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INSTALLER PROFILE:

Digging in Dakota By Ken Wysocky

ON THE COVER:

Though he has expanded to offer a broad list of earth moving-related services, Seth Dixon has always relied on the septic system installation he learned in his youth to power profits for his company, SRD Construction/Excavation, in Williston, North Dakota. Dixon is shown in the field with Case CX36B and CX210 excavators. (Photo by Gabriel Black)

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Call toll free 800-257-7222;
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Send to Editor, *Onsite Installer*, P.O. Box 220, Three Lakes, WI, 54562 or email editor@onsiteinstaller.com.

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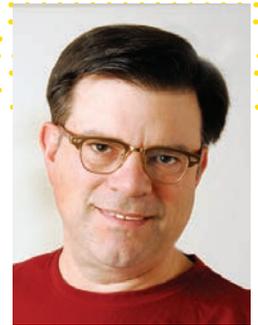
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Enjoy this issue!

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



What Winter Slowdown? February Can Be Go Time!

If you're not digging in the ground these days, you can spend time with your trade association, shopping for new equipment and looking for good workers

It's always the darkest just before dawn, and that's what I say when the calendar rolls around to February. The days are short, and the weather is cold (at least up north in Wisconsin). Trying to reach installers is a mixed bag this time of year. On one hand, I might catch a voicemail message saying they're on a Caribbean cruise to get away from the office. On the other hand, they may pick up on the first ring and have plenty of time to chat.

For most installers I know, this is the slowest time of year. Sure, there may be some emergencies to respond to as systems in the coldest climate can freeze and cause a lot of heartache for customers. But on the whole, February is a time to hibernate — catch up on some sleep, organize the accounts receivable file, and spend a little quality time with the family.

Even if it's not too cold to work, the phone tends to remain silent as homeowners aren't thinking about outside maintenance this time of year. They're still recovering from the holidays and have more pressing bills to pay.

So you may have the rare opportunity to focus on something other than scrambling to respond to a long list of jobs in front of you. If you have some free time this month, don't just squander it opening the mail, drinking

coffee, and staring out the window all afternoon ... unless you really need more time to recuperate from the last busy season.

Rather, turn on the computer, fire up the phone, and get out the door and keep moving to improve your business. The work you do now might not put money in your pocket this month, but it will pay off down the road in building a bigger customer base and handling the future workload more efficiently.

As the furnace chugs along and I watch the snow falling outside my window, I'll pass along a few suggestions for fun and productive February activities for all my friends in the *Onsite Installer* community:

Attend the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show

Can you believe another year has passed and it's time once again for the biggest show in the wastewater industry? The WWETT Show returns to the Indiana Convention Center in Indianapolis with education days (Feb. 21-23) and exhibits (Feb. 22-24). Installing contractors attend the show for many reasons including seeing the latest equipment and technologies on display, obtaining continuing education credits required by their states, watching live demos, networking with other installers, and just basically cutting loose and having a good time with all that downtown Indy has to offer. For more details on the show or to register, go to www.wwettshow.com.

Catch up with your trade association

Most of our state or provincial wastewater trade groups hold conferences this time of year. To learn about winter activities planned by your regional group, turn inside to our Associations List, find your state or province listing, and check out their websites. If you are already a member of a trade association, good for you. If you haven't looked into joining a state group or the National Onsite Wastewater Recycling Association or National Association of Wastewater Technicians, I'll make an argument for you to consider it. Industry trade associations can offer many benefits that are well worth the cost of membership.

First, associations care about promoting best practices in the profession. They offer certified training opportunities that will keep your technicians abreast of the latest techniques and innovations that will help your customers. You can't put a price on staying on top of service standards when competing for great customers with your competitors.

In addition to necessary education, trade associations offer important networking opportunities ... chances for you to get to know other related

continued >>



▲ One way to check out new industry innovations and network with other wastewater professionals is to attend the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show in Indianapolis later this month. Education days are Feb. 21-23, and exhibits are open Feb. 22-24. (File photo)

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Make an offer that will make prospective employees think of your company as not just a place to have a job, but as a place to make a career.

Hire someone who you think can grow in the position and take on new responsibilities down the road.

ment grapple with pollution issues like groundwater contamination and water reuse. The more installers who join your state or national trade group, the stronger the industry voice in steering some of these important decisions.

Perform an equipment inventory

Like they always say about a thoroughbred horse, your trucks and tools were rode hard and put away wet last fall. When your technicians are working sunup to sundown, proper maintenance can get lost in the shuffle. Take this month to prepare for the coming busy season. Develop an equipment readiness list that includes checking on the condition of your

businesses in your region. Networking can lead to business alliances that improve your bottom line and allow you to better serve your customers. You might find a pumping contractor in your area who would be happy to refer repair business to you, and you might get to know a pumper who you would refer your customers to when they need pumping.

An often-overlooked benefit to trade groups is their ability to lobby with regional and state officials for improved rules and regulations over the industry. When done effectively, you can help your industry get out in front of issues, such as licensing requirements and mandated pumping, and advocate for the best interests of installers and your customers. This is critical as states and the federal government

excavators, jettors, cameras and safety equipment. Fix everything now, and you may avoid that costly surprise breakdown when you're running full-throttle in the summer.

You may find it's time to replace a workhorse truck or machine. If so, that's where my advice returns to the WWETT Show. There is no other place where you can see, touch, and climb on the latest and greatest equipment at the same time. The best way to compare what the industry has to offer is looking at equipment side by side and having a serious talk with the vendors who build and sell it. And if you find something you like, you may be able to buy it right off the show floor and take it home. I hear many stories of contractors doing just that, and these purchases usually are icing on the cake of a successful WWETT Show.

Recruit a new worker

Many installers have been running lean and mean going back to the recession that hit about a decade ago. Maybe you've been putting off adding to your crew and the time has long since passed. Or maybe you've been trying to add a few good technicians ... but you've learned that a good man (or woman) is hard to find. Well, now you might have some time to rectify your slim staffing situation.

Take time to think about the skills you want your next installer to possess. Take the time to write a job description that covers all the bases. Starting with a good job description will help you find not just an average worker who will just get by, but a great employee who will help you grow the company. Take that job description and start an exhaustive search for the right person. Ask your crew if they have someone to recommend for the job. Call your friends and family, and get the word out that you have an opening. Post the job on social media sites, and broadcast your needs any way you can think of.

When you get some good candidates, be sure to make an offer that will make prospective employees think of your company as not just a place to have a job, but as a place to make a career. Hire someone who you think can grow in the position and take on new responsibilities down the road.

USE YOUR TIME WISELY

Do you have other thoughts about how installers can take advantage of slower winter days? Send your suggestions to editor@onsiteinstaller.com, and I'll share them with the installer community. And if you just want to kick up your feet in front of the wood stove for a few days and relax, well, I understand that, too. I hear from enough of you to know you earned a few days of rest and relaxation. □



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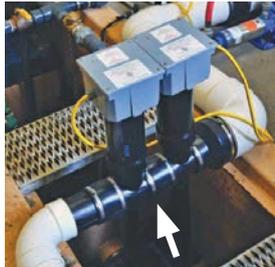


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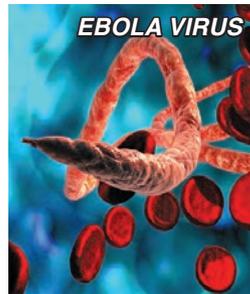
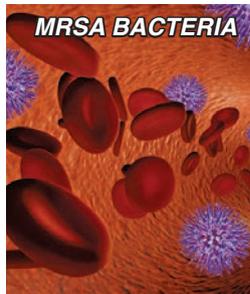
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DEEP FREEZE

Frozen Lines: Do's and Don'ts

With the extreme cold weather over the last few weeks, freezing waterlines have been reported across the U.S. Having customers continuously run water to thaw frozen waterlines and septic lines is not the answer. Read up on how to prevent freezing pipes and thaw frozen ones — and what not to do. onsiteinstaller.com/featured

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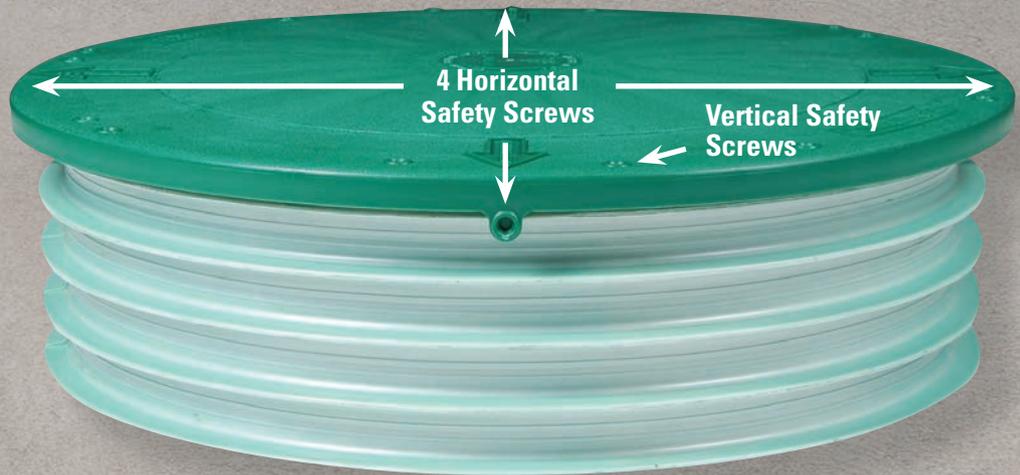
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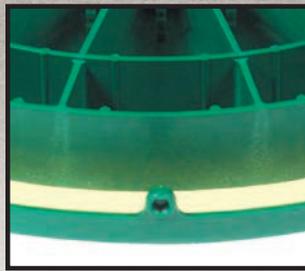
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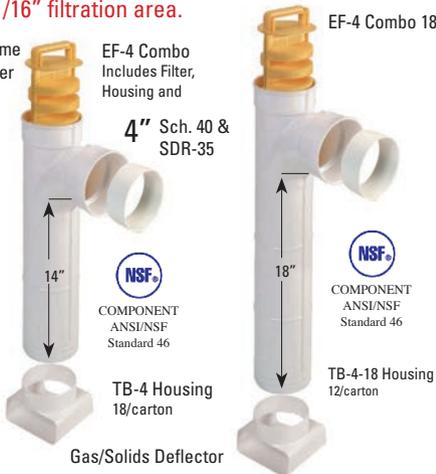


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DIGGING IN DAKOTA

Steady demand for onsite systems in an oil-exploration boom zone provides the solid foundation of revenue for a dynamic, growing excavation company

By Ken Wysocky

As a youngster in the 1990s, Seth Dixon used to help his stepfather install septic systems in and around Olympia, Washington. Now, the owner of SRD Construction/Excavation in Williston, North Dakota, still installs septic systems — and a whole lot more.

By adding diversified services such as waterline and sewer line installations, horizontal directional drilling, trenching and cable plowing, hydroexcavating, road building, and site preparation, Dixon has dramatically increased the size of his company. How much? For perspective, consider that in 2013 — the year Dixon established SRD (which use his initials, Seth Ryan Dixon) — he had \$3,000 in a bank account and owned just a dump truck and a trailer.

Since then, the 31-year-old entrepreneur has invested more than \$1.5 million in productivity-enhancing equipment. And along the way, he expanded geographically into neighboring Montana and established footholds in new markets, particularly laying fiber optic cable for a Montana-based communications company.

“Finding someone with a construction background who’s also knowledgeable and wants to work ... is a nightmare.

Recruiting people is a real struggle.”

Seth Dixon

But installing septic systems still is a staple service for SRD, which puts in 30 to 50 systems a year. “It’s always been a very steady business,” Dixon explains. “It’s never really grown or shrunk, which is the main reason why I never stopped doing it. Someone always seems to need a septic system installed.”

“I could do more installations ... but I don’t chase the work,” he adds. “We don’t have the time or the employees to do more. But it’s always good to have that steady work to fall back on.”

Almost all of the installations are gravelless systems for new homes, typically built on lots of at least 1 acre. And Dixon says SRD’s ability to do more than just install septic systems helps him win installation business from construction contractors. “We can offer homebuilders a full package,” he points out. “We can do the dig-out for the foundation, backfill the foundation, and install the waterline and the septic system,” he says. “After that, we also can do the final grade. So in the end, they only have to use one contractor.”

COMPLEX TO SIMPLE

When Dixon worked for the installation company that his stepfather, Ben Potter, owned in Washington state, sophisticated and complex systems were the norm. As an example, he cites the M31 system developed and manufactured by Glendon Biofilter Technologies. It’s primarily designed for lots with poor-draining soil and/or high water tables.

Waste still flows into a collection tank, but any similarities to conventional systems end there. From the tank, effluent gets pumped into roughly 8-foot-long, 6-foot-wide concrete “pods” with no lids. The number of pods required equals the number of bedrooms in a home, he says.

“Each pod has a liner,” Dixon explains. “You fill the pods with gravel and sand that acts like a filter. Then, cover it all up with a layer of sand, a





▼ The SRD Construction/Excavation team includes (from left) Rob Marshall, Travis Lindenberg, Nyles Brown, Stacy Allee, Vance Torgerson, Josh Stock, Ray Montanez, Shane Potter, Sanford Jones, Thad Salter, Tyler Myskewitz, David Ravis, Junior Balle and Seth Dixon. (Photos by Gabriel Black)

jute mat and a little topsoil.” Capillary action wicks the effluent through the sand-and-gravel medium, over the rim of the pod and into the surrounding soil. Such systems could cost anywhere from \$30,000 to \$50,000 and could take up to 40 hours to install, he explains.

Things are much simpler in North Dakota, where Dixon says he primarily installs concrete tanks dosing effluent into Quick4 chambers from Infiltrator Water Technologies. The average tank size ranges from 1,000 to 1,500 gallons.

North Dakota counties aren’t regimented when it comes to requirements for installing septic systems. Dixon says the counties where he works send installers a design sheet that outlines general site parameters, such as soil type and the square footage required for a drainfield, then gives installers discretion to choose which system would work best. Options typically include a conventional gravity system with gravel and lateral pipes, a mound, or a gravelless system.

“I’ve never had a really challenging installation here,” Dixon says. “We mostly put in plain old residential gravity systems, with an occasional commercial job.”



SRD Construction/ Excavation Inc.



Location: Williston, North Dakota

Owner: Seth Dixon

Founded: 2013

Employees: 21

Specialties: Septic system installation, fiber optic trenching and cable plowing, directional drilling, hydroexcavation, sewer line and waterline installation

Service area: Northwest North Dakota and northeast Montana

» Directional drilling is one of the added services offered by SRD Construction/Excavation. Technician Nyles Brown sets up the company's Vermeer 10x15 directional drill on a job site.

▼ Rob Marshall operates a Komatsu America excavator while Josh Stock maneuvers an electrical box on a job site near Williston, North Dakota.



A PASSION FOR MACHINES

Dixon has been involved in excavation and heavy equipment for most of his life. His father, Jack, worked as a heavy-equipment operator. “Between him and my stepdad, I literally grew up on heavy equipment,” Dixon says.

Dixon started doing excavating for mainline sewers at age 18. Then he got a job doing excavations for natural gas pipelines, which took him all over the country. But around 2010, he grew tired of the travel and extremely long hours. So he took a job as a foreman for a Montana contractor that performed waterline and sewer line installations.

During that time, he met his wife, Jessica, who was raised in Williston. Within a year, the couple moved to Williston, where Dixon abruptly decided to start his own company in November 2013. “I just got tired of working for other people,” he explains.

To get started, Dixon leased a skid-steer and a mini-excavator and started installing septic systems. At the same time, he studied for and passed the state test to become a licensed water and sewer contractor. He also borrowed \$13,000 from his in-laws and bought a dump truck and trailer. He paid off the loan in six months by installing septic systems and doing site preparation work.

Dixon kept prospecting for new clients. Later in 2014, he caught a break: After getting edged out by a more experienced contractor on a bid to dig footings for an expansion at a big-box retailer and stabilize its deteriorating parking lot, Dixon got called in to finish the work. That gave him his first taste of the challenges posed by rapid growth.



"It's always been a very steady business. It's never really grown or shrunk, which is the main reason why I never stopped doing it. **Someone always seems to need a septic system installed.**"

Seth Dixon

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“That ramped us up from two employees to six or seven,” he says. “Also, it happened in late fall, so we had to hurry up to finish before the ground froze. As an owner, going from two to seven employees is a big leap both in time commitment and asset management.”

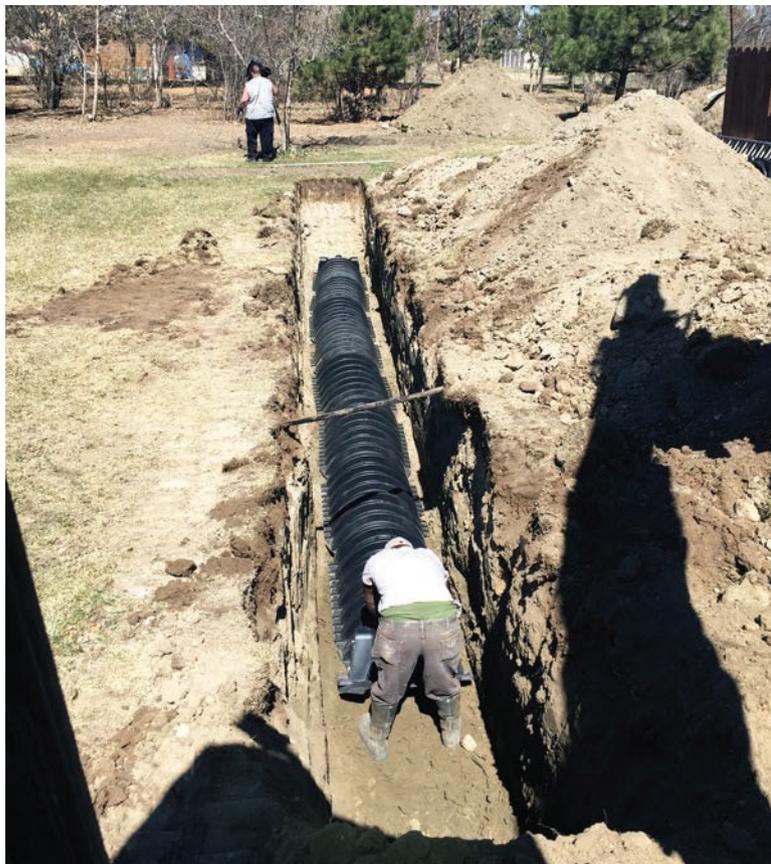
“We had to rent a lot more iron, too, so we went from barely any bills to a lot of bills in a hurry,” he continues. “Logistically, there were a lot more moving pieces to keep track of. Plus, I also wanted to be sure the job was profitable and done right. I’m big on quality work.”

PERSISTENCE PAYS

As Dixon talks about his business, two things emerge as factors in his company’s rapid growth: quality control and persistence. Doing quality work led to repeat business and word-of-mouth referrals. And persistence — in terms of continually but diplomatically reminding prospective customers that he was interested in doing more work — more often than not got his foot in the door.

“I’m big on quality all the way around,” he says. “And that’s exactly why we are where we are today. We make sure the product we’re turning over to a client is exactly what they wanted — no cutting corners.”

The value of persistence was demonstrated in 2015, when SRD landed a contractor to
continued >>



▲ Technician Tyler Myskewitz locates fiber cable along a roadway using a VACMASTERS truck built on a 1999 GMC 5500 chassis and using a General Pump for vacuum and a Roots Systems blower.

◀◀ SRD Construction/Excavation workers install Quick4 chambers from Infiltrator Water Technologies during construction of a septic system. (Photo by Seth Dixon)

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perform fiber-optic-line installations for a large communications company based in Montana. After installing a fire line (a 6-inch-diameter line that supplies water for fire-sprinkler systems) for the company in a building it owned in Williston, Dixon kept asking the company for more work.

Satisfied with the fire line project, the communications company kept giving SRD small jobs — think of them as test runs. The business relationship grew, and now SRD is the company's sole contractor for moving and reinstalling fiber optic lines during road projects as well as new fiber-optic-line installations, he says.

TOOLS OF THE TRADE

Providing an array of services allows Dixon to hedge against cyclical slowdowns in various business sectors. "I hate to say no if we get a call to do something," he explains. "So we keep adapting (to customers' needs) by adding services.

"Keeping our services diverse is a big growing point," he continues. "It puts us out there. ... If people need waterlines fixed or septic systems installed, I want them to think SRD."

Providing so many services requires a diverse inventory of equipment. Dixon relies on a 2012 Case CX210 excavator, a Case CX36B excavator, a Case 1850K bulldozer and a Caterpillar 277B skid-steer.

The company also owns a Vermeer P-1250 cable plow with a reel carrier and a trencher attachment for winter work, a Case 580 Super N wide-track backhoe, two mini-excavators made by Komatsu America and Case Construction Equipment, a cable plow manufactured by Ditch Witch, a Vermeer 10x15 directional drill, and a Case 6030 directional drill.

SRD also relies on a 1997 Ford F-800 bucket truck, a pull tractor made by Massey Ferguson (a brand owned by AGCO), a 1999 International dump truck, a Ditch Witch 350 small-service cable plow/trencher, a 1989 Caterpillar 613 scraper, a 1999 Sterling tractor cab, a 2006 35-foot end-dump trailer made by HILB, and two paving rollers built by BOMAG Americas (a Fayat Group company).

In addition, SRD owns a hydroexcavation truck built by VACMASTERS on a 1999 GMC 5500 chassis with a 500-gallon debris tank, a 350-gallon water tank, a water pump built by General Pump (owned by Interpump Group), and a 3,000 cfm blower manufactured by Roots Systems. A variety of trailers round out the fleet; they're made by Lambert Tractor & Machinery Sales, Pace American, Trail King Industries, Econoline Trailers, Redi-Haul Trailers and PJ Trailers.

Buying and renting equipment has been one of the biggest challenges for Dixon. He had no credit rating when he started out, which made it

continued >>

FOCUS ON THE BIG PICTURE

Many contractors believe getting things done right means doing it themselves. Seth Dixon used to operate that way until he acquired two unwanted partners in his business: stress and burnout.

Rapid growth at SRD Construction/Excavation pushed Dixon to a point where he realized he couldn't do everything. So, he hired a secretary to handle invoicing and other administrative details as well as a company to process payroll. "Now I basically handle crisis management — make sure things are going right," he says.

Dixon also delegated more responsibility to his right-hand man, Sanford Jones, the company's head superintendent. "He's the key person in our operation," Dixon explains. "He's always the first one there and the last one to leave. He's also great with quality control and keeping projects going on schedule. In addition, he's very reliable. If I ask him to do something, it's done; I never have to wonder about it."

Of course, delegating responsibilities to others requires employees who can handle the extra work. And like so many contractors nationwide, Dixon struggles to find employees with the right experience, values and work ethic. "Finding someone with a construction background who's also knowledgeable and wants to work and doesn't carry a lot of baggage, like drunken-driving convictions, is a nightmare," he says. "Recruiting people is a real struggle."

To identify job candidates, Dixon says he's been trying outlets such as Facebook, Craigslist and temporary-employee agencies. "There's a Facebook page called People of HDD Help Wanted," he says. "It's like a Facebook page for horizontal directional drilling employees around the country who are looking for work."

Dixon also is considering implementing production bonuses as an incentive to recruit new employees. In the meantime, a main strategy for finding quality employees is a volume approach. "I find quality employees through sheer volume of hiring," he says. "I'm not sure how else to explain it — that's just how it is."



▲ SRD Construction/Excavation owner Seth Dixon is on the job with his company's Vermeer directional drilling machine.



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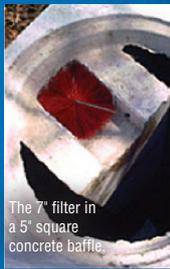
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impossible to obtain financing to buy equipment. The situation worsened a bit when he incorporated the company in early 2015 to separate his personal finances from the company's (he had been operating as a sole proprietor).

"As a result, on paper the company is only a year and a half old, so it's still hard to get credit," he notes. "Incorporating kind of kicked us in the shins financially." But thanks to good relationships with leasing companies and quick payments by his largest customer — keeping cash flow up — Dixon is managing to obtain the equipment required to meet the increasing demand from customers.

Looking ahead, Dixon expects further growth, particularly in the market for laying fiber optic cables. But, he also figures the company will always install septic systems, too, along with other core services like road work and installing water-lines and sewer lines. "I can't get rid of those core services," he says. "That's where my roots are." □

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What Happens When Granny Moves In?

As families cope with the necessary care of an older relative, it's important to consider the implications of adding another person to a decentralized wastewater system

By Jim Anderson and David Gustafson

An issue many people are facing with our aging population is what to do when it becomes necessary to care for older parents. For many, the answer is to have them come live with you. For those living on septic systems, this raises questions or concerns about the effects of bringing another family member into the home. At our workshops, we get questions about what will need to be done to ensure the system continues to operate.

The answer depends on each individual situation, what each parent's health is, the need for privacy, the size and condition of the current system, and numerous additional factors. Below, we will give you a few ideas and thoughts about potential system impacts and solutions.

CRUNCH THE NUMBERS

We'll start with understanding that the system operating in the backyard has a finite capacity. That capacity was determined by estimating the daily sewage flow. Often, this estimation was made based on the number of bedrooms in the residence. The design assumption often is water use of 75 gallons per person per day with 2 persons in each bedroom. For example, a

Blood pressure medications, having chemotherapy, and other health needs can upset the biological balance in the tank and **result in solids not breaking down and settling, which will require periodic pumping.**

three-bedroom house would have an estimated daily flow of 2 persons/bedroom x 75 gallons/person/day x 3 bedrooms = 450 gallons. Each state code has its own variations or deviations from this formula that can be used for adjustments. But since this is the accepted U.S. Environmental Protection Agency method, most states do not deviate far from this standard.

Septic tank capacity and soil treatment area sizing are based on estimated daily sewage flow. Whether the addition of grandma will have an impact on the system and whether changes need to be made is based on the current situation and the planned living space for her.

A simple example would be grandma moving into one of the bedrooms in the house that was vacated when the kids moved out and got married. Grandma is in good health, has no special needs or medications, and will not have separate meals. Here, the increase would be one person in addition to the two current residents. In this case, the estimated use for three people (3 x 75 gallons/day = 225 gallons/day) would be well within the design number of 450 gallons per day. Other than educating grandma about use of the septic system, there would not be any need for changes.

As most of us are aware, this example is usually not what happens. One of the issues with a parent moving in is the question of privacy for all individuals involved. This means that most often some level of modification or addition is made to the residence. Modification may involve putting in a separate entrance, addition of a separate bedroom and setting up a separate kitchen.

Where we live, this often means changing the basement from family room and recreation space to living quarters. In other areas, it probably means an addition to the house or an additional living structure or pod, tiny house, etc. In our area, we see living areas with separate access in garage lofts converted to living space as well as separate structures in the backyard.

SIMPLE OR COMPLEX

If the situation is converting basement space and if there was already a bedroom that was counted in the initial system design, there still may not need to be any septic system changes. Adding a bedroom automatically increases the flow estimate by 150 gallons per day. Changes in septic tank and soil treatment unit capacity will need to be made.

Let's say there's no additional bedroom but a kitchen is added so grandma can make her own meals in private. The picture begins to change. For a three-bedroom residence, the minimum size septic tank required by our code is 1,000 gallons. We feel this should probably be higher to begin with; but adding an additional kitchen certainly means there will be additional water use, so septic tank size will need to be increased. Using the most conservative method allowed in our state code would estimate this use at 142 gallons per day. This is basically adding the equivalent of another bedroom.

In these home expansion scenarios, septic tank capacity would need to be increased at a minimum from 1,000 gallons to 1,500 gallons, and with the increased kitchen waste, the recommendation would be to add 1,000 gallons of capacity. The current 1,000-gallon tank could be replaced by a 2,000-gallon tank or the addition of another 1,000-gallon tank placed in series.

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Addition of the kitchen also means there will likely be an increased need for septic tank cleaning due to the introduction of additional solids. Changing health conditions will also trigger the need for additional maintenance. Blood pressure medications, having chemotherapy, and other health needs can upset the biological balance in the tank and result in solids not breaking down and settling, which will require periodic pumping to keep solids from clogging the effluent screen or (worse yet) passing through to the soil treatment and dispersal area.

Increased septic tank capacity and increased maintenance are only two of the potential impacts on the system and how it is managed. Next month, we'll take a closer look at the trend of utilizing granny pods, the soil treatment area and management changes that can help mitigate the results of adding another person to the family home. □

Follow the Golden Rule With Customers

Wastewater professionals should heed this solid advice shared with Andrew Andriola, president of the Long Island Liquid Waste Association

Compiled by Betty Dageforde

In States Snapshot, we visit with a member of a state, provincial or national trade association in the decentralized wastewater industry. This time, we learn about a member of the Long Island Liquid Waste Association.



Andrew Andriola
president/sales/service tech

Business: Andriola's Cesspool Service, Holbrook, New York

Age: 61

Years in the industry: Lifelong

Association involvement:

Long Island Liquid Waste Association member, board of directors, and currently president

Benefits of belonging to the association:

Since its inception in 1974, the Long Island Liquid Waste Association has been the advocate for the septic waste industry in Nassau and Suffolk counties in New York. Most of our member companies can be considered small

businesses, with many having less than five employees. Companies of this size are often at a distinct disadvantage when being represented to national, state and local governments. There is, however, strength in numbers, and Long Island Liquid Waste Association has established an excellent working relationship with the government. The septic industry nationally and locally is now dealing with nitrogen intrusion and the environmental problems it causes. By working closely with the government, environmental groups, and the public, we are addressing these issues.

Biggest issue facing the association right now:

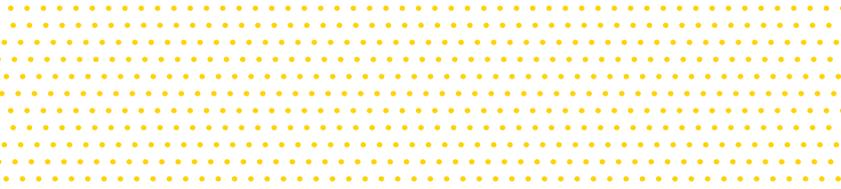
In Suffolk County, 70 percent of private homes are served by onsite septic systems. Many are old, deteriorating, and greatly in need of service or replacing. Sewering the whole county is neither affordable nor practical. By working together, we are developing pragmatic solutions to these problems. By sewerage where practical and affordable in critical areas, and through development and installation of innovative onsite septic systems — along with education of the public and industry workers — we are establishing practical and realistic answers to this problem. As one would expect, this problem will not be solved overnight. We are in the second year of this program, and naturally, there have been growing pains. Reasonably, this is going to be a long-term effort.

Typical day on the job:

On the service-end of my business, my day most of the time is not planned. I rely on the phone ringing every day, and lucky for me, it does. It could be anything — pumping, repairs, an installation project, drain cleaning.

The job I'll never forget:

Late one afternoon, we got a call from a woman crying frantically that she knew her earrings fell off the shelf and were flushed down the toilet. When we arrived on the job, it turns out she was in her 80s and her husband just bought them for her before he passed away unexpectedly about a month prior. So, we went to work. Turns out it was not that hard to fish them out. She had a clean-out at the end of the pipe. So, we used a camera to locate the earrings and a sewer jet to flush them down the pipe and found them in the house trap. She was so happy, crying and hugging us, that I didn't have the heart to charge her.



My favorite piece of equipment:

I like them all — excavators, pump trucks, sewer jet trucks. There is a vast array of septic products and manufacturers of equipment for the septic industry, and most are equally proficient for the job at hand. However, some of my personal favorites are a 2011 Case Construction Equipment excavator along with a 1994 Ford L900 4,000-gallon vacuum truck. Presently, I have been using a Grumman Olson step van and a 4,000-pound Harben pressure jetter. Most sanitary systems on Long Island are buried, so for locating, I have a Spartan Tool camera and a RIDGID transmitter.

Most challenging site I've worked on:

Due to the broad pattern of soil conditions found on Long Island, which was formed by a glacier, sometimes ground conditions are not favorable for installing sanitary systems, and you end up doing quite a bit of digging before you hit clean sand and gravel. And now you must haul all that material offsite and truck in clean sand and gravel and fill in the hole that you just dug before you can set the sanitary system and backfill the rest. You were only supposed to be on the job for one day, and now it took two or three days. It's just very time consuming.

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

Not so much crazy, but "Where does the sewerage go?" In our area, most sewerage is either hauled or piped to a treatment plant where — after proper processing — it is then piped out into the ocean. When I explain it to them and how it works, they usually say that can't be good for the ocean. Then I have to explain it again, and for the most part, they understand.

If I could change one industry regulation, it would be:

To bring all sanitary covers — residential and commercial — to grade for easier locating and access.

Best piece of small business advice I've heard:

That would be from my father when he retired. We have a large residential customer base. "Continue to treat them the way you would want to be treated and be fair-priced, and they will always recommend you and always come back for future service" — and that's held true for the last 16 years.

If I wasn't working in the wastewater industry, I would:

I've been in this business most of my life. I guess I'd say firefighter, cop, school teacher. I'll let you know in my next life.

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

Sewers will be installed in environmentally endangered areas where practical and/or affordable. As on Long Island, the septic industry in many areas of the country will see the development and installation of innovative and alternative onsite systems. These systems will require a more involved installation and yearly servicing along with additional education for service people on the new technologies. □

Would you like to see someone in your state or provincial wastewater trade association profiled in Snapshot?

Send your suggestions to Jim Kneiszel at editor@onsiteinstaller.com.

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SYSTEM PROFILE

◀◀ The new, 1,500-gallon septic tank fit between the first and second original stone-and-pipe trenches. The pipe from the second trench peeks out on the left. Risers and lids are from TUF-TITE.

Firehouse System Replacement Calls for Rapid Response

A gravity-flow system and fast-tracked installation enable a fire station to remain vigilant during southwest Arizona's wildfire season

By Scottie Dayton

Septage backing into the Whetstone Fire District firehouse in Huachuca City, Arizona, brought service provider Sierra Vista Plumbing on the run.

Laborer David Maeding ran a Maxi-Rooter (General Pipe Cleaners) down the house lateral to the 1,500-gallon septic tank. The 4-inch pipe was unobstructed. He then pulled the almost submerged effluent filter in the tank, but the liquid level remained static.

Unable to determine the problem, Maeding called sister company

American Septic Service in Sierra Vista to pump the tank, which didn't solve the problem. The station is home to six full-time firemen and an office manager.

Peter Bidon, district fire chief, hired American Septic Service to troubleshoot the situation. Foreman Zachary "Zack" Long used a Caterpillar 416F2 backhoe loader to excavate the tank. As he removed soil from around the outlet, wastewater poured into the hole through the gap where the 4-inch supply line had never been sealed to the tank.

To stop further environmental contamination, Bidon closed the station's lavatories and rented two portable restrooms. Meanwhile, Long continued his exploration and found the badly deformed plastic distribution box full of sludge. Moving to the stone-and-pipe drainfield, he noted the first two 84-foot laterals were clogged with sludge. The third trench had never seen effluent because the lightweight PVC supply line had been squashed flat.

Bidon hired American Septic Service to replace the system. "We were in the middle of our wildfire season," says Dawn Long, the company's field coordinator and septic designer. "If all 17 firehouse personnel and

continued >>

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SYSTEM PROFILE



◀◀ The gravity-flow system for the Whetstone Fire District firehouse in Huachuca City, Arizona, includes a 1,500-gallon septic tank and 64 Infiltrator Water Technologies Quick4 HC chambers in four trenches.

▼ Foreman Zack Long from American Septic Service saw-cut the southeast corner of the asphalt parking lot, enabling him to attach the new 4-inch PVC firehouse lateral to the original pipe with a 45-degree elbow.



System Profile

Location: Huachuca City, Arizona

Facility served: Whetstone Fire District firehouse

Designer: Dawn Long, American Septic Service, Sierra Vista, Arizona

Installer: Zachary "Zack" Long, American Septic Service, Sierra Vista, Arizona

System repair: Gravity-flow system

Hydraulic capacity: 750 gpd

some surrounding districts responded to a blaze, two portable restrooms at the location would provide insufficient sanitary facilities, and there's no guarantee more units would be available during the emergency. We had to move on this and fast."

Long worked with county officials to expedite the septic permit. "It was approved in four days instead of the usual six to eight weeks," she says. Zack Long and septic technician Tyler Thomas installed the gravity-flow and chambers system in two days, setting a company record.

Site conditions

Soils are sandy clay loam with an absorption rate of 0.40 gpd per square foot. Groundwater is not a factor.

System components

Dawn Long designed the system to handle 750 gpd. Major components include the following:

- 1,500-gallon dual-compartment oval concrete tank (Padilla Precast).
- EF-6 effluent filter and seven-hole distribution box (TUF-TITE).
- 64 Quick4 HC chambers with inspection ports (Infiltrator Water Technologies).

System operation

Wastewater and graywater from showers flow 50 feet through a 4-inch PVC pipe to the septic tank. Effluent from the tank flows 15 feet to the distribution box feeding four 64-foot-long trenches, each with 16 48-by-31-by-16-inch-high chambers spaced 15 feet side to side.

Installation

Constricting setbacks forced Long to sandwich the septic tank between the first and second original drainfield trenches and to locate the distribution box and delivery lines in the third trench. To ensure 100 percent accuracy, Zack Long and Thomas spent the first day measuring and staking out boundaries. They ran string to delineate the piping and components, then sprayed white marking paint under the twine.

The next morning, Long excavated the 10-by-12-by-10-foot-deep hole for the tank and bedded it with compacted pea gravel. The Padilla driver and Thomas set the tank, then Long conducted a 24-hour water test to check for leaks per the state septic code.

"I specify Padilla tanks because their round corners and tee-baffles distribute influent more evenly," Dawn Long says. "It smoothly circles around and goes down with minimal disturbance to settling."

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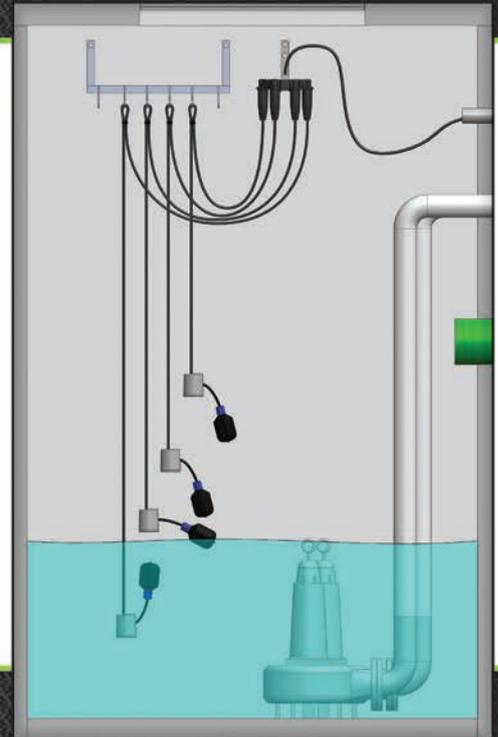
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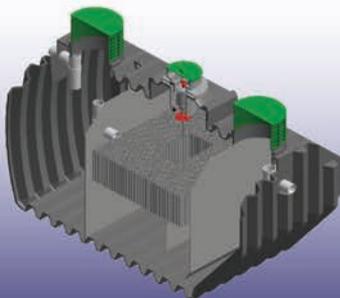


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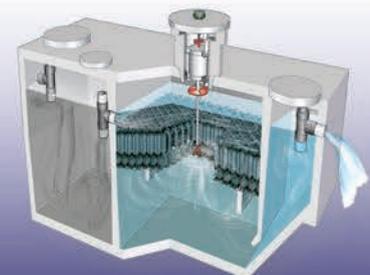


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SYSTEM PROFILE

“We bed all piping and components on compacted pea gravel, then photograph the evidence.”

Zachary “Zack” Long

➤ The original drainfield runs left to right under the swingset, while the propane tank marks the location of the septic tank.

▼ Dawn Long (left) uses a homemade handle to lift the distribution box lid as Tyler Thomas prepares to check the box and drainfield chambers with a RIDGID SeeSnake camera. After the inspection, the lid is replaced to prevent rodents from filling the box with soil. The riser and lid are from TUF-TITE. (Maranatha Photography)



Zack Long saw-cut a 2-foot-wide section of asphalt parking lot to intercept the firehouse lateral. After exposing the pipe, he excavated a 3-foot-deep trench to the septic tank, laid the lateral, and connected the two lines with a 45-degree PVC elbow.

“We bed all piping and components on compacted pea gravel, then photograph the evidence,” Long says. “After laying the piping, we cover it with more pea gravel to protect it while backfilling.”

Because the state’s point-of-sale inspection form asks if the distribution box was opened for inspection and its operational status, Dawn Long specifies a 24-inch riser to bring boxes to grade. “This practice ensures fast access for troubleshooting and to the speed levelers in case a trench is ponding,” she says.

“D-boxes must be bedded solidly to prevent movement during backfilling,” Long continues. “If they move, all hope is lost for equal distribution. It’s a misconception that if equal flow is established with speed levelers, then equal absorption will occur in the trenches. It doesn’t. Trenches absorb at individual rates.”

Zack Long set the distribution box at 3 feet deep, then began excavating the trenches while Tyler Thomas installed the chambers. They finished the drainfield the second day and restored service to the firehouse. “We backfilled around the tank by adding native soil a little at a time, then soaking each layer with a hose,” Long says. “The soil was suitable for gardens, making this excavation the easiest we’ve ever done.” □



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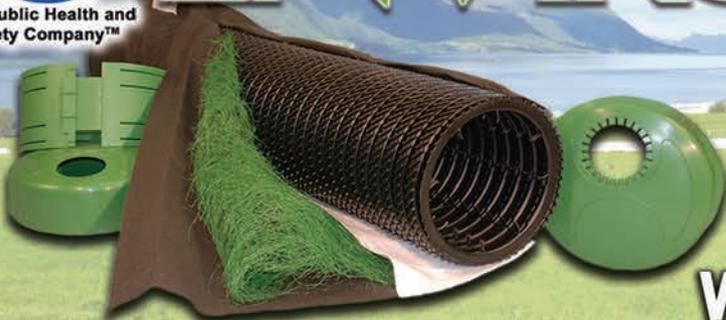
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Don't Become Complacent When You Take a Wand in Hand

Installers who use high-pressure water to maintain drainfield lines or clean equipment must diligently follow safety procedures

By Jared Raney

“High pressures can cause injuries similar to gunshot wounds, but have the added health hazard of involving contaminated water.”

That quote is from an Occupational Safety and Health Administration (OSHA) article describing the dangers of high-pressure jetting.

Installers face plentiful safety threats. Trenches, excavation, and confined spaces are often touted as the main concerns in risk management, but technicians can also face another underestimated risk — cleaning with water under pressure.

“Injection injuries can happen much lower than the pressures in use in drain and sewer applications. And that carries the risk of infection and tissue damage as well. ... Water injection injuries can appear minor but can cause serious health complications, even at pressures in the range of a consumer pressure washer or drain cleaner,” says Peter Wright, association manager with the WaterJet Technology Association and Industrial & Municipal Cleaning Association, or WJTA – IMCA.

DRAINFIELD JETTING

Despite being generally overlooked in terms of safety across the wastewater industry, due in part to a relatively low rate of injury when compared to working in trenches and the like, jetting is a concern simply because of how common it is. Installers may encounter jetting dangers while performing many tasks, from site maintenance such as scouring drainfield lines of roots or other accumulations to using a power washer to clean earthmoving equipment back at the shop.

“Trying to get people to understand that you can get injured by a water jet strike is probably the most difficult bit to get across,” says Nick Woodhead, president of US Jetting. “We’ve got to start promoting safety.

“I think people assume that hoses are not going to burst, and therefore, they are sort of immune. Or they’ve never seen a hose burst, or they’ve never seen a jet injury, so it doesn’t really register. People get complacent.”

And it’s not just equipment malfunction that operators need to worry about.

A case in point is Chad Unverzagt, an Indiana worker who was killed in 2012 while responding to a routine sewer blockage. Unverzagt wasn’t killed by an exploding pipe or other malfunction — his hose got loose while the system was pressurized as he was attempting to retrieve it from the pipe. It was a momentary lapse in a job he’d done a thousand times before over 30 years in the industry.

With no protective gear, he didn’t stand a chance against the high-pressure water, which lacerated his neck, killing him before help could arrive.

“That’s more of an isolated incident, but it’s worth reminding people,” Woodhead says. “That’s why you’ve got to know what you’re working in.”

“Mark the end of the hose a distance from the nozzle to help indicate the location of the jets within the pipe ... **It’s definitely important to have respect for the power and the force of the high-pressure water streams.**”

Peter Wright

BE PROACTIVE

For those who work regularly in high-pressure water situations, protective clothing could be considered to improve safety.

“The safety gear is essential when you’re running a machine. So many people don’t wear anything,” Woodhead says. “We’ve got to try and get it across to people, it is worth investing in the kit to protect yourself. Even if you’re the operator and maybe the boss doesn’t want to spend the money; it’s worth investing in it, just as a precaution.”

US Jetting has made it their practice to supply a pair of protective gloves to customers with purchase of a jetting system, and it has encouraged other manufacturers to do the same.

Other products like semiautomated jetting systems give even more options for mitigating risk to operators.

“OSHA says if there’s safety gear available, the owners of the company are bound to supply it,” Woodhead says. “Rather than have government regulation, we’d rather be self-regulated and have people understand (the dangers).”

Beyond planning for the worst, simple common sense and following standard operating procedure goes a long way to ensuring safety. That

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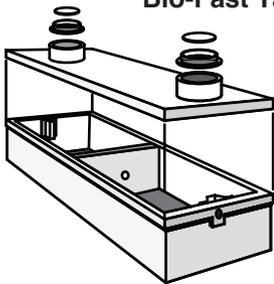
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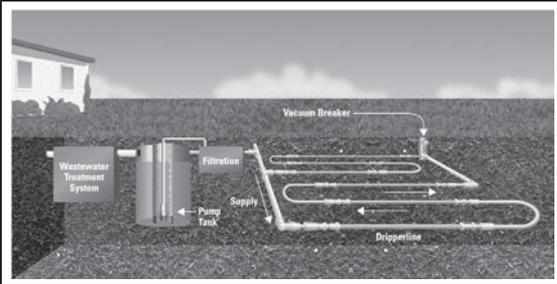
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includes checking the equipment before each job, performing the necessary maintenance, and assessing each job site before beginning any work.

“It doesn’t take more than a couple of minutes to do the cursory checks,” Woodhead says. “Once you’ve gotten to your location, you’ve got to do your due diligence.”

WJTA-IMCA offers several manuals covering many aspects of pressure cleaning, including best practice for waterjetting and industrial vacuum. US Jetting has its own video and PowerPoint presentation covering the basics of jetter operation and safety, and the National Association of Sewer Service Companies, NASSCO for short, has videos on jetting as well as a Jetter Code of Practice, which are available for a fee.

PIPE-CLEANING TIPS

To get you started, Wright offers a few quick tips to keep in mind: “Mark the end of the hose a distance from the nozzle to help indicate the location of the jets within the pipe. Ensure the system is depressurized before conducting maintenance or repairs. Ensure the nozzle is well inside the pipe before bringing the system up to pressure,” Wright says.

It’s easy to oversimplify pipe cleaning, but when the pressure is on, there’s a lot operators can do to prevent accidents — it’s just a matter of knowing how and promoting safety whenever possible.

“It’s definitely important to have respect for the power and the force of the high-pressure water streams,” Wright says. □

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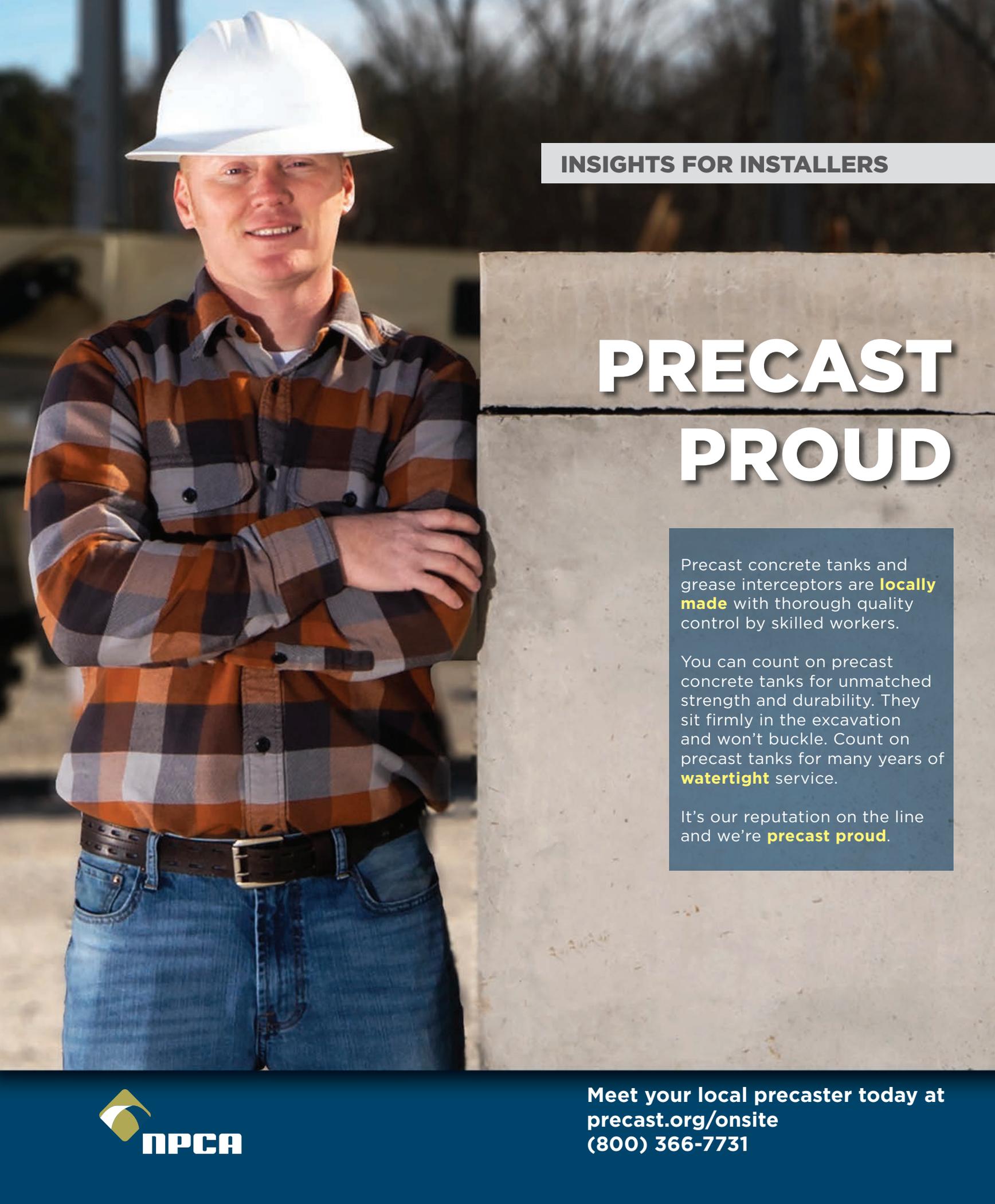
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Jacksonville, Florida, Officials Want Universal Design for Septic Lids After Child's Death

By David Steinkraus

The death of a 3-year-old boy in Florida sparked a TV news investigation of underground tank safety and promises from the mayor of Jacksonville to standardize all the tank lids used in city parks.

Florida regulations require tanks to be covered in such a way that manholes are resistant to vandals, tampering and children. Methods to secure tanks may be a lock, lid requiring special tools for removal, or lid weighing at least 58 pounds, regulations say.

On Oct. 22, Amari Harley disappeared during a family birthday party at the city's Bruce Park. Police came to focus their search on an underground septic tank. The boy's body was found inside when the tank was drained just before 8 p.m. that evening.

In January, the city had a complaint about an uncovered tank at the same park, and the city says it fixed the problem the next day. WJXT television talked with an 8-year-old girl who says she fell into the same tank about two months before Amari Harley. She says she ran across the cover, and it gave way beneath her. She managed to catch herself on the sides of the tank, and her mother pulled her out.

Jacksonville Mayor Lenny Curry says he planned to order the city to standardize lids at every park.

"When we roll out our final review, I can tell you I am going to order that we standardize the lid process in Jacksonville, in all of our parks, and ensure that safety is our top priority," Curry tells WJXT.

That pledge came after WJXT reporters visited all 76 parks and boat ramps where the city manages septic tanks and lift stations. They found a variety of tank covers made of various materials. At one park, they found a plastic or fiberglass cover; another opening with a metal lid and padlock; and a third opening covered with a bolted fiberglass lid. At a second park, reporters found a lid that was apparently secured yet easily opened because the bolts were corroded. Many parks had substantial security, the reporters found, including lids with padlocks and, in some cases, access openings inside buildings that were closed to the public.

Patrick Mullhall, vice president at Polylok Inc. / Zabel, says it was good of the journalists to look at the public sites, but he says risk extends beyond public property. "If you look at just the private homes within Jacksonville, you're talking hundreds of thousands with the same problem lurking in backyards," he says.

His advice for professionals dealing with septic tank covers comes in two parts.

Part one is to inspect what's there. Make sure the lid is in good shape, and if it is locked with any type of fastener, make sure the riser material is

in good shape so the fastener (he recommends stainless steel) is solidly bedded. Then, make sure you use all those fasteners. "If there are eight screws on a cover, eight screws should go back in," Mullhall says.

Part two is providing a second layer of safety in case a tank opening is exposed. Solutions depend on what is being installed and what a manufacturer provides, Mullhall says. "There should be safety redundancy. To me, it's just utterly foolish if you don't have a secondary means of protection. And it's cheap," Mullhall says.

Manufacturers offer products such as screens that fit inside a riser and prevent someone from falling in, or locking mechanisms that require a key, he says. All tanks can be retrofitted with safety devices, he says.

Remember that an accident like this can happen in a moment. In one case, Mullhall says, a pumper servicing a tank walked back to his truck while leaving a lid off. In that short time a child found the opening and fell in. Few states mandate safety devices, but more of them are realizing the importance of such requirements, he says.

Indiana

The LaPorte County Health Board took steps to shut down septic systems and halt construction because of rising water levels in Lake Michigan.

In 2013, the lake hit a record low, but it has since rebounded, although this summer's high was still 2 feet below the record set in 1986. Yet, the water is high enough to flood septic systems along the shore.

As a result, two property owners in the community of Long Beach, about 2 miles from the Indiana-Michigan border, were ordered to shut down their septic systems. Their tanks will become holding tanks that must be pumped out regularly. The health board also put a moratorium on permits for new systems to be built next to the lake, and it revoked two permits issued for systems not yet built, reports the *Michigan City News-Dispatch*.

Several years ago, the Indiana Health Department revised its septic system placement rule to allow systems within 50 feet of the lake if the waste was pretreated. Previously, the limit was 200 feet. Patricia Sharkey of the Long Beach Community Alliance says some property owners rushed to take advantage of the relaxed rule.

"Our organization has long had concerns about septic systems being located too close to the water," she says. "What we're seeing is the result of that policy."

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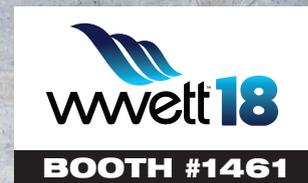
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Massachusetts

A Cape Cod town rejected a proposed onsite treatment system for a laundromat. Instead, the town says it would work with the developer and the Sandwich Water District to pursue a better long-term solution.

Developer Thomas Tsakalos tells officials in the town of Sandwich that he wants to build an onsite system to treat water from the laundromat and discharge it into the ground. But, town bylaws prohibited such a discharge because the area is a protected water district.

Tsakalos tells officials those bylaws were written before the advent of modern treatment technology that can return wastewater to potable condition. He says he would use such technology for the 30,000 gpd flow from the laundromat, reports *The Sandwich Enterprise*.

Dan Mahoney, superintendent of the water district, says there were other concerns. He acknowledges the frustrations with current rules but says water commissioners are also worried about allowing pharmaceuticals and other contaminants of emerging concern to reach groundwater.

Washington

Kittitas County, which lies about 85 miles east of Seattle, is having difficulty screening septage received from local haulers. The bar screen that removes large debris has 3/8-inch openings, and there is no water at the receiving station to clean the screen, reports the *Daily Record* in Ellensburg, Washington. The county accepts about 1.2 million gallons of septage annually. County commissioners have requested that county staff investigate options for a water supply. That could be drilling a well or hauling in water.

Michigan

A proposal for a Leelanau County septic ordinance was turned down once, but the county commissioner who proposed the idea says commissioners are now open to considering the idea again.

In July, county Commissioner Ty Wessell asked for the creation of a committee to research and write an ordinance that would include required inspections. But that idea failed to gain support among his fellow commissioners, reports the *Traverse City Record-Eagle*. Leelanau County occupies a peninsula in Lake Michigan on the northwestern side of the state's lower peninsula.

Now, Wessell says commissioners are open to a recommendation from the health department operated jointly by Leelanau County and adjacent Benzie County. Tom Fountain, the health department's director of environmental health, says rules cover new construction adequately but not older systems that could be covered by a point-of-sale inspection. He says there is talk that Michigan Gov. Rick Snyder may push for a statewide point-of-sale rule before he leaves office at the end of this term.

Maryland

Harford County will allow some construction on land that otherwise is reserved for expansion of an onsite system's drainfield or replacement of a failing drainfield.

Under the legislation, the county health department could grant waivers for commercial or residential property owners to build in these septic reserve areas, reports *The Baltimore Sun*. Additions to existing structures, driveways and parking lots are among the construction that may be

allowed if the property owners ensure their systems are working properly and meet all county and state requirements.

Only Councilman Chad Shrodes voted against the rule. He says waivers for commercial properties were fine, but he worried that residential property owners may not be able to afford the cost of demolishing a structure in order to repair a failing system, and he says some people may not know a previous owner built in a septic reserve area. In the past, Shrodes has supported legislation that reduced the area required for reserves. He says this rule further constricts property owners.

New York

The village of Southampton proposed legislation requiring state-of-the-art wastewater treatment technology for all new construction and some renovations. The same technology would be required for substantial changes to an existing onsite system.

The village is on the eastern end of Long Island and is part of Suffolk County where a number of communities, as well as the county itself, have been pushing or requiring better onsite technology to reduce the nitrogen load in nearshore waters of Long Island Sound and the Atlantic Ocean.

The proposed rule would not require an upgrade to existing systems unless there are plans for a new system or an expansion of a dwelling that increases the number of bedrooms, reports *The Southampton Press*.

Rhode Island

Because of public outrage over the cost, the Town Council in Coventry voted to suspend a sewer construction program. Coventry is on the edge of the urban area around Providence and touches the Connecticut border.

Citizens complained about the cost of hooking into municipal sewer service and leaving their onsite systems behind. The cost to join municipal sewer service was estimated at more than \$20,000 per property, reports *The Coventry Courier*. More than 200 people filled a high school auditorium for a question-and-answer session with the town manager.

"I have a septic tank that works perfectly, and now they tell me I have to come up with another \$20,000," says one resident. "There is no way I can come up with that kind of money."

Resident Janice Stenson asks how many of the homes in the town's sewer facilities plan had failing septic systems.

"Rather than arbitrarily choose some streets, should you not have looked at the records first to see if (replacement is) needed?" she says. ◻

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PRODUCT NEWS



SJE-Rhombus EZconnex Float Switch Connection System

The EZconnex quick-release Float Switch Connection System from SJE-Rhombus has a four-port manifold that connects one to four EZconnex float switches for level control applications. Its color-coded wiring pairs and corresponding colored caps make for easy installation and maintenance. The system is rated for temporary submersion, and a dual-seal design protects against water ingress and corrosive gases. It is CSA certified and offers multiple manifold and float-switch cable lengths to suit a variety of applications. 888-342-5753; www.sjerhombus.com.

Water Cannon Inc. - MWBE Easy Start Unloader Plumbing Kit

The Easy Start Unloader Plumbing Kit from Water Cannon Inc. - MWBE ensures water goes where it should and keeps excess water inside the pressure washer. The preassembled unit includes a brass valve body with a stainless steel ball and seat. It adjusts from 100 to 5,650 psi and has an adjustable ergonomic handle, featuring a tamper-resistant setting. The kit has two inlet and bypass ports and a built-in easy-start feature so the pump can start without static back pressure. It must be mounted in a vertical position. 800-333-9274; www.watercannon.com. ▣



INDUSTRY NEWS

Maine Association of Site Evaluators holds volunteer day with local Habitat for Humanity

To help raise awareness for SepticSmart Week, the Maine Association of Site Evaluators worked with its members and local businesses to provide Midcoast Habitat for Humanity with materials for a septic system for a home in Camden, Maine. The Maine Association of Site Evaluators' purpose is to advance the profession through training and public awareness. The design, installation, and inspection process were professionally recorded and will be made publically available on the Maine Association of Site Evaluators' website, www.maineese.com, when completed.

National Precast Concrete Association announces award, new board member

Andy Wieser, president of Wieser Concrete, headquartered in Maiden Rock, Wisconsin, was presented with the Robert E. Yoakum Award Oct. 14, at the NPCA 52nd Annual Convention in Atlanta. Wieser was presented with the association's most prestigious honor for devotion to the betterment of the industry and the association. NPCA also announced that Mark Wieser was elected to serve a three-year term on its board of directors. Wieser holds a degree in civil engineering from the University of Wisconsin-Platteville and is a registered professional engineer in the state of Wisconsin.



Mark Wieser

John Deere rolls out new website

John Deere has completed the global rollout of new company websites. The site works on a variety of platforms, from smartphones and tablets to traditional desktop computers. The launch included 33 websites in 16 languages and approximately 2,300 product pages. ▣

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www.azowra.org; 928/443-0333

ARKANSAS

Arkansas Onsite Wastewater Association;
www.arkowa.com

CALIFORNIA

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

COLORADO

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

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

DELAWARE

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

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

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Georgia Onsite Wastewater Association;
www.onsitewastewater.org; 678/646-0379

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

IDAHO

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

ILLINOIS

Onsite Wastewater Professionals of Illinois;
www.owpi.org

INDIANA

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

IOWA

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

KANSAS

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

KENTUCKY

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

MAINE

Maine Association of Site Evaluators;
www.mainese.com

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

MARYLAND

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

MASSACHUSETTS

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

MICHIGAN

Michigan Onsite Wastewater Recycling Association;
www.mowra.org

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

MINNESOTA

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

MISSOURI

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

NEBRASKA

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

NEW HAMPSHIRE

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

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

NEW MEXICO

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

NEW YORK

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

NORTH CAROLINA

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

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

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

OHIO

Ohio Onsite Wastewater Association;
www.ohioonsite.org; 888/294-0084

OREGON

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

PENNSYLVANIA

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

Pennsylvania Onsite Wastewater Recycling Association;
www.powra.org

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

TENNESSEE

Tennessee Onsite Wastewater Association;
www.tnonsite.org

TEXAS

Texas On-Site Wastewater Association;
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Education 4 Onsite Wastewater Management;
www.e4owm.com; 713/774-6694

VIRGINIA

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

WASHINGTON

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

WISCONSIN

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

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

NATIONAL

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

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

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

CANADA ALBERTA

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

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British Columbia Onsite Wastewater Association;
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NEW BRUNSWICK

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

NOVA SCOTIA

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

ONTARIO

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

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

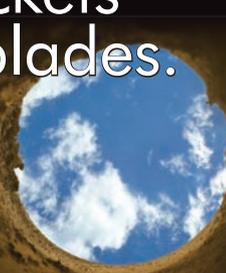
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