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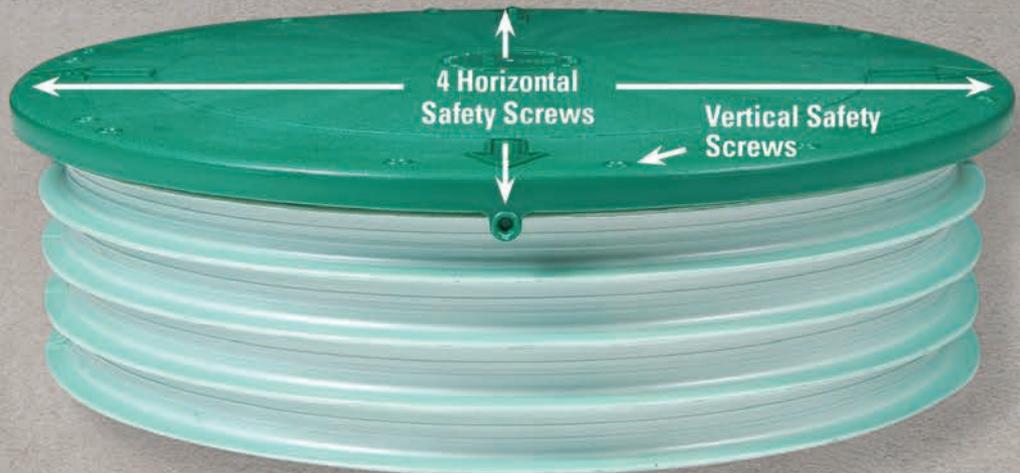


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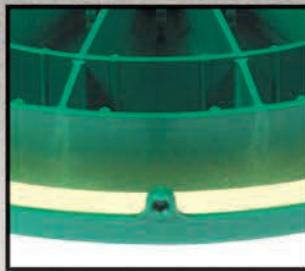
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By David Steinkraus

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It took a little time for Matt Dow to discover his passion for septic system installation. Now his company, Dow Excavating, provides onsite services for the residents of Hollis, Maine. (Photo by Kevin Brusie)

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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.

**Jim Kneiszel**



Send your comments, questions or opinions to Jim Kneiszel at [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com)

# Are Onsite Installers Being Paid Enough?

Higher wages, stronger benefits and better equipment may help turn around labor shortages in the wastewater industry in 2022

A lot has been made of the labor shortage since the COVID-19 pandemic hit nearly two years ago. Service businesses were the most severely disabled by a shrinking workforce ... for evidence of this, simply walk into a restaurant and expect to be served quickly.

People like to throw out a lot of reasons to explain why “Help Wanted” signs are placed in just about every window in commercial districts and industrial parks across the country. Some will say lazy people are disincentivized from working because of generous unemployment benefits that started during the pandemic. Others will point out that many who died of COVID or related illnesses were taken out of the workforce, contributing to the shortage of able-bodied workers.

These arguments about the worker shortage have devolved into partisan political tirades and I’m not at all interested in that. It’s not productive and it won’t lead to any meaningful solutions to our present crisis. I guess I’ve lost my patience with the current national debate because our wastewater industry has faced a growing shortage of workers for years. It’s nothing new.

**I see many installers in their 50s and 60s searching for ways to ensure a solid future for the companies they started and love.**

They want to turn the great potential of these businesses over to enthusiastic younger people to take to the next level.

How can we turn things around for septic system installing and excavation companies? That’s *the* question I would like to dwell on as we head into a new year that promises a continued worker shortage and opportunities to turn around the grim outlook.

It’s never been a more important time for change as it seems the wastewater industry is populated mostly by workers who are much closer to collecting Social Security checks than starting a fresh, new career. I see

many installers in their 50s and 60s searching for ways to ensure a solid future for the companies they started and love. They want to turn the great potential of these businesses over to enthusiastic younger people to take to the next level.

But how do they get there? How can they attract and retain the workers who will step up eventually to supervise a crew, assume daily management duties, and eventually take over the company? This is the central dilemma facing onsite installers today. Certainly, there are other pressing issues, such as adapting to new wastewater regulations and constantly learning new technologies. But these things won’t matter if you don’t have the workers to operate equipment, set tanks and lay pipe.

## SHOW ME THE MONEY!

When I worked as newspaper reporter years ago, whenever we investigated government corruption or a shady business deal, the editors always used the old adage, “follow the money.” Whenever you wanted to test someone’s motivation for a questionable decision, a big green wad of cash usually pointed to the truth. So when we look for reasons young people aren’t joining the wastewater industry, we have to consider that low wages might be a major factor. Are installers being paid enough?

There was a time not too long ago when companies might be talking about onboarding a new helper or crew member for \$15 an hour. However, competition for good blue-collar workers before and during the pandemic seems to have changed that. For companies charged with providing an essential service like yours, we might be in the midst of a radical pay adjustment period. Given what I’ve heard about the workforce in general and wastewater industries in particular, we may be looking at doubling that \$15 expectation to find reliable workers who see a future in the wastewater industry.

To the longtime owner of an installing company, it might seem like starting pay has kept pace with U.S. economic conditions. But a recent study of minimum wages worldwide says otherwise.

According to the personal finance website, [www.money.co.uk](http://www.money.co.uk), the U.S. tops countries whose minimum wage value has decreased over the past 10 years. According to the global study, the minimum hourly wage for U.S. workers was \$8.60 in 2010 and, adjusted for inflation, was \$7.10 in 2020.

That's a drop of 15%. Countries following the U.S. on this inauspicious list are Greece, Belgium, Netherlands, France, Luxembourg, Slovakia, Ireland, Australia and Brazil.

Installing jobs don't pay minimum wage, but the statistics may be an indicator of lagging pay up and down the scale. Wastewater jobs entail hard work, sometimes unpleasant conditions and long hours of unpredictable emergency service. Working in a trench is not glamorous, but it is rewarding because handling wastewater is vital to the health of the economy and everyone in your community. In my mind, your technicians are to be celebrated for the work they do ... and their pay should be commensurate with the importance of their jobs.

And when you compare what you pay to others in the trades, look at the plumbers, electricians and growing manufacturing companies in your hometown. These workers are often required to have significant training and certification, but today's installers increasingly need similar on-the-job training and additional certification to perform their duties. If there has been a pay gap between your technicians and other industries in the area, that gap should be narrowing to ensure more quality workers consider a career in wastewater.

## BEYOND THE PAY

Installing professionals should feel like they have some financial security. If they see a strong benefits package at your company, they are more likely to think of building septic systems as a career option rather than a way station to something better. And that's the attitude you need to foster if you are grooming your workers to take more responsibility.

Take a good, hard look at what you offer in benefits like health and life insurance, 401k retirement savings plans, personal time off, profit sharing and the like. Do your workers live paycheck to paycheck or are they able to set aside money for a new home or replace an old car? Are they able to contribute to a retirement plan? Are their families protected with insurance in the event they are injured or die? Is your company family friendly for workers, offering flexible schedules and understanding that your people have important priorities off the time clock? All of these benefits make your crew feel valued and cared for.

Next, are you doing all you can to help workers advance professionally? If you don't cover the costs of all training and education, you should rethink this. The same goes for promoting professional enrichment that will help your workers gain expertise that will improve their value down the road — whether or not they are working for you. Do whatever you can to help workers reach the potential you saw in them when they were hired. Maybe not all the time, but sometimes this concern for their career advancement will pay great dividends for your company.

Then assess the quality of the equipment workers are entrusted to use every day. Are your trucks and excavation equipment rusty and held together with baling wire, or do you upgrade the fleet regularly. Quality, well-maintained machines make the work more enjoyable and safer, and will help employees take pride in their performance and your company. And equipment that utilizes modern technology and provides greater operator convenience will convey to workers that your company wants to remain on the cutting edge in the industry ... showing that this is a good place for them to be.

## FOCUS ON QUALITY SERVICE

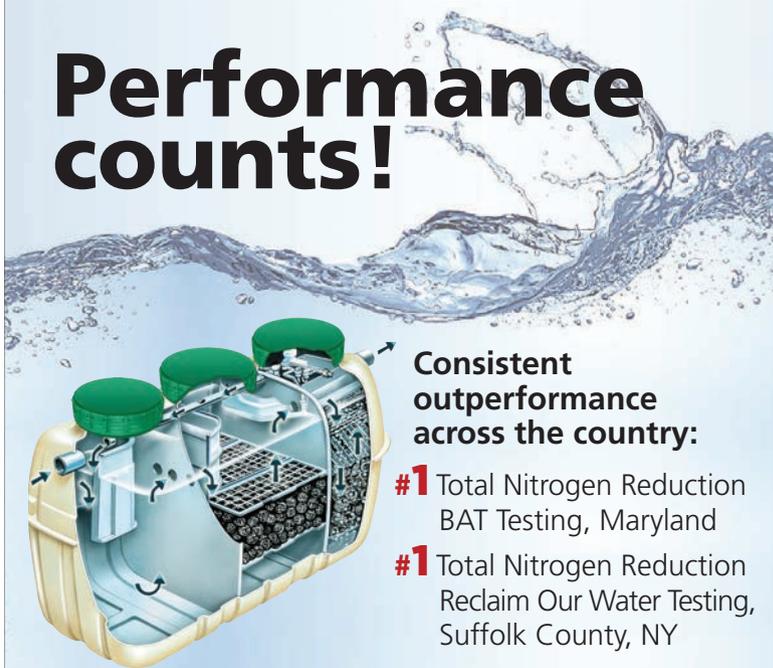
This all sounds great, I know. It takes immense resources to reach these goals, you might say. But if you can't find the capital to attract, retain and groom good workers for the future, what's going to happen to the company you built into a successful enterprise? Will it wither away, and therefore waste your years of hard work at the helm?

The answer is clear. It's another old adage: "You have to spend money to make money." And to generate the income to meet the task at hand, you must concentrate on quality, professional service rather than on low prices. Demand a fair profit for good work and show the customer the value prospect of a well-trained, experienced field crew that takes pride in their work.

Then watch what happens in 2022. □

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



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## FIGHTING THE COLD **Insulate Existing Septic Systems**

Both during construction and with existing systems there are measures that can be taken to reduce the likelihood that onsite systems will freeze. In colder climates we often get a layer of snow that helps insulate the system, but what if we have a winter with less than average snow with cold temperatures? This article outlines items to be checked during service visits or recommended to property owners to help protect onsite systems. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

## INSTALLATION CALCULATION **The Importance of Slope**

Slope calculations are necessary in onsite system design in order to evaluate constructability on a potential site, assess cut and fill volume calculations, and determine inverts of pipes. The slope will impact the type of equipment used to construct the system and the appropriate final treatment and dispersal components. Sara Heger gives a review of the importance of slope calculations in this exclusive online article. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)



## Overheard Online

**“If you have team meetings where you’re simply talking at your employees, rather than courting their opinions and inviting some give-and-take, you’re not really giving them any incentive to listen carefully.”**

– *How to Improve Your Team's Listening Skills*  
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## REACH MORE CUSTOMERS

### **Key Stats About Online Reviews**

For many consumers, reading online reviews is now an ingrained step in their buying and hiring processes. Although home service businesses have traditionally marketed through word-of-mouth, online review management is a crucial (and now unavoidable) aspect of online marketing. Reviews are a way to showcase your brand, integrity and knowledge. This article highlighted six key stats about online reviews that can no longer be ignored. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

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# Multi-Tank Precast System Overcomes On-Site Challenges

## Challenge

A new temple and cultural center development in the Midwest needed an onsite treatment system, but the site posed challenges including limited access, confined drain field space and sensitive surrounding habitats.

## Solution

To meet the area's treatment needs and protect the adjacent wetlands, designers chose durable precast concrete tanks for the three-step advanced treatment system. The precaster designed the tanks to fit the site's small footprint and maximize the limited drain field space. The precaster also installed piping at the precast plant to save installers time on the jobsite.



Workers install 12,000-gallon precast concrete tanks for a development in the Midwest.



By installing air piping and discharge piping at the plant, installation time was greatly reduced.

Photos courtesy of Wieser Concrete Products Inc.

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## INSTALLER PROFILE

» Keith Good and Matt Dow discuss picking up the next load of sand for a drainfield bed. (Photos by Kevin Brusie)

# DIGGIN' HIS GIG!

After years installing cell towers, Matt Dow found his passion underground building onsite systems

By David Steinkraus

**M**att Dow started his construction career in 2005 after graduating from high school. As an employee for a couple of companies that built cellphone towers, he excavated tower foundations, built roads over mountains, graded for drainage, ran conduit — basically doing everything except install the electronics.

It was a great life until it wasn't, says Dow, 35. "I was travelling all over New England, and I bought a house and had my first son. I did not want to live my life on the road."

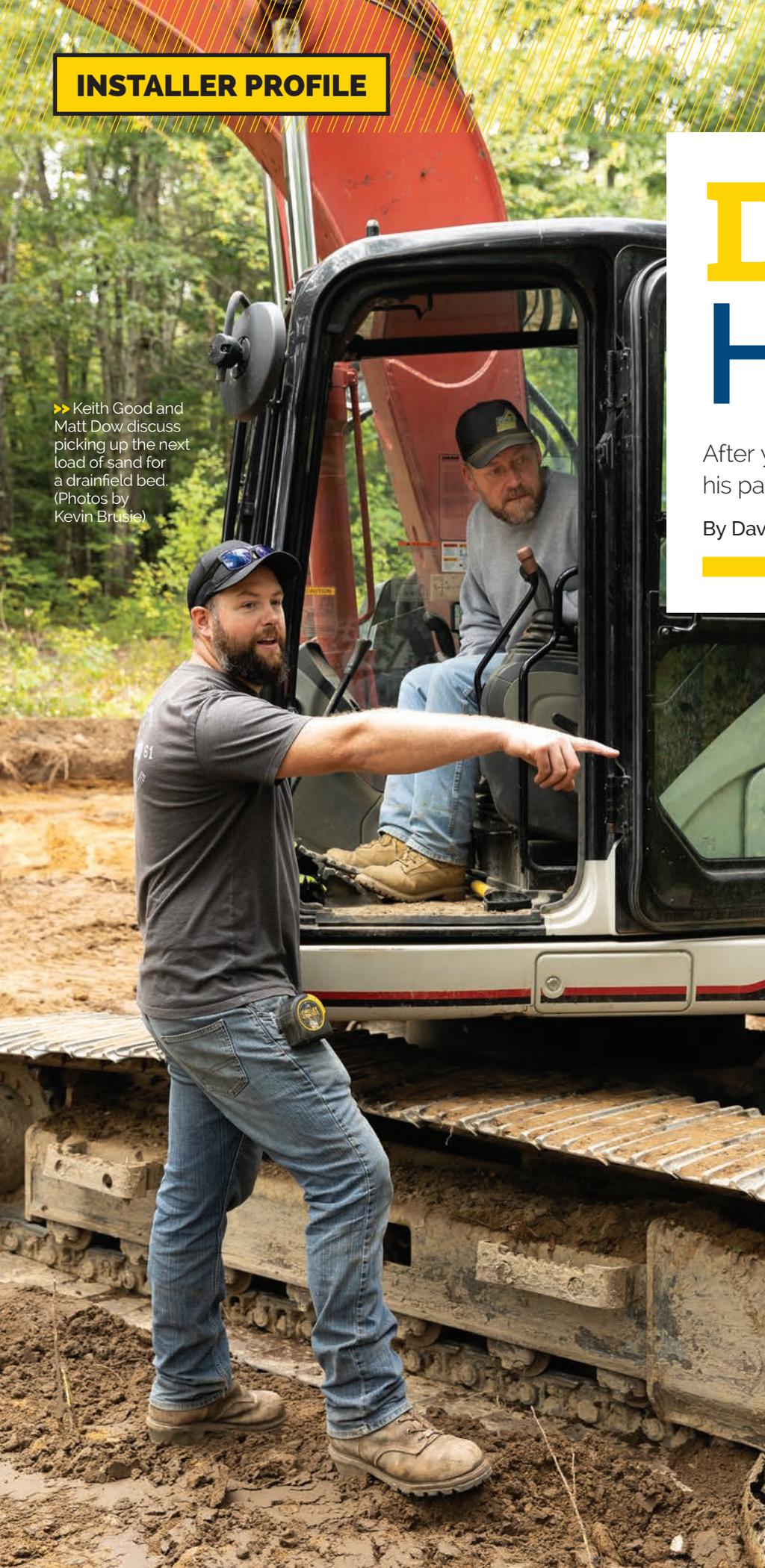
That was 2013, and he realized he needed to change his life. For about two years he welded and built dump truck bodies while he thought about what to do. At about the same time, his own home needed an onsite system. As he watched a contractor put in his system, he was intrigued with the onsite industry. After taking the necessary training, he was performing both inspections and installing work.

"I worked part time with a couple different contractors, and I found I would rather be doing installs. I like to have a finished product and have results, and I just wasn't getting the satisfaction from doing the inspections," he says.

All of his experience came together in 2019 when he formed Dow Excavating based in Hollis, Maine. As an inspector he had formed relationships with many real estate agents. He let them know he was starting his own installation company, "and that really helped me get started."

### GRAVITY RULES

Most common in his corner of the world are gravity-fed septic systems, with the addition of a pump station if gravity flow won't work.





>> Lewis Anderson checks the grade using a DeWalt laser level at a residential septic system site.

∨ Matt Dow delivers drainfield pipe to a residential property.



## Dow Excavating Hollis, Maine

- Owner:** Matt Dow
- Founded:** 2019
- Employees:** 5
- Service area:** 50-mile radius
- Services:** Onsite installation and repairs, general excavation and landscaping
- Website:** [www.dowexcavatingconcrete.com](http://www.dowexcavatingconcrete.com)

“We do a lot of Eljens. I’d say like 80% now are the Eljen-style leach beds,” he says. Stone-and-pipe drainfields are still popular where there’s enough space and the soil is acceptable. Infiltrator Water Technologies chambers and some concrete chambers round out the solutions employed in his area.

There are two reasons for the widespread Eljen use, he says: poor soil and small lots. “I feel they’re putting septic systems in places that years ago they wouldn’t put them, and these Eljens and chambers are allowing that,” he says.

Work takes his company east to Portland and Biddeford, Maine. Public sewer covers much of the developed land, Dow says, but on the outskirts of these cities are areas utilizing private onsite systems.

His most memorable projects are the those from his first year when he was working alone. “It was much harder work when I was working by myself,” he says.

“I would get out of the machine and rake, get back in the machine,” he says. “I can remember raking out a stone bed trying to get pipes to lay flat, and inch-and-a-half stone does not shovel well. It does not rake well. It was 100 degrees outside. That one’s always stuck out in my mind because I was by myself and never thought I was going to get to the end of the pipe run.”

A continuing challenge is rock ledge. “I’ve had different jobs where I’ll get a drawing and try to dig, and we can’t get deep enough. And then we have to have the system redesigned,” he says.

In other cases, a hammer works. For a small tank installation, that would be an electric jackhammer. For more extensive digging it’s a hydraulic hammer on the end of a big excavator he’s rented.

Dow’s other common obstacle is water that fills holes and makes jobs harder as the crew tries to fill a septic tank excavation with a level bed of stone. Standard equipment on his truck are pumps, both submersible electric and gas-powered. When a hole needs to be drained, Dow drops in

## SOLVING THE WORKER SHORTAGE

Matt Dow is likely to be putting out the “help wanted” sign soon. The question is whether he’ll be able to find someone to do the work.

“It seems like the younger generation just doesn’t want to do the manual labor,” says Dow, owner of Dow Excavating & Concrete. “I think it’s been pushed for so long, you need to go to college. The trades haven’t been pushed for a long time.”

He’s expected to find younger folks to help out during the busy season, but no luck. “I thought I’d have some college kids for the summer or some high schoolers, but I never really found them,” he says. His acquaintances report the same thing: Employees come and go very quickly.

Dow found a solution by two hiring people in their early 50s. “One of them, Lewis [Anderson], I’ve known for a long time,” Dow says. He had excavating experience but was working at a company where he did a lot of concrete work and wanted to leave it. “Keith [Good], my truck driver, he’s a brother-in-law to another guy I know, and he was between jobs.” Dow made the offer, and Good accepted.”

His latest hire fits the same pattern. Dow wanted another employee and found Larry Leighton, also in his fifties and with 20 years of experience installing systems and operating equipment.

a 5-gallon bucket drilled full of holes and filled with stone to act as a sump.

### INSTALLS RULE

By 2020, the company installed one to two systems per week. In addition there was repair work from pre-sale home inspections done by other people who found crushed pipes, damaged or crushed d-boxes, and old cast iron pipe.

About 50% of his work is installations, he says, 10-15% is repairs, and new-house packages are about 35%. Included in those packages is and onsite system and other excavating work such as foundations.

The pandemic was not a problem. In the early days there was a lull in work while officials figured out who could work and who couldn’t. Dow communicated with the state, which designated him and his team as essential workers.

“The housing market was still booming right through the pandemic, so a lot of the referrals and work — it just never slowed down,” he says.

His part of Maine is fairly well settled, and he’s only half an hour from Portland, the state’s largest city. What he experienced was the trend that followed the pandemic: When companies



Larry Leighton prepares to swap buckets on a Link-Belt excavator to scarify the bottom of a drainfield bed.

closed their offices and asked people to work remotely, those remote workers realized they were then free to live where they wished.

“A lot of out-of-staters from Massachusetts,” Dow says, “they have good jobs down there, a higher pay scale down there. Once they went virtual they were able to move, still make the same money, and buy houses up here. The real estate market’s been crazy with the lack of inventory.”

## SEEKING WORK

To start his career, Dow became certified through the state’s wastewater disposal class. Certification provides an option to skip the first of two required inspections of the systems he installs. The first inspection is called the “horizon inspection,” and it is done to ensure an installer has scarified the bottom of a hole using the excavator teeth and then mixed sand with the native heavy clay to ensure water will move into the soil.

Because he’s been certified, Dow can fill out an affidavit attesting that he did the procedure properly, instead of waiting for a town inspector. Only the final inspection of the installed components requires a town official.

“Some towns like to see the horizon anyway, but in other towns, if you work with the town a lot and they see what type of work you do, a lot of them will accept the affidavit,” he says.

For Dow, marketing is limited mainly to social media presence with a Facebook page and Instagram account, the Facebook-owned, visual-focused site.

**“In this industry it always seems like you need more and more equipment. You never have the right piece of equipment for the job. I feel like it’s a never-ending balance of having everything you need for everything you do.”**

**Matt Dow**

“I don’t do any ads anywhere. I sponsor my son’s Little League team and try to do things in the community — when there’s a community event and they ask for sponsors,” Dow explains. “I sponsor a couple of race cars of friends just to get my name out there. Other than that, I’ve been lucky enough that I haven’t needed to do anything else.”

Dow says he would like to do more marketing to round up customers, but he’s a tricky point with the business right now.

“With the workload right now, I’m busy enough that I really need to hire another operator,” he says. One of his two present employees drives the dump truck and helps with installs. The other is a laborer. If Dow hires another operator to run equipment, he would have time to do estimates and other necessary tasks, and he could also create two teams, one doing repairs and the other focusing on new-house packages.



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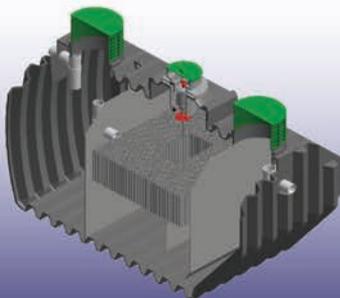


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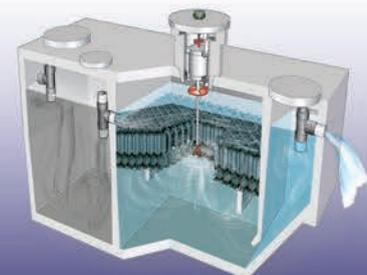


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“I worked part time with a couple different contractors, and I found I would rather be doing installs. I like to have a finished product and have results, and I just wasn’t getting the satisfaction from doing the inspections.”

**Matt Dow**

“But then that ends up with needing another dump truck. I’m trying to figure out how big I want to get in taking that next step to keep two crews running,” he says.

The economy may make that decision for him. High costs of building material took away some house package work when homebuyers backed out, but he says he’s still leaning toward hiring that extra person.

## MACHINE MATTERS

To handle his onsite work, Dow depends on:

- 2019 Bobcat E50 tracked mini-excavator
- 2017 Link-Belt Cranes Spin Ace 145 full-size excavator
- 2012 John Deere 323 tracked skid-steer
- 1988 GMC General 10-wheel, 14-yard dump truck
- 2013 Chevy 1-ton truck with a Reading dumpbody
- 2005 Eager Beaver 20-ton equipment trailer for the big excavator
- 2019 Sure-Trac 8-ton tilt trailer for the skid-steer

▲ The Dow Excavating team includes, from left, Keith Good, Lewis Anderson, Larry Leighton and Matt Dow.

While he has a stable of equipment now, Dow didn’t buy machines when he started the company. “For the first six months I rented an excavator from a friend who doesn’t make a living with it but has one for his property,” he says.

Dow rented by the day to start. Then he bought his Bobcat mini-excavator new. The rented excavator was a 10,000-pound Kubota. He learned it was a bit too small for his work, but he knew he wanted a zero-swing machine.

The Bobcat rubber tracks are useful, he says, for example to minimize damage to paved driveways. Size is important for jobs in small yards. But the Bobcat isn’t quite large enough to reach into the big dump truck and load or unload material, he says, and the limited reach of its arm means dirt must be moved in stages instead of once.

His solution was the Link-Belt excavator. It’s zero-swing, but he wishes it had rubber tracks because as it is his crew must lay plywood to protect pavement from the machine’s metal tracks.

“In this industry it always seems like you need more and more equipment. You never have the right piece of equipment for the job. I feel like it’s a never-ending balance of having everything you need for everything you do.

» Larry Leighton and Lewis Anderson watch as a load of sand is delivered at a work site.



“It’s an expensive industry to get into. You can get into debt really quickly,” Dow says.

Instead, he says, he took a slower approach: Buy the basic equipment he needed and try to make that work for every job.

### HELPING HANDS

Joining Dow in making the business run are employees Lewis Anderson, Keith Good and Larry Leighton. Another worker who recently joined is Dow’s wife Malerie, who handles bookkeeping and payroll. She owned a day care for a decade, Dow says. The pandemic came, and she closed it in March 2020. For the next year she home-schooled their three children: Brody, 10; Ily, 8; and Colter, 4.

One of the struggles for Dow’s new business is trying to keep to a schedule and keep customers happy.

“It’s very hard. You get rain days, and things don’t go as planned. You can get scheduled out weeks for people who think you’re going to be there a lot sooner,” he says.

Each year, it seems, his schedule is filled earlier. And it’s hard to pass on work, he says.

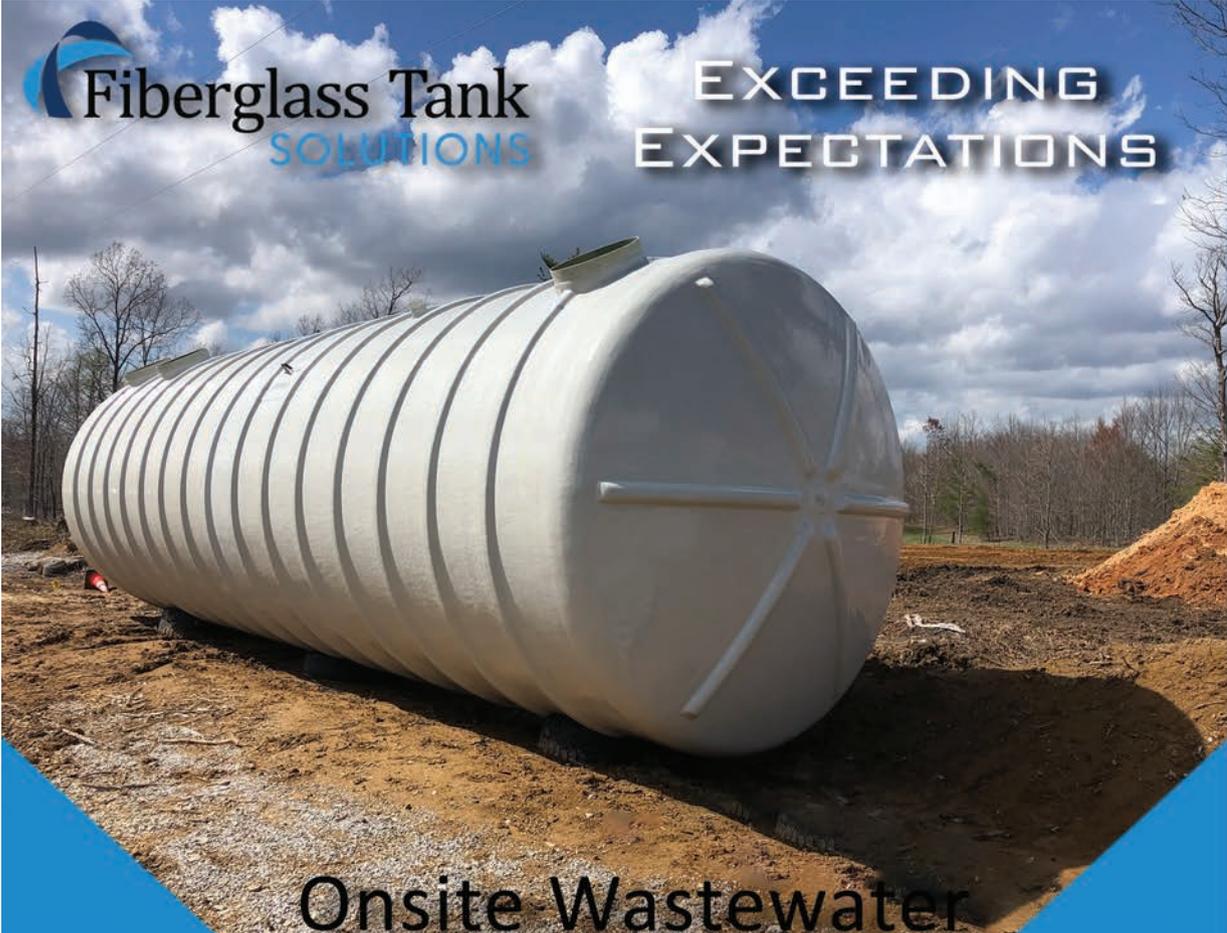
Too many subcontractors he’s observed will promise to arrive on a certain day but will then change that and change it again. He says his solution is to be as upfront and as honest as possible with customers, keeping them up to date on changes.

It’s the kind of solution that may carry this new business a long way. □

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# San Francisco Expands Wastewater Recycling Requirements for City Buildings

By David Steinkraus

Cities are one of the last places you might expect onsite wastewater recycling, but in late September the San Francisco Board of Supervisors voted to expand the recycling required of buildings in the city.

Since 2012, buildings of at least 250,000 square feet have been required to treat some graywater (showers and bathroom sinks) and reuse it to flush toilets and irrigate plants, report San Francisco news media. The new rule lowers the recycling threshold to 100,000 square feet. Large commercial developments will also have to expand influent to include wastewater from kitchen sinks and toilets.

Residential complexes will have to collect condensate from heating and cooling systems and use that in laundry rooms. Affordable housing is exempt from this rule.

When constructed a few years ago, Salesforce Tower, the city's tallest building and headquarters of the customer relationship software company Salesforce, included a full wastewater recycling system. Effluent is for non-potable use: flushing toilets, irrigating plants and running cooling towers. Recycled water replaces about 30,000 gallons of fresh water per day for the building.

All the new rules take effect this month. And all of this happens as California faces the prospect of water shortages driven by climate change. Gov. Gavin Newsom last fall approved a \$5.2 billion plan that will invest in short-term drought response and long-term water resilience. There is money for water and wastewater infrastructure with a focus on small and disadvantaged communities.

## Massachusetts

A town's challenge to a lawsuit predicts widespread problems for onsite system owners if its opponent prevails in the case.

Earlier this year, the Conservation Law Foundation filed suit against the town of Barnstable on Cape Cod and its plan for a wastewater treatment plant. The foundation claims the state permit for the plant allows for too much nitrogen discharge, which ultimately travels through groundwater and feeds algae blooms in Lewis Bay. The foundation asked a federal judge to require a stronger NPDES permit from the U.S. Environmental Protection Agency.

In a response, the town said effluent from its plant requires about 21 years to reach the bay. A 2020 Supreme Court decision found effluent discharged into groundwater can be the equivalent of direct surface discharge, depending on the circumstances. Because of this ruling, the town wrote, if the foundation prevails in the case, homeowners, businesses and other owners of onsite systems would either have to shut down those systems or obtain Clean Water Act permits to continue operation.

## Florida

As part of a \$114 million program to improve water quality, the state last fall recommended that Orange County receive a \$41 million grant for wastewater treatment. According to the county government, money may be used for upgrading standard septic systems to include nutrient removal technology, to provide advanced wastewater treatment or to replace onsite systems with municipal sewer.

## Ohio

Communities in the southeastern part of the state will receive more than \$11.2 million in funding to improve wastewater and water infrastructure. In Athens, Jefferson, Lawrence and Pike counties, local health departments will receive \$150,000 for the repair or replacement of onsite systems, reported the Pike County *News Watchman*. The loans are eligible for forgiveness of the principal.

## Washington state

Starting last fall, every county in the state was eligible for the Regional On-Site Sewage System Loan Program. Although the program was established in 2016, the last 17 counties were only recently added. Under the program, residents may obtain financing for the repair or replacement of failing onsite systems. The program finances the full cost of a system and does not require upfront costs.

Owner-occupied homes are the primary targets although commercial properties and homes not occupied by owners may also qualify. The loan program is a partnership among the state Ecology Department, Health Department, and Craft3, a nonprofit community lender.

## Texas

People with a failing onsite system in the Lampasas River watershed may be eligible for a grant to pay up to 100% of the cost of a replacement. Federal money will pay for about 15 systems within the watershed, with a maximum payment of \$8,000 for each system, according to *AgriLife Today* from Texas A&M University. The watershed covers parts of Mills, Hamilton, Lampasas, Coryell, Burnet, Bell and Williamson counties.

Money comes from Clean Water Act grants for non-point sources, and the program is being coordinated by the Lampasas River Watershed Partnership. More information is available online at: [www.lampasasriver.org/ossf](http://www.lampasasriver.org/ossf). Priority will be given to failing systems within 2,000 feet of an affected waterbody. ▣

Rules and Regs is a monthly feature in *Onsite Installer*<sup>™</sup>. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com).



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# Abandoning Sewage Tanks Properly Saves Lives

Follow these decommissioning tips to prevent dangerous collapses, ongoing pollution issues and unnecessary underground obstacles in a customer's yard

By Jim Anderson and Dave Gustafson

Every year there are news accounts of adults, children or pets falling into a collapsed septic tank, cesspool or seepage pit, causing serious injury, long-term health problems and even death. This past year has been no exception with multiple reports from different parts of the country.

Aside from these types of catastrophic incidents, there are other problems caused by not properly abandoning onsite sewage treatment systems. They include instances of flooded basements or businesses due to water following old piping back to buildings from a flooded septic tank; health problems due to contact with pathogens; and all sorts of minor scrapes and broken bones.

When a system is decommissioned in the process of upgrading and improving an onsite system or when the house switches to a municipal sewer, it is important to abandon the system in a way that protects the health and safety of the homeowner and others.

Even though cesspools and seepage pits are technically not tanks, they should be abandoned consistent with the procedures for any other sewage tank. The same is true for abandonment of vault privies or composting toilets. Access for future discharge to the tank and the rest of the system should be permanently denied. This means removing or permanently disconnecting any piping from the residence or business to the tank.

## REMOVE CONTENTS

To properly abandon a sewage tank, all solids and liquids should be removed. All electrical devices, pumps and floats should be removed. The tanks should either be removed or left in place, crushed and the void spaces filled with soil or rock material. If a tank left in place and crushed, this should be done in a manner that prevents it from holding water. The soil material should be sand or a granular material. The material should be compacted and slightly mounded to allow for settling. Proper grade should be established and vegetative cover provided.

Septage or mixed waste removed from the tank should be disposed of in accordance with all state, federal and local regulations. If it meets regulatory requirements, it can be land applied, taken to a landfill or to a septage or sewage treatment facility. Most treatment facilities will require some type of written agreement providing assurance the material being delivered does not contain hazardous material. This is for your protection, as the service provider, and the facility's protection. So documentation showing the material was handled properly is important.

Power to the system should be disconnected at the source. All controls and panels should be removed. All electrical lines should be removed unless

If abandoning the soil treatment area due to hydraulic or organic overload and the system meets all setback and separation requirements, the designer, installer, and owner may decide to provide a switching option where the old system can be used as a backup.

they are used for other purposes. Pumps and floats may be recycled for future use or disposed of according to local solid waste regulations. Of particular importance in older systems is some of the controls may be operated by mercury switches. This is a hazardous waste and cannot just be deposited in the garbage; but taken for proper recycling.

Many systems have additional pretreatment components that need to be abandoned. These include ATUs and media filters. Since many are proprietary products, the manufacturer may have specific requirements for abandonment. So manufacturers should be consulted before the components are disposed. Many pumps, blowers, panel boxes and alarms will be reusable, so they should be recycled or salvaged.

## SOIL TREATMENT AREAS

Any modular containers should be removed; the distribution network should be removed along with the distribution and treatment media. Any materials that cannot be reused should be disposed of according to state and local regulations. Some may go to a treatment facility and some to a landfill. If the unit involves a tank, it can be treated like any other sewage tank, crushed and filled, with the site properly graded and with vegetative cover established.

For soil treatment areas, there are several options; it may be left in place if there are no other plans for use of the area, after resting the area can be reused, the components removed.

If abandoning the soil treatment area due to hydraulic or organic overload and the system meets all setback and separation requirements, the designer, installer and owner may decide to provide a switching option where the old system can be used as a backup or fit into planned switching back and forth



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between areas. Obviously, this can only be done if approved by the permitting authority and absolutely should not be done with seepage pits.

If the soil treatment component is left in place and there was no effluent surfacing, the area can be maintained with current vegetative cover. If effluent was surfacing, those areas can be treated with hydrated lime, the area back-filled, and vegetative cover established.

If the soil treatment area is removed, all piping and media will be removed and should be disposed of and handled to prevent contact with the public. All distribution and other boxes should be pumped and the field allowed to dry out. When the materials are removed the area should be backfilled, graded, topsoil applied and a vegetative cover reestablished.

If these procedures are followed during abandonment, public health and the environment will be protected, which aligns with our industry goals. □



# Now It's Prime Real Estate

Sand filter modules turn a devalued Georgia lot into a profitable lakefront property

By **Scottie Dayton**

**A** businessman sought to purchase a prime 0.39-acre lot on sprawling Lake Lanier in the northern region of Georgia, but the state Department of Health had approved it for only a one-bedroom cottage. The potential buyer wanted to build a three-bedroom home.

In addition, the Hall County Environmental Health Department wouldn't issue a septic permit due to the extent of disturbed soils. Over the years, locals had dumped vegetative debris and fill on the lot and used it as a borrow pit.

The businessman consulted Harold Trip, owner of Premiere Residential Builders. Trip had built several homes for the customer and had worked previously with Harold Kilgore, owner of On-site Wastewater Consultants and Gravelator Systems in Carnesville, Georgia.

"The complexity of many projects today isn't the install, it's reaching that point," Kilgore says. "Getting the county on board was the major hurdle for this job." Eljen sand filter modules made the permit possible and the businessman bought the lot.

## **CHECKING THE BOXES**

Steve James, Kilgore's managing partner, met with Hall County regulators to learn what they required for this septic permit. "It was a two-step process," James says. "The first was a Level IV soil evaluation."

◀◀ Harold Kilgore of Gravelator Systems uses a Takeuchi TB260 compact excavator to dig the Eljen drainfield, while Heath Kilgore moves the spoils with a Takeuchi TL12R2 compact track loader. The house and fence line are 30 feet apart. Laborer David Thompson shovels out stones. (Photos by Kaylinn Gilstrap)



Kilgore hired William Taylor, a soil scientist with Beck, Taylor, & Beshara, then Kilgore excavated six test pits to determine the depth of the debris and fill and if the borrow pit had sufficient depth to avoid a rock ledge. Taylor's report noted that "six borings in this small area exceed Level III boring density requirements," and that the soil underneath the fill was suitable for use. The regulators accepted his conclusion.

The second requirement was a design showing the three-bedroom house, a driveway and the primary system with recovery area on the lot. Kilgore and Trip collaborated on the site plan.

"After determining the footprint of the three-bedroom house and onsite system, we placed the home on the west property setback line to provide the maximum work area on the east side for the tanks, force main and drainfield," Kilgore says. "The 1,008-square-foot stone-and-pipe recovery field occupied the entire front yard. It's shown on the plan but wasn't installed."

Hall County officials approved the septic permit. The overall process took seven months.

## SITE CONDITIONS

Soils are Cecil (deep, well-drained, moderately permeable soils like sandy loam) with a percolation rate of 60 minutes per inch.

## SYSTEM COMPONENTS

Kilgore designed the system to handle 450 gpd. Major components are:

- 1,500-gallon dual-compartment concrete septic tank (Nix Septic Tank Co.) with 4-inch effluent filter (Polylok) and risers (TUF-TITE)

◀◀ Heath Kilgore, project manager for Gravelator Systems, sets up the Bosch self-leveling rotary laser.

▲ Heath Kilgore places sand to hold the geotextile fabric in place, while Harold Kilgore tucks the material around the Eljen A-42 modules. Laborer David Thompson stands ready to assist.

## System Profile

<b>Location:</b>	Flowery Branch, Georgia
<b>Facility served:</b>	Three-bedroom home
<b>Designer/ Installer:</b>	Harold Kilgore, Gravelator Systems
<b>Type of system:</b>	Sand filter modules
<b>Site conditions:</b>	Cecil soils; percolation rate 60 minutes per inch
<b>Hydraulic capacity:</b>	450 gpd

- 1,000-gallon single-compartment concrete dose tank with 1/3 hp Model 253 effluent pump (Liberty Pumps)
- 40 feet of 1.5-inch Schedule 40 PVC force main
- 4-outlet distribution box (Polylok)
- 24 A-42 sand filter modules (Eljen)
- 25 cubic yards of ASTM C-33 sand from River Sand
- Installer Friendly Series Simplex control panel (SJE Rhombus)

## System operation

All piping is PVC Schedule 40.

Wastewater gravity flows 13 feet through the 4-inch house lateral to the septic tank, then effluent drains to the dose tank. Its on-demand pump

## SYSTEM PROFILE

“The complexity of many projects today isn’t the install, it’s reaching that point.”

Harold Kilgore



◀◀ A Bosch self-leveling rotary laser helps Harold Kilgore (left) level 12 inches of ASTM C-33 washed sand over native soil. Laborer David Thompson assists.

▼ Heath Kilgore's hole-drilling template in action. It increased productivity.



sends 75 gallons through a 1.5-inch force main 40 feet to the distribution box. Effluent then gravity flows to two 48-foot-long rows of modules in a 11-foot-wide trench. The rows, separated by 2 feet, each have a dozen 48- by 24- by 7-inch-high modules.

Effluent drips through a 4-inch perforated pipe above the treatment units. After the liquid passes through the interwoven plastic corrugated core and black geofabric, it discharges to 12 inches of ASTM C-33 washed sand over native soil.

### INSTALLATION

The house was still under construction when Gravelator Systems installed the system. Kilgore coordinated with Trip for a 3- to 5-day window in which his team had the run of the lot. “Both construction crews would have clogged the narrow road to the property,” Kilgore says.

Once workers removed the debris on the lot and corrected the borrow pit, the installation went so smoothly that they finished in two days. One reason for the speed was Heath Kilgore’s template for drilling holes in the modules’ distribution pipe.

“My son took a 4-foot length of angle iron and drilled 1/2-inch holes in it,” Kilgore says. “He staggered the holes side to side in the 5 and 7 o’clock positions and spaced them 6 inches apart, then welded a handle on the edge of the angle iron. The template has increased our production 100%.”

On the second day, the new owner and his son arrived to see what an Eljen system looked like. Kilgore used the visit as an educational opportunity.

The state had approved Eljen’s equivalency factor to size the primary drainfield, but it still mandates recovery fields to be conventional stone and pipe. “Georgia regulators are living in the Stone Age regarding recovery,” Kilgore says. “We feel the lot would be more valuable had we installed a second Eljen system for recovery, especially when it is more cost-effective than

336 feet of gravel. It also would allow the owners to do more with their property.”

### MAINTENANCE

Gravelator holds the Technical Assistance Agreement. Twice a year, a technician downloads information from the control panel and checks for problems. The effluent filter is cleaned annually. ◻

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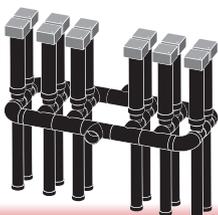
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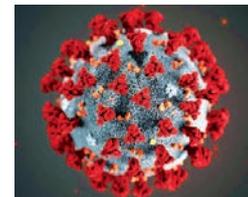
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# Companies Should Involve Technicians in Trade Associations

A member of the Delaware pumper and installer group says bringing more workers into professional groups will improve the wastewater industry as a whole

Compiled by Betty Dageforde

*In Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Delaware On-Site Wastewater Recycling Association.*



Jason Guarino and daughter Isabella working on an IFS pump system control panel.

## Jason Guarino, owner

**Business:** Jason Guarino Excavating and Septic Services, Millsboro, Delaware

**Age:** 47

**Services we offer:** We do septic system installs, Class H real estate inspections, O&Ms (operation and maintenance), replacement systems, lot clearing and grading.

**Years in the industry:** I've had my installer license for five years, but I've been in the industry for 17 years working for pumpers and installers.

### Association involvement:

I've been a member of the Delaware On-Site Wastewater Recycling Association for five years. I am now serving as vice president.

### Benefits of belonging to the association:

It's great for the knowledge you receive from the installers, engineers, soil scientists and all the people in the industry. You really learn a lot from them. The organization does a lot for its members — we have an annual convention, and we also have a golf outing, a clay shoot, a crab feast.

### Biggest issue facing your association right now:

We're not getting enough members. And the people who are members aren't getting involved enough and speaking out. Sometimes people have stuff to say when they're not in a meeting, but in a meeting, they shut down. We're trying to reach out more to installers — and their laborers. A lot of installers just use their laborers to do the work but don't get them involved with the association.

Since the laborers are not licensed, they're not required to have continuing education and the companies don't want to pay to sign them up. It's a shame because they're the ones doing the work. They should be members, be involved, go to the shows and see the new tools. Many installers don't realize there are a lot of new tools in the industry that make our jobs so easy. Without getting the younger guys who are doing the work involved, it's a dying industry.

### Our crew includes:

My brother-in-law Carlton Daniels, my girlfriend Jamie Bullock and my son Giovanni.

### Typical day on the job:

We all get together in the morning and put our game plan together so we can get our day knocked out. We do so many different things, but it's very rare we don't finish a job within the day we had planned it and I think that's one of the things that's helped my business be successful.

### The job I'll never forget:

We've seen some septic tanks installed backward — the liquid side was the solid side, and the solid side was the liquid side. In another case, the dosing chamber was actually a septic tank spun around backward. Every day in this industry, it's pretty crazy what you run into.

continued >>

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◀ Jason Guarino with son Giovanni, Carlton Daniels, Jamie Bullock with daughters Sydney and Chloe.

### My favorite piece of equipment:

I love Kubota. DOWRA hosts some backhoe rodeos and I've taken both first place and third place because of a Kubota excavator. I don't own my own excavator yet but I just purchased a skid-steer. I love the power and the strength and the speed of it. It helps me get my jobs done a lot smoother and cleaner and faster.

### Most challenging site I've worked on:

I did a double mound system. It was one house but they had made the garage into an apartment and converted the house into two separate housing units. So they had to design a septic system that was quite large — and they designed it in the middle of the woods. I had to clear the whole lot and then build a double mound, which wound up being 62 loads of stone, sand and fill dirt that we hauled in. We had to cut up concrete and remove sidewalks. It was one of the first systems I did when I started out.

### Oops, I wish I could take this one back:

There was a 13-bedroom house with two separate families in it. The designer did not realize how big the house was because he didn't do all his legwork. The state of Delaware had it down as a seven-bedroom home but, come to find out the homeowner added an addition but never pulled any permits. Nobody wanted to take responsibility and it all comes down to you because you were the installer. I still made money on it, but it was just one of those headaches where you question yourself and wonder if this is really what you want to do for a living.

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

Mostly it's, "Can you get the septic system installed last week?" or "Can you get me my [real estate inspection] by tonight because the closing is tomorrow?"

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

I'd like to see the installers more involved with the soil scientists and designers. We have to take something they put on a piece of paper and make it come to life and I wish we had more say-so in the process. That's why DOWRA was created. It's a speaker in between installers, soil scientists and engineers. Some of the rules are so outdated. The industry

has changed, designs and installs have changed. So if everyone could work together it would be a lot better for the industry.

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

A gentleman who taught me a lot when I first got into the industry, Dave Austin, told us to take 100-plus pictures of every septic system we did so if there was any question we had documentation. I also took the advice of my ex-business partner who said don't try to compete with other installers, just set your price and get what you feel you're worth.

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

I grew up in a pizzeria. My dad was born in Sardinia and we flipped pizzas for a living. There are a lot of things out there but if there was one thing I would get back into it would be the restaurant industry. I would definitely get back into pizza. It's just something we were born into and raised with.

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

I'm hoping we can get more installers not just using their license to make money but who get more involved in the work. We've had a lot of systems lately that are failing within the first year, including my future brother-in-law who bought a brand new house and the system started backing up less than a week later.

In the future, I hope there's more discipline for these installers that are not doing the job properly. During home sales, a lot of times the Realtor and the seller want the fastest, cheapest route, and the buyer is the one who gets hurt. Buyers usually don't have a clue about septic systems. Homeowners need to be taught more and installers need to have a say along with the Realtor, seller, soil scientist and designer. □

### 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](mailto:editor@onsiteinstaller.com).



# Serving the Industry

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

**ARKANSAS**

Arkansas Onsite Wastewater Association;  
www.arkowa.com

**CALIFORNIA**

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

**COLORADO**

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

**CONNECTICUT**

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

**DELAWARE**

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

**FLORIDA**

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

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

**ILLINOIS**

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www.owpi.org

**INDIANA**

Indiana Onsite Waste Water Professionals Association;  
www.iowpa.org; 317-965-1859

**IOWA**

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

**KANSAS**

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

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

**MAINE**

Maine Association of Site Evaluators;  
www.maine-se.com

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

**MARYLAND**

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

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Michigan Onsite Wastewater Recycling Association;  
www.mowra.org

Michigan Septic Tank Association;  
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**MINNESOTA**

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www.mowa-mn.com; 888-810-4178

**MISSISSIPPI**

Mississippi Pumpers Association;  
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601-249-2066

**MISSOURI**

Missouri Smallflows Organization;  
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**NEBRASKA**

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

**NEW ENGLAND**

Yankee Onsite Wastewater Association;  
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**NEW HAMPSHIRE**

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

Granite State Onsite Wastewater 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.;  
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North Carolina Septic Tank Association;  
www.ncsta.net; 336-416-3564

**OHIO**

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www.ohioonsite.org; 740-828-3000

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Oklahoma Onsite Wastewater Association;  
918-727-7113

**OREGON**

Oregon Onsite Wastewater Association;  
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**PENNSYLVANIA**

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Pennsylvania Septage Management Association;  
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**TENNESSEE**

Tennessee Onsite Wastewater Association;  
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**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;  
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**NATIONAL**

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

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WCOWMA Onsite Wastewater Management of B.C.;  
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### MANITOBA

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 Onsite Wastewater Systems Installers of Manitoba, Inc.;  
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### NEW BRUNSWICK

New Brunswick Association of Onsite Wastewater Professionals;  
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### NOVA SCOTIA

Waste Water Nova Scotia;  
[www.wwns.ca](http://www.wwns.ca); 902-246-2131

### ONTARIO

Ontario Onsite Wastewater Association;  
[www.oowa.org](http://www.oowa.org); 855-905-6692

Ontario Association of Sewage Industry Services;  
[www.oasisontario.on.ca](http://www.oasisontario.on.ca); 877-202-0082

### SASKATCHEWAN

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## PRODUCT NEWS

### Vertiflo Series 700, 800 and 900 immersion sump pumps

Vertiflo Pump's Series 700, 800 and 900 immersion sump pumps are available with variable-frequency drive motors. The pumps are built for sump drainage, flood control and process drainage and meet U.S. Environmental Protection Agency and Occupational Health and Safety Administration requirements. Depending on the rpm selected, they provide the capability of varying flow and head performance from a vertical pump. The Series 800 specs include heads to 230 feet, temperatures to 350 degrees F, pit depths to 26 feet and up to 3,000 gpm. Select from cast iron, 316 stainless steel or alloy 20 construction. Series 700 sewage ejector pump specs include heads to 100 feet, pit depths to 26 feet and up to 1,500 gpm. The Series 700 pumps are available only in cast iron construction. The Series 900 has heads to 170 feet, pit depths to 26 feet and up to 1,600 gpm. 513-530-0888; [www.vertiflopump.com](http://www.vertiflopump.com)



## PRODUCT SPOTLIGHT

### Durability is a key to manufacturing long-lasting fiberglass tanks

By Tim Dobbins



Fiberglass Tank Solutions manufactures an underground storage tank with a potential life span of 100 years.

The company "utilizes a combination of chop strand glass, fiberglass wind roving and structural ribs and fiberglass reinforcements to build a hoop-wound tank with superb strength," says Kevin Hawthorne, owner of Fiberglass Tank Solutions. "Our tanks employ a sandwich-layer design to create tanks that resist buckling, loads and buoyancy upthrust."

Though FTS makes underground storage tanks for many applications, Hawthorne says that decentralized onsite wastewater systems have always been a big part of their business. The products include septic tanks, dosing tanks, recirculation tanks, process tanks and storage tanks ranging from 500 to 50,000 gallons.

Hawthorne says fiberglass is lightweight, strong and corrosive resistant to chemicals and wastewater. "Fiberglass resins can be modified to store harsh acids, chemicals and hazardous materials," he says. "FTS can customize the tank with a multitude of resin types to match the tanks application to the exact resin for the contents stored inside the tank."

Along with corrosion resistance, the manufacturing process used by FTS is designed to create tanks that can withstand years of use, support heavy weight and each one utilizes an anti-float system to manage buoyancy. FTS tanks can be buried empty up to 25 feet deep, or in fully flooded conditions. "Anchoring of underground storage tanks in a major feature of the tank system," Hawthorne says. "Improperly done, you can have a submarine in your yard or parking lot, which tends to create a really bad day."

FTS also provides finite element analysis engineering reports with professional engineer stamps for all the tank sizes so customers have certification and proof of steps taken to build each tank system.

"FTS takes pride in providing tanks with custom features, components and fabrication to create an operational tank system for process, pumping and storing," Hawthorne says. "Contractors appreciate the multitude of custom features we offer to eliminate field fabrication and modification." 573-317-9620; [www.ftgsolutions.com](http://www.ftgsolutions.com)



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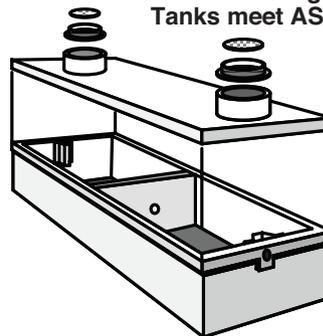
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## INDUSTRY NEWS

### Felling Trailers names new sales manager

Felling Trailers appointed Joel Lindmeyer Great Lakes regional sales manager. He is responsible for all sales development, activity and dealer support in Minnesota, Wisconsin, Illinois, Michigan, Indiana, Ohio and Kentucky. Lindmeyer has 25 years of experience in the truck and trailer industry with an emphasis in sales and customer service. Daniel "Boone" Larsen previously held the position before his retirement last year.



Joel Lindmeyer

### Joseph H. Wieser passes away

Joseph H. Wieser, 84, of Maiden Rock, Wisconsin, died Nov. 20 at Sacred Heart Hospital in Eau Claire, Wisconsin. Born May 13, 1937, to Aloys and Malinda (Eden) Wieser, the eldest of 18 children, he enlisted in the army in 1957 and he was honorably discharged in 1963. He married Mary Buchmann on July 12, 1958, and together they had 10 kids and were married over 63 years.



Joseph Wieser

Wieser was a dairy farmer in Minnesota until 1965 when he and Mary started Wieser Concrete Products in Maiden Rock. Wieser was involved with the company until his retirement in 1999. After he retired, he stayed involved with Wieser Concrete by mentoring and advising his daughter and sons in the business. In 1967, he joined the National Precast Concrete Association and started to get involved and quickly became a leader at the national level. He was instrumental in the growth and success of the NPCA and was awarded its highest award, the Robert E. Yoakum Award in 1981. He later served as chairman of the association in 1985.

He is survived by his wife, Mary, his 10 children and many beloved grandchildren.

### NOWRA elects board of directors

The following members have been elected to the National Onsite Wastewater Recycling Association board of directors to serve through 2024: Tricia Scott, regulator, Nebraska; Chris Chapman, service provider, Missouri; Claude Goguen, supplier/manufacturer, Indiana; and Joshua Gunia, installer, Washington. Outgoing board members are Chris Kumnick, regulator, Georgia; Jessica Wood, service provider, Missouri; and Bruce Stow, supplier/manufacturer, New York.

In other NOWRA news, the 2021 Richard J. Otis Industry Achievement Award was given posthumously to Ron Suchecki, Jr. at the 2021 Onsite Wastewater Mega-Conference in Texas. Suchecki, research director and general manager for Hoot Systems and a partner in Central Texas Precast, passed away in February 2021 at age 50. □

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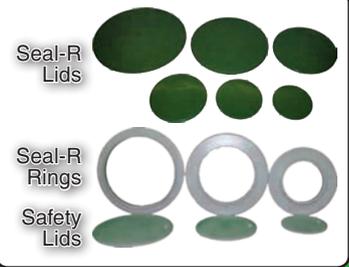
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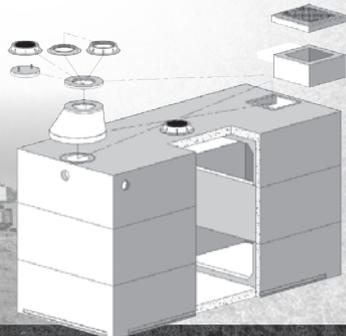
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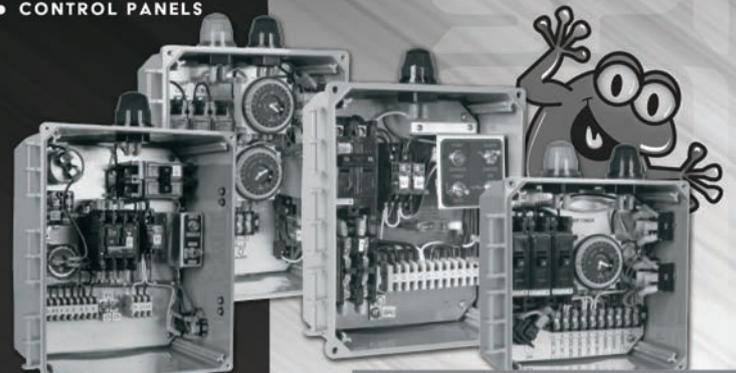
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## DRAINFIELD COMPONENTS

### Advanced Drainage Systems Septic Stack

The Septic Stack system from Advanced Drainage Systems is available in configurations of 9, 11 and 13 pipes. The units are designed to allow for exceptional soil contact without the use of gravel, functioning as a trickle filter to disperse effluent into the voids in and around specially banded ADS pipe. The pipe is engineered with holes and slots, allowing it to collect and disperse effluent as it passes over corrugations in the pipe. Systems are available for use in both residential and commercial applications in trench, bed and mound configurations, as well as pressure dosing. 800-821-6710; [www.ads-pipe.com](http://www.ads-pipe.com)



### Arcan Enterprises Septic-Scrub

Septic-Scrub chemical additive from Arcan Enterprises is designed to help remove sludge that builds up and sticks to the stone in a drainfield, pit or sand mound to rejuvenate the drainfield. According to the maker, it works in the first 24 hours after application. It can serve as part of a maintenance program. It works with all types of systems, is safe to handle and is environmentally friendly. 888-352-7226; [www.arcan.com](http://www.arcan.com)



### Clarus Environmental WW4

The WW4 effluent filter from Clarus Environmental is mounted in the septic tank outflow to provide protection from solids moving out of the tank and into the dispersal area. A secondary screen offers protection when the primary cartridge is removed to be cleaned. After the primary cartridge is cleaned, the secondary screen can be removed and cleaned. It can handle up to 4,000 gpd and can be assembled on site in a multifilter configuration for larger flows. 800-928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com)



### Polylok 24-inch Rhino Distribution Box

The Polylok 24-inch Rhino Distribution Box has 10 potential openings, making it suitable for any drainfield application. Polylok's 24-inch stackable riser system can be used to easily bring the Rhino Box to grade. It will accept 2-, 3- and 4-inch pipe with the use of the Polylok seal and nut system. It will also accept 6-inch pipe with the use of a Polylok 6-inch grommet. It is also available as a catch basin with a Polylok heavy-duty grate. 877-765-9565; [www.polylok.com](http://www.polylok.com)



### Sim/Tech Filter orifice shields

Orifice shields from Sim/Tech Filter are designed to prevent drain media, such as drain stone, from blocking discharge holes, promoting even distribution of effluent in pressurized systems. The shields have a sturdy design that keeps them firmly in place after snapping them on the laterals, according to the maker. The large amount of open area between the pipe and shield allows for easy placement over the holes and reduces media clogging by debris. The enclosed design has a large amount of open area, but all openings are small enough to prevent media from entering the shield. Two styles are available — for top-discharge distribution holes and bottom-discharge holes. Shields are available to fit 3/4-, 1-, 1 1/4-, 1 1/2-, 2- or 3-inch pipe. 888-999-3290; [www.simtechfilter.com](http://www.simtechfilter.com)



### TUF-TITE Distribution Box with Speed Leveler

The non-corrosive TUF-TITE Distribution Box with Speed Leveler in each outlet provides a simple, stable, reliable and permanent means for dividing septic tank effluent flow, according to the maker. Distribution boxes come in four sizes: four-, six-, seven- and nine-hole. Risers are available on the four-, seven- and nine-hole boxes. All boxes come with a one-piece watertight seal that accepts 1.5-, 2-, 3- and 4-inch SDR 35 or Schedule 40 pipe, including corrugated, for easy installation. 800-382-7009; [www.tuf-tite.com](http://www.tuf-tite.com)



## FILTER MEDIA

### E-Z Treat Recirculation Sand/Media Filter System

E-Z Treat recirculating synthetic media filter systems are designed to create a suitable setting for bacterial growth to flourish. They are manufactured to treat sewage across multiple applications and for flows of 100 to 100,000 gpd. The system uses natural biological processes to break down waste. When septic-treated effluent first enters the recirculating chamber, it is dosed passively through an active film matrix. Through a series of bypass valves and recirculation pumps, the effluent is continuously circulated through the media where it can exit through a bypass valve and flow into a gravity drainfield or into a pump chamber for dispersal options. 866-753-4770; [www.eztreat.net](http://www.eztreat.net)



### Eljen Geotextile Sand Filter

The GSF, or Geotextile Sand Filter, advanced wastewater treatment and dispersal system from Eljen is designed to provide treatment and dispersal in the same footprint while keeping installations easy and maintenance minimal. This product is used for both commercial and residential applications. Utilizing a two-stage pretreatment process, the geotextile modules apply filtered septic tank effluent to the soil, increasing the soil's ability to accept the effluent and increase the long-term acceptance rate. Open-air channels within the module support aerobic bacterial growth on the module's geotextile fabric, surpassing the surface area required for traditional absorption systems. The result is simple installations in a smaller soil absorption area. The system is tested and certified by NSF to NSF/ANSI Standard 40. 800-444-1359; [www.eljen.com](http://www.eljen.com)



## VENT PIPE FILTERS

### Industrial Odor Control, a Simple Solutions Company, Heavy Duty

Industrial Odor Control, a Simple Solutions Company, has made an improvement to the Heavy Duty filter with an end-of-service life indicator (ESLI), a qualitative (yes/no) colorimetric indicator for the end-of-service life of carbon adsorbers and filters. It is designed to provide real-time indication of the breakthrough of hydrogen sulfide gas, allowing the customer to order replacement carbon before the odor returns. It is located on the side of the filter and is easily viewable from the ground, allowing the homeowner to know when the carbon is becoming saturated without climbing on the roof or waiting until they notice an odor breakthrough. The indicator is waterproof. Filters come



complete with their first charge of carbon, Norit Darco's H2S Sulfursorb Plus. This carbon has been engineered to work efficiently in high-humidity conditions. The filter housings are manufactured from heavy-duty schedule 40 PVC. 866-667-8465; [www.industrialodorcontrol.com](http://www.industrialodorcontrol.com)

### Pagoda Vent

Vent pipe filters from Pagoda Vent provide septic field microbes with the oxygen needed to thrive. They give concrete tanks gas release to mitigate microbial-induced corrosion and provide pressure relief for pumps. They provide proper ventilation, while remaining inconspicuous and attractive in the landscape. The units are durable, lightweight and will not rust. An optional odor filter cartridge using a specialized concentrated media offers years of lasting odor control and fits concealed in the device, according to the maker. 888-864-1468; [www.pagodavent.com](http://www.pagodavent.com)



## CASE STUDY

### Combined treatment and dispersal system enables development of 30-home residential community

**Problem:** The Cottages at River Hill in Newbury, Massachusetts, is a residential community of 30 clustered single-family homes. A system was needed to handle a total design flow of 9,240 gpd from the 84 total bedrooms in the development.



**Solution:** Developers selected an Enviro-Septic combined treatment and dispersal system from Infiltrator Water Technologies. Due to separation to seasonal high-water table requirements for new construction, the system was designed in an elevated mound configuration including two beds totaling 6,002 feet of pipe configured in 66 rows at 91 feet each. Part of one of the beds (15 rows) slopes at 6% to allow the large field to blend in with the terrain and save on the cost of additional fill, which would have been required for a level bed. Because of the secondary treatment performance of the system, it is approved at a 40% reduction as compared to conventionally sized systems in Massachusetts. This enabled a smaller footprint and significantly less disturbance to the natural areas of the property.

**Result:** Today, the Cottages at River Hill are fully occupied. The wastewater treatment system requires low maintenance and the clustered homes preserve open spaces and natural vistas. 800-221-4436; [www.infiltratorwater.com](http://www.infiltratorwater.com) □



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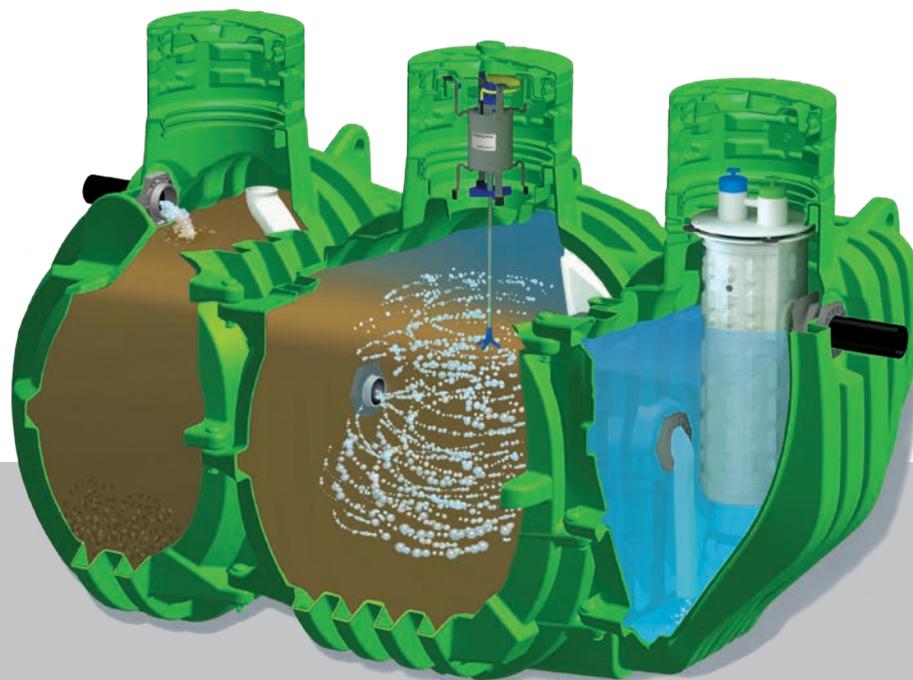
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