

TREATMENT PLANT OPERATOR

tpo™

DEDICATED TO WASTEWATER & WATER TREATMENT

tpomag.com
JUNE 2018

IN MY WORDS:

**Helping veterans join
the water professions**

PAGE 26

Tackling All Obstacles

**DEVIN SNYDER SUCCEEDS WITH A SKILLED TEAM,
ABUNDANT EXPERIENCE, AND A SUPPORTIVE MANAGER**

PAGE 40

**HEARTS AND MINDS:
Outdoor learning for
kids in Georgia**

PAGE 36

Devin Snyder
Manager of O&M
Laurel, Miss.

**TECHNOLOGY DEEP DIVE:
Leak detection from space**

PAGE 34

Blue-White
Is Now
ISO 9001:2015
Certified

ProSeries-M®

See Us at
ACE18
June 11-14
BOOTH
17101

PRECISION CHEMICAL METERING

FOR THE TREATMENT OF MUNICIPAL
WATER & WASTEWATER



MD-3

HYBRID DIAPHRAGM METERING PUMP

MD-3 DELIVERS A NEW LEVEL OF PERFORMANCE
AND FUNCTION IN CHEMICAL METERING.

PRECISE TURNDOWN	✓ 2,000:1
VARIABLE FLOW RATE	✓ .03-58 GPH (.11-219.6 LPH)
VARIABLE WORKING PRESSURE	✓ Up to 145 psig (10 bar)
SMOOTH CHEMICAL DOSING	✓ No Pulsation Dampener Needed
EASY ORDERING	✓ Single Model Number Handles All Your Needs
DIAFLEX® EQUIPPED	✓ A Blue-White® Exclusive
PATENTED	✓ Multiple U.S. and International Patents Pending



CHEM-FEED® SINGLE AND DUAL PUMP SKIDS

ENGINEERED SKID SYSTEMS

DESIGNED AND ENGINEERED USING SOLID
MODELING TOOLS FOR SUPERIOR QUALITY AND EASY
COMPONENT MAINTENANCE.

EASY INSTALL

- ✓ Drop it in place and make your connections / Wall mountable / Small footprint design

PROVEN COMPONENTS

- ✓ Vented ball valves, PRV (pressure relief valve), gauge guards, and metal free check valves

FLOW INDICATOR

- ✓ Provides a visual indication of chemical movement through the system

CALIBRATION CYLINDER

- ✓ Self filling cylinder, does not require chemical level in supply tank be above calibration cylinder for filling



PRECISION CHEMICAL METERING FOR OVER 60 YEARS

Blue-White

www.proseries-m.com • www.blue-white.com

5300 Business Dr., Huntington Beach, CA 92649 USA • 714-893-8529 • sales@blue-white.com

Online Fluoride Monitor

Keep Fluoridation Under Control



Continuous monitoring of fluoride concentrations in drinking water ensures that chemical feed equipment is functioning properly.

FEATURES

- Automatic 2-point calibration
- Two 4-20 mA analog outputs for fluoride and temperature
- Simple to operate and maintain

FilterSmart™

EchoSmart Interface Level Analyzer



FilterSmart is the only instrument bundle designed specifically and uniquely for filter backwashing.

FEATURES

- Reduce water consumption
- Ensure proper media expansion
- Minimize media loss with online monitor

Residual Chlorine Monitor

Free or Combined Chlorine



The Q46H system uses a polarographic membraned sensor to measure chlorine directly, without the need for chemical reagents.

FEATURES

- Dual Chlorine/pH Monitoring
- Economical Operation
- No reagents or moving parts

Free Ammonia Monitor

Proven Measurement Approach



The Q46N uses reaction chemistry that converts ammonia in solutions to a stable monochloramine compound equivalent in concentration to the original ammonia level.

FEATURES

- Free Ammonia and Monochloramine Measurement
- Low Cost of Ownership
- Free NH_3 and Monochloramine Measurement

Turbidity

Highly Sensitive Turbidity Measurement



Turbidity measurement in raw water, filter effluent, wastewater effluent, or industrial process water can be accommodated with the Q46/76 Turbidity Monitor.

FEATURES

- US EPA 180.1/ISO 7027 Compliant
- Low & High range measurement with the same instrument
- Flowcell or submersible sensor

Toxic Gas Transmitter

Hart™ or Modbus™ Interface



With the F12 Transmitter, monitoring toxic gases in the workplace has never been easier.

FEATURES

- Accepts up to 32 different toxic gas sensors
- Loop-Powered Transmitter or AC Power with Relays
- Exclusive "Auto-Test" sensor self-test option

Introducing the all new MetriNet!



MN
metrinet
multi-parameter monitoring

- The first Low-Power Multiparameter Monitor for Water Distribution Systems
- User Configurable for up to 8 Measuring Nodes
- Data can be uploaded to cloud-based storage for easy viewing
- Options for cellular modem, Wi-Fi, or wired Modbus, Ethernet/IP, or Profibus DP

VISIT US AT ACE18! BOOTH #22131

ATI
ANALYTICAL TECHNOLOGY, INC.

www.entechdesign.com

www.analyticaltechnology.com

800-959-0299



The closed bag system for screenings, grit and sludge screenings.

- Mounts to existing equipment.
- Increased odor control.
- Minimized mess.
- Very robust, 90m (295') long continuous feed, non-porous, polythene bag.
- Over 20,000 installations worldwide.

Visit www.paxxo.us for more information.



PAXXO (USA) INC. 1924 Millard Farmer Road, Newnan, GA 30263
www.paxxo.us Tel +1 770 502 0055 Fax +1 770 502 0088

FREE INFO – SEE ADVERTISER INDEX

letters

Obstacles to STEM Education

I agree wholeheartedly with your analysis of the STEM-related challenges attached to the “brain drain” in our profession, especially the dearth of quality instructors and the overcoming of nerd/geek biases (“The Roots of the STEM Student Shortage,” *TPO*, May 2018).

However, I would add another more overarching, more widespread influence that I believe is directly involved in influencing all those other factors: The disturbing societal skepticism of scientific knowledge in general, as perhaps best exemplified by climate-change deniers and the “moon landing was fake” crowd, for whom I confess I have little to no patience.

Until this alarming anti-science attitude is addressed and corrected, I foresee further difficulties in filling the science-based positions in our line of work.

Russ Higgins
Instrumentation Technician
American Water Enterprises
Duvall, Washington

Like something? Hate something? Agree? Disagree?

Share your opinions about *TPO* articles through our Letters to the Editor.

Send a note to editor@tpomag.com | **tpo**

advertiser index

JUNE 2018

	FREE INFO		FREE INFO
AdEdge Water Technologies, LLC 11	<input type="checkbox"/>	Komline-Sanderson 61	<input type="checkbox"/>
AERZEN 15	<input type="checkbox"/>	Levisand 51	<input type="checkbox"/>
Airmaster Aerator LLC 8	<input type="checkbox"/>	MELTRIC Corporation 61	<input type="checkbox"/>
AIIMax Software, Inc. 47	<input type="checkbox"/>	Myron L Company 7	<input type="checkbox"/>
American Water Works Association 53	<input type="checkbox"/>	PAX Water Technologies 5	<input type="checkbox"/>
Analytical Technology, Inc. ... 3	<input type="checkbox"/>	Paxxo 4	<input type="checkbox"/>
Aqua-Aerobic Systems, Inc. 61, 63	<input type="checkbox"/>	Pulsed Hydraulics, Inc. 61	<input type="checkbox"/>
Asahi/America, Inc. 29	<input type="checkbox"/>	Red Valve Co. / Tideflex Technologies 25	<input type="checkbox"/>
Aurora Water 35	<input type="checkbox"/>	SAF-T-FLO Chemical Injection 29	<input type="checkbox"/>
BDP Industries 21	<input type="checkbox"/>	SEEPEX. ALL THINGS FLOW SEEPEX Inc. 21	<input type="checkbox"/>
Bionetix International 57	<input type="checkbox"/>	Siemens Industry Process Instrumentation back cover	<input type="checkbox"/>
Blue-White Industries 2	<input type="checkbox"/>	Simple Solutions Distributing 61	<input type="checkbox"/>
BOHN BIOFILTER 39	<input type="checkbox"/>	Southern Valve & Fittings USA, Inc. 61	<input type="checkbox"/>
Brentwood Industries, Inc. ... 17	<input type="checkbox"/>	USP Technologies (US Peroxide) 59	<input type="checkbox"/>
Bright Technologies, Division of Sebright Products, Inc. ... 59	<input type="checkbox"/>	Vaughan Company, Inc. 27	<input type="checkbox"/>
FLOWROX Flowrox, Inc. 17	<input type="checkbox"/>	Watson-Marlow Fluid Technology Group 55	<input type="checkbox"/>
Force Flow 57	<input type="checkbox"/>	YSI, a Xylem brand 47	<input type="checkbox"/>
Howden Roots 53	<input type="checkbox"/>	CLASSIFIEDS 61	
Huber Technology, Inc. 9	<input type="checkbox"/>		
JDV Equipment Corporation 55	<input type="checkbox"/>		
Keller America Inc. 45	<input type="checkbox"/>		
Kifco, Inc. 61	<input type="checkbox"/>		

FREE Information from Advertisers (check the Free Info boxes above)

PRINT NAME:	TITLE:	
FACILITY NAME:		
MAILING ADDRESS:		
CITY:	STATE:	ZIP:
PHONE:	CELL PHONE:	
FAX:	EMAIL:	

Scan and email to: nicole.labeau@colepublishing.com / Fax to: 715-546-3786
 Mail to: COLE Publishing Inc., P.O. Box 220, Three Lakes WI 54562

TEN THOUSAND INSTALLATIONS AND COUNTING: RELIABILITY IN POLYMER ACTIVATION



POLYBLEND®
M-SERIES



DYNABLEND™
L4-P/L6-P

NEW EQUIPMENT | REPLACEMENT PARTS | ON-SITE SERVICES | REPLACEMENT EQUIPMENT

POLYBLEND® AND DYNABLEND™ THE BIGGEST BRANDS IN POLYMER ACTIVATION FROM UGSI CHEMICAL FEED

- Both Polyblend® and Dynablend™ polymer blending systems have defined efficient polymer activation for over 30 years.
- Both systems are optimized using the science of polymer activation which dictates high energy activation followed by a transition to a quiescent polymer expansion zone.
- Production and demonstration units are available for shipment today. Call us and let's make your polymer work harder.

See Us At
ACE18
Booth 29020

www.ugsichemicalfeed.com
Toll Free: (855) 669-3845

 **UGSI Chemical Feed**
SOLUTIONS



on the cover

Devin Snyder didn't start out as an operator, but as a maintenance technician at the Savanna Street Wastewater Treatment Plant in Jackson, Mississippi. Today, Snyder is manager of operations for two wastewater treatment plants and oversees maintenance for three water treatment plants in Laurel, Mississippi. (Photography by Chuck Cook)

top performers:

WASTEWATER PLANT Page 18

The Whole Enchilada

When a stepwise approach to a plant upgrade fell short, a New York village opted for complete engineered solution.

By Ted J. Rulseh

WASTEWATER OPERATOR Page 30

A Quick Climb Up the Ladder

Herlon J. Fayard Jr. applies effective training, personal conviction and people-oriented management to achieve award-winning results.

By Jim Force

WATER/WASTEWATER OPERATOR Page 12

'Everyday' Leader

Jeff Pippel uses plain-spoken management skills and a sharp mentoring focus to build an award-winning career at West Virginia water and wastewater plants.

By Jack Powell

WASTEWATER OPERATOR Page 40

Tackling All Obstacles

Award-winning wastewater plant supervisor Devin Snyder succeeds with a skilled team, maintenance and electrical experience and a supportive manager.

By Trude Witham

LETTERS Page 4

LET'S BE CLEAR Page 8

Bang for the Buck

Cost-benefit analysis can play an important role in making decisions about water and wastewater plant improvement projects.

By Ted J. Rulseh, Editor

@TPOMAG.COM Page 10

Visit daily for exclusive news, features and blogs.

HOW WE DO IT: WATER Page 16

A Hot Breath of Air

A cleverly rigged portable kerosene heater helps crews in a Kentucky city deal effectively with freeze-ups in water meters and services.

By Ted J. Rulseh

PLANTSCAPES Page 24

Painted Streets, Green Roofs

Rooftop planting, storm drain painting and residential rain barrels spotlight initiatives to control runoff in Richmond.

By Jeff Smith

IN MY WORDS Page 26

A Perfect Fit

An initiative in New England looks to match military veterans seeking careers with attractive opportunities in the water professions.

By Ted J. Rulseh

TECHNOLOGY DEEP DIVE Page 34

Eye in the Sky

Satellite-based technology helps water utilities find and fix distribution and transmission leaks more cost-effectively.

By Ted J. Rulseh

HEARTS AND MINDS Page 36

Into the Outdoors

Cubihatcha Kids program teaches third-graders about watersheds, water quality and water conservation in a natural setting in Henry County.

By Ted J. Rulseh

HOW WE DO IT: WASTEWATER Page 38

Pumping Up Reliability

Progressive cavity pumping solves a Florida wastewater treatment plant's biosolids cake conveyance problem.

By Richard M. Schoenborn, P.E., and Bill Martiniere

SUSTAINABLE OPERATIONS Page 44

Nearing Neutrality

A Chicago-area district has net-zero energy in sight for its wastewater treatment plant through efficiency improvements and biogas production augmented by FOG.

By Steve Lund

PRODUCT FOCUS Page 48

Odor Control and Disinfection

By Craig Mandli

CASE STUDIES Page 54

Odor Control and Disinfection

By Craig Mandli

INDUSTRY NEWS Page 57

PRODUCT NEWS Page 58

Product Spotlights:

Wastewater: Clearing the FOG

Water: Optimizing flow measurement

By Craig Mandli

WORTH NOTING Page 62

People/awards; Events

coming next month: July 2018

FOCUS: Pumps, Drives, Valves, Blowers and Distribution Systems

» Let's Be Clear: The passionate centrist

» Top Performers:

Wastewater Plant: North Platte (Nebraska)

Wastewater Treatment Plant

Wastewater Operator: Mark Houle, South Huron Valley, Michigan

Wastewater Plant: Pascagoula (Mississippi)

Wastewater Treatment Facility

Water System: City of Norton, Kansas

» How We Do It: Fast-track valve refurbishment in Los Angeles

» Sustainable Operations: Cutting power demand in Waterbury, Vermont

» PlantScapes: Art with a message in Boynton Beach, Florida

» Hearts and Minds: Write-Off story contest in Southern California

» Technology Deep Dive: Modular chemical feed systems

OVER **60** YEARS

Coming Soon 900 Series

Multi-Parameter Monitor/Controller

Conductivity, Resistivity, TDS,
pH, ORP, Salinity, ISE, Flow,
Pressure, with Touch Screen LCD
+more!



Ultrapen PTBT1, PTBT2 and PTBT3
Smartphone/Tablet Compatible Tester

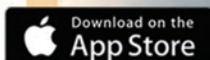


Compatible with
Android and iOS Devices.

AWWA Booth# 20067



www.myronl.com
760-438-2021

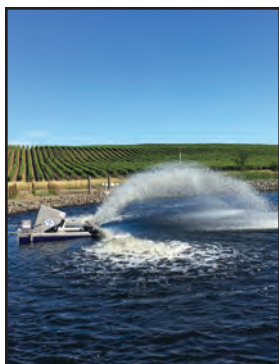


FREE INFO - SEE ADVERTISER INDEX



INFUSION AERATION.

Technology Raises D/O Levels and Saves Energy.



Our new infusion aeration technology aerators improve treatment efficiency and provide maximum mixing, while dramatically raising the dissolved oxygen levels. Using low h.p. motors enables huge energy savings. Call us today for complete details.



888-813-3680 • www.airmasteraerator.com

FREE INFO – SEE ADVERTISER INDEX



DEDICATED TO WASTEWATER & WATER TREATMENT PROFESSIONALS

Published monthly by COLE Publishing, Inc.

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

Call toll free 800-257-7222 / Outside of U.S. or Canada call 715-546-3346

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

Website: www.tpomag.com / Email: info@tpomag.com / Fax: 715-546-3786

SUBSCRIPTION INFORMATION: A one year (12 issues) subscription to TPO™ in the United States and Canada is FREE to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that partakes in the consulting, design, installation, manufacture, management or operation of wastewater and water treatment facilities. To subscribe, return the subscription card attached to each issue, visit tpomag.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 and \$150 per year to all other foreign countries. To subscribe, visit tpomag.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 and Discover are also accepted. Include credit card information with your order.

ADDRESS CHANGES: Submit to TPO, P.O. Box 220, Three Lakes, WI 54562; call 800-257-7222 (715-546-3346); fax to 715-546-3786; or email nicole.labeau@colepublishing.com. Include both old and new addresses.

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.

ADVERTISING RATES: Call 800-994-7990 and ask for Phil or Kim or email phil.hahn@colepublishing.com or kim.bruss@colepublishing.com. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.

EDITORIAL CORRESPONDENCE: Address to Editor, TPO, P.O. Box 220, Three Lakes, WI 54562 or email editor@tpomag.com.

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

CIRCULATION: 68,746 copies per month.

© 2018 COLE PUBLISHING INC.

No part may be reproduced without permission of publisher.



let's be clear

Bang for the Buck

COST-BENEFIT ANALYSIS CAN PLAY AN IMPORTANT ROLE IN MAKING DECISIONS ABOUT WATER AND WASTEWATER PLANT IMPROVEMENT PROJECTS

By Ted J. Rulseh, Editor



All environmental improvements come at a cost. The question that's not always answered and sometimes not even asked is: At what cost exactly and to what benefit? And after that: Does the benefit justify the cost?

The cost versus benefit question comes up at various times in wastewater treatment, perhaps most often as it relates to nutrient removal. Phosphorus discharges into streams and lakes can seriously degrade water quality, feeding excessive growth of weeds and algae. In marine waters, nitrogen loadings have been responsible low-oxygen dead zones in Chesapeake Bay and the Gulf of Mexico, and elsewhere.

The nutrients come from various sources: urban stormwater, agricultural runoff, wastewater treatment plant effluent, and natural processes. The question then becomes: What is the most cost-effective way to mitigate the problem? In other words, what remedies will create the biggest bang for the buck?

Similar questions can also arise around whether a clean-water agency should reclaim water to use for landscape irrigation, industrial process water, groundwater recharge, or potable reuse — direct or indirect.

AVOIDING EXTREMES

Discussions on such issues often slip into arguments between extremes. On one side are industries affected by proposed regulations, claiming that the cost of compliance will drive them out of business and cost hundreds or thousands of jobs. On the opposite side are environmental advocates, claiming that without extremely strict regulations, precious resources will be destroyed and lost for all time.

That's a caricature, of course, but we've all seen such arguments play out to some degree. Fortunately, there's a better way, and it goes by the name of cost-benefit analysis. Not every issue can be broken down purely into dollars and cents, but if sound policy is to be made, then economics must be part of the discussion.

On the question of nutrients, notably phosphorus, there has been good progress in that direction. Regulators' first instinct was to impose strict effluent phosphorus limits on clean-water plants. Plant upgrades to meet those limits can

cost many millions of dollars, even for small communities — and may not make a big dent in the total phosphorus entering the water from all sources.

OUTSIDE THE BOX

So enlightened regulators asked: What if we gave utilities the option to address other, larger phosphorus sources? And so the concept of adaptive management was born. Now in some states, instead of upgrading a treatment plant, a utility can work with farms and communities upstream to reduce phosphorus from nonpoint sources by an agreed-upon amount. More good gets done for less money.

That's an example of cost-benefit analysis being put to work. But more generally speaking, what's involved in such an analysis? Here's an example from the world of water reclamation and reuse for farm irrigation that I found in a paper published in the International Journal of Environmental Protection and Policy (www.ijepp.org).

Not every issue can be broken down purely into dollars and cents, but if sound policy is to be made, then economics must be part of the discussion.

On the cost side of the ledger were the land required, the treatment works, the piping, the conveyance system for delivering the water to farms, and the costs to operate and maintain the system. On the benefit side of the ledger were:

- Resources gained from supplying moisture and nutrients to the crops.
- The agricultural benefit from improved crop production.
- The benefits from jobs created by the treatment works and the irrigation system.
- The environmental benefits of reduced pollutant loading to waters, improved public health and lower impact on downstream aquatic ecosystems.

That last item isn't easy to translate into dollars and cents. Still, the paper gives a good example of how a cost-benefit analysis can be conducted for any project involving environmental regulation.

The paper in question is titled, "Development of a cost-benefit analysis approach for water reuse in irrigation." You can read it if you want more detail. What do the costs and benefits look like for the next project you plan to undertake at your facility? **tpo**



Like something? Hate something? Agree? Disagree?

Share your opinions about *TPO* articles through our Letters to the Editor.

Send a note to editor@tpomag.com | **tpo**

PUT THE SUN TO WORK



SRT Solstice Solar Active Dryer

Cost effective volume reduction

Solar designs for most latitudes

Combinations possible to
augment with waste heat

See how it works at:

huberforum.net/SRT

solutions@hhusa.net
704-990-2053

Linear feed allows
fill as you dewater

HUBER
TECHNOLOGY
WASTE WATER Solutions

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



OVERHEARD ONLINE

"You can't sit out on your porch. Kids can't go outside and play, and God help us if it gets hot and this material is still out here."

Trainloads of Stranded Biosolids Causing a Stink in Alabama
tpomag.com/featured

PUBLIC ENGAGEMENT

Creating Opportunities

One of the biggest challenges all utilities face is garnering public support, whether for capital improvement or rehabilitation and repair. Tim Murphy, executive director of the Albany County (New York) Water Purification District, recently got the chance to spread the district's message to a wide audience in a local radio broadcast. See how he made this most of the opportunity in this online exclusive story.

tpomag.com/featured



COLLECTIONS SYSTEM

Fighting Drug Abuse

A collections system playing a role in the fight against drug abuse? That's what is happening in Cary, North Carolina. The town is setting up a system that will test wastewater from clusters of about 5,000 people to identify what drugs are being used. The data will be made available to outside researchers for analysis, and it could drive how the town goes about implementing programs to combat opioid abuse as well as monitoring how effective programs are.

tpomag.com/featured



PROMOTING THE INDUSTRY

Finding Young Workers

The Lakehaven Water and Sewer District in Washington is collaborating with Federal Way Public Schools to introduce the wastewater industry to middle and high school students contemplating careers. Last fall, more than 40 students attended a program at the district's Lakota Wastewater Treatment Plant. The district's commissioners are looking for ways to promote the industry to students who are still deciding career paths.

tpomag.com/featured



**Emails
& Alerts**

Visit tpomag.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

Facebook.com/tpomag Twitter.com/tpomag



ARSENIC IS **NOT** A GAME

Ready to make the right move?

AdEdge is your one-stop resource for arsenic treatment systems for any size community. We now supply Bayoxide E33 adsorptive media and E33 media replacements for the largest and the smallest systems. As always, AdEdge offers competitive pricing, experienced engineers, and unparalleled support.

With AdEdge's arsenic treatment systems' global success history, why would you go anywhere else?

When you're ready to make the right move, call us at **866.823.3343**.



www.AdEdgetech.com



Team members at Jefferson Utilities include, from left, Greg Williams and Timmy Tumblin, operators; Stephanie Reel, general manager; and Jeff Pippel, operations manager.



“I found water and wastewater an ideal career because of the opportunity to serve the public and provide clean, safe water.”

JEFF PIPPEL



The main office building for Jefferson Utilities in Kearneysville, West Virginia.

**Jeff Pippel,
Jefferson Utilities,
Kearneysville, West Virginia**



POSITION: | Operations manager

EXPERIENCE: | 25 years

DUTIES: | Oversee water and wastewater operations;
supervise three operators

EDUCATION: | Associate degree, ecology and
environmental technology, Paul Smith's
College (New York); bachelor's degree,
environmental studies, East Stroudsburg
University (Pennsylvania)

CERTIFICATIONS: | Grade III Water Operator;
Grade III Wastewater Operator;
backflow certification

GOALS: | Stay with Jefferson Utilities, and serve the
community until retirement

GPS COORDINATES: | Latitude: 39°20'51.41"N;
Longitude: 77°52'29.82"

'EVERYDAY' LEADER

JEFF PIPPEL USES PLAIN-SPOKEN MANAGEMENT SKILLS AND A SHARP MENTORING FOCUS TO BUILD AN AWARD-WINNING CAREER AT WEST VIRGINIA WATER AND WASTEWATER PLANTS

STORY: **Jack Powell** | PHOTOGRAPHY: **John Canan**

DEPENDABLE. DEDICATED. EASY-GOING. AWESOME. THOSE ARE some labels executives and direct-reports apply to Jeff Pippel, operations manager for Jefferson Utilities, which operates 12 water treatment plants and three wastewater treatment facilities in the eastern panhandle of West Virginia.

A 25-year industry veteran, Pippel draws rave reviews for his work ethic, self-effacing manner, and commitment to operator training — so much so that he received the 2016 Perkins-Boynton Award from the West Virginia Section of the American Water Works Association and the West Virginia Bureau of Public Health. The award came in the Small System category, for utilities serving less than a 3,300 population.

AWWA officials say the award, named for the Mountain State's first certified public water service operator, goes to active licensed plant operators who have demonstrated exemplary ability in water plant operation and showed desire to increase their water treatment knowledge.

LOW-KEY STYLE

Shrugging off the praise, Pippel was thrilled to hear that he'd won the prize: "The state health inspectors nominated me, which was quite an honor. It definitely wasn't on my radar, and I'm really grateful to them and to my bosses and operators. It's their award as much as mine."

Such quiet candor is typical of Pippel, who grew up in Hatboro, Pennsylvania, a borough of 7,400 near Philadelphia, and graduated from Upper Moreland High School. In 1989 he earned an associate degree in ecology and environmental technology from Paul Smith's College near Lake Placid, New York. While there, he worked at a wastewater treatment plant. Two years



Jeff Pippel, operations manager

later, he received a bachelor's degree in environmental studies from East Stroudsburg University in Pennsylvania.

In 1992, he joined Snyder Environmental Services, a private company in Kearneysville, West Virginia, that does construction and contract operations for water and wastewater utilities. Pippel largely focused on wastewater and landfill treatment. When owner Lee Snyder formed the sister company Jefferson Utilities in 1995, Pippel moved over to water treatment operations and became a mainstay.

STEPS TO SUCCESS

For CEO Snyder, whose family has been in the water and wastewater business since 1966, hiring Pippel was a total win-win. Since 1979, Snyder Environmental Services has grown to \$20 million in business annually, with 90 employees in six states and the District of Columbia, and on the utilities side to about \$2 million a year and 14 employees.

"Jeff is a very dependable operator who really knows what he's doing," Snyder says. "He has been an important part of our growth for all of the years he's been with us. Beyond his broad knowledge and technical skills, Jeff is an excellent mentor and teacher, and that makes him a great asset."

Pippel sees things a bit differently: "I found water and wastewater an ideal career because of the opportunity to serve the public and provide clean, safe water. The hard part is getting the younger generation to step up and commit to the business. Many want careers that are more glamorous. That's why I try to be a good boss and mentor, so they'll see how much opportunity the industry offers."



The management team at Jefferson Utilities includes, from left, Stephanie Reel, general manager; Jeff Pippel, operations manager; and Lee Snyder, owner.

“Jeff is a dedicated employee, no matter the situation — good, bad, or indifferent. He has helped our system work so much better than it had. He’s easygoing and a lot of fun to work with.”

STEPHANIE REEL

NONSTOP EFFORT

As chief operator, Pippel has helped Jefferson Utilities dramatically improve small water treatment facilities that were once failing and in receivership, to the point where they’re now thriving. The six water plants under his direction are: Walnut Grove (886,000 gpd), Deerfield Village (57,600 gpd), Mountain System (202,000 gpd), Deerwood (72,000 gpd), Apple Orchard Acres (5,000 gpd) and Cacapon State Park (72,000 gpd).

The groundwater system comprises a network with 18 wells that serve customers, including residential subdivisions, schools, hotels, RV parks, industrial parks, restaurants, and retail and manufacturing businesses. Most of the treatment plants are chlorination-based. In a cost-saving coup for the county, Pippel in 2015 acquired and installed a secondhand 40 gpm MEM-COR membrane system (Evoqua Water Technologies) for the Deerfield Village plant. Its well had been designated by the state Health Department as “under the influence” of groundwater, thereby requiring filtration, which also included new membranes and controllers.

At the Cacapon State Park facility, Pippel and his team put in greensand water filters, without any rate increase, to help with manganese removal. They did a similar greensand filter installation for the Mountain System’s Harris Campsites and Keyes Ferry Acres treatment facilities to address iron and manganese issues that a seques-



Jeff Pippel and Greg Williams discuss a utility mark-out.

MENTORSHIP AND LEADERSHIP, PIPPEL STYLE

For 25 years, Jeff Pippel has made mentorship and leadership priorities at Snyder Environmental Services and later at Jefferson Utilities, where he applies commonsense principles to get the most out of water and wastewater operators. Here are his thoughts on bringing out the best in team members:

- Talk to the people, learn their skills and try to enhance those qualities.
- Lead the team toward a goal, and see how they develop their thoughts and actions to achieve it.
- Help team members understand how everything interacts and how the whole process works.
- Have a grasp of the process so that if something goes awry, you can help the team fix it.

As for leadership, Pippel is straightforward: “A good leader is someone who listens to other people on the team and understands that he might not have all the answers, or that someone might have a better one. Somebody else might see something differently than you do and have a fresh perspective. A new set of eyes just might see something that was overlooked.”

How has Pippel done as a mentor and boss? Pretty well, according to his boss and operators. “Jeff provides good mentorship to those who work for him, including new guys and those with experience,” says Stephanie Reel, general manager. “He works with his operators every day and makes sure he always answers their calls, responds to their questions and gets the answers they need.”

Operator Greg Williams says, “He’s great about getting me answers, no matter how busy he is. Plus, he’s been a big help as I prepare to get my certification.”

Operator Joey Carter adds, “Jeff is real good at explaining things and helping people learn the job. That’s what he did for me. He can make you understand just about anything connected with our water and wastewater operations. He goes above and beyond what’s required to help us succeed.”

tering agent couldn't solve. In fact, the Keyes Ferry Acres didn't even feed chlorine into its treatment systems. Pippel had to find chlorine contact tanks and start feeding them. Customers thanked him; one says, "Thanks to this, our kids' ear infections went away."

In addition, the team recently completed a 16-inch waterline extension and installed a third water tank in Jefferson County to support a \$150 million expansion of ROXUL, a Canadian maker of insulation, sound absorption materials and adhesives for the construction industry.

QUALITY WATER, QUALITY BOSS

Maintaining high-quality water permeates everything Pippel does, from taking water samples to test for nitrates, inorganics, volatile organic compounds, lead and copper, and others, to doing maintenance and even some plumbing and electrical work. In 2015, when the waterlines for one of the mountain systems broke during a cold snap, Pippel and his operators spent the entire weekend finding and repairing the leaks, eventually installing an entirely new water main.

"Jeff is a dedicated employee, no matter the situation — good, bad, or indifferent," says Stephanie Reel, Jefferson Utilities general manager. "He has helped our system work so much better than it had. He's easygoing and a lot of fun to work with. He's got a great personality. Jeff works closely with the three operators who report to him to make sure the system is running as efficiently as it can."

Reel credits Pippel's broad knowledge and inclusive management style for his and the company's success: "Jeff works with the Health Department nearly every day and knows what needs to be done in terms of maintaining compliance. When new employees come on and want to learn water treatment or wastewater operations, he's the one they turn to because he knows so much and can guide them. He understands how to build employees up and help them grow."

MANAGING A BIG PROJECT

At present, Pippel is too busy to acknowledge the kind words. He's overseeing a major upgrade of the Walnut Grove system that will feature state-of-the-art membrane filtration and is expected to come online in 2020. The new plant, which Pippel calls "the Taj Mahal of our system," will be in Charles Town, about 10 minutes from Kearneysville, at an existing subdivision. Basically, Jefferson Utilities is transforming its present plant into an entirely new facility. The new plant covers 6,000 square feet and has six membrane filtration units. Once it is up and running, the old plant will be taken down.

Once the upgrade is done, the Walnut Grove system and its 1,845 customers will be interconnected with the neighboring Burr water system (415 customers) and the Deerfield Village system (41 customers). The interconnection will enable Jefferson Utilities to supply all lower Shenandoah Valley customers from both of its 510,000-gallon water towers and will provide a backup water source in case one well has to be shut down for an accident or spill that could endanger public safety.

"We're really excited about the new plant," Pippel says. "There are a ton of details to be worked out with a project of this size to make sure we keep costs under control and keep the existing system functioning for our customers."

WORK-HOME BALANCE

When not troubleshooting, managing, or mentoring, Pippel enjoys photography, traveling, and spending time with his wife, Julie, retired in 2016 from her job as director of the Division of Environmental Management (covering water, wastewater and landfill) in Washington County, Maryland. Their daughter, Natalie, attends Hagerstown Community College in Maryland.

As for the future, Pippel is happy where he is, being a standout chief operator and serving area residents to the best of his ability: "I plan to stay here the rest of my career. I have about 15 years more to go, and if Jefferson Utilities still wants me, I'll hang around until retirement." tpo

featured
products from:

Evoqua Water
Technologies LLC
www.evoqua.com



**AERZEN TURBO.
RUNS LIKE A DREAM.**

Whether a marathon-runner or a sprinter, MBR or SBR system, the reliable and proven performance of AERZEN Turbo Blowers exceeds all expectations.

AERZEN Turbos impress with up to 80% efficiency. As the core unit in compound systems they generate energy savings of up to 30%. AERZEN Turbo Blowers feature a small footprint and are engineered to integrate seamlessly, with other aeration blower technologies, as the base load blower.

Request a quote from an Aerzen Turbo Blower Specialist:
(610) 380-0244 inquiries@aerzenusa.com

Download The Aerzen Turbo Blower Brochure
www.aerzenusa.com

PD Blowers | Hybrid Blowers | Turbo Blowers

 **AERZEN**
EXPECT PERFORMANCE

A Hot Breath of Air

A CLEVERLY RIGGED PORTABLE KEROSENE HEATER HELPS CREWS IN A KENTUCKY CITY DEAL EFFECTIVELY WITH FREEZE-UPS IN WATER METERS AND SERVICES

By Ted J. Rulseh

The winter of 2013-14 was brutal, even as far south as Kentucky. The winter of 2017-18 was almost as harsh.

For Ron Slade and the water distribution team in the city of Cynthiana (population 6,500), extreme cold meant freeze-ups in the system and lots of calls from customers. In 2013-14, the team thawed out frozen components using torches and heat guns, with limited efficiency. Now, they deal with freezes much more effectively using a specially rigged kerosene heater.

IN THE VORTEX

“The winter of 2013-14 was the worst I’ve seen in 23 years,” recalls Slade, assistant supervisor of maintenance. “The polar vortex came through here, and we had 118 customer service calls for frozen meters and services.

“We’ve used any number of systems over the years to deal with freezes. The biggest problem was getting heat, which rises, down into our underground pits and trenches. We would rig cardboard chutes and plywood walls trying to deflect the elusive heat to where we needed it.”

After the winter of 2013-14, Slade turned to a kerosene-fueled heater (a type often called salamander or torpedo heaters). He rigged a DuraHeat unit with a capacity of 125,000 Btu/h with a 12-inch section of 28-gauge stovepipe attached to the heater’s internal frame. He then added a flexible elbow and another 18-inch stovepipe section.



Cynthiana, Kentucky, team members are shown with their specially modified heater (from left): Harley Flack, assistant supervisor; Ron Slade, assistant supervisor of maintenance; and Estill Barnett and Gary Barrett, operators.

“Whether dealing with water leaks or frozen meters, we can deal with the pipe work and keep the area warm for our mechanics as well.”

RON SLADE

“We use wooden handles to rotate the elbow and wooden knobs to fasten the removable pipe section when transporting the heater,” Slade says. “It rolls on wheels. We haul it around with an electric generator, and we’re in business. It’s basically a portable furnace.”

DELIVERING THE HEAT

The pipe carrying the heat can be rotated 360 degrees so that crew members can easily force heated air down into leak sites and underground pits.

“Whether dealing with water leaks or frozen meters, we can deal with the pipe work and keep the area warm for our mechanics as well,” Slade observes. “The rig has been most useful over the last few years, and

we’ve had rave reviews from all who have used it or seen it in action.”

Earlier this year, the heater came in handy in dealing with a freeze-up in a pump room at the water treatment plant, but most of the time, the unit is used out in the field. It came in handy on many January days this year when temperatures dropped into the single digits.

“Workers at other water utilities might enjoy the concept of heat control during cold weather,” Slade says. “I tell my guys that we will always examine good ideas, even if in the end we don’t use them.” **tpo**

Certified vs. Compliant: Know The Difference

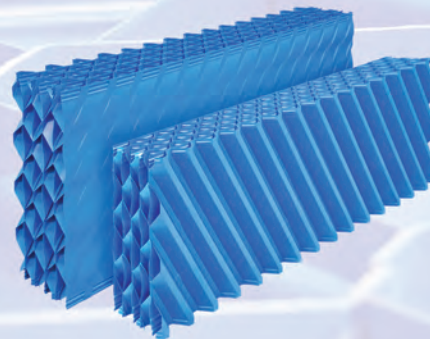
NSF/ANSI Standard 61 certification is required in all but seven states for components being used in drinking water applications. Before a product can earn NSF certification, it must be physically evaluated, tested, and certified by an independent third party. Compliance, however, is a self-made claim by manufacturers whose products have not been held to the same high quality standards and testing methods.

Brentwood is committed to delivering the safest equipment to the water industry by ensuring our products are certified.

Invest in a supplier who invests in you.



brentwoodindustries.com



FREE INFO – SEE ADVERTISER INDEX

THIS IS HOW WE ROLL

*Our Rolling Design Saves Money
& Increases Hose Life*

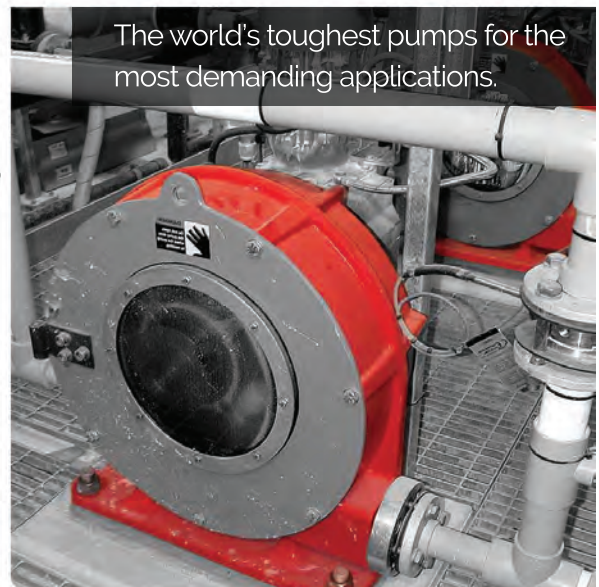
Flowrox Peristaltic Pump **VS.** Shoe Design Peristaltic Pump

- | | |
|--------------------------------------|----------------------------------|
| • Hose Life: 2.7 Million Revolutions | • Hose Life: 518,000 Revolutions |
| • 1 Year Opex: \$9K | • 1 Year Opex: \$29K |
| • 5 Year Opex: \$45K | • 5 Year Opex: \$145K |

*Pumping Lime Slurry @ 35% Solids Concentration

Unmatched Reliability

Your productivity and profitability is our #1 concern.



FLOWROX
Proven Performance

ASK ABOUT A FREE TRIAL!
888-356-9797
www.flowrox.com

FREE INFO – SEE ADVERTISER INDEX



The Whole *Enchilada*

WHEN A STEPWISE APPROACH TO A PLANT UPGRADE FELL SHORT,
A NEW YORK VILLAGE OPTED FOR COMPLETE ENGINEERED SOLUTION

STORY: **Ted J. Rulseh**
PHOTOGRAPHY: **Mike Bradley**

SOMETIMES THE BEST OF PLANS AND INTENTIONS run into hurdles that can't be cleared.

That's what happened when the New York village of Newark set out to upgrade its 3 mgd (design) wastewater treatment plant one piece at a time to avoid a major bond issue and an increase in rates.

As it turned out, costly repairs to aging equipment kept consuming the funds set aside for the next year's planned upgrades, bringing progress to a halt. Ultimately, on the advice of its engineering firm, the village opted for

a comprehensive \$23 million project that improved efficiency and removed the threat of a consent order for noncompliance from the New York Department of Environmental Conservation.

John Reynolds, chief operator, and his fully cross-trained team kept the plant operating and effluent quality within permit limits during the four-year construction project. Last November, the last punch-list items were completed, and the team celebrated with a ribbon-cutting ceremony for local and state officials and the community at large.

Rob Hilfiker measures the sludge blanket in a clarifier at the Newark Wastewater Treatment Plant.



RIPE FOR RENEWAL

Newark, a community of about 10,000, lies 25 miles east of Rochester and a dozen miles south of Lake Ontario. Its treatment plant was built in 1906 and progressively updated. A 1986 upgrade added a second digester and a new laboratory building, and at the same time, two force mains were replaced and one pump station added.

More than two decades later, the plant was showing its age. “There was some old equipment that had to be replaced, and we were under the threat of a consent order because when the flow got really high, some of our sewage was being bypassed into the Erie Canal,” Reynolds recalls.

When the piecemeal approach to upgrade didn’t work out, Newark officials in 2010 engaged the MRB Group engineering firm to conduct a village-wide facilities study. “They recommended what needed to be done and said our best course was to do it all at once,” Reynolds says. “That way, we wouldn’t have to worry about the costs increasing every year.” The upgrade plan covered the plant and the collections system, including the pump stations.

The project included a new headworks building, refurbishment of the two primary clarifiers, expansion of the aeration system from four basins to six, an upgrade to ultrafine bubble diffusion and high-efficiency turbo blowers, refurbishment of the two secondary clarifiers and addition of a third, an improved dewatering process, and the addition of biosolids composting (the material previously was landfilled).

STREAMLINED TREATMENT

In the new process, the flow passes through a fine screen (Hydro-Dyne Engineering) with a second as backup. “I was adamant about getting two of them,” Reynolds says. “The original design called for one, with a manual bar screen in reserve in case the fine screen went down for repairs. I said, ‘We’ve got to have a second fine screen.’”

After a cyclone degritter (Envirodyne Systems), the water enters a wet well equipped with a flowmeter (Emerson/Rosemount) before delivery to the primary clarifiers. In the aeration tanks, three turbo blowers (Aerzen) deliver air by way of diffusers from Sanitaire - a Xylem Brand. A screw pump (EPIC INTERNATIONAL) then lifts the flow to the final clarifiers (Envirodyne Systems) before discharge to the canal. At present, no disinfection is required, although the upgrade included structure for disinfection with the expectation that the New York Department of Environmental Conservation will order that step in the coming years.

Anaerobically digested biosolids are dewatered to 17-18 percent solids on a 2.0-meter 3DP belt press (BDP Industries) and composted with wood chips in a building using the aerated static pile method. An aeration fan is controlled on a feedback loop based on the pile temperature.

“There was some old equipment that had to be replaced, and we were under the threat of a consent order because when the flow got really high, some of our sewage was being bypassed into the Erie Canal.”

JOHN REYNOLDS

Newark (New York) Wastewater Treatment Plant

BUILT: | 1906; recent major upgrades 1986, 2017

EMPLOYEES: | 4

FLOWS: | 3 mgd design, 1.4 mgd average

POPULATION SERVED: | 10,000

TREATMENT LEVEL: | Secondary

TREATMENT PROCESS: | Activated sludge

BIOSOLIDS: | Composted

RECEIVING STREAM: | Erie Canal

ANNUAL BUDGET: | \$500,000 (operations)

WEBSITE: | www.villageofnewark.com

GPS COORDINATES: | Latitude: 43° 3'12.63"N; longitude: 77° 5'16.27"W



The staff at the Newark Wastewater Treatment Plant includes, from left, John Reynolds, chief operator; and Dan Callahan, Rob Hilfiker, and Matthew DePauw, operators.

Annual volume is projected at 600 cubic yards per year for sale to commercial entities or free distribution to the public.

MEETING THE CHALLENGE

The upgrade process proved challenging for Reynolds (Class 3A Wastewater Operator license) and team members Dan Callahan, assistant chief operator (3A); Matt DePauw, plant operator (2A); and Rob Hilfiker, trainee.

“It was pretty interesting,” Reynolds says. “Some equipment we could



EXCELLENT BACKING

The Newark (New York) Wastewater Treatment Plant won a 2017 Silver Award for design excellence from the American Council of Engineering Companies of New York, but John Reynolds, chief operator, is equally proud of another award. In 1999, the plant received a Municipal Achievement Award from New York Water Environment Association to recognize decision-makers’ support for the operation.

“They realized that the mayor and the village board were 100 percent behind this plant,” Reynolds says. “We’re fortunate that the current and past administrations have been completely supportive. The previous mayor, Peter Blandino, was an angel. He was very informed. He knew everything that was going on. He also understood that we were the ones with the certifications, and he wasn’t going to come in and tell us what to do. The current mayor, Jonathan Taylor, is the same way.”

Newark Wastewater Treatment Plant PERMIT AND PERFORMANCE			
	INFLUENT	EFFLUENT	PERMIT
BOD	288 mg/L	3.5 mg/L	30 mg/L
TSS	171 mg/L	6.0 mg/L	30 mg/L
Ammonia	23.7 mg/L	0.5 mg/L	8.1 mg/L
Phosphorus	3.88 mg/L	0.34 mg/L	1.0 mg/L

keep running while they put in the new. The influent building was totally new, so we were able to keep the flow coming in while they built that, and then do a switchover.” On the other hand, the flow had to be bypass pumped from the headworks to the primary clarifiers to enable expansion of the wet well and the installation of new pumps (Hidrostral Pumps).

“We had two primary tanks, so we could keep one online while the contractor took the other one offline, sandblasted and painted it, and replaced all the equipment. At the same time, one of our digesters was offline, so our solids process was basically down to half capacity.”

As for the aeration tanks, two existing units were taken offline for cleaning and refurbishment while the two new ones were constructed. “We were down to two aeration basins for almost two years,” Reynolds says. “That was a little bit of a challenge in the spring when we had high flows. We instituted what we call our wet weather policy, which basically means reducing the air-flow, closing some valves and opening others, and working to keep the effluent within the permit limits.”

Once the new aeration tanks were built, they were put into service and the remaining older basins were cleaned and refurbished. The two final clarifiers were kept online until the new and larger one was complete. That clarifier then handled the load while the older units were disassembled, sandblasted, and painted and the sidewalls were raised to increase the depth from 8 to 15 feet.

On the solids side, both digesters were emptied, sandblasted, painted, and fitted with new covers and a new gas collections system. A plate-and-frame dewatering press was replaced with the belt press, and the composting building was erected on vacant land in the center of the plant property.

(continued)

SEEPEx.
ALL THINGS FLOW

INTRODUCING

BRAVO[™]

CHEMICAL METERING SYSTEMS

SEEPEx's BRAVO Chemical Metering

Systems provide maximum reliability and whole process control. These modular and scalable systems incorporate progressive cavity Intelligent Metering Pumps and are the most flexible solution for disinfection, pH control and flocculation in your industry.

BENEFITS

- Simplified design reduces installation and operating costs
- Less chemical use due to minimal pulsation
- NSF/ANSI 61 certified progressive cavity pumps
- Single source for pumps and controls

For more information visit:

www.seepexsales.com/go/bravo

Visit us at
AWWA ACE 18
Booth #22017

SEEPEx Inc.
sales.us@seepex.com
T +1 937 864-7150
www.seepex.com



FREE INFO – SEE ADVERTISER INDEX

Custom Dewatering & Composting Solutions.



DSP Screw Press



Rotary Drum Thickener



Agitated and Aerated In-vessel type Composting System (ICS)



3DP Belt Press



Enclosed Gravity Belt Thickener



Skid-Mounted 3DP

- Belt Presses
- Screw Presses
- Rotary Drum Thickeners
- Gravity Belt Thickeners
- Equipment Restoration
- On-Site Service & Mobile Demos
- Complete Compost Facility Design



Sales: 518-796-1440
Fax: 518-695-5417

Factory: 518-695-6851
Email: dan@bdpindustries.com

BDP INDUSTRIES
www.bdpindustries.com

FREE INFO – SEE ADVERTISER INDEX



Dan Callahan is the maintenance specialist on a staff that collectively demonstrates diverse skills.

PULLING TOGETHER

During the upgrade, the plant team's dedication and cohesiveness were on display. "Part of our agreement with the contractor was that we would dewater the digesters to save money," Reynolds says. "It was a win-win. It was good for the team because we got overtime pay, and it was good for the village because the cost was about half versus the contractor doing it.

"We worked long hours. Another operator and I would come in at 3 in the morning, fire up the press and start dewatering. The other crew members would come in during the day, and we would do our regular work. Then Dan would stay and continue dewatering until 7 or 7:30 at night."

“There are times I put on my manager's hat, but for the most part, I'm right there working with [the guys] and shooting the breeze with them at break time.”

JOHN REYNOLDS

It helps to have a team whose members are experienced and versatile. Reynolds, in his 32nd year with the village, worked at the plant while in high school in an on-the-job training program. "When I left, the chief operator said, 'I like your work ethic. If there's an opening here, are you interested?' Two years later, I came home from work and there was a note on my door from him, stating, 'We have an opening.'"

Reynolds became chief operator six years ago and also serves as pretreatment coordinator, working mainly with the local hospital, two metal finishing companies, and a battery manufacturing plant. The other team members have their specialties — Callahan in maintenance, DePauw in composting, and Hilfiker in electrical work — but in reality, the four broadly share responsibilities. "Everyone can do maintenance, everyone can do lab work, everyone can do the composting," Reynolds says. "We all work together."

Reynolds leads with a light hand. "If I treat them right, they're going to treat me right," he says. "I used to be in the union like they are. When I took this position, I said, 'I'm not going to change — I hope you guys don't.' There are times I put on my manager's hat, but for the most part, I'm right there working with them and shooting the breeze with them at break time. I respect them. If there is a piece of equipment they need, I tell them, 'State your case, and if we can justify it and afford it, we'll get it.'"

COLLECTIONS CRISIS

The camaraderie pays off during trying times, such as last September when an alarm system failure led to the flooding of a pump station. "We opened the door and the whole building was flooded," Reynolds says. "Everything was underwater — the pumps, the control panel, the transfer switch. Of course, this was on a Friday."



New streamlined treatment at the plant includes a fine screen (Hydro-Dyne Engineering).

The team deployed a pump (Godwin Pumps, a Xylem brand) to empty the building and a sewer cleaning truck to vacuum out the wet well. Then they used the portable pump to bypass incoming wastewater into the force main. “That was the first day,” Reynolds recalls. “That Saturday night, we had to go back because the temporary control panel was failing. I got called

“During the ribbon-cutting, as we gave tours, we had the biology up on the screen. People just loved it.”

JOHN REYNOLDS

stations will help prevent such events in the future. For now, there’s time to appreciate the new plant facilities, put on display for last November’s ribbon-cutting. The highlight of that event was a microscope with a camera connected to a TV monitor for checking the process microbiology. “During the ribbon-cutting, as we gave tours, we had the biology up on the screen,” Reynolds says. “People just loved it.”

The event included Mayor Jonathan Taylor, village board members and other local officials, a state senator and assembly member, and a few dozen

in at 2 in the morning, and when I got there, it was within a foot of flooding again. I called Matt. We hooked the pump up and started bypass pumping again so we could get the control panel back up.”

They removed two pumps to send out for repair, leaving one pump in service. Just after repairs to the two pumps were finished, the remaining pump failed; the team quickly removed and replaced it, avoiding another flooding episode.

Continuing upgrades to the pump

members of the public. Reynolds observed that the visitors were enlightened: “They didn’t like the fact that the sewer rate went up, but they got to see everything that was involved. Half the people didn’t even know the plant was here. They said, ‘I drive by here every day, and I didn’t even know what this was.’”

They do now, and they saw the results of \$23 million well spent. **tpo**

featured products from:

Aerzen

610-380-0244
www.aerzen.com/en-us
(See ad page 15)

BDP Industries

518-695-6851
www.bdpindustries.com
(See ad page 21)

Emerson / Rosemount

800-854-8257
www.rosemount.com

Envirodyne Systems, Inc.

717-763-0500
www.envirodynesystems.com

EPIC INTERNATIONAL, Inc.

804-798-3939
www.epicintl.com

Godwin Pumps, a Xylem brand

800-247-8674
www.xylem.com/dewatering

Hidrostral Pumps

630-948-3355
www.hidrostralpumps.com

Hydro-Dyne Engineering

813-818-0777
www.hydro-dyne.com

Sanitaire - a Xylem Brand

855-995-4261
www.xylem.com/treatment



Artwork surrounding a manhole cover reflects the theme, "It All Drains to the James," referring to the James River.

Painted Streets, Green Roofs

ROOFTOP PLANTINGS, STORM DRAIN PAINTING AND RESIDENTIAL RAIN BARRELS
SPOTLIGHT INITIATIVES TO CONTROL RUNOFF IN RICHMOND

By Jeff Smith

The green roofs on two buildings at the Richmond wastewater treatment plant are an important part of the city's water quality improvement efforts.

But so are the rain barrels in many residents' backyards and the professionally painted storm drains on numerous city streets, says Clair Watson, utility operations superintendent in Richmond, Virginia's capital.

The green roofs are of particular interest to Watson since he is responsible for the 75 mgd advanced treatment plant. "My main focus is to make sure the plant runs like it's supposed to," Watson says. "Richmond is a combined sewer system, so the rain barrels and rain gardens and other stormwater management controls are handled by our stormwater division."

NATIVE PLANTINGS

A 6,000-square-foot green roof installed in 2005 on the effluent filtration building was the first at the plant. It joined green roofs on several other public and private buildings, added in response to city initiatives to improve water quality and sustainability. The city has a Phase II municipal separate storm sewer system (MS4) permit that requires management of stormwater runoff.

A 2,400-square-foot green roof was installed in 2012 on the UV disinfection building as part of a recently completed \$120 million nutrient removal upgrade project. Each green roof is a 4-inch-deep modular system with indigenous flowering plants, such as sedum, euphorbia and alliums. On the filtration building, an L-shaped walkway made of 3-by-6-foot sections of high-density polyethylene sheets provides a pathway and platform to care for the plants. On the disinfection building, hinged skylights and removable vents provide roof access.

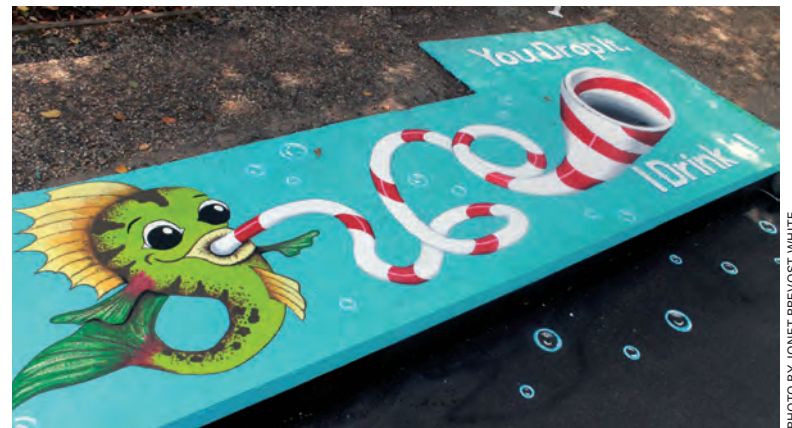


PHOTO BY JONET PREVOST-WHITE

A storm drain in Richmond, decorated by artists.

"We've had a good response and positive feedback about our green roofs and plant upgrade," Watson says. The plant received a 2017 Environmental Performance Award for the upgrade from the National Association of Clean Water Agencies.

CREATIVE COLLECTORS

The stormwater utility's rain barrel program, started in 2009, has placed nearly 200 of the barrels at citizens' homes. Build a Barrel – Save the Bay was the theme when Gay Stokes, outreach coordinator, started visiting ele-

mentary and middle school science and art classrooms to promote environmental awareness. There she introduced a rain barrel painting contest that offered an in-class prize.

After Stokes' presentation about the water cycle, pollution causes, and conservation measures, the students paint a 55-gallon barrel in a way that aligns with the year's contest theme. Photos of the barrels are then posted on a website where residents can vote for the most creative job of displaying the themed message. The painted barrels are donated to residents who apply to have a barrel installed at their homes.

Along with Richmond Department of Public Utilities team members, volunteers with the nonprofit James River Association deliver and install the barrels after fitting them with an overflow valve and a hose bib. The

“We've had a good response and positive feedback about our green roofs and plant upgrade.”
CLAIR WATSON

local Coca-Cola bottler donates used barrels as raw material for the contest; they are stored at the wastewater treatment plant until Stokes delivers them to the classrooms.

“It's a really good program for the city,” Stokes says. “Not only do citizens get a rain barrel installed, but they get a credit on their water bill.”

STREET ART

A separate contest with painting storm-drain art was created in 2015 by Jonet Prevost-White, MS4 operations manager. Each spring, a call for artists is issued online. Respondents submit photos and sketches of their ideas, again revolving around a



A winter view of the 2,400-square-foot green roof on the wastewater treatment plant's UV disinfection building.



Painted rain barrels are stored at the treatment plant and donated to residents who apply to have them installed at home.

theme. Several come from book illustrators, muralists and other experienced artists.

Storm drains for painting are chosen in highly populated areas. The Stormwater Utility Operations and Maintenance group prepares each 8-by-3-foot “artist's canvas” by cleaning and priming the concrete surface. When the artists finish their paintings, volunteers apply a sealer. Each artist gets a \$500 stipend.

“Some of the artwork is truly amazing,” Prevost-White says. “We even received a Media Award for our outreach from the NACWA.” A stormwater utility booklet describes how other localities can create a storm drain art program. Prevost-White often gets phone calls from around the country inquiring about the program. **tpo**

Red Valve

Visit Us at AWWAACE18 Booth #26076



WATER
WASTEWATER
CHEMICAL
POWER
MINING

The Professional's First Choice for the Toughest Applications. 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.

Tideflex®
Check Valves

CheckMate® In-Line
Check Valves

Control Valves

Knife Gate Valves

Manual Pinch Valves



www.redvalve.com | 412.279.0044

Tideflex
TECHNOLOGIES

A Perfect Fit

AN INITIATIVE IN NEW ENGLAND LOOKS TO MATCH MILITARY VETERANS SEEKING CAREERS WITH ATTRACTIVE OPPORTUNITIES IN THE WATER PROFESSIONS

By Ted J. Rulseh

Military veterans transitioning to civilian life need rewarding careers. The water industry needs bright people with technical aptitude, a commitment to teamwork and a service ethic.

If you think that's a match made in heaven, so does Dustin Price. By day, he's maintenance manager for the Portland (Maine) Water District. In his spare time, he chairs the New England Water Environment Association's ad hoc Veterans Workforce Development Committee.

In that role, Price has helped lead what has come to be called the Water Warriors Jobs Initiative, an effort by the New England Water Environment Association and its affiliated state organizations to recruit and retain returning and retiring veterans to well-compensated, satisfying careers in the drinking water and clean-water professions.

It's a timely endeavor, in that veterans are constantly in need of career paths while the water sector faces a wave of retirements among experienced operators. To further its goal, the initiative aims to provide veterans with education and training, streamline the certification process for them, and provide placement assistance and apprenticeships.

The ad hoc committee was formed in June 2017. Before then, Price, a U.S. Navy veteran, worked extensively with Pete Goodwin to lay a foundation, doing research on existing programs that might help their cause and pleading their case to members of Congress. Goodwin, a former consulting engineer, is client services manager with the Ted Berry Co. and a past state director for the Maine Water Environment Association. The two talked about the Water Warriors Jobs Initiative in an interview with *Treatment Plant Operator*.

tpo: What is your military background?

Price: I was a nuclear machinist mate in the Navy, operating a nuclear propulsion plant on a submarine.

Goodwin: I don't have a military background, but my father is a retired World War II Marine, and my grandfather was a World War I Army veteran.

tpo: How did you make the transition from military life into a clean-water career?

Price: When I left the military as a young guy, the water and wastewater industry was out of sight and out of mind. I didn't know how to leverage the skills I'd learned, so I became underemployed, doing shift work in security. One day at my apartment, my landlord was outside working on his tractor. I helped him fix it and explained my skills from the Navy. It turned out he was the collections foreman for the York (Maine) Sewer District, and they were looking for a mechanic. That was 16 years ago, and I've been in the water industry ever since.



Pete Goodwin (left) and Dustin Price

PHOTO BY MICHELLE CLEMENTS

tpo: How did you make the decision to embark on a water career?

Price: My landlord invited me to tour the plant. I told him no at first. Like many people, I pictured turds rolling by and I didn't want anything to do with that. But I went for the tour and I noticed that the plant didn't smell bad. Everything was fairly clean. I saw the equipment and said, "I know how to operate all of this. I can do this job." It was a very happy accident that my landlord's tractor broke. But my slogan is: "No more accidents." People shouldn't have to find the water industry by accident.

tpo: What does the workforce look like in New England in terms of operators aging?

Price: On a graph showing the ages of wastewater operators in Maine and New Hampshire, you can clearly see a bubble between 51 and 60. We don't have a lot of people before or after that bubble. In New Hampshire, 55 percent of the operators are over the age of 50.

tpo: How would you assess the population of veterans in the region?

Goodwin: As an example, in Maine we found there are about 120,000 veterans. About half of them are students, retired, disabled. The other half are in the workforce, but many are underemployed. While the number of underemployed is relatively small, it should be zero. These are people who aren't making use of the skills they have been trained to have.

tpo: So the two of you are the drivers behind the Water Warriors Jobs Initiative?

Price: We were at first, but it has picked up significantly. We have 35 volunteers right now on our committee, and we have subcommittees for every New England state.

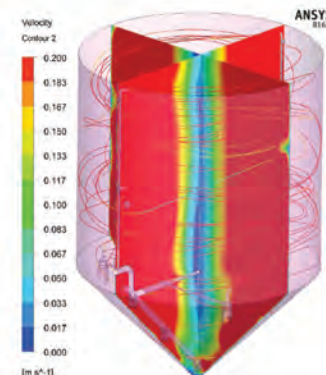
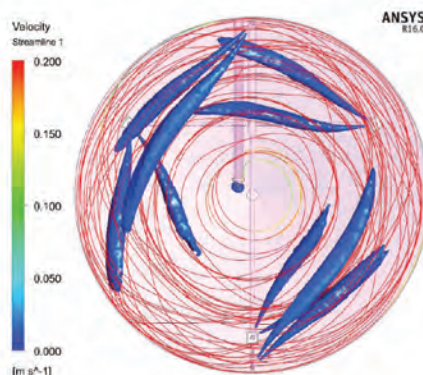
“People leaving the military are well-trained, and they tend to have many of the skill sets that anybody working in a wastewater or water facility must possess.”

PETE GOODWIN

tpo: What makes the water and wastewater sector such a good fit for veterans?

Goodwin: People leaving the military are well-trained, and they tend to have many of the skill sets that anybody working in a wastewater or water facility must possess.

Price: My military training related directly to what I do now. It's the same
(continued)



OUR HYDRAULIC MIXING CAUSES QUITE A STIR

With over 2,000 systems operating worldwide, Vaughan's Rotamix System sets the standard for hydraulic mixing. Combining lower operating costs with a more efficient breakdown of organic solids, all backed by Vaughan's UNMATCHED RELIABILITY, makes it the perfect solution for mixing digesters, sludge storage tanks, equalization basins, or any other process where you need reliable, effective mixing.

- Guaranteed 90% Active Mixing
- Even Distribution of Solids and Temperature
- 10-Year NON PRORATED Nozzle Warranty
- No Internal Moving Parts
- Various Materials of Construction Available
- Available with Vaughan Chopper or Triton Screw Centrifugal Pumps
- Design Flexibility to Meet Process Mixing Needs



See videos, drawings, and details at ChopperPumps.com or call 888.249.CHOP
ChopperPumps.com | 360.249.4042 | info@chopperpumps.com



FREE INFO - SEE ADVERTISER INDEX

pumps, the same kinds of equipment. As a nuclear machinist mate, I learned physics, chemistry, math, computer skills, engineering, fluid flow, and thermodynamics. The training was equivalent to 77 semester hours of college credit. People come out of the military with knowledge of safety data sheets, bloodborne pathogens, and first aid. Safety is constantly trained in the military and is very much a part of the culture, just as it is in the water sector.

tpo: What about the softer skills needed by someone working in a water or wastewater treatment facility?

Price: There is a certain mentality about emergency response that you see in military folks. They get excited about that. They don't want cubicle jobs. You can get a water main break at 2 in the morning. Anytime at my plant I can have a machine malfunction that threatens the environment. I need people who are ready to pivot from their day-to-day job to an emergency response. Military folks are trained to make that pivot and get the mission done.

tpo: How have you structured your job initiative for veterans?

Goodwin: It's based on what we call four tent poles: training, certification, internships and apprenticeships, and job placement and recruiting.

tpo: What is your initiative planning to do to meet veterans' need for training?

Price: The military has a Transition Assistance Program, or TAP, where veterans coming out can experience different careers. We should be at those transition centers, advertising the careers we have. Right now, the New England Water Environment Association has a 12-week, one-day-a-week operator training program. It's a very rigorous Wastewater 101. We would like to condense that into a two-week program and teach it at the TAP centers twice a year. Participants would be able to get their license after taking that class.

Goodwin: We would like to see those classes approved for support under the GI Bill. If we offer the class at the TAP centers, have a single instructor teach it, and have a defined curriculum, then we can get the operator training school GI Bill-qualified.

tpo: On the certification front, how can your committee smooth the path toward the licenses that veterans need to become operators?

Price: As we looked to convince states to increase and standardize their education credit for military experience, the Massachusetts Department of Environmental Protection took the initiative and began changing their rules to allow for up to 2 years of education experience for military service. Other states are reviewing their rules now, and we expect at least two more New England states to adopt the Massachusetts model fairly shortly. Most licenses have a time requirement before operators can move up, so this model will allow veterans to advance two years faster than before. That's a big benefit.

tpo: What progress are you making in establishing apprenticeships?

Price: The Maine Department of Labor and the National Rural Water Association have a wastewater apprenticeship program in place. It includes 4,000 hours of on-the-job training in a structured format along with integrated online training. I'm planning to refine and pilot test that program here in Portland.

tpo: What are the key advantages of these apprenticeships for veterans?

Price: The biggest boon is that it's GI Bill-approved. Apprentice veterans can qualify for a monthly stipend of up to \$2,000 for the first two years they are in on-the-job training. When you look at what our industry typically pays for entry-level positions, that's a tough sell for folks coming out of the military. They're not going to come in at \$15 to \$16 an hour. But if you take that initial pay rate plus \$24,000 a year, along with the two years of

structured training they get, plus two years of education credit toward certification, they could leave the apprenticeship with a higher license and better compensation than they would have otherwise.

tpo: Apart from the internships, what can be done to place qualified people in water and wastewater positions?

Goodwin: We have tended to post our job openings mostly to each other — on association or state websites and maybe in our local newspapers. We need to get our job postings out more broadly. In Maine, the Department of Labor has given us some resources to help spread the net a little further. We're considering some radio spots. We've also talked about how to rework our ads to appeal to a veteran audience.

“The service ethic resonates with a lot of veterans. This is a job where we make the world a better place a million gallons at a time.”

DUSTIN PRICE

If you would like to support the Water Warriors Jobs Initiative, you can contact the designated liaison for your state:

- **Connecticut:** Chris Lund, clund@groton-ct.gov
- **Maine:** Pete Goodwin, peter.goodwin@tedberrycompany.com
- **Massachusetts:** Jeremiah Murphy, jmpatrick27@yahoo.com
- **New Hampshire:** Dustin Price, dustin.price77@gmail.com
- **Rhode Island:** Janine Burke-Wells, janine.burke-wells@warwickri.com
- **Vermont:** Bob Fischer, bfischer@sburl.com

tpo: What kind of messages do you see appealing to military veterans?

Price: The service ethic resonates with a lot of veterans. This is a job where we make the world a better place a million gallons at a time. We don't just make widgets or ring a register. We protect the public health. Many veterans want to continue to serve in their own backyards, and there's a water and wastewater facility in basically every town. It's a great way to serve their community with great pay and great benefits. This is a career. When we bring people into our industry, we generally see them retiring after 30 or 40 years. They love what they do. And we know that military veterans love the same things about this career that we talk about.

tpo: What are your proudest achievements to date under this initiative?

Goodwin: The first was taking the concept and focusing it down to four manageable tent poles.

Price: The second is the number of volunteers who have come out from an array of disciplines. We have folks from regulatory, training commissions, operators, chief operators, superintendents and others. It resonates far and wide.

tpo: Where would you like this initiative to be about two years from now?

Price: We would like to have the apprenticeship program set up with state sponsoring organizations and operating throughout New England.

Goodwin: We would love to see the TAP education program in place, advocating and training veterans coming into the workforce. We would also like to see this initiative spread farther than New England. We have lofty goals and a lot of work to do, but with a crew of 35 working right now, we think we can do it. **tpo**

SAF-T-FLO

CHEMICAL INJECTION



SAF-T-FLO retractable injection quills are designed to provide a maintenance friendly way of maintaining injection feeds prone to scale and clogging.

Rarely are any two injection points the same. Our wide range of sizes, materials, and unique features allows each quill to be configured for the intended application. No compromises, just the right tool for the job.

Key Features

- 1/2" to 3" Connection Sizes
- Restraint ratings of both 150psi and 250psi.
- Integrated check valves on select sizes.
- Does not require the main to be depressurized for insertion/removal.
- SAF-T-Seal Elastomeric Tip for excessive scale prone feeds.

Learn More

call: 800-957-2383

visit: www.saffflo.com

view: youtube.com/saffflo



FREE INFO - SEE ADVERTISER INDEX

**Everyone talks about creating
a greener environment.**

You actually do it.

Find the tools you need to keep your communities **green** at

www.colepublishing.com.

Publishing environmental trade magazines since 1979.

See what everyone is talking about!

Visit us at booth #27059
at ACE18 in Las Vegas

NEW DESIGN FEATURES

- New disc and seat design for increased internal sealing performance
- Redesigned degreed position indication plate for lever type valves
- Molded valve body tag holes

New!
**Next Generation of
Butterfly Valves
Type-57P**



Lever & Gear

QUICK TURNAROUND

- Ships within 24 hours from time an order is received
- Compact design
- Many standard features that are extra options on most other electric actuators

New!
**Compact and
Powerful
Series 17 Electric
Actuator Fast Packs**



Type-21
Ball Valve

Type-57P
Butterfly
Valve



www.asahi-america.com



FREE INFO - SEE ADVERTISER INDEX

top performer

wastewater:

OPERATOR



“I came into the profession 10 years ago not even knowing what the local water authority was. But the training, the leadership academies, the opportunities — it’s been unbelievable for me to move up the way I have.”

HERLON J. FAYARD JR.

The Shoal Creek Water Reclamation Facility has 112 acres with 70 wet acres used to polish flows of up to 4.4 mgd. It is plant supervisor Herlon J. Fayard Jr.’s favorite spot.

A QUICK CLIMB UP THE LADDER

HERLON J. FAYARD JR. APPLIES EFFECTIVE TRAINING, PERSONAL CONVICTION
AND PEOPLE-ORIENTED MANAGEMENT TO ACHIEVE AWARD-WINNING RESULTS

STORY: **Jim Force** | PHOTOGRAPHY: **Kaylinn Gilstrap**

HERLON J. FAYARD JR. WAS THE NEW KID ON THE BLOCK WHEN he became supervisor of the Shoal Creek Water Reclamation Facility three years ago. It didn't take him long to win the support of management and staff. His positive attitude won the day.

"Herlon really enjoys the work that he does and the people," says Michael Crabtree, an operator at the plant operated by the Clayton County (Georgia) Water Authority. "He's a joy to work with."

Chris Hamilton, water reclamation manager, adds, "He has worked his way up through the ranks in very short order and has done lots of good things at the plant and in the department that make for a safer, well-organized, and well-operated facility. He has left his mark."

His latest reward is a new assignment as supervisor of the authority's Northeast Water Reclamation Facility. Fayard observes, "I've been beyond fortunate and blessed. I came into the profession 10 years ago not even knowing what the local water authority was. But the training, the leadership academies, the opportunities — it's been unbelievable for me to move up the way I have."

The profession has recognized Fayard as well. In 2017, he was named the Top Operator for District 3 by the Georgia Association of Water Professionals. He also received the Water Environment Federation's 2017 William D. Hatfield Award. In addition, Shoal Creek received the Georgia Plant of the Year 2017 award from Georgia Association of Water Professionals for advanced treatment facilities smaller than 5.0 mgd.



Herlon J. Fayard Jr., plant supervisor, Shoal Creek (Georgia) Water Reclamation Facility

OUT OF THE TRUCK

Growing up in Louisiana, Fayard wanted to be a "big-truck driver." He achieved that dream, driving trucks and dealing with heavy equipment for 12 years, until that work led him to help the Clayton County authority transition from spray fields to constructed wetlands that accept the effluent from Shoal Creek and the W.B. Casey Water Reclamation Facility.

"It was interesting," Fayard recalls. "The wastewater supervisor encouraged me to look into certification." He did that, studying for and passing the tests, then going to work as a beginning operator at the W.B. Casey facility. Soon, he was managing the midnight shift before earning his Class III Wastewater Operator license and becoming chief operator.

When the supervisor at Shoal Creek retired three years ago, Fayard took that position. He's responsible for operations and maintenance of the 4.4 mgd (design) biological nutrient removal plant, which uses continuously sequencing reactor (CSR) technology (Schreiber) to achieve nutrient removal.

The facility employs coarse screens and grit removal, 5 mm rotary drum fine screens (Parkson Corp.), a pair of CSR units, two secondary clarifiers, a re-aeration basin and UV disinfection (TrojanUV). Solids are processed in two anaerobic digesters, followed by centrifuges. Cake biosolids are recycled for green roofs and other applications in the area by EARTH Products, a private contractor.



Herlon J. Fayard Jr. relies on his team members' long-term knowledge, blending it with his own ideas. He believes straightforward communication is essential to success.

FAMILY AFFAIR

You can't leave a conversation with Herlon J. Fayard Jr. without asking about his first name. His grandfather's oldest son (his uncle) went to college in Germany and became good friends with a German student named Herlon: "My grandfather liked the name. When my father was born, he named him Herlon, and it passed on to me. Thus, I have a German first name and a French last name."

Fayard Jr.'s oldest son is also named Herlon, and a new grandson carries the name. Family is vital. Married for 30 years, Fayard Jr. and his wife have three sons. He volunteers for the local baseball and football youth programs, having played both sports in high school.

"When my boys signed up for Little League Baseball, they needed a coach," he says. That was 20 years ago. Since then, he has run the baseball and football youth associations. When his sons got into wrestling in high school, he helped coach the team, and he still does. His oldest son went on to be an All-American in junior college, competing at 141 pounds.

That's good coaching!

Effluent is polished in the constructed wetlands before release into two authority-owned drinking water reservoirs. The plant meets a phosphorus requirement of 2-3 mg/L, as well as stringent limits for ammonia (4.0 mg/L), TSS (30 mg/L), and BOD (10 mg/L).

The Shoal Creek team includes Robert Cloud, chief operator; Crabtree and Hilton Texidor, day shift operators; Andy Eason, evening shift operator; and Robin Liles and Willie McCune, midnight shift operators. About half the staff members have 20 to 30 years' experience. "They all outrank me in terms of service," Fayard says. "I get credit for the awards, but I couldn't have done it without them. It's impossible to do by yourself; you need a quality team."

Herlon J. Fayard Jr., Shoal Creek (Georgia) Water Reclamation Facility

POSITION: | **Plant supervisor**

EXPERIENCE: | **10 years in the industry**

RESPONSIBILITIES: | **Supervise 4.4 mgd wastewater facility, constructed wetlands, staff of seven**

CERTIFICATION: | **Class I Wastewater Operator**

GOALS: | **Keep up with new technology**

GPS COORDINATES: | **Latitude: 33°24'36.58"N; longitude: 84°23'2.03"W**



POSITIVE ENERGY

Fayard managed the transition to leadership by paying attention to his team members and respecting their experience and knowledge. A family man himself, he is also sensitive to staff members' family ties and personal commitments. "They all have different personalities, and they don't always come to work happy," Fayard says. "They have to balance their family and personal life issues with their responsibilities at work."

"Luckily for me, I had worked with many of them before on shifts and in different places within the authority. We knew each other, our personalities and our thought processes."

Still, he admits it was a big step up in responsibility: "In the beginning, the toughest thing I had to deal with was getting everyone to buy into the team concept — getting everyone rowing in the same direction."

Fayard took advantage of his team members' long-term knowledge, blending it with his own ideas. Straightforward communication was critical and remains a key to the plant's success.

"I just talk with employees, monthly, weekly, daily. It's a thing we do. It's just conversations around the plant — how their day is going and what's happening in their personal lives."

Fayard's management style mirrors that of managers above him who enabled his success. "I was very lucky in my first position with the authority," he says. "My first supervisor Donnie Kiblinger and my manager Chris Hamilton were very encouraging. They let me work as hard as I wanted to and advance."

The positive vibe at Shoal Creek paid off in many ways, including compliant performance and the prestigious 2017 George W. Burke Safety Award from the Georgia Water Environment Association. "We've won the plant operations award for our category many times," Fayard says. "This was the first time we got the safety award."

“In the beginning, the toughest thing I had to deal with was getting everyone to buy into the team concept — getting everyone rowing in the same direction.”

HERLON J. FAYARD JR.

METICULOUS CARE

Shoal Creek hasn't had a lost-time accident in nearly 18 years, starting long before Fayard's time. Still, he made sure all the proper safety equipment was readily available: mounting brackets, davit arms, safety cables and safety harness gear around the plant's ground-level basins. Team members use the buddy system and maintain thorough records.

"I think that was one reason we won," Fayard says. "We have years and years of records and information about training, meetings, unsafe condition reports, repairs, and operational data. Plus, we have a quality group of operators. They're conscious of what it takes to do the job safely and efficiently. Our goal is that everyone goes home with everything they came with."

A strong maintenance program enables safe operations, and Shoal Creek takes a comprehensive approach. The plant uses a JD Edwards (Oracle) software program to track maintenance on all systems and equipment — daily, weekly, monthly, semiannually, and annual, as required. Team members can call up work orders automatically on any day.

Good maintenance also supports quality plant performance. "We basically use a timer system to run our anoxic, oxic, and anaerobic zones and maintain good quality of our organisms," Fayard says. "A lot of our equipment is old and refurbished. Influent changes. We need to keep it running and stay in that sweet spot."

LOOKING AHEAD

Shoal Creek recycles its biosolids and uses natural treatment to produce a high-quality effluent that is stored in reservoirs. In Fayard's mind, these practices are the wave of the future. "If we don't recycle, we're going to be in bad shape," he says. "It's going to be important not only for the environment, but for society overall."

Change will be driven by economics and advancing technology, he believes: "Right now, we have 4 billion gallons of storage available to us. With the rising cost of real estate, that's not going to be available to us in the future. With the change from spray fields to constructed wetlands, we went from thousands of acres to hundreds.

"Technology is changing fast. When I was growing up 48 years ago, we had a well and a septic tank. My generation didn't start out with computers. Now we have email and automation. We're reducing electricity usage."

He believes the younger generation may be more receptive to concepts like turning treated wastewater into drinking water: "People our age have



The Shoal Creek team includes, from left, Robert Cloud, chief operator; Michael Crabtree, Class 1 operator; and Herlon J. Fayard Jr., plant supervisor.

trouble grasping the idea, even though it makes sense economically. But the kids today, they may be more open to that."

As for his new role at the Northeast facility, that's a new challenge that his colleagues feel certain he'll master. "I have every confidence in the world that he'll do a fine job there," says Hamilton. "At Shoal Creek, he established an environment for teamwork, communication and mutual respect within his staff. He has a lot to learn and it's a little more technically advanced than Shoal Creek, but he wants to do a good job and he cares about what he is doing. That sets him apart." tpo

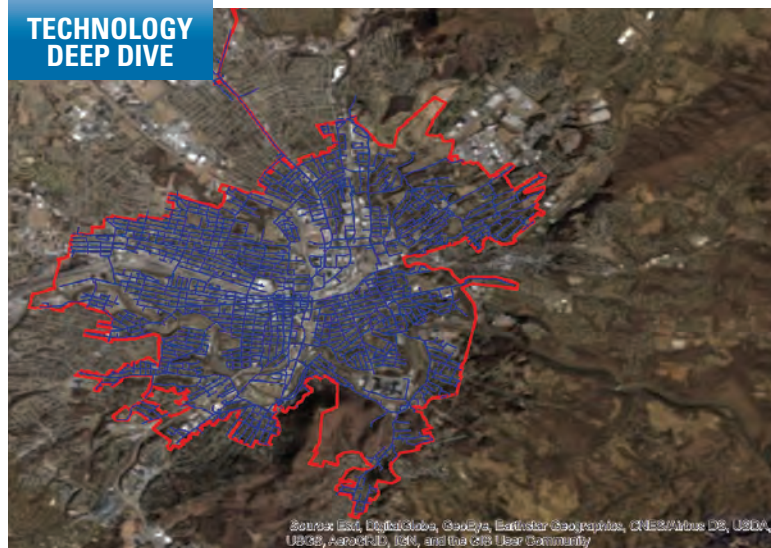
featured products from:

Oracle
800-392-2999
www.oracle.com

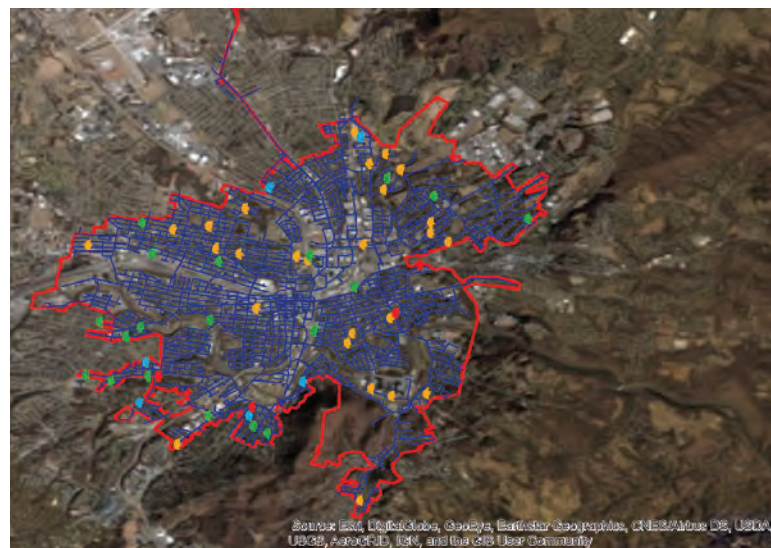
Parkson Corporation
888-727-5766
www.parkson.com

Schreiber LLC
205-655-7466
www.schreiberwater.com

TrojanUV
888-220-6118
www.trojanuv.com



A GIS map of a water utility distribution system



Utility distribution system overlaid with likely leak locations as detected by a satellite-mounted radar system. Locations are color-coded according to potential leak severity.

Eye in the Sky

SATELLITE-BASED TECHNOLOGY HELPS WATER UTILITIES FIND AND FIX DISTRIBUTION AND TRANSMISSION LEAKS MORE COST-EFFECTIVELY

By Ted J. Rulseh

Leaks from drinking water systems cost money. So do leak detection and repair programs. The trick to dealing with leaks is to find the method that delivers the best possible return on investment. A variety of leak detection tools and methods are deployed with success at water utilities of many sizes. Now, Utilis adds a new layer of technology that can help make those tools more cost-effective to deploy.

The company has devised a method for detecting leaks in water distribution and transmission networks from outer space. The technology is based on analysis of images captured by a satellite-mounted radar system and sensor. The company says its method, used in tandem with traditional acoustic devices, can triple leak detection efficiency.

The technology requires no upfront investment in equipment and can significantly reduce field labor. It enables priority leaks to be targeted and addressed quickly. Gustavo Bach, a marketing and sales manager for Utilis, talked about the technology in an interview with *Treatment Plant Operator*.

tpo: What is the history behind this technology?

Bach: Utilis was founded in 2013 and has been operational for the last three years. The idea came from our chief technology officer and founder Lauren Guy, who was studying for his master's degree in atmospheric physics and dynamics and was using remote sensing to find underground water on Mars and Venus. Since we have so many water-related problems right here on Earth, he decided to apply that same technology to help find underground water here.

tpo: What is the practical benefit of the Utilis technology?

Bach: Our solution helps utilities reduce nonrevenue water. It can pinpoint as many as hundreds of possible leaks in a single project, and it can be much more time- and cost-effective than traditional leak detection methods.

tpo: How does this technology save time and money over acoustic listening and other conventional methods?

Bach: First of all, satellite leak detection methodology does not substitute for traditional acoustical leak detection. Depending on the size of the distribution system, we deliver to our clients dozens or hundreds of possible leaks that may be happening in the system. So instead of an acoustic leak detection team going through the entire system, walking 2 1/2 to 3 miles a day, they simply go to specific points that we've delivered, saving time and money.

tpo: In basic terms, how does the satellite-based technology work?

Bach: The satellite orbits about 400 miles above the surface. It carries a radar that sends microwaves to Earth in a specific wavelength and frequency that can penetrate the ground. Every single object reacts to microwaves and sends back a signature that is received by a sensor. We look for

“Our solution helps utilities reduce nonrevenue water. It can pinpoint as many as hundreds of possible leaks in a single project.”

GUSTAVO BACH

“We pick up all types of water: treated water, high water tables, sewage and seawater. We filter out everything that is not treated water in contact with soil and deliver the finished image to the client.”

GUSTAVO BACH

the signature of treated water that is gushing out of a pipe and in contact with soil, thus creating chemical reactions. That is what the satellite picks up.

tpo: How is all this data sorted and analyzed?

Bach: Once we have an image formed, we do many things. We do geo-referencing and we clean out many types of noise, because the satellite image picks up not only water but also vegetation, buildings and man-made objects in general. The last part of process is to input that image into an algorithm that we developed. We pick up all types of water: treated water, high water tables, sewage and seawater. We filter out everything that is not treated water in contact with soil and deliver the finished image to the client.

tpo: Can the technology differentiate large leaks from small leaks so that utilities can set repair priorities?

Bach: We pick up leaks as small as 0.1 liter per minute (0.026 gpm), but our reports do not distinguish between small, medium, and large leaks. We deliver to the client a GIS map with a grid code where we identify the leaks according to probability: red is the highest, then yellow, then green, and then blue is the lowest probability. The color indicates how strongly we picked up the signal of treated water in contact with soil, but that doesn't indicate the size of the leak. A big leak running for two days can give the same signal as a very small leak running for three years. However, because our map shows the areas of high-probability, customers can attack those areas with the expectation of finding most of the leaks there.

tpo: What kind of orbital pattern does the satellite follow?

Bach: The satellite circles the planet about two dozen times every day. It reaches the same point above the Earth every two weeks. So if we wanted to get an image of New York City and the satellite were on top of the city today, we could get the next shot of the city two weeks later. The satellite can give us a 50-by 70-kilometer image, which is 3,500 square kilometers, or 1,200 square miles.

tpo: Once you contract with a utility to do this, how is the offering structured?

Bach: It differs for every customer. Normally we start with a one-time shot of a smaller area. We deliver the data and then go with the client into the field for a full week to demonstrate how they can use our tool. For that, we charge a fixed amount. If the customer likes the result, we move into a service contract that covers at least one year and includes a minimum of two reports. We charge for that service by linear mile of pipeline.

tpo: How would you characterize the customer response so far?

Bach: Customers like it because we pinpoint not just leaks that have surfaced, but also background leaks — those that most likely wouldn't be found without our tool. Some leaks are in locations where acoustic listening is difficult or come from plastic pipes. Normally, we can deliver many more leaks and do so much faster than acoustic leak detection. We have served more than 90 utilities in 26 countries. We do not have to prove anymore that our technology works. It has already become part of the utility toolbox. **tpo**



Your future is waiting.

Check out our job openings at
AuroraGov.org/AuroraWaterJobs



A and B level water and wastewater operators: Colorado is looking for you. Life at 5,280 feet is calling your name. Head to Aurora Water for your next big adventure.

- ✓ Accelerated professional growth with a Partnership for Safe Water - Phase IV "Excellence in Water Treatment" designee
- ✓ Generous incentives
- ✓ Healthy work-life balance
- ✓ Stable retirement plan





“The kids love being out here. They love a chance to come outside and get into a learning environment that’s different from a normal school setting. It enhances their learning.”

KEN PRESLEY

Cubihatcha Kids learn all about wide variety of outdoor and nature topics. One popular activity involves study of crawfish anatomy.

Into the Outdoors

CUBIHATCHA KIDS PROGRAM TEACHES THIRD-GRADERS ABOUT WATERSHEDS, WATER QUALITY AND WATER CONSERVATION IN A NATURAL SETTING IN HENRY COUNTY

By **Ted J. Rulseh**

In the early 1980s, Georgia’s Henry County was a rural place with about 35,000 residents. Today, it’s part of the Atlanta metropolitan area with a population approaching 250,000.

Still, the more pastoral heritage lives on in the Henry County Water Authority’s Cubihatcha Outdoor Education Center, encompassing 1,000 acres of land between two of the authority’s five drinking water reservoirs.

Each September, about 3,000 third-graders from the Henry County schools visit the center for a day of learning about nature; wildlife; and — most important — watersheds, the water cycle, water quality, and water treatment. Called Cubihatcha Kids, the program is the keystone of the authority’s public outreach, promoting watershed protection and resource stewardship.

The authority partners with the Henry County Board of Education and other public and nonprofit organizations to put on half days of hand-on activities at stations placed along the education center’s 10 miles of trails. In the 14 years since its inception, more than 40,000 kids have taken part.

“This program has grown and evolved to the point where it is very popular — it’s phenomenal,” says Lindy Farmer, Henry County Water Authority general manager. “It has turned into something truly special and very much needed in our communities and Henry County.”

SETTING THE SCENE

Cubihatcha Center (the name is a Native American word for “Land Between the Lakes”) came about while the authority looked to expand its water supply in the face of growth as Atlanta expanded outward. “In the early 2000s and late 1990s, this was one of the fastest-growing counties in the state if not the nation,” Farmer says.

The authority’s five reservoirs cover 3,138 acres and hold 18.1 billion gallons, more than 600 days of supply. Average water demand is about 14.7 mgd. The wastewater system includes three treatment plants with a total design capacity of 10.75 mgd (average flow 6.8 mgd).

Land for Cubihatcha Center was set aside as part of the authority’s federal government permitting process to construct a network of new reservoirs. The landscape includes bottomlands, forested wetlands and uplands. Beyond its education function, the site serves as a wetland enhancement area to help improve and protect diverse fish and wildlife habitats.

The property includes an office, a meeting room/classroom, and various pavilion shelters. The site is available to the public for activities like fishing, kayaking, 5K runs, family and group picnics, bird-watching, and special deer hunts for youth and veterans.

TIGHTLY ORGANIZED

Cubihatcha Kids visits are spread across three weeks in September. Buses arranged by the school system roll in at about 9:30 a.m. The kids divide into groups of about two dozen and by 10 a.m. start visiting a series of four hands-on activity stations.

"We do some extreme planning on the front end, so on the day, we know which schools are coming, how many kids we'll have, how many instructors we need, and who is supposed to go where," says Ken Presley, reservoir manager and center director. The kids spend 20 minutes at each station and then have 10 minutes to walk to their next stop. Their routes are mapped out and trail signage directs them. The activities end around noon; the kids enjoy a lunch and then board the buses to go back to school.

Activity instructors include authority staff members, school teachers, volunteers, and members of partnering organizations. "We keep the topics diverse," Presley says. "We expose the kids to at least some activities covering water, wetlands and stormwater. We might include an activity around owl pellets or crawfish anatomy." Activities vary year to year and have included:

- Georgia Department of Natural Resources staffers leading wildlife viewing experiences.
- Georgia Forestry Commission team members teaching about native trees or controlled burns.
- Georgia EMC, representing the state's electric cooperatives, demonstrating solar energy.
- County board of education holding physical education activities and teaching about water, wastewater and water conservation.
- Georgia Farm Bureau giving planting demonstrations and sending each child home with a potted plant.
- Henry County UGA Extension Office leading water-related activities.

The University of Georgia, the Georgia Wildlife Federation and the Atlanta Audubon Society have also contributed at times.

GREAT FOR THE KIDS

Most of all, Cubihatcha Kids is a hit with the young folks. "The kids love being out here," Presley says. "They love a chance to come outside and get into a learning environment that's different from a normal school setting. It enhances their learning. When you watch them, you can tell they're having a good time."

Presley notes that the makeup of the students has changed since the county transitioned from rural to heavily urban: "Originally a lot of the students had experience in the outdoors. Now, most of the kids who come here don't experience the outdoors daily. They get to learn new things in a setting they've never been accustomed to. They see the reservoirs, and they learn that when they turn on their tap on, this is where the water comes from. That's pretty cool."

Seeing the success of Cubihatcha Kids, the authority is looking to close the circle in the future by adding activities for high school students. "Being a good steward of our resources is something the water authority takes pride in," Presley says. "That's the vision of our board, and we want to pass that on to the citizens of our county, especially the school kids."

The water industry is also taking notice. In 2016, the Metropolitan North Georgia Water Planning District gave the Cubihatcha Kids program its STREAM Award for excellence in education and outreach. The Georgia Association of Water Professionals presented the authority with the Program of Excellence Award last year (2017) for Cubihatcha Kids, in addition to having its cumulative public outreach efforts selected by the Georgia Association of Water Professionals as the Public Education Program of the Year in 2007, 2009 and 2011.

"Overall, it has been a huge success," Presley notes. "It has placed the water authority and the board of education in a positive light. Other water agencies have expressed interest in using our program as a model. That and the awards we win are proof that we must be doing something right." **tpo**

What's Your Story?

TPO welcomes news about your public education and community outreach efforts for future articles in the Hearts and Minds column. Send your ideas to editor@tpomag.com or call 877-953-3301.



ABOVE: Javier Sayago (center) of Henry County Stormwater teaches kids about runoff pollution and how they can help prevent it. BELOW: Zeb Brown, naturalist at the Cubihatcha Outdoor Education Center, speaks to kids about wildlife habitat during a Cubihatcha Kids session.



Pumping Up Reliability

PROGRESSIVE CAVITY PUMPING SOLVES A FLORIDA WASTEWATER TREATMENT PLANT'S BIOSOLIDS CAKE CONVEYANCE PROBLEM

By Richard M. Schoenborn, P.E., and Bill Martiniere

Conveyance of biosolids sludge cake from dewatering equipment to further processing or truck transport can be challenging, even under favorable design conditions.

The South Florida city of Port St. Lucie recently upgraded the cake conveyance system at its Glades Wastewater Treatment Facility, installing a progressive cavity pump fitted with an auger feeder to replace shaftless screw conveyors.

LOW-PROFILE CHALLENGES

Port St. Lucie, population 181,000 and growing, operates the Glades treatment facility (12 mgd design) and the Westport Wastewater Treatment Facility (6 mgd design). Because the Glades plant lies close to a residential area, a low-profile design was required for all structures, including the new biosolids dewatering building.

The low-profile design meant that new centrifuges would be located at ground level instead of elevated on a second floor. An interconnected series of cascading shaftless screw conveyors transported dewatered biosolids cake from the centrifuges to hauling trucks located in an adjoining building.

The complete process consisted of nine conveyors, including one vertical conveyor with a conveyance height of 35 feet and an intermediate collection bin. The path from centrifuges to the trucks was tortuous. The system was not easy to maintain, and the vertical conveyor and elevated conveyors broke down frequently.

The biosolids cake at the Glades plant originates mainly from domestic wastewater and averages 17 percent solids. The centrifugal pumping equipment familiar to plant personnel would not be applicable. After considering various conveyance options, the plant team chose a progressive cavity cake pump (SEPEX).

RELIABLE DESIGN

Progressive cavity pumps are used at numerous Florida wastewater plants in similar applications. Among its advantages at Glades, progressive cavity pumping eliminated



Cake discharge into an existing overhead conveyor.

the vertical conveyors, the elevated cake storage bin, and some elevated conveyance equipment. The pump was delivered with a control system that allows it to operate independently. The system uses a sophisticated laser level control, dry run protection, and overpressure protection for reliability.

With the new pump in place, the number of overhead electric motors and conveyance sensors in the dewatering building was greatly reduced. In addition, the discharge pipe and valve system are neater and cleaner in appearance.

The Glades plant presented numerous obstacles to a successful design. The dewatering building's low-profile construction left little room for a suitable installation inside the building. The waste discharge and cleanup under the centrifuges made for a harsh and wet environment.

The ultralow headroom underneath the centrifuges further limited access for system maintenance and operation. Integration of the pump's sensor and speed controls into the plant's Device-Net-based control system was another concern during the project planning phase.

EXTERIOR INSTALLATION

The team ultimately decided to place the pump outside the building near the truck hauling bay. This location allows nearly uninhibited access during startup and for maintenance. Another conveyor was required to deliver the cake to the pump, but it is no longer in a problematic vertical configuration.

Two overhead horizontal discharge conveyors inside the truck loading bays were retained for normal use since they typically need minimal



The original vertical conveyor at the Glades Wastewater Treatment Facility.



LEFT: Tight spaces below the existing centrifuges.
BELOW: New biosolids cake pump installation (SEEPEx).



Share Your Ideas

TPO welcomes news about interesting methods or uses of technology at your facility for future articles in the How We Do It column.

Send your ideas to editor@tpomag.com or call 877-953-3301

maintenance units. Minor modifications enabled the truck loading conveyors to accept cake discharge from the pump.

The discharge piping consists of 12-inch pipe and two overhead, motor-operated, heavy-duty slide gate valves at each existing overhead truck loading conveyor. All pipe elbows have an ultralong radius at more than 2.5 times the discharge pipe's inside diameter. The electric motor operators on each discharge valve enable operation from loading bay floor level.

An emergency pressure relief valve on the discharge piping on the downstream side of the pump provides additional overpressure protection. The pump's own control panel and touch-screen operating system has little interaction with the Device-Net system, a significant advantage to the plant operations and maintenance staff.

CONTINUOUS DUTY

The project also included installation of a new piped drainage system under the centrifuges to conduct waste liquids directly to the centrate drain header. In total, the upgrades improved the dewatering operations' appear-

Daily pump operation is typically smooth and continuous. The laser level control has been robust in matching and maintaining the pump's speed with cake input, even during the heaviest rainfalls.

ance, freed workers from daily waste cleanup, and improved overall system reliability.

The dewatering building upgrades were completed in April 2017, and pumping of cake began in May. Daily pump operation is typically smooth and continuous. The laser level control has been robust in matching and maintaining the pump's speed with cake input, even during the heaviest rainfalls. Average pump discharge pressures range from 56 to 67 psi, depending on the flow path and the hauling trailer location.

ABOUT THE AUTHORS

Richard M. Schoenborn, P.E., (rschoenborn@cityofpsl.com) is senior civil-utility engineer with the city of Port St. Lucie (Florida) Utility Systems Department. Bill Martiniere (bmartiniere@seepex.com) is a territory manager with SEEPEx.

tpo

Bohn has the solution...

A leader in odor control biofilters since 1986. We have a powerful single-stage solution with unmatched reliability.

BOHN BIOFILTER CORP
Odor and Air Emissions Control

bohnbiofilter.com

TACKLING ALL OBSTACLES

AWARD-WINNING WASTEWATER PLANT SUPERVISOR DEVIN SNYDER SUCCEEDS WITH A SKILLED TEAM, MAINTENANCE AND ELECTRICAL EXPERIENCE AND A SUPPORTIVE MANAGER

STORY: **Trude Witham** | PHOTOGRAPHY: **Chuck Cook**

DEVIN SNYDER DIDN'T START OUT AS AN OPERATOR, BUT AS a maintenance technician at the Savanna Street Wastewater Treatment Plant in Jackson, Mississippi.

"I was 18, and a friend of mine told me about an opening," he says. "I learned as much as possible because I could see that the current workforce was aging, and I wanted to eventually move up."

Today, as manager of O&M in Laurel, Snyder oversees O&M for the 7.4 mgd Massey and the 6.6 mgd Smyly wastewater treatment plants, as well as 50 lift stations. He also oversees maintenance for the city's three water treatment plants.

He's employed by SUEZ and manages a contractual partnership between the company and the city. SUEZ manages the city's water, sewer, billing, customer service and collections systems. With his management team and crew, he oversees systems that have recorded zero violations, with equipment that consistently stays online. Both wastewater plants operate at 97 to 99 percent BOD and TSS removal.

His greatest challenges include heavy inflow and infiltration from storms and dealing with daily changes from industrial users, such as heavy BOD and grease loadings. His greatest successes include consistently meeting permit and implementing new SCADA and lime slurry systems in 2016.



Devin Snyder of SUEZ is manager of operations for two wastewater treatment plants and oversees maintenance for three water treatment plants in Laurel, Mississippi.

A "TOGETHER" PROJECT

In September 2017, Snyder received the 2016 Don Scott Award as Outstanding Class IV Pollution Control Operator of the Year from the Mississippi Water and Pollution Control Operator's Association. One of his former SUEZ project managers, Mike Moore, nominated him.

"The association toured the facility and interviewed me, but I didn't know I had won until I went to the event in September," Snyder says. "It means the world to me. It lets me know that all the late nights and missed holidays have made a difference. I enjoy doing my part to help provide a sustainable environment for the future."

Snyder believes he won because of the progress he and his team have made at the Laurel facilities: "When the regulatory agency performs their annual inspection, they comment on the cleanliness and organization and say they wish all projects were as together as Laurel. I've rebuilt this team with skilled technicians, and we have tackled all obstacles to make these plants perform as they should."

Determination and a strong work ethic have defined Snyder from the beginning. While at the Jackson plant, he enrolled in an industrial electricity class. He later graduated at the top of his class with an associate degree in applied science from Hinds Community College in Pearl.

Snyder was soon promoted to maintenance supervisor at the plant, the largest in the state. "The plant was operated by SUEZ, and because I was

Devin Snyder believes he won recognition as Outstanding Class IV Pollution Control Operator of the Year for the progress his team made in improving the facilities and their performance. Plant team members pictured with Snyder are, from left, Blake Smith, Michael Freeman and Charles Newell.



“I have the team everyone wishes they had. I am just one person, and I may get all the recognition, but they are the ones who did the work. I just paved the road.”

DEVIN SNYDER

Devin Snyder, Laurel, Mississippi

POSITION: | SUEZ Manager of WW O&M

EXPERIENCE: | 12 years

AWARDS: | 2016 Don Scott Award, Outstanding Class IV Pollution Control Operator of the Year, Mississippi Water and Pollution Control Operator's Association

GOAL: | Provide a sustainable environment for future generations

GPS COORDINATES: | Latitude: 31°41'10.60"N;
Longitude: 89°6'49.93"W



Snyder with lab technician Tony Shaw

able to make a big difference as maintenance supervisor, they asked if I would transfer to Laurel.” He was promoted to manager of the Laurel system.

Snyder credits his mentors for much of his success, especially his current boss, Randy Dias, regional manager. “Randy is a true leader who continues to encourage me and push me toward my goals,” Snyder says. “I work for an amazing company that has always encouraged me to do my best.”

TWIN SISTER PLANTS

The Massey and Smyly plants (also called George Gaddy Treatment Facility No. 1 and No. 2, respectively) are activated sludge oxidation ditch facilities with fine-bubble aeration, both built in 1989. “They are twin sister plants about 10 miles apart,” Snyder says. “Wastewater from the city is split 50-50 to each plant. The city decided it was more cost-effective to run two facilities than to build one huge plant.”

Together, they serve 26,000 people in Laurel, along with industrial customers that include two poultry processors, an electrical transformer manufacturer, a metal fabricating plant and several oil companies. Plant equipment includes:

- Two FlexRate automatic bar screens (Duperon).
- Three ABS 48 hp dry pit submersible influent pumps (Sulzer Pumps Solutions).
- Two 75 hp vertical turbine storm pumps (Pentair - Fairbanks Nijhuis).
- Four ABS 48 hp return activated sludge pumps (Sulzer Pumps Solutions).
- A Pista grit system (Smith & Loveless).
- Influent and effluent autosamplers (Teledyne ISCO).
- Eight EMU mixers (Wilo USA).
- Three six-stage blowers (Continental Blower).
- Two SpiraFlo circular final clarifiers (Lakeside Equipment).
- A UV disinfection system (TrojanUV).

Each plant includes a 90-acre storm equalization basin, a 10-acre waste activated sludge basin, and an anaerobic lagoon to treat poultry plant wastewater. A laboratory at the Massey plant handles all testing, including regulatory. Both plants discharge to Tallahala Creek. Biosolids are dredged, belt pressed and landfilled by Synagro Technologies.

PAVING THE ROAD

Snyder is based at the Massey plant but travels daily to the Smyly plant to speak with the operators about daily conditions and to help address maintenance issues. He manages a staff of seven who handle O&M for both plants. Snyder holds Class IV (highest) Wastewater, Class II Collections and Class C Water certifications. Reporting to him are:

- Blake Smith, O&M technician and lead maintenance/safety coordinator, Class II Wastewater and Collections.
- Michael Votta, O&M technician and lead operator, Class III Wastewater.
- O&M technicians Charles Newell, Class III Wastewater, Class II Collections; Maurice Hughes, Class II Wastewater; Lee Rowell; and Michael Freeman.
- Tony Shaw, lab technician, Class II Wastewater.



Team members include, from left, Devin Snyder, Maurice Hughes, Blake Smith, Michael Freeman, Charles Newell, Lee Rowell and Michael Votta.

OUTDOOR ADVENTURES

When not overseeing plant O&M, Devin Snyder likes to hit the slopes. “I enjoy recreational skiing, and my family and I travel to the mountains a few times a year to ski,” he says.

He and his wife, Shellie, love the outdoors so much that they named their two daughters Autumn and Rivers: “We love to travel. We have a 30-foot travel trailer, so we spend as much time as we can camping and exploring new places.”

They also enjoy riding their all-terrain vehicles. “We go on several large rides throughout the year, including trails in the Tennessee mountains and mud riding in Mississippi and Alabama.”

The O&M technicians perform all operations, maintenance for water and wastewater along with grounds work. “Any of them can do any job,” Snyder says. “Most were hired with a maintenance background, and we can do all the electrical and mechanical work in-house.”

Both plants operate around the clock. The staff can access the plants remotely via the SCADA system (Mission Communications). “I have the team everyone wishes they had,” Snyder says. “I am just one person, and I may get all the recognition, but they are the ones who did the work. I just paved the road.”

The staff gives back to the community by conducting plant tours for high school and college students. “They tour the facilities, and we have them view slides under the microscope in our lab,” Snyder says. “We also enter trucks and equipment in parades, participate in a Touch-A-Truck event for children, and financially sponsor the city’s annual fireworks show.”

INCREASING EFFICIENCY

In 2016, the wastewater plants added SCADA control and a lime slurry system (Polytec). Snyder says, “Before the SCADA, everything was operated

manually. The staff had to learn how to operate the new system, but it saves so much time. When they arrive at 7 a.m., it generates a report that tells them how they will spend their day.”

Snyder added the lime slurry system after looking for ways to increase staff efficiency. “We use lime for alkalinity and pH adjustment and had been spending a lot of time dumping bags of lime at the headworks,” he says. “We were handling 30 to 40 50-pound bags a day.”

Now, a truck delivers and pumps the 35 percent lime slurry about twice a month. Plant operators set the target pH, and the system doses the correct

amount. “The plant saved \$19,000 in 2017 on lime costs alone by switching to slurry, not to mention the overwhelming savings in manpower efficiency,” Snyder says. “The system took a year and a half to implement and wouldn’t have happened without city cooperation.”

Future plant upgrades include new aeration blowers. “We are being proactive and considering the age of our equipment so as to reduce future downtime,” Snyder says. “The city of Laurel has been outstanding. They see the problems with infrastructure and do their best to allocate proper funding to make it better.”

“We get an incredible amount of I&I during the November through March rainy season. We average about 56 inches of rain a year and received 21 inches just in June 2017.”

DEVIN SNYDER

PLANNING FOR PRETREATMENT

Snyder’s biggest challenge is learning to deal with daily changes in the flow from industrial users. “We’re coming to something new every day, so we have to change how we operate to keep up with their changes,” he says.

Plant staff members have developed good relationships with the customers, who now give them a heads-up when they make a change: “When an industrial facility goes into cleanup or goes down for maintenance, that can adversely affect our system. Luckily, they now give us a call to let us know what they’re doing and how long it will take.”

Each plant pretreats poultry waste in an anaerobic lagoon. The waste is broken down to reduce organic loading, and the water is decanted into the treatment plant. Plant staff members aim to implement an industrial pretreatment program by summer 2019. It will include all nonresidential customers with flows containing more than 200 mg/L BOD and TSS.

SIZED FOR I&I

Snyder is not fond of the storms and heavy rain the city has seen in past years: “We get an incredible amount of I&I during the November through March rainy season. We average about 56 inches of rain a year and received 21 inches just in June 2017.”

Hurricanes are always a concern. “Potential effects of hurricanes are power out at lift stations and high flows from I&I,” Snyder says. Hurricane Nate in October 2017 didn’t affect the plants since Laurel is 90 miles north of the coast, but Hurricane Katrina in August 2005 did have an impact. High winds took out power lines, destroyed several lift station sites and damaged a few structures throughout the system. Each facility has an emergency preparedness plan and 100 percent backup generator power.

The plants are designed for wet weather. “At 75 hp, the two vertical turbine storm pumps are sized to handle the inflow,” Snyder says. “Although our average daily flow at each plant is 4.0 mgd, we have seen 19 mgd, and we can push 20 mgd.”

The stormwater pump station receives wet weather flows above the plants’ peak hydraulic capacity of 13 mgd. It raises the stormwater to a high level where the flow can be discharged to the equalization lagoon or to the oxidation ditches if needed. The flow to the equalization lagoon is retained and gradually drains back into the main pump station for treatment during dry weather.

Snyder, Blake Smith and Charles Newell perform maintenance on a Continental blower.



*To learn more,
take a look at a video
profile of Devin Snyder
at www.tpmag.com*

While the weather in Laurel can be stormy, all is calm at the treatment plants. For Snyder, the missed holidays and late nights are not nearly as frequent. “There were a lot of late nights, more times than I can count when I was first brought in to get the maintenance to where it needed to be,” he says. “But I would do it all over again. It’s a good profession.” **tpo**

featured products from:

Continental Blower, LLC
315-451-5410
www.continentalblower.com

Duperon Corporation
800-383-8479
www.duperon.com

Lakeside Equipment Corporation
630-837-5640
www.lakeside-equipment.com

Mission Communications
877-993-1911
www.123mc.com

Pentair - Fairbanks Nijhuis
913-371-5000
www.fairbanksnijhuis.com

Smith & Loveless, Inc.
800-898-9122
www.smithandloveless.com

SUEZ North America
201-767-9300
www.suez-na.com

Sulzer Pumps Solutions Inc.
800-525-7790
www.sulzer.com

Synagro Technologies, Inc.
800-370-0035
www.synagro.com

Teledyne ISCO
800-228-4373
www.teledyneisco.com

TrojanUV
888-220-6118
www.trojanuv.com

Wilo USA
888-945-6872
www.wilo-usa.com

PHOTOS COURTESY OF DOWNERS GROVE SANITARY DISTRICT



A contractor delivers a tanker load of grease to the Downers Grove (Illinois) receiving station. The grease will be fed to the anaerobic digesters.

Nearing Neutrality

A CHICAGO-AREA DISTRICT HAS NET-ZERO ENERGY IN SIGHT FOR ITS WASTEWATER TREATMENT PLANT THROUGH EFFICIENCY IMPROVEMENTS AND BIOGAS PRODUCTION AUGMENTED BY FOG

By Steve Lund

The Downers Grove (Illinois) Sanitary District is on the verge of a sustainability milestone: The wastewater treatment plant is producing more electricity than it uses, nearly enough to offset natural gas consumption to become a net-zero energy facility.

Nick Menninga general manager of the district in a southwestern suburb of Chicago says the plant approached net-zero energy consumption by the end of 2017. “We certainly have days when we make more energy than we use, but our objective is to get 12 months in a row where we’re at a negative number,” he says.



One of the two biogas-fueled engine-generators (Nissen) that form the heart of the combined heat-power system.

Achieving that will bring in a \$500,000 grant from the Illinois Clean Energy Community Foundation, which has helped the district with several previous grants totaling \$589,400 as it cut electricity consumption and boosted its generating capacity.

“Downers Grove is almost like the poster child of what we would want some of the large plants to do,” says Gabriela Martin, program director for

“The biggest thing was the aeration project. That made a very noticeable difference in our electricity usage. Once we had a handle on how efficiently we could run, we started looking at making electricity on site using digester gas.”

NICK MENNINGA

energy with the foundation. “They have been working with us for many years and have gradually been improving the plant’s energy efficiency. They got to the point where there wasn’t a lot more they could do to reduce energy consumption, so they began to expand biogas capability.”

A LONG PROCESS

The process has taken about 10 years. In the beginning, Downers Grove was just trying to save money: Electricity made up about 15 percent of operating costs. The activated sludge plant (11 mgd design) has tertiary filters and hypochlorite disinfection and discharges to the East Branch of the DuPage River.

District leaders considered replacing electric motors in the plant with steam or biogas but decided to stick with the basic electric infrastructure

(continued)

Into deep.
kelleramerica.com



 **KELLER**
submersible level transmitters

The Acculevel is intended for high-accuracy measurement in countless liquid level applications. Use only as directed. Product contains no-cost guaranteed lightning protection. Common side effects include increased reliability and decreased system downtime. Contact Keller America right away if you experience lead-times greater than 3 days with other manufacturers. Warning: In many cases, the desire to switch to all Keller instrumentation can occur as this indicates a high degree of customer satisfaction. In such cases, contact Keller America at 877-253-5537 or email sales@kelleramerica.com for assistance.



High-speed turbo blowers replaced older blowers at the Downers Grove plant (Sulzer Pumps Solutions).

and look for efficiency opportunities. “We first looked at modifying the aeration system,” Menninga says. “We put in fine-bubble diffusers (Sanitaire - a Xylem Brand) and high-speed turbo blowers (Sulzer Pumps Solutions) and installed better process controls (Allen-Bradley) so we could modulate the airflow to the process more closely.”

The old blowers were either on or off. The new instrumentation monitors the air demand from the aeration tanks and automatically modulates blower speed. The district also changed the blowers in the aerated grit chamber, installed more efficient lighting, and improved the buildings’ HVAC system efficiency.

“The biggest thing was the aeration project,” Menninga says. “That made a very noticeable difference in our electricity usage. Once we had a handle on how efficiently we could run, we started looking at making electricity on site using digester gas.”

BIOGAS TO ELECTRICITY

The district had some experience as early as the 1980s using digester gas to operate a blower, but the equipment was difficult to maintain and was inefficient. “We started looking at other uses of biogas,” Menninga says. “We decided to install a combined heat and power, or CHP, facility. It’s basically a couple of V8 engines driving synchronous generators. The hot water off the engines is used to heat the anaerobic digesters.”

The biogas is fed through a cleaning system (Unison Solutions) before being fed to the engine gensets, a 280 kW Tech 3 Solutions unit and a 375 kW Nissen model. To boost gas production, the district installed a receiving station to accept fats, oils and grease from restaurant grease traps for feeding to the digesters.

“Restaurant grease traps get pumped out pretty routinely,” Menninga says. “We permit haulers to deliver it here, and they pay us to take it off their hands. We put it into a tank and bleed it into the digesters along with our sludge. It dramatically increases gas production.”

The grease receiving equipment required a significant investment: “We bought special pumps and macerating equipment and a mixer for the tank. Grease receiving has become a pretty substantial piece of infrastructure.” The CHP system brought the treatment plant close to energy neutrality. In December 2017, net energy usage was 13 MWh (40 MWh in natural gas used for heat and 27 MWh of electricity sold back to the grid), while plant operations totaled 632 MWh of energy.

HELPING PAY THE WAY

The Illinois Clean Energy Community Foundation offers grants to wastewater treatment plants in the state that are serious about becoming energy neutral or better.

The independent foundation was established in 1999 with a \$225 million endowment from Commonwealth Edison. Part of its mission is to improve energy efficiency and advance the development and use of renewable energy resources. It has awarded more than 5,000 grants totaling more than \$250 million.

However, the end of the money is in sight. “We’re spending ourselves out of existence,” says Gabriela Martin, program director for energy. “We estimate that we have another five to seven years of funds left. The board decided that we wanted in the last few years to make an impact in a few sectors and really push them.” The members chose to focus on net-zero energy buildings and wastewater treatment plants.

Illinois has more than 1,000 wastewater treatment plants, large and small, and many may be capable of producing more energy than they use. “Some just need a large solar array to offset their electric consumption, or they may want to consider a wind turbine,” Martin says. “We have a number of smaller plants where that is definitely feasible.”

The Downers Grove Sanitary District is the only grant recipient so far under the net-zero program, but other projects are in the design phase. The foundation is looking for more qualified applicants. The grants require matching funds and are performance-based: The foundation releases the grants only when the project produces results.

“Anyone who comes in looking for funds has to have an energy plan in place that commits the facility to becoming net-zero,” Martin says. “It has to be a part of their way of doing business. Sometimes it’s a long haul to get there. We’re not looking to make many grants. We want to make grants that catch people’s attention, that make a difference, and hopefully get others to think about doing the same thing.”

THE FINAL HURDLE

The next piece of the puzzle, which Menninga thinks will bring the plant to net-zero, is FOG storage. After the second engine-generator came online in 2017, the plant was using up all its FOG over weekends.

“We found our gas production would fall off on Sunday afternoons,” Menninga says. “We took our final delivery on Friday. By Sunday, our gas production would drop. There would be a day of the week when we weren’t making that much electricity.”

The solution was to put in a second grease receiving station with enough storage to keep the digesters producing gas throughout the weekends. “We’re expecting to be able to run seven days a week pretty much at capacity instead of six days a week,” Menninga says. “With that, we’re pretty confident we’ll be able to run at net-zero from now on.” **tpo**

AllMax Software can
save you time and make
your job *easier!*

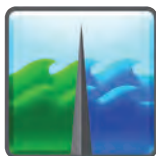
Contact us today to
find out *how.*



Antero™
Maintenance



Operator10®
Water & Wastewater



Synexus™
Pretreatment

AllMax
Software

www.allmaxsoftware.com

800-670-1867

sales@allmaxsoftware.com

FREE INFO – SEE ADVERTISER INDEX



GET
EMAIL NEWS
ALERTS FOR

TREATMENT PLANT OPERATOR
tpo

Go to
tpomag.com/alerts
and get started today!



a xylem brand

YOU
ALWAYS
HAVE A
CHOICE



You have a choice in process monitoring.


YSI has been developing and manufacturing water quality
monitoring instrumentation in the U.S. for 70 years.

It's time to partner with YSI.

CONTACT US:

 info@YSI.com

 YSI.com/WW

 1-800-767-7241

xylem
Let's Solve Water

FREE INFO – SEE ADVERTISER INDEX

Odor Control and Disinfection

By Craig Mandli

Activated Carbon System

ACTIVATED CARBON SERVICES – PACS ACTIVATED CARBON ADSORPTION SOFTWARE

Activated Carbon Adsorption Software from Activated Carbon Services – PACS quickly and efficiently provides adsorption capacities on activated carbon for 818 organic volatile compounds. This software information enables the plant manager to pick the best carbon for each application and the amount of carbon they will need to provide odor control. The database provides humidity effects on adsorption at different influent concentrations. The adsorption feature in presence of humidity is easy to use. The user puts in the compound of interest and relative humidity and pushes the calculate button to get a two-page output including influent concentrations of 100 to 10,000 ppmv, adsorption loading on dry carbon in cubic centimeters of compound adsorption per 100 grams of activated carbon, and adsorption in the presence of humidity. **724-457-6576; www.pacslabs.com**



Activated Carbon Adsorption Software from Activated Carbon Services – PACS

Biofiltration



biotTTA biological filtration system from AdEdge Water Technologies

AEDGE WATER TECHNOLOGIES BIOTTTA

The biotTTA biological filtration system from AdEdge Water Technologies leverages nature to offer a sustainable solution for well-head treatment of inorganic and organic contaminants. Its fixed-bed, dual-stage

biotreatment cultivates an environment for microbiological organisms

to destroy contaminants or reduce elements to simple unarmful forms. The fixed-bed treatment process consistently addresses contaminants at low levels, intermittent or fixed operation, and the dual bed assimilates a complete packaged biotreatment plant. It has regulatory approval for the reduction of nitrate and perchlorate, and it demonstrates hexavalent chromium, VOCs, iron, manganese and sulfide elimination in a single process. The low-volume discharge is easily managed as a non-hazardous waste stream. **866-823-3343; www.adedgetech.com**

ANUA AIRASHELL

Airashell from Anua is a modular bio-filter with a small footprint. The air treatment system removes a variety of noxious odor compounds, including over 99 percent hydrogen sulfide, and can handle high variability in compound concentrations. It is prepackaged with recycled seashells, which



Airashell biofilter from Anua

protects the environment while reducing solid waste. The seashell media acts as a host for biological activity and a catalyst for pH neutralization. **336-547-9338; www.anuainternational.com**

Chemicals

CARUS CAIROX CR POTASSIUM PERMANGANATE

Cairox CR Potassium Permanganate tablets from Carus are designed to treat hydrogen sulfide odors in municipal wastewater when the use of feed equipment is not practical. They can be easily deployed in polyester mesh bags in remote site, lift stations and manhole applications. Controlled release technology allows the tablets to begin reacting with hydrogen sulfide and other odor-producing compounds in seconds. Tablets are passive, prevent sulfide-based corrosion and eliminate the health risks associated with hydrogen sulfide exposure. **800-435-6856; www.caruscorporation.com**



Cairox CR Potassium Permanganate tablets from Carus

Chlorination/Dechlorination



Neutralizer from BCR

BCR NEUTRALIZER

The Neutralizer from BCR is a two-stage advanced oxidation process that converts waste activated sludge to Class A biosolids, which can be registered as a commercial fertilizer. The process is an 8-hour batch process that can process up to 3,650 dry tons per year in a 12 mgd facility. The highly scalable process thickens WAS to 4 percent total solids and adds chlorine dioxide for the first stage of the disinfection process. After pH adjustment, sodium nitrite is added to produce nitrous acid in situ, which completes the disinfection process. After processing, the biosolids are dewatered using any common dewatering method. The process is a closed system and eliminates odors normally associated with biosolids processing. The entire process uses approximately 10 percent of the energy expended by a single digester, making it cost effective and reducing the carbon footprint of the plant. **904-819-9170; www.bcrenv.com**

FORCE FLOW CHLOR-SCALE AND HALOGEN ECLIPSE

To protect chlorination systems from dangerous leaks, the Halogen Eclipse emergency valve shut-off system instantly closes the container valve when a signal is received from a leak detector, panic button or SCADA. The actuator quickly installs on the tank without the use of any tools and allows manual operation of the valve while in place. During an emergency shutdown event, the system measures the actual torque applied to the valve to ensure that the valve is closed to Chlorine Institute recommended standards and provides remote confirmation that the emergency close operation successfully closed the valve. The Chlor-Scale from Force Flow safely cradles a chlorine ton container while providing critical feed and chemical inventory information. Know in real time exactly how much chlorine has been fed and how much remains in the tank. It can warn of excessive or insufficient feed rates and can be remotely monitored from a PLC or SCADA system. **800-893-6723; www.forceflow.com**



Halogen Eclipse and Chlor-Scale from Force Flow

PROMINENT FLUID CONTROLS CHLORINE ANALYZER AND CONTROLLER

Chlorine Analyzers and Controllers from ProMinent Fluid Controls provide precise monitoring or control of chlorine for potable and wastewater applications. They use amperometric sensor technology, resulting in a reagent-free online analysis with no colorimetric concerns or reagents. Packages are fully plumbed, wired and assembled on a back panel for easy wall mounting. Choose one of three packages by selecting one part number that includes a microprocessor analyzer, flow cell, flow sensor and a (2 or 10 ppm) free or total chlorine sensor. They have a reagent-free sensor design and are EPA Method 334.0 compliant. No service contract is required. **412-787-2484; www.prominent.us**



**Chlorine Analyzers and Controllers
from ProMinent Fluid Controls**

SCIENCO/FAST - A DIVISION OF BIO-MICROBICS SCICHLOR

SciCHLOR from Scienco/FAST - a division of Bio-Microbics is a sodium hypochlorite generator designed to give a large span of markets a safe and effective way to disinfect. With salt, water, and electricity, the system with multipass SciCELL Electro-Chemical Activation, or ECA, technology will produce an available supply of 10 to 60 pounds chlorine-equivalent/day sizes. Connected to an incoming water source and with multiple operating modes, the brine solution multipasses through the low-voltage DC electrolytic cell to provide a reliable method for the needs of



**SciCHLOR from Scienco/FAST -
a division of Bio-Microbics**

medium to large onsite disinfection applications. Its recirculation method keeps control of desired chlorine concentration while the assembly minimizes maintenance downtime. With an 800 ppm FAC sample taken from the generator, the solution killed 100 percent of the *Staphylococcus aureus* and *E. coli* organisms within 30 seconds, according to the maker. **866-652-4539; www.sciencofast.com**

TGO TECHNOLOGIES CHLORTAINER

The ChlorTainer from TGO Technologies is a high-pressure containment vessel into which a 1-ton or 150-pound chlorine gas cylinder is processed. If the cylinder should leak, chlorine gas is contained within the vessel and processed at a normal rate. All of the chlorine gas is used, and no hazardous waste is generated. No scrubber systems, fans, pumps, tanks or mechanical systems are required. The vessels can be installed



**ChlorTainer from
TGO Technologies**

indoors or even located in an open-air structure as long as it provides shelter from direct sunlight and rain. The system is defined as passive for the purpose of the RMP and meets with Article 80 of the Uniform Fire Code. All vessels are built to ASME code and can withstand the maximum pressure produced by a chlorine cylinder. It can provide safety containment for sulfur dioxide and anhydrous ammonia as well. **800-543-6603; www.chlortainer.com**

Covers/Domes/ Infrastructure

AIRMASTER AERATOR TURBO X-TREME IAT

The 25 hp Turbo X-Treme IAT from Airmaster Aerator is a high-efficiency, floating/surface aerator that can pump 5 mgd. The stainless steel unit incorporates a turbo blower and a double-sided impeller to achieve high-capacity water movement with maximum aeration and mixing. In operation, it disrupts the molecular structure of the wastewater and infuses air. The air-infused wastewater is then discharged from both the right and left side of the aerator and mixed from the top of the basin to the bottom. This creates a complete mix of air-infused wastewater in the basin without increasing the temperature of the wastewater. It can consistently raise the dissolved oxygen levels in the water while providing high-capacity water movement. **888-813-3680; www.airmasteraerator.com**



**Turbo X-Treme IAT from
Airmaster Aerator**



Powerfoil X3.0 from Big Ass Fans

BIG ASS FANS POWERFOIL X3.0

The Powerfoil X3.0 from Big Ass Fans uses a hermetically sealed gearbox that never requires maintenance. In addition to manual control, the included SmartSense

controller can automate fan operation year-round for optimal energy efficiency. The substantial airflow provided quickly eliminates odors and fumes from treatment facilities; additionally, this airflow augments the fume-removal capabilities of existing ventilation fans and louvers. Its airflow also helps keep workers up to 10 degrees F cooler during the hottest summer months, making facilities without air conditioning more comfortable and safer. It is available in diameters from 8 to 24 feet. **877-244-3267; www.bigassfans.com**

CST INDUSTRIES FLAT-PANEL COVERS

Flat-panel covers for wastewater process and water storage tanks from CST Industries help control odorous emissions and prevent water intrusion.

They provide high strength, durability, odor-control and protection characteristics. The flush batten engineered aluminum covers are low-maintenance, low-cost and low-profile while versatile enough to permit a wide range of accessories important to the water, reservoir and wastewater industry. **844-448-2657; www.cstindustries.com**



**Flat-panel tank covers
from CST Industries**



**Defender Tank Covers
from Environetics**

ENVIRONETICS DEFENDER TANK COVERS

Defender Tank Covers from Environetics are custom manufactured from industrial-grade materials to fit the profile of a new or existing wastewater treatment or potable water tank.

Odorous gas emissions from wastewater treatment facilities generate complaints from local residents and are subject to the Clean Air Act Amendments of 1990. The covers contain volatile organic compounds at their source. Low-

profile structurally supported covers minimize emission treatment volume to reduce the cost of air filtration equipment and eliminate the ongoing expense of applying odor control chemicals through atomizers and misters. 815-838-8331; www.environeticsinc.com

INDUSTRIAL & ENVIRONMENTAL CONCEPTS (IEC) ANAEROBIC COVERS

Anaerobic covers from IEC are custom designed to work on virtually any pond. They are designed to operate at all water elevation changes and most pressures. In colder climates, the covers are offered with an insulation that retains water temperature, which promotes year-round reliability and performance. The design effectively removes rainwater and eliminates problems associated with ponding and ballooning. The system requires minimal maintenance with an unsurpassed service life. Engineers and operators are welcome to call us. 952-829-0731; www.ieccovers.com



Anaerobic covers from Industrial & Environmental Concepts

JDV EQUIPMENT LEVEL LODOR



Level Lodor cover system from JDV Equipment

The Level Lodor cover system from JDV Equipment helps contain odors by covering standard dump containers used for hauling processed material. The design allows for even distribution, increasing the fill percentage without having to manually even out material. Enclosing containers allow outdoor installation without exposing material to the environment or pests. 973-366-6556; www.jdvequipment.com

PAXXO LONGOPAC FILL

The Longopac Fill continuous bag system from Paxxo can connect to the discharge point of machines used to move, dewater or compact screenings, grit and biosolids. Material is then deposited in a 90-meter-long continuous bag for odor containment and spillage control. The cassette bag is easy to seal, and the material and odors are trapped inside, cutting down development of bacteria and fungus spores. 770-502-0055; www.paxxo.com



Longopac Fill continuous bag system from Paxxo

SIMPLE SOLUTIONS DISTRIBUTING WOLVERINE MEGA MT-20



Wolverine Mega MT-20 odor filter from Simple Solutions Distributing

The Wolverine Mega MT-20 odor filter from Simple Solutions Distributing provides odor control for airflows up to 20 cfm and can be used on station wet wells, sewer line vents or anywhere a vented air stream is present. Its crossflow design and catalytic activated carbon media provide years of trouble-free operation. It is available with an optional saturation indicator to let a maintenance crew

know when it is time to service the filter, before odor complaints begin. 866-667-8465; www.industrialodorcontrol.com

WESTECH ENGINEERING DUOSPHERE DOUBLE MEMBRANE GAS HOLDER

The DuoSphere Double Membrane Gas Holder from WestTech Engineering can maximize gas storage capability while providing odor containment. The dual nature of the product, which includes both an inner lining and external cover made of high-strength fabric, allows for constant pressure regulation. The customized, lightweight cover can adapt to both slab- or tank-mounted applications. It is an effective alternative to a steel digester cover while also adding biogas storage and odor containment. The gas chamber comes sealed from the factory, and the design allows easy access to inspect the inner membrane. High-strength fabric and a radio frequency welding process make complex reinforcing cables or framework unnecessary in most situations. It requires no field welding or painting. A gas detection system continuously monitors the air within the space between the membranes for any potential gas leaks. 801-265-1000; www.westech-inc.com



DuoSphere Double Membrane Gas Holder from WestTech Engineering

Detection Equipment



Jerome J605 from AMETEK Arizona Instrument

AMETEK ARIZONA INSTRUMENT JEROME J605

The Jerome J605 from AMETEK Arizona Instrument is designed to detect hydrogen sulfide at concentrations as low as 3 ppb with a resolution of 20 ppt. It has a survey mode that allows the user to continuously draw in samples of air in order to sweep an area for hydrogen sulfide hot spots or leaks so corrective action can be taken. Its wide detection range makes it useful for multiple applications, including regulatory compliance and odor control at wastewater and landfill facilities, scrubber efficiency testing, and monitoring corrosion in control rooms. 602-529-3723; www.azic.com

Distillation/Floridation Equipment and Microbiological Control

BIONETIX INTERNATIONAL HYGIEA 2200 FF 10X

HYGIEA 2200 FF 10X liquid odor control concentrate from Bionetix International contains all-natural ingredients that fight unpleasant odors by forming complexes with and absorbing chemicals/particles such as hydrogen sulfide and mercaptans. It also biodegrades these chemicals, producing a long-lasting effect by eliminating odors immediately and persistently instead of just masking them. This bio-blend can be diluted with water and automatically metered into wastewater at municipal treatment plants to control odor. It can also be sprayed in the ambient air to remove odors and stains in bathrooms, laundry and fitness facilities, garbage pails, dumpsters, garbage trucks, landfills or high-odor areas of treatment plants. It is a green, free-flowing liquid with a fresh mint fragrance. It should be diluted at a ratio of 1-to-10 by the end user before application. 514-457-2914; www.bionetix-international.com



HYGIEA 2200 FF 10X odor control concentrate from Bionetix International

Lovibond® Water Testing

Tintometer® Group

New!

Smart Interface

- Intuitive Mobile App & Local Display
- Superior Data Management

Low Maintenance

- Stable Light Source
- Easy to Clean
- Rapid Fluidics Connections

Innovative Design

- Low Volume Flow Body
- Simple Installation
- Optimized for Grab Samples
- Integrated Flow Indication

PTV Series Process Turbidimeters



www.lovibond.com



FREE INFO – SEE ADVERTISER INDEX



Waste-Eze Tabs from
Eco-logical Concepts

ECO-LOGICAL CONCEPTS WASTE-EZE TABS

Waste-Eze Tabs from Eco-logical Concepts use SORT (Selective Oxygen Release Tab) technology to provide oxygen and billions of safe bacteria to break down and digest organic solids, waste, and grease while eliminating odors. They can be used in wastewater treatment facilities, as well as pump and lift stations. They help prevent hydrogen sulfide and other noxious odors, as well as potential corrosion issues. When hydrogen sulfide is trapped in an enclosed area, it can form sulfuric acid, which will corrode tank walls and pipes, eventually leading to system failure. The tabs help prevent the creation of hydrogen sulfide and other noxious odors or corrosion by adding oxygen. The byproduct of aerobic (with oxygen) degradation is carbon dioxide, a nontoxic odorless gas. **516-248-3553; www.econowcommercial.com**

Ozonation Equipment/ Systems

DE NORA WATER TECHNOLOGIES CAPITAL CONTROLS OZONE GENERATORS

Capital Controls ozone generators from De Nora Water Tech-



Capital Controls ozone generators
from De Nora Water Technologies

nologies are available in components to complete packaged systems, including containerized plug-and-play pilots. SAFEGUARD technology offers modular fuse or electronic control for flexibility and maintenance advantages. The mechanical design of the dielectric is easy to maintain, increasing uptime. Standard components make aftersales support easier, quicker and less expensive. **215-997-4000; www.denora.com**

SUEZ – WATER TECHNOLOGIES & SOLUTIONS OZONIA M

The ozonia M ozone generator from SUEZ increases ozone production capacity while reducing energy consumption and costs, providing improved resistance to environmental conditions. A compact and cost-effective solution, it produces up to 25 kg/h of ozone. It provides improved resistance, allowing operation under harsh environmental conditions like marine vessels, making it a marine-certified ozone system for ballast water treatment. The system uses ozonia IGS+ technology, an ozone-generation process with improved performance to provide lower energy consumption and increase ozone production capacity with lower overall capital and life cycle costs. The SmartO3 automation platform provides a suite of advanced features to optimize the ozone system performance and make operations and maintenance more efficient. **201-676-2525; www.ozonia.com**



ozonia M ozone
generator from SUEZ

(continued)

Scrubber

HEYWARD FLORIDA HIBOCS

The HIBOCS odor control vessel from Heyward Florida is a biological air scrubber system designed to remove vapor phase odorous gases, primarily hydrogen sulfide. Typical applications are lift stations or plant headworks with high-level H_2S and airflow volume. The system is comprised of a fiberglass or polypropylene vessel, which contains HIHP-98 high-surface-area synthetic plastic media. All system control panels are prewired and plumbed and mounted to the control skid for quick and easy installation. The FRP or corrosion-resistant cast aluminum blower is powered by a stainless steel wash-down/inverter duty motor that is variable-frequency drive controlled for precise airflow and quiet operation. Since the media life expectancy is the life of the system, and the nutrient chemicals are nonproprietary, the operating cost is low. 407-628-1880; www.h2scontrol.com



HIBOCS odor control vessel from Heyward Florida



3G UV wastewater disinfection unit from SALCOR

Ultraviolet Disinfection Equipment

SALCOR 3G UV WASTEWATER DISINFECTION UNIT

The 3G UV wastewater disinfection unit from SALCOR is proven for residential, commercial, and municipal uses, according to the maker, and is UL-certified NEMA

6P flood-proof and NSF/Washington State Protocol six-month tested (with 21 upstream treatment systems). It inactivates bacteria/virus pathogens, including superbugs. Rated at 9,000-gpd gravity flow, it is a reliable building block for large water recovery/reuse systems. When installed in 12-unit parallel/series arrays with ABS pipe fittings, systems are disinfecting over 100,000 gpd, the manufacturer reports. Gravity flow equalizes without distribution boxes. Each unit has a foul-resistant Teflon lamp covering, two-year long-life lamp with speedy installation, minimal annual maintenance, and energy efficiency of less than 30 watts. 760-731-0745

WEDECO - A XYLEM BRAND DURON

The Duron UV system from WEDECO - a Xylem Brand helps meet the disinfection needs of midsized to large wastewater treatment sites. To maximize disinfection efficiency and hydraulic performance, it uses staggered 600-watt Ecoray lamps at a 45-degree angle. Simple to install and operate and validated for a diverse range of water characters, it can be designed to meet any site's specific disinfection requirements. No lifting device is required and maintenance is made easy with fully automatic UV module lifting. Energy savings come from providing the required dose based on integrated OptiDose control, which is based on real-time lamp aging, fouling and water parameters. It provides closed-loop monitoring of UV intensity, UV transmittance and flow rate to quickly adapt to water quality changes. 855-995-4261; www.xylem.com tpo



Duron UV system from WEDECO - a Xylem Brand

FREE INFO ON THESE PRODUCTS — RETURN FOLLOWING FORM

For FREE information on these odor control and disinfection products, check the box(es) below:

Activated Carbon System

- ☐ Activated Carbon Services — PACS Activated Carbon Adsorption Software

Biofiltration

- ☐ AdEdge Water Technologies biotita biological filtration system
☐ Anua Airashell biofilter

Chemicals

- ☐ Carus Cairox CR Potassium Permanganate tablets

Chlorination/Dechlorination

- ☐ BCR Neutralizer
☐ Force Flow Chlor-Scale and Halogen Eclipse
☐ ProMinent Fluid Controls Chlorine Analyzer and Controller
☐ Scienco/FAST - a division of Bio-Microbics, SciCHLOR
☐ TGO Technologies ChlorTainer

Covers/Domes/Infrastructure

- ☐ Airmaster Aerator Turbo X-Treme IAT
☐ Big Ass Fans Powerfoil X3.0
☐ CST Industries flat-panel tank covers
☐ Environetics Defender Tank Covers
☐ Industrial & Environmental Concepts (IEC) anaerobic covers
☐ JDV Equipment Level Lodor cover system
☐ Paxxo Longopac Fill continuous bag system
☐ Simple Solutions Distributing Wolverine Mega MT-20 odor filter
☐ WesTech Engineering DuoSphere Double Membrane Gas Holder

Detection Equipment

- ☐ AMETEK Arizona Instrument Jerome J605

Distillation/Floridation Equipment and Microbiological Control

- ☐ Bionetix International HYGIEA 2200 FF 10X Iodor control concentrate
☐ Eco-logical Concepts Waste-Eze Tabs

Ozonation Equipment/Systems

- ☐ De Nora Water Technologies Capital Controls ozone generators

- ☐ SUEZ — Water Technologies & Solutions ozonia M ozone generator

Scrubber

- ☐ Heyward Florida HIBOCS odor control vessel

Ultraviolet Disinfection Equipment

- ☐ SALCOR 3G UV wastewater disinfection unit
☐ WEDECO - a Xylem Brand, Duron UV system

- ☐ **FREE subscription to TPO magazine**

PRINT NAME: _____

TITLE: _____

FACILITY NAME: _____

MAILING ADDRESS: _____

CITY: _____

STATE: _____

ZIP: _____

PHONE: _____

CELL PHONE: _____

FAX: _____

EMAIL: _____

Scan and email to: nicole.labeau@colepublishing.com / **Fax to:** 715-546-3786
Mail to: COLE Publishing Inc., P.O. Box 220, Three Lakes WI 54562

TPO0618

The wastewater industry relies purely on performance

Aeration technology and control systems for wastewater plants

Howden has been supplying blowers and compressors to wastewater treatment plants for over 100 years. By combining our high efficiency blowers and compressors, with our sophisticated downstream control systems – developed specifically for the wastewater treatment market, we can offer the most advanced and efficient aeration systems available.



SG Integrally-Gear Compressor Roots® Overhung Impeller With Bearing Housing Roots® Horizontally Split Compressor Roots® Integrally Geared Compressor Roots® RAS-J Roots® Rotary Package



Now offering Turblex® as part of our compressor portfolio

Learn more, visit: www.howden.com/turblex

For more information contact:

Howden Roots, 900 West Mount Street, Connersville, IN 47331, USA

t: 1-800-55-ROOTS (76687) e: roots.enquiries@howden.com w: www.howden.com/compressors

Revolving Around You™

FREE INFO – SEE ADVERTISER INDEX



TOP SKILLS THAT A WATER OPERATOR NEEDS NOW!



WATER TREATMENT OPERATOR COURSES

Instructor-led courses introduce the basic functions and responsibilities of Level 1 operators including in-depth concepts and practices about conventional water treatment processes, basic laboratory and sampling skills.

awwa.org/distancelearning

Level 1: July 23-August 24

Level 2: September 10-October 12

Level 3: October 15-November 16



The new AWWA Exam Prep App allows you to take certification preparation with you wherever studying is most convenient.

awwa.org/WSO



*dist@nce***Learning**

FREE INFO – SEE ADVERTISER INDEX

By Craig Mandli

Biofilter used to eliminate odors from sewer interceptor

Problem

A Southwest community was concerned about odor from a new sewer interceptor being built near a walking and bike path. They sought a reliable, low-maintenance odor control system that would also be unobtrusive and blend into the parklike environment.

Solution

The community chose a **BOHN BIOFILTER** to eliminate 1,200 cfm of foul air from the interceptor. This environmentally friendly system biologically oxidizes the odor-causing compounds and does not require regular nutrient addition.



RESULT:

The community now has highly effective odor control in a trouble-free system that goes essentially unnoticed by the public. **520-624-4644; www.bohnbiofilter.com**

System helps eliminate hydrogen sulfide odors at pump station

Problem

High hydrogen sulfide levels at the Forest Hills Pump Station in Pikeville, Kentucky, were creating a nuisance odor and a possible health risk. The station is at a major intersection and across the street from a high school and football stadium. Operators had tried various chemicals and other types of odor control with limited success.

Solution

The operators tried a **Phantom odor control system** from **Anue Water Technologies** that uses sidestream wastewater to draw in concentrated oxygen and ozone. The aerated/ozonated stream is delivered back to the wet well through well washing systems, uniformly transferring the oxygen and ozone for FOG and odor/corrosion control.



RESULT:

The hydrogen sulfide levels dropped to 9 ppm after the first day of operation and to zero during the second day. **760-727-2683; www.anuewater.com**

Granular activated carbon helps drinking water provider achieve compliance

Problem

Shelby County Water Services in Westover, Alabama, needed help complying with the EPA Stage 2 Disinfection Byproduct Rule, or DBPR.

Solution

The plant installed four **Calgon Carbon** 14-foot-diameter **Model 14 pressure vessels** containing granular activated carbon. The carbon adsorbs the total organic carbon, leaving less material in the water for reaction with the disinfectant chemical and reducing potential for DBP formation.



RESULT:

Since installation, DBP levels throughout the distribution system remain in compliance. Installation pre-empted the impact of the Stage 2 rule. **800-422-7266; www.calgoncarbon.com**

Odor control cover ends neighbors' complaints

Problem

The South Dearborn Regional Sewer District in Lawrenceburg, Indiana, is in a growing area and is surrounded by retail and other commercial developments. Odor complaints became an issue, and efforts to mask odors from the primary clarifiers were unsatisfactory.

Solution

The district chose **Evoqua Water Technologies' Geomembrane Technologies** structurally supported covers for the clarifiers. Each custom-designed cover is tensioned over a series of aluminum support arches. The retractable covers allow operators to easily access tank internals for inspection and maintenance. The covers were installed in less than a week without taking the clarifiers out of service.



RESULT:

"Odors have disappeared from our plant," says Dennis Feichtner, district superintendent. "Odor complaints used to arise so frequently that it was a standard agenda item in board meetings. Now we receive positive comments from the public." **www.evoqua.com**

**RANGE
EXTENDED!**
Now includes Qdos 120

qdos
Peristaltic Metering

Accurate, versatile chemical pumps

- Cut chemical costs through higher accuracy metering
- Simple drop-in installation eliminates ancillary equipment
- Range expanded to include the Qdos 120: flow rates from 0.001 to 31.7 USGPH and up to 100 Psi

ReNu Fully sealed for life, one minute technology tool-free maintenance
REVOLUTIONARY PERISTALTIC PUMP HEAD



ACE¹⁸
ANNUAL CONFERENCE & EXPOSITION

Booth 19052



qdospumps.com
info@wmftg.com

**WATSON
MARLOW**

Fluid Technology Group

FREE INFO – SEE ADVERTISER INDEX

City uses 'green' technology to control odor in collections system

Problem

The Taylorville (Illinois) Sewer Department faced severe hydrogen sulfide odor issues caused by heavy FOG deposits and matting buildup in several lift stations. Farther down the line, at several manholes, hydrogen sulfide readings exceeded 700 ppm, showing heavy signs of corrosion and sparking major complaints from residents.

Solution

The city purchased three **Little John Digesters** with UV Ozone from **DO2E Wastewater Treatment**. Within the first month of running the digesters, hydrogen sulfide levels dropped by 94 percent, and FOG and matting dropped by 99 percent.



JDV LEVEL LODOR™

*Design for Even Distribution
&
Odor Control*

www.jdvequipment.com



JDV Equipment Corporation
Incorporating Ralph B. Carter Company

RESULT:

"We have been operating these digesters for over 18 months, and they have by far exceeded our expectations not only in odor control, but also in FOG, matting removal, and corrosion control," says Richard Wiseman, street and sewer superintendent. "We anticipate a return on our investment in less than 24 months. We have budgeted for more digesters this year with UV ozone." 251-937-8200; www.do2e.com

(continued)

FREE INFO – SEE ADVERTISER INDEX

Turnkey system helps eliminate treatment odors

Problem

Expanding population in the Atlanta area had the largest of the city's four wastewater treatment plants in need of an additional system to alleviate odors, improve reliability and comply with environmental regulations.

Solution

Indusco Environmental Services proposed a turnkey **odor control system** consisting of a custom-designed vertical packed bed scrubber, chemical storage tanks, exhaust stack, platform and ladder, centrifugal fan, recycle and chemical feed pumps and skids, control panels, and instrumentation.



RESULT:

The system is up and running operating with a more than 99 percent removal efficiency. 251-621-2338; www.induscoenviro.com

Ionized-based odor control used at industrial dairy farm

Problem

The wastewater treatment system at Mayfield Dairy Farms in Homewood, Alabama, had a conventional extraction carbon-based odor scrubber that required media replacement three times a year at an average cost of \$45,000 annually. Plant personnel realized the existing system could not consistently reduce odors to an acceptable level.

Solution

Kusters Water, division of Kusters Zima Corp. provided a **Terminodour ionization-based system** to treat the odors inside the building before the external scrubber. Each system includes an air-handling unit outside the building. Air is drawn in through louvers and passes through filters. Then a blower moves the air into the plasma reactor chamber, where it flows over corona discharge tubes and oxygen molecules are ionized. As air exits, it is fed through a series of galvanized steel ducts on the building exterior.



RESULT:

The system brought a noticeable improvement in interior air quality and an estimated 90 percent reduction in odors. The reduced odor load to the scrubber led to fewer carbon media changes, saving about \$30,000 a year. Odor complaints from neighbors have stopped and the working environment is much improved. 800-264-7005; www.kusterswater.com

Grease-busting system help eliminate lift station odors

Problem

The in-plant lift station at California's Carmel Area Wastewater District wastewater treatment facility had a foul odor along with grease buildup that required frequent clean-outs.

Solution

Ed Waggoner, plant operations superintendent, chose the **Pulsed Hydraulics grease-busting system**, which creates beach ball-sized air bubbles at the bottom of a basin. The bubbles rise quickly and fracture the grease cap, roll the grease over, and carry it to the bottom, where it is pumped with wastewater. Because the lift station is a long rectangle, the company recommended a pair of bubble diffusion forming plates installed on the basin floor. High-pressure air (50 to 100 psi) is supplied by a Kaeser rotary screw compressor, and bubble-forming air pulses are controlled by a Pulsed Hydraulics 350 mixer.



RESULT:

The process was effective within 30 minutes of startup. With the grease cap formation eliminated, the odor was gone. 800-641-1726; www.phewater.com

Containerized unit solves plant's odor issues

Problem

A water treatment works in Yorkshire, U.K., experienced a significant rise in taste and odor complaints.

Solution

Plant operators chose a **TransPAC unit** from **Transvac Ejector Solutions**. The fully containerized unit was lifted by a truck crane driven to the site. Transvac engineers installed the unit and set the powdered activated carbon dosing rates to site requirements. No PAC is wasted, and the flow can be adjusted as conditions change. The unit came with a bulk bag dosing frame and silo feed chute, allowing the site engineers to choose their method of transferring PAC into the hopper.



RESULT:

The client was pleased with the quick turnaround. Thanks to the stock unit, the time from order placement to delivery was just one week. www.transvac.co.uk tpo

Wilo USA announces NSF certifications

Wilo USA announced its entire range of vertical multistage pressure boosting systems has received NSF 61 and NSF 372 certifications. The booster offerings include the CO-Helix, SiBoost, and Helix EXCEL Complete, which are available in single to four-pump configurations. NSF certification indicates a company complies with strict standards and procedures, including verification through extensive product testing, material analyses, and unannounced inspections.

AdEdge Water Technologies adding Rotec flow-reversal reverse osmosis technology

AdEdge Water Technologies will be adding Rotec flow-reversal reverse osmosis technology to its core product offerings. The two companies are entering into an exclusive licensing agreement to distribute the FR-RO technology in North America. FR-RO utilizes standard nonproprietary equipment and can be implemented in all newly built municipal and industrial RO systems, and it can be retrofitted to existing RO systems.

Jo Vanhoren named president and CEO of Alfa Laval

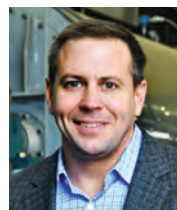
Jo Vanhoren was appointed president and CEO of Alfa Laval in March. In addition, he was named president of Alfa Laval's North American sales and service organizations in the U.S. and Canada. He joined the company in 1991 as a heat exchanger engineer for Alfa Laval Benelux. From 1996 through 2006, he held several progressive positions within the organization. In 2007, he was named general manager for the company's Air Business Center, and in 2012, he was appointed managing director of Alfa Laval Iberica, covering the Spain and Portugal markets. In addition to his managing director role, Vanhoren was named president of the southern Europe group in 2017. He holds a degree in electromagnetic engineering and a postgraduate degree in business management. Vanhoren will be based at the company's Richmond, Virginia, facility.



Jo Vanhoren

BCR announces Joshua R. Scott as new CEO, expansion of services

BCR announced that Joshua R. Scott was named CEO on a permanent basis. Previously serving as president and interim CEO since July of 2017 and chief operating officer since joining the company in late 2016, Scott has driven a strategic planning process and organizational and cultural redefinition with a vision toward scaling BCR to become more national in scope.



Joshua R. Scott

The company also announced it is scaling the availability of its biosolids treatment technologies throughout North America. With a number of successful installations in the Southeast, the company has scaled its sales, representative network and follow-on service capabilities to support the growing demand for both Class A and Class B process technology solutions.

EBARA announces consolidation of divisions

EBARA Corp. announced it has consolidated its Ebara International Corp. - Fluid Handling Division and Custom Pump Divisions into a new independent company, EBARA Pumps Americas Corp., effective April 1. The company will continue to provide engineered pumps, pump products, and related services for the industrial, building services, and municipal markets, and it will begin offering locally supported custom pump products from its Rock Hill, South Carolina, headquarters. **tpo**

CHLORINE SAFETY!

Chlorine & Chemical Tank Scales

◆ Know exactly how much you fed & how much remains

Chlorine Emergency Shutoff Systems

◆ Instantly STOP a dangerous chlorine leak!



FORCE FLOW

CHECK. CONTROL. COMPLY.
www.forceflowscales.com



Your Partner in Safety
www.halogenvalve.com

FREE INFO - SEE ADVERTISER INDEX

DON'T HAVE A FIT WHEN YOU HAVE TO.... SIT!

PORTA-TREAT

- Treats and Deodorizes
- Liquid, Powder, or Water-Soluble Pouches
- Biodegradable, Non Toxic
- Natural Cultures of Bacteria
- Free of Chemicals

21 040 rue Daoust
Ste-Anne-de-Bellevue, Quebec
H9X 4C
Phone: 514 457.2914
Fax: 514 457.3589
Email: info@bionetix.ca
www.bionetix-international.com

Bionetix
INTERNATIONAL
A Subsidiary of Corcon Corporation

ISO: 9001 Certified
Quality System Registered

FREE INFO - SEE ADVERTISER INDEX



1. CLEARSPAN FABRIC STRUCTURES DESIGN-BUILD SOLUTIONS

ClearSpan Fabric Structures provides design-build solutions for wastewater facilities, covered sludge beds and more. ClearSpan Hercules Truss Arch Buildings feature high clearances and spacious interiors without support posts to hamper operations. The fabric buildings are outfitted with frames constructed from USA-made, triple-galvanized structural steel that will hold up strong in corrosive environments. Rip-stop polyethylene covers let natural light shine through, eliminating the need for daytime artificial lighting and lowering energy costs. Buildings can be engineered to fit the requirements of the specific location, such as snow load or foundation type. **866-643-1010; www.clearspan.com**

2. GENEVA EQUIPMENT FRAC TANKS

Assess and treat effluent water quality with ease to ensure compliance with federal, state and local discharge regulations. As municipalities continue to replace outdated septic and combined sewer systems, the controlled flow of raw water and wastewater into water treatment facilities is critical for the preservation of potable water. The 21,000-gallon flat-top frac tank is the perfect solution, acting as a temporary holding tank and allowing for a controlled and variable flow to the treatment system. For larger projects, external manifolds with hammerlock fittings allow for the linking of multiple tanks, with each tank having a 3-inch fill line for the smooth transfer of liquids. Geneva Equipment has thousands of five-point inspection and EPA-compliant frac tanks available nationwide. Contact Eli **855-201-2181** and ask for delivery to your door; **www.genevaequipment.com**

3. KROHNE FMCW RADAR LEVEL TRANSMITTERS FOR OPTIWAVE

KROHNE's six new 24 and 80 GHz transmitters for its OPTIWAVE series of FMCW (frequency-modulated continuous-wave) radar level transmitters are designed for liquid and solid applications. The devices feature two-wire 4-20mA HART 7 communication and come with an extensive choice of process connections, starting from 1/4 inch. They have a large backlit LCD display with four-button keypad, a quick setup assistant for easy commissioning and free PACTware device type manager with full functionality. Hazardous area approvals are available. **800-356-9464; www.krohne.com**

4. BLUE-WHITE INDUSTRIES TFD+ TECHNOLOGY

Blue-White Industries' new TFD+, or Tube Failure Detection, is built into every FLEXFLO Polymer Pump and is designed to eliminate costly polymer spills and downtime required for cleanup. The technology is designed to detect the presence of oil and water-based polymers in the pump head, which would indicate tube failure. When the TFD+ senses tube failure, the pump automatically shuts off and will energize a relay permitting communications with external equipment, such as a backup pump, an alarm, or a SCADA system. There is no false triggering caused by condensation or washdown procedures. The pump will not resume operation until the problem is resolved. **714-893-8529; www.blue-white.com**

5. SEALEVEL SYSTEMS SEACONNECT 370W WASTEWATER TREATMENT DEVICE

The SeaConnect 370W from Sealevel Systems is an Industrial Internet of Things edge device that remotely monitors and controls the status of real-world I/O processes. The module features a powerful, integrated event engine that is configured using an intuitive web-based interface to send alerts and trigger actions when specific conditions are met. The 370W is designed to work with the Sealevel SeaCloud IIoT platform. It features a TI SimpleLink CC3200 ARM Cortex-M4 microcontroller unit with a certified Wi-Fi interface and WPA2 encryption for a secure connection to your wireless network. The module includes a variety of I/O interfaces and two 12-bit A/D converters. An optional QuickStart module is available for demonstration and testing purposes. **864-843-4343; www.sealevel.com**

6. ENDRESS+HAUSER MEMOSENS COS81D DISSOLVED OXYGEN SENSOR

The Memosens COS81D hygienic optical sensor from Endress+Hauser measures dissolved oxygen in fermenters and bioreactors used in the food, pharmaceutical, and biotechnology industries, as well as in drinking water and boiler feedwater applications. It can be used in all measuring points from lab fermenters to production processes. The sensor measures dissolved oxygen, gaseous oxygen and temperature with accuracy up to plus or minus 0.2 percent. It works in process temperatures from 15 to 280 degrees F and pressures from 0 to 190 psi. The sensor also provides temperature and partial pressure, as well as raw measured values. The sensor connects to a transmitter via a cable that transmits an optical digital signal. **888-363-7377; www.us.endress.com** tpo



Odor Control Solutions

Cost-effective, Full-service Programs, Customized to Meet Your Needs:

- Collection Systems
- Equalization Basins
- Headworks
- Primary Clarifiers
- Thickeners
- Digesters
- Holding Tanks
- Dewatering
- Transportation Trailers
- Receiving Facilities

Odor Sampling, Technology Evaluation, Performance Monitoring, No Capital Solutions

USPTechnologies.com | Call toll-free (877) 346-4262

FREE INFO – SEE ADVERTISER INDEX

Dewatering Made Easy



0.6 Meter Press

INTEGRATED COMPONENTS:

- Sludge Pump
- Polymer System
- Wash Water Booster Pump
- Touch Screen Controls
- 25-50 GPM Dewatering
- Fits 20' X 10' Floor Area

ADDITIONAL OPTIONS:

- Sludge Flow Meter
- Discharge Conveyors

Phone: 269-793-7183 Fax: 269-793-4022
127 N. Water St., Hopkins, MI 49328

www.brightbeltpress.com



FREE INFO – SEE ADVERTISER INDEX

wastewater: product spotlight

Clearing the FOG

By Craig Mandli

A breakthrough in oil spill cleanup technology has now been adapted for wastewater treatment use. The oil skimming technology, developed by **Elastec** in 1990, allows the use of a plastic drum device to skim floating oil from the water's surface quickly and efficiently. The oil is attracted to plastic, while water isn't.

The wastewater version is called **THE DUKE FOG Maintenance System**. According to Linda Henning, Elastec's marketing director, the device is designed to skim fats, oils, and grease in the cell of the primary treatment process.

"THE DUKE will actually separate the skimmed oil material into a holding tank, where it can then be properly disposed of," she says. "FOG is an increasing problem in wastewater treatment, and we believe this technology can help alleviate it."

The skimmer's drums rotate using a hydraulic power unit at a calibrated speed that picks up FOG and very little water. When the material is accumulated on the skimmer's wiper blades, the vacuum pump engages and runs for a preset time, suctioning the collected FOG into a separation tank. The vacuum pump continues to run for a set time frame to empty the skimmer of material. Once the cycle ends, it is repeated based on predetermined and adjustable time settings.

"We view THE DUKE FOG skimmer system as a cost/benefit for the treatment plant to lower chemical and filter maintenance expense," Hen-

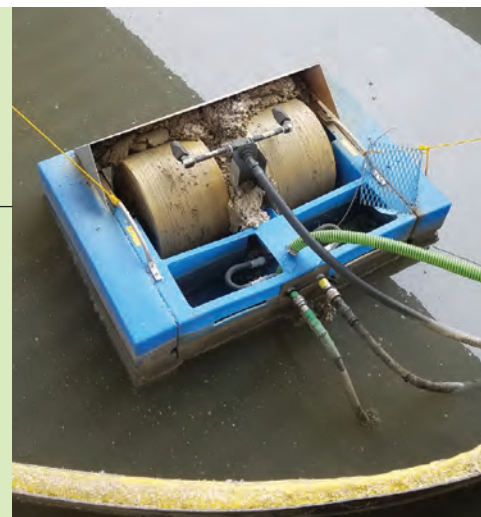
THE DUKE
from Elastec

ning says. "The system is showing promising results in reducing total suspended solids (TSS) and toxic hydrocarbons."

The tank portion of THE DUKE has two compartments — a vacuum portion on top and a water storage portion under-

neath. When the vacuum pump is engaged, a ball check valve seals the top portion from the bottom, creating vacuum pressure to separate the FOG from any water that is collected, which is very little. The bottom portion is vented, and the collected water circulates to wash the FOG from the skimmer's trough to the vacuum hose. When the cycle is complete, the valve opens, and water refills into the bottom portion of the tank. When the tank is full, the FOG can be vacuumed and hauled away.

"We see THE DUKE as a solution to lessening the accumulation of fats, oils, and grease that reach a wastewater treatment facility from restaurants and stormwater runoff — and in turn, it will produce cleaner effluent into the receiving water environment," Henning says. **618-382-2525; www.elastec.com**



FREE INFO ON THESE PRODUCTS — RETURN FOLLOWING FORM

(continued)

water: product spotlight

Optimizing flow measurement

By Craig Mandli

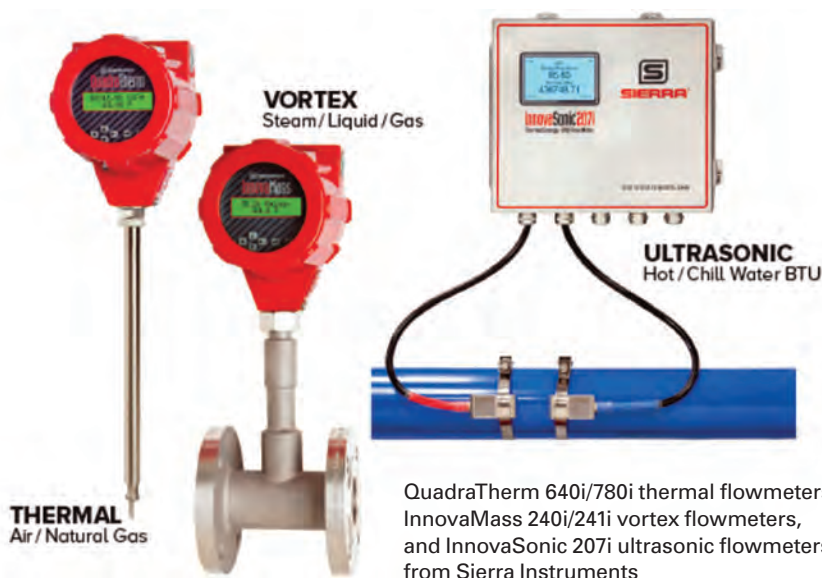
In large treatment facilities, water flow isn't the only flow that requires measurement. Often steam and natural gas need to be measured. Facilities that produce biogas also require precise measurement. Fortunately Sierra Instruments has launched a flow energy solution for managing and optimizing flow measurement for industrial facilities of all sizes.

The solution includes **Sierra Instruments' QuadraTherm 640i/780i thermal flowmeters, InnovaMass 240i/241i vortex flowmeters, and InnovaSonic 207i ultrasonic flowmeters**. When combined, the Big-3 share the same Raptor firmware and many of the same software apps.

"In larger facilities, there are a wide variety of flow energy applications that require measurement," says Matthew Olin, president of Sierra Instruments. "Engineers often must contend with an assortment of companies to obtain the right instrumentation. With the Big-3, we've eliminated many of the overwhelming challenges they face."

The Big-3 share common firmware and software for easy integration, setup, and serviceability. All sensors provide accuracy, extensive flow knowledge through multivariable functionality and benefit from the Raptor operating system to manage sensor inputs.

QuadraTherm iSeries thermal sensors offer a no-drift sensor with a lifetime warranty and accuracy of plus or minus 0.5 percent of reading. Its four-sensor technology provides the critical inputs for Raptor's living, learning algorithm set and gas database to accurately manage changes in gas and pipe selection, gas temperature, gas pressure, and outside temperature. InnovaMass vortex sensors combined with the Raptor OS offer a Mass Balance sensor, improved DSP, and achieve flows below 1 foot per



QuadraTherm 640i/780i thermal flowmeters, InnovaMass 240i/241i vortex flowmeters, and InnovaSonic 207i ultrasonic flowmeters from Sierra Instruments

second. It measures up to five process variables with one process connection, including volumetric flow rate, mass flow, density, pressure, and temperature, which is ideal for highly accurate steam flow measurement. The InnovaSonic 207i ultrasonic flowmeter ensures accuracy of plus or minus 0.5 percent of reading from 0.16 to 40 feet per second. This is maintained even if liquid density changes as the temperature of a flowing liquid moves up and down over time. In addition, the Big-3 has shared software apps with common home screens, which means there is no learning curve on three different software platforms. Big-3 software apps give operators the ability to mine and analyze data quickly to make effective productivity decisions.

"This means operators now have the option of acquiring all necessary flowmeters from one company, saving time and money on installation and maintenance," Olin says. "One contact point links them to Sierra's global network of flow energy experts for all support." **800-866-0200; www.sierrainstruments.com**

FREE INFO ON THIS PRODUCT — RETURN FOLLOWING FORM

For FREE information on these products, check the box(es) and return form

- ☐ 1. ClearSpan Fabric Structures design-build solutions
- ☐ 2. Geneva Equipment Frac Tanks
- ☐ 3. KROHNE FMCW radar level transmitters for OPTIWAVE
- ☐ 4. Blue-White Industries TFD+ technology
- ☐ 5. Sealevel Systems SeaConnect 370W wastewater treatment device
- ☐ 6. Endress+Hauser Memosens COS81D optical oxygen sensor
- ☐ Elastec THE DUKE FOG Maintenance System
- ☐ Sierra Instruments QuadraTherm 640i/780i thermal, InnovaMass 240i/241i vortex, and InnovaSonic 207i ultrasonic flowmeters

☐ **FREE subscription to TPO magazine**

PRINT NAME: _____ TITLE: _____

FACILITY NAME: _____

MAILING ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ CELL PHONE: _____

FAX: _____ EMAIL: _____

TPO0618

Scan and email to: nicole.labeau@colepublishing.com / Fax to: 715-546-3786 / Mail to: COLE Publishing Inc., P.O. Box 220, Three Lakes WI 54562



inspiring, stimulating, motivating

Savored by wastewater and water treatment professionals everywhere.

Get your fill for free.
Subscribe at tpomag.com

Rebuilds Parts



Belts



Komline-Sanderson

1 800 225 5457
www.komline.com

CLASSIFIED ADVERTISING

COVERS

POND & TANK COVERS: Industrial & Environmental Concepts (IEC) makes gas-collection covers, odor-control covers, heat-retention covers and clarifier covers. Call 952-829-0731 www.ieccovers.com (o07)

DEWATERING

FOR SALE: Two (2) Andritz 2.2-meter belt presses, unused after complete refurbishing to Andritz factory specifications throughout. Dyer Equipment Co. 970-454-3784, Ault, CO or dyerequipment@aol.com (o06)

EDUCATION

Dissolved Air Flotation (DAF) – Potential Process Training and Consultation Services Request. Metropolitan Council Environmental Services (MCES) provides wastewater treatment services for the metropolitan area of Minneapolis/St. Paul. It operates dissolved air flotation (DAF) for thickening of waste-activated sludge. MCES is considering obtaining the services of an experienced trainer and expert in the operation and troubleshooting of the DAF process and equipment to understand the DAF processes located at the Metro Wastewater Treatment Plant and develop - then provide DAF training - to its operators, operations managers, and process engineers. To be included on the list of entities to receive information on

WATER-REEL
Redistribute Waste Water
with Superior Uniformity

KIFCO
www.kifco.com
800.452.7017 • sales@kifco.com

WOLVERINE BRAND
Industrial Odor Control Solutions

PATENT #US 8,273,162

IndustrialOdorControl.com
A Broad and Economical Range of Odor Control Solutions

- Manhole Odor Inserts
- Lift Station Odor Control
- Pollution Control Barrels
- Septic Vent Filters
- Activated Carbon
- Custom Solutions

Simple Solutions
DISTRIBUTING LLC
866-NO-STINK (866-667-8465)
973-846-7817 in NJ
Makers of the Wolverine Brand of Odor Control Solutions

this potential procurement of the services, please provide your contact and/or company information in an email correspondence to george.sprouse@metc.state.mn.us prior to 7/1/2018. (o06)

GREASE TRAP UNITS

Stop FOG at the source! Goslyn Automatic Separators remove all FOG without any moving parts or odors. A 25gpm unit lists for \$4,850. Call for more information:
800-664-9502 o06

ACE
Booth 24059

Need Temporary Wastewater Filtration?

Rent AquaDisk® Cloth Media Filters

- Economical option for short term needs
- Available in 6-disk (1.5 MGD) and 12-disk (3.0 MGD)
- Utilizes OptiFiber® chlorine resistant pile cloth media
- Effective TSS and phosphorus removal and capable of reuse/recycle
- Package units ship fully assembled with automatic controlled PLC
- Small footprint for inside or outside operation

Renting is an ideal solution during plant upsets, existing filter rebuilds or validating cloth media technology for an application.

AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company
aquadisk4rent.com | 800-940-5008

PHi
Pulsed Hydraulics, Inc.

Big Bubbles No Trouble Mixers

www.phewater.com

PLUG & PLAY PUMPS

Using Switch-Rated Plugs & Receptacles

- ▶ Quickly connect & disconnect power to motors
- ▶ Simplifies NFPA 70E compliance

OFF Button

Rated up to 75hp, 200A, Type 4X

FREE Samples Available

MELTRIC
800.433.7642 • meltric.com

Southern Valve & Fitting USA, Inc.

Quality UL/FM, AWWA, NSF Valves

Ductile Iron / Brass / PVC Sch-40 & 80

www.soval.com
Tel: 888-877-6825

people/awards

Brian Lafferty, a wastewater treatment plant operator, was named the February 2018 Employee of the Month by the Cedar City (Utah) Employee Advisory Committee.

The city of **Fruitland Wastewater Treatment Facility** received a PISCES award from the Idaho Operations Office of the EPA for its use of money from the Clean Water State Revolving Fund program.

The **North Attleboro (Massachusetts) Industrial Pretreatment Program** received a 2017 Regional Industrial Pretreatment Program Excellence Award from the EPA.

The **Tarpon Springs Advanced Wastewater Treatment Facility** received the 2017 Plant Operations Excellence Award from the Florida Department of Environmental Protection.

The **Jamestown (Rhode Island) Wastewater Treatment Facility** received a 2017 Regional Wastewater Treatment Plant Excellence Award from the EPA.

Peter LaBonte, chief operator of the North Conway (New Hampshire) Wastewater Treatment Facility, received a 2017 Regional Wastewater Treatment Plant Operator of the Year award from the EPA.

The **Lewiston (Maine) Auburn Water Pollution Control Authority** Industrial Pretreatment Program received a 2017 Regional Industrial Pretreatment Program Excellence Award from the EPA.

The Florida Department of Environmental Protection presented 2017 Plant Operations Excellence awards to five northwest Florida utilities. Drinking water facility awards went to **Naval Air Station Whiting Field**, **Destin Water Users**, and the **Bay County Water Treatment Plant**. Wastewater facility awards went to the **Military Point Regional Advanced Wastewater Treatment Facility** and the **Rivercamps on Crooked Creek Wastewater Treatment Plant**.

The **Braham Wastewater Treatment Facility** received a 2017 Certificate of Commendation from the Minnesota Pollution Control Agency.

The Northeast Ohio Regional Sewer District **Southerly Wastewater Treatment Plant** in the Greater Cleveland area received the Envision Silver award from the Institute for Sustainable Infrastructure.

The city of **Santa Cruz Wastewater Treatment Facility** won 2017 Overall Plant of the Year and Plant of the Year (Medium) awards from the California Wastewater Environment Association-Monterey Bay Section. **James Locatelli**, wastewater collection field crew leader, was named 2017 Collections Person of the Year; **Dave Meyers**, wastewater treatment operations supervisor, was named 2017 Operator of the Year.

The Narragansett Bay Commission's **Field's Point Wastewater Treatment Facility** in Providence, Rhode Island, received a 2017 Regional Wastewater Treatment Plant Excellence Award from the EPA.

Rathbun Regional Water Association received the Best Tasting Water in Iowa Award at the 2018 Iowa Rural Water Association conference.

Congressman Brian Fitzpatrick of Middletown, Pennsylvania, received the Champion award from the Water Quality Association for his work pur-

events

June 3-6

Pennsylvania Water Environment Association PennTec Annual Conference, Hershey Lodge and Convention Center. Visit www.pwea.org.

June 6-7

Water Environment Federation BlueTech Forum: Managing Water Risk in the Circular Economy, Vancouver (British Columbia) Convention Centre. Visit www.bluetechforum.com.

June 10-13

New York Water Environment Association Spring Technical Conference and Exhibition, Lake George, New York. Visit www.nywea.org.

June 11-14

AWWA ACE18, Mandalay Bay Convention Center, Las Vegas. Visit www.awwa.org.

June 16-21

Resources for Future Generations 2018, Vancouver (British Columbia) Convention Center. Visit www.rfg2018.org.

June 18-21

Water Environment Federation Nutrient Removal and Recovery Conference, Hilton Midtown hotel, Raleigh, North Carolina. Visit www.wef.org.

June 20-21

California Water Environment Association Water Boards Data Science Symposium, CalEPA Headquarters, Sacramento, California. Visit www.cwea.org.

June 24-27

Michigan Water Environment Association Annual Conference, Boyne Mountain Resort, Boyne Falls, Michigan. Visit www.mi-wea.org.

suings legislative solutions to drinking water contamination in Bucks and Montgomery counties.

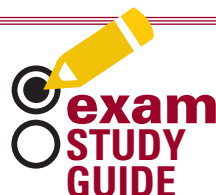
The **Helix (California) Water District** received the 2018 Public Communications Achievement Award from the American Water Works Association.

For the fifth straight year, the city of **Cambridge, Minnesota**, earned the Water Fluoridation Quality Award from the Centers for Disease Control and Prevention.

Jason Gagnon was named superintendent of the North Conway (New Hampshire) Water Precinct, replacing David Bernier, who retired.

Matt Bernhardt, director of public works and utilities in Gastonia, North Carolina, has retired.

TPO welcomes your contributions to Worth Noting. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements as well as event notices to editor@tpomag.com. tpo



**Get help on
sticky questions.**
tpomag.com

Aqua ElectrOzone®

SAFE AND EFFECTIVE OZONE TREATMENT

Wylie, TX
Treating 770 MGD
World's Largest Drinking Water Plant Using Ozone

A RELIABLE SOLUTION WITH A PROVEN TRACK RECORD

The Aqua ElectrOzone® ozone generation system is an ideal solution for water, wastewater and industrial applications requiring taste and odor control, bleaching/color removal, oxidation or disinfection. The system features advanced Metawater MicroGap™ glass lined dielectric core technology. Stainless steel elements are precision engineered for high dimensional accuracy resulting in consistent ozone generation, efficient cooling and extremely low failure rates.

- Robust Design for Long Life Dependability
- Power Savings with Reduced Discharge Gap
- Low Harmonics with Solid State Pulse Width Modulation Power
- Low O&M Costs and Simple to Operate
- More than 800 Installed Units, Worldwide



AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

www.aquaelectrozone.com | 815-654-2501

Scan for cost
of water
calculator



How much is lost water costing you?

One of the biggest costs associated with the operation of a water treatment facility and distribution network is the loss of treated water either through leakage or theft. It is estimated that upwards of 18% of all treated water is lost due to these two issues. Siemens' "Cost of Water" calculator can help you to identify the amount of lost revenue you may be experiencing and how you can utilize existing measurement infrastructure and/or the addition of measurement at key points in your network to help identify and correct situations as early as possible to minimize the lost potential revenue. To learn more visit us at AWWA booth #18090.