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Damon Forney
Plant Manager
Apex, N.C.

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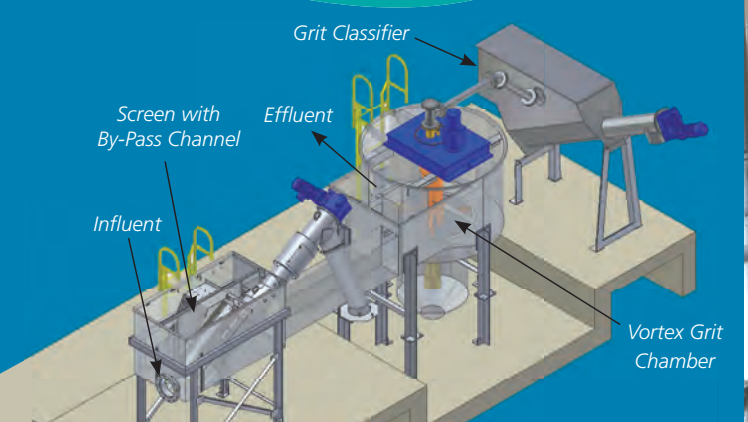

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September 2021

top performers

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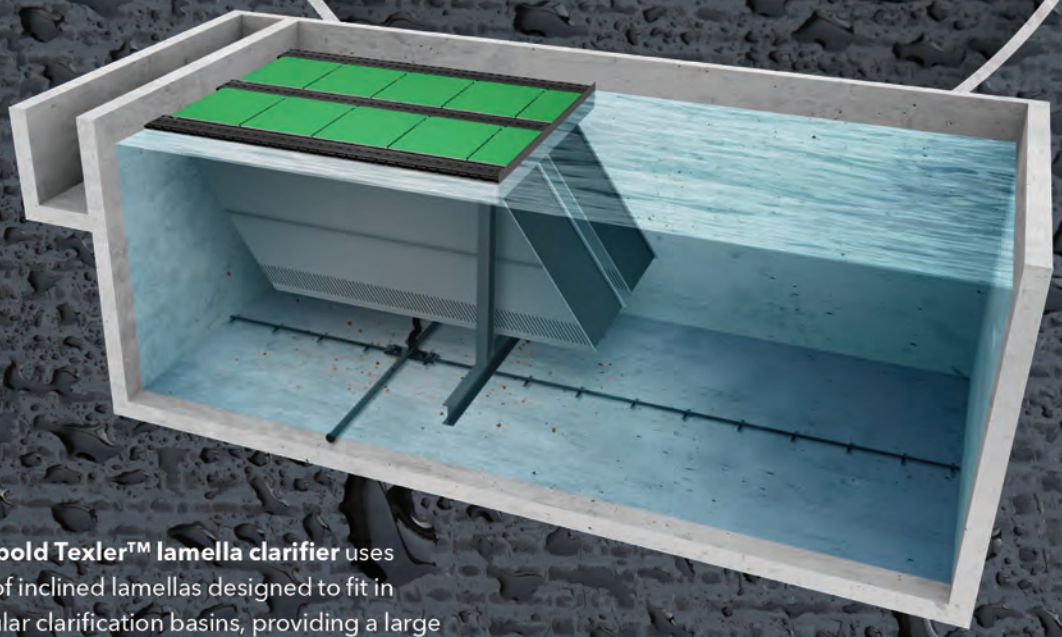

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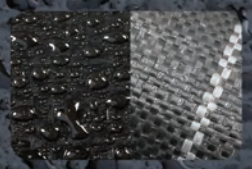

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Everybody Loves Infrastructure

BUT ONLY IF SOMEBODY ELSE, OR NOBODY, HAS TO PAY FOR IT. AND IF THAT'S THE CASE, HOW WILL IT EVER GET BUILT OR REHABBED?

By Ted J. Rulseh, Editor

As I write this, President Biden has offered an infrastructure plan that includes substantial funds for water and wastewater infrastructure. And much else, of course.

Everybody likes that general idea. Everyone knows our infrastructure needs investment. Everyone knows that building and fixing infrastructure creates good-paying jobs. Everyone knows that sound infrastructure is fundamental to a strong economy and a secure nation.

There's only one problem. No one wants to pay for it. And as long as that is true, how will anything ever get done?

MEANS OF AVOIDANCE

When it comes to paying a couple trillion dollars for an infrastructure plan, there are all kinds of dodges and fantasies. One is that public/private partnerships can magically cover the majority of the cost. The idea here is that we can get the private sector to build things with a certain percentage of public funding, and then the private sector can impose user charges.

That might be feasible for highways and bridges, which can be financed by way of tolls, but I have yet to see toll-funded sewers or water mains or treatment plants. User charges, yes, but the size of investment needed for the water and sewer infrastructure would in many, if not most cases dwarf homeowners' and businesses' ability to pay in that manner.

> I get a little tired of hearing politicians proclaim that we can never raise taxes on "hardworking Americans."

Another fantasy, which I heard a governor espouse on a Sunday talk show, is we can pay for infrastructure by "growing the economy." In other words, set policies that lead to more high-paying jobs, thus more tax revenue, which in turn will pay the bills. That sounds good, but I have yet to see an explanation of exactly how this works or a shred of evidence that it can.

TAX THE OTHER GUY

Another school of thought says the plan has to be accompanied by specific sources of revenue, which mostly means taxes. And taxes are fine with everyone, as long as the tax is on someone else. The saying, as a lobbyist once put it to me, goes like this: "Don't tax you. Don't tax me. Tax that fella behind the tree."

So the president's plan as first announced was to raise a couple trillion dollars by increasing taxes on corporations. Of course, the corporations don't

like that, and nor do the Republicans in Congress; that basically makes the idea a non-starter as long as there is such a thing as a filibuster in the Senate.

But if not corporations, then who? The president has pledged not to raise taxes by a single penny on any person or family earning less than $400,000 a year. His party certainly aligns with that, and so do the Republicans who don't believe in raising taxes, on anyone, at any time, for any reason whatsoever.

But it's doubtful that enough money could be wrung out of high earners (millionaires, billionaires) to cover trillions in spending. So then, what does that leave?

THE DEFAULT

What it leaves is the national credit card, which has been used for decades to fund wars, a vast Medicare drug program, disaster aid after many catastrophic storms, massive tax cuts, COVID relief and much more. Will we pay for infrastructure that way, too? And send the national debt over the $30 trillion mark (if it isn't there already)?

I get a little tired of hearing politicians proclaim that we can never raise taxes on "hardworking Americans." Sure, we work hard, but how or why should that exempt us from paying more in taxes for national necessities that benefit all of us?

Taxes have been repeatedly cut over the past few decades and, contrary to popular folklore, not only for the wealthy and corporations. What's wrong with revisiting the tax structure and finding fair, equitable ways to pay for big, expensive things that we all know we need?

And what's wrong with starting from the assumption that we should all contribute in some proportion to our ability to pay? If we can agree on that basic principle, then maybe we can make a start toward reliable funding for infrastructure and other critical priorities. **tpo**

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The Burrillville Wastewater Treatment Facility in Rhode Island is using a Nissan LEAF to support the New England electric grid. When not in use by employees, the EV is plugged into a bidirectional charger and monitored by software to transfer power back to the grid to help meet peak demand.

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IMPROVE YOUR STAFF

Tap Introverts' Potential

While it's only human nature for people to notice extroverts more than introverts, managers who do so run the risk of overlooking the potential these lower-profile employees bring to the table. So how should you go about tapping the potential of introverts? It helps to first take time to understand their worldview.

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'The Greatest Place on Earth'

DAMON FORNEY LOVES HIS JOB. HIS PASSION FOR EXCELLENCE SHOWS UP IN STAFF EXCELLENCE, HIGH MORALE, AND EXEMPLARY FACILITY PERFORMANCE.

STORY: **Jim Force** | PHOTOGRAPHY: **Michael Cline**

In the minds of most people, the "greatest place on earth" might be a hammock on a south sea island or a campsite at a spectacular mountaintop.

But to Damon Forney, it's right where he is: working at the Western Wake Regional Water Reclamation Facility in Apex, North Carolina. "This is the greatest place on earth," he says. "No amount of money could get me to go somewhere else."

As the operator in charge, he's been at the facility since its construction in 2012. "We've been good from the first drop since we came online in 2014," he says. "I get great satisfaction just being here every day. I do my best and never give up."

Forney communicates that attitude to his staff and transfers the same zeal for perfection as they operate and monitor this exceptional-quality effluent plant, serving Cary, Morrisville, Apex, and Wake County Research Triangle Park. The facility has had no effluent violations for more than six years and has earned the Platinum Peak Performance Award from the National Association of Clean Water Agencies.

FOCUSED ON ENVIRONMENT

Forney came to Western Wake just as contractors started digging the foundations for the facility.

Before that, he was the plant manager at the Orange Water and Sewer Authority (OWASA) in Carrboro/Chapel Hill, starting there in 2007.

Although wastewater work was new to him, environmental issues were not. Before joining the staff at Orange, he worked in environmental positions in private industry: "I worked at a chemical plant for 15 years. I learned all about environmental issues — stormwater, hazardous waste and more. "When the economy started to falter in 2007, I looked around and saw the opportunity at OWASA."

Damon Forney, plant manager, Western Wake Regional Water Reclamation Facility

“Doing nothing is not an option. We stress consistently doing the right things well.”
DAMON FORNEY

Damon Forney, Western Wake Regional Water Reclamation Facility,
Apex, North Carolina

POSITION:
Plant Manager

RESPONSIBILITIES:
Manage Grade IV biological nutrient removal treatment plant

EXPERIENCE:
15 years environmental work in private industry, 12 years in municipal wastewater treatment

EDUCATION:
Bachelor’s degree, biology, Greensboro College

CERTIFICATION:
Grade 4 Biological Treatment Operator, Land Application Residuals Operator, Spray Irrigation Operator, Grade 1 Physical/Chemical Operator

HONORS:
North Carolina WEA Hatfield Award, 2019

GOALS:
Prepare for retirement, but, “I don’t want to just sit in the chair.”

Forney is a strong believer in teamwork, something he likely learned during an outstanding college basketball career.

Damon Forney reviews dissolved oxygen and temperature bench sheets with Penny Rosser, lab supervisor.

The Western Wake facility is designed for 18 mgd and serves a population of 98,500. Damon Forney supervises 18 team members.

He remembers coming to Western Wake and working out of a construction trailer, but he relishes the experience. "How many times can you watch a new plant being built and then be in charge of it?" he asks.

Jamie Revels, utilities director, says Forney didn't just watch: "His input was critical to the success of the construction project. And he was on the front lines going door to door to keep citizens informed about the new plant."

TOP FLIGHT PERFORMANCE

The plant is designed for a capacity of 18 mgd (7 mgd average) and serves a population of 98,500. It is staffed by Cary municipal employees. Western Wake refers to the western portion of Wake County. Forney supervises 18 team members, including eight operators, two per shift. The team includes:

- Chris Andres, operations supervisor, and team members Ricky Stroud, Kevin Fannin, Ronnie Locklear, Richard Cullens, Marvin Berryman, Ricky Thomas, Don Daniel and Scott Lewis
- Tim Thomas, maintenance supervisor, and staff members David Parker, Steven Sugg, Zack Van Hoy, Glenn Ross and David Camacho
- Penny Rosser, laboratory supervisor and staff member Amy Holden
- Deborah Puccia, administrative assistant

> "Damon's input was critical to the success of the construction project. And he was on the front lines going door to door to keep citizens informed about the new plant."
> **JAMIE REVELS**

Wastewater enters the plant through two parallel pipelines. Treatment starts at the preliminary stage, where debris is removed with bar screens (JWC Environmental) and a grit removal system (Westech Engineering).

As a biological nutrient removal facility, the plant has no primary clarifiers. Instead, flow goes directly to a series of four bioreactor basins, each containing nine cells operated in a variety of anaerobic, anoxic and aerobic conditions to remove nitrogen and phosphorus.

Forney explains that the operation is slightly modified so that influent is directed to the third cell; the first two cells are devoted to fermentation and anoxic recycle flows and additional treatment phases. Polychem rectangular clarifiers follow, designed to save space on the small plant footprint. Kruger cloth disc filters remove remaining suspended solids, and a UV unit (TrojanUV) disinfects the effluent. The unit has three channels, one a backup.

"Some of our highly treated effluent water is reclaimed and returned to the plant," Forney says. "We use it for condenser cooling water and other applications." A portion of the reclaimed water is available free of charge to area landscapers, who are eager to get it.

The plant and laboratory are monitored and controlled by a SCADA system linked to a Hach laboratory Information Management System (LIMS). Data is stored in the cloud, and operators access it through iPads.

Biosolids are dewatered on belt filter presses (Ashbrook Simon-Hartley), dried to 90% solids in a Kruger dryer, and processed further in a CPM pelletizer. A local vendor purchases the Class A exceptional quality material and sells it to the agricultural industry. A BIOREM biofilter and carbon scrubber controls odors.

LEADING THE TEAM

Forney's expansive duties include maintaining certifications, meeting effluent permit requirements and managing the biosolids dryer facility, the biosolids compliance program and marketing of the final product. He also develops long-range goals and policies related to plant growth, asset management, process optimization, long-range staffing and budget.

Anyone talking with Forney quickly realizes he could write a book on leadership and team building. Perhaps remembering his days on the college basketball court (see sidebar), he insists that his crew must have "respect for everything." He warns against becoming complacent yet points with pride to accomplishments. "It's good to say, 'We did this,'" he believes.

Revels wrote the nomination letter for Forney's 2019 William D. Hatfield Award. "Damon brings great leadership, passion and professionalism to the field of wastewater treatment in so many ways," he says. "He has created a culture of excellence and motivates the staff to be the best they can be each day."

(continued)

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Revels notes Forney's community work: He frequently gives talks, teaches classes, leads tours and has even hosted a community cookout on the treatment plant grounds. "He's our ambassador in the community," Revels says.

Revels also credits Forney for coaching and mentoring: "He hired the entire staff and adopted the town's career ladder program to help train and promote employees. It has helped staff members upgrade their certifications, build experience, develop plans and promote their careers."

FIRM COMMITMENT

Teamwork is in Forney's DNA. "Doing nothing is not an option," he says. "We stress consistently doing the right things well. You've got to give a lot to get a little bit, but it's worth it."

Working with others must be sincere and enduring in Forney's eyes. "We build team cohesiveness through monthly team meeting, staff cookouts with fried chicken and celebrating Earth Days," he says. Much of that was been postponed by the pandemic, but Forney uses plain old conversation to communicate and motivate just as well.

"How you doing?" might be the three most important words in Forney's vocabulary. "Just talking to people shows that you care about them," he says. And he pushes his people to be their best. "You can come into this field at the lowest level and rise to the top," he says. "No matter your position or title, hold yourself to a higher standard. Do more than your job description."

FACING TOUGH TIMES

Not that there aren't challenges. "There are days when I feel pretty beat up, and then the next day I'm walking on a cloud," he says. "After all, we are stewards of the environment, for our kids and their kids."

And he's not afraid to get his hands dirty. Relying on brick-laying skills he learned as a youngster, he personally repaired a brick wall along one of the plant's walkways. "He's just a super guy, a great leader, a great mentor and a good friend," says Revels. "I really can't say enough good things about him."

So, if the Western Wake Regional Water Reclamation Facility really is the greatest place on earth, it's quite likely Damon Forney made it that way.

tpo

HOOP HIGHLIGHTS

He might not still be able to hit a jump shot or sky for a rebound, but at one time Damon Forney sure could.

A four-year starter, he was good enough to make his college's top-ten all-time basketball player list and to be inducted into the school's Athletic Hall of Fame. That was at Greensboro (North Carolina) College. Forney graduated in 1981 with a degree in biology.

One of his coaches who helped with the hall of fame induction described Forney as "more than just a basketball player. He was one of those guys who was well respected both on and off the court." It's an attribute he has carried with him ever since, and it's evident in the way he operates the Western Wake Regional Water Reclamation Facility.

"It's teamwork," he observes. "We're in this together."

Penny Rosser, laboratory supervisor, attests to that: "He's very supportive. His door is always open." When she started at Western Wake in 2013, Forney helped her understand the wastewater process and provided a lot of guidance.

"He keeps everybody energized and encourages us to be the best we can be," she says. "We feel good around him." No doubt, Forney's basketball teammates felt the same.

Forney (right) talks with Ricky Thomas (mechanic/operator) in the control room at Western Wake Regional Water Reclamation Facility.


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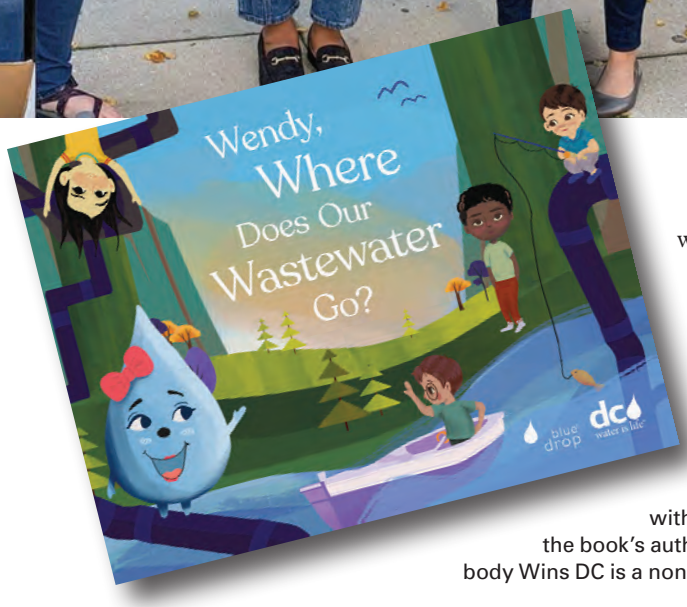
Wendy's Wonderful Water Journey

DC WATER PUBLISHES A CHILDREN'S BOOK TO EDUCATE ELEMENTARY STUDENTS ABOUT WASTEWATER THROUGH CLEVER IMAGERY AND ILLUSTRATIONS

By Sandra Buettner



DC Water's new children's book takes Wendy the Water Drop on a wonderful journey from the drain to the wastewater treatment plant. The 32-page rhyming book is illustrated with fun, engaging images.

"We researched children's books on the topic of wastewater and couldn't find any out there, so we decided to create and publish our own," says Torri Epperson, education outreach coordinator for the utility.

The softcover book has been a big hit with educators, residents and nonresidents. Teachers like that it is nonfiction, a fun read and a reference source for teaching.

DC Water operates the Blue Plains Advanced Wastewater Treatment Plant, the largest of its kind in the world. It serves 701,000 residents, including neighboring counties in Maryland and Virginia. The utility has more than 1,350 miles of drinking water pipes and 1,800 miles of sanitary and combined sewers.

EDUCATION AND REVENUE

Published in 2020, *Wendy, Where Does Our Wastewater Go?* was created for children ages 6-12. Besides its educational function, the book generates income for DC Water's SPLASH Fund (Serving People by Lending A Supporting Hand), which provides funding for those needing financial assistance to avoid service disconnection.

At first the utility formed a team to explore what it would take to make the book happen. The DC Water communications team, utility staff and educators weighed in on the content. Epperson, an educator by profession, wrote the book. Two local college students provided the illustrations, and treatment plant operators and process engineers reviewed the content for accuracy.

The creation team worked with educators to make sure the book was written appropriately for elementary grades.

The book starts with several children pondering where water goes once it goes down the toilet or the drain. They go into the community, find Wendy the Water Drop, and ask her. She explains the term wastewater to them and takes them on a journey through the pipes and pro-

DC Water's children's book (shown at left) has drawn positive reviews. ABOVE: Sarah Aldridge, left, volunteer and partnerships manager with Everybody Wins DC; Torri Epperson, education outreach coordinator and the book's author; and Jordi Hutchinson, executive director of Everybody Wins DC. Everybody Wins DC is a nonprofit that helps children thrive by building connections through reading.

cesses of their local wastewater treatment plant to show them how wastewater is cleaned.

Along the way, Wendy tells about all the people working behind the scenes to make it happen. She explains that the cleaned water returns to the river so that people can enjoy it and wildlife can flourish. The end of the book includes vocabulary words, quiz questions and experiments for the children to try at home or in class.

DISTRIBUTED WIDELY

The book sells for $14.99; residents and non-residents can buy it. It is now available on Amazon. Utilities from around the country and world can purchase the digital content and re-brand it to fit their facilities and services.

The utility donated several copies to the DC Public Library and to local teachers. Staff members also placed copies in Little Free libraries around the service area and offered a free reusable water bottle for residents who found the copies. They also plan to sell the book through retail websites and offer an e-reader version.

The utility team is now working on a series of 10 books with different storylines. The next one will be on the potable water treatment process. DC Water established the nonprofit subsidiary Blue Drop LLC to help offset rate increases for DC residents (www.bluedrop.co).

Besides the sale of the book on the Blue Drop website, the utility also sells Wendy-branded merchandise, Bloom fertilizer manufactured from biosolids, and Pipe Sleuth software that helps utilities review video footage to identify anomalies in sewer pipes. DC Water also rents out space in its headquarters building for events.

POSITIVE FEEDBACK

In the past year, DC Water has sold and distributed several hundred copies of the book. Reaction from residents, students and educators has been extremely positive. One student from the United Kingdom was doing an experiment from the book involving grease floating on water. His grandfather took a picture of his experiment with the book in the shot, emailed it to the utility and told how much his grandson liked the book.

Torri Epperson with Wendy the Water Drop.

"We were encouraged to see the book touching many young minds and expanding beyond the U.S.," says Torri Epperson, the book's author. "It was also a nice promotion for our facility and what we're doing in the district."

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Operator C.J. Hyatt uses the touch screen for the Rockfish Creek Water Reclamation Facility's 500 hp aeration blower (Atlas Copco).

Looks Great. Runs Great.

THIS NORTH CAROLINA CLEAN-WATER PLANT OPERATES IN KEEPING WITH ITS SHARP APPEARANCE

STORY: **Ted J. Rulseh** | PHOTOGRAPHY: **Michael Cline**

In this case appearances are not deceiving.

The Rockfish Creek Water Reclamation Facility looks sharp, from the landscaping outside to the walls, floors, pumps, motors and blowers inside.

The facility, in Fayetteville, North Carolina, operates in keeping with its appearance. The 10-member operations team and a centralized maintenance group keep effluent in compliance and all equipment running smoothly. Leading the operations side are Scott McCoy, facilities operations supervisor, and Chuck Baxley, water reclamation facilities treatment manager.

Housekeeping is part of each operator's regular role. "Our guys are assigned areas of the facility that they have to maintain," Baxley says. "That includes painting, sweeping and clearing out cobwebs; wiping down blowers, pumps and motors; and making sure the filters are kept clean."

A landscaping crew takes care of the exterior. "Our grounds are just nice," Baxley says. "We take a lot of pride in it. We also keep our exposed gate operators, motors, piping and other items painted."

PROUD TRADITION

Rockfish Creek is one of two water reclamation facilities (Cross Creek is the other) owned by the Fayetteville Public Work Commission, a century-old water utility and electric company. The drinking water side includes the P.O. Hoffer and Glenville Lake water treatment facilities with a combined 58 mgd capacity and 23.5 mgd average demand. The maintenance group takes care of all four plants and more than 80 wastewater lift stations.

Both water reclamation facilities use activated sludge processes. The main difference is that Rockfish Creek (21 mgd design, 17.2 mgd average) uses aerobic biosolids digestion while Cross Creek (25 mgd design, 15 mgd average) has anaerobic digesters. Class B liquid biosolids from both are applied to some 4,000 permitted acres of cropland, including a 750-acre farm that the commission owns and operates.

"We actually farm the land," Baxley says. "We plant corn, soybeans, sorghum and hay. Ours is one of the largest liquid land application programs in the state, and having our own farm is very unique."

> "Ours is one of the largest liquid land application programs in the state, and having our own farm is very unique."
>
> **CHUCK BAXLEY**

TERTIARY TREATMENT

The Rockfish Creek facility receives flow through gravity lines and a force main. Archimedes-type influent screw pumps lift the influent to the headworks, which includes an automated quarter-inch bar screen (WesTech Engineering) and stirred vortex grit chambers (Smith & Loveless).

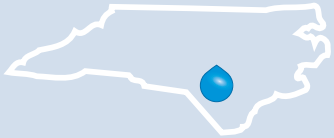
After grit removal, the flow moves to five aeration basins by way of a weir-controlled distribution box, where magnesium hydroxide is added for alkalinity to sustain the nitrification process. "Years ago, we used lime," Baxley says. "We're just

The Rockfish Creek Water Reclamation Facility.

Rockfish Creek Water Reclamation Facility

Fayetteville, North Carolina

www.faypwc.com/sewer-facilities



BUILT:
1985; upgraded 2007

POPULATION SERVED:
210,000

TREATMENT PROCESS:
Activated sludge

TREATMENT LEVEL:
Tertiary

FLOWS:
21 mgd design, 17.2 mgd avg.

RECEIVING WATER:
Cape Fear River

BIOSOLIDS:
Aerobic digestion, land applied (Class B)

ANNUAL BUDGET:
$4 million (operations)

providing the proper environment for our microorganisms to remove the ammonia in the water."

In the basins, six blowers (Atlas Copco) supply oxygen and provide mixing via fine-bubble diffusers (Sanitaire, a Xylem brand). Dissolved oxygen in the basins is monitored in real time with supplemental daily manual checks by the operations team.

The secondary-treated water passes to three 140-foot-diameter secondary clarifiers (two Envirex, one Ovivo). A chlorine diffuser provides disinfection as the clarified water overflows the weirs. "It gives us more detention time, and it also controls the algae that typically wants to grow on the weirs and the concrete launder structure," Baxley says.

Traveling bridge sand filters (Aqua-Aerobic Systems) provide tertiary treatment. Sodium hypochlorite provides final disinfection, followed by dechlorination with sodium bisulfite before discharge down aeration steps to the Cape Fear River. Some of the effluent is used as seal water for pumps, for washdown and for other in-plant purposes.

Waste activated sludge is sent to five aerobic digesters supplied with oxygen by five Gardner Denver blowers. The pH in the digesters and in all storage tanks is monitored in real time. The digested material goes through gravity belt thickeners (Ashbrook Simon-Hartley) to achieve 3.5% to 4% solids for land application.

A contractor delivers and applies the material and handles site permitting and reporting. "Our staff does the incorporating after land application," Baxley says. "We also do anything else the farmers need — liming, potash or whatever."

DEALING WITH COVID

The COVID-19 pandemic caused trouble for many employers, but especially those with limited staffs and whose team members needed to work on site.

Of course, those employers include clean-water plants, and the Fayetteville water reclamation facilities were no exception. Treatment Facilities Manager Chuck Baxley observes, "Back in April 2020, when COVID really got bad, given the limited staff and qualified operators we have at each facility, we decided to sequester the operators onsite in campers.

"We had four team members on site. Two would sleep and two would work a 12-hour shift. Then they just rotated for an entire month. That was quite a sacrifice. They were stepping away from their families while continuing the service we provide, at a time when everybody was uncertain and scared about what was going to happen.

"They were sequestered for 28 days. That's a big ask. None of our guys bailed. They took turns month to month being sequestered. We did that for a couple of months. Then we got back to a more conventional schedule, and we've been doing that ever since."

Rockfish Creek Water Reclamation Facility PERFORMANCE AND PERFORMANCE

	INFLUENT	EFFLUENT	PERMIT
$CBOD_5$	205 mg/L	1.67 mg/L	5.0 mg/L summer 0.0 mg/L winter
TSS	218 mg/L	0.15 mg/L	30
Ammonia	20 mg/L	0.08 mg/L	1.0 mg/L summer 2.0 mg/L winter

The team at the Rockfish Creek Water Reclamation Facility includes, from left, Adrian Furr and C.J. Hyatt, operators; Charles Autry, senior operator; Chuck Baxley, facilities manager; Scott McCoy, facilities operations supervisor; Drew Scruggins and Darrick Hunt, operators; and Thomas Urbanek, maintenance coordinator. Not pictured: Shawn Clark, Norman Johnson and Jeff Corder, operators.

KEEPING IT RUNNING

The central maintenance staff is always available to the operations team. A computerized asset management program (Oracle) helps track tasks scheduled according to manufacturers' planned maintenance recommendations. "Whenever we're requesting work, we submit a work order to the maintenance group," Baxley says. "The work is then assigned to a technician. Whether it's a mechanical task or an instrumentation, electronics and control task, the proper person will go to the facility or lift station and perform that work.

"For our large equipment, like our aeration blowers, we have service agreements in place with a contractor who comes in to do the annual maintenance," Baxley says. "We have hundreds of pumps and motors between the plants, and most of that preventive work we do in-house."

Among their proudest accomplishments, Baxley and McCoy cite an apprenticeship program launched in the late 1990s in conjunction with the state Department of Labor. Baxley recalls, "The goal was to get every operator to Grade 4 certification and to land application certification if they so chose. There were monetary gains for those who completed the program.


Chuck Baxley, facilities manager

"I'm proud of the guys we have coming in. They are motivated, and I'm proud of what they do on a day-in, day-out basis."
SCOTT McCOY

"When it was all said and done, all of our operators were Grade 4. Right now, we don't have that just because of turnover due to retirement. If you go back to five years ago, I was one of the younger guys, and I have 29 years. We've had a rash of retirements, and so we have some younger staff. We're pushing those people through regional schools to get them eligible to continue with their certifications, but we're no longer doing anything as structured as the apprenticeship program."

Besides Baxley and McCoy, the Rockfish Creek team includes Thomas Urbanek, facility maintenance coordinator; Charles Autry, senior treatment plant operator; and Jeff Corder, Norman Johnson, Drew Scruggins, Darrick Hunt, Adrian Furr, Shawn Clark and C.J. Hyatt, treatment plant operators.

STEPPING UP

Experienced or not, team members have proven their willingness to pitch in during emergencies. Among the biggest recent challenges were Hurricane Matthew in 2016 and Hurricane Florence in 2018. "We were just slammed at the facilities with really high flows and the corresponding high receiving stream levels," Baxley recalls.

(continued)

Darrick Hunt, operating the plant's Verderflex Dura 15 magnesium hydroxide chemical feed pump (Verder) with a Vacon X Series drive (Danfoss).

> "We have hundreds of pumps and motors between the plants, and most of that preventive work we do in-house."
> **CHUCK BAXLEY**

EXPANSION AHEAD

The future holds challenges for the Rockfish Creek facility: "We are beginning the design of an expansion that's going to take us to 28 mgd design capacity," Baxley says. "Hydraulically we have reached 80% of capacity, at which point we're required to be in the design phase, and we're getting close to the 90% level where we would have to be under construction.

"Beyond that, I really feel like the next time we expand, or at our next permit cycle, we're going to end up with nutrient limits. I foresee that happening in the next five years at both facilities. That is going to be a challenge." It likely means creating zones within the aeration basins and adding more chemical treatment.

Meanwhile, staffing challenges continue. As openings occur at the treatment facilities, the commission places job listings on the North Carolina Rural Water Association websites and puts the word out to leaders of other area treatment facilities and to the North Carolina Eastern Region Operators Association.

"We advertise internally as well," Baxley says. "We try to give folks an opportunity who are in other areas of our organization if they're interested in this type of work. Our goal is to find somebody who has some experience, has certifications in their pocket and can hit the ground running. But that doesn't always work out."

In that event, good candidates include those who have taken technical school or college courses in related fields or who have field experience in water system or collection system construction or maintenance.

Operations supervisor McCoy is pleased with the team members, both veterans and newcomers. "We have a lot of new folks due to retirements and aging out," he says. "I'm proud of the guys we have coming in. They've taken the initiative pursue all their certifications. They are motivated, and I'm proud of what they do on a day-in, day-out basis." tpo

MUCH DECORATED

There are lots of plaques on the walls at the Fayetteville Public Works Commission. They include:

- **U.S. EPA:** Operations and Maintenance Award: Cross Creek 1994, Rockfish Creek 1988; Outstanding Contributions and Leadership in the Beneficial Reuse of Sludge, 1990.
- **Professional Wastewater Treatment Plant Operators Committee-Eastern Region:** Wastewater Treatment Plant Operations and Maintenance Excellence Award: Rockfish Creek, 2019-20.
- **North Carolina AWWA/WEA:** Wastewater Collection System of the Year, 2015-16; George W. Burke Safety Award, Cross Creek and Rockfish Creek, 2015-16.
- **North Carolina Eastern Region Operator's Association:** Service Award, Chuck Baxley, 2010-11; Baxley and Scott McCoy, past chairs.
- **Consulting Engineers Council of North Carolina:** Grand Award for Engineering Excellence in Water and Wastewater, 2000.

"The river was flooded, so our outfall was completely submerged. We had issues getting flow out of the plant. It was like having the flood gates open on one end, and then a roadblock on the other end. We just weren't able to get the flow out as quickly as normal. All of our basins were at the tippy-top. That was pretty stressful. We were here for a week plus at a time. Our guys gave us everything they had."

During the storms, the water reclamation facilities ran on 2 MW emergency diesel generators. A Detroit Diesel unit serves the Cross Creek plant; as of last spring, Rockfish Creek had a rental unit (Power Secure) while awaiting a replacement for its fixed generator.

Baxley noted that the water reclamation facility operations are electricity intensive. The staff has looked at options to reduce cost, including biogas-fueled combined heat and power at Cross Creek, but the projected payback was not acceptable. Some savings have come from a coincident peak rate that reflects the power supply costs from Duke Energy Progress, the power supplier for the commission.

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Tapping Potential

A MICHIGAN CLEAN-WATER UTILITY MODIFIES ITS TRAINING PROGRAM, AIMING TO ATTRACT A DIVERSE WORKFORCE TO REPLACE RETIRING WORKERS

By Sandra Buettner

Bryan Clor heard alarm bells on realizing that half of his 41-person staff would retire within the next five years.

"I knew something had to be done immediately, and there was no time to waste," says Clor, division head for the Warren (Michigan) Water Recovery Facility.

Clor looked over the utility's training manual and basically changed it up to make it more inclusive for all the areas where clean-water operators needed to be proficient. He knew that training the next generation of operators meant thinking of creative ways to get the word out about the industry and the benefits of wastewater careers.

Sam Turner, left, mechanic technician, mentors trainee Malcom Brown on pump repair.

COLLEGE PARTNERSHIP

The Warren plant (50 mgd design, 22 mgd average) serves a city of 135,000, about 20 miles north of Detroit. The city had been giving plant tours for about 10 years with students from Macomb College, but Clor began using the tours to promote careers in the industry.

"We need to change people's perception of the wastewater industry," Clor says. "I started telling them what a career in wastewater really means and all the benefits it provides, such as a recession-proof job, variety in work, and the significance to the community of cleaning our water."

> "I am in a position right now where I have more applicants than I have openings, which is a good problem to have."
> **BRYAN CLOR**

He was doing more than planting seeds with the students; he was outright asking them to join his team and take part in his training program. Several took him up on his offer, made great trainees and were eventually hired.

Clor's only requirement is that students who apply have at least one year of post-secondary education. "This is a job where you are constantly learning new things, and we want people who like to learn," he says. "I've been here 13 years and I'm learning new things all the time."

DIVERSE TRAINING

Trainees who are accepted are paid as if they were employees. They learn four parts of the operator's role: lab, operations, maintenance and industrial pretreatment. They spend three months in each area training with an experienced team member.

"One area builds on the other," Clor says. "It also makes them more well-rounded. If I need to move them around for some reason, they are already familiar with the area." Training typically takes one year; trainees who need more work in a given area repeat it, but must complete the total program within two years.

They are also encouraged to acquire a Class D license and follow up with C, B and A licenses. They receive bonus payments for each license they complete.

CASTING A WIDER NET

Clor's advice to other plant leaders: "Find local resources in your backyard and tap into them." He believes a diverse workforce brings multiple ideas to the table and that men and women of different ages and backgrounds make for a more successful team.

Besides recruiting at the college, Clor has started visiting local high school seniors' classes to tell them about careers in the field while they are still contemplating their next move after graduation. To date, 24 students have applied for training; four trainees have been hired, and two are waiting for job openings to come up.

"I am in a position right now where I have more applicants than I have openings, which is a good problem to have," Clor says. Sarah Schwartz, a trainee recently hired as an operator, was an environmental science major at Macomb and wasn't sure what to do with her degree.

After taking the plant tour, she applied and has been an ideal candidate. She just received a promotion to a water specialist role and wants to make wastewater her career, says Clor. "While a science degree is ideal," he says.


Dave Kmiecik came to the Warren training program with an art background but has taken well to the water professions.

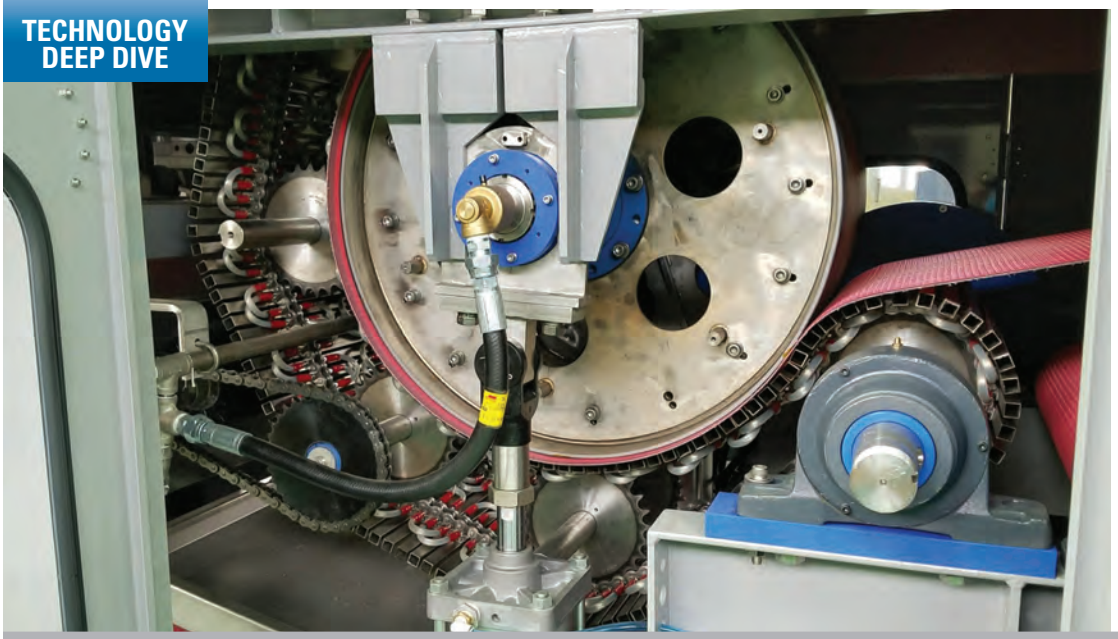
"We just hired an art major, Dave Kmiecik, as a trainee, and he is working out great."

REWARDING PROGRAM

Clor notes that living in a Great Lakes state puts new operators on the front line of defense for the waterways, lakes and streams. He impresses that on the students he talks with. The training program has been so successful with operators that Clor wants to use the same template to fill electrician and engineer openings.

To date, the program has won the Michigan Pump Award for enhanced water resource recovery practices, from the Michigan Department of Environment, Great Lakes & Energy and the Michigan Water Environment Association. Clor received a Public Utility Management Person of the Year award from the MWEA. In addition, the program received a Special Attribute Recognition from the Governor of Michigan. In June, it will receive the MWEA Donald M. Pearce Award for Outreach. **tpo**


Bryan Clor received a Public Utility Management Person of the Year award from the Michigan Water Environment Association, in part for the training program he devised.



The anode drum and the cathode track sandwich the belt and biosolids cake for the drying process.

Drier Biosolids at Lower Cost

AN ELECTRO-OSMOSIS DEHYDRATION TECHNOLOGY HELPS TREATMENT FACILITIES REMOVE MORE WATER AT FAR LOWER COST THAN THERMAL DRYING SYSTEMS

By Ted J. Rulseh

Technologies like belt presses, screw presses, rotary fan presses and centrifuges dewater biosolids and water treatment sludges effectively.

But what if circumstances require material with higher solids content than those devices can provide? For example, what if a landfill suddenly requires material at 40% solids instead of 20%? Or what if the cost of hauling material at 20% solids becomes too high to sustain?

One option is to add a thermal dryer to the process, essentially boiling off some of the excess water. Another option, new to the United States, is an electro-osmosis dehydrator, a technology that uses electric fields to pull the water out of the material.

That's the ELODE system, distributed by Charter Machine Co. It removes water at much lower cost than thermal drying. The system comes in a compact footprint and is easily installed downstream of a facility's mechanical dewatering process. Walter Kuehnrich, vice president and owner, and Christopher Boyd, director of sales, both of Charter Machine, talked about the technology in an interview with *Treatment Plant Operator*.

tpo: What is the background of this technology?

Kuehnrich: This is a proprietary technology that has been on the global market for about 15 years.

ELODE is the manufacturer, based in South Korea. Charter Machine has the distributorship rights for the technology in the United States. We also manufacture a variety of dewatering equipment.

tpo: Where does this product fit into the water and wastewater market?

Kuehnrich: Presses and centrifuges all operate in the range of about 15-23% solids. After that, traditionally, the next level of technology was dryers, achieving 60% solids and up. There was nothing in that in-between range. The capital equipment cost and the footprint for dryers is enormous. We fit into a niche beyond presses and centrifuges, but before thermal dryers.

tpo: Where is the market niche for this technology?

Boyd: It is not a stand-alone dewatering system. It is an enhancement to an existing dewatering system, and it is retrofittable to any application. The main concept is that you are doubling the cake solids content. If you are at 15% solids, we can get at least 30% out of it. If you're at 20%, we can get to at least 40%.

tpo: What is the basic business case for ELODE technology?

Boyd: It is completely economic-based. If you're paying $60 or $70 a wet ton to landfill cake solids, you can cut your cost in half by using our equipment. After paying for the equipment and the electricity, there is a very short payback. If you are applying material to a farm one mile from your treatment plant, this would not be a cost-effective solution. But for large cities paying high rates for landfilling, it can be very attractive.

tpo: What payback times are achievable?

Boyd: It all depends on the application, but we have seen payback as low as less than a year, in some cases three or four years, or in other cases pushing five years. At payback beyond five years, most facilities would not consider this technology.

tpo: Is this technology ever used ahead of a pelletizing process?

Boyd: No. Pelletizers require a very specific cake solids content coming in. They don't function well at more than 23-24% solids, because there needs to be a wetted product that can be molded into pellets as the material is drying.

ELODE is more for a facility that is getting 16-17% cake solids, and all of a sudden the landfill says it will not take materials as less than 20%. We can take that material at 16% and make it 30%.

tpo: What makes this solution more energy efficient than traditional drying technology?

Boyd: We're not using heat and we're not boiling off the water, which is very inefficient. It takes almost nine times as much energy to boil away water than to heat it from room temperature to the boiling point. We use an electric field to drive the water out of the material. Our technology generates some limited heat, but that is not the principal technique for removing the water.

> "The main concept is that you are doubling the cake solids content. If you are at 15% solids, we can get at least 30% out of it. If you're at 20%, we can get to at least 40%."
> **CHRISTOPHER BOYD**

tpo: Please describe in basic terms how this technology works.

Boyd: The dewatered cake is fed into the unit, which includes a distribution chamber where it is flattened onto a belt. It then enters the dewatering system where the material is trapped between the belt and the surface of a drum. The tension on the belt is just enough to hold the material in contact with the drum and keep it moving through the unit. There we apply a DC current that realigns the molecules in the water and the solid material, so that the water can be released. In two or three minutes inside the machine, the solids content is doubled. The water drains off through the belts into a sump and is returned to the facility headworks.

tpo: How much energy does this process require?

Boyd: It uses roughly 120 kWh per 2,000 pounds of wet material, or 120 kW per ton of wet cake, on average. That is more energy than for mechanical dewatering, but nowhere near as much as for a thermal dryer.

tpo: What is involved in an installation?

Boyd: It depends on the plant layout. Is there space behind a belt press or next to a centrifuge? If not, they just have to put in some conveyance from the dewatering equipment to a hopper that feeds the ELODE unit, which is about the same size as a belt press.

tpo: How are you demonstrating this technology to prospective users?

Kuehnrich: We take a full-scale unit on a trailer to customer sites. The neat thing about this equipment is that it only takes three minutes to get a result. Once you fire it up, you just feed in buckets of material, and within three minutes the dewatered samples come out the other side.

tpo: Is there a need for any polymer or other thickening agent?

Boyd: No. You just put the cake in and take the dewatered cake out.

tpo: Are there any differences in performance with, say, primary or waste activated sludge, or a mixture of the two?

Boyd: We haven't seen any difference. We run a conductivity test of the sludge, as conductivity dictates the amount of amp draw required. You do need to build the electric field and have some of the electricity go through the cake solids. With about 95% of sludges, there is no issue. **tpo**

The Power of Instrumentation

TODAY'S ANALYZERS WITH ONLINE SAMPLING AND COMMUNICATION CAPABILITIES GIVE OPERATORS REAL-TIME DATA THAT HELPS ENSURE COMPLIANCE AND BOOST PLANT EFFICIENCY

By Ted J. Rulseh

Alan Vance

Steve Smith

Stricter effluent limits for wastewater plants place a growing importance on the accurate measurement of parameters in the treatment process.

Today's operators assign high importance to operating efficiency, whether saving energy in the treatment processes or maximizing biogas production in anaerobic digesters. Today's instruments can provide significant help in these areas, and more.

Instruments strategically placed in the treatment process deliver vital flow and parameter data in real time, enabling prompt and correct adjustments to the process as conditions change. Devices can be configured to communicate with SCADA and other master control systems, enabling process feedback loops and allowing operators to track parameters remotely or from the control room.

Alan Vance, water/wastewater industry manager, and Steve Smith, liquid analysis product manager, both with instrumentation, service and solutions provider Endress+Hauser, talked about developments in the design and use of analyzers in an interview with *Treatment Plant Operator.*

tpo: Why are analyzers so important in the water and wastewater industry today?

Vance: Analyzers are essential to measuring the critical parameters of water quality. These instruments still measure their primary variables as they have for years, but analyzers today can measure additional parameters, are much smarter, cost less to maintain and provide better diagnostics.

> "There is two-way digital communications now between the plant control system and the instrument."
> **ALAN VANCE**

tpo: How is measurement of water-quality parameters different today?

Vance: Historically, operators had to go out and take manual samples and bring them back to the lab to test for pH, TSS, dissolved oxygen and other parameters. But if two or three hours elapsed between the sample and the result, it would be difficult to detect and adjust for a process hiccup. In the last 10 to 15 years, plants have been adding more online instruments, from single pH or DO sensors to colorimetric analyzers. Now they can measure critical parameters 24/7/365, and this data is stored and trended in the plant control system.

tpo: What is the net benefit of that capability?

Vance: Over time, plant operators can continuously improve their processes so they are running at the optimum efficiency, such as by reducing plant power consumption related to aeration blowers. As they add points of measurement, they gather the data needed to see what is going on with the process and to make necessary adjustments. Lab samples continue to play a critical role, but in more of a quality-control capacity.

tpo: How and where are these analyzers deployed within the processes?

Vance: Plants monitor various analytical parameters at the headworks and throughout the process, so at the end they know they are meeting or outperforming the permit limits set by their state regulatory agency or the U.S. EPA.

tpo: What does it mean to say today's instruments are much smarter than years ago?

Vance: There is two-way digital communications now between the plant control system and the instrument. Operators can view instrument data and other performance factors from the control room. In addition, there are more sophisticated diagnostic and troubleshooting functions. For example, diagnostics might tell an operator that the sample supply to an analyzer has been interrupted. The intelligence built into these instruments provides useful data to help plant personnel make better decisions.

tpo: What kinds of improvements have been made in diagnostics?

Vance: The technology is such that now operators can verify the functionality of a flowmeter, a level sensor or an analytical sensor right in place. For example, they can look at a flowmeter and the internal parameters that it reads and verify that the meter is still within the original wet calibration specifications it had when it left the factory. So, the operators do not have to pull that meter out, put another one in and send the original unit back to us to verify the calibration.

tpo: Does a similar concept apply to analytical instruments?

Smith: Yes. With the diagnostic technology integrated into devices today, instruments can assess themselves. If operators see a value that seems a bit out of the norm, they can get reassurance that it's out of the norm not because the instrument is functioning incorrectly, but because something has happened in the process.

tpo: Are there also improvements in areas such as calibration intervals?

Smith: Yes. Operators can remove an instrument from the process, such as a pH sensor, bring it back to the lab, run the calibrations, analyze the instruments and keep that information in a database, so they can moni-

> "We now have ion-selective sensors that can be put directly into the basin that provide real-time monitoring of ammonium and nitrate levels."
> **STEVE SMITH**

tor the instrument's progress over time. They may find they don't need to bring the instrument in as often for calibration or maintenance; they can just clean it up and put it back in the process. By using databases and computing, they can determine when it makes sense to calibrate the instrument and when it makes sense just to replace the sensor.

tpo: What are some newer opportunities to apply modern analytical devices?

Smith: Historically, plants have controlled the activated sludge process by using sensors to measure dissolved oxygen. The problem is that DO is simply a means to an end. It really doesn't tell you whether the conversion (from ammonium to nitrogen gas) is happening efficiently or not. We now have ion-selective sensors that can be put directly into the basin that provide real-time monitoring of ammonium and nitrate levels. So now operators can control the process based on what they're actually trying to accomplish.

tpo: Do these kinds of technologies also apply on the solids side of the process?

Vance: We see a lot of wastewater plants upgrading or adding digesters. They want to know the flow to the digester, the pH level, the temperature and the level of sludge in the digester. One of the most critical devices is a flowmeter that monitors biogas coming off the digester. Plants are looking for instruments to improve the control of digesters so they can optimize biogas production. Instruments are available to measure both the biogas volume and methane content.

tpo: What are customers' expectations these days in terms of instrumentation?

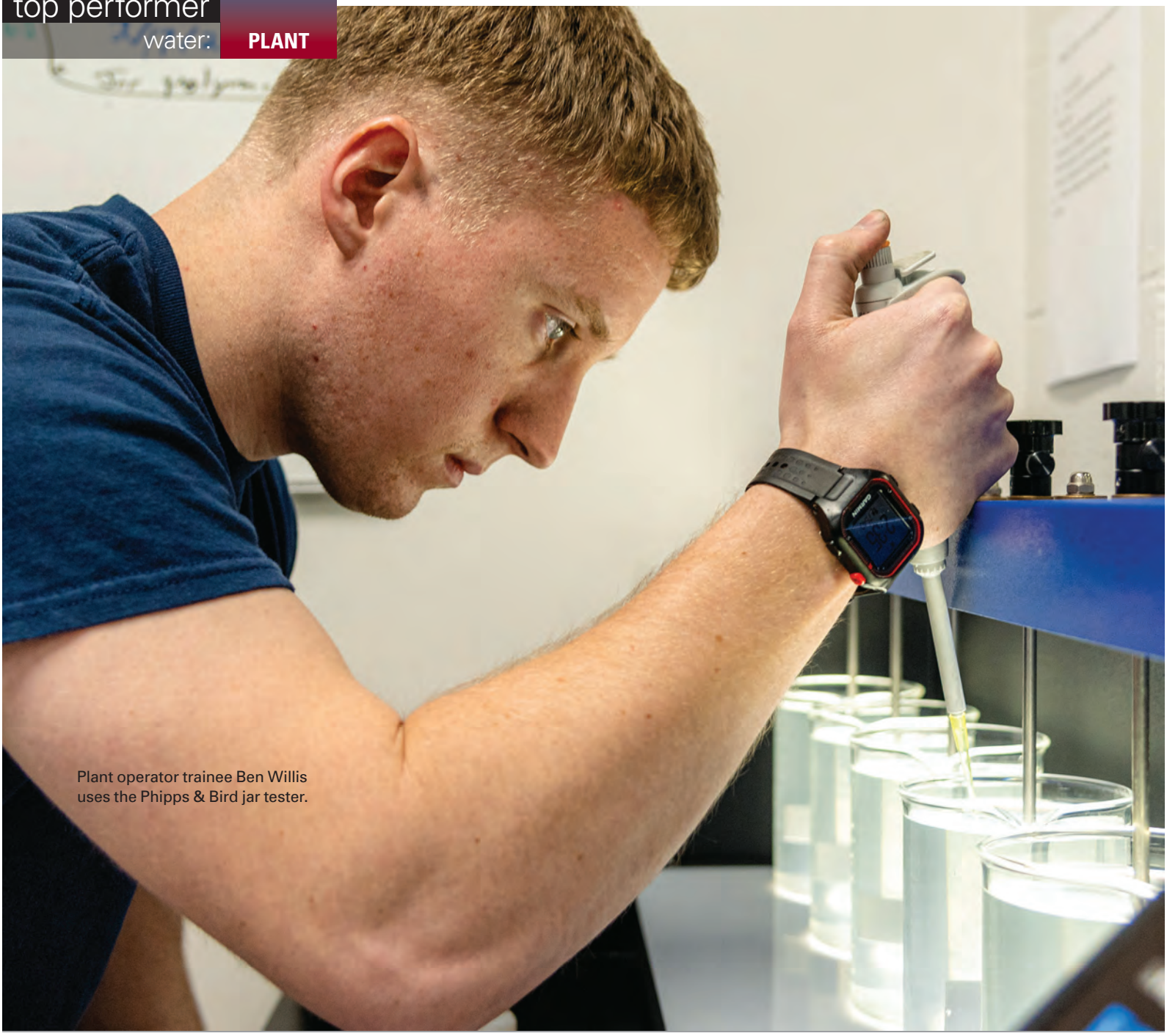
Smith: Operators are looking for ways to reduce manual grab samples and trips to the lab. They're looking for instruments to duplicate the measurements historically made in the lab that they can place in situ and use in the process. They want those instruments to operate for long periods with minimal maintenance and calibration. They prefer instruments capable of self-cleaning, self-monitoring and easy integration to their control systems.

tpo: What specific types of instruments do you see as being in the greatest demand?

Vance: Flow measurement is a huge priority. Plants are putting a flowmeter on every line they can, whether it's at a remote pumping station or within the plant walls. The other area where we are seeing more demand is in colorimetric analyzers for ammonium, orthophosphate and total phosphorus, not because these didn't exist before, but because there have been dramatic improvements in the technology. Plants are replacing older colorimetric analyzers with modern analyzers that are more cost-effective to operate and provide more features and capabilities.

tpo: As a whole, how well are water and wastewater treatment plants taking advantage of the instrumentation technology available?

Vance: We see more plants adopting modern technologies, instruments and digital communications. When plants upgrade, they typically replace all the motor controls, drives, pumps and instrumentation. There is also more talk about how it all fits together with digital communication and how the instruments are tied into the entire control system. Plant personnel are using Ethernet, Ethernet I/P and PROFIBUS, words you didn't hear them mentioning 10 or more years ago. Plants are moving more and more toward digital communications. tpo



Plant operator trainee Ben Willis uses the Phipps & Bird jar tester.

Winning Formulas

THE RIGHT BLEND OF TECHNOLOGY, APPROACH AND OPERATIONAL TEAMWORK DELIVERS AWARD-WINNING WATER QUALITY TO COMMUNITIES IN RURAL KENTUCKY'S HARDIN COUNTY

STORY: **Suzan Chin-Taylor**
PHOTOGRAPHY: **Martin Cherry**

The White Mills Water Treatment Complex in Glendale, Kentucky.

Karst topography can present water utilities with unique challenges. Hardin County (Kentucky) Water District 2 has found ways to overcome its biggest challenges by incorporating unique process technology, cross-training the staff and being willing to look at and adopt alternatives. All this has earned the utility recognition for 10 years running as a leader in water quality for the communities it serves.

The district's White Mills Water Treatment Plant, established in 1990, serves a rural population of 78,000 with about 29,000 connections. The plant can treat up to 8.1 mgd but on average treats 5.5 mgd, and the distribution system covers some 425 miles with 1,000 miles of distribution main.

> "We work very hard at the plant, but we also need to give credit to our wonderful board of commissioners."
> **SHAUN YOURAVICH**

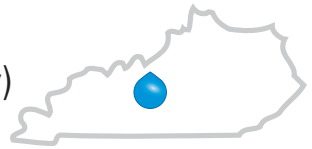
The district itself was formed in the mid-1960s to provide water to the rural areas of Hardin County. In 2014 the district purchased the nearby City of Elizabethtown system and became the county's largest water provider. The district also supplies parts of Larue and Hart counties.

White Mills draws its water from the confluence of the Nolin River and the White Mills Spring. Although the primary source is a spring, the area's karst topography makes this water body very susceptible to surface water, presenting a challenge of high turbidity during heavy rain events.

Karst topography allows surface runoff to enter into the groundwater supply, carrying contaminants including soil, chemicals and animal waste.

The region has taken steps with residents and farmers to limit infiltration by incorporating filter strips around streambanks and sinkholes. In addition, no-till farming has become more prevalent in reducing runoff and, with it, the levels of organics and soil in the plant's source water.

Hardin County (Kentucky) Water District No. 2, White Mills Water Treatment Plant



www.hcwd2.org

BUILT:
1990, expanded in 2000, upgraded 2018

SERVICE CONNECTIONS:
29,000

SERVICE AREA:
Hardin County, City of Elizabethtown, Parts of Larue and Hart counties

EMPLOYEES:
14

TREATMENT PROCESS:
Contact and gravity flow filtration

FLOWS:
8.1 mgd design, 5.5 mgd average

SOURCE WATER:
White Mills Spring and Nolin River

SYSTEM STORAGE:
7.8 million gallons

DISTRIBUTION:
1,000 miles of water mains, 14 storage towers

ANNUAL BUDGET:
$12 million (operations)

KEY CHALLENGES:
Staffing, turbidity, disinfection byproducts

TECHNOLOGY AND TREATMENT

The White Mills plant treats water in a unique way. Two KSB and two Sulzer submersible pumps deliver source water to the plant, where it passes through a series of CB&I ClariCone solids contact units (McDermott). These up-flow clarifiers, with minimal moving parts, can treat 2.7 mgd each. From there the water passes through six gravity flow filters before delivery to the distribution system by five 125 hp US Motors (Nidec) pumps and three 250 hp PACO (Grundfos) pumps.

The plant received the Outstanding Water System Operations Award from the Kentucky Water and Wastewater Operator Association in 1992, 1996, 2004 and 2019 and has been recognized 10 years in a row by the Kentucky Division of Water in 2020 for meeting Area Wide Optimization Program

The team at the White Mills Water Treatment Plant includes, from left, Jeff McDowell, Class IVA operator; Ben Willis, operator trainee; Joy Womack, Class IVA operator; Shaun Youravich, district general manager; John Cruse, chief water treatment operator; Jody Nalley, water treatment plant maintenance technician; Chris Phillips, Class IVA operator; and Ryan Kynett, water quality supervisor. They are shown with one of the plant’s CB&I ClariCone solids contact clarifiers (McDermott).

CREATING INTEREST AND INCENTIVE

At the completion of its White Mills Water Treatment Plant refurbishment, Hardin County Water District 2 conducted educational tours for local schools, colleges and organizations.

The COVID-19 pandemic put a halt to that, but district staff members were not deterred from making sure the local community and students knew about the important work that they did. Although the in-person tours had to end, staff member Kelli Lee put together virtual tours on video for schools and offered online presentations.

The district now can take some field crew members to the schools, along with equipment such as backhoes, to let the students see and experience the district’s work in outdoor demonstrations. The hope is that some students will take an interest and become recruits for the future.

In another effort to replace retiring operators, the district has implemented trainee positions. The goal is always to have two trainees on staff at the water plant, gaining experience so that when someone retires, his or her successor is ready to step up, get certified and be able to run the plant. Trainees shadow more seasoned operators while they going to school and qualifying for their certifications.

goals. That’s largely because the district runs a tight ship, keeping the plant well maintained and its team members cross-trained.

“We work very hard at the plant, but we also need to give credit to our wonderful board of commissioners who listen to our needs and give us the resources necessary to run the facility and the system the way it should be run,” says Shaun Youravich, district general manager.

“That support trickles down from there to our management staff and supervisors, who take what they do very personally. They have tremendous respect for the district and for what they do. They care deeply about what they provide to our customers.”

The facility has succeeded despite substantial challenges and obstacles. Extreme turbidity has been a persistent issue, requiring operators to be vigilant especially during heavy spring and summer rain events, which are common. The team performs diligent jar testing while also running a UV 254 test for organics to stay ahead of potential treatment issues.

To help stay on top of demand and meet water quality standards, the district in 2000 added a state-certified laboratory as part of an expansion of its facilities. Previously, the plant had relied on a lab 60 miles away; that was unacceptable in cases of main breaks or other emergencies at off hours when it was essential to get samples into the lab as soon as possible.

“We decided to open our own lab not so much to save on cost but because it would be more convenient and efficient in getting results back quickly,” Youravich says. “Having our own lab helps us provide better customer service, and now we can offer that same type of service to other surrounding utilities.” Multiple plant operators are also trained in the lab and have lab analyst certifications so that Hardin can run samples regardless of date or time.

In 2018, the plant remained fully operational throughout a complete inte-

rior upgrade, in which barely a bolt went untouched from floor to ceiling. With three clarifiers and three treatment trains, the team was able to shut one down at a time and keep the others online. That was no small feat, as sandblasting and varied construction activity created a form of chaos. It took about a year, but at the end White Mills was a like-new facility.

GOODBYE BYPRODUCTS

Disinfection byproducts were historically an issue for the plant, and rule changes revealed that the plant would likely be above the maximum contaminant limits. Knowing this, the team began looking at process changes to reduce disinfection byproducts while maintaining water quality.

Accordingly, the staff decided to switch from chlorine to chloramines as the primary disinfectant.

The plant now adds liquid ammonium sulfate to the process to react with chlorine. That has reduced disinfectant byproducts by more than 65%, keeping the water well below the new EPA limits. There were some added benefits to the changeover: "We feel this has improved water quality, residuals and water taste, especially in the more far-reaching areas of the distribution system," says John Cruse, chief water treatment operator.

Several equipment changes enabled the switch to chloramines, among them the installation and modification of chlorine analyzers throughout the distribution system to allow operators to read total chlorine versus free chlorine.

The district had always maintained a positive Langelier Index and had monitored the corrosive activity of the water throughout the system. The change to chloramines had no effect on the infrastructure, and the staff noticed that with the reduction in disinfection byproducts, the chlorine residual appeared to last longer in the distribution system. That was important because the system is large and widespread.

While the switch to chloramine did not provide direct cost saving, the district did save on maintenance, as hydrant flushing is now needed less frequently in some areas.

Ryan Kynett works in the lab at the White Mills Water Treatment Complex.

ALL HANDS ON DECK

The district employs a full maintenance department whose members work in the distribution system, and each treatment plant has a maintenance technician. The team in addition to Cruse includes the following members:

- Stuart Erhardt, plant manager (Class IVA licensed)
- Ryan Kynett, water quality supervisor (Class IVA)
- Jody Nalley, water treatment plant maintenance technician
- Class IVA plant operators Chris Phillips, Mike Hale, Caleb Sedlak, Jeff McDowell, David Lowe and Class IIIA operator Joy Womack
- Water quality technicians Stephen Schueller and Mike Rock
- Plant operator trainees Taylor Aubrey and Ben Willis

(continued)

Jody Nalley, maintenance technician, checks the packing motor (Nidec) and oil levels on a Peerless vertical turbine pump (Grundfos).

Several team members serve as both maintenance technicians and operators. "We had people who were initially hired as operator and performed that task for a number of years," Youravich says. "But during their tenure we discovered that some had great technical or mechanical ability, and so it made sense for them to morph into also being maintenance technicians.

"Vice versa, we had maintenance technicians with excellent understanding of technology who received industrial maintenance training through our community technical college, and we were able to accentuate their natural abilities through in-house training in our treatment plants to become certified as operators. Although it's a long process it pays off for both the staff members and the plant."

By cross-training throughout the entire organization, both of the district's treatment plants are covered. Although the plants operate differently, staff members can easily go from one to the other. With their expertise, technicians can spot issues for each other and address them before they become major problems.

Youravich also makes the entire operating team part of the district's capital improvement planning. The 20-year capital program is updated annually, and all departments are asked to work on it collectively as a living document.

The district also has a strong culture of promoting from within and rewarding team members who have served well. "To be successful in this business, from an operator's point of view, you've got to love what you do," Cruse says.

"We are not people who are out in the public view. Most of the time we are out in the country working somewhere, invisible. Nobody really thinks about the treatment plant. They just turn the water on and it's there. But we know how important it is to provide safe, high-quality drinking water to the public. That is what drives us and keeps us pushing to improve and serve." tpo

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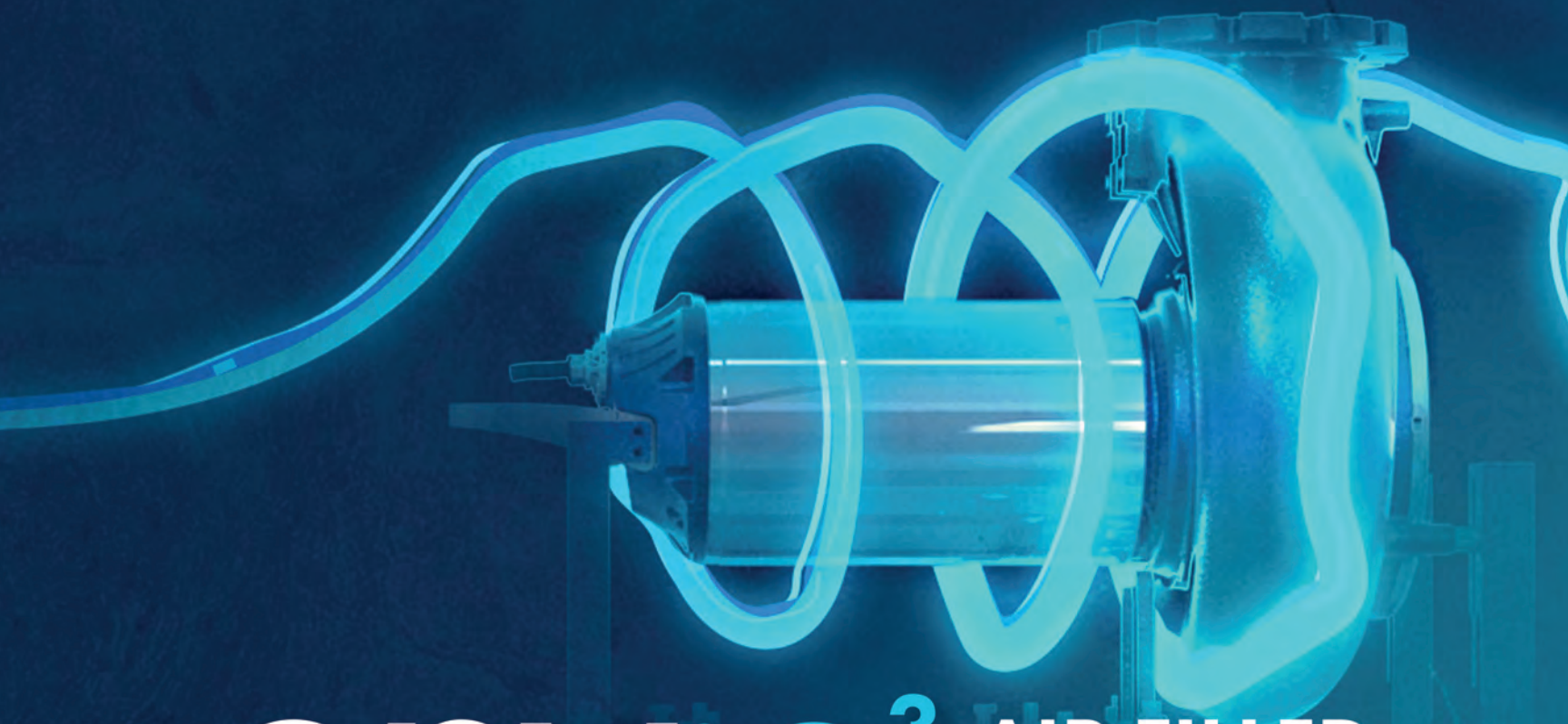

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The administration building at Loudoun Water's Trap Rock Water Treatment Facility has been certified LEED Gold.

Looking to the Future

BILLIONS OF GALLONS OF STORAGE, A LEED CERTIFIED ADMINISTRATION BUILDING, AND TWO STAGES OF OZONE ARE ALL PART OF SUSTAINABILITY EFFORTS AT LOUDOUN WATER

By Steve Lund

When a water utility is in a fast-growing area and needs to plan for expansion, it's good to have something extra in the bank.

Loudoun Water in Loudoun County, Virginia, about 25 miles northwest of Washington, D.C., brought a new water treatment plant online in 2019 to draw water from the Potomac River. At the same time, it is creating a water bank — a stockpile of water in retired stone quarries — to give the system more resiliency and to protect the river during times of low flow.

DROUGHT PROTECTION

The idea of using quarries for water storage was first proposed in 1988, but there was no plan to implement it until the Trap Rock Water Treatment Facility in Leesburg was designed. The plant is rated for 20 mgd and produces 10 mgd on average, but it was designed for expansion to 40 mgd.

A retired quarry will provide a billion gallons of storage by 2026. Plans call for other quarries to be added, eventually providing up to 8 billion gallons of storage. The storage is key to the plan known as the Potomac Water Supply Program. In droughts and other emergencies, the utility will be able to draw from the quarries instead of the river, and then refill the quarries when the river's flow returns to normal.

"In the event of water contamination or a drought, we would be able to pull our operation off the Potomac River and use the water stored in the quarry," says Jessica Edwards-Brandt, director of water operations.

OZONE TREATMENT

The storage system is only one example of the utility's campaign for a sustainable water supply and a clean, energy-efficient operation. The administration building at the Trap Rock Treatment Plant has been certified LEED Gold. The building draws 15% of its power from solar panels, has a water-source heat pump HVAC system and was built using regional material, like the stone in masonry walls.

Loudoun Water also had sustainability improvements in mind when designing the treatment process at Trap Rock. The plant uses a two-step ozone process followed by biofiltration. Water is treated first with ozone (as a preliminary oxidant). After conventional coagulation, flocculation and sedimentation, the water gets another ozone treatment and then passes through biofilters with 48 inches of granular activated carbon. This is followed by Ozonia UV (SUEZ) and chlorine disinfection.

Gerardo Castaneda, plant engineer, says, "We have ozone treatment at the head of the treatment process and also in the middle to target certain contaminants or substances at different stages.

> "Ozone is a very powerful disinfectant for certain pathogens. We are currently using it to remove organics, but we hope in the future we would have the option to use it as our primary disinfectant, followed by UV."
>
> **GERARDO CASTANEDA**

"Following the second step of ozone we also have biofiltration. At the second stage, ozone reacts with organic materials and tears them up into smaller particles. The organic material then becomes more bioavailable to the bacteria that live in the filter. The bacteria will consume that organic matter and remove it from the flow."

MULTIPLE ADVANTAGES

The bacteria that consume the partially decomposed organic materials are naturally occurring as long as conditions are right. "We just create the right condition for the biological materials to grow," Castaneda says. "The

biofilters are managed and maintained in order to maximize their capability."

The two-step ozone process has a number of advantages, Castaneda says. One is that the final product has less organic material that could react with chlorine to create disinfection byproducts in the finished water. Another advantage is that the finished water, because it has less organic material, is more stable and has a longer retention time in the distribution system.

Another potential advantage of the two-step ozone system is that ozone could become the primary disinfectant. "Ozone is a very powerful disinfectant for certain pathogens," Castaneda says. "We are using it to remove organics, but we hope in the future we would have the option to use it as our primary disinfectant, followed by UV." Eliminating chlorine for primary disinfection would save on chemicals and energy, but so far the utility's permit requires chlorine as the primary disinfectant.

ADAPTABLE TO CONDITIONS

Loudoun Water's system is adaptable to changing conditions. That's necessary because the source water is not necessarily consistent. "It's a river," Castaneda says. "The water is changing all the time. It changes based on storms. It changes based on seasons. Depending on all these different conditions, we can do a little more of this or cut back on that. This is all part of having many tools at our disposal, not just for now but for what we would need in the future.

"In the end, the goal is to be able to provide safe water to our customers. The better the water quality we put out there, the less concern we have that we are going to run into a problem, or that we're going to have any customer complaints due to taste or odor issues."

Loudoun Water serves a population of about 300,000. In addition to the water it produces at Trap Rock, it also draws about 60% of its water from Fairfax Water in neighboring Fairfax County. The source water for Fairfax is also the Potomac River and the treatment process is similar. "The two finished products are very similar," Castaneda says. "That is intentional so they can blend easily in our distribution system." **tpo**

2021 Instrumentation directory

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✔				✔			
			✔	✔			Meter Reading Equipment
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				✔			
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			✔				
			✔	✔			
				✔			Pump Controls
			✔	✔		✔	
✔				✔			

The Raptor Grit Washer (Lakeside Equipment) is designed to effectively provide grit classification and washing from any grit removal system.

Beating the Ups and Downs

A SCREEN AND GRIT SYSTEM HELPS A MICHIGAN COMMUNITY DEAL EFFECTIVELY WITH A GRIT BUILDUP RELATED TO PEAKS AND VALLEYS IN TREATMENT PLANT FLOW

By Chris French

One would think that with a population of just 1,200 people, wastewater treatment in the Michigan community of Baldwin would be pretty straightforward, but this village has taken a yo-yo of a journey for the past two decades, treating 75,000 gpd to 200,000 gpd, and back down again, and at various levels in between. For treatment plant operators, that has presented quite a challenge, and even now it appears the flow could go back all the way down again to 75,000 gpd.

The flow variability led to a significant buildup of grit in a force main feeding septage to the treatment plant. The facility team and its engineers solved the problem with a headworks upgrade that included a new screen and grit removal system.

CHANGE OF PLANS

Rural Baldwin attracts plenty of visitors for its world-class trout fishing and canoeing on the Pere Marquette River, protected by the Wild and Scenic Rivers Act. But the big differentials in population have come from the North Lake Correctional Facility, which at capacity has had up to 1,600 inmates and 400 staff. Under new Biden administration, it is expected to close — again — but time will tell.

In the late 1990s, the village brought in the Fishbeck engineering and construction firm to design the original 75,000 gpd sequencing batch reactor plant. But construction was well underway when everything had to change with the building of a prison, observes Jim Truxton, village president.

"At the time, it was a unique opportunity for the state to house the facility, and we couldn't be blind to the fact that there would be significant federal grants towards upscaling our wastewater treatment plant as a solid investment for the future of Baldwin," he says.

NEW REVENUE SOURCE

"Over the years, I doubt anyone could have foreseen the on/off, open/closed saga, but then, opinions and policies can change when new administrations are elected. During a long period of closure for North Lake, for around seven and half years, our treatment plant was running at only 30% capacity, so to generate some much-needed revenue, we took in septage."

Septage delivered by trucks went into a primary pump station and was sent through a nearly three-mile-long force main that travels under an abandoned railroad and wetlands area before discharging at the treatment plant.

In early 2018, Fishbeck completed the design and bidding for an $8 million plant expansion, including an upgrade of the primary pump station, and proceeded with construction. Previously, there was too little flow to move the grit, which accumulated in the force main.

DEALING WITH GRIT

For the new headworks, Fishbeck and the village chose a Raptor Micro Strainer screen with a quarter-inch perforated plate screenings basket and a SpiraGrit vortex grit system, both made by Lakeside Equipment.

Dave Conklin, senior engineer with Fishbeck, states, "We had previously specified Lakeside headworks equipment based on its competitive pricing and performance. We also had excellent experience with the manufacturer's representative, Dubois Cooper. Both businesses were highly involved in the startup of equipment and any troubleshooting. They also organized good-quality training and kept us up to date."

The real fun began at Baldwin in March 2019 when, as part of the upgrade, new and larger pumps were installed to help move the legacy of grit, which was estimated to occupy two-thirds of the force main.

John Barthels, division director with Infrastructure Alternatives, which manages 130 wastewater treatment plants, observes, "Getting all this accumulated grit out of the line resulted in a huge amount of material for the Lakeside equipment to deal with, probably six to ten times the normal amount."

The equipment proved robust in handling the material. "There was an amazing amount of grit," Truxton says. "For the first six months of the installation, a 10-cubic-yard container was filled to the brim every week. Now after that initial wave of grit, the whole thing works just fine. All that is required is some periodic cleaning and basic preventive maintenance."

HANDLING VARIABLE FLOWS

Over a wide range of daily flow rates, the SpiraGrit system captures grit particles in a flat-floor circular upper chamber. Rotating paddles maintain the flow velocity in the chamber; grit is removed from the storage hopper by a self-priming pump to a Raptor dry grit washer.

Organics are separated from the grit particles by introduction of upwardly directed wash water and a grit stirrer assembly. The organics are automati-

cally recycled back to the treatment process. The cleaned grit is removed via a grit dewatering screw and discharged into a dump container.

In the headworks channel, the Raptor Screen captures debris, and a brush on the central screw cleans the screenings basket and conveys solids up to the compaction zone and dewatering chamber. After the compaction zone, the dewatered material enters a discharge chute that directs it into a dump container at a lower level. The screen and grit equipment are constructed from Type 316 stainless steel for corrosion resistance.

The SpiraGrit system (Lakeside Equipment) captures grit particles in a flat-floor circular upper chamber.

THE LONG HAUL

"One way or another, it has been quite a journey. With or without North Lake Correctional Facility, we now have a very professionally managed wastewater treatment plant with equipment that delivers excellent performance for the long-term. Plus, we have a team of highly skilled and conscientious professionals behind us all the way," Truxton says.

"With our groundwater discharge and close proximity to a precious waterway such as the Pere Marquette, we rightly have to be careful with our treatment processes." tpo

New Technology Slated for WEFTEC 2021

By Craig Mandli

WEFTEC, the Water Environment Federation's annual Technical Exhibition and Conference, offers water and wastewater professionals from around the world exposure to the newest products, along with water-quality education and training. This year's event, from Oct. 16 to 20 in Chicago, promises to show off some of the finest new products on the market for municipal and industrial water and wastewater professionals. Below is a preview of some of the newest products that will be highlighted at this year's show.

Aerzen Rental Temporary Oil-Free Blowers

Aerzen Rental provides temporary oil-free **blower packages** engineered for aggressive rental environments with onboard variable frequency drives, remote monitoring and outdoor builds with sound-attenuating enclosures. The rental units are available for immediate deployment in the event of a production failure or shortfall to longer-term operational leasing and rent to own.
844-400-2379; www.aerzenrentalusa.com; Booth 1062

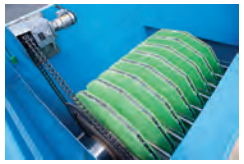
AllMax Software Operator10

Operator10 wastewater software from **AllMax Software** is designed to address the issues that are most important in managing plant operations. It provides centralized storage for all wastewater operations data. Plants that record data from external labs, LIMS, SCADA, Historians and more need a place to house, organize, review, manipulate and report on their data. It includes multiple options to get data into the company's database, and tools to perform calculations, create charts and run reports. It can handle issues in a budget-friendly, straightforward and secure database solution.
800-670-1867; www.allmaxsoftware.com; Booth 2908

Analytical Technology Entech EchoSmart

Entech EchoSmart sludge blanket monitors from **Analytical Technology** take the guesswork out of blanket measurements in clarifiers, thickeners and anywhere an underwater interface measurement is needed. Smart sensor technology allows for wireless networks with up to 16 sensors, reducing the per-tank price. In addition, the ability to remotely monitor the system via a cellular modem ensures support for even the most challenging processes.
800-959-0299; www.analyticaltechnology.com; Booth 3452

AquaStorm Cloth Media Filtration System



The new **AquaStorm cloth media filtration system** is an effective solution for CSO, SSO and stormwater applications due to its removal efficiencies and high-quality effluent, even under varying influent conditions. The AquaStorm system utilizes a disk configuration with three zones of solids removal to effectively filter wet weather flows without the use of chemicals. The system is designed to handle a wide range of flows in a fraction of space compared to other treatment methods, and offers simple startup/shutdown with unattended operation for remote locations. The system's flexibility also allows for dual-use application for tertiary and wet weather operation.
815-654-2501; www.aquastormfiltration.com; Booth 4657

BDP Industries 3DP Belt Press

The **3DP Belt Press** from **BDP Industries** is designed to provide high discharge cake solids at high flow rates. It has a 25-year track record of low operation and maintenance costs while providing suitable performance. It has been continually improved with the latest features and automation, and is a rugged, durable machine designed to provide years of reliable service. With its history of dewatering aggregates and minerals, as well as wastewater treatment plant solids, it is also especially suited for water treatment plant residual dewatering.
518-695-6851; www.bdpindustries.com; Booth 2402

Blue-White FLEXFLO M1

Users can standardize one chemical feed solution with the **FLEXFLO M1** peristaltic chemical dosing pump from **Blue-White.** It is self-priming and delivers consistent, precise chemical dosing with no vapor lock or lost prime. SCADA inputs include 4-20mA. The pump achieves a 10,000-1 turndown ratio and feed output range of 0.0001-5.6 gph, with pressures to 100 psi. It has a high energy-efficiency rating and is powered by efficient BLDC motor technology. A sealed enclosure and a display shield protect the pump's controls and display from chemical spills and splashes. It has CNC precision-machined rollers for optimum squeeze, accuracy and extended tube life.
714-893-8529; www.blue-white.com; Booth 3442

Bright Technologies, Division of Sebright Products Inc., Belt Filter Press

Bright Technologies, Division of Sebright Products Inc., offers **belt filter presses** that provide high performance in a compact, high-value package. Complete belt filter press dewatering systems are skid or trailer mounted. The company designs and manufactures the skid equipment package for high throughput, low maintenance, superior cake solids and ease of operation.
800-253-0532; www.brightbeltpress.com; Booth 4336

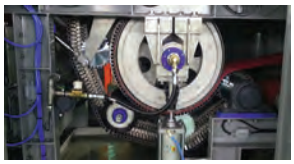
Centrisys/CNP MagPrex

MagPrex is a digestate phosphorus-removal technology offered by **Centrisys/CNP.** It is for all-sized plants that have high soluble phosphorus concen-

trations, struvite accumulation and poor dewaterability as a cost-effective way to remove the soluble phosphorus. Installing between the anaerobic digester and the dewatering equipment, it converts the orthophosphate into struvite crystals and the system is configurable to either sequester or harvest the struvite. With five operating installations across the USA, it has demonstrated it will reduce soluble phosphorus by at least 90%, reduce maintenance costs up to 50% and reduce polymer consumption up to 30%.
262-747-2384; www.centrisys-cnp.com; Booth 3256

Charter Machine Co. Elode Dryer

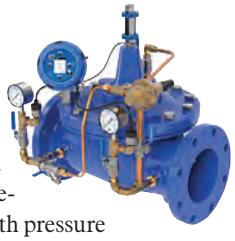
Charter Machine Co. is introducing a new way of increasing your cake solids dryness by use of electro-dewatering. The **Elode dryer** takes any dewatered cake and doubles the cake solids in under one minute by use of electrophoresis and electro-osmotic reactions that are generated from a DC field, according to the maker. No pressure, no chemicals, just a little electricity and your hauling costs are cut in half. The Elode dryer works well with cake solids in the 15-20% TS range to generate more than 40% TS cake. Stop by the Charter Machine booth for more info.



732-494-5350; www.chartermachine.com; WEFTEC Booth 1623

Cla-Val Model XP2F

The **Cla-Val Model XP2F** is a flow-metering option available now for any Cla-Val control valve. It is a differential pressure-based solution and comes with pressure transmitters, a valve position transmitter and flow calculation module. It is IP 68 rated, with a 12-24V DC input, four analog inputs and four analog outputs with the ability to accept additional field instrumentation and retransmit measurements to PLC/SCADA via 4-20mA signals.



949-722-4800; www.cla-val.com; Booth 4621

CUES QZ3 Advanced

CUES has developed an advanced model of its lightweight, portable, HD wireless video inspection pole camera, the **QZ3 Advanced,** which can be operated by one person using any tablet. It provides safe viewing in industrial or environmental areas with no-man entry. Users can perform swift inspections and surveys of pipelines, manholes, tanks and other areas that are difficult to reach. It can also be used to locate lateral services or to identify blockages at manholes, access ports or other entry points without entering the line or structure. Added features over the basic model include motorized height and tilt, in addition to laser distance measurements. Many options are available to enhance the utility of the model.

800-327-7791; www.cuesinc.com; Booth 1605

Eagle Microsystems PS-2000 Multifunction Controller

The **Eagle Microsystems** new **PS-2000** is a multifunction controller capable of being configured as a process controller, sensor monitor and data logger. The PS-2000 can fulfill a large number of tasks that would normally require multiple separate instruments. This is accomplished by its ability to accept a wide variety of input signals and the availability of up to 10 user-configurable relays. The PS-2000 multifunction controller uses a color touch-screen interface allowing for intuitive operation and configuration.

610-323-2250; eaglemicrosystems.com; WEFTEC Booth 4619

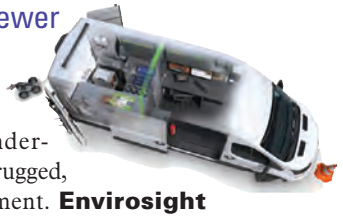
Emerald Coast Mfg. WAVE

The **WAVE** from **Emerald Coast Mfg.** is an all-climate heavy-duty vacuum wastewater sampler. The ABS/acrylic case provides superior weather protection. Its 7-inch color touch screen grants ease of programming and status viewing. This refrigerated sampler provides composite sampling with a high level of accuracy and the powerful vacuum system will lift nearly 30 feet. It is completely user friendly. Sample size can be programmed, and the system will automatically adjust to ensure an accurate repeatable sample.

850-469-1142; www.emeraldcoastmfg.com; Booth 4257

Envirosight sewer inspection vehicles

Getting the full picture underground requires rugged, versatile equipment. **Envirosight** has applied decades of operator experience to deliver trucks with the capabilities and amenities needed. It features the ROVVER X inspection crawler platform, with options for lateral launch, push camera and zoom survey camera. It is available on many panel van and box truck options, with generator (gas or diesel), inverter or engine electric power. It comes with equipment washdown, safety beacons, site lighting, stainless work surfaces, climate control, overhead monitors, storage drawers and cabinetry and washable surfaces. Options include cranes, sinks and winches.



866-936-8476; www.envirosight.com; Booth 2274

Flomatic Valves Model 745 AIS Swing Check Valve

Flomatic's AIS-complaint **Model 745 AIS Swing Check Valve** is designed with a short disc travel distance, guaranteeing a fast valve closure for non-slam high performance. Constructed with a full-flow area equal to nominal pipe diameter and a 45-degree valve-seat angle, accessories include a backflush device, position indicator and limit switch. Manufactured according to ANSI/AWWA C508 standards, it includes a Buna-N coated steel one-piece disc with an integral molded O-ring on the seating surface. Featuring NPT threaded and plugged side ports, it's suitable for easy installation of gauges or accessories.

800-833-2040; www.flomatic.com; Booth 4248

FLSmidth KREBS Sewage-Degritting Cyclones

KREBS Sewage-Degritting Cyclones from **FLSmidth** are simple, yet highly effective units for removing grit, sand and other inorganic solids from the primary clarifier and grit chamber underflow streams in sewage treatment plants. Features and benefits include high performance efficiency for effective downstream equipment protection; high capacity in a small footprint, reducing installation costs; fabricated carbon steel housing for reduced costs; hinged apex housing for easy maintenance and system cleaning without disconnecting piping; easily replaceable neoprene and gum rubber liners (other liner materials available on request); and a choice of manually adjustable or fixed apex assembly to provide flexibility.

520-744-8200; www.flsmidth.com; Booth 4772

(continued)

Franklin Electric FPS NCX Series

Municipal infrastructure operators have a safe and reliable solution for wastewater transfer with the **NCX Series** of explosion-proof submersible non-clog pumps from FPS, a brand of **Franklin Electric.** The pumps are certified for use in Class 1, Division 1 and Group C & D hazardous location requirements — making them suitable for applications such as lift stations; stormwater, flood and pollution control; and general fluid transfer. Available in single- and three-phase power options to accommodate flows up to 625 gpm, each unit is designed with a field-adjustable wear plate, dual silicon carbide mechanical seals, and chemical-resistant components.

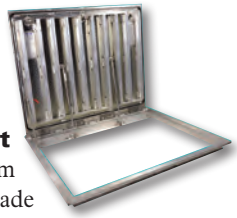
866-271-2859; www.franklinengineered.com; Booth 2062

Gorman-Rupp EchoStorm

The **EchoStorm, Gorman-Rupp's** new static venturi aeration device, is designed to add dissolved oxygen into pumped liquids, adding oxygen to wastewater, reducing the size of organic solids and degassing organic solids. It is available in sizes from 2 to 6 inches, with flows from 50 to 1,300 gpm. It is a suitable solution for municipal, industrial, and agricultural applications, including wet well influent, aerobic sludge digestion, lagoons, oxidation ditches, fat, oil and grease digestion and landfill leachate. The device can be combined with a variety of Gorman-Rupp self-priming, centrifugal and priming assisted pumps.

419-755-1011; www.grpumps.com; Booth 2012

Halliday Products Series F Flushmount Floodtight Covers



Series F Flushmount Floodtight Covers from **Halliday Products** are made from highly durable aluminum and stainless steel, and feature EDPM compression gaskets, spring assists and stainless steel cam locks. They are structurally designed to support a 25-foot column of water.

800-298-1027; www.halladayproducts.com; Booth 648

ChemScan, an In-Situ Brand, Mini LowAm Ammonia Analyzer

In-Situ is sharing its portfolio of analyzers and sensors for reliable wastewater and drinking water monitoring. Among featured products will be the **mini LowAm Ammonia Analyzer** from **ChemScan.** This industrial-grade, colorimetric analyzer is designed to support reliable performance and low ownership costs. Features include a low-maintenance filter system enabling reliable aeration basin monitoring; large anti-clogging lines for more reliable performance; affordable reagents and spare parts to reduce costs; and simple operation to make service contracts obsolete. Use the Mini LowAm Analyzer to eliminate frequent manual sampling and lab analyses and improve control of your processes.

800-446-7488; www.in-situ.com; Booth 1439

InfoSense SL-RAT

The **Sewer Line Rapid Assessment Tool, or SL-RAT** from **InfoSense** is a portable and easy-to-use technology that uses sound waves to assess blockage conditions in gravity sewer pipe. It serves as the first step in a collection system maintenance process — providing a fast, low-cost but low-resolution view of blockage conditions. An assessment is provided in three minutes or less, allowing a two-person crew to screen up to 10,000 feet per day at less than 1/10th the cost of cleaning or CCTV. It is portable, with no-flow contact, GPS enabled and EPA validated.

877-747-3245; www.infosense.com; Booth 7317

JDV Equipment Nozzle Mix System

The dual-zone **Nozzle Mix System** from **JDV Equipment** provides uniform mixing patterns that produce even distribution and a stable environment. It optimizes solids suspension and contact to promote efficiency in a wide range of applications. The system is designed with pumps installed outside the tanks and are typically chopper pumps or pumps incorporating in-line grinders. The high-velocity nozzles mounted inside the tank completely mix the tank contents. Applications include anaerobic digestion, biosolids storage, blending tanks, excess flow tanks, septage or leachate, anoxic zones, combined sewer overflow handling, aerobic digestion, secondary treatment and biosolids holding ponds.

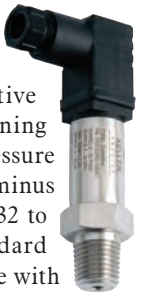
973-366-6556; www.jdvequipment.com; Booth 3844

JWC Environmental Monster Stack

Since materials in the waste stream vary, grinders often need to address multiple challenges from the bottom to the top of the grinder. The **Monster Stack** from **JWC Environmental** addresses those specific challenges. No longer does the facility need to settle on a single cutter type. JWC uses individual cutters for its grinders, so you can mix and match different cutter types in the Monster Stack, and those changes can happen anywhere along the stack. Using the right cutter at the right location optimizes grinder performance and unit longevity. Wastewater debris varies. So should grinder cutters.

833-912-3331; www.jwce.com; Booth 2043

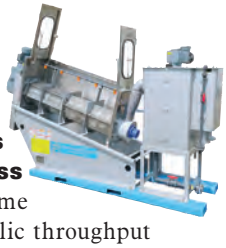
Keller America Econoline



The **Econoline** pressure transmitter from **Keller America** combines a media-isolated piezoresistive silicon sensor with signal conditioning electronics to provide a compact pressure transmitter with less than plus or minus 1% total error band accuracy over 32 to 122 degrees F. The industry standard 4-20mA analog output is compatible with most existing monitoring infrastructure and SCADA systems and provides meaningful output in ranges from 30 to 10,000 psi. The design makes it suitable for use under harsh environmental conditions, including those with high levels of electromagnetic radiation and/or those involving aggressive media where small size, low weight and reasonable cost are required. Modular production provides short lead times and maximum versatility for customer-specific applications.

877-253-5537; www.kelleramerica.com; Booth 8013

Komline-Sanderson Multi-Wave Screw Press



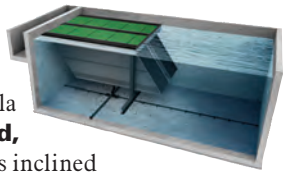
Komline-Sanderson's Multi-Wave Screw Press is designed for high volume reduction and high hydraulic throughput at a low polymer dose. The design has low maintenance costs and long operational life even with highly corrosive sludges. As a combined thickener and dewatering device, polymer consumption is reduced by the progressive stabilization achieved through aggressive water removal in the thickening zone. The unit self-regulates to achieve the highest cake solids in one step.

800-225-5457; www.komline.com; Booth 1841

Lakeside Equipment Raptor FalconRake Bar Screen

Protecting downstream equipment in municipal and industrial applications, the **Raptor FalconRake Bar Screen** from **Lakeside Equipment** achieves high removal efficiency and low headloss — without the need for lower bearings, sprockets, bushings or guides that could foul or jam conditions in the channel. The all stainless steel, corrosion-resistant construction is designed with multiple rakes that continuously remove captured material. It is available in a wide range of bar shapes and depths, so that it can create an efficient, durable and dependable rapid debris removal system for a wide range of applications. In addition, its design and construction mean a low horsepower, energy-efficient drive system.
630-837-5640; www.lakeside-equipment.com; Booth 1826

Leopold, a Xylem Brand Texler



The **Texler** lamella clarifier from **Leopold, a Xylem Brand** uses inclined lamellas designed to fit in rectangular clarification basins, providing a large settling area within a small footprint. It provides a large clarification area basin and the numerous lamella sheets, installed at a 55-degree angle, increase the water treatment capacity by up to 100% compared to conventional sedimentation systems. Solids settle without blocking the pathway of the water. The trough covers have an integrated V-notch weir design to ensure even flow distribution throughout the clarifier. In this process, solids are reduced by over 80%, resulting in turbidity levels below 1 NTU.
855-995-4261; www.xylem.com; Booth 1808

Mueller i2O Data Logger

With **Mueller's** recent acquisition of i2O, the company now offers **data loggers** to cost-effectively monitor flow and pressure throughout water distribution networks. The data loggers are accurate, reliable and robust, with highly configurable data transmission and a full set of alarm functions on all data channels. They offer a wide range of interval and dial-up configurations and can detect transients and monitor pressure-relief valve conditions. The i2O three-pressure logger can also be used as a controller, meaning there is a minimal upgrade path to advanced pressure management.
770-206-4200; www.muellerwaterproduts.com; Booth 2034

Penn Valley Pump Double Disc Pumps

The **Double Disc Pumps** from **Penn Valley Pump** are based on a free-disc technology and operate on the principle of induced flow. This positive displacement pump's discs work in unison to perform the duties of both the pump and valve element, creating a double-acting, non-clogging pumping action. The pump handles sludge, slurry, scum and other waste liquids with up to 2-inch solids and is routinely used to feed a variety of dewatering devices. Thanks to a non-close tolerance design, it has less wear for longer operating life and can run dry without damage. When maintenance is required, the maintain-in-place system allows the pump to be serviced without disturbing piping.
215-343-8750; www.pennvalleypump.com; Booth 3323

Sauereisen SewerGard Roll Applied 210XROL

Sauereisen SewerGard Roll Applied 210XROL is an epoxy lining system designed to protect concrete surfaces of municipal wastewater treatment structures and collection systems from chemical attack and physical abuse. Roll applied ensures ease of application on vertical surfaces, does not require a primer, zero VOCs and prohibits water inflow and infiltration. It is resistant to corrosive conditions common to the municipal wastewater treatment industry and suitable for application over damp or dry concrete surfaces. Depending on surface temperatures and substrate conditions, it can be applied up to 25 mils per coat.
412-963-0303; www.sauereisen.com; Booth 1728

Sealing Systems Flex-Seal 2.0

Flex-Seal 2.0 from Sealing Systems is an all-purpose sealant that adheres to many surfaces and has over 800% elongation. It is designed to prevent inflow and infiltration and to provide corrosion protection at the grade adjustment ring section or joint section of manholes and catch basins. It is 100% safe and Prop 65 compliant.
800-478-2054; www.ssisealingsystems.com; Booth 1125

Sulzer Pumps Solutions HST Turbocompressor

The **HST Turbocompressor** from **Sulzer Pumps Solutions** offers an advanced design with digitally controlled magnetic bearing technology and a premium efficient high-speed motor driven through a built-in frequency converter. It has no mechanical wearing parts or lubricants requiring minimal maintenance. This is made possible by electronically controlled magnetic bearing technology, which levitates the integrated rotor/shaft/impeller single-piece assembly along the self-diagnostic features of the active magnetic bearing controller. The result is a compressor with no performance deterioration over time and no need for scheduled maintenance. They are widely used in wastewater treatment plants and in low-pressure industrial processes.
203-238-2700; www.sulzer.com; Booth 2038

Vaughan Company Chopper Pump

At its core, a true **chopper pump** consists of a rotating impeller with cupped and sharpened leading edges, cutting against stationary fingers at the entrance to the volute. The original patent was applied for in 1960 by **Vaughan** founder, Jim Vaughan. Vaughan has introduced many new chopper pump models covering a broad range of heads and flow, greatly improved efficiencies, all incorporating numerous patented cutting features. Including upper cutters, stationary cutter bars and other cutting features is fundamental to chopping and clearing problematic materials. This protects downstream components which is vital to the effectiveness of wastewater systems.
360-249-4042; www.chopperpumps.com; Booth 2379

Wachs Utility Products DWG 416

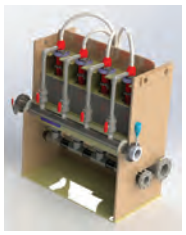
The **DWG 416** diamond wire guillotine saw from **Wachs Utility Products** can be used to cut pipe from 4- to 16-inch O.D. Equipped with folding arms for ease of storage, transport and entry to tight locations, it uses a diamond-infused cutting wire to cut all materials quickly and precisely, including concrete lined and plastics. It mounts to the workpiece for safe operation, avoiding kickback injuries. It is hydraulic powered for long life, allowing for full water immersion. Its long-lasting diamond cutting wire delivers a low

cost per cut. Two models are available — the DWG 208 for 2- to 8-inch O.D. and DWG 416 for 4- to 16-inch O.D.
847-537-8800; www.turnvalves.com; Booth 743

WinCan Web

Maintaining sewers starts with understanding sewer condition, and WinCan makes it easy to collect detailed, standards-compliant inspection data. It identifies trends, pinpoints hotspots, prioritizes maintenance and lets you forecast budgets. Its broad range of reporting and data visualization tools lets you drill down to the insight you need. Now, **WinCan Web** helps get more from the sewer inspection data collected. The cloud-based platform lets you share inspection data with anyone — instantly and securely online; view video, maps and observations on any device with a browser; safeguard your data with automatic offsite backups; and reduce IT costs and overhead. It replaces unreliable methods of sharing inspection data — such as printouts, DVDs, emails and thumb drives — with cloud-based collaboration. And it works with all brands of sewer inspection equipment.
877-626-8386; www.wincan.com; Booth 2907

World Water Works inDENSE



World Water Works' inDENSE system increases process throughput and performance through the selection of dense sludge aggregates with improved MLSS settling and the promotion of enhanced biological phosphorus removal bacteria. It's a gravimetric selection technology that provides a method for retaining the denser biomass while wasting out the lighter (unwanted) fraction of the MLSS in the treatment system. It can enhance nitrogen and phosphorus removal, promote denser sludge selection, and serve as a solution for poor settling MLSS. It reduces and/or completely eliminates chemistry for settling/TP removal, and can be easily integrated into any existing plant. It offers a minimization of sludge loss and operational stability.
800-607-7873; www.worldwaterworks.com; Booth 1861

YSI VARiON Plus 700 IQ H

The **VARiON Plus 700 IQ H** is **YSI's** Class I, Division 2 rated sensor for measuring ammonium and nitrate in hazardous locations. It is an ISE probe and works directly with IQ SensorNet for process monitoring and control. IQ SensorNet is the only networked water quality monitoring system available that can measure ammonium and nitrate in C1D2-rated areas. The unit conforms with NFPA standard 820 to reduce the potential of fire or explosion in hazardous locations in wastewater treatment facilities. The sensor is reliable and a safer option for measuring nitrate and ammonium in aeration basins that are not preceded by a primary settling tank.
937-767-7241; www.ysi.com; Booth 1808 tpo

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exam STUDY GUIDE

Licensing exams can be challenging. Our **Exam Study Guide** helps you prepare by presenting questions similar to those on an actual exam. You can find many more sample questions on the *TPO* website at www.tpomag.com/study.

ABOUT THE AUTHORS

Rick Lallish is water pollution control program director and Drew Hoelscher is program director of drinking water operations at the Environmental Resources Training Center of Southern Illinois University Edwardsville.

WASTEWATER

By Rick Lallish

When selecting a polymer for dewatering on a belt-filter press, what performance requirement should you conduct before making a choice?

A. Time to filter test
B. pH and acidity analysis
C. Jar test
D. Emulsion standards analysis

ANSWER: C. Selecting the proper polymer for dewatering is very important. Polymers matched to your plant's sludge characteristics can make a huge difference. Too much conditioning can be costly and fail to meet your needs, and too little can result in ineffective dewatering and possible excess costs in handling and land application. Jar tests are effective means of testing different types or concentrations of polymers at the same time. Learn more in the WEF textbook, *Wastewater Fundamentals II — Solids Handling and Support Systems*, Chapter 1.

DRINKING WATER

By Drew Hoelscher

The backwash rate for a granular activated carbon filter should be sufficient to achieve a bed expansion of about what percent?

A. 15
B. 30
C. 50
D. 75

ANSWER: C. It is essential to follow proper backwashing procedures to ensure adequate filtration and adsorption. If the media is not properly cleaned, the effectiveness of both filtration and adsorption is lost, and mudballs may develop. Polymers fed as filter aids may also contribute to mudballs if the media is not expanded to about 50% during a backwash. It is also important to note that the density of granular activated carbon is less than that of other filter media, so it can be easily washed out if the backwash rate is excessive. tpo

Self-Cleaning pH System

weftec Booth 3452

pH/ORP Monitor

The Q46P/R Monitors enhance the reliability of long-term pH or ORP measurement by providing automatic sensor cleaning. Effective on biological growth, oily coatings and other non-crystalline buildups, sensor maintenance is greatly reduced.

FEATURES

- "Q-Blast" Air-Blast Sensor Cleaning System
- Differential pH and ORP Sensors
- Sealed Reference Prevents Sensor Contamination

Total Chlorine Monitor

Reagent Free Measurement

The Q46/79PR is ideal for controlling chlorine addition in disinfection chamber.

FEATURES

- Submersible or Flowcell Type Sensor
- Optional pH Measurement
- Easy Installation and Low Operating Cost

Dissolved Oxygen Monitor

Automatic Sensor Cleaning

Optical Sensor with Q-Blast

FEATURES

- Self-contained, High Pressure Autocleaner
- Optical Luminescence or Membraned Sensors
- Factory Assembled for Easy Installation

Toxic/Combustible Gas XMTR

"Smart Sensor" Technology

D12 Gas Transmitter for H2S, LEL, and oxygen depletion.

FEATURES

- Interchangeable "Smart Sensors"
- Internal Data-Logger
- Automatic Sensor "bump test"

Entech Design
www.entechdesign.com

800-959-0299
www.analyticaltechnology.com

ATI
ANALYTICAL TECHNOLOGY, INC.

Grundfos and Baseform formalize strategic partnership

Grundfos and Baseform have formalized a strategic partnership to bring digital services to water utilities worldwide. Grundfos Utility Analytics, an AI, machine-learning utility management technology provided by Baseform, allows utilities to better plan their network renewal investments, actively manage water losses or infiltration and inflow, and optimize their energy usage while enhancing operational efficiency and effectiveness. The analytics offer will be served in a software as a service (SaaS) base to utilities, allowing an unlimited number of users and connecting to an unlimited number of data sources in the utility.

ISIA S.p.A. to sold to De Nora

Grundfos and De Nora announced that an agreement was signed for De Nora Water Technologies to acquire 100% of the shares of ISIA S.p.A., including the intellectual property on chlorine dioxide generator technology. As part of the agreement, De Nora will also take on ISIA's experienced team of specialists. The submerged reactor design and process control expertise from ISIA will complement the De Nora's Capital Controls chlorine dioxide generation product line.

Xylem announces water recycling milestone

Xylem is helping its customers reuse more than 1 trillion gallons of water, according to its *2020 Sustainability Report, Solving Water for a Resilient World*. The company's technology also prevented 369 billion gallons of polluted water from potentially flooding communities and entering local waterways. Water reuse and pollution prevention are two of Xylem's signature sustainability goals, targeted for achievement by 2025.

CUWA names Broley as new executive director

California Urban Water Agencies named Brown and Caldwell's Wendy Broley as its new executive director effective July 1, replacing Cindy Paulson after 10 years in the role. CUWA is a nonprofit corporation of 11 major urban water agencies responsible for serving drinking water to over two-thirds of California's population.

Watercare appoints new executive VP

Ixom appointed Marc Roehl as executive vice president, Watercare, based in the United States. Roehl has over 25 years' experience in the water and wastewater treatment sector, with a focus on industrial and municipal markets. He is currently an active board member of the global Water Council and is a member of the Water Environment Federation.

Kurita Water Industries acquires Keytech Water Management

Kurita Water Industries completed its acquisition of Keytech Water Management through its North American subsidiaries in a stock purchase deal. Keytech, which is headquartered in Kitchener, Ontario, will operate as a 100% consolidated subsidiary of Kurita Canada. Douglas Halbert, former president and general manager of Keytech, will continue to lead the organization as general manager, under the leadership of LaMarr Barnes, CEO of Kurita America.

Mueller Water Products acquires i2O Water

Mueller Water Products has acquired i2O Water for approximately $20 million in cash. Founded in 2005, i2O Water is headquartered in Southampton, United Kingdom, with operations in Malaysia and Colombia. The company provides a range of intelligent water network solutions including advanced pressure management, network analytics, event management, data logging and the iNet software suite.

Franklin Electric appoints new VP and CFO

Franklin Electric announced that Jeffery Taylor has been appointed vice president and CFO. John Haines has retired as vice president and CFO of the company but will support Taylor through an interim period to ensure a seamless transition. Most recently, Taylor was the CFO of Blue Bird, a leading manufacturer of school buses, since 2020.

EnBiorganic expands into Southwest and Canada

EnBiorganic Technologies welcomed RMCI of Albuquerque, New Mexico, to its licensed network of EBS-Di installers and service providers. Providing general contracting services throughout the Southwest for both public and private sector clients since 1990, RMCI constructs water and wastewater treatment plants, large-scale industrial projects, storm and sanitary sewer systems and large diameter utilities. EnBiorganic also announced Con-Tech General Contractors of Saskatoon, Saskatchewan, to its network of EBS-Di installers and service providers. In business since 1994, the firm has done design-build, general contracting and construction management for water and wastewater treatment plants, public infrastructure projects and commercial buildings. tpo

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Digital Technology

By Craig Mandli

Analytical Instrumentation

HORIBA SCIENTIFIC AQUALOG A-TEEM

Aqualog A-TEEM from HORIBA Scientific

The Aqualog A-TEEM from HORIBA Scientific is a fluorometer that simultaneously scans for absorbance and fluorescence excitation and emission matrix (A-TEEM). Unlike traditional scanning spectro-fluorometers that take hours, its optical technology with multichannel CCD detection allows for rapid A-TEEM scans from seconds up to minutes per sample. A-TEEM provides true, traceable molecular fingerprints as well as precise quantification for compounds of interest. Its ability for automatic inner-filter effects correction not only ensures the accuracy of the fluorescence spectra but also extends the sample's concentration linearity range. With the combination of multivariate analysis, it complements an organics lab as an advanced tool for organic matter characterization. It is a simple, fast and powerful analytical tool that in some cases displaces laborious and expensive chromatography-based techniques. **866-562-4698; www.horiba.com/scientific**


3017M analyzer from YSI, a Xylem brand

YSI, A XYLEM BRAND 3017M

The 3017M analyzer from YSI, a Xylem brand, continuously measures free or total chlorine in municipal drinking water or wastewater effluent using the proven DPD colorimetric method of analysis. It uses EPA-approved DPD methodology that conforms with standard method 4500-CL-G, U.S. EPA method 334.0 and ISO method 7393-2. It is compliant with U.S. EPA regulation 40 CFR 141.74 for drinking water and 40 CFR 136.3 for wastewater. The analyzer is built with Flow Injection Analysis, factory calibration and simplified tubing which lowers reagent use and maintenance requirements. It can operate as a standalone analyzer or be integrated into the IQ SensorNet system of online controllers, analyzers and sensors for better visibility and control of your process. **937-767-7241; www.ysi.com**

Control/Electrical Panels

LUTZ-JESCO AMERICA TOPAX MC


TOPAX MC multichannel controller from Lutz-JESCO America

The TOPAX MC multichannel controller from Lutz-JESCO America has a modular design that makes it an adaptable and effective solution for all measurement and control technology requirements. It offers automated efficiency — freedom from repetitive control tasks while providing accuracy and reliability. Users can actuate the dosing pumps using an optocoupler or relay and servomotors by using a relay or a 20mA output. The high-resolution, 5-inch color display offers a user-friendly operating interface with a simple touch-control and intuitive navigation menu that can be set to multiple languages. Use four analog outputs (0/4-20 mA) or the network capability to transfer measured values to a web browser or a telemaintenance point. A programmable interval timer can be used to set automatic alerts for wear-related sensor change. **800-554-2762; www.lutzjescoamerica.com**

ORENCO CONTROLS OLS CONTROL PANELS


OLS Control Panels from Orenco Controls

OLS Control Panels from Orenco Controls come with the choice of either integrated starters or variable-frequency drives that optimize system operation. These panels are suitable for a variety of pumping applications, such as lift stations, stormwater pump stations, water boosting, dewatering or sludge pumping. They can also be used as a SCADA patch, connecting peripheral equipment to future or existing SCADA systems. Parameters can be configured via a human-machine interface and include a user-friendly startup wizard. Engineers can preprogram user interfaces to the site-specific needs of an installation, making the panel virtually plug-and-play. Maintenance staff can easily adjust settings and monitor the system remotely. These weatherproof control panels are UL 508A listed and include service-rated circuit protection, phase and voltage protection, and level controls. **877-257-8712; www.orenco.com**


SHADE AIDE from Smith & Loveless

SMITH & LOVELESS SHADE AIDE

The SHADE AIDE from Smith & Loveless is an human-machine interface screen protector that easily installs onto a variety of control panels so that operators can see their HMI no matter how sunny of a day. It collapses when not in use and is fully lockable. It also protects the display from the harmful effects of constant UV ray exposure, saving the maintenance budget from replacement HMI costs due to excessive sun exposure. The product is compatible and customizable to fit every HMI screen sold today, with custom sizes available. **800-922-9048; www.smithandloveless.com**

Flow Monitoring

BADGER METER MODMAG M2000


ModMAG M2000 flowmeter from Badger Meter

As a high-accuracy device, the ModMAG M2000 electromagnetic flowmeter from Badger Meter measures the flow of water and chemical additives in a wide range of water treatment and distribution applications. This meter features sophisticated, processor-based signal conversion with accuracies of +0.20% of rate +1 mm/s. Its wide selection of liner and electrode materials help ensure maximum compatibility and minimal maintenance over a long operating period. This NSF-approved, IP68-rated meter has a wide turndown range, minimal pressure loss and no moving parts in the flow stream. It offers connectivity either to BEACON advanced metering analytics software as a service via cellular-enabled endpoints or to the user's SCADA system, providing backup redundancy. It can be used to measure both potable water and wastewater within treatment facilities and pump stations as well as water distribution and reclamation applications. **877-243-1010; www.badgermeter.com**

SIEMENS PROCESS INSTRUMENTATION FLOWMETERS

Flowmeters from Siemens Process Instrumentation

Leak detection technology offered in Siemens Process Instrumentation flowmeters allows municipalities to promptly and accurately locate leaks or breaks in their distribution systems. In addition, efficient pumping algorithms built into Siemens pump controllers allow implementation of economy pumping routines to best suit electricity peak pricing. High-accuracy flow measurement systems can save money and improve chemical treatment systems. Together, these technologies result in more cost-efficient plant operation, helping solve inefficient energy practices that can result in excess energy costs of up to 30%. **800-365-8766; www.usa.siemens.com**

Gas/Odor/Leak Detection Equipment

External Pump from Gas Clip Technologies

GAS CLIP TECHNOLOGIES EXTERNAL PUMP

The External Pump from Gas Clip Technologies is a motorized sampling pump that allows any of the company's diffusion detectors to take remote samples from up to 75 feet away, drawing air at two feet per second. It has a 52-hour continuous run time and takes four to six hours to recharge. Users can also perform a manual block test before taking samples in order to ensure a clean and proper draw. Audio and visual alerts will inform users of various errors including blockages and a low battery charge. The pump has an ergonomic design as well as an alligator clip so that it can sit comfortably in the hand or firmly attach to a user's belt, jumpsuit, etc. as needed. **972-775-7577; www.gascliptech.com**

RKI INSTRUMENTS GX-6000

GX-6000 from RKI Instruments

The GX-6000 from RKI Instruments simultaneously monitors up to six gases, including combustibles, oxygen, carbon monoxide and hydrogen sulfide. Two smart sensor slots accept PID, infrared or other toxic gas sensors. It includes an internal sample pump, man-down and panic alarm, LED flashlight and large autorotating LCD. It operates as a single-gas PID unit or a multifunctional tool using all six channels. The PID sensor comes equipped with a library of more than 600 VOC gases and can personalize a favorites list of 30 commonly used VOCs as well as a list of eight of the most recently used VOCs. A benzene-specific PID sensor is also available using a pre-filter tube for detecting low levels of benzene. Four PID sensors are available, 10.0 eV, 10.6 eV (low or high range) and 11.7 eV. Any combination of two PID sensors can be installed. **800-754-5165; www.rkiinstruments.com**

Monitor

FORCE FLOW SOLO G2 DIGITAL WEIGHT INDICATOR

The SOLO G2 Digital Weight Indicator from Force Flow, when combined with a scale or ultrasonic sensor, offers a dependable yet economical way to see exactly how much chemical is being used and how much remains in a tank. It allows readability to 0.1 lb/kg and is available as a single or dual channel unit. Housed in a NEMA 4X enclosure, it offers suitable protection against harsh environments such as chemical rooms and outdoor installations. All functions are menu driven and configuration changes are done through the keypad. It comes standard with 4-20mA outputs for remote monitoring through a PLC or SCADA system. Level alarm relays are also available. **800-893-6723; www.forceflowscales.com**

SOLO G2 Digital Weight Indicator from Force Flow

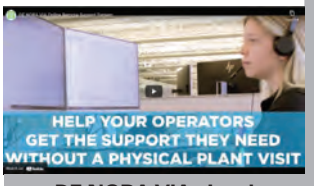
Operations/Maintenance/ Process Control Software

Antero from AllMax Software

ALLMAX SOFTWARE ANTERO

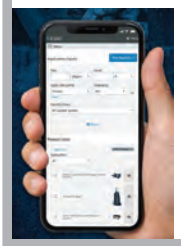
Antero from AllMax Software accurately tracks maintenance data, allowing plant operators to streamline maintenance programs, all while providing peace of mind that equipment is being maintained efficiently and effectively. The newest version of the software includes a number of new sections and a complete redesign of the entire program. The improved My Work section is a one-stop place for a user to view all assigned work, manage their workload and complete work orders. Manage maintenance tasks in new sections such as Work Management, Work Order Review and Procedures. Changes to the Parts, Calendar and Home Screen sections make the program easier to navigate. **800-670-1867; www.allmaxsoftware.com**

DE NORA WATER TECHNOLOGIES DE NORA VIA



DE NORA VIA visual assistance platform from De Nora Water Technologies

The DE NORA VIA visual assistance platform from De Nora Water Technologies connects technicians with onsite customers in real time using live video and inspections. The service provides capabilities like voice, text, document share and augmented reality to provide a fast and easy response to equipment concerns. Using their own smart devices, customers securely connect with experienced engineers and product specialists who see exactly what they see during equipment operation, seamlessly troubleshooting the issue without interrupting service. It can also be used to assist startup and installation. It can help provide an uninterrupted maintenance routine that optimizes operations and immediate equipment resolution eliminates costly, disruptive operational downtime. **215-997-4000; www.denora.com**



FE Select online tool from Franklin Electric

FRANKLIN ELECTRIC FE SELECT

The FE Select online tool from Franklin Electric makes product selection, configuration and quoting easy for contractors, engineers and wholesale distributors. It's also secure and free to use, allowing users to input performance requirements or specs to help you find the best products to fit particular needs. It walks the user through the process from start to finish. A basic search requires only primary application data, such as flow and total

dynamic head demands; an advanced selection considers factors like liquid properties, operating temperature and NPSHr values. It then recommends the necessary components, provides a list price quote for the package and offers links to related informational product documentation. With 24/7 online and mobile-friendly availability, it instantly helps formalize deliverables with printable and downloadable quotes. **866-271-2859; www.franklinengineered.com**

Process Control Systems

CLEAN WATER TECHNOLOGY GEM SYSTEM

GEM System from Clean Water Technology

The GEM System from Clean Water Technology is a new approach to primary wastewater treatment. This flocculation and flotation system delivers results using hydrocyclone technology in the Liquid, Solid, Gas Mixing Heads (LSGM), providing chemicals which are injected as air is dissolved into 100% of the wastewater stream while creating a vortex. The random flocculation and flotation process of a DAF becomes a managed process, resulting in the removal of more contaminants and dryer sludge. **310-380-4648; www.cwt-global.com**

INDUSTRIAL FLOW SOLUTIONS STANCOR OIL MINDER

Stancor Oil Minder system from Industrial Flow Solutions

The Stancor Oil Minder control and pump system from Industrial Flow Solutions allows water to be automatically pumped without the danger of ejecting potentially harmful, oily substances into sewers, rivers and waterways. There is no need for a separate oil-water separator. The product is engineered for efficient and trouble-free pumping, even under the most severe conditions. It is a plug-and-play system that is easy to install and is designed with conductive sensing technology to ensure the most reliable signal. It offers push-to-test to monitor installation. Complementary components, which are UL certified, are then designed to offer a high level of reliability from installation to operation. It does so in a modular package configured to balance performance for the best value over the lifetime of equipment. **860-631-3618; www.flowsolutions.com**

PULSAFEEDER MICROVISION EX

MicroVision EX controller from Pulsafeeder

The MicroVision EX cooling tower controller with PULSAlink communications from Pulsafeeder comes with a toroidal conductivity sensor, multiple level security codes, up to 10 digital inputs, dry contact alarm output, battery backup, USB data logging capability and optional PULSAlink communications and 4-20mA analog outputs. PULSAlink allows the user to safely communicate with the controller from anywhere on a laptop, phone or tablet. Users can receive live readings, alarm notifications and even change and customize the controller and settings over an encrypted cloud-based site. MicroVision EX and PULSAlink is also eServiceReport and Modbus compatible. It is available mounted on a fabricated panel system with pump mounts designed to provide complete and easy-to-install solutions for cooling tower applications. **800-333-6677; www.pulsatron.com**

SEEPEX TOUCH

Touch process controller from SEEPEX

Touch is SEEPEX's adaptable solution for smart process control. It is a programmable process controller with integral touch screen and can be furnished as an accessory with SEEPEX pumps or BRAVO metering skids. It is preconfigured with a variety of control algorithms commonly associated with progressive cavity pumps, and it can also be custom programmed for specialized applications. It can be linked to a customer's SCADA system or plant control network via TCP/IP. Process control routines are built into the controller. Pump start/stop and speed control is available with a local-remote selector. It offers lead/lag pump operation with auto alteration, tank level control, closed-loop control (pH, flow, ORP, residual, turbidity and pressure), cake pump hopper level control, ratio dosing control, pump protection interlocks, high discharge and low suction pressure, a low-flow, variable-frequency-drive fault, bridge breaker manual/auto control and boundary layer interjection manual/auto control. **844-473-3739; www.seepex.com**

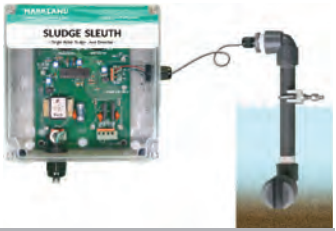
Sensors

KELLER AMERICA ECONOLINE

Econoline pressure transmitter from Keller America

The Econoline pressure transmitter from Keller America combines a media-isolated piezoresistive silicon sensor with signal-conditioning electronics to provide a compact pressure transmitter with less than plus or minus 1% total error band accuracy over 32 to 122 degrees F. The industry standard 4-20mA analog output is compatible with most existing monitoring infrastructure and SCADA systems, and it provides meaningful output in ranges from 30 to 10,000 psi. Its design makes it suitable for use under harsh environmental conditions, including those with high levels of electromagnetic radiation, both conducted and radiated. As a result, it provides trouble-free service and sufficient accuracy for almost any application, including those involving aggressive media and/or high levels of electromagnetic interference and where small size, low weight and reasonable cost are required. It provides versatility for customer-specific applications and is produced using modern lean manufacturing methods, allowing short lead times, negating the need to maintain extra inventory onsite. **877-253-5537; www.kelleramerica.com**

MARKLAND SPECIALTY ENGINEERING SLUDGE SLEUTH



Sludge Sleuth detector from Markland Specialty Engineering

The Sludge Sleuth sludge blanket level detector from Markland Specialty Engineering has an optical sensor that makes it suitable for diverse tanks, sumps and pits, providing accurate readings even in obstructed/constricted installations such as lamella separators, and helping plants avoid process upsets such as septic biosolids conditions, carryover from

clarifiers and solids wash-out through DAF unit baffles. With simple and effective damping and concentration controls, it accommodates thin or thick biosolids and slurries, and even light flocs, automating pumps or valves when the preferred liquid-solids interface level is reached and alerting operators. It helps maximize water removal and optimize feed density and, in turn, reduce energy/haulage costs and improve outflow for reuse. **855-873-7791; www.sludgecontrols.com**

POLYLOK 3014AB FILTER ALARM (SMART ALARM)

3014AB Filter Alarm (Smart Alarm) from Polylok

The 3014AB Filter Alarm (Smart Alarm) from Polylok is a wired indoor/outdoor filter alarm that provides audio/visual warning notifying operators that a tank filter needs cleaning. The Smart Alarm Switch activates when the filter cartridge is near capacity (approximately 90% full) with solids. The Smart Alarm Switch installed in the filter sends a signal to the panel, activating the audible and visual alarm. It offers a manual alarm test switch and horn silence, an alarm horn rated to 82 dB at 10 feet, and 15 feet of cable, with longer lengths available. **888-765-9565; www.polylok.com**

PULSAR MEASUREMENT OCF 6.1

The OCF 6.1 open-channel flow and tank level meter from Pulsar Measurement allows the user to continuously monitor, display, totalize and data log flow through any flume or weir, or measure the level

product focus

Digital Technology

OCF 6.1 meter from Pulsar Measurement

or range of fluids in tanks or vessels. Use the isolated 4-20mA to transmit flow to remote chart recorders or displays, and the control relays are programmable for level/flow alarm and flow proportionate pulse for samplers, chlorinators or remote totalizers. New features include a built-in 26 million-point data logger with software for easy reporting, expanded flume and weir selections, CE approvals, and optional Modbus RTU communications. **888-473-9546; www.pulsarmeasurement.com**

SWAN ANALYTICAL USA AMI TURBIWELL

AMI Turbiwell from SWAN Analytical USA

The AMI Turbiwell from SWAN Analytical USA uses a white LED method to measure turbidity in potable water, surface water and wastewater. It includes both a source and detector that are mounted in the cover of the measurement chamber with a drain mounted in the bottom. This means sediment settles to the bottom of the flow chamber while all optics are kept out of the path of potential coating substances. The bottom-mounted drain can be opened periodically to flush out sediment before it can become a problem, with an automated drain option available to further simplify operations. When cleaning or maintenance is needed, the measuring chamber is readily accessible from the front of the analyzer, with no tools required. With a push on the locking pin, the entire measuring chamber swings out for easy access. Quick fastener screws can be hand-turned to open the chamber for cleaning or verification. **847-229-1290; www.swan-analytical-usa.com**

Security Equipment/System

PHOENIX CONTACT FL MGUARD 1102 AND 1105

FL mGuard 1102 and 1105 from Phoenix Contact

The FL mGuard 1102 and 1105 from Phoenix Contact offer easy, low-cost protection for any industrial network. The security devices have the trusted routing, NAT and firewall technology that the mGuard firmware provides. With the range of functions, even somebody with little network or security expertise can put the devices into operation, whether it's a new subnet (with routing and NAT) or an existing network (as a transparent device). The Stateful Inspection Firewall and high data throughput demands with gigabit interfaces are suitable for applications with basic security requirements. The Easy Protect Mode network lets users block outside access completely with just a wire jumper — no virtual configuration required. The Firewall Assistant helps the user create firewall rules, and the Test Mode checks the created firewall rules without restricting system availability. **800-888-7388; www.phoenixcontact.com** tpo

By Craig Mandli

Using sludge blanket monitors to automate pump cycles reduces hydraulic loading

Problem

The Punta Gorda (Florida) Water Treatment Plant used a manual system to cycle pumps for biosolids in the upflow clarifiers. This led to frequent depletion of the sludge blanket and large amounts of water unnecessarily sent to the solids drying process.

Solution

An **Entech Design EchoSmart Sludge Blanket Monitor** from **Analytical Technology** was installed in the wasting channel in each clarifier. The monitors were tied into the plant's pump controls and programmed to keep the blanket level within six inches of the ideal operating set point.

RESULT:

Previously, the solids drying process consisted of a 12-cell drying bed with underdrains, above which sand was placed to act as a filter and protect the drain system from the weight of the front-end loader used to collect the dried material. After installation of the monitors, loading to the beds was reduced to one cell, greatly reducing amount of sand needed and also reducing hydraulic loading, labor and cost. **940-367-7759; www.entechdesign.com**

Pump protection unit saves damage from power imbalance

Problem

The Cherokee County Water and Sewerage Authority in Cartersville, Georgia, had a power imbalance event at its wastewater treatment plant due to a faulty regulator at the electric utility. The event occurred at 3 a.m.; the current asymmetry registered 12.9%, which would quickly destroy any pump.

Solution

The event was detected because the **Grundfos MP204 pump protection unit** kept influent pumps from starting. Grundfos supplied full system including wastewater pumps, control and monitoring, and the MP204 units. The company's GO remote monitoring app was used to remotely check the equipment status and see what alarms the MP204s were registering.

RESULT:

It took only 20 minutes to find the problem; previously troubleshooting could have taken all night and several pieces of equipment could have been damaged. Plant manager Mike Venters says the MP204 saved several large pumps: "The pump was what gave us the answer to an external power problem. "Getting the MP204s was one of the best decisions we've made. Just the ability to troubleshoot so quickly is a cost savings. It's matter of minutes instead of hours to find out what's wrong in the system." Since initial incident, MP204 has saved the pumps a number of times. **800-926-6688; www.grundfos.com/us**

Wastewater collection and treatment plant updated with PLCs, SCADA

Problem

The city of Faribault, Minnesota, needed to improve and modernize its wastewater collection system and treatment plant. The project included a major upgrade to all electrical components, including PLCs and SCADA system programming.

Solution

PRIMEX worked with the electrical contractor on engineering and commissioning the upgrades. A thin client architecture provides scalability and management. Critical upgrades included seven PLCs, motor control centers on a DeviceNet bus, 28 separately enclosed VFD controllers, and the **Wonderware System Platform** deployed inside the plant on virtualized server hardware. Virtualization allows the city to replace hardware rather than upgrading SCADA software licenses, saving money in the long run. As part of complete integration services, PRIMEX handled overall system documentation, including a comprehensive description of operation, application programming. and overall system responsibility.

RESULT:

PRIMEX deployed the Wonderware System Platform across the entire plant. Redundant communications links ensure that all communications operate as desired. **844-477-4639; www.primexcontrols.com**

Municipality finds analyzer to monitor free chlorine

Problem

A Florida water municipality needed a new analyzer to monitor free chlorine for more than 20 groundwater treatment plants with aims to improve efficiency, reduce maintenance and save money.

Solution

HF scientific supplied a **CLX DPD-based chlorine analyzer** and **JAW reagent,** first deploying both at a plant with the greatest potential issues with hardness. Both were monitored for more than months. A new model of the previous analyzer was tested side-by-side. The CLX proved easier to install, required less maintenance and improved reliability.

RESULT:

The municipality chose the CLX, which also had the lowest capital and operating costs. The system provides cost-efficient, reliable and accurate chlorine monitoring for the groundwater treatment plants. "I've provided the CLX in Florida since they were introduced to the market, and I am very pleased to say that not one customer who has tried the CLX has wanted to turn back," says Bill Lazenby of Lazenby & Associates, which recommended the equipment. **888-203-7248; www.watts.com/our-story/brands/hf-scientific** tpo

Flomatic AIS-compliant valves

With an extensive offering of American Iron and Steel requirement-compliant valve products, Flomatic is dedicated to engineering and manufacturing lasting and reliable valves that are ready to perform and meet your ever-changing needs. Manufactured in the U.S. and available in a variety of materials and configurations, Flomatic offers many AIS-compliant valves, including check, automatic control, swing check, silent check, foot, ball check and more. No matter how complex your application is, Flomatic can help select the most efficient valve product for your next job.

800-833-2040; www.flomatic.com

Endress+Hauser Proline Prosonic Flow P 500 flow measuring system

The Prosonic Flow P 500 measuring system from Endress+Hauser requires only minimal straight inlet runs and it can be installed directly onto the exterior of the pipe, so there is no need to interrupt operations. The clamp-on measuring technology provides a cost-effective solution when retrofitting ultrasonic sensors on very large pressure lines with diameters of up to 13 feet. The system can be mounted on a wide variety of pipeline types and materials: on metal pipes made of steel or cast iron, plastic pipes, glass-reinforced plastic pipes, and pipes made of composite materials, all with or without lining. The unit can be used at process temperatures between negative 40 to 338 degrees F.

888-363-7377; www.us.endress.com

product spotlight

water

Monitoring system warns of environmental threats to water facilities

By Craig Mandli

Water treatment facilities continue to become more automated, but there are drawbacks. What happens if a piece of that automation malfunctions? How long will it take to identify and correct the problem if the facility isn't constantly staffed? How much damage could be done?

To help operators of smaller water and wastewater facilities who do not staff their premises around the clock, Sensaphone offers two low-cost early warning systems. These remote monitoring systems notify personnel immediately of changes in environmental conditions that can indicate equipment malfunction. The **Sensaphone 1400 and 1800 systems** let users remotely keep tabs on sensor reading fluctuations of pump status, tank level and pump alarm outputs.

The Sensaphone 1800 system can accommodate up to eight sensors to monitor conditions such as temperature, humidity, air circulation, carbon dioxide, water pH, water leaks, fire, smoke, power failure and unauthorized access. The Sensaphone 1400 system can accommodate up to four sensors. Both systems connect to any traditional telephone line and provide 24/7 monitoring.

When these systems detect that a sensor reading has moved out of the preset range, they immediately alert up to eight people with custom phone calls. This alert gives personnel the chance to arrive on site quickly to address the situation and avert serious damage to the facility or water processing malfunction.

Users can get quick status checks and make easy on-site programming changes using the keypad.

1400 and 1800 systems from Sensaphone

When checking sensor readings, these systems let users know the actual value of the monitored condition, not simply whether conditions are OK or not OK.

The Sensaphone 1400 and 1800 systems can also switch a local device, such as a light, on or off based on alarm activity. An optional microphone allows users to call in and listen to on-site sounds.

The internal rechargeable battery backup provides 24 hours of continuous monitoring and alerts in the event of a power outage. Each monitoring unit is sealed in a weatherproof NEMA-4X enclosure to protect it from moisture, dirt and chemicals. Operators can obtain the status of each monitored condition at the installation site or via telephone. In addition to dry contact, 2.8K, and 10K thermistor inputs, 4-20mA support allows for third-party sensor integration. Nonvolatile memory retains system settings, programming, and even logs in the event of power failure. The user can call in by phone to get the status of each monitored condition.

855-807-1887; www.sensaphone.com

Patterson Mfg. davit cranes

New davit cranes are available from corrosive environment and safety experts Patterson Mfg. Give your operations a lift with models in 1/2- and 1-ton capacities. The cranes exhibit the company's hallmark safety, simplicity and durability, with key features such as a reliable brake with long life and readily available parts, a hot-dipped galvanized finish and no plastic sheaves or pulleys. They put safety and simplicity within your reach with a low maintenance, easy-to-assemble design that is made in the USA. For over 160 years, Patterson has been a trusted supplier of winches, rigging, fittings and custom products for lifting applications in the marine, construction and mining markets. These davit cranes continue to deliver the company's promise of helping businesses run safer, easier and faster. Find out how our team and products can improve employee safety and positively impact your bottom line.

800-322-2018; www.pattersonmfg.com/davit-cranes

DeZURIK APCO ASU Combination Air Valves

APCO Single Body Combination Air Valves from DeZURIK can be used for clean or dirty fluids. The venting design provides varied and

product spotlight
wastewater

Pump aimed at eradicating 'flushables'

By Craig Mandli

Despite warnings and marketing campaigns aimed at eliminating their use, flushable wipes continue to be an infrastructure nightmare for wastewater operators. Fortunately pump manufacturers offer units aimed at making it possible for those wipes, not to mention other stringy materials, to move through the collection system.

Designed for economical, trouble-free operation, the solids-handling capabilities of the **Super T Series pumps** from **Gorman-Rupp** make them suited for a variety of applications including solids-laden liquids and slurries. The large volute design allows automatic repriming in a completely open system without the need for suction or discharge check valves. Available in discharge sizes of 2 to 10 inches, this line of self-priming pumps boasts capacities to 3,400 gpm and heads to 148 feet.

"The 2 inch Super T Series pump is actually the latest upgrade to the Super T Series family of pumps," says Jeff Hannan, centrifugal product manager for Gorman-Rupp. "This new 2-inch pump has an external, shimless and indexable impeller to wear plate clearance which was not available in previous models. It also has a lightweight inspection cover and comes standard with the Eradicator Solids Management System."

Super T Series pumps are available in several configurations, including higher head, higher efficiency, close-coupled or engine-driven models. Because they are self-priming, they can be mounted above the liquid being pumped. Should service or maintenance be required, it can be easily performed using common hand tools without disconnecting piping. The impeller, seal, wear plate and flap valve can all be accessed through the shimless cover plate opening for inspection or service. The Eradicator Solids Management System was developed specifically for handling flushable wipes and all other types of stringy materials, such as feathers, hair, plastic bags and waste.

Super T Series from Gorman-Rupp

"Gorman-Rupp has been doing research and development on the Eradicator's aggressive, self-cleaning wear plate for a number of years," Hannan says. "Our engineering team has spent countless hours in the lab, trying all types of debris, and then sending multiple prototypes into various applications in the field to prove the technology and test the system. It has been a great fit as it has dramatically decreased the amount of clogging which was occurring in applications with stringy materials and/or wipes."

According to Hannan, the feedback has been impressive. "Many pumps in plants and collection systems have gone from clogging multiple times a day to having weeks and weeks of clog-free performance and extended uptime," he says. **419-755-1011; www.grpumps.com**

predictable air flow over a wide range of air release and air/vacuum conditions with low pressure sealing down to 2 psi. The compact design of the ASU combination air valve allows for installation in piping systems with limited space and in vaults with low ceiling heights. A large-diameter air/vacuum disc provides high-volume air flow for rapid venting during pipeline filling and for high volumes of air to enter the pipeline during draining. During normal pipeline flow conditions, the dual-range air release design prevents air buildup and resultant flow restrictions under changing conditions and through the full flow range. The design of the valve keeps it operating on fluids containing grit, solids and grease longer than standard air valves. The valves are suitable for corrosive conditions with a 316 stainless steel body and float and have been certified to meet the NSF/ANSI 61 standard for components used in drinking water systems.
320-259-2000; www.dezurik.com

Blue-White FLEXFLO M1 peristaltic dosing pump

Blue-White's FLEXFLO M1 peristaltic dosing pump is self-priming and delivers smooth, consistent and precise chemical dosing with no danger of vapor lock or loss of prime. SCADA inputs include 4-20mA and a feed output range of .0001–5.6 gph and pressures to 100 psi. The FLEXFLO M1 has a high-energy efficiency rating and achieves a 10,000-to-1 turndown ratio and is powered by efficient brushless DC motor technology. A sealed enclosure and a display shield protect the pump's easy to operate controls from chemical spills and splashes. The Tube Failure Detection System senses tube rupture with no false triggering.
714-893-8529; www.blue-white.com

Watson-Marlow Qdos CWTpump

Watson-Marlow Fluid Technology Group's Qdos Conveying Wave Technology metering pump extends the capabilities of peristaltic pump technology and offers longer service life than traditional tube-based designs. Qdos CWT pumps achieve their peristaltic action by operating a unique fluid contact element that offers the same basic function as the tube of a conventional peristaltic pump. In addition to eliminating vapor locking, the element delivers stable, reliable performance, even with fluctuations in ambient temperature and pressure. The pumps introduce chemicals — including sodium hypochlorite for post-chlorination cycles — without the need to overdose, delivering consistently high accuracy for the life of the pump.
800-282-8823; www.wmftg.com tpo

people/awards

The Prince William County Service Authority's **H.L. Mooney Advanced Water Reclamation Facility** now maintained perfect wastewater compliance for 12 successive years, earning its most recent Platinum Peak Performance Award from the National Association of Clean Water Agencies.

The **Clayton County (Georgia) Water Authority** earned three 2020 awards from the Georgia Association of Water Professionals:

- Biosolids/Residuals Program of Excellence for Small Operating Systems (less than 5 dry tons), **Northeast Water Reclamation Facility** in Rex, Georgia
- Public Education Program of Excellence in Water (large systems)
- Denise Skinner-Hurst Pretreatment Award, **Jennifer Brandon,** environmental compliance manager

All three of the authority's water production plants earned Platinum Awards for 100% compliance **J.W. Smith Water Production Plant** (12 years), **Terry R. Hicks Water Production Plant** (20 years) and **W.J. Hooper Water Production Plant** (23 years). The **Shoal Creek Water Reclamation Facility** earned its 23rd Platinum Award for 100% compliance.

Jordan Young, wastewater operations superintendent at Decatur Utilities, was named 2020 Young Professional of the Year by the Alabama/Mississippi Section American Water Works Association.

The city of **American Falls** claimed the 2021 title of the Idaho's best-tasting drinking water from the Idaho Rural Water Association.

Bob Kuchenski, system operator for the Bayview Water and Sewer District, was named 2021 Water Operations Specialist of the Year by the Idaho Rural Water Association.

The City of Hamilton, Ohio, chose **Edwin Porter** as executive director of infrastructure, replacing interim director **Dan Moats,** who retired after more than 40 years with the city's utilities.

The **Staunton Public Works Department** earned the Gold Award for Performance Excellence from the Virginia Department of Health for water treatment.

The City of Winchester's **Percy D. Miller Water Treatment Plant** earned the gold award through the 2020 Virginia Optimization Program.

Rossarden, Tasmania, won the Best Municipal Water for 2021 award at the Berkeley Springs International Water Tasting event.

William Varley, chief growth officer of American Water Works Co., announced his retirement.

Johann Coetzee retired from his job as water resources general manager for the city of Elizabethton, Tennessee.

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

events

Aug. 31-Sept. 3
2021 Tri-Con Association Conference, Roland E. Powell Convention Center, Ocean City, Maryland. Visit www.chesapeaketricon.org.

Sept. 7-10
New England Water Works Association Annual Conference, Omni Mount Washington Resort, Bretton Woods, New Hampshire. Visit www.newwa.org.

Sept. 12-15
AWWA 2021 Water Infrastructure Conference, Arizona Grand Resort & Spa, Phoenix, Arizona. Visit www.awwa.org.

Sept. 12-15
Pacific Northwest Clean Water Association Annual Conference and Exhibition, Boise Centre, Idaho. Visit www.wef.org.

Sept. 13-16
Virginia WEA WaterJam 2021, Virginia Beach Convention Center. Visit www.wef.org.

Sept. 14-17
2021 Michigan Section AWWA Annual Conference, Amway Grand Plaza, Grand Rapids. Visit www.mi-water.org.

Sept. 14-17
Minnesota Section AWWA Annual Conference, Duluth Entertainment and Convention Center. Visit www.mnawwa.org.

Sept. 14-17
Rocky Mountain Virtual Water Summit & Expo, online. Visit www.rmsawwa.org.

Sept. 21-23
2021 Iowa WEA Annual Conference, Prairie Meadows, Altoona. Visit www.iawea.org.

Sept. 21-24
WCW (Western Canada WEA) Annual Conference and Exhibition, online. Visit www.wcwwa.ca.

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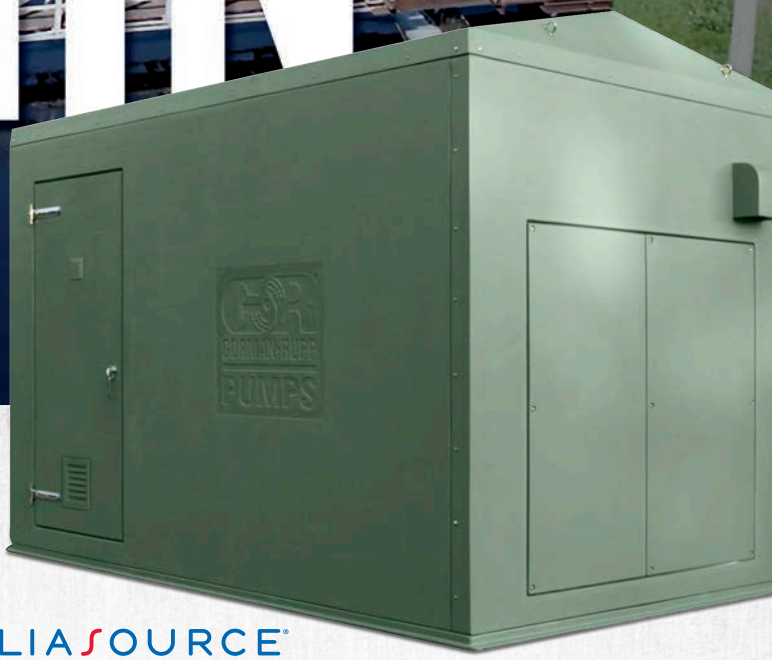

ECHO-STORM™

The NEW EchoStorm aeration system maintains sufficient dissolved oxygen in wastewater, minimizing odor and corrosion

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Our complete line of ReliaSource® lift stations include industry-leading pumps, enclosures, controls and valves – everything custom-designed from the ground up and delivered to the job site ready to install. We also manufacture pumps ideal for handling influent, sludge, effluent and a variety of other plant process applications. If odor control is a concern, pumps and stations can be equipped with Gorman-Rupp's NEW EchoStorm™ venturi aeration system, which adds dissolved oxygen into the liquid being pumped. For all of your municipal wastewater treatment needs, you can count on Gorman-Rupp – guaranteed.

For more information, call Gorman-Rupp at 419-755-1011 or visit GRpumps.com to find a distributor near you.

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