, MI**

1 Day Recertification Course  
Trainer: Brandon Conley  
Contact Ashley Groves for more information or to register:  
248/349-0904 or email [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

**June 21-23**

**Twinsburg, OH**

Includes Manholes and Laterals!  
Recertifications Welcome  
Trainer: Brandon Conley  
Contact Ashley Groves for more information or to register:  
248/349-0904 or email [pacp@dohenycompanies.com](mailto:pacp@dohenycompanies.com)

**June 21-23**

**Roseville (Sacramento), CA**

Includes Manholes and Laterals!  
A limited number of PACP Recertification seats available.  
Contact Marilyn Shepard for more information or to register:  
916/899-8961 or email [mshepard1@hotmail.com](mailto:mshepard1@hotmail.com)

**June 23-24 & 27**

**Millbury, MA**

Includes Manholes and Laterals!  
Trainer: Justin deMello  
Contact Lynn Foisy for more information or to register:  
978/482-7884 or email [mwpca2011@yahoo.com](mailto:mwpca2011@yahoo.com)

**July 11-13**

**Marriottsville, MD**

Includes Manholes and Laterals!  
Trainer: Ted DeBoda  
Contact Dawn Jaworski for more information or to register:  
410/442-7473 or email [dawn@nassco.org](mailto:dawn@nassco.org)

**July 20-22**

**Seattle, WA**

Includes Manholes and Laterals! (if desired)  
PACP Recertification seats available  
Contact John Jurgens for more information, register or discuss in-house training:  
425/487-3325 or email [nodig@aol.com](mailto:nodig@aol.com)

### ITCP TRAINING (CIPP and Manhole)

**August 9-11**

**Cincinnati, OH**

Manhole Rehabilitation  
8 a.m. – 5 p.m. Day 1  
8 a.m. – 12 p.m. Day 2 Morning  
Trainer: Tim Back  
Contact Tim Back for more information:  
513/253-8461 or email [timbacktwo@gmail.com](mailto:timbacktwo@gmail.com).  
Courses can be taken individually or together in 3 days!

Cured In Place Pipe

1 p.m. – 5 p.m. Day 2 Afternoon

8 a.m. – 5 p.m. Day 3

Trainer: Gerry Muenchmeyer

Contact Gerry Muenchmeyer for more information:  
252/626-9930 or email [gerry@muenchmeyerassoc.com](mailto:gerry@muenchmeyerassoc.com).  
Courses can be taken individually or together in 3 days!

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

NASSCO  
**PRO**  
TRAINING





# P350 flexitrac™ pipeline inspection system



SPX 

## Flexible, Reliable, Versatile.

- **Modular:** Build your choice of motorized or manual compact system that offers both pushrod (up to 500'/150m) and crawler (up to 1000'/305m) capability.
- **Reliability where you need it:** Weatherproof construction and robust interconnection system that's designed to withstand the toughest conditions.
- **Outstanding picture quality:** Ultra-bright LEDs and high-resolution cameras built on a powerful digital video platform.
- **Advanced pushrod integration:** P340 flexiprobe® pushrod reels and cameras can be connected directly to the flexitrac system, allowing you to switch from crawler to pushrod operation from one controller.
- **Reporting options:** Comprehensive built-in reporting system, with optional Pipe Inclination report or WinCan interface.

To find out more call us on **(800) 688-8094**, or email [pearpoint.sales.us@spx.com](mailto:pearpoint.sales.us@spx.com)  
[www.pearpoint.com](http://www.pearpoint.com)

*ultra* *ultra* *ultra*  
**LIGHT – VERSATILE – SAFE**

## ultraSHORE PRODUCTS



Quick to Install.  
As light as 130lbs.



Roll Your Own.  
Optional wheel kit.



Stacks easily with  
2' & 4' high panels.

*This is What Aluminum Shoring Was Meant to be!*



1-800-683-8837

**1-800-SHORING**

CALL TOLL-FREE NATIONWIDE • 1-800-746-7464

[www.shoring.com](http://www.shoring.com)

## POWERHOUSE MUNICIPAL SOLUTIONS



[www.CHEMPACE.com](http://www.CHEMPACE.com)

CONTINUOUS TREATMENT!

**bioFORCE BRICK**  
 Bacterial treatment, controls odors & reduces grease

**bioFORCE HEAVY DUTY GREASE PACKETS**  
 Biological grease control

**ORANGE AID**  
 Floating degreaser & deodorizer dissolves grease and sludge  
 CITRUS AROMA

**SEWER FOAM**  
 Dual-action, foaming cleaner with long-lasting bacterial treatment. Eliminates sewer line solids & hydrogen sulfide odors!

ECONOMICAL SEWER MAINTENANCE!



**800-423-5350**  
 BUYING DIRECT ALWAYS EQUALS COST SAVINGS!

# A GREEN CLEANING OPTION

NozzTeq's MANTA bottom cleaner engineered to clean effectively with recycled water

By Craig Mandli



**NozzTeq sales manager Josh Ballum (right) discusses the features of the MANTA 350-RC Sewer Nozzle with a WWETT 2016 attendee. The nozzle can use recycled water to clean large pipes from 12 to 72 inches in diameter. (Photo by Craig Mandli)**

**D**rought conditions in the western United States have put a premium on water. Not only are citizens being asked to cut back on usage, municipalities and contractors are as well. That's why the idea of using recycled water in sewer cleaning operations is gaining traction in the industry.

NozzTeq certainly responded to this growing trend with the MANTA 350-RC Sewer Nozzle. The innovative new nozzle, designed for use with recycled water, was the highlight of NozzTeq's display at the 2016 Water & Wastewater Equipment, Treatment & Transport Show.

"Jet/vac units that use recycled water have been in Europe for awhile, and you're starting to see them get a foothold in the States," says NozzTeq President Scott Paquet. "The nozzles used for those trucks need to have some different design parameters to work effectively and stand up to abuse."

NozzTeq developed the MANTA system in cooperation with a longtime customer as a complement to the C-RAY bottom-cleaning nozzle. The customer had purchased and began using a jet/vac truck that recycles water, but was having difficulty using his C-RAY nozzle with it.

"The tube system in his bottom cleaner wasn't designed to handle the abrasiveness of recycled water," Paquet says. "We knew we needed to go back to the drawing board and come up with something that would work effectively with that water."

To answer the challenge, NozzTeq built the MANTA with a heavy-duty inner design to handle the abrasiveness from recycling trucks. The upgraded internal flow design minimizes pressures and flow losses, while providing high pulling and cleaning power. It is made for cleaning large (up to 72-inch) pipe and smaller pipes down to 12 inches with debris at the bottom of the pipe. The number of jets in use on the unit can be altered from

eight, 10 or 12 through a flexible exchange system on the rear end, allowing the user to match the nozzle to pipe size and pump capacity. It can handle anywhere from 80 to 532 gpm of water pressure. A system of interchangeable wear runners also enables quick switch-out for different size lines.

"That ability to switch the number of jets is huge," Paquet says. "It saves the operator time in the field switching out nozzles, and they don't need to have a bunch of floor-cleaning nozzles on the truck, saving money in the long run."

NozzTeq launched the MANTA 350-RC in late 2015, and according to Paquet, the feedback from the field has been positive. Not only has the unit performed its cleaning chores effectively, it gives users, especially private contractors that contract with municipalities to perform sewer cleaning, an extra marketing push.

"Companies that are using the MANTA with a recycled water jet/vac can really push how green the idea is, and how they are helping the environment," Paquet says. "It's really a direct response to meet that greener focus in the industry. Fortunately, we were able to do a twist on our existing technology to handle more adverse water conditions."

NozzTeq is a longtime exhibitor at the WWETT Show, and Paquet says it's an event that they actually frame their year around. He says being able to interact with customers and potential customers face to face is an invaluable opportunity.

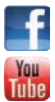
"This show is always a success for us, and this year was no exception," he says. "The WWETT Show is where the people in this industry make their decisions and buy." 866/620-5915; [www.nozzteq.com](http://www.nozzteq.com). ♦

# Stops Water Infiltration



**Infi-Shield® Gator Wrap** prevents infiltration and erosion by providing a water-tight seal around any manhole, catch basin or pipe joint. Infi-Shield® Gator Wrap resists harsh soil conditions and also provides a root barrier for any crack or joint.

The manhole chimney area is the number one source of infiltration in sanitary sewer collection systems. Preventing infiltration during the construction process is very cost effective and simple. **Infi-Shield® External Seal** is the best solution since it increases system capacity by preventing erosion and infiltration in both manholes and catch basins. The one piece molded seal is made from EPDM rubber and it has a reinforced preformed L-shaped corner.



Sealing Systems, Inc.  
800-478-2054  
[www.ssisealingsystems.com](http://www.ssisealingsystems.com)

## Inside The Pipe "GRIPPER" Tool



### Easy To Use Pneumatic Tool For Grabbing Objects in Sewers & Ventilation systems

- Makes 90° Bend in 4" Pipe
- Air Powered (15psi) Operation up to 82' Standard or Longer Distances Possible (Option)
- Fast & Simple Maintenance
- "No" detection needed
- Camera Hook Up Optional
- Easy In/Out using Fiberglass Push Rods, Cable or Sectional Rods
- 2.16" dia. x 9.45" length - Weight 10#
- Pliers Teeth Grabbers Optional

**Cost \$2400.00 + Freight**

**CLOVERLEAF** Tool Co.®

"Quality Products at Affordable Prices"  
P. O. Box 110757 • Bradenton, Florida 34211 USA  
**Toll Free: 800-365-6583**  
Tel: 941-739-0707 • Fax: 941-739-0001  
[www.cloverleafatool.com](http://www.cloverleafatool.com) • email: [sales@cloverleafatool.com](mailto:sales@cloverleafatool.com)



## PROTECTING WHAT'S IMPORTANT Starts With A Fine Screen



### Safeguard Your Assets

Critical processes after the headworks require the best defense from today's sewage.

- Staple Guard UHMW panels for better clean-off
- Superior labyrinth sealing prevents screen bypass
- Super Fine Drum Screens for MBR protection

### Long Term Investment

Screening solutions that keeps running so you can focus on more important things

- Brushless finescreens - one less maintenance item
- Easy change screening panels minimize service time
- Rugged construction from top to bottom that prevents future problems



Contact Us Today For More Details  
toll free: 800.331.2277 | phone: 949.833.3888  
email: [jwce@jwce.com](mailto:jwce@jwce.com) | web: [www.jwce.com](http://www.jwce.com)

# Product Spotlight

MyTana's midsize camera features built-in Wi-Fi

By Craig Mandli

The MS11-NG midsize video inspection camera from MyTana is designed to inspect 3- to 4-inch lines with up to 150 feet of range. The camera allows the user to record or upload an inspection using the MyTana viewer app, available for iPhone, iPad and Android.

Built-in Wi-Fi allows multiple viewers, as inspection video can be viewed wirelessly at up to 100 feet away. The user can save the job video, upload it to YouTube and email either the video link or still photos for viewing within minutes.

"Certainly, having the ability to wirelessly send the video to an unconnected device is a huge benefit," says MyTana President Jock Donaldson. "We believe that we've taken a product that was already very strong and desirable, and made it even better. The feedback we've received has been overwhelmingly positive."

It has a 1 1/2-inch color self-leveling camera head, with an "Ice Ball" protective covering that is a field-replaceable, translucent polycarbonate light ring cover built right into the camera head. A built-in 512 Hz transmitter allows the user to locate during the inspection, and its daylight-read-

able 6.4-inch monitor includes an on-screen footage counter. The unit can be powered with either household electric current or an onboard battery boasting a two-hour life. Media connects through RCA jacks on the front of the unit.

"The self-leveling feature is very popular, especially for people watching the video, as it keeps the image consistently upright," Donaldson says. "We also stand behind the product, and do all after-sales service and warranty repairs in-house."

The company launched the MS11-NG four years ago, but just recently added the Wi-Fi capability — a feature Donaldson says is already proving popular. **800/328-8170; www.mytana.com.**



COXREELS Biodiesel



Ditch Witch OptiCut

## COXREELS biodiesel reels

Biodiesel reels (SHF-N-525-BBN, TSHF-N-XXX-BBN and TSHL-N-635-BBN) from COXREELS are designed for biodiesel concentrations above B5. Model TSHF-N-620-BBN is designed for biodiesel concentrations above B20 when used with Viton seals and the Flexwing VersaFuel hose. **800/269-7335; www.coxreels.com.**

## Ditch Witch digging system for walk-behind trenchers

The OptiCut digging system from Ditch Witch, a Charles Machine Works Company, is made to enhance walk-behind trencher productivity in all soil conditions. Designed for depths up to 36 inches deep and 3.5 inches wide, the digging system uses a low-profile tooth design for a smoother cut with less chain wear. Configurations include a 4-pitch DuraTooth, a 2-pitch Shark and a 2-pitch DuraTooth/Shark combination. The digging system is compatible with Ditch Witch C12, C14, C16, C16X, C24X and C30X walk-behind trenchers and can be adapted to other makes and models with a special conversion sprocket. **800/654-6481; www.ditchwitch.com.**

(continued)

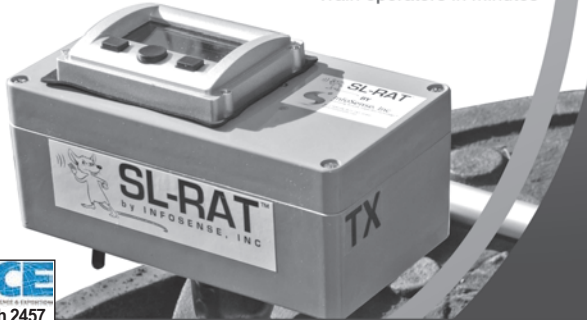


**SL-RAT™**  
by INFOSENSE, INC

## Sewer Line Rapid Assessment Tool

A new way to focus camera and cleaning resources.

- Less than 1/10<sup>th</sup> the cost of camera inspection
- Patented Active Acoustic technology
- No flow contact
- Blockage assessments in 3 minutes or less
- Millions of feet inspected
- Rugged field-tested construction
- Train operators in minutes



**ACE**  
Booth 2457

877-747-3245  
sales@infosenseinc.com  
www.infosenseinc.com

Winner 2012  
WEF Innovative  
Technology  
Award



## RHINO

**8 lb**

**"JAKE"**

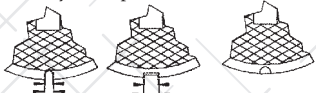
Manhole Cover Extractor

**12 lb**

**"MARY A"**

Manhole Cover Extractor

- ↘ 8 lb. and 12 lb. (4140) ASTM A148 cast steel head breaks frozen covers free easily. Serrated edge strengthens pick-end and eliminates possibility of tool becoming bottlenecked in the cover.
- ↘ Combination sledge hammer and pick/pry bar. Two tools in one enables a worker to carry only one piece of equipment into the street
- ↘ Tapered saw-tooth pick fits 5/8" or larger drain holes and most pick slots.
- ↘ Top quality handle constructed of fiberglass.
- ↘ "Mary A" is patented.

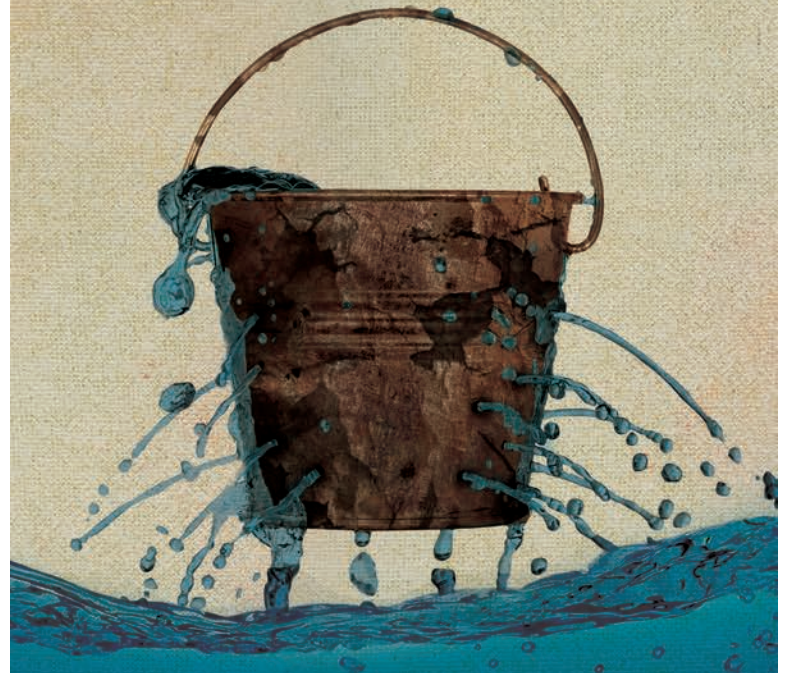


Distributed by:  
**DOUG MEADOWS  
COMPANY, LLC**  
1.800.588.3684  
Fax (325) 695-7954

Web site: [www.dougmeadows.com](http://www.dougmeadows.com)

*Jack and Jill  
Need water still  
But buckets get  
too rusty*

*And now they see  
That FRP  
Is something much  
more trusty.*



*Engineers all across North America and around the world are specifying affordable, low-maintenance Flowtite® FRP pipe. Our June webinar will cover what you need to know.*

*Get this and more useful information at [www.flowtite.com](http://www.flowtite.com) or call (225) 658-6166 today.*





Gen-Eye Prism

## General Pipe Cleaners Gen-Eye Prism video inspection system

The Gen-Eye Prism video inspection system from General Pipe Cleaners features a Wi-Fi transmitter that enables a tablet or smartphone to be used to view and record inspections from up to 500 feet via a free mobile app. The system offers all the features of full-size inspection systems in a compact, fan-cooled package. The command module weighs 3 pounds and can be mounted on any Gen-Eye GL or POD reel. Optional brackets for mini-tablets and smartphones are available. Complete systems include a self-leveling camera and a 512 Hz transmitter for camera tracking with the Hot Spot pipe locator. **800/245-6200; www.drainbrain.com.**



Pelican TrekPak

## Pelican Products divider systems

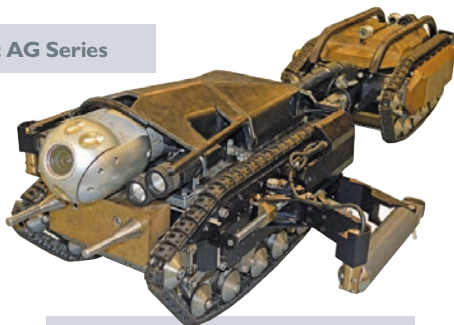
The TrekPak divider system from Pelican Products allows users to customize their cases. Each system comes with preinstalled wall sections, divider panels, locking pins and a cutting tool. Divider sections are waterproof, lightweight and durable. Extra divider materials and panels are available. The divider is available as a fourth configuration in six cases (1510TP, 1550TP, 1560TP, 1600TP, 1610TP and 1650TP). **800/473-5422; www.pelican.com.**



Franklin Electric AG Series

## Franklin Electric centrifugal close-coupled pumps

The AG Series of centrifugal close-coupled pumps from Franklin Electric are designed for efficiency in challenging water transfer applications. Ten different models cover the most popular hydraulic performance ranges from 3 to 75 hp, flow ratings from 50 to 2,000 gpm, and heads up to 300 feet. Each pump is equipped with either a NEMA standard JM or JP motor for mechanical seal or packing gland configurations, both of which include a 416 stainless steel sleeve for extra durability and ease of service. **800/473-5422; www.franklinwater.com.**



Pure Technologies PureRobotics

## Pure Technologies robotic crawler

The PureRobotics inspection system from Pure Technologies is designed to carry sensors and tools up to 3.1 miles at 85 feet per minute in pipes with or without flow. The system, designed for water and wastewater applications, features HD digital, pan/tilt/zoom and closed-circuit television that delivers live video for detecting leaks and other anomalies in underground pipes. The crawler can be equipped with a variety of tools including an inertial measurement unit for XYZ mapping, 3-D LIDAR scanning tools, or pull condition assessment tools such as 2-D laser technology. The track feet are modular and can be changed out for different styles depending on the type of pipe. The chassis can also be expanded for large pipelines. **855/280-7873; www.puretechltd.com.**



Reelcraft Series L 70000

## Reelcraft spring-retractable reels

Series L 70000 spring-retractable cord reels from Reelcraft Industries are designed to accommodate up to 100 feet of 12-gauge cord. Steel construction and baked-on powdercoat finish combine for a heavy-duty, corrosion-resistant finish. The containerized drive spring offers safer and easier handling during maintenance. Two sealed ball bearings produce a smoother spool rotation and easier operation. All cord reels are UL-listed. **800/444-3134; www.reelcraft.com. ♦**



Wisconsin State Fair Park, Milwaukee, Wisconsin

# WEQFAIR

Wastewater Equipment Fair

PRODUCED BY COLE PUBLISHING

SEPT. 12-13, 2016 **MILWAUKEE**

Live demonstrations and operational equipment for the water and wastewater industries!

**\$20**

per person in advance

**\$30**

per person on site

Registration includes ear plugs and safety glasses!

**MONDAY**

September 12th

Fair Hours: 12 p.m. - 6 p.m.

**TUESDAY**

September 13th

Fair Hours: 8 a.m. - 2 p.m.

Outdoor Event - Rain or Shine



► Many hotel options close by: [wistatefair.com/wsfp/visitor-information](http://wistatefair.com/wsfp/visitor-information)

Pumper installer **PRO**

Cleaner **MUNICIPAL SEWER WATER** **GAS OIL & MINING CONTRACTOR** **tpo**

digDIFFERENT Plumber

View complete event details at:  
**WEQFAIR.COM**

Call 866-933-2653 for more info.

Federal Signal acquires Westech Vac Systems



Federal Signal Environmental Solutions Group, parent company of Vac-tor Manufacturing, acquired Westech Vac Systems, a leading provider of vacuum truck-mounted solutions. As a Federal Signal subsidiary, Westech will continue to operate in Nisku, Alberta, as Westech Vac Systems.

Raven Lining Systems earns USDA certification

Raven Lining Systems earned the USDA Certified Biobased Product Label for its AquataFlex 505 and 506 products. The label verifies that the products' amount of renewable biobased ingredients meets or exceeds levels set by the USDA. Both products deliver strong adhesion properties to properly prepared concrete, steel, aluminum, wood, composites and many other substrates.

Avanti International, US Grouts receive NSF certification

Ultrafine SD and Ultrafine ND cementitious grouts — manufactured by US Grouts and distributed by Avanti International — received NSF International certification as conforming to the requirements of NSF/ANSI Standard 61 for use in contact with potable water.

ServiceTitan reports record growth

ServiceTitan, a provider of cloud-based business management software, reported significant growth in 2015, adding a record number of employees and tripling its customer base. In 2015, the number of employees grew from 21 to 95.

Thompson Pipe Group – Flowtite names regional sales manager

Thompson Pipe Group — Flowtite named Dee Bryant regional sales manager. Bryant will be based in Houston and will focus on growing the success of Flowtite FRP across the South Central market.



Mark Lincoln

Draincables Direct names territory sales rep

Mark Lincoln has joined the sales team at Draincables Direct and will serve the Dallas territory. Lincoln has over 25 years of sales experience in the industry.

Hydro International to acquire Hydro-Logic

Hydro International conditionally agreed to acquire Hydro-Logic Limited and Hydro-Logic Services, known collectively as Hydro-Logic. Hydro-Logic was founded in 1985. Its products provide instrumentation and information systems for water environment monitoring applications.

Cityworks celebrates 20-year partnership with Esri

Esri president and CEO Jack Dangermond presented Cityworks with an award at the 2016 Esri Partner Conference in Palm Springs, California, recognizing the two companies' 20-year partnership. The award was received by the Cityworks executive team led by president and CEO Brian Haslam.

APWA appoints executive director

Scott D. Grayson was named executive director of the American Public Works and Canadian Public Works associations. He will lead the APWA and CPWA in the management and direction of strategic initiatives. Grayson is the associate managing director for the Institute of Electrical and Electronics Engineers based in the District of Columbia.

GapVax founders receive local honor



GapVax founder Gary Poborsky and his wife, Rose, were inducted into the Greater Johnstown Cambria County Business Hall of Fame in Johnstown, Pennsylvania. The GJCC Business Hall of Fame honors individuals who have made a lasting impression on the region through business contributions or efforts to improve the area. Poborsky founded GAP Pollution and Environmental Control in 1977. ♦

Beyond buckets and blades.

digDIFFERENT

FIND OUT HOW. FREE subscription at digdifferent.com

## DYE TRACERS

**NSF**  
Certified to ANSINSP 60

**Solutions for:**

- Infiltration
- Septic Systems
- Cross Connection
- Leaks and more...

# BRIGHT DYES

Division of Kingscote Chemicals

[www.brightdyes.com](http://www.brightdyes.com) • 1-800-394-0678

## Let Us Build Your JETTER

**Diesel Propane Gas**

**AMERICAN JETTER.COM**  
**866-944-3569**

## IndustrialOdorControl.com

A Broad and Economical Range of Odor Control Solutions

Pictured: Super Wolverine 8# Unit  
Patent # US 8,273,162

- Manhole Odor Inserts
- Pollution Control Barrels
- Activated Carbon
- Vapor Phase Adsorbers
- Septic Vent Filters
- Custom Solutions

Simple Solutions DISTRIBUTING LLC  
Makers of the Wolverine Brand of Odor Control Solutions

866-NO-STINK (866-667-8465)  
973-846-7817 in NJ

## Generator-Parts.com

Online parts breakdowns to help you troubleshoot and identify repair parts.

**FULL LINE OF GENERATORS AND OEM PARTS FROM:**

**GENERAC KOHLER Cummins Onan**

**MANY PARTS IN STOCK:**

- Filters
- Fuel System Components
- Starter Motors

- Replacement Gaskets
- Solenoids
- Much More!

Same day shipping on in-stock inventory orders placed before 4 p.m. CST.

Our large midwest inventory reaches most places in 2-3 business days via standard shipping.

Government and Military Quotations Welcome

Trained & Certified Repair and Installation Staff  
877-409-1618 • [sales@generator-parts.com](mailto:sales@generator-parts.com)  
**Generator-Parts.com**

## ROTATING TURBO NOZZLES

**\$39.99** 4500 PSI

**watercannon.com**  
800.333.9274

Made in Italy  
Industrial Duty

## Now That's Smokin'!

Tests up to 7500 cubic feet of pipe per minute

### Turbo Fog MH75

• Easy • Cost Effective • Compact •

**1.800.394.0678** [www.turbo-fog.com](http://www.turbo-fog.com)

**TECH TALK: CALCULATING PUMP TRASH CAPACITY**  
HUMAN WASTE, UNCONSCIOUSLY BASED ARE ASKIN TO HEART DISEASE  
SEWER, METTLEVILLE CELEBRATES COMPLETE TURNING OF COLLECTIONS SYSTEM

**STEPPING INTO THE FUTURE**  
SUEA CIESA invests in a new SCADA program and builds distribution efficiency with in-home repair and replacement

## Philmac UNIVERSAL TRANSITION COUPLINGS (UTC)

Connecting pipe sizes from 3/4" to 2"

- CTS PE & PEX
- PE IPS-OD
- PE SIDR 7 - 15
- Galvanized Steel
- Stainless Steel

- Steel
- Copper
- Lead
- PVC
- ABS

Rated 200psi @ 73°F and 150psi @ 100°F  
100% Lead Free

**HARCO Fittings**  
[www.harcofittings.com](http://www.harcofittings.com)  
(800) 825-7094

## Green Bison heavy duty degreaser

Superb product for grease control in collection systems. Emulsifies grease, improves high pressure cleaning performance. Highly recommended for cleaning/degreasing of tools, equipment and machinery. With Green Bison you do not have to trade efficiency for safety. Green Bison is a certified environmentally responsible product that utilizes natural and bio based ingredients, delivers industrial strength cleaning power while keeping your cost down.

Call us today **866-366-0587**

This product meets the Green Seal™ standard for cleaning/degreasing agents based on its reduced hazard to humans, reduced aquatic impacts, reduced smog production, and low ozone depletion potential.

[safetechemical.com](http://safetechemical.com)

Visit Us At

# ACE

ANNUAL CONFERENCE & EXPOSITION

Booth # 1641

## MUNICIPAL SEWER & WATER

[www.mswmag.com](http://www.mswmag.com)

GET EMAIL NEWS ALERTS FOR

## MUNICIPAL SEWER & WATER

Go to [mswmag.com/alerts](http://mswmag.com/alerts) and get started today!

## "Your One-Stop Stopper Shop!"

FOR 31 YEARS - HOME OF THE ORIGINAL PIPE PLUG & NB BAG/ PILLLOW DESIGN STOPPER

[ SINGLE SIZE OR MULTI SIZE PIPE STOPPERS 4" & UP ]

- » SINGLE & MULTI SIZE PASS THRU PLUGS
- » MULTI SIZE PLUGS & MULTI SIZE LEAK LOCATORS
- » SINGLE & MULTI SIZE TEST PLUGS
- » COMPLETE LINE OF SEWER & DRAINAGE TOOLS AVAILABLE

disc plugs | high pressure plugs | large inflatable pipe plugs | pipeline testing & acceptance plugs | pneumatic by-pass plugs

### SEWER EQUIPMENT CO. OF FLORIDA, INC.

NEW SMYRNA BEACH, FL  
IN FL 800.225.2952 | OUT OF FL 800.635.2323  
IN CANADA 800.328.3318

[www.SewerEquipmentCo.com](http://www.SewerEquipmentCo.com)

## CONFINED SPACE ENTRY PACKAGE

ONLY \$2,995

**The best package on the market includes:**

- 4-Gas Air Monitor
- 7' Tripod
- 3-Way Fall Protection
- Work Winch
- Full Body Harness

Add a Blower with 15' of duct for only \$350!  
Add a 5 Minute Escape Respirator for only \$500!

**MTECH** 800.362.0240  
[www.mtechcompany.com](http://www.mtechcompany.com)

## PEOPLE/AWARDS

The **City of Rockford** received the 2016 Stormwater Management Award from the Illinois Association for Floodplain and Stormwater Management for its overall efforts to improve stormwater management.

**Courtney Walker** was hired as the Douglas County (Nevada) stormwater program manager. Much of Walker's 10-plus years of experience with stormwater and watershed management came in the Tahoe and Carson River Watershed area.

The **City of Cedar Rapids** received a grant of nearly \$100,000 from the Iowa Department of Agriculture and Land Stewardship. The money will go toward funding the development of four Stormwater Best Management Practice pilot projects. Locations were specifically picked because they're outside school areas. The pilot projects are hoping to improve water quality by lowering the amount of pollutants that enter streams and waterways.

## LEARNING OPPORTUNITIES

### American Water Works Association

The AWWA is offering a webinar titled What You Need to Know About Climate Risks to Water Utility Infrastructure and Assets on Nov. 30. Visit [www.awwa.org](http://www.awwa.org).

### Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering Using WinSLAMM v.10.2: Meeting Urban Stormwater Management Goals R324 on May 5-6 and Oct. 6-7 in Madison. Visit <http://epdweb.engr.wisc.edu>. ♦

## CALENDAR

### June 15-17

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

### June 19-22

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

### July 3-6

Canadian Society for Bioengineering Annual General Meeting and Conference, Halifax World Trade and Convention Centre, Halifax, Nova Scotia. Visit [www.csbe-scgab.ca](http://www.csbe-scgab.ca).

### July 11-13

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

### July 17-20

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

### Aug. 22-25

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

### Aug. 28-31

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

### Sept. 12-14

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

### Sept. 28-Oct. 1

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

### Nov. 13-17

American Water Resources Association 2016 Annual Conference, Florida Hotel and Conference Center, Orlando, Florida. Visit [www.awra.org](http://www.awra.org).

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

**AMERICAN HIGHWAY PRODUCTS LTD.**  
RAISING AMERICA, ONE INCH AT A TIME

**PIVOTED TURNBUCKLE MANHOLE RISER**

The Most Efficient and Powerful Expanding Riser on the Market.

Riser heights 3/4" and up in all diameters. 1" diametric variance and DOT approved in most states.

Made in the USA

**INCLINED MANHOLE RISER**  
Now you can raise and tilt the manhole cover to match the grade of the road surface.

**Manhole Safety Ramp**

**Sewer Lid Seal Kit**

**Solid Rubber Adjusting Ring**

Toll Free 1-888-272-2397 • [www.ahp1.com](http://www.ahp1.com) • e-mail: [sales@ahp1.com](mailto:sales@ahp1.com) • Free Video/CD ROM

**It's your magazine.**

**TELL YOUR STORY.**

At **Municipal Sewer & Water**, we're looking for sewer and water departments with an interesting story to tell. If you'd like to share your story, send us a note at [editor@mswmag.com](mailto:editor@mswmag.com).

**MUNICIPAL SEWER & WATER**

# SOLD

## Sell your equipment in *Municipal Sewer & Water* classifieds

Reach over 36,000 potential buyers each month when you list your equipment in the classified section. Plus, your listing is placed automatically online at the *Municipal Sewer & Water* website. That's two ways to move your equipment out of the parking lot!

## Why wait?

Go to  
[mswmag.com/classifieds/place\\_ad](http://mswmag.com/classifieds/place_ad)



Scan the code with your smartphone.

## classifieds

see photos in color at [www.mswmag.com](http://www.mswmag.com)

### COVERS

POND & TANK COVERS: Industrial & Environmental Concepts makes gas-collection covers, odor-control covers, heat-retention covers and wildlife-protection covers. Call 952-829-0731 [www.ieccovers.com](http://www.ieccovers.com) (MBM)

### JETTERS



**US Jetting** Skid-Mounted Unit for Sale: 18gp/4,000psi, Gen II wireless remote control, 7-position swivel hydraulic power pull-out hose reel w/500 ft. Includes extra 320-gallon tank. Only 40 working hours. For pricing please contact:

[dlong@usbsec.com](mailto:dlong@usbsec.com)

M06

### POSITIONS AVAILABLE

Request for Qualifications - Sewer Tunnel Stabilization and Pipeline Replacement Project - \$50 million project over 5 years - South Coast Water District, Laguna Beach, CA - RFQ available on District website at [www.scwd.org/business/procurement/default.asp](http://www.scwd.org/business/procurement/default.asp) (M06)

Request for Proposals - Construction Manager - Sewer Tunnel Stabilization and Pipeline Replacement Project - \$50 million project over 5 years - South Coast Water District, Laguna Beach, CA - RFP available on District website at <http://scwd.org/business/procurement/default.asp> (M06)

GapVax, Inc., a nationally recognized manufacturing business, is seeking a talented, highly motivated individual to fill a full-time Sales Position in the Midwest (Iowa based preferred) region. GapVax is the leading manufacturer of industrial and municipal vacuum units and hydroexcavation units in the United States. We provide the most reliable, comprehensive, and efficient mobile vacuum units in the industrial and municipal markets. Specifications of the position are listed on our website, [www.gapvax.com](http://www.gapvax.com), click on the Now Hiring link in the left hand column. Send resumes to [Lthomas@gapvax.com](mailto:Lthomas@gapvax.com) or 575 Central Avenue, Johnstown, PA 15902. (MBM)

### PRESSURE WASHERS

Industrial Pressure Washer - New w/warranty \$9,500. 2,000psi, 18gpm. 999cc Kohler & AR pump. Will deliver. 321-800-5763 (MBM)

Honda horizontal GX engines, new in-the-box w/warranty. GX200QX - \$399; GX270QAG - \$579; GX390QA - \$599 delivered price. 800-363-9855 or [GXParts.com](http://GXParts.com) (MBM)

### RENTALS

Area/Velocity gravity flow monitor rentals. All inclusive software, rings, sensors, data loggers, \$350 meter/mo. Also have ADS Model#4000 meters and parts for sale. Call Mike 678-900-6805 (M06)

Liquid vacs, wet/dry industrial vacs, combination jetter/vacs, vacuum street sweeper & catch basin cleaner, truck & trailer mounted jetters. All available for daily, weekly, monthly, and yearly rentals. **VSI Rentals, LLC, 888-822-8648; [www.vsirentalsllc.com](http://www.vsirentalsllc.com).** (CBM)

### SERVICE/REPAIR

**Dynamic Repairs - Inspection Camera Repairs:** 48 hour turn-around time. General Wire, Ratech, RIDGID, Electric Eel Mfg., Gator Cams, Insight Vision, Vision Intruders. Quality service on all brands. **Rental equipment available.** For more info call Jack at 973-478-0893. Lodi, New Jersey. (MBM)

### TV INSPECTION

USED Envirosight ROWER System: Brand new RC90 camera. Cable reel (SN 360570) has new power supply, motor, clutch, cable (656') and winding rollers. 125 crawler (SN 0260768) has new top plate, side plates, axles and seals, plus new control board compatible with rear-view camera accessory (not included). CCU (SN 0160981) with new power card, new 56V card, new +/-26 card, and new card. Control pendant (SN 0492645) is compatible with RC90 camera and R225 crawler. \$27,500. Call 973-252-6700. (MBM)

**NEED TRACTION?** We make aftermarket more aggressive pads and chain assemblies for all chain-driven camera tractors. Custom, dependable, double-hole fabrication secured to high quality carbon steel chain, or just pads and rivets. Samples upon request. **Pipe Tool SpecialtiesLLC:** 888-390-6794; Fax 888-390-6670; [www.yourtractionpads.com](http://www.yourtractionpads.com) or email [pts4422@yahoo.com](mailto:pts4422@yahoo.com) (MBM)

Pearpoint Flexi-coiler p571 mk2 pushrod system (attached monitor) with p455 explosion-proof Twinview Flexiprobe color digital camera - auto-uprighting head. Two available. \$13,200 per unit. 412-384-9327 (C06)

# Increase the Efficiency and Quality of Your Cleaning and CCTV Operations

"The Standard of the Industry"



## TruVue™

The CUES TruVue™ Video Transmission System enables the jet truck operator to remotely view real time video generated from the CCTV inspection system, avoiding the potential for unintended collisions between the jet nozzle and the CCTV inspection camera. TruVue™ works with all manufacturers' video inspection systems, requiring an available video output and AC power.

### SAVE WORK

CCTV truck can remain at one entry point while the jet truck can move from manhole to manhole, decreasing set up time and enabling the inspection of multiple cleaned pipe sections from one access point.

### SAVE TIME

Easy to use – set up within a few minutes.

### SAVE MONEY

Use for any operation where remote video monitoring is beneficial, including point repair and other rehabilitation processes.

[www.cuesinc.com](http://www.cuesinc.com) • 800.327.7791 • [salesinfo@cuesinc.com](mailto:salesinfo@cuesinc.com)

**Contact CUES for a free demo!**



Combination JetVacs, Hydro Excavators, Air Movers,  
Skid-mounted Vac Units .....all custom built for you.  
Our equipment is easy to operate and maintain,  
versatile, long-lasting and outperforms.

**Call today for your demo!**



ASK ABOUT OUR  
ADVANCED SYSTEM!



DEER PARK, TX  
281-884-8658

JOHNSTOWN, PA  
888-442-7829

CHECK OUT OUR PARTS CATALOG AND AVAILABLE EQUIPMENT AT [WWW.GAPVAX.COM](http://WWW.GAPVAX.COM)

Everyone at Vac-Con, all of our friends, partners, associates and industry followers mourn the tragic death of our dear friend and dealer Dave Berube. He was killed, along with his friend Dana Parenteau, and his associate, Ben Bridges in an airplane accident on Long Island. Dave was the proprietor of New England Municipal Equipment Company, the very first Vac-Con dealer. For more than 30 years, Dave represented our products in the New England territory, and his engaging smile, friendly demeanor and can do attitude will be missed by everyone he touched. He loved life and all it had to offer. He was involved in motor sports, including automobile racing, motorcycles and snowmobiles; if it had an engine, he liked it. He was an experienced and skilled pilot, having logged many thousands of hours in the air.

But most importantly, he was our friend, our business associate and our partner. We did a lot of business together and had a lot of fun together; we laughed, we cried, we argued, we agreed, we fought, we made up. We miss all of those moments, Dave and wish you were still here. Wherever you have gone, we bid you Godspeed, and our thoughts are with you. Your memory will be cherished by us all.



Pictured: L-R Dave Berube and Darrell LeSage, President, Vac-Con, Inc.