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for many installers  
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Equalize flow for  
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## A REWARDING SECOND ACT

After many years working as an employee, Rhode Island's  
Brendan Cory struck out on his own to provide winning onsite expertise

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November 2014



ONSITE  
**installer**

Published monthly by

COLE publishing

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



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## CIRCULATION

Circulation averages 21,954 copies per month. This figure includes both U.S. and International distribution.

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# A Watershed Year

In 2014, the onsite industry was greeted by a muddy mess and an uptick in work orders, causing many installers to finish the year with a flurry of work

By Jim Kneiszel



**F**or many onsite installers, it's getting to be time to park the mini-excavator for the winter and reflect on what seemed to be an unusual 2014 season of digging dirt and laying pipe. In my discussions with installers over the past several months, I've identified several factors that came together to challenge these small-business owners in ways they haven't experienced in a while.

My sense is that contractors were frustrated by springtime rains, then they were rushing to catch up with increased and intense demand for their services all summer long. In the fall, at least for those working in the north, there was a dash to meet all of the year's commitments for new systems before the ground froze.

I've spoken to installers who were going full-bore from early spring to late fall. Others experienced periods of long days and long weeks, followed by a few weeks of relatively little work piled up and the phone remaining silent. I do not recall talking to anyone all year who was desperately short on work; the attitudes were certainly not like they were in the construction lull that followed the 2009-2010 recession.

What were the factors that either challenged or confounded installers? I'll share a few, along with my take on what business owners can do to relieve these stresses for next year.

## THE PRECIPITATION BLUES

Wet weather put many installers behind schedule early in the year. I recall talking to Pete Schmitz, of Schmitz Brothers LLC, in Monticello, Minn., about the late spring thaw and heavy rains that got his year off to a muddy, messy start. Orders for other excavation work piled up as Schmitz grappled with an emergency septic tank replacement. Delivering the tank, a truck got buried up to the axle and Schmitz lost days pulling the truck out and laying down special mats to reach the failed onsite system.

Shown are typical working conditions early in 2014 for Schmitz Brothers LLC in Monticello, Minn. A late spring thaw and heavy rains plagued installers in much of the U.S. last spring, setting work schedules back. (Photo courtesy of Pete Schmitz)

Schmitz wasn't alone with weather-related headaches. We were ready to profile several system installs for the magazine, only to see them put off for months because of soft ground and pressing emergency work brought on by overloaded septic systems. Time and again installers talked about the frustration of standing idle while waiting for good working conditions. In this respect, installers are a lot like farmers. The whims of Mother Nature are beyond your control.

## PENT-UP DEMAND BUILDS

Installers tell me the economy is not where it was at the apex of the building boom about 2006, but it's getting close. They see evidence in a rise in new housing starts, commercial growth and property owners starting to





feel more comfortable about ordering long-overdue onsite system repairs and replacements. In July, contractors told me they were already booked through September and later in the fall.

Hopefully the demand continues to grow in 2015. And the key to being able to take on the additional work and complete jobs in a timely fashion is to bolster your work crews. Many installers are still stinging from having to trim down their workforce after the housing market imploded. Letting good people go is one of the toughest things a small-business owner has to do, and those layoff days are not soon forgotten. But you can only avoid hiring new helpers for so long. People drive growth for your business, and it may be time to think about putting another crew on the job.

### THE REGULATIONS, THEY ARE A CHANGIN'

The uptick in infrastructure spending seems to be mirrored by an awakening of regulators of onsite wastewater systems and water quality. For the past year, many states have announced long-overdue reviews of onsite rules. And the Chesapeake Bay watershed states, at the behest of the U.S. Environmental Protection Agency, are leading the way in looking at stricter onsite limits on effluent that makes its way back into sensitive waterways.

The result of stricter standards is that advanced systems are more the rule than the exception in more and more regions. That means installers need to adapt to a wider array of technologies to be able to solve problems faced by their clients. They need to be able to offer onsite solutions that

### The uptick in infrastructure spending seems to be mirrored by an awakening of regulators of onsite wastewater systems and water quality. For the past year, many states have announced long-overdue reviews of onsite rules.

require less space on small lots, produce cleaner effluent and be willing to offer ongoing maintenance required of complex systems. A good way to stay current with technology is by attending the Water & Wastewater Equipment, Treatment & Transport Show in February in Indianapolis. The show (formerly the Pumper & Cleaner Expo) offers dozens of educational seminars and exposure to all the latest products the onsite industry has to offer.

### TELL US ABOUT YOUR MOST CHALLENGING JOB IN 2014

While we're reflecting on the past year, I'd like to ask you to share how you met your biggest or most interesting onsite challenge. I'm currently on the lookout for projects to write about in our System Profile feature in *Onsite Installer*. One of our goals as a trade publication is to learn by networking, and explaining how you overcame a difficult site or need for using an advanced technology for the first time will help others in the industry.

So how can you get involved? It's easy. Simply drop me a line at editor@onsiteinstaller.com and tell me a little about your tough job. I'll give you a call to discuss the project. These days, most installers use digital cameras or the advanced camera in their smartphones to document the work they do. We can use those photos to illustrate a story about the system you installed. If your project is still on the horizon, we can discuss how you can shoot the photos to best show your crew at work.

I often hear from installers after we feature their system in the magazine. They are proud to share their experiences with others in the industry, and they can show off the magazine to customers, serving to enhance their reputations as professionals in the field. It's a big win for industry networking and promoting the quality of work they perform. So what are you waiting for? Contact me today to talk about your most interesting job from 2014. □



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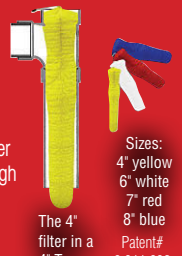
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# Picture Perfect

More technology education is necessary for the onsite industry to fully realize the potential of digital photography to document installations

By Bob Wright

I enjoyed the Editor's Notebook column (*Power in the Pixel*, August 2014) on the capability of the smartphone to take and process photos to document the installation of onsite wastewater treatment systems. Very well stated.



Bob Wright can be reached at [rwrightak@gmail.com](mailto:rwrightak@gmail.com).

As a designer and regulator, I find that the problem with taking photos of installations and documenting the installation process is not with the technology or equipment, but more with the inability of practitioners in our industry to understand that the time spent to take good photos is not wasted.

I speak with many installers a week and find that when I ask most of them if they have photos of the installation of a component, the almost universal response is no. ... It wasn't part of installing a system 20 years ago and doesn't have to be now. Most installers I discuss this with would rather risk digging up a component to be inspected

than spend the time taking a photo of it. To me, it is human nature at work. If we mentally marginalize the value of the photo, then we do not have to take pictures.

## STORAGE NOT AN ISSUE

Another complaint I hear is that photos take too much space on a computer, and there must be time spent saving and cataloging them. Most installers I talk to just do not feel they have the time to save their photos. That generally prompts them to take too few photos and not save them all.

This year I bought a 2-terabyte USB connected storage device. I know that 2 terabytes means nothing to the average person in our industry, or the public at large. But I calculated that if I took 50 photos of each job I visited, and each photo was 5 megabytes in size, I could save 4,000 jobs on that drive; all for \$115. Fifty photos on a job is way more than I see anyone in the industry take, and almost no one works on more than 100 jobs a year, so 2 terabytes is more than enough storage for a very long time, and an end to excuses why we don't take and properly store photos.

One aspect that you did not cover – and I am sure it was because of space – is what to take photos of. I advocate taking multiple photos of each component, from different angles, and also making sure that a site landmark is in the background, to be able to prove that the photo was taken at the site claimed.

I have hundreds of files with photos that show only a hole in the ground; there is nothing shown to tie the photos to a specific site. A few lower tree trunks or some grass and a hole. Why not take a couple wider-angle shots of the site to show the locations of the holes with reference to the rest of the site? Few people think about what they are taking photos of, or how they will relate the photos to a point on the site or to someone who has never seen the site.

The mindset seems to be that a photo is a photo is a photo, and if I take a picture, I have done my duty. Your statement that “A picture is worth a thousand words” could not be truer, but it takes training and understanding on the part of the person taking the photo to ensure the photo has value.

## COMPOSE PHOTOS FOR IMPACT

Lastly, the art of framing photos to take a meaningful picture may not have completely died out, but it is definitely on life support and will not be in existence, except for professional photographers, in a very short time. The advent of “point-and-shoot” has brought us just that: point that camera, push the shutter release and off to the next task.

Most of the time, the onsite photographer doesn't even check the photo to see if it captured the important detail of the project. I see way more photos of people with 6 feet of wall space or sky above their heads than I do well-framed pictures, which actually look like what the photographer thought they were taking/wanted.

Better and easier-to-use devices come every year – in the form of smartphones, cameras, storage devices and software for our computers. I have high hopes that our industry will embrace these new technologies and work to understand the value installation photos can have.

At most, taking photos might add 30 minutes to an installation or 10 minutes to a site assessment or system troubleshooting. But that time can pay for itself several times over back at the office when well-taken photos can be reviewed rather than making another trip to the site to verify something. □

## About the author

Bob Wright, P.E., is an environmental health specialist for the Weld County Department of Public Health and Environment. He lives in Johnstown, Colo.



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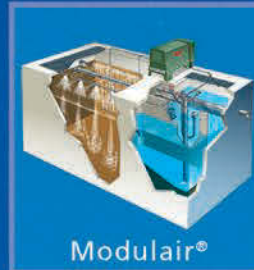
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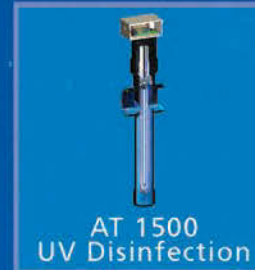
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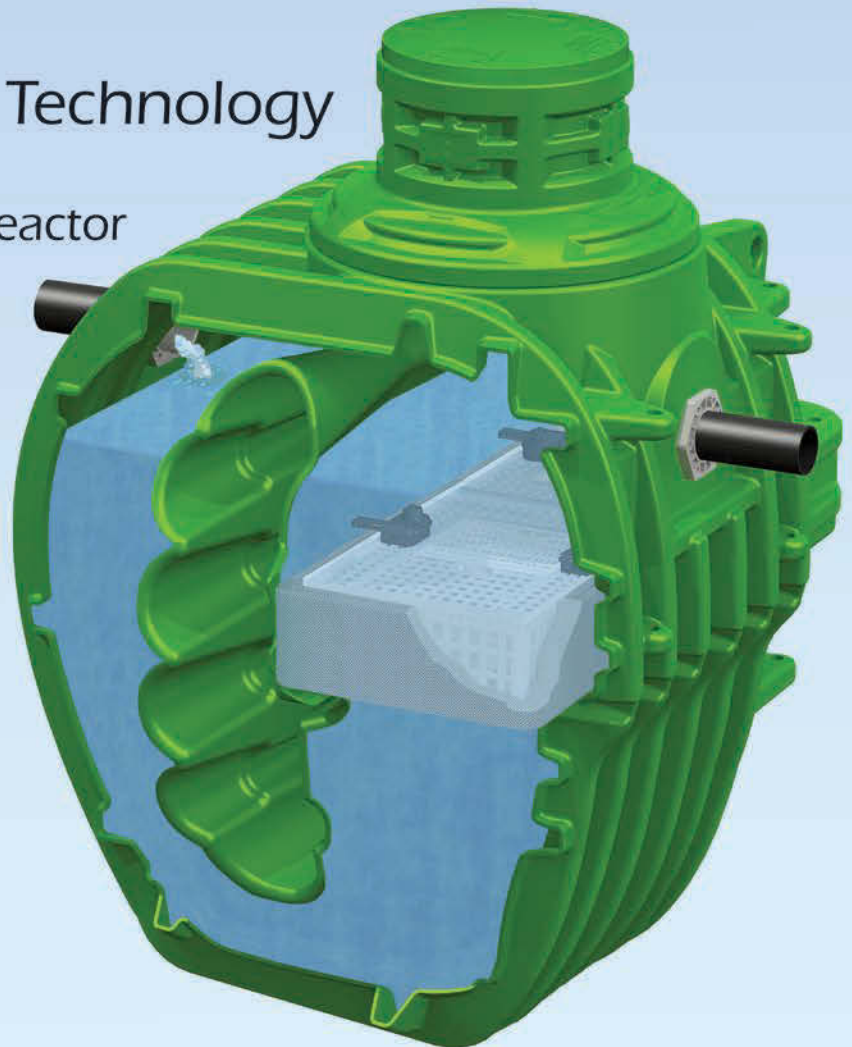
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Brendan Cory, owner of BSC Environmental in Little Compton, R.I., concentrates on building effective onsite systems and collaborates with another contractor who performs all the earth-moving work. Cory, 59, started the business four years ago and has no plans to retire. He is shown on an install with a Caterpillar excavator in the background. (Photos by John Clarke Russ)

# A REWARDING SECOND ACT

After many years working as an employee, Rhode Island's Brendan Cory struck out on his own to provide winning onsite expertise

By Gil Longwell

**B**rendan Cory has had a lot of jobs and worn a lot of hats during a four-decade career in the onsite industry. Right out of high school, his uncle put him to work on an excavator. Although he was working for a general contracting business, Cory quickly felt a calling to and comfort with onsite system assignments.

Then, after 23 years with the company and as one of about 30 employees, he was thrust into a supervisory role when his uncle died. His last assignment was to supervise completion of all active jobs and close the company. After completing that assignment, he signed on with an onsite-focused installer as a crewmember; then in 2010 he was again without work.

"I was laid off and could have stayed on unemployment but I saw too many opportunities. I could not sit around, so I started my own business," recalls Cory, now 59. He works under the business name BSC Environmental in Little Compton, R.I.

Located about 60 miles southwest of Boston, Cory works across all of his tiny home state and throughout southeastern Massachusetts. He will travel the entire stretch of Cape Cod.

## ALONE TOGETHER

Like many sole proprietorships, Cory has no employees. Unlike most installers, he has no storage yard filled with earth-moving equipment. Instead, he has a collaborative relationship with another sole proprietor; they refer work to one another and work most installation and repair jobs in tandem.

Kevin Wilkie works alone as owner of KMW Enterprises, which has an array of excavation machinery. "We are both cross-trained and appropriately

### BSC Environmental, Little Compton, R.I.

**OWNER:** Brendan Cory

**YEARS IN BUSINESS:** 4

**MARKET AREA:** Rhode Island and southeastern Massachusetts, including Cape Cod

**SERVICES:** New and replacement onsite systems, system management, repairs and real estate inspections

**AFFILIATIONS:** Rhode Island Society of Environmental Professionals, National Onsite Wastewater Recycling Association





licensed operators, but I do the installations and Kevin does the earthwork,” Cory explains. The collaboration is efficient and rewarding.

Focusing on installation-specific tasks, Cory says “large volumes of aggregate material, necessary tankage and most supplies are purchased and delivered to the job site. This lets both of us stay focused on the tasks we do best.”

About half of Cory’s work is installing replacement systems for existing homes, so he talks to a lot of homeowners. Often the discussions come too late to help system owners prevent catastrophic failure, but just in time to let him explain how an onsite system works, its maintenance needs and the customers’ obligation to protect its performance.

### **PARTIAL TO THE ATU**

“I push ATU systems. They are less expensive to install and operate. With near-surface seasonal high water tables, there is often no alternative,” he concludes.

Cory’s comfort with ATUs is acquired through hands-on experience. “I like to climb on, poke around and get to know the ins and outs of a system before I recommend that system,” he explains. He has personally evaluated many industry products, including those from Orenco Systems, SeptiTech, Bio-Microbics, Singulair (Norweco) and Cromaglass. When selecting a technology, he says, “The site’s conditions drive my recommendation. The technology and site must be a good fit.”

## **He believes in lifelong learning**

At an age when many installers are contemplating retirement, Brendan Cory has decided to pursue an advanced degree. The owner of BSC Environmental, Little Compton, R.I., is working on a master’s degree in environmental engineering through the University of Rhode Island. He doesn’t need the degree to keep on a rising career path. He views it as personal enrichment that will help him better serve onsite system users.

“The new knowledge will help me make better siting decisions that let me better serve my customers,” he says. A better understanding of the way soil renovates effluent in varying conditions is an example of knowledge that will help him better match emerging technologies to sites.

There is, perhaps, another more subtle reason for this new pursuit. Along with a better understanding of the how and why-it-works aspects of these systems, he believes the degree will add credibility and believability to his words.

In the process, he will be earning greater respect for his chosen field. “Professional development and continuing education will benefit my industry,” he concludes.



Installer Brendan Cory, left, visits on a job site with Rick Pezza, owner of Green Wastewater Solutions, a local distributor for Orenco Systems. Pezza had just delivered the AdvanTex AX25RT as part of a new ATU at a farmhouse in Rhode Island.



Not afraid of physical labor, Brendan Cory works a posthole digger on a warm summer afternoon. Cory, 59, has run his hands-on installing business for four years and has no retirement plans.



## watch them in action

To learn more about BSC Environmental, check out a video interview at [www.onsiteinstaller.com](http://www.onsiteinstaller.com).

Another reason he holds out for his ATU preference, especially for replacements, is that – soil conditions aside – the ATU is often an easier fit into a constrained site. “There is not always a lot of space to fit in tanks and an absorption area, but with an ATU, the absorption area is often smaller and that helps both the landowner and me.”

Rhode Island regulations allow installers to design certain repair systems and undertake system repairs. His repair solutions often include time-dosing of treatment tank effluent to the ATU and/or the absorption area. A common mistake he frequently encounters involves the grade on the pressurized effluent delivery line. “Laterals in the absorption area must be installed absolutely level, but the delivery line to the header must have a minimum 2 percent slope away from the header toward the pump tank.” Cory and Wilkie share a common view on elevation and grade accuracy. They observe a zero tolerance standard; things must be dead-on and as designed.

## SYSTEM MANAGEMENT

Maintenance services are about 20 percent of Cory’s work. For the roughly 60 systems he has in the ground and under contract, he follows a precise, tailored service protocol to augment manufacturer’s specifications. Both Rhode Island and Massachusetts require ATU maintenance agreements, although enforcement is not consistent across state lines.

Cory offers a two-year contract with twice-a-year system checks. The first step is a motor amperage test to look for signs of problems or potential failure. He also performs a lateral end pressure check. Lower than expected pressure leads to further investigation. Filters – passive, reduced aperture technology or intentionally designed to be biologically active – are inspected on each visit and serviced as needed.

“I tell landowners, ‘When you must call for a pumpout to resolve a problem, it is usually too late to save the system,’” he says. Cory has found pumpers may fail to clean filters, or worse. “Pumpers yank them out and discard them,” he says. “Homebuilders, too, want to avoid service calls, so after the system is installed and inspected, many do the same thing.”

When advanced treatment technologies are selected, maintenance is a necessity. Cory knows better-educated installers and service providers are better at educating homeowners. And consumer education is a task he willingly takes on.

## BOOSTING PROFESSIONALISM

“Professional development, mandatory basic and continuing education requirements, and consistently applied and enforced regulations will benefit my industry. They will bring respectability into this occupation,” Cory says. Giving high marks to the leadership of George Loomis and David Kalan, both of the New England Onsite Wastewater Training Program, Cory feels installers enjoy a helpful relationship with the University of Rhode Island Extension Service.

The Extension Service’s two-day training helped Cory attain certification as a registered onsite wastewater system inspector. Inspections by credentialed individuals are required by many towns for system owners to comply with maintenance or management ordinances. This credential is also a prerequisite for time-of-sale real estate inspections, which account for about 10 percent of Cory’s workload.

The New England Onsite Wastewater Training Program addresses all facets of onsite system training, but Cory would like to see a dedicated trade group in his home state.

“I would love to see an onsite association in Rhode Island,” Cory says.





Excavator Kevin Wilkie, left, and installer Brendan Cory attach timbers used in the construction of the box to contain a bottomless sand filter for an ATU system.

“It would be a place for peer-to-peer mentoring, a voice for the industry in addressing any needed regulatory changes and a forum to swap techniques and practices.”

#### **BSF DECONSTRUCTED**

Less than the legendary “Wisconsin mound” or an “elevated sand mound,” the Rhode Island bottomless sand filter was created to address a variety of issues. The BSF, as it is known, has emerged to solve challenges presented by near-surface water tables, zero-grade sites and the need

**“I tell landowners, ‘When you must call for a pumpout to resolve a problem, it is usually too late to save the system.’”**

**Brendan Cory**

to eliminate failing systems through repairs or enable new development. It is also a solution for tiny, constrained sites.

Like the Wisconsin mound, the BSF is built with a clean, graded fine aggregate placed in direct ground contact. Also like the mound, the BSF relies on a site-built retaining system to constrain the fine aggregate and a pressurized effluent delivery system. But this is where the family resemblance quickly fades.

Construction begins when the installer lays out a 12- by 18-foot rectangle on the site. The surface vegetation within is removed and then things get rolling. Cory describes the system:

“On that footprint, I assemble a 24-inch-high retaining perimeter using 4- by 4-inch pressure-treated, ground-contact-rated landscape timbers.” To ensure the grade of the finished retaining system remains level, Wilkie uses a hydraulic auger on one



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Rick Pezza and Michael Quaglieri, of local Green Wastewater Solutions, an Orenco Systems dealer, check out the wiring on an AdvanTex AX25RT being installed by Brendan Cory.

of his machines to bore holes at each corner and at 6-foot intervals along each side. Into each hole a 4- by 4- by 36-inch square-cut timber is installed vertically. On top of these posts, the first horizontal “course” of 6- by 6-inch timber is placed. Each succeeding course has staggered joints and is secured to the one below.

**“Professional development, mandatory basic and continuing education requirements, and consistently applied and enforced regulations will benefit my industry. They will bring respectability into this occupation.”**

**Brendan Cory**

“I developed the post idea to ensure that the finished timber frame stays level as intended,” Cory explains. “I use ‘Timberloc’ screws for these connections because they have a more aggressive bite.” To ensure close-tolerance butt joints, the team uses a beam saw rather than a chain saw.

### **DIRECTING THE EFFLUENT**

To ensure effluent moves down through the sand material, the entire interior surface of the timber perimeter is covered with a heavy 30-mil PVC liner, which prevents through-the-side breakouts.

Once the first 3 or 4 inches of sand have been placed, the teeth of an excavator bucket are used to thoroughly mix the previously scarified upper soil layer with the placed sand. When the transition zone is thoroughly mixed, the balance of the sand, 24 inches total, is placed. A 3-inch layer of

5/8-inch stone is placed on the sand and then raked to a level surface.

The pressure effluent line is connected to a manifold, which services the six laterals. Laterals resting on the stone have discharge holes 18 inches on center. The holes point downward and are fitted with oriface shields. The pipe network is covered with 7 to 8 inches of 5/8-inch stone.

While this design is typical for a BSF, the sand/soil interface varies from on-grade to several inches below grade. “One job I worked on had soil conditions that allowed most of the sand to be placed in an excavation. The finished product has only a single 6-inch by 6-inch timber exposed,” says Cory.

When finished, the top is raked level and left exposed and free of all vegetation. Cory has installed several of these BSFs, which all receive effluent from an ATU.

### **ONWARD AND UPWARD**

Cory has built a career on basic and continuing education and practical experience. Knowing what technologies will address specific challenges, how they work and how to maintain them have prepared him for effective customer education and to be an advocate for higher industry standards. □

### **MORE INFO:**

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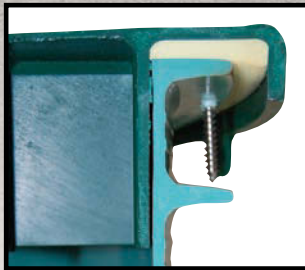
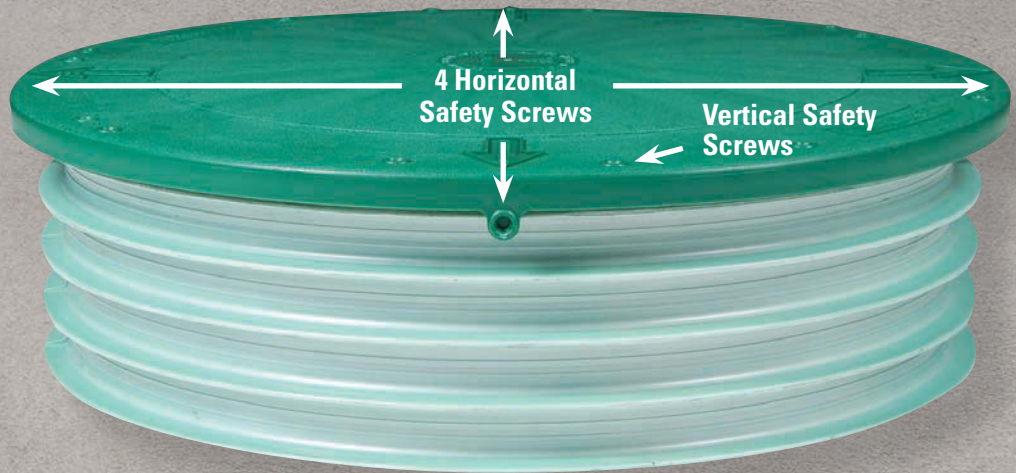
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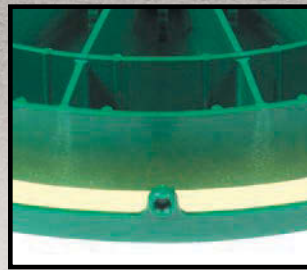
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- Simple to install
- May also be used as Outlet Tee with Solids Deflector

# WWETT Your Appetite

Rebranded 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show promises four value-packed days

By Craig Mandli

The rebranded 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show promises all the excitement the annual Pumper & Cleaner Environmental Expo International has delivered for 35 years – the best new tools, technology and equipment, valuable educational courses and endless peer networking opportunities all under one roof.

The WWETT Show will encompass all 560,000-plus square feet of exhibit space at the Indiana Convention Center Feb. 23-26, 2015, showing off the latest products and technologies in the environmental services industry, as well as providing educational seminars led by skilled industry professionals. While he's extremely proud of what the show has become over the last 35 years, COLE Publishing founder Bob Kendall says the time is right to update the name and what it means.

## WHAT'S IN A NAME?

“Over the last several years, we realized that the former name no longer covered the entirety of the industry we’re reaching,” he says. “Last year in Indianapolis, I called 30 wastewater service companies within a short drive of our trade show, and many said they weren’t planning to attend because they weren’t pumpers. They thought the show wasn’t for them. We want them to know that it is.”

The WWETT name was chosen because it hits all segments of the industry reached by COLE Publishing’s titles. “We’ve reached out into the municipal water and wastewater industry with *Treatment Plant Operator* and *Municipal Sewer & Water* magazines, and want those markets to know that the show is theirs, too,” says COLE Publishing President Jeff Bruss. “There are so many facets of the industry that are part of the show now, it’s important to open and promote it to all we serve.”

Education opportunities kick off Day 1 of the 2015 show, with presenters from the industry’s top manufacturers and associations. New to this year’s lineup is a presentation by speaker John Conley on trucking safety topics, including compliance with Part 180 and preparing for a tank truck CT shop audit and cargo tank safety and regulatory report.

There are educational opportunities for everyone, though, as sponsoring associations are offering over 50 sessions on Education Day. Trade organizations taking part include the National Association of



The first day of exhibits at the 2014 Pumper & Cleaner Environmental Expo drew a huge crowd. Next year marks the 35th anniversary of the show, now known as the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show.



Pumper & Cleaner Environmental Expo attendees make their way through the 560,000-square-foot exhibit hall.

Wastewater Technicians (NAWT), National Environmental Health Association (NEHA), Southern Section Collection Systems Committee (SSCSC), National Association of Sewer Service Companies (NASSCO), National Onsite Wastewater Recycling Association (NOWRA), Waterjet Technology Association/Industrial & Municipal Cleaning Association (WJTA-IMCA) and the Sump and Sewage Pump Manufacturers Association (SSPMA). The last hour of the day is dedicated to an “Ask the Expert” session featuring experts from NAWT, NEHA, NOWRA, SSCSC and NASSCO. There will also be a Women in Wastewater Roundtable discussion Monday afternoon.



**“We’re excited about the show, especially with the name change. It broadens the scope of the trade show, and amplifies the professionalism of the industry. It really enhances the change in how those in the water and wastewater trades are viewed from the outside. They are environmental services that are essential to the health and safety of the public.”**

**Bob Kendall**

## **MORE LEARNING OPPORTUNITIES**

Learning opportunities extend throughout the week, with educational seminars from WWETT exhibitors also slated for Tuesday and Wednesday. Not only can attendees gain valuable industry-specific knowledge, WWETT education courses also count toward continuing education credits in many states. Visit the WWETT website ([www.wwettshow.com](http://www.wwettshow.com)) for specific information on your state.

While the educational opportunities are immensely valuable and popular, it’s the new technology and equipment on display that makes the biggest impression on attendees. Every year, products introduced at the show become important components in many industry professionals’ toolboxes and equipment fleets. More than 8,700 people representing 3,800 companies attended the 2014 show, with 529 exhibitors nearly spilling out of the exhibit hall. Kendall is optimistic that the 2015 WWETT show will be even bigger and better.

“We’re excited about the show, especially with the name change,” he says. “It broadens the scope of the trade show, and amplifies the professionalism of the industry. It really enhances the change in how those in the water and wastewater trades are viewed from the outside. They are environmental services that are essential to the health and safety of the public.”

While many attendees will spend their time roaming the exhibit hall, attending education sessions and networking, the City of Indianapolis is also an inviting destination for both water and wastewater professionals and their families, with dozens of museums, entertainment venues and shopping

opportunities, along with hundreds of restaurants within walking distance of the Convention Center. And with 4,700 guestrooms connected to the Indiana Convention Center via covered and heated skyways, weather won’t be an issue.

## **GET READY TO PARTY**

Of course, no show week is complete without the annual Industry Appreciation Party on Wednesday evening, Feb. 25, at 5 p.m., in the Sagamore Ballroom above the exhibit hall. In addition to 25-cent tap beer and a fun, laid-back atmosphere, popular country singer/songwriter Cole Swindell will perform an exclusive concert for WWETT attendees. Swindell is storming the music charts, reaching the top spot with his 2013 breakout hit, “Chillin’ It”, while 2014’s “Hope You Get Lonely Tonight” scored him Top 10 status.

Of course, to many, especially those industry professionals who have made the show a must-attend event year after year, it will always be the Pumper Show. Kendall says that he’s not discarding that moniker, but instead adopting a new handle that he hopes opens the door to an even larger, more inclusive trade event.

“It’s been the Pumper Show for a long time, which definitely isn’t a negative connotation,” he says. “To many of us, including me, it will always be the Pumper Show at heart. But now it’s so much more too.”

The 2015 WWETT show is shaping up to be a great four days encompassing all the water and wastewater industry has to offer. To stay updated, visit [www.wwettshow.com](http://www.wwettshow.com) and check out the constantly evolving schedule of events. □

# Flow Equalization Explained

Effectively balancing effluent loading will make onsite systems run smoother and last longer

By Jim Anderson and David Gustafson

**I**n recent workshops, we've been asked if flow equalization is a legitimate concept for managing wastewater in residential situations. So we decided to take the time to introduce the concept and some of its applications. As system management becomes more common, installers will be involved with systems employing this design concept.

Flow equalization is basically storing wastewater generated over a period of time to spread the flow out more evenly for a day or week. It is the start of managing treatment efficiency in the system. The desired flow rate – or daily loading – is determined by the use pattern and levels, and the ability of the final soil treatment unit to accept the wastewater.

Management can be approached from two different perspectives: working with users to change their habits and reduce overall flow, and management of flows within the system to improve efficiencies. If designers find themselves faced with these situations, a combination of the two approaches is chosen. Water-saving fixtures will be installed to reduce overall flow and, in particular, to lower peak flows.

One point to remember is that just reducing the overall flow or peak will not typically change the overall organic loading or the level of nutrients or pathogens. So it only addresses one part of our big balancing act between accepting the wastewater to the system and having treatment take place.

## GO WITH THE FLOW

In addition to managing wastewater flows by changing water-use habits, peak flows can be managed through flow equalization tanks. Although this method does not change the amount of flow from the facility, it does even out the flow into the treatment system. There are many situations where flow equalization can help system operations.

It is probably a good idea if the average flow is consistently at or above 70 percent of the design capacity. If there is great variability in water-use habits or the hours of operation in the facility are variable, flow equalization may be a good choice to bring more consistency to the flow. An example of this might be a church being used only a few hours a week. If the peak flows are frequently significantly greater than the average or design flow, then flow equalization is probably necessary. Other situations where this may occur are with restaurants and bars, and even in some homes where there are a lot of visitors or entertaining.

We are always reminded of a trip we made to Malibu, Calif., where we highlighted in a workshop that although there may be significantly more

flow in a domestic residence in the morning before work and school and then again in the evening, most systems are set up to handle these “normal” variations. Seminar attendees told us that when their clients throw a party, they throw a party! This means they need to deal with very high peak flows.

Of course, even in a residence where the flow varies from day to day – due to wash day or use of cleaning services – and the system is being loaded on average more than 70 percent of the design flow, equalizing the flow over 24 hours will improve system operation. Using timers to regulate distribution of sewage through the day also means that the system cannot be overloaded for a significant period without setting off an alarm.

## UNCOVERING PROBLEMS

A flow equalization tank does more than average out water delivered to the treatment system. A well-monitored system using timed delivery can help uncover problems in the system. Major changes in flow patterns can detect leaking tanks or devices using too much water, or clogged orifices in the distribution system. A system with a timed surge tank designed to handle 350 gpd may activate a high-water alarm if discharges are consistently more than that design flow.

Several factors can contribute to excessive flows, including undersized components, leaky fixtures and/or groundwater/surface water infiltration. Or in the case of clogged orifices, the pump will be prevented from delivering its designed output. For example, a pump may be designed to deliver 30 gpm. However, as the orifices begin to clog, the actual volume delivered by the pump will decrease. Since the timer is set based on the pump delivering 30 gpm, the pump will not keep up with the system output of 350 gpd and the high-water alarm will activate.

In the event of an extended power outage, the tank will provide storage and prevent all the collected water from being immediately sent to the treatment system upon startup.

Lastly, if some of the more advanced pretreatment components such as media filters or aerobic treatment units are a part of the system, microbes in the system will be much happier having food delivered to them on a regular basis. This will improve treatment by these components, which should benefit the soil treatment unit. □



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# Education Day Sessions

Monday, February 23, 2015

## NAWT

National Association of Wastewater Technicians  
Room 234-236

- 8 a.m. Pre-Trip Inspections
- 9:30 a.m. Hours of Service (HOS) Overview
- 11 a.m. Roadside Inspections
- 1:30 p.m. Environmental Impact Study: Effects of Water Softener on Septic Tank Performance
- 3 p.m. A Study of Microbiological Induced Corrosion
- 4 p.m. Ask the Expert Q & A

## WJTA-IMCA

Water Jet Technology Association  
Industrial Municipal Cleaning Association  
Room 140-142

- 8 a.m. Hydroexcavation — Tools to Stay Current in a Changing Marketplace
- 9:30 a.m. Maximizing Productivity on Vacuum/Air Mover Projects
- 11 a.m. Waterblast Safety Can Enhance Productivity, Quality and Profits!

## SSCSC

Southern Section Collection Systems Committee  
Room 231-233

- 8 a.m. Combination Vacuum Unit Operation Overview
- 9:30 a.m. Been There, Done That, Got The T-Shirt (Small Business From a Hands-on Perspective)
- 11 a.m. So You Think You Are the Best? CCTV Inspection In Its Highest Form
- 1:30 p.m. Avoid the Pitfalls — Trenchless Pipeline Repair and Renewal
- 3 p.m. NOZZLES, NOZZLES, NOZZLES!
- 4:30 p.m. Ask the Experts Q & A

## SSPMA

Sump and Sewage Pump Manufacturers Association  
Room 243-245

- 1:30 p.m. Sizing Guidelines for New or Replacement Sewage Pumps
- 3 p.m. Backup Battery and Combination Pump Systems Evaluation and Installation
- 4 p.m. Specifying Pumps: Why Do Pumps Fail?

## NASSCO

National Association of Sewer Service Companies  
Room 130-132

- 8 a.m. Overview of Manhole Rehabilitation Technologies
- 9:30 a.m. When, Why and How to Defeat Infiltration Cost Effectively
- 11 a.m. New Opportunities in Small-Pipe Relining and Reinstatement
- 1:30 p.m. Pipeline cleaning Best Practices
- 3 p.m. Large-Diameter Pipe and Drain Rehabilitation Technologies
- 4:30 p.m. Ask the Experts Q & A

## NEHA

National Environmental Health Association  
Room 237-239

- 8 a.m. New Technologies for Non-Potable Water Use
- 9:30 a.m. Rules & Regulations with New Technologies and Working with Regulators
- 11 a.m. New Technologies for Non-Potable Water Use Part 2
- 1:30 p.m. OSHA Regulations and Smart Business
- 3 p.m. Sales & Marketing with New Technologies
- 4 p.m. Ask the Experts Q & A

## NOWRA

National Onsite Wastewater Recycling Association  
Room 240-242

- 8 a.m. Lobbying
- 9:30 a.m. Field Inspections Part One
- 11 a.m. Field Inspections Part Two
- 1:30 p.m. Septic Tank Safety — Lethal Lids
- 3 p.m. Time Dosing
- 4:30 p.m. Ask the Experts Q & A

## Portable Restroom Track

Beverly Lewis  
Room 243-245

- 8 a.m. Mastering the Busy Season
- 9:30 a.m. A Great Customer Experience
- 11 a.m. Employee Retention and Recruitment

## Business Track

Kelly Newcomb, Ellen Rohr, Women's Roundtable  
Room 136-138

- 8 a.m. Grow or Go! Why Most Companies Fail to Grow Effectively and What You Can Do to Keep Your Company From Failing
- 9:30 a.m. Target Marketing: How to Effectively and Efficiently Grow Your Sales
- 11 a.m. Effective Branding and How it Can Help Your Business
- 1:30 p.m. Business Basics 101
- 3 p.m. Build the Business You REALLY Want
- 4:30 p.m. Women in Wastewater Roundtable Discussion

Gil Longwell  
Room 140-142

- 1:30 p.m. Protecting Private Enterprise

## Marketing Track

Susan Chin  
Room 133-135

- 8 a.m. Ladies and Gentleman: Create Your Personal Brand and Strategic Network for Success in 5 Easy Steps
- 9:30 a.m. Effective Website Design and Engaging Customers in the Digital Age
- 11 a.m. Tapping into the Power of Social Media and Content Marketing

## Road Rules & Safety Track

John Conley  
Room 133-135

- 1:30 p.m. A Trucker's Guide to Washington Speak
- 3 p.m. Cargo Tank Safety and Regulatory Report
- 4:30 p.m. Compliance with Part 180 and Preparing for a Tank Truck CT Shop Audit



# Tuesday Sessions

Detailed session information available at: [wwett.com](http://wwett.com)

February 24, 2015

## NAWT Track

Room 234-236

- 8 a.m. | Septage Processing Introduction:  
Working with an Engineer
- 9:30 a.m. | Analyzing Your Resources:  
What Goes on Around You is Important!
- 11 a.m. | Introduction to Odor Control

## Installer Track

Room 231-233

- 8 a.m. | Soils, Design, O&M: What Every Installer  
Should Know
- 9:30 a.m. | Best Installation Practices for  
Trouble-Free Pump Controls
- 11 a.m. | Introduction to Effluent Filters

## MSW Track

Room 237-239

- 8 a.m. | Mapping Solutions for Repair and  
Maintenance of Water Distribution Systems
- 9:30 a.m. | The Shift from Reactive to Proactive  
Wastewater Management Best Practices
- 11 a.m. | Why Hasn't Your Sewer System Evaluation  
Survey Testing Worked?

## Treatment Plant Operator Track

Room 240-242

- 8 a.m. | An Emerging Technology for Lagoon-Based  
Nutrient Removal
- 9:30 a.m. | The New Wastewater: Collection System  
Challenges Caused by Today's Modern Trash
- 11 a.m. | Wastewater Microbiology

## Industry Safety Track

Room 243-245

- 8 a.m. | New Trends and Technology in Equipment  
for Excavation Safety
- 9:30 a.m. | Best Practices: Use, Care and Repair of  
High-Pressure Sewer Cleaning Hose
- 11 a.m. | Development and Execution of a Cross-Bore  
Prevention Program

## Business Track

Room 130-132

- 8 a.m. | How to Position Your Company in the Market Today
- 9:30 a.m. | Six Proven Tactics to Generate Leads and  
Turn Them Into Revenue
- 11 a.m. | Growth by Acquisition or Exiting Gracefully:  
Buying or Selling a Septic or Sewer Business

## Cleaner Track

Room 133-135

- 8 a.m. | Drain Cleaning Methods - Then and Now
- 9:30 a.m. | The Physics of Pipe Cleaning Tools and  
How I Make it Work for Me
- 11 a.m. | Lateral Lining - Are You Using the Right Tool?

## Industry Technology Track

Room 136-138

- 8 a.m. | How to Manage Septic Systems  
using Remote Monitoring
- 9:30 a.m. | GPS Tracking: Hype Vs. Reality
- 11 a.m. | Wireless Controls in the Waterjet Industry:  
Sacrificing Safety for Convenience

## Pumper Track

Room 140-142

- 8 a.m. | True Crime Scene Stories: How to Inspect  
and Troubleshoot Suspect Onsite Systems
- 9:30 a.m. | One Man's Waste is Another Man's Treasure
- 11 a.m. | Dewatering Options for Roll-Off Containers



\*Complete contest rules and details at: [wwett.com/rules](http://wwett.com/rules)





# Wednesday Sessions

Detailed session information available at: [wwett.com](http://wwett.com)

February 25, 2015

## Pumper Track

Room 140-142

- 8 a.m. Considerations in Building Your Next Vacuum Truck
- 9:30 a.m. Grease Collection and Treatment:  
Raising the Bar Via Resource Recovery
- 11 a.m. Analyzing Common Onsite Septic System  
Malfunctions and Options for Prevention & Correction

## MSW Case Study Track

Room 231-233

- 8 a.m. Retrofit of the Lansdowne Sanitary P/S
- 9:30 a.m. Huntington Beach Successfully Navigates  
Emergency Repair of Fragile Storm Drain  
Collection System Rehabilitation –  
Alternative Technology
- 11 a.m. Collection System Rehabilitation –  
Alternative Technology

## MSW Technology Track

Room 237-239

- 8 a.m. Implementation of Acoustic Inspection Technology  
at the City of Augusta
- 9:30 a.m. Highlights from the 7th Edition of Operation  
and Maintenance of Wastewater Collection  
Systems Manual
- 11 a.m. Technological Advancements Fulfill the  
Promise of Zoom Survey Paradigm

## Portable Sanitation Track

Room 136-138

- 8 a.m. Portable Sanitation - Special Events
- 9:30 a.m. Making Your Portable Restroom Business Lean  
and Mean – How to Boost Productivity and  
Increase Your Bottom Line
- 11 a.m. Building and Coaching Your Portable Sanitation Team

## Treatment Plant Operator Track

Room 240-242

- 8 a.m. Utility Regulation Basics for Grease Haulers
- 9:30 a.m. The Waste in Our Wastewater
- 11 a.m. Security Issues and Best Practices for Water/  
Wastewater Facilities

## Pipe Rehab Track

Room 243-245

- 8 a.m. Integrating Temperature Sensor Technology  
within Lateral Pipeline CIPP Installations
- 9:30 a.m. CIPP Calibration and Vacuuming
- 11 a.m. Extending Life Expectancies with Corrosion-  
Resistant Coatings and Linings

## Business Track

Room 133-135

- 8 a.m. Team Building for Profit
- 9:30 a.m. Ten Commonsense Ways to Grow and  
Improve Your Business
- 11 a.m. Setting Expectations – The Key to Sales  
and Customer Satisfaction

## Advanced Installer Course

Room 234-236

8 a.m. - 5 p.m.

- Introduction and Site Evaluation
- System Sizing and Basic Design Principles
- Pumping to Systems
- Installations of ATUs
- Installing for Management
- Troubleshooting Systems

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Andrew Gunia directs Keith Pelzel as he lowers the 1,000-gallon Infiltrator Systems Inc. plastic septic tank. Tom Armijo helps guide it, while Jerry Arthur observes. (Photos courtesy of Aaron Lang A Advanced Septic Services)



# Hitting the Beach

Membrane bioreactor technology allows a nonconforming repair on a tiny waterfront lot in an environmentally sensitive area of Washington State

By Scottie Dayton

**F**ecal coliform from a failed septic system on Purdy Spit, Wash., threatened a potable well and a commercial oyster farm a mile away in Puget Sound.

George Waun, environmental health specialist II at the Tacoma-Pierce County Health Department, knew no ordinary solution would meet code based on designs he had approved for neighboring systems. He worked with Andrew Gunia, owner of A Advanced Septic Services, a company in Puyallup, Wash.

Gunia had recently installed the first BioBarrier membrane bioreactor from Bio-Microbics in the state. “We were confident the technology would protect the sensitive waters,” he says. The unit is NSF/ANSI certified to Standard 40 Class 1, Standard 245 (nitrogen reduction) and Standard 350 Class R (water reuse).

Keith Pelzel, of Westside Septic Design in Tacoma, Wash., designed the nonconforming repair and helped install it. Despite requiring waivers, customized septic tanks and a barge to reach the site, Gunia’s crew completed the system in three days.

## SITE CONDITIONS

Soils are beach sand with a loading rate of 0.6 gpd per square foot and 20- to 24-inch high water table. The one-bedroom home on a 120- by 50-foot-wide lot is accessible from the beach only at low tide.

## SYSTEM COMPONENTS

Major components of the 240 gpd system are:

- 1,000-gallon IM-1060 single-compartment plastic septic tank (tanks made by Infiltrator Systems)
- 1,000-gallon, dual-compartment IM-1060 treatment tank with Sanitee-418 4-inch effluent filter and BioBarrier 0.5 membrane filter (Bio-Microbics)
- 540-gallon IM dose tank with Hydromatic 4/10 hp pump and 3G ultraviolet disinfection chamber (Salcor Inc.)
- 27 ARC36 LP 8-inch leaching chambers (Advanced Drainage Systems)
- 135 feet of 1.25-inch Schedule 40 PVC laterals
- Control panel (Bio-Microbics)





**LEFT:** Ian Midgette helps guide Tom Armijo as he maneuvers the Kubota KX121-3 Super Series compact excavator off the barge.

**BELOW:** Ian Midgette hammers the locking seam clips into position on the septic tank.



## SYSTEM PROFILE

<b>Location:</b>	Purdy, Wash.
<b>Facility served:</b>	Single-bedroom home
<b>Installer:</b>	Andrew Gunia, A Advanced Septic Services, Puyallup, Wash.
<b>Designer:</b>	Keith Pelzel, Westside Septic Design, Tacoma, Wash.
<b>Site conditions:</b>	Beach sand with loading rate of 0.6 gpd per square foot; 20- to 24-inch high water table
<b>Type of system:</b>	BioBarrier from Bio-Microbics
<b>Hydraulic capacity:</b>	240 gpd

## SYSTEM OPERATION

Wastewater drains through a 4-inch PVC Schedule 40 line to the septic tank, then to the settling zone of the treatment tank. Effluent passing through the angled slots in the effluent filter enters the bioreactor's anoxic zone. The pump runs 30 minutes on, 30 minutes off to keep solids in suspension.

The flat-sheet membrane bioreactor module in the aerobic zone attaches to an aeration grid with a 10 to 40 cfm blower. The vigorous upward flow of air between the double membrane plates scours them and provides high surface treatment while acting as a physical barrier for most wastewater contaminants.

On demand, a 5 gpm discharge pump draws 20 gallons per dose through the membrane pores to the space between the plates, then pumps permeate through a 4-inch line to the disinfection unit inside the dose tank. Retention time in the treatment tank is 12 hours. The system requires no backwash.

An anti-siphon valve and check valve in the dose tank prevent backflow from the 2-inch Schedule 40 PVC supply line. Every two hours, the pump sends 20 gallons to a manifold that splits the flow to three 45-foot-long rows of low-pressure leaching chambers on 4.5-foot centers. The chambers have 1.25-inch laterals with 3/16-inch orifices drilled 3 feet apart, spraying up.

## INSTALLATION

A bridge connects the spit to the mainland, but the only parking space at the site was a small public area on the opposite side of a busy highway. "Traffic rounds a curve at more than 50 mph," says Gunia. "If we survived the crossing, a 3-foot-wide stairway dropped almost vertically for 35 feet to the back lawn. The house was 30 feet away on a terraced plateau."

Unable to pump the original septic tank from the parking area, the operator drove the truck off the highway, parked it on a boat ramp 900 feet away, and dragged the hose across the beach and over the 10-foot-high seawall. Meanwhile, Gunia's crew loaded the 10,000-pound Kubota KX121-3 Super Series compact excavator and other equipment on a steel barge rated for 30,000 pounds.

"The only way we moved everything in one trip was by Infiltrator shipping the tanks as half shells," says Gunia. Normally, supply houses assemble the 160-pound injection-molded halves to retain their waterproof warranty. Gunia's supplier, H.D. Fowler, instructed workers on how to position the reinforced watertight mid-seam rubber gasket, then fasten the halves with plastic alignment dowels and locking seam clips.

When the low-riding barge reached shore, Ian Midgette guided Tom Armijo as he drove the excavator down wooden ramps and onto the beach. Armijo transported



A worker prepares to lower the plumbed BioBarrier membrane bioreactor into the treatment tank.





The 120- by 50-foot-wide property is reached from the beach only at low tide.

every component from the barge and lifted it over the seawall and into the front yard. Then he ran the excavator up the repositioned ramps and cleared the wall.

## REMOVING THE OLD TANK

The homemade septic tank, located between the side of the house and neighbor's wood panel fence, had a concrete floor and lid and cinder block walls. The 15-foot-wide work area gave Pelzel just enough room to smash the concrete with the excavator bucket and break the chunks into manageable pieces. Stockpiling them and the excavated sand required him to swing the bucket over the fence to reach the space behind him.

The size of the original tank almost matched the size of the new tank taking its place. As Pelzel excavated, 18 to 20 inches of groundwater poured in from the saturated hillside. Even four electric 1/3 hp sump pumps discharging to a soil test pit couldn't keep up with the flow. "We recalled the vacuum truck to assist in lowering the water enough to install the tanks," says Gunia. The truck ran for 10 hours over two days.

Meeting the 5-foot setbacks from the house and property line left 5 feet for the tanks. "Code specifies a 1,500-gallon septic tank, which was too wide," says Gunia. "George allowed us to install a 1,000-gallon tank, which just fit." They removed the baffle in the tank to allow more nutrients to reach the treatment tank.

With no room on either side to bring in components, Gunia asked permission to backfill as they set the tanks in series. Waun agreed, provided Pelzel was present throughout the installation. He was.

Gunia was concerned the high groundwater would blast the buoyant plastic tanks out of the ground if they didn't anchor them, especially when pumping the septic tank. The crew strapped galvanized chain over the anchoring locations on the tanks, then laid excess chain in the bottom of the holes.

"We put stockpiled pieces of concrete along the base of the tanks, hauled in three pallets of Ready-Mix and poured 1,000 pounds of concrete on top of the rubble and chains," says Gunia. The slabs were 2 feet deep.

**"At startup, I added 5 gallons of dewatered sludge to the anoxic zone, filled the tank with water and turned on the system. In 15 minutes, clear, odorless treated water came out."**

**Andrew Gunia**

## BEGINNING TREATMENT

Before setting the treatment tank, workers drilled holes for the piping and removed plastic shavings and anything that could damage the sensitive membranes. After setting the tank, they lowered the module and secured it with mounting brackets.

"At startup, I added 5 gallons of dewatered sludge to the anoxic zone, filled the tank with water and turned on the system," says Gunia. "In 15 minutes, clear, odorless treated water came out."

The length of the mandated 1,000-gallon dose tank would encroach into the drainfield, so Waun waived the capacity rule. "Although permeate from the bioreactor usually doesn't require disinfection, having the UV chamber made everyone feel more comfortable about the nonconforming system," says Gunia.

Armijo dug 12-inch-deep trenches as workers laid laterals and covered them with 8-inch-high chambers. "We balanced the site and didn't have to haul off a single shovelful of spoil," says Gunia. "It all became backfill."

## MAINTENANCE

A Advanced Septic Services maintains the system. Quarterly visits include drawing permeate samples from after the bioreactor and disinfection chamber to analyze differences in BOD, TSS, FOG and fecal coliform. "Sampling was part of our agreement with Bio-Microbics," says Gunia. "Once the state approves a technology, our county doesn't require sampling."

The control panel sends an alert when scaling reduces the membranes' efficiency. "We won't clean the module on site because it soaks in a citrus acid solution for some time," says Gunia. "We'll exchange it with an extra module. The critical factor is wet membranes are ruined if they dry out." □

### MORE INFO:

**Advanced Drainage Systems, Inc.**  
800/821-6710  
[www.ads-pipe.com](http://www.ads-pipe.com)

**Bio-Microbics, Inc.**  
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[www.biomicrobics.com](http://www.biomicrobics.com)  
(See ad page 2)

**Infiltrator Systems, Inc.**  
800/221-4436  
[www.infiltratorsystems.com](http://www.infiltratorsystems.com)  
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# When the Cold Wind Blows

Whether getting equipment ready for storage or a hard-working winter, here are a few steps you will want to follow

By Ed Wodalski

**D**epending on where you live, the winter chill may already be in the air. Hopefully, you've taken the time to properly store your equipment for spring. Or maybe you plan on using it year-round. A skid-steer loader, after all, makes a handy snow removal tool.

In either case, your operator's manual is a good place to start. Each piece of equipment is unique and requires its own shutdown procedures.

## SHUTTING DOWN UNTIL SPRING?

Typically, winterization includes a multipoint inspection of your equipment: lubricate and/or replace parts; drain and/or change fluids, oil and filters; check tires; and inspect the brakes, steering and gearboxes. This is also a good time to check the hours on your machine to see if it's due for required maintenance.



When working in cold weather, give your equipment time to warm up before putting it to work. (Photo courtesy of Ditch Witch)

Lars Arnold, product manager for compact equipment at Volvo Construction Equipment, says after referring to the operator's manual, it's a good idea to clean the machine, removing all dirt and corrosive materials.

"Grease the machine's moving parts; don't miss any grease points," he says. "Check the machine for oil leaks and damage."

That includes engine oil as well as hydraulic fluids and lines, topping off as needed. And don't forget the windshield fluid. Arnold prefers using soap and water for summer, but switching out to an approved winter washer

## Don't forget the attachments

Popular winter attachments, such as snow blades, snowblowers, angle brooms and spreaders deserve the same attention as your skid-steer, trackloader or mini-excavator.

Ron Peters, product manager at CEAttachments, says when preparing equipment, such as snowblowers, for winter use, check the hydraulic hoses for cracks or dry rot.

"Hopefully it was stored inside a building," he says. "If it was stored outside, you want to check hoses for damage and replace anything that shows wear and tear. Look at the seals on the cylinders that operate your spout deflector; make sure that looks good. Check for oil leakage around the hydraulic motor and seals and replace if any of that is showing wear."

Take a look at the bolt-on cutting edge that scrapes along the bottom of the blower and replace it if worn, as well as the adjustable skid shoes, he says. You also want to apply grease to all the zerks.

If you need to store attachments until spring, such as a power rake, grease and oil the joints by the cylinders to prevent corrosion.

"Set it on pallets or blocks of wood so it's not on the ground where moisture and condensation would be," he says. "If it has a hydraulic angle on it, it's best to angle it so the cylinder rod is all the way inside the cylinder."

If you do store your attachment outdoors, it's best to cover it, but don't fully wrap it in plastic. Doing so can trap moisture and cause damage. If the attachment, such as a power rake, has wheels, keep it elevated to prevent the tires from rot. It's also best to keep it out of the sun.

"The sun can be very hard on the rubber, including the tires and hydraulic hoses," Peters says. "It's also a good idea to smear a little grease on the flat-face couplers so they don't corrode or rust."



formula when temperatures dip to prevent damaging fluid reservoirs. He also recommends filling the fuel tank to prevent condensation and be sure the coolant is suited to your environment. It's also a good idea to use a fuel stabilizer.

**KEEP THE TRACKS CLEAN**

If possible, store the machine inside, but if left outdoors, don't park it in the mud, especially tracked vehicles. It's also a good idea to jack your skid-steer wheels at least an inch off the ground to prevent flat spots.



Snowblowers can be a handy winter attachment. Before sending yours out in the cold, be sure to check the hydraulic hoses for cracks and wear and the condition of the cutting edge and skid shoes. (Photo courtesy of CEAttachments)

“This will cause unnecessary wear and tear on the tracks if it becomes frozen to the ground,” Arnold says. “Get some 2-by-8s or 2-by-12s and park the machine on the wood.”

Arnold also recommends retracting all hydraulic cylinders, lowering the attachments to the ground and releasing the hydraulic pressure.

“If needed, apply a thin layer of grease or petroleum jelly to all exposed cylinder piston rods so you don't get rust.”

He also suggests removing the battery and keeping it in a warm, dry place.

“Put the battery on trickle charge or charge the battery periodically,” he says. “Cover the machine with a tarp so you don't get moisture and snow buildup.”

**WARM IT UP**

Arnold recommends periodically (monthly) starting the machine and running it until the engine reaches working temperature. Remove the grease from the cylinder pistons, check all fluid levels and carefully operate the hydraulic controls, making sure they function properly.

*(continued on page 33)*

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# Idaho is Considering New Regulations for Septic Systems

By Doug Day and Sharon Verbeten

The Idaho Department of Environmental Quality is considering changes to rules for the design, construction and operation of onsite wastewater systems. The proposals include updates to requirements for engineers, permits, inspections and alternative systems. Also proposed are recommendations and best practices for converting a septic tank to a lift station to meet current standards for drainfield depth. The setback for individual lagoons for homes and small businesses would double under the proposal, from the current 100 feet from the property line to 200 feet, and would have to be designed by a licensed engineer.

## Wisconsin

An unusually heavy snowmelt and series of rainstorms in the northwestern portion of the state have caused septic systems to back up. According to published reports, most of those counties have received between 8 and 16 inches more precipitation this year than normal.

In some areas, the ground has been so saturated that drainfields can't function properly and septic systems are backing up. Some haulers who spread treated waste on farm fields have been hampered by saturated fields. One state hauler said the problem has led to additional labor and fuel costs and not enough time to get all the work done.

## Alaska

Alaska pumpers reported problems in July due to heavy and sustained rainfall. The precipitation has also saturated the ground and flooded many septic systems. One pumper in North Pole, Alaska, discouraged the large number of customers requesting pumpouts because empty tanks in saturated soil become buoyant and can rise to the surface. He reported that a holding tank under an outhouse had lifted the structure 6 feet in the air.

## New York

It might not sound like a lot, but for a town like Shelter Island, N.Y., every little bit helps. The town has received a check for \$4,000 to help pay an intern to collect records on existing septic systems and cesspools.

The money was provided by the Group for the East End, an environmental nonprofit group, which believes the database is "crucially important to developing informed recommendations and ultimately solutions for what are increasingly important water-quality issues facing our entire region."

## Michigan

The federal government is giving the state \$200,000 for projects that help recreational boaters with proper disposal of collected waste. The grant is among \$16.6 million being offered to 21 states under the Clean Vessel Act program, run by the U.S. Fish and Wildlife Service.

Since 1993, the agency has distributed funds to states for construction, replacement, renovation and maintenance of marine waste disposal facilities. The program also provides information and education about benefits and availability of pumpouts. The Midwest regional office has used such funds for new pumping equipment and reimbursement for materials. Some states also install floating restrooms where boaters congregate and no restrooms are available.

Funding is generated through excise taxes on fishing tackle manufacturers, motorboats and small engines. □



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## Mazzei Injector names president

Mazzei Injector Co., manufacturer of high-efficiency venture injectors, promoted Geoffrey Whynot to president. He joined the company as chief financial officer in 2012.



## Manitou donates skid loader to school

Manitou Americas donated a Gehl skid loader to the University of Wisconsin-Washington County in West Bend. The R190 skid loader will be used for multiple landscape projects. □

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(continued from page 31)

“Get the machine nice and warm and then put it back in storage,” he says. “If the temperature is extremely low, like in the northern states or Canada, we recommend changing the hydraulic oil to an arctic oil. But again, this is different from machine to machine.”

## WORKING IN WINTER?

Of course, not everyone shuts down until spring. If you plan on working your equipment this winter, be sure the diesel fuel is winter blend. Arnold says there’s no need for additives unless you still have a summer blend in the tank.

“The other thing I would strongly recommend, besides checking the fluids for winter operation, is installing a block heater to ease engine starting and for comfort,” he says. “And maybe a programmable diesel auxiliary heater; set it for an hour before you start working, that way the engine coolant and oil are already heated. When you start the engine it gets warm right away inside the cab.”

## TAKE TIME TO STRETCH

Winter or summer it’s always a good idea to idle down your equipment before shutting it off, especially a turbocharged engine, and give it time to warm up before you begin working.




“It’s like an athlete, an athlete never comes out the locker room and starts playing; he always stretches and does warm-up exercises,” Arnold says. “You need to do the same with your equipment. Before you start operating the machine hard, you need to make sure the engine is warmed up and the hydraulic oil is warmed up.” He says an excavator started at -20 degrees F needs time to get the oil warmed and moving in the cylinders and through the control valves. □

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# Mixing It Up

The makers of the Crust Busters tank agitator plan to show a new extension option at 2015 WWETT

By Cory Dellenbach

**P**ete Schmitz knew he had a tough job ahead of him when he decided to pump out his own septic tank back in 1996. He opened the cover and saw a thick layer of hard scum between his suction hose and the liquid contents below.

“I went to pump out my tank and there was a terrible, thick crust about 2 feet deep on it,” says Schmitz, partner with Crust Busters/Schmitz Brothers LLC, based in Monticello, Minn. “Seeing how I had experience in the waste industry, I knew that I should get an agitator and mix it in order to suck it up into the hose.”

Thus came the idea for the Crust Buster – a product that has been shown at the Pumper & Cleaner Environmental Expo International (now the Water & Wastewater Equipment, Treatment & Transport Show) for the last 18 years, beginning in 1997. The top end of the product looks very much like the engine and handles on an ice-fishing auger and a variety of shaft extensions and blades complete the package.

## GREASE SERVICE, TOO

“This is geared toward guys that are in the septic tank pumping business and grease trap pumping business, and also guys who are pumping car wash pits, it works great for that as well,” Schmitz says.

However, it didn’t start out that way, Schmitz says. When the product launched it was marketed solely for septic service. After the second or third year of the show, Schmitz says people asked him if it would work for challenging grease trap service.

“Up here in Minnesota there were not that many grease traps,” Schmitz says. “We did not have experience at pumping grease traps, so we weren’t quite sure if it would work just as well.”

Pumpers began using Crust Busters on grease traps and soon reported the results.

“One guy came up to us and said that on our advertisement instead of it saying septic tank agitator, we should add grease trap agitator,” Schmitz says. “After that we changed it to grease trap agitator also.”

The Crust Buster mixes the crust, effluent and solids into a slurry, liquefying a 1,000- to 2,500-gallon residential septic tank in five minutes or less, Schmitz explains.

It comes in a two- or a three-blade model, and has undergone minor changes since it was first developed in 1996 – a vinyl cover can now be purchased to protect the powerhead. Buster Brackets allow pumpers to



Rick Glass, left, owner of Tom’s Sewer & Septic in McDonald, Ohio, and his daughter, Christine, look over a Crust Buster with Crust Busters partner Pete Schmitz. Glass purchased a unit during the 2014 show. (Photo by Cory Dellenbach)

conveniently secure the tool in their vacuum truck hose trays, and a variety of extensions help users reach every corner of deep tanks.

“The Buster Brackets allow operators to mount the Crust Buster to their truck when going from job to job,” Schmitz says. “The advantage to that is they don’t have to disassemble the powerhead from the shaft if they don’t want to. It’s quicker to take it off those Buster Brackets and take it right to the tank.”

The shaft extensions are available in 2-, 4- and 6-foot lengths, with the standard shaft length being 80 inches.

## NEW FOR 2015

When Crust Busters returns to the WWETT show in February 2015,



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Schmitz says the company will have another extension available as part of its lineup.

“We’re going to be adding different-sized extensions,” Schmitz says. “I’m adding some longer ones because guys are getting to these tanks that are pretty deep in the ground and harder to access. So instead of just a 6-foot shaft, we’re making 9-foot shafts now.”

There’s a big reason Crust Busters has been attending the show the last 18 years – the customers.

“We always pick up new customers there. We actually have people at the show tell us part of the reason they come to show is to buy a Crust Buster and to see the Crust Buster,” Schmitz says. “We also pick up new customers not only from the U.S., but from other countries. We meet new clients and also talk to our old clients. It’s a good way to communicate, you can meet people from all over the world there at one location.”

Schmitz says the 2014 show was a great one for the company; an omen of good things to come was that a sale was made as soon as the doors opened on the first day of exhibiting.

“I thought this past year at the show was very good for us,” Schmitz says. “People were coming into the booth looking to buy, they were looking to see what has changed or what is still there. It’s just a great way to meet the people and see what’s happening.” 888/878-2296; [www.crustbusters.com](http://www.crustbusters.com). □

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# Laying Groundwork For Disposal

After seven years of legislative work, the Georgia Onsite Wastewater Association has helped craft a bill to promote sustainable land application of septage

By Doug Day

**A**fter years and many hours of work by the Georgia Onsite Wastewater Association, land application of septage is now an affordable alternative in the Peach State. “GOWA had a big role,” says President Matt Vinson of Natural Systems Utilities. “Several of our members were key in getting that done. It was a big victory.”

Vinson took over the GOWA leadership role this year, succeeding John Ford. The new land application regulations, seven years in the making, place control of the permits in the hands of the state, rather than local officials, and will reduce costs for onsite professionals and the homeowners they serve.

Vinson and Dart Kendall, of Advanced Septic, discuss the work of the Georgia association:

## Why were changes needed in the land application regulations?

**Vinson:** The sites were permitted under each county board of health governed by the local county commissioners. As soon as someone heard their neighbor wanted to land-apply septage, they would object and it would get shut down. There have been no new permits in years; the cost of disposal at wastewater treatment plants is high and many plants don't accept it. Haulers and pumpers were having a hard time disposing of septage.

The permits are now issued by the Georgia Environmental Protection Division. It took a lot of work by our GOWA committee:

- Dart Kendall, Advanced Septic
- Tommy Chambliss, Chambliss Construction
- Devin White, LHR Hulsey Farm
- Blake Jones, Jones Septic Tank
- Jeff Adams, J. L. Adams
- Harold Kilgore, Gravelator Systems
- Don Wolf, Dad's Septic and Well

## Dart, how did this cooperative effort come about?

**Kendall:** A law passed seven years ago gave EPD five years to come up with septage land application rules. The rules we got two years ago were so restrictive that nobody was going to apply [for permits]. There weren't that many at the time, about 22 or 23, and everyone was going to turn in their permits because of the rules. We were going to have big areas of the state with no place to dispose of septage, and some people would have to drive 100 miles to a treatment plant.

We got a new bill passed to delay the rules for two years. EPD was told they had to sit down with us, the end users, and come up with more reasonable regulations. We worked together for two years and have guidelines we feel are reasonable and will encourage more land application.

There are now two sets of rules. Tier 1 is for small operators; septage 1 pump that I want to apply on my property. It is much more lenient. Tier 2 is for the larger operators. For both tiers, septage must be screened, and it must be injected or incorporated into the soil within so many hours, among other requirements.

## Was EPD open to your ideas?

**Kendall:** They were great. This is the way regulations need to be done. EPD had more understanding after we sat down and talked. We were able to show them that the cost of disposal was getting so high that some homeowners were pumping their tanks into a nearby ditch. We have areas where disposing of 1,000 gallons of septage at a treatment plant is \$350 to \$400. The average cost of pumping a tank is already around \$350. People can only afford so much to pump their tank before they quit doing it. The counties realize we need a place to put it but didn't want to get blamed for land spreading. They just wanted to make sure it was regulated. Now we have something that is going to be really good for us.

## Matt, what other types of issues has GOWA been working on?

**Vinson:** A lot of our effort has been around the Metropolitan North Georgia Planning District; 15 counties and more than 90 cities in the metro Atlanta region dealing with comprehensive planning for water supply, wastewater treatment and stormwater management.

The Technical Committee is mostly comprised of representatives of



Reach Matt Vinson, president of the Georgia Onsite Wastewater Association, at 478/457-5292 or [mvinson@naturalsystemsutilities.com](mailto:mvinson@naturalsystemsutilities.com).



Dart Kendall



municipalities and water and sewer authorities. Many on the committee want to maximize the amount of water that gets returned to rivers and streams through the sewer plant discharge. They consider onsite wastewater as “consumptive use.” They don’t care that we put water into the ground and it gets back to the groundwater and surface water over time; they want to know how much goes back immediately.

A bill was introduced this past legislative session requiring local governments to return so much water to the source every month. If it was less than 25 percent in 2016, no new water service connections would be allowed. In 2019 that percentage was 50 percent, and then 75 percent in 2024. That would have nibbled away at our onsite business. The bill died in committee.

**“GOWA and onsite wastewater are going to be around for a long time; you can’t run a sewer pipe down every road in the state. I really believe the trend will be toward large cluster systems. You still need installers for cluster systems, and pumpers are going to get a lot more business from them than from individual system owners.”**

**Matt Vinson**

**Have you been successful in changing attitudes?**

**Vinson:** Not yet. It’s still an issue and is still going to come up. The district was formed in 2001 and we’re coming in at the tail-end fighting to keep what we have. GOWA is pretty small in terms of legislative power, 416 regular members and 57 sponsor members [mainly manufacturers and larger installers]. I believe other organizations would take our side if something like this made it through committee; the homebuilders association and the real estate association would be on our side.

**Does that say something about the importance of joining groups like GOWA?**

**Vinson:** There is power in numbers. So many onsite professionals don’t see how their money and membership is going to help. We are getting better at increasing membership, mainly through our continuing education classes.

**What is GOWA’s role in training onsite professionals?**

**Vinson:** Georgia requires eight hours of continuing education every two years. We worked hand-in-hand with the University of Georgia until their professor left in 2010 and the university stopped supporting it. The two-year continuing education cycle was just ending so we had to scramble to put together classes.

Our outgoing president, John Ford, did a really good job getting it back to full speed in time for the end of the 2014 training cycle. It really helped to have the support of Chris Kumnick, the onsite program director for the Georgia Department of Public Health. We trained 864 pumpers and installers this year. Our goal is to start offering online classes.

**What do you see in the future for GOWA?**

**Vinson:** Georgia is adding certification for portable restroom providers. So we’re looking to add them to our membership. EPD wants GOWA to help develop the certification test and provide the continuing education.

GOWA and onsite wastewater are going to be around for a long time; you can’t run a sewer pipe down every road in the state. I really believe the trend will be toward large cluster systems. You still need installers for cluster systems, and pumpers are going to get a lot more business from them than from individual system owners who only call when they have a problem. Most installers and pumpers aren’t familiar with cluster systems. People who are members of groups like GOWA and who go to events like the Water & Wastewater Equipment, Treatment & Transport Show [formerly the Pumper & Cleaner Expo] are aware of cluster systems because they are informed about the future of onsite wastewater. □

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# New Technology/Installation Tools

By Craig Mandli

Keeping abreast of the latest industry trends and technologies can help onsite septic system installers operate businesses more efficiently and effectively. These innovative products, including laser levels, excavation equipment, tools, pumps and sludge samplers, help installers stay on the cutting edge.

## EXCAVATION EQUIPMENT

### Skid-steer backhoe attachment

The EDGE Backhoe attachment from CEAttachments allows operators to turn a skid-steer loader into an excavator to dig utility trenches and septic tank excavations without bringing another large piece of equipment to a job site. It offers ergonomic operation combined with digging depths from 8 feet 5 inches to 11 feet 1 inch. It has 180-degree boom pivot rotation and bucket digging forces of 3,895 to 6,200 pounds. Cushioned swing is standard for a smooth stop at maximum swing. It mounts to most skid-steer loaders, and buckets are available in 10-, 12-, 16-, 18-, 24- and 36-inch sizes with capacities from 0.92 to 4.05 cubic feet. 866/232-8224; [www.ceattachments.com](http://www.ceattachments.com).



### Truck vacuum excavator

The FXT50 truck vacuum excavator from Ditch Witch mounts directly to a truck's frame rails, allowing the system to flex independently of the truck for greater stability and operator confidence. Ditch Witch dealers will mount the unit to the single-axle truck of customers' choosing, and can customize the truck with toolboxes and other support equipment, such as a 1,020 cfm blower, and 3,000 psi water system flowing at 5 gpm. The unit is designed to operate quietly and provide optimum filtration. 800/654-6481; [www.ditchwitch.com](http://www.ditchwitch.com).



### Conventional tail swing excavator

The DX63-3 compact conventional tail swing excavator from Doosan Infracore America Corporation provides 11.6 inches of tail-swing overhang, designed to deliver over-the-side lifting performance without increasing the overall weight. With an operating weight of 13,779 pounds and a bucket force of 9,731 foot-pounds, the 59.4 hp unit digs to depths of 13 feet 6 inches. It has a blade float that enables operators to smoothly grade, level or backfill materials. Its auto-shift drive system transitions between high and low range, allowing operators to focus on the direction and speed of travel. Auto idle helps reduce fuel consumption. It has ergonomic multifunction joystick controls, a color LCD instrumentation panel, extended grease intervals and four tie-down points. 770/831-2200; [www.doosanequipment.com](http://www.doosanequipment.com).



### Zero-tail-swing mini-excavator

The 35V4 zero-tail-swing mini-excavator from IHI/Compact Excavator Sales includes auxiliary hydraulics, pattern change valve, rubber tracks, four-pump hydraulic system and additional counterweight for superior balance. The operator's cabin is 25 percent larger than previous models, has 20 percent more legroom and comes standard with a spare power port. Auto-idle and eco-mode features provide up to a 24 percent fuel savings when equipped with a Tier 4 Final engine. It has a standard digging depth of 11 feet 1 inch, a max digging force of 7,688 pounds and expandable tracks for added stability. 800/538-1447; [www.ihices.com](http://www.ihices.com).



### Mini-excavator

TMX mini-excavators from Innovative Equipment have a quick-hitch system that can be hooked behind a standard 1/2-ton pickup, van or light-duty tow vehicle. They utilize zero-turn technology on constricted work sites to reduce damage to lawns and landscape and improve access near walls and other obstructions. They weigh 2,941 pounds, have an 8-foot digging depth, 7-foot-2-inch loading height, 140-degree swing radius and provide a 6,600-pound digging force. An auxiliary hydraulic tool circuit powers tools including jackhammers, pumps and saws. 888/359-3002; [www.iequipt.com](http://www.iequipt.com).



### Compact excavator

The 36 hp, 26.8 kW 50G compact excavator from John Deere has a door designed for more convenient cab entry and visibility to the left hand side of the machine. The operator station has a multifunction monitor featuring coolant temperature and fuel gauges, a clock, dual trip meters, regeneration inhibit, auto shutdown control and machine hours. A third service door provides improved access to the cooling core. The cores are positioned side-by-side rather than stacked for increased cooling performance. It has an oil-impregnated boom, and arm and bucket bushings. 800/503-3373; [www.johndeere.com](http://www.johndeere.com).



### Crawler excavator

At 81,800 pounds with a 270 net hp engine, the SK350LC crawler excavator from Kobelco Construction Machinery USA has a digging depth of 24 feet 10 inches, a reach of 36 feet 3 inches, and





a dump height of 24 feet 2 inches for versatility when digging, dumping, lifting and placing. The Hino engine meets U.S. Environmental Protection Agency Tier 4 emission standards for cleaner operation and better fuel efficiency. Three operational modes allow the operator to select from H, S or Eco based on the situation, saving fuel and gaining productivity through increased continuous operation. It has a noise- and dust-reduction system, and advanced hydraulic circuitry for reduced pressure loss. 281/888-8430; [www.kobelco-usa.com](http://www.kobelco-usa.com).

### Fuel-efficient crawler excavator

EC250E crawler excavators from Volvo Construction Equipment have efficient Tier 4 Final/Stage IV-compliant Volvo engines, and a range of features that optimize flow and minimize pressure losses in the hydraulic system. The ECO mode automatically reduces fuel consumption without any loss of performance in most operating conditions. The operator also has the ability to manually control flow to the hydraulics using the integrated work mode system. To reduce idle time, they can be equipped with automatic idling and auto engine shutdown systems. When a machine's controls are inactive for a preset amount of time (between three and 20 seconds), engine speed is reduced to idle. When a machine has been motionless for five minutes, the engine automatically turns off. 717/532-9181; [www.volvoce.com](http://www.volvoce.com).



## TOOLS

### Construction laser level

The LL300N fully automatic, self-leveling laser level from Spectra Precision/Trimble is designed to handle a wide range of general construction, concrete and site preparation applications, including elevation control, leveling forms and footers, concrete pours, excavations and basic slopes. It has a glass lighthouse and offers an IP66 environmental protection rating, which allows operation in adverse environmental conditions, even heavy rain. With a metal sunshade and composite material housing, the laser is constructed to withstand drops of up to 3 feet onto concrete and tripod tip-overs up to 5 feet. It has one-button operation for basic leveling. The optional RC601 remote control enables single-axis slope mode and manual slope matching capabilities. A choice of receivers and kits including tripods and various scale grade rods in a system case are available. 800/527-3771; [www.spectralasers.com](http://www.spectralasers.com).



### Sludge agitator

The Crust Buster power agitator from Crust Busters/Schmitz Brothers LLC has an 80-inch shaft and two- or three-blade propeller designed to mix the contents of a septic tank or grease trap in five minutes. It comes with 2-, 4- and 6-foot extensions, and a short three-blade shaft that adapts to the two-blade unit. 888/878-2296; [www.crustbusters.com](http://www.crustbusters.com).



### Pneumatic machine chisels

Non-sparking, corrosion-resistant pneumatic machine chisels from CS Unitec are used for breaking or chipping concrete, asphalt or soil with paving breakers and other demolition tools. Manufactured from copper-beryllium or aluminum-bronze alloys, they are designed to eliminate spark risk at sites where explosive



atmospheres may be present. They meet OSHA and ATEX regulations for safe use in areas where hazardous, flammable or combustible vapors, liquids, dusts or residues may be present. They are laser-engraved to indicate where each can be used safely. Paving breaker tools include bull points for breaking concrete and 3-inch-wide chisels for softer material with deeper penetration in both 1 1/8- and 1 1/4-inch hex shanks. 800/700-5919; [www.csunitec.com](http://www.csunitec.com).

### Cable installation tool

Ideal Industries' 3-in-1 Premise Muletape combines threading line, measuring tape and winch line, allowing an installer to thread, measure and pull cable with a single product. Because it is imprinted with sequential footage markings, the installer is not required to manually calculate the needed length of cable. It comes pre-lubricated to reduce friction levels and eliminate duct cutting. Its lower elongation reduces pulling time, while improving safety for workers by eliminating cable snap-back. It is lightweight to allow it to be easily blown through conduit or inner duct. It is available in two types: No. 31-315 (1,300 feet in length, rated at 1,800 pounds of pulling strength) and No. 31-314 (4,500 feet, rated at 400 pounds). 800/435-0705; [www.idealindustries.com](http://www.idealindustries.com).



### Large-diameter sludge sampler

The TruCore large-diameter, accurate and user-friendly sludge sampler from Sim/Tech Filter is designed for use in the thicker sludge common to septic tanks. It allows samples to be taken quickly without creating excessive turbulence because there are no restrictions caused by valves, stoppers and flaps. With an inside diameter of 1 3/8 inches, the capacity per foot is almost 10 ounces. The straight-through design also allows the sample to be quickly and effortlessly returned to the tank. The unit is made of a polycarbonate sampling tube (marked every foot) and PVC fittings. It comes as a single-piece 8-foot unit, or as two 4-foot sections that slip together. Custom sizes and configurations are available, as is an extension kit for deeply buried tanks. 888/999-3290; [www.simtechfilter.com](http://www.simtechfilter.com).



## PUMPS

### Effluent pump

The EP50 1/2 hp effluent pump from Ashland Pump is all cast iron, with a cast iron impeller and PSC motor for lower amp draw and increased energy efficiency. It is available in both 115- and 230-volt configurations, with a 20-foot cord. The 115-volt version has an SJE piggy-back wide angle switch. 855/281-6830; [www.ashlandpump.com](http://www.ashlandpump.com).



### Treatment aerator

Enviro aerators from Blue Diamond Pumps are designed for biological aeration in residential wastewater treatment units and ATUs. They use an electromagnetically operated diaphragm to eliminate sliding parts and minimize wear and tear. They incorporate energy-efficient motors, and have a weatherproof compact alloy casing. A range of models are available in steps from 8 to 53 gpm. They are CE and UL approved. A built-in fail-safe alarm detects low pressure in the air line, alerting users with a loud buzzer and LED warning light. It is also available with a 230-volt signal wire for activating an external alarm system. 770/831-1122; [www.bluediamondpumps.com](http://www.bluediamondpumps.com).



## Grinder pump

The 2 hp grinder pump from **Champion Pump** provides up to 133 feet TDH and flows up to 42 gpm. It has a double-seal configuration with a seal-failure alarm option. The starting components are optional, eliminating the need for control panels. Also available in a three-phase system, its quick-disconnect cord is available up to 50 feet, allowing it to be replaced without disturbing the wiring in the panel and conduit. It is offered as a package system with guide rails built to specification. 800/659-4491; [www.championpump.com](http://www.championpump.com).



## Replacement grinder pump

The **Upgrade** progressive cavity replacement grinder pump from **Environment One Corporation** fits virtually any other grinder pump wet well. It is designed to replace the components of a centrifugal pump, including slide rails, pump/motor, float switches, piping and motor control devices. Solids are ground into fine particles, allowing them to pass easily through the pump, check valve and small-diameter pipelines. It is designed not to jam and for minimum wear to the grinding mechanism. It comes with a self-contained level control system, is automatically activated and runs for short periods. The 1 1/4-inch slide face discharge connection is adaptable to any existing discharge piping. The internal check valve assembly is designed for non-clog, trouble-free operation. Units are available with a number of discharge hose lengths to accommodate a wide range of existing tank depths. 518/579-3068; [www.eone.com](http://www.eone.com).



## Wastewater pumping system

The **Exporior** wastewater pumping system from **Flygt** – a **Xylem Brand**, offers energy savings in a package that is easy to install and operate. Adaptive N-technology allows the impeller to move axially upward when necessary to permit bulky or tough debris to pass through, reducing stress on the shaft, seals and bearings. It is available with efficient motors optimized for wastewater pumping. SmartRun intelligent controls enable programming to optimize energy use. 704/409-9700; [www.flygtus.com](http://www.flygtus.com).



## Submersible turbine pump

STS Series submersible turbine pumps from **Franklin Electric** offer premium ductile iron bowls, discharges, motor brackets, investment cast 304SS impellers, lengthened bronze discharge bearing, bronze motor bracket bearing, and other custom options to meet job requirements. It can be used for irrigation, industrial, commercial or municipal submersible water pumping applications. 800/269-0063; [www.franklinwater.com](http://www.franklinwater.com).



## Multistage pump

The horizontal-oriented e-HM Series of multistage pumps from **Goulds Water Technology** - a **xylem brand**, are designed for commercial and industrial uses. There are six models for modular construction



and available for applications such as industrial washing and refrigeration, food and beverage, water treatment and pressure boosting. The pumps have lower life cycle costs and leave a smaller energy footprint compared to previous Goulds models. The standard balanced impeller leads to a 40 percent reduction in axial thrust and the 20 percent increase in body thickness leads to a higher working pressure and reaches a flow rate of 27 gpm. A broad hydraulic range and multiple space-saving configurations reduce carbon dioxide emissions. 866/325-4210; [www.goulds.com](http://www.goulds.com).

## Grinder pump

The LSG-Series Omnivore grinder pump from **Liberty Pumps** has V-Slice cutter technology with a hardened stainless steel cutting system that aggressively shreds jeans, shop rags, sanitary napkins and other difficult solids into fine slurry with little jamming. It has a one-piece cast iron body, quick-disconnect power cord, stainless steel impeller and dual shaft seals. Complete pre-designed grinder systems are available in a variety of basin sizes. 800/543-2550; [www.libertypumps.com](http://www.libertypumps.com).



## Septic tank effluent pump

The **STEP (Septic Tank Effluent Pump) System** from **Polylok** is designed to draw effluent from the middle layer (clear zone) of the septic tank, filter remaining unwanted solids, then pump the effluent to either a dispersal field or a wastewater treatment system. It installs quickly in a 19- to 23-inch-diameter opening in new or existing concrete or fiberglass tanks. The easy-access dual-compartment design allows the filter cartridge to be removed without pulling the pump or the entire vault. The engineered system includes a polyethylene basin, effluent filter, 1/2 hp high-head turbine effluent pump with 10, 20 (standard) and 30 gpm versions available, internal 1 1/4-inch piping and valves, float switches and a control panel. 800/701-3946; [www.polylok.com](http://www.polylok.com).



## Drainfield rejuvenation system

The **Retro-Air Rejuvenator System** from **Septic Services** is designed to improve flow and return a failed system back to optimal performance. It delivers a constant flow of air to the diffuser to restore failed anaerobic installations or to prevent failures in newly constructed septic systems. As the biomat in the absorption field continually builds up, it clogs the pores in the soil, causing effluent to rise to the ground's surface. If allowed to continue, sewage backups can occur. The unit delivers dissolved oxygen and aerobic bacteria in the absorption field. Over time, aerobic bacteria consume the biomat, allowing the soil to absorb effluent once again. It is designed for 500- to 2,000-gallon tanks, and can be installed in single or multiple compartment systems. It includes aerator pod, air line-diffuser assembly, outlet baffle filter and installation manual. 800/536-5564; [www.retro-air.com](http://www.retro-air.com). □



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## CULTEC Recharger V8 plastic chamber

The Recharger V8 plastic chamber from CULTEC holds about 100 cubic feet of water and is IAPMO R & T certified. Applications include subsurface retention, detention, recharging or controlling the flow of stormwater. The chamber is 32 inches high

and 60 inches wide with a capacity of 8.68 cubic feet per linear foot. The internal manifold allows for design flexibility and decreased installation footprint. 800/428-5832; [www.cultec.com](http://www.cultec.com).

## Infiltrator potable water tank

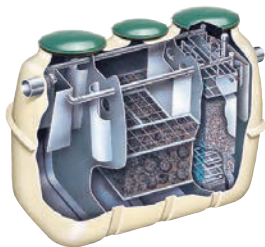
IM Series potable water tanks from Infiltrator Systems are NSF 61 certified for potable use. Available in 552-gallon, 1,287-gallon and 1,787-gallon capacities, the injection-molded tanks feature structurally reinforced access ports, reinforced structural ribbing and fiberglass support posts for additional strength. The IM tanks are designed for buried water tank applications and require no special installation, backfill or water filling. 800/221-4436; [www.infiltratorsystems.com](http://www.infiltratorsystems.com).



## Clarus wastewater treatment system

The Fusion Series "drop-in" wastewater treatment system from Clarus Environmental uses anaerobic and aerobic zones to produce secondary quality effluent. Filter media are never removed or replaced. Features include constant recirculation of treated wastewater and twice-daily automatic backwash cycle

that returns residual sludge to the head of the system. A programmable compressor delivers oxygen to aerobic zones, consuming about the amount of energy used by a 65-watt light bulb. 800/928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com).



## Gateway safety eyewear

Parallax protective eyewear from Gateway Safety features a temple designed for comfort. The eyewear has a single, wrap-around lens for protective coverage. An integrated brow guard protects against debris from above. The soft gel nosepiece works with the temples to ensure the glasses stay in place. The glasses meet ANSI Z87+ and CSA Z94.3. 800/822-5347; [www.gatewayssafety.com](http://www.gatewayssafety.com). □



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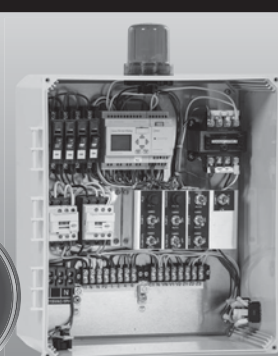


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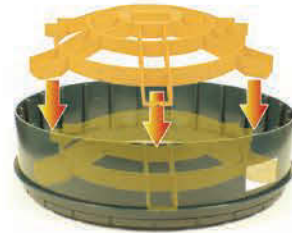


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