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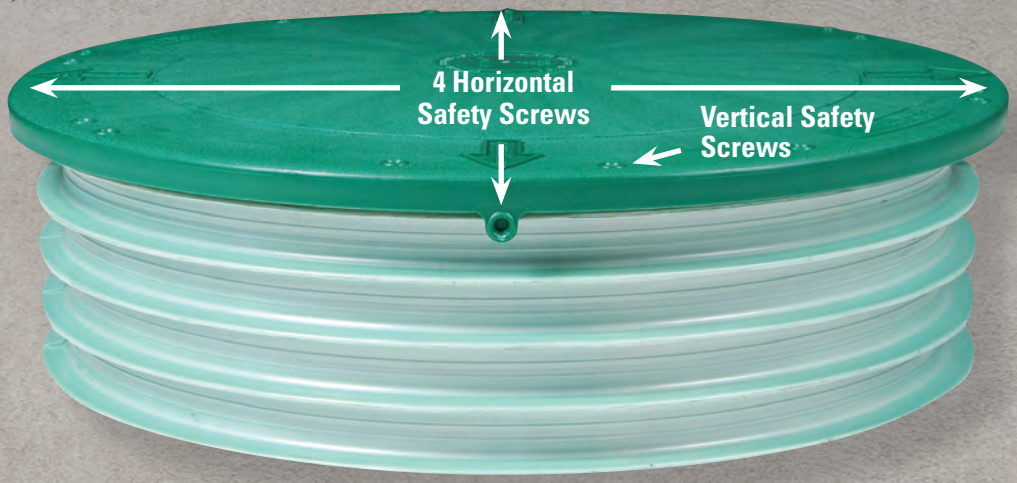

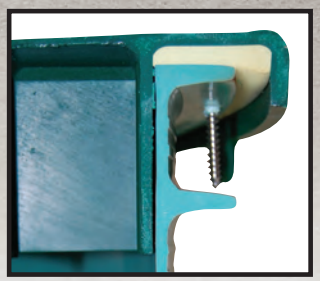

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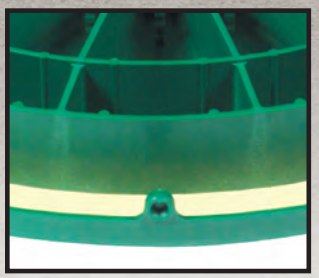

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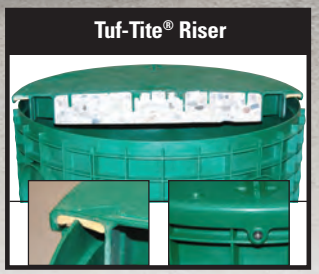

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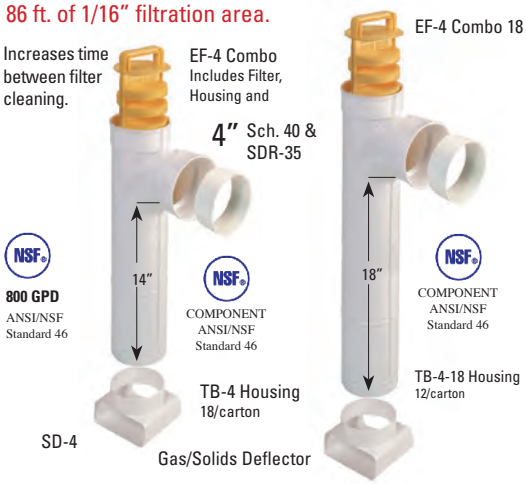

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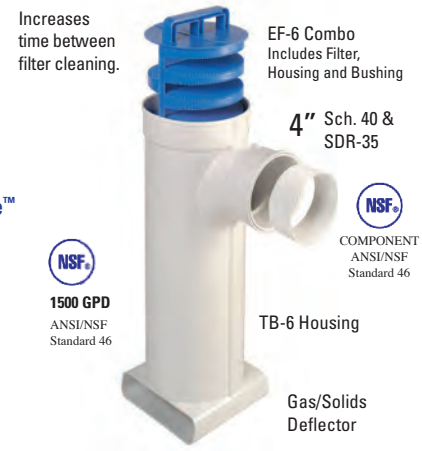

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Problem-Solvers
By David Steinkraus

ON THE COVER:
Ray Tebo, owner of New Excavating Technology and Recycled Water Technologies in St. Anne, Illinois, is shown at a work site with employees. In the photo is an Infiltrator Water Technologies riser and an Aquaworx panel by Infiltrator. (Photo by Miles Boone)

Coming in August 2020

ISSUE FOCUS: Advanced Treatment Units
System Profile: Michigan installers rally for new build
States Snapshot: News from North Dakota

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ADVERTISER INDEX

July 2020

Enjoy this issue!

Established in 2004, *Onsite Installer*™ fosters higher professionalism and profitability for those who design and install septic systems and other onsite wastewater treatment systems.

Jim Kneiszel

Send your comments, questions or opinions to Jim Kneiszel at editor@onsiteinstaller.com.

Emergency Calls Hint at a Big Problem

Pumpers see an increase in system failures during the coronavirus pandemic. Could it mean a crush of installer workload is on the horizon?

The past several months of dealing with the COVID-19 pandemic may have revealed an unfortunate truth to the onsite industry: the decentralized wastewater infrastructure in the U.S. is in even worse shape than previously thought.

In recent years, the experts have warned of the aging out of conventional septic systems across America. Those simple tank and drainfield systems were installed in every rural and suburban area 30, 40, 50 or more years ago, most of them providing yeoman's service and exceeding expected life span.

About one-third of the nation's homes are served by private wastewater systems, and that percentage figures to grow as the cost to extend municipal sewer service skyrockets. Government officials — including health departments — now recognize the practical effectiveness of newer advanced treatment technologies and will go in that direction to curtail growing utility expenses.

We knew there was a lot of work to be done to upgrade millions of failing septic systems, but it took the coronavirus and its associated stay-at-home orders to show just how big the problem is. As families were locked down at home starting in March, they soon realized septic systems were being overwhelmed.

Older systems may have been built so robustly and with excess capacity that they performed pretty well under normal usage. But as soon as the whole family is at home 24/7, these systems' age and treatment shortcomings came to light. Soon pumping contractors were reporting a raft of emergency calls every week as sewage was backing up into homes or surfacing in the backyard.

TAKING IT TO THE NEWS

"We're getting a high volume of people backing up, which is the systems are full so the water has nowhere to go. So it's backing up into the house," Kevin Snyder, president of Flash Sanitation in Battle Creek, Michigan, says in a local WOOD-TV 8 report. "With everyone being home, you have a lot more water usage."

Snyder was one of a number of wastewater professionals who TV news stations turned to during stay-at-home orders to explain why septic systems were failing. He and Kevin Green of the local Calhoun County Public Health Department urged septic system users to watch their water usage and have their systems inspected to safely get through the period of high usage.

"Since we are staying home … we want to conserve water and not to throw anything down through your toilet more than toilet paper," Green says. "We do recommend that you get your septic system pumped … normally every three to five years, depending on the number of people that are in your house."

Scott Robertson of ASAP Septic in Mishawaka, Indiana, had a similar story to tell WNDU-TV 16 News Now.

"We've had a lot more emergency calls because families are staying at home and overutilizing their water needs. Some septics aren't able to take all the water that they're generating, and it's overflowing into their yard or back into their house," Robertson says.

Please consider jumping in anytime you have the opportunity to reach the audience of onsite system users. … Far too many people are new to septic systems and don't know the basic rules.

ONSITE AMBASSADORS

First off, I would like to congratulate these and any other wastewater professionals who stepped up during this crisis and thank them for helping educate homeowners about proper septic system care. This is a critical message to get out in these times. It's hard enough when families are in quarantine and fearing infection from a deadly virus. Imagine going through that and losing use of your wastewater system at the same time.

Please consider jumping in anytime you have the opportunity to reach the audience of onsite system users. We all know how much work there is to do on the education front. Far too many people are new to septic systems and don't know the basic rules. Others should know about proper maintenance

but ignore it. And many don't understand when their systems are failing and how they can be replaced with better treatment technology.

The COVID-19 crisis has been unlike any emergency we've experienced in a century, and it has taken a terrible human and economic toll. But perhaps there is one silver lining for the onsite industry: That is to raise awareness of the critical importance of effective wastewater treatment. It is often said that septic systems are out of sight and out of mind for the people who use them. But this attitude has to change if we want to avoid devolving into some kind of third-world existence where it's OK for waste to be ponding in backyards or flowing in the ditches.

Now is our time to send important messages. Old systems must be replaced. And new systems must use the best technology available for a cleaner environment. We will drive the point home through constant communication with system users. And we will push state officials and county regulators to endorse a wide variety of treatment solutions so installers can offer many options for any site condition.

System Design and Installation for Future Management

Your print edition of *Onsite Installer* has a virtual cousin you can find at www.onsiteinstaller.com. If you haven't spent a lot of time at the website, I urge you to check out the fresh stories posted there every week. Our online editor, Kim Peterson, does a great job bringing unique content you won't find anywhere else. And working with Kim, we're doing something a little different with the print magazine.

As part of website analytics, we track how many times someone clicks on and reads each online article. Through that process, we can determine the most popular stories and topics over any period of time. Because these stories are only published online, print readers who don't visit the website miss out on some valuable content. We're going change that starting in this issue.

Awhile back, Jim Anderson, co-writer of our Basic Training feature and University of Minnesota emeritus professor, produced a seven-part online series on the topic of design and installation of onsite systems with future management in mind. Most of you know Anderson as a wastewater industry trainer across the country and at the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show over many years.

I have reworked Anderson's series into two stories to run this month and next. In this issue, he covers regulatory programs, consumer education and soil evaluation. In the conclusion next month, he will cover system component access.

We will continue to look for opportunities to bring you some of our most popular online stories in the months ahead.

Drop Us a Line

Have a comment about an article you've seen in *Onsite Installer*? An experience from a job that you'd like to share? *Onsite Installer* would love to hear from you. Email comments and photos to editor@onsiteinstaller.com

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STAY SAFE ON THE JOB

Make Safety a Priority

Companies in the onsite industry do not typically have an employee assigned specifically to oversee safety. That means every person on a job site is responsible not only for his or her own safety, but also the safety of those around them. No matter how experienced your staff is, regular meetings and an emphasis on safety are important for any onsite company. onsiteinstaller.com/featured

Overheard Online

"Having someone trust you is better than any form of advertising."

– Cultivating Goodwill During Uncertain Times

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DISINFECTANT OVERKILL

Antibacterial Cleansers Impact Septic Systems

Septic systems can handle small amounts of disinfectants, but with the current health concerns related to COVID-19, there are both existing and new products that may be impacting septic systems. If a customer's system is negatively impacted and you think antibacterial soaps and other disinfectants could be to blame, here are some tips to give the homeowner. onsiteinstaller.com/featured

GET NOTICED

Embrace Email Marketing

People are turning to their devices and computers even more for news updates, shopping and entertainment. For businesses, this presents a great opportunity to employ an email marketing strategy if you haven't already. This online article outlines tips to build your email list and increase exposure for your business. onsiteinstaller.com/featured

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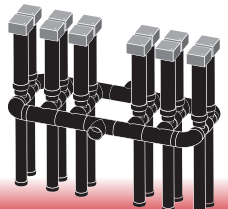

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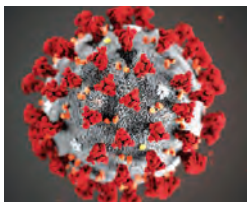

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INSTALLER PROFILE

PROBLEM-SOLVERS

Illinois installer Ray Tebo focuses on membrane bioreactor technology as a versatile solution to enhance decentralized wastewater treatment performance

By David Steinkraus

Ray Tebo grew up on a farm near St. Anne, Illinois, where he now runs his wastewater business, New Excavating Technology. He likes digging, and his happiest days are the days when he can go out on a farm and run equipment.

He can't dig as much as he wants to, and he shouldn't, he says. "For onsite installers, they can't be the guy in the excavator. They have to be the owner. If I'm an operator, the company stands still."

It's the reality of running his diverse, multispecialty business that is becoming more specialized as it grows.

EMBRACING ONSITE

"We dig all year round," Tebo says.

Not all of that is for his wastewater business. He also oversees some family farmland and excavation work, and he keeps his crew busy by shifting them from one type of work to another.

As his onsite business evolved, Tebo found it more interesting to specialize, a move that also opened more opportunities. Like many businesses, he started with the basics. Excavating and septic work followed naturally from his farm background, where neighbors were always helping other neighbors dig and where a few people had installing licenses. At first he built lagoons and worked on sewers.

"As the developments moved farther out, we weren't hooking up city sewers anymore. All the houses we would do were asking for a septic system. So I decided to get my license," he says.

Yet he didn't do many septics. He worked on aerobic treatment systems. His shifts in work focus often came from a request. A company representative would ask for help, Tebo accepted, and that built his experience and led him to offer a different service.

He installed his first membrane bioreactor in 2013.

"What led me to the MBRs was my search for a better type of aerobic system. I wanted to try MBRs, I called the rep, and he invited me to put in MBRs."

<< The crew includes, from left, Wayne Street, Ken Thomas, Ray Tebo, Luke Tebo and Keith Anderson. They are shown at the company research and development site with a Bobcat excavator and equipment assembled by the staff. (Photos by Miles Boone)

>> Anderson assembles an Infiltrator Water Technologies IM-540 tank. (Photo by Ray Tebo)

Sometimes the company still installs aerobic systems, but that's primarily for existing customers.

Work splits into about 80% MBRs and 20% everything else. MBR work is commercial work, and one of those jobs can be bigger than all the houses he installs in a given year, Tebo says.

"We've done a lot of special projects really far away," he says.

TRAVEL TIME

One of those projects was at a grain depot along the Mississippi River, about 250 miles from St. Anne. The site was a flood plain, and the building for the depot's workers sat on stilts 8 feet above the ground. Tebo proposed the membrane bioreactor because its effluent is clean enough for discharge into the river.

He and his crew used a precast concrete vault, 10 feet by 25 feet and 8 feet tall. Inside they put 2-inch hard insulation panels and sand to insulate the MBR and other components from the weather.

A disadvantage of working on such specialized, one-time projects, Tebo says, is there is no one to call for advice. He and his technicians have to solve problems largely on their own.

Another disadvantage in his part of the market is a lack of competition. There isn't a selection of companies from which he can pick the right components, he says.

New Excavating Technology Inc. and Recycled Water Technologies Inc.

St. Anne, Illinois

Owner:	Ray Tebo
Founded:	2000
Employees:	3
Service area:	250-mile radius
Services:	Onsite installation, specialty excavating, service work
Associations:	National Onsite Wastewater Recycling Association
Website:	www.netexcavation.com, www.recycledwatertech.com

Ray Tebo reaches for a hammer drill while Ken Thomas programs aeration and a pumping sequence. Shown is a Fuji Clean blower and Aquaworx panel by Infiltrator.

At a residential install, Luke Tebo shovels dirt in the foreground. Shown in the photo are a Roth RMT-1060 tank, EZflow 1202H drainfield and Bobcat E85 excavator. (Photo by Ray Tebo)

Because his jobs are so customized, information about system performance isn't widely available. Tebo once bought another tool truck so he and a technician could drive every month to 30 job sites around the state and download data from panels. Then Tebo studied the data to learn how those systems were performing. "I did that on my dime, but that's how you have to do it sometimes in the specialized fields," he says.

From all of this learning, he has settled on a direction: membranes.

"I studied membrane systems all around the world," Tebo says. "I spent a lot of time traveling and looking at them. And it really seemed to me that in my life, membranes are the thing of the future."

This means more than MBRs, he adds. There is room for membranes in many applications from water to chemical plants and glass factories — any industrial operation that needs to have water cleaned for cooling or machinery. There is room for this beyond central Illinois.

"You know, we have a lot of good, open land here. But a lot of places in the world, especially some Asian countries, they don't have the land, and so membranes are becoming really, really important," he says.

The same thinking applies around large U.S. cities where municipal sewer systems cannot be expanded fast enough to keep up with the sprawl of development, he says.

Tebo sees his own company as moving into anything that involves membrane technology. He said he's already been asked to perform jobs hundreds of miles from his home base.

EQUIPMENT CORNER

For the work he does, Tebo keeps an inventory of equipment that allows him to do jobs of almost any size. New Excavating Technology operates with:

- Three mini-excavators: a Bobcat E85, Bobcat E35 and Bobcat 418
- Bobcat T650 compact track loader
- Komatsu D21P dozer
- Kobelco excavator
- John Deere 4066R tractor
- John Deer UTV Gator

Other equipment is rented as needed.

To move equipment, they use all-aluminum trailers from Lightning (a division of Forest River). Lighter-duty jobs are handled with Aluma trailers.

Machines lighter than 10,000 pounds in most cases are moved in enclosed trailers. Even for service work, technicians are now pulling enclosed trailers to job sites. Aside from keeping equipment out of the weather, enclosed trailers have other advantages, Tebo says.

"I studied membrane systems all around the world. I spent a lot of time traveling and looking at them. And it really seemed to me that in my life, membranes are the thing of the future."

Ray Tebo

"The wind doesn't blow away your parts, or your instructions, or your electrical diagram," he says. Membranes can't be wet until they're about to receive effluent, and working inside makes it easier for technicians to deburr and glue pipes and assemble other fittings.

The people who make the installation division run are Wayne Street, Keith Anderson and Ken Thomas.

That is a small group for all the work the company does, and it's small because other work is subcontracted. Jobs are so specialized and Illinois workmen's compensation is so expensive that it makes economic sense to subcontract complex subspecialties such as electrical wiring or commercial plumbing, Tebo says.

WORKING SMART

For planning his specialty work, Tebo has set up a special space. There is a shop where major components can be built and dry-fitted so technicians aren't struggling in the field. The grain depot job is an example; components were fitted and test-assembled in the shop. As a result, installation took only two days from start to startup.

Tebo had high-speed internet extended to his shop out in the country so technicians would have easy access to information.

"We have an 80-inch screen where we bring up jobs. The guys all come in and we sit there and go through the jobs. We looked at one this morning: what that job site is going to look like, where people are going to be, where the subcontractors are going to be and how we're going to mount the equipment. And we do that in comfort," he says. "The guys have a cooking area in there. They have washing machines and a shower, so if somebody comes home and they have sewage water on them, they can wash their clothes. There is also a restroom and bedroom in case workers, clients or product reps need to spend the night. We're in the process now of setting up our own lab because if we make an adjustment, it needs to be tested and I don't want my guys to drive an hour to drop something off at a lab."

continued >>

<< Ray Tebo talks about the next onsite installation project on the job board. Wayne Street is shown with his back to the camera.

The building also contains tanks to clean membranes that have been removed from reactors, and there are other tanks to test the membranes before they're installed in another system. There is a test MBR for fitting components and testing for vibration, vacuum, electricity consumption and aeration.

There is also a machine shop because each of his jobs seems to require customized parts, he says. One of his employees is skilled at basic machining and ultrasonic welding. Complicated work goes to a local CNC company.

All the planning and fitting obviously needs a long lead time, but Tebo's jobs have that because they're commercial projects requiring months for design and permitting. He says it's typical to plan jobs one to three years ahead.

SUBCONTRACTING SUITS HIM

Looking at the future takes a different form when it comes to the people who will do the work.

"As I get older especially, I really like to see young people trying hard and getting into things, and I try to help them," says Tebo, who is 41. When younger installers pick up material from one of the product lines he represents, one point he makes is the need to plan carefully.

"I tell them, 'You really only have about 120 permit digging days a year, and you have to price your business upon that. So one-third of the days in the year — not counting service work — have to make all the money for the company for the year,'" he says. "You should see some 23-year-old coming to get materials and looking at you like you're crazy for saying this, but then you see it spinning in his head. He starts to understand how valuable the time is."

Limited time is another reason why Tebo began using subcontractors. Get everyone lined up, he says, and it's easier to do a lot of work in a small amount of time because if one part of a job is slow, it does not prevent other people from working on other projects.

Subcontractors also fill the gap that everyone finds when trying to find skilled workers, Tebo says. "Even though you're paying a lot more, the subcontractors show up," he says.

continued >>

UTILIZING ADVANCED CONTROLS FOR EXCAVATION

Successful completion of a job requires good planning, and the day is here when planning includes punching a program into a computer that controls the digging. This is not new for Ray Tebo, owner of New Excavating Technology in St. Anne, Illinois. It is an outgrowth of computer controls that have been common for 20 years in the agriculture industry he grew up with.

"We're working on a lot of really specialized grade control and mapping," Tebo says. He means setting parameters in a computer on the excavator before technicians are on the job site. "When we get there, the operator can't push down and dig any deeper than he's supposed to," he says.

For example, a sensor on a bucket is linked to a GPS system and steering so the computer knows where it is at any given moment and how deep a piece of equipment should be.

Mapping is necessary before the components are covered.

"It's so critical for the future, for the technicians or for somebody going back to replace something and repair something," Tebo says. "You have a lot of accidents: garbage trucks run over something or concrete trucks run over something. We see this on a yearly basis.

"Supposedly now we have accuracy to 1 inch in a mile," he says.

While precision and speed are benefits of this technology, it also helps control workers' compensation costs.

"If I have to dig a hole 8 feet deep, 40 feet long, 12 feet wide, and the operator can dig at the correct depth without anybody even thinking about going down in the hole, it's just a huge advantage to me for safety, insurance, everything."

Machine grade controls and mapping are only three to five years old for the onsite industry, he says, and it's still very expensive.

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Technician Ken Thomas gathers supplies for a new system install. Wayne Street is in the background with tanks from Infiltrator Water Technologies.

> "As I get older especially, I really like to see young people trying hard and getting into things, and I try to help them. I tell them, 'You really only have about 120 permit digging days a year, and you have to price your business upon that.'"
> Ray Tebo

It reduces profit, but the job is done perfectly, he says. What he's doing is trading short-term gain for longer-term benefits. First, when a job is done properly the first time, there won't be a callback to fix problems. Second, it builds on his company's reputation.

For a couple of years, Tebo says, he's sent a tank-setting crew out ahead of other workers. That means the digging crew can dig on a beautiful 78-degree F day while the people doing mechanicals are handling another phase of a different job, he says.

BROADENING THE BUSINESS

Tebo's home base is in a fast-growing area about 70 miles south of Chicago. This means more work for Tebo's company, but it also means less time to rest. "We used to enjoy five or six weeks of downtime a year," Tebo says. "We would get in the shop and turn wrenches. We struggle now to get that time."

It means relying more on dealerships to take care of machinery, he says. It also means he and his employees are less able to get away. During any given winter, Tebo used to attend four or five trade shows and take some of his guys along so they could expand their knowledge and have some recreation. It's harder to do that now.

His future is about to be busier because after about two years of work, he is beginning to manufacture a modular MBR system that will scale to whatever flow is required. It's for his new membrane-installation company, Recycled Water Technologies. New Excavating Technology will continue regular installations, and the new company (which meets NSF/ANSI Standard 350) will handle specialty membrane installations.

The company is at the point of needing more people, although that also means adding trucks, tools, benefits and other associated costs. So again, Tebo is thinking about subcontractors and the future of the whole industry.

"It's very, very hard to get young people interested in this work," he says. "I think the industry is still looked down upon for being a rough industry where people get dirty."

TIME FOR EMPLOYEE OWNERS?

Greater use of technology may attract younger people, he says, because they may prefer watching and adjusting 200 systems on a tablet. As he looks at the small-business landscape, he also sees more younger people who want to work for themselves instead of being an employee of someone else. Perhaps that is the incentive to keep people in wastewater careers, he says.

Or perhaps it is time for employee-owned companies. Tebo has heard about that idea, arrangements where in a small company each employee may own 10% while the boss owns 50%. He's been thinking about that for his own company but hasn't reached the point of creating it.

For the moment, Tebo is busy creating a better and more interesting future for himself and his employees.

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Florida Switches Wastewater Oversight to Environment Department, Supports Grants for Onsite Upgrades

By David Steinkraus

It took a decade, but the Florida Legislature has passed a bill that makes progress on protecting the state's waters and keeps the onsite industry as a viable solution to some of the state's water problems. In the end, Senate Bill 712 sailed through the Senate 39-0 and through the House 118-0.

After some false starts, it turned out this was the year for action, says Roxanne Groover, executive director of the Florida Onsite Wastewater Association. "The cost of not doing anything was going to far outweigh the challenges we're going to get from people for doing something," she says.

For the decentralized wastewater industry, there are two major takeaways from the bill. First, oversight of onsite systems will shift from the Department of Health to the Department of Environmental Protection. Second, the bill requires that when the department is formulating rules about onsite systems, it must consider advanced treatment units in addition to conventional septic systems.

Gov. Ron DeSantis made clean-water legislation one of his major goals. He set up a task force to study algae blooms that have stricken the state for several years, and he is expected to sign the bill into law.

One of the first attempts to protect the state's waters came in 2010 with a bill mandating onsite system inspections every five years. Those were repealed in 2012 after citizens objected.

In 2017, Rep. Randy Fine, R-Palm Bay, introduced a bill that would have required onsite system inspections when a property was sold, but the bill was altered so sellers would only have the responsibility of telling buyers that an onsite system was present. The bill never made it to the floor of the House.

Last summer, as legislators discussed how to address water-quality problems, FOWA members spent time talking to legislators about the industry and how onsite technologies can help protect the environment. Infiltrator Water Technologies hired a lobbyist to work with FOWA's lobbyists and present the manufacturing perspective, Groover says.

Groover also worked with Sen. Debbie Mayfield, R-Vero Beach, last summer. It was Mayfield who wrote the bill that has now passed the Legislature, and Groover gives her great credit for reaching out to interested groups, keeping discussions alive and encouraging people to compromise. "That is the greatest challenge she overcame this year," Groover says.

For pumpers and installers, the bill should not disrupt business because the role of county health departments remains the same, she says. And FOWA is ready to help with the shift of oversight from the Health Department to the Environmental Protection Department, she says. That means helping ensure permits aren't stuck in the system as the agencies move people or change their duties. "There's a lot of shared people, shared offices, shared equipment," she says.

An advantage of having the Environmental Protection Department handle oversight is that funding for onsite upgrades comes through that department, Groover says. This year, the state allocated $8 million for grants of up to $10,000 in nine counties that hold natural springs critical to the state's freshwater supply. Homeowners could use that money to buy advanced treatment units, she says, and the money is available again this year. It may be a fraction of what is allocated for conversion from onsite to municipal sewer, but the money is there, and shifting oversight to the Environmental Protection Department provides an opportunity to expand the program, Groover says.

Florida newspapers report some grumbling by environmental groups who say the bill did not go far enough in regulating agriculture. That industry has been cited as a major contributor of the nutrients fueling algae blooms.

The bill may be fine-tuned in the next legislative session, Groover says, but the onsite industry shouldn't be part of any major struggles. The next Florida Legislature convenes in January 2021.

Ohio

A small community is going to court to avoid a forced connection to municipal sewer service.

In 2012, the state ordered Washington County to provide municipal sewer service to people in Devola, an unincorporated community 115 miles southeast of Columbus near Marietta and the West Virginia border. The county signed an agreement with the city of Marietta, but the two are now in court because the city says the county isn't complying with the agreement. All of this gave impetus to Devola residents who don't want to pay for a sewer conversion.

Costs over 30 years would be $66,300 to $78,575 for each property, depending on how much work the county would do versus how much would be up to property owners, reports *The Marietta Times*.

In January, some Devola citizens formed DASH: Devola Against Sewering Homes. DASH's attorney asked a judge to let the group become involved in the suit between the city and county. While the order to provide municipal sewer was based on studies in 2009 and 2010 of nitrate contamination of groundwater, DASH's attorney says more evidence about the contamination has accumulated since then, but the state isn't looking at it.

Wyoming

Teton County has drafted an update to its onsite regulations, but one advocacy group wants the rules to go further. The draft rules build on state rules and existing county ordinances and will now require leak testing and an operations manual for each onsite system that would be passed from one homeowner to the next, reports the *Jackson Hole News & Guide*.

Dan Hellig, of the Wyoming Outdoor Council, says thousands of county onsite systems are sources of nitrate and *E. coli* contamination of groundwater. He says the county should require mandated system maintenance and

inspections. Ted VanHolland, the county engineer, says inspections would be a burden on county staff.

Several thousand properties in the county — about one-third of all homes — depend on onsite systems for wastewater treatment. Teton County is in the northwestern corner of Wyoming and includes Grand Teton and Yellowstone national parks.

Tennessee

The state Department of Environment and Conservation imposed a $20,000 civil penalty and $3,617 in cleanup costs on Price Septic Service of Rogersville and owner Robert Price. Twice septage from company trucks was intentionally dumped into tributaries of Cherokee Lake, the state says.

In one case, Price had applied lime along the channel where septage had flowed, reports the *Citizen Tribune* of Morristown. The state wrote letters telling Price to clean up the septage but received no reply.

Cherokee Lake is in eastern Tennessee, about 35 miles northeast of Knoxville.

* * *

A bill in the Tennessee Legislature is being criticized for removing power from the Department of Environment and Conservation to set standards for community wastewater systems.

Senate Bill 2224 and its companion, House bill 2206, would restrict permits from requiring land be set aside for effluent treatment. The bill's sponsor, Sen. Steve Southerland, R-Morristown, was quoted in news reports as saying proposed department rules about community systems would be harmful to building.

The bill is out of committee and was referred to the Senate Calendar Committee.

It Takes Teamwork to Ensure Residential Onsite Performance

From the design phase to the end user, all parties responsible for operations and maintenance need to plan ahead for the best outcome

By Jim Anderson

When I started working in the onsite industry, it was as a researcher studying the movement of water (effluent) through the soil. This is a rather narrow slice of everything that goes on relative to an onsite wastewater treatment system. If you take a step back and look at a system as a whole, it's not long before you realize that having long-lasting systems requires a lot of effort on everyone's part: from the regulatory agencies to the homeowner, designer, installer, service provider and others.

To this day, some 40 years later, it's my opinion that way too often there is a separation or disconnect between these groups of professionals and that this causes the systems to not function as intended and, as a result, not last as long as they should. This is one of reasons the idea of different management levels was articulated in late 1990s as the U.S. Environmental Protection Agency looked at how to improve onsite system performance. It was also part of the reason they searched for or encouraged the development of responsible management entities to take care of systems, perform required maintenance and replace the systems when necessary.

One positive outcome has been recognition that systems need to be installed properly and require maintenance over their life span. It was also recognized that everyone involved has certain responsibilities to ensure onsite systems protect the environment and public health while meeting the homeowners' needs.

A typical residential system has the following pieces: the residence as the source, collection, pretreatment components, and final treatment and dispersal. Each of these four pieces in the treatment process need to be continually evaluated as part of an ongoing operations and maintenance process.

Take time to educate customer unfamiliar with how to get the best onsite system performance. (COLE Publishing file photos)

MANAGE THE SYSTEM

From a regulatory perspective, management is the framework that allows steps for proper operations and maintenance of onsite wastewater treatment systems. From my perspective, those steps begin with the initial concept and design. If the "right" system is not selected based on homeowner requirements and site characteristics, no amount of operations and maintenance in the future will make that system function the way it should.

There are two aspects to management of onsite systems, and they need to go hand in hand. There is the management of the individual system that serves a residence, and then there is the regulatory

Homeowner education needs to stress that they can help or hurt their system by how much water they use. … If they are using more than system capacity, they need to cut back or make the decision to enlarge their system to accommodate the flows. They need to understand the system has a finite capacity that cannot be exceeded on a regular basis.

management program, which covers managing all systems in an area, township, county, etc.

The regulatory program is only as good as the worst systems being managed. If systems are not "good" from the perspective of site location, proper system type for the area or having installation problems, the management program will not meet the objectives of having long-lasting systems that take care of water use from the residence and adequately treat the wastewater to protect the environment and public health.

Management begins then at the point of estimating the daily sewage flow from the residence (using the assumption that the system serves a home, so the wastewater generated will be domestic waste).

CONSUMER EDUCATION

Most state and local codes provide for estimation of daily sewage flow from residences and other establishments. Since we are focusing here on residences, those processes are relatively straightforward, often based on the number of bedrooms and water-using devices to be installed. Water-using devices are things like toilets, sinks, dishwashers, washing machines and others. A common method was to use the number of bedrooms and assume for design purposes that two people occupied each bedroom and each of them generated 75 gpd of wastewater; therefore, a three-bedroom home would be estimated to generate 450 gpd.

That worked relatively well, but it wasn't long before it was recognized that not all three-bedroom houses were the same. A way to compensate was to adjust estimates based on square footage of houses and water-using devices. All of this can be justified from a management and regulatory perspective. Calculations also recognize that in a lot of cases, there will not be two people in each bedroom, and a number of research studies show that per capita water use is actually around 60 gpd.

Homeowner education needs to stress that they can help or hurt their system by how much water they use, and in my opinion, this means having water meter data available to monitor water use. If they are using more than system capacity, they need to cut back or make the decision to enlarge their system to accommodate the flows. They need to understand the system has a finite capacity that cannot be exceeded on a regular basis.

SOIL TELLS THE STORY

A colleague of mine has often said the most common installing mistake he has seen is misidentifying soil characteristics, which results in the wrong type of system or the wrong size system being installed. Let's explore a few common soil identification problems and how they impact system performance. Remember, this is in the context of being able to manage the system into the future.

Two major ways the soil affects the system are determining the size of the final soil dispersal and treatment system and the location of the system in the soil. I call this the soil treatment unit; depending on soil characteristics, this unit can consist of gravity-fed trenches installed in the soil, in-ground pressure distribution systems including drip distribution, or aboveground systems such as mound and pressure-distributed at-grade systems. Sizing the system is a big part of defining where in the soil profile the system should be located.

Soil is effective at treating septic tank or aerobic system effluent. The key is having enough soil between where the effluent enters the soil through the system and any type of limiting layer that interrupts the flow and treatment processes. Limiting soil layers include the presence of seasonally saturated zones, dense soil layers, any significant change in texture, and bedrock, either creviced or hard.

Always field-test soils for moisture content before proceeding with excavation to avoid smearing.

Where I worked, the magic number for separation distance was 3 feet. Bear in mind that this 3 feet must be unsaturated and well aerated to provide treatment. If there is a limiting layer exactly 3 feet beneath the infiltrative surface, you should recognize that when effluent is added to the soil daily, there will probably be less than 3 feet of separation because the water will build up above this layer before it moves sideways or downward.

Establishing the depth to a limiting layer is key, and staying above it is critical to long-term operation and performance. If there is not adequate separation, management will need to be different than if there is separation. Management changes might include installing a media filter or aerobic tank rather than a septic tank so that effluent is cleaner. Even this might not be enough to allow the system to function hydraulically, depending on the actual separation distances and soil permeability.

>> Choose materials carefully when constructing a drainfield trench.

THE SOIL-SIZING FACTOR

This leads to the second major impact of soil on the type and location of the treatment unit: the soil-sizing factor, which coupled with estimated sewage flow determines the size of the system. Soil characteristics involved in this assessment include texture, structure and consistence. If the site evaluator, designer or installer is not well versed in these characteristics, it is easy to select the wrong sizing factor, resulting in the wrong size soil treatment unit.

Mistakes in soil identification in general are very hard to fix and almost impossible to manage. Management would have to incorporate flow reduction from the residence or replacement or enlargement of the system; either would be very costly to the homeowner.

When soil characteristics are not interpreted correctly, they can negatively impact long-term performance. Assuming the installer is not the one who made the soil interpretations and design (although I recognize a lot of you do soil and site evaluations and design), what are some of the potential soil problems an installer can control?

One of the biggest factors is not excavating or working with soil when it is too wet. In my area, the construction season can sometimes last only a few months, and rainy periods during the summer can make a short season even shorter. This puts pressure on installers to get a lot of systems installed in relatively short windows. Working the soil or having traffic over the area used for the soil treatment unit can cause significant compaction and smearing. This reduces soil permeability to both air and water.

TEST THE SOIL MOISTURE

The site evaluator and designer may have technically made the right calls regarding the soil but because it was compacted during installation, the soil will not accept the amount of effluent intended. Once this compaction occurs and it's not mitigated, no amount of management short of soil treatment unit replacement is going to fix the problem.

There is an easy field test to determine if the soil moisture content is at or above the plastic limit, which is where compaction and smearing will occur. Take a handful of soil and try to roll it between the palms of your hands. If you can roll the soil into a ribbon 1/8-inch in diameter, the soil is too wet to work.

The soil should be tested at the depth where the system will be installed. So if a trench is 24 inches deep, that depth and above is where the test soil should come from. If it is a mound or at-grade, then test at the surface. Compaction, particularly at depth, is very hard to fix. So, if it looks like you are compacting and smearing the soil, work should be stopped until the soil is dry enough.

Often it's not the installer, but other contractors working on the site, causing the damage. This happens a lot during new construction or remodeling. For example, the shortest path to bring in the concrete blocks or cement truck is across the drainfield site. Heavy equipment can seriously compact the soil in the area to depths of 2 to 3 feet or more given the right soil conditions.

This has led regulatory agencies to require protecting the drainfield area by fencing and signage. Even if this guideline isn't a part of your local regulations, as an installer you should protect the site from other disturbances. ▢

This is the first of a two-part series covering the design and installation of onsite systems with future management in mind. Jim Anderson is co-author of the Basic Training column in *Onsite Installer* and an emeritus professor at the University of Minnesota Department of Soil, Water and Climate.

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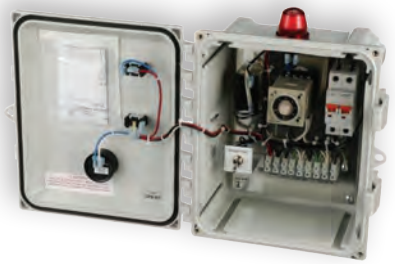

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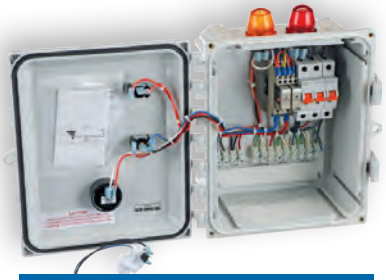

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Jim Anderson, Ph.D., and David Gustafson, P.E., are connected with the University of Minnesota onsite wastewater treatment education program. David is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor. Readers are welcome to submit questions or article suggestions to Jim and David. Write to ander045@umn.edu.

The Household Power Is Down. Now What?

Installing contractors should prepare homeowners on how to protect their onsite systems during a power outage

By Jim Anderson and David Gustafson

Whenever we conduct workshops on the basics of sewage treatment systems and talk about incorporating pumps, it leads to a discussion of what to tell people to do when the power goes out. If you live in a rural area, you recognize it's not a question of *if* the power will go out but *when* and for *how long*. Most outages are for a matter of a few hours, but there are times when the power is out for several days to a week or more. It is these longer outages that cause concern for our treatment systems.

Our first reaction is to remind folks that there is another pump to think about when the power goes out, and that's the well pump. If there is no water coming into the house from the well, the amount of sewage generated will be reduced. Once water is drained from the pressure tank, no more water comes from the well. Any sewage generated will then come from water stored before the outage or carried in from a nearby water source.

One exception to this is when a residence has an automatic generator system that takes over if the power goes off. A note of caution for homeowners is to remember to include the circuits that control the sewage pumps when selecting circuits to receive power from the generator. It is easy to remember the well pump for water, stove, refrigerator, freezer and TV and then forget the sewage pump out in the yard to move sewage from the pump tank to the drainfield.

OVERFLOW PREVENTION

There are rural areas that have rural water systems where could still be water delivered to the residence and sewage generated. Here, homeowners with mounds, at-grade and pressure distribution systems, or any system that requires a pump, need to be prepared for the potential multiple-day power outage if they do not have an automatic generator. Any system with a pump will not be able to transfer wastewater from the septic tank and pump chamber to the disposal field during a power outage.

It is important to minimize use of the septic system to prevent overflow of the septic tank and pump chamber. Toilet flushing should be limited to only solids; any dishwashing should be done in a tub where water can be carried outside and discarded. Showers and baths should be curtailed. The homeowner should monitor the level in the pump tank and, if possible, have a pumper come to remove the contents of pump and septic tanks if they are full.

If the system is an on-demand system, the pump cycle begins whenever the wastewater volume reaches a preset level in the septic tank — usually controlled by floats — and the effluent is pumped into the drainfield. When there is a power outage, effluent is not pumped into the drainfield. The septic and pump tank collect the wastewater throughout the power outage and will release it all at once when the power is restored and the pump starts. Too much water pumped at one time can flood the drainfield, causing surfacing or backups.

To avoid this problem, the homeowner can become a human timer by turning off the circuit to the pump during the outage and when power is restored, run the pump for a typical time period that would deliver a single dose to the drainfield. Turn the pump off and then run it again after a period of four to six hours. In other words, gradually deliver the accumulated effluent to the system over time. The number of cycles required will depend on how much effluent has accumulated in the system.

To homeowners unfamiliar with rural areas and individual treatment systems, spending some time explaining how the pumps work and what to do during power outages can save a lot of work and headaches in the future.

THE OWNER'S MANUAL

A pump system with a timer controls the number of times the pump starts and stops. It manages how much effluent (liquid sewage from the septic tank) goes to the drainfield in a 24-hour time period. Timers make sure the drainfield only gets as much effluent as it was designed to handle. The timer system will eventually take care of itself once the power is restored. If the high water alarm sounds when the power is restored, the effluent has backed up into the reserve storage area of the pump tank. It may be necessary to employ the manual override or turn the pump on and off by turning the circuit off to gradually reduce the backup.

Provided by the installer, the homeowner should have an owner's manual for their onsite wastewater treatment system that explains the

components of the system and how they work. Situations such as power outages are why this is important; the manual should explain the amount of dose delivered and the time the pump runs. The manual should be easily accessible in case of emergency or an outage.

If the power has been off for a while, the timer will be behind. To let the timer catch up, the homeowner should continue to conserve water for an additional day or more. This means taking short showers, not doing laundry, and performing other water conserving actions.

These recommendations probably seem to be common sense; but to homeowners unfamiliar with rural areas and individual treatment systems, spending some time explaining how the pumps work and what to do during power outages can save a lot of work and headaches in the future. □

Better Homeowner Education Is Key for Iowa Wastewater Pros

As onsite system maintenance becomes more critically important by the day, installers and pumpers focus on their role in teaching end users

Compiled by Betty Dageforde

In States Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Iowa Onsite Waste Water Association.

Kurt Leichty
vice president of Leichty & Son Construction and president of Leison Pumping

Business: Leichty & Son Construction/ Leison Pumping, Mount Pleasant, Iowa

Services we offer: Septic system installations, pumping, time-of-transfer inspections and maintenance

Age: 50

Years in the industry: 25

Association involvement:

A member of the Iowa Onsite Waste Water Association since its inception and currently on the board of directors.

Benefits of belonging to the association:

I get the most value from the training we receive, talking with other members in the association and meeting new suppliers at our annual conference.

Biggest issue facing your association right now:

The industry will always be expanding since wastewater will always need to be treated, so keeping up with the changes in the industry is always something we're concerned with.

Our crew includes:

Brittany Davis is our office manager. Matt Stalder is a foreman, installer and inspector. Bryan Westphal is a pumper and inspector. Terry Lunsford is an installer and inspector. Walker Lunsford, Jeremy Farley, Jake Sanow, Steve Davis and Micah Johnson are installers. We wouldn't be here today without our great staff of hardworking employees. They're like family to us and are our company's biggest asset.

Typical day on the job:

I most like to be out on a job site with the crew running equipment, but plans often change throughout the day depending on emergency calls. I also do inspections, talk to homeowners and bid on projects throughout the week.

The job I'll never forget:

A homeowner had a septic tank failure and groundwater infiltration, which in turn backed up into his basement. To solve the problem, we installed a new system. The most difficult part was getting down to the old tank, which was 9 feet in the ground before we reached the top of the tank. The old tank was then removed and replaced with a new Wilkinson Heavy Precast 1,500-gallon, three-compartment tank. The risers were concrete with a centonite wrap. We were able to use an existing footing tile to help dewater the area around the tank. The effluent from the tank was pumped to a sand filter and then gravity-drained to the outlet.

My favorite piece of equipment:

Our equipment includes a three-tandem dump truck; Caterpillar 305 and 323 excavators; Komatsu PC200, PC240, PC138 and PC160 excavators; and a 2017 Kenworth vacuum truck built out by Advance Pump & Equipment with a 3,200-gallon steel tank and National Vacuum Equipment 4310 blower. But the most useful timesaving piece of equipment is our RIDGID SeeSnake camera with locator.

Most challenging site I've worked on:

Different times of the year can cause different installation issues, whether it's frost in the winter or substantial rains in the spring. We've had to install dewatering pumps to lower the water table to set tanks. We've also had to use the frost tooth on a 54,000-pound excavator to rip frost for emergency septic installations. Getting to some tanks in adverse conditions can be challenging for pumping tanks as well.

The Leichty & Son team includes, from left, Terry Lunsford, Micah Johnson, Matt Stalder, Jeremy Farley, Jacob Sanow, Walker Lunsford, Steve Davis, Irvin Leichty and Kurt Leichty. (Photos courtesy of Leichty & Son Construction, Inc.)

Terry Lunsford and a Wilkinson Heavy Precast 1,500-gallon, three-compartment tank with a pump chamber.

The craziest question I've been asked by a customer:

There have been a handful of times a homeowner has asked us to install their septic system in a specific area. Usually it's because they would rather not have to look at their septic lids. But most of the time they have a lack of knowledge about how septic systems work and their request is impractical.

Best piece of small-business advice I've heard:

Treat clients with the utmost respect. Treat them as you would want to be treated.

Planning for the future:

Our goals are always the same: taking care of our existing clients, adding new ones, being efficient and offering a great service.

Crystal ball time – This is my outlook for the wastewater industry:

Training homeowners is getting to be so important. The more information we can get to them about the proper care of their system, and the do's and don'ts of the system, the better off they will be. It will make their investment more worthwhile and give them many years of trouble-free use.

Would you like to see someone in your state or provincial wastewater trade association profiled in Snapshot?
Send your suggestions to Jim Kneiszel at editor@onsiteinstaller.com.

Alarms, Controls and Monitoring Systems

By Craig Mandli

ALARM SYSTEMS/COMPONENTS

Anua i/o.site

The **i/o.site system** from **Anua** provides performance monitoring of electromechanical components while keeping everyone connected to information through a simple web interface. It can remotely monitor any blower, aerator, pump, float switch or motor. It tracks water use, catches motor issues before failure, uses any mobile device or computer, and monitors any powered onsite system. **336-547-9338; www.anuainternational.com.**

MSA Safety TG5000 Gas Monitor

The **TG5000 Gas Monitor** from **MSA Safety** reliably detects oxygen, combustible and toxic gases. It offers multiple sensor and installation options. Its single- or dual-sensor design doubles sensing power and reduces wiring costs. The intuitive design of the local interface makes it simple to install, use, and maintain. Its OLED display and LED indicators show power, fault or alarm; gas readings; and Bluetooth connection. A touch button accesses all functions. It operates in stand-alone mode or can be connected with a 4-20 mA output to a PLC or DCS. HART is available, and it supports remote monitoring, where the sensor must be separated from electronics. It has XCell TruCal sensors, which respond rapidly to gases. Self-diagnostics and SafeSwap capability enables sensor replacement without turning off the instrument. It includes a 95 dB audible alarm with horn silence control. **800-672-4678; www.msasafety.com/detection.**

Polylok 3014AB Filter Alarm (Smart Alarm)

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.**

Septic Products Observer 400

The **Observer 400** system monitoring device from **Septic Products** is a 120-volt indoor/outdoor high-water alarm that includes a 15-foot alarm float for high levels. It includes a large 360-degree indicating light and 85 dB at 10 feet audible alarm. It comes with a test-normal-silence switch, automatic alarm reset, auxiliary contacts and 120-volt circuit power for the pump. It has easy access to the interior components for a repairable design. The alarm can be adapted with ease for use as either a high- or low-level alarm. It is built and labeled to UL 508A. **419-282-5933; www.septicproducts.com.**

Sump Alarm Wi-Fi version outdoor tank alarm

The Wi-Fi version outdoor tank alarm from **Sump Alarm** provides email, text and voice notifications for up to five numbers. The unit can call installers when a client's tank is full. The weatherproof high-tank alarm requires no on-site wiring and includes a 90 dB horn and 1-inch LED indicator. Versions are available in 120 or 220 volts and for high- and low-level detection. It joins the household's Wi-Fi network. It is preassembled and suitable for extreme temperatures. **314-787-8059; www.sumpalarm.com.**

PUMP CONTROL PANELS

Alderon Industries Power Post

Power Post pump connection centers from **Alderon Industries** include the Mini Power Post monitoring, Power Post monitoring and Power Post control panel. They enable a professional and safe connection for power and float-switch wiring connections to an onsite septic system. Available models include timed or demand dosing with 120- or 240-volts AC pump power receptacle used for a variety of applications including septic tanks, holding tanks, pump chambers, water tanks, mound systems and pressurized drainfields. Systems include an integrated outdoor alarm with various color LED indicators, a buzzer and test/silence push-button. The top of the enclosure changes color along with system function displayed text on the OLED screen. Menu keys are provided to program settings and view data such as pump cycle counts, pump amps, elapsed time, total gallons pumped, pump dosing events and alarm conditions. **218-483-3034; www.alderonind.com.**

Aquaworx by Infiltrator IPC Panel with Tapper

The **Intelligent Pump Control (IPC) Panel** from **Aquaworx by Infiltrator** is available with the Tapper Wi-Fi connection for programming and monitoring. It innovates pump system performance by leveraging simple pressure transducer technology. The Tapper enables the user to program and monitor multiple IPC pump-driven systems remotely via a standard wireless connection to an enabled mobile phone, tablet or computer. The Tapper also includes a USB slot for capturing and downloading system events and settings onto a removable USB memory device. This provides the operator with a history of system function critical to troubleshooting and maintaining a pump-driven system. The easy-to-install panel monitors liquid levels, controls pumping time intervals, logs events in real time and calculates daily system flow via an embedded microprocessor in the pump controller and a floatless pressure transducer in the pump chamber. **800-221-4436; www.infiltratorwater.com.**

Delta Treatment Systems CP20/40/50 Series

CP20/40/50 Series control panels from **Delta Treatment Systems** provide intelligent monitoring and alarm functions for residential, commercial and industrial wastewater treatment systems. They are easy to install and operate and are available in several models engineered for use with advanced wastewater treatment systems and custom packaged plants. Customized control panels are also available, and all panels can be supplied with UL and/or Canadian UL 508A listings upon request. They monitor air pumps and effluent pumps on the Delta Whitewater treatment system. Additional options include the Series CP22, which monitors the air blower on Delta ECOPOD systems with options for controlling and monitoring UV lights for disinfection after treatment. Series CP8000/9000 control the Delta ECODRIP Pre-Engineered Disposal Systems' headworks filter system and effluent dosing pump using a PLC for time-dosing drip disposal fields. **800-219-9183; www.deltatreatment.com.**

Franklin Electric simplex and duplex nonclog control panels

Available in both single- and three-phase power options, simplex and duplex nonclog control panels from **Franklin Electric** are designed exclusively for 3NC and 4NC Series nonclog pumps. Typically used for wastewater applications, these control panels are UL 508A listed and have a waterproof NEMA 4X enclosure, IEC motor contactor and lockable latch. The panels include an adjustable motor starter; and for single-phase, nonclog pumps include an adjustable pump overload relay. Single-phase control panels also come standard with starting components for proper operation and simplified field maintenance. All nonclog control panels can be designed with additional options, including an event counter, elapsed time meter, lightning protection, redundant off float, low-level cutoff and anti-condensation heater. **800-348-2420; www.franklinengineered.com.**

Jet Inc. Model 197

The **Model 197** control panel from **Jet Inc.** monitors the operation of the Jet Inc. treatment system aerator and additional components. It can monitor single- or dual-aeration systems with selectable high- and low-amperage monitor settings. The panels have dedicated alarm and control circuits with separate power circuits for aeration devices. In addition to the aerator control circuits, the panel contains three auxiliary 120-volt output circuits for external device control relays. They include three low-voltage auxiliary input circuits selectable for N/O or N/C alarm inputs. An integrated pump power control relay is automatically disabled in an auxiliary device alarm condition. A signal array includes a power indicator LED and four additional equipment alarm indicator LEDs. **800-321-6960; www.jetincorp.com.**

Orenco Systems 4-in-1 Controller

The **4-in-1 Controller** from **Orenco Systems** supports numerous electrical configurations and dosing schedules within a single panel. Both Simplex (MVP-S2DM) and Duplex (MVP-DAX2DM) models are available and can be configured in the field for timed or demand dosing. While the control circuit operates on 120-volt power, the pump circuit is dual-rated for both 120- or 240-volt power, meaning installers and service providers can reduce their panel inventories for new installations and repairs. It includes a programmable logic unit with multiple timing intervals for changing flow conditions and has a built-in elapsed-time meter and counter. It also displays float position and has a float error indicator. Each panel includes a reference chart to assist with troubleshooting during installation and testing, as well as wiring diagrams. It is completely touch-safe. **877-257-8712; www.orenco.com.**

See Water WS Series

The **WS Series** from **See Water** is a complete line of preengineered water and wastewater control panels that will operate simplex, duplex or triplex pump configurations up to 115 FLA. The panels come standard with a clear front NEMA 4X-rated polycarbonate enclosure, IEC-rated contactors and motor protective switches. These systems are designed, assembled and tested in the U.S. and are UL 508A- or UL 698A-listed for the U.S. and Canada. **888-733-9283; www.seewaterinc.com.**

SJE Rhombus EZ Series In-Site CL

The **EZ Series In-Site CL** data logging control panel from **SJE Rhombus** offers wireless Bluetooth connection for smart devices. There is no need to open the panel for configuration, viewing status or downloading data using the EZ Connect mobile app. The Bluetooth smart module eliminates the need for a PC to enable safe and secure access in all weather conditions. The panel uses the C-Level sensor for continuous level monitoring and records up to 4,000 system events, including pump runtimes, pump cycles, alarm conditions, hand/off/automatic settings, power outages and service calls. The In-Site software formulates system data, creating reports quickly and easily so system conditions can be identified and corrected. Single-phase simplex or duplex models are available. This panel can be easily converted to demand or timed dose in the field. **888-342-5753; www.sjerhombus.com.**

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ALABAMA

Alabama Onsite Wastewater Association; www.aowainfo.org; 334-396-3434

ARIZONA

Arizona Onsite Wastewater Recycling Association; www.azowra.org; 928-443-0333

ARKANSAS

Arkansas Onsite Wastewater Association; www.arkowa.com

CALIFORNIA

California Onsite Wastewater Association; www.cowa.org; 530-513-6658

COLORADO

Colorado Professionals in Onsite Wastewater; www.cpow.net; 720-626-8989

CONNECTICUT

Connecticut Onsite Wastewater Recycling Association; www.cowra-online.org; 860-267-1057

DELAWARE

Delaware On-Site Wastewater Recycling Association; www.dowra.org

FLORIDA

Florida Onsite Wastewater Association; www.fowaonsite.com; 321-363-1590

GEORGIA

Georgia Onsite Wastewater Association; www.onsitewastewater.org; 706-407-2552

Georgia F.O.G. Alliance; www.georgiafog.com

IDAHO

Onsite Wastewater Association of Idaho; www.owaidaho.org; 208-664-2133

ILLINOIS

Onsite Wastewater Professionals of Illinois; www.owpi.org

INDIANA

Indiana Onsite Waste Water Professionals Association; www.iowpa.org; 317-889-2382

IOWA

Iowa Onsite Waste Water Association; www.iowwa.com; 515-225-1051

KANSAS

Kansas Small Flows Association; www.ksfa.org; 913-594-1472

KENTUCKY

Kentucky Onsite Wastewater Association; www.kentuckyonsite.org; 855-818-5692

MAINE

Maine Association of Site Evaluators; www.mainese.com

Maine Association of Professional Soil Scientists; www.mapss.org

MARYLAND

Maryland Onsite Wastewater Professionals Association; www.mowpa.org; 443-570-2029

MASSACHUSETTS

Yankee Onsite Wastewater Association; www.maowp.org; 781-939-5710

MICHIGAN

Michigan Onsite Wastewater Recycling Association; www.mowra.org

Michigan Septic Tank Association; www.msta.biz; 989-808-8648

MINNESOTA

Minnesota Onsite Wastewater Association; www.mowa-mn.com; 888-810-4178

MISSISSIPPI

Mississippi Pumpers Association; www.mspumpersassociation.com, 601-249-2066

MISSOURI

Missouri Smallflows Organization; www.mosmallflows.org; 417-631-4027

NEBRASKA

Nebraska On-site Waste Water Association; www.nowwa.org; 402-476-0162

NEW HAMPSHIRE

New Hampshire Association of Septage Haulers; www.nhash.com; 603-831-8670

Granite State Designers and Installers Association; www.gsdia.org; 603-228-1231

NEW MEXICO

Professional Onsite Wastewater Reuse Association of New Mexico; www.powranm.org; 505-989-7676

NEW YORK

Long Island Liquid Waste Association, Inc.; www.lilwa.org; 631-585-0448

NORTH CAROLINA

North Carolina Septic Tank Association; www.ncsta.net; 336-416-3564

North Carolina Portable Toilet Group; www.ncportabletoiletgroup.org; 252-249-1097

North Carolina Pumper Group; www.ncpumpergroup.org; 252-249-1097

OHIO

Ohio Onsite Wastewater Association; www.ohioonsite.org; 740-828-3000

OREGON

Oregon Onsite Wastewater Association; www.o2wa.org; 541-389-6692

PENNSYLVANIA

Pennsylvania Association of Sewage Enforcement Officers; www.pa-seo.org; 717-761-8648

Pennsylvania Onsite Wastewater Recycling Association; www.powra.org

Pennsylvania Septage Management Association; www.psma.net; 717-763-7762

TENNESSEE

Tennessee Onsite Wastewater Association; www.tnonsite.org

TEXAS

Texas On-Site Wastewater Association; www.txowa.org; 409-718-0645

Education 4 Onsite Wastewater Management; www.e4owm.com; 713-774-6694

VIRGINIA

Virginia Onsite Wastewater Recycling Association; www.vowra.org; 540-377-9830

WASHINGTON

Washington On-Site Sewage Association; www.wossa.org; 253-770-6594

WISCONSIN

Wisconsin Onsite Water Recycling Association; www.wowra.com; 888-782-6815

Wisconsin Liquid Waste Carriers Association; www.wlwca.com; 888-782-6815

NATIONAL

Water Environment Federation; www.wef.org; 800-666-0206

National Onsite Wastewater Recycling Association; www.nowra.org; 800-966-2942

National Association of Wastewater Technicians; www.nawt.org; 800-236-6298

CANADA

ALBERTA

Alberta Onsite Wastewater Management Association; www.aowma.com; 877-489-7471

BRITISH COLUMBIA

British Columbia Onsite Wastewater Association; www.bcossa.org; 778-432-2120

WCOWMA Onsite Wastewater Management of B.C.; www.wcowma-bc.com; 877-489-7471

MANITOBA

Manitoba Onsite Wastewater Management Association; www.mowma.org; 877-489-7471

Onsite Wastewater Systems Installers of Manitoba, Inc.; www.owsim.com; 204-771-0455

NEW BRUNSWICK

New Brunswick Association of Onsite Wastewater Professionals; www.nbaowp.ca; 506-455-5477

NOVA SCOTIA

Waste Water Nova Scotia; www.wwns.ca; 902-246-2131

ONTARIO

Ontario Onsite Wastewater Association; www.oowa.org; 855-905-6692

Ontario Association of Sewage Industry Services; www.oasisontario.on.ca; 877-202-0082

SASKATCHEWAN

Saskatchewan Onsite Wastewater Management Association; www.sowma.ca; 877-489-7471

CANADIAN REGIONAL

Western Canada Onsite Wastewater Management Association; www.wcowma.com; 877-489-7471

Komatsu rebrands company-owned distributors

Komatsu has created a new structure in North America to strengthen the growth of company-owned distributor branches. A new corporate unit has been created, and effective immediately, all company-owned distributor locations will be branded Komatsu to reflect their inclusion in the company's global footprint. With the alignment of these larger groups of premiere distributors, customers will have access to additional equipment and parts inventory, as well as greater service and support resources. Trade territory for the renamed branches remains the same, as do all equipment lines sold and services provided.

Felling Trailers announces beneficiary of 2020 Trailer for a Cause

Felling Trailers will be hosting its eighth annual Trailer for a Cause online auction of an FT-3 utility trailer to benefit a nonprofit organization. The company has selected the Lymphoma Research Foundation as the 2020 auction beneficiary. Felling Trailers' goal is to bring awareness to various nonprofits that are making a difference by donating 100% of the winning bid each year. The previous Trailer for a Cause auctions have raised more than $21,000 for nonprofit organizations including Bright Pink (breast cancer), ACT on Alzheimer's, Special Olympics Minnesota (SOMN) and Children's Cancer Research.

PRODUCT NEWS

PRODUCT SPOTLIGHT

HAWK Monitoring System offers flexible control of onsite systems

By Tim Dobbins

Installing and maintaining supervisory control and data acquisition (SCADA) systems is becoming a routine part of working with many onsite wastewater treatment systems. These software platforms provide connectivity and control over facility systems from anywhere in the world, making efficient operations much more manageable and achievable.

The HAWK Monitoring System, or HAWKMS, is a platform from Adenus Technologies that's designed to monitor and control a variety of onsite applications specific to septic systems.

"The HAWKMS is a custom solution, built specifically to serve the decentralized wastewater industry," says Matt Pickney, development team lead for HAWKMS. "The uniqueness is found in its ability to provide subscribers with a managed service that is tailored to their specific needs."

HAWKMS is a software as a service product that links the control panels running wastewater infrastructure and the operators managing them. The designers focused on flexibility, making the product capable of fully supporting the controls, monitoring and operational tracking of industry-specific applications such as collections systems, lift stations and an array of treatment technologies.

The software has taken years to develop into the platform it is today, and Pickney believes longtime partnerships with established wastewater service providers gives HAWKMS unique value specific to the industry. "With more than 20 years of focused development driven by user feedback, HAWKMS is a mature platform that is constantly evolving," Pickney says.

Monitoring effectively and efficiently can be the difference in keeping a business and treatment system up and running. Software like HAWKMS can provide a way to effectively track and maintain required guidelines or identify areas that may need improvement, according to Pickney.

The product features a secure channel for tracking site performance, a full reporting suite, benchmarking for trend analysis and forecasting, and an automated case management system to ensure problems are being identified and resolved in a timely manner.

"Our customers recognize the value that our service delivers — in particular, our ability to securely deliver timely intelligence on their most important assets," Pickney says. "We are their trusted partners in the critical areas of tracking regulatory compliance, system uptime and operational efficiency." **888-423-3687; www.adenus.com.**

12,000-Gallon Tanks Provide Strong, Durable Treatment Solution

The 12,000-gallon precast concrete tanks were manufactured in five sections to make delivery and installation easier for the contractor.


The tanks are AASHTO HS-20 traffic rated and have a custom lid to provide maintenance access to the filtering system.

Photos courtesy of Shea Concrete Products Inc.

When the time came to upgrade a restaurant's wastewater treatment system in the Northeast, engineers needed a **durable, large-capacity solution** to satisfy the multi-step treatment process.

The restaurant's effluent is first treated by a precast concrete gravity grease interceptor. Next, it enters a series of **two 12,000-gallon precast concrete septic tanks.** The treated effluent then travels to **three precast concrete distribution boxes** with a total of 51 outlets to disperse the effluent to the 6,200-square-foot leach field, which is capable of treating **8,000 gallons per day.**

Each of the 17-foot-by-10-foot-wide septic tanks is 13-feet-5-inches tall and **AASHTO HS-20 traffic rated.** The tanks were produced with concrete having a minimum **compressive strength of 5,000 psi for added strength and durability.** The precaster designed a custom lid for one of the septic tanks, which provides maintenance access to the filtering system inside. Both septic tanks were manufactured in five sections – a 21-inch-tall base, two 4-foot-tall middle segments, a 3-foot-2-inch-tall middle segment and an 8-inch-thick lid – **to make delivery and installation easier for the contractor.**

Due to a constrained job site with no room for tank storage or staging, the **precaster strategically scheduled the deliveries** so the components could be installed immediately upon arrival to the site. The **precaster and contractor collaborated throughout the project** to ensure the restaurant's new treatment system would provide the efficient treatment it needed in strong, **durable structures** and would be **installed without delay.**

Whatever the challenge you're facing, precast concrete has a solution.

Polylok, Inc. has been at the forefront of effluent filter and onsite wastewater technology for over 35 years. With an extensive line of effluent filters, septic tank risers and covers, filter and tank alarms, safety devices, distribution boxes, and an array of onsite wastewater accessories, we are your one stop shop for all your septic tank needs. Trust the company that experts and professionals have trusted for over 35 years!

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