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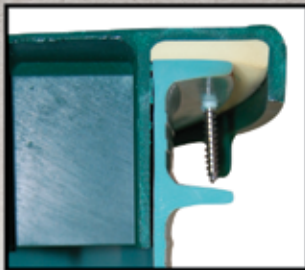
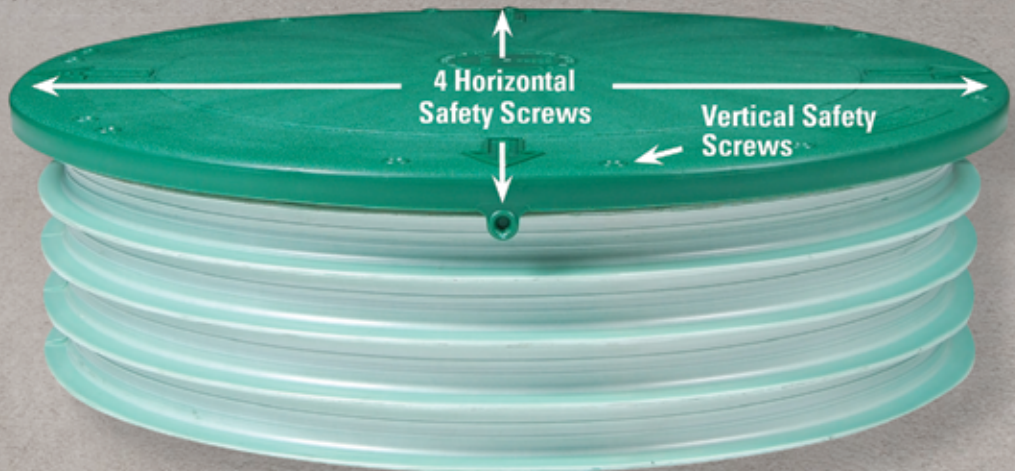


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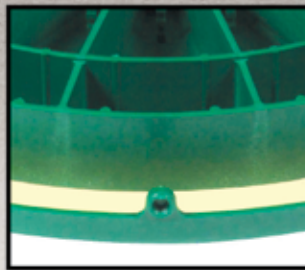
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TB-4 Housing  
 18/carton

SD-4  
 Gas/Solids Deflector

EF-4 Combo 18



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 Standard 46

TB-6 Housing

Gas/Solids  
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### INSTALLER PROFILE:

#### Diagnose Before Digging

By Ted J. Rulseh

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Travis Gemmell got his start taking on the little jobs, but since then his company and the projects he books have grown substantially. (Photography by Lucian Witmer)

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Be sure to check out our exclusive online content.

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### Enjoy this issue!

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Eljen's Founder

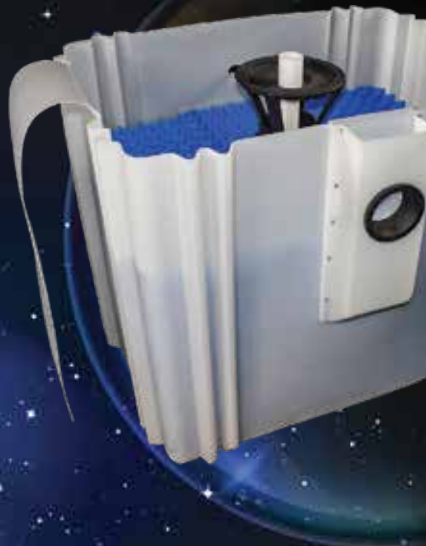
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### NO DETAIL TOO SMALL

#### Back to Basics

Turning a critical eye to even the smallest details prevents callbacks, misunderstandings and even injuries. Even when your business may feel like a well-oiled machine, it's important to remember the basics that got you to where you are — and that there's always room for improvement. In this online article, columnist Todd Stair explains why 2024 is his year to take his company back to the basics, why that's important, and how to make it happen. [onsiteinstaller.com/featured](https://onsiteinstaller.com/featured)



#### Overheard Online

The fastest way to burn out is trying to do everything yourself. To save your sanity, identify the team members you can trust to handle big jobs or new responsibilities without a ton of oversight.

— *8 Ways for Stressed-Out Business Owners to Cope*

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#### GET OFFLINE

#### Being More Visible in Your Local Market

Marketing experts Carter Harkins and Taylor Hill often see companies rely on nothing but online marketing, and thus miss out on opportunities that are right under their noses. Are you missing out on prime local opportunities to market your business? Check out this online article for easy ways to expand your marketing efforts in your home market.

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### EXTENDING THE LIFE OF OLDER SYSTEMS

#### Revitalizing Drainfields

Travis Gemmel, owner of Walnut Grove Excavating, featured in this month's cover story, operates in rural areas around the southwest Michigan city of Grand Rapids. Many homes in the area were built 30 to 50 years ago, which means Gemmel often encounters drainfields that appear to be failing. Read this exclusive online article to see how he can often revitalize these systems — much to the delight of property owners.

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**Tim Dobbins**



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

# The Courtesy of Communication

A little effort goes a long way when it comes to keeping in contact with clients

One of the easiest ways to turn people off to your business is being too busy to communicate.

For the past four years, my wife and I have been renovating our home that was built in the early 1970s. We've removed a load-bearing wall, put in new kitchen cabinets and countertops, renovated the main bathroom, installed new flooring throughout the whole house, had new drywall on both the walls and ceiling put up, and everything in between.

We have had some great experiences working with suppliers and contractors throughout the project, but sadly it seems for every positive involvement, there was a negative one, and they all centered around the lack of communication.

I encountered an alarming number of unreturned calls when inquiring about a service, was treated like I was a hassle when trying to order and purchase large items like a wood-burning furnace, and often I was not notified when something I did order was delayed several weeks.

I don't know if I should attribute my experiences to an overall change in the dynamic of customer service, or if now I'm simply more immersed in trade transactions and just now seeing the way things have always been. Regardless, I'm a firm believer that communication can either lead to the growth or demise of your business, depending completely on how you approach it.

The subject of this month's profile, Travis Gemmill talks about communicating with clients and how education is part of business as usual for him and his crew; something I have no doubt contributes to his success.

So, how can you keep your customers feeling like they matter and that they have your attention?

## Acknowledge early

Even when you're swamped, take a minute to acknowledge that a request was made. Set aside time every day to call back customers and return emails. If you can't address the entire request immediately, just let them know you received their questions and that you'll get back to them as soon as you have time. A helpful tool is setting up an auto-response email that lets customers know what time of day you check messages and when they can expect to hear from you. Not only will this help them feel like they matter, it signals that you are well-organized and professional, and stops them from pestering you when you haven't answered a question.

## Be approachable

Asking the right questions to gauge a customer's experience and knowledge is a skill that can go a long way toward healthy client relations. Many people you'll do business with have little to no experience with septic systems. Installers have to put themselves in the mindset of these customers. They don't understand this expensive process and are intimidated by the thought of hiring someone and the money involved.

You can help with this by managing their expectations and keeping them involved. Provide information about what you will be doing and why it needs to be done. When possible, readily supply clients with documentation of what they should expect from start to finish in terms of equipment that will be used, the crew that will be doing the work and an estimate of the time it will take. These are things they will want to know, but may feel intimidated asking or don't know what questions to ask.

Even when you're swamped, take a minute to acknowledge that a request was made.

**Set aside time every day to call back customers and return emails.**

## Be consistent

Frequent reminders and updates are appreciated. This applies to before and during the installation work. After you schedule a job, follow up a day or two before arriving to confirm you will be there. This ensures that the customer isn't caught off guard if they forgot, and reiterates that you are organized and trustworthy.

Once on site, provide consistent updates on the progress, or if there are setbacks. Let people know what was accomplished after a day's work and what is left to be done. A few quick updates helps the customer feel like they are involved and also keeps them from badgering you while you are trying to work.

## Be honest

Honesty, even when it doesn't immediately benefit your business is huge.

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**Date:** July 25, 2024

**Presenter:** Claude Goguen, P.E.



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When we were choosing our new kitchen cabinets and counters from a local contractor in town, we were struggling to choose a counter color and material that fit within our budget. The one we really liked was slightly outside of what we hoped to spend, but ultimately we decided to go for it. We had already ordered our cabinets through this dealer, and when I let him know what counter we wanted, he informed me that though he could order what we wanted, he wasn't a distributor of that brand. He followed that by telling me that we could save a lot of money on the same counter if we went to a larger supplier nearby. His honesty was refreshing and we greatly appreciated it. Since then, I've made sure to encourage everyone I know to go there for cabinet and counter projects, and he was my first call when the time came to update our bathroom vanity.

The lesson here is if you are too busy at the time or think the proposed project isn't exactly in your wheelhouse, be truthful and let the customer know that. The headline of this issue's Snapshot sums it up well — Courtesy Is Never Outdated. A quote in that article from a longtime industry professional says, "It is important to answer the phone and return calls even if you can't do the job or don't have time for it." □

### DROP US A LINE

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

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# DIAGNOSE BEFORE DIGGING

Michigan's Walnut Grove Excavating leaves no stone unturned when seeking the most cost-effective onsite solutions for its customers

By Ted J. Rulseh



▲ Gemmell and his crew rely frequently on Sena headsets for both ear protection and communication. They keep them talking and safe even when their hands are full installing pipe. (Photography by Lucian Witmer)

**T**ravis Gemmell doesn't simply accept claims that an onsite system needs replacement.

He and his team of nine at Walnut Grove Excavating often turn away what could be high-dollar jobs because closer investigation shows that a tank or field in reality does not need to be replaced. Gemmell describes it as a "very long-term oriented" approach.

"We're not there to prove that they're right, the system has failed," says Gemmell. "The way we look at most jobs, we're going to prove that their septic system is probably OK. We don't make big money on the job today, but when that system does fail in 10 or 15 years, we'll get the business then."

That level of customer orientation is a winning proposition for Walnut Grove in its territory around Grand Rapids, Michigan. "If you focus on the customer, everything will fall into place," Gemmell says. "The customer is our main priority: taking care of them, being honest with them, being upfront, all the time."

"I tell our people: Do every job like it's for your grandparents. You really want to do what's right because this is someone's grandma, mom or dad, brother or sister."

## BAREBONES BEGINNING

Gemmell started work life with a high school equivalency certificate loading trucks at an ice cream factory. When he turned 18, he earned a CDL and became a truck driver for a large food service company based in Grand Rapids.

He moved up the ladder into corporate management and stayed with the company for 20 years, in the process earning master's certificates in strategic leadership and business development from Michigan State University. But eventually he tired of a job that kept him on the road and away from his family more than 40 weeks per year.

Around that time he and his wife Stacy bought an old farmhouse on 30 acres. They cleared part of it and needed a contractor to pull stumps, but all the local excavators were too busy, and a family friend ended up doing the work.

Seeing an opportunity, Gemmell bought a pickup truck, trailer, skid-steer and mini-excavator. He started by visiting every excavator within 30

» Ethan Vanderwark begins backfilling a septic tank while Kelvin Anderson plumbs pipe between system tanks.

miles and saying, “I’m the new guy in town, I want all the little jobs you’re not interested in.” He got enough work to get the business on its feet, and word began to spread.

One of his early jobs was building a large pressurized mound treatment system. He completed it with help from a friend in the onsite industry and local sanitarians, along the way acquiring his installer license. He also watched YouTube videos on all aspects of the onsite business and got familiar with the regulations in the five counties where he now does work. Walnut Grove Excavating officially launched in 2017.

## JOBS DONE RIGHT

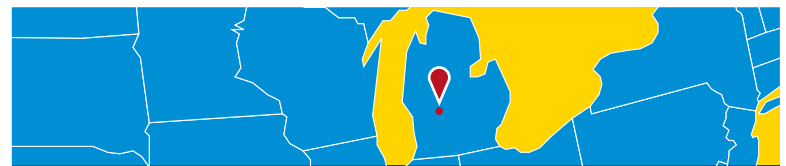
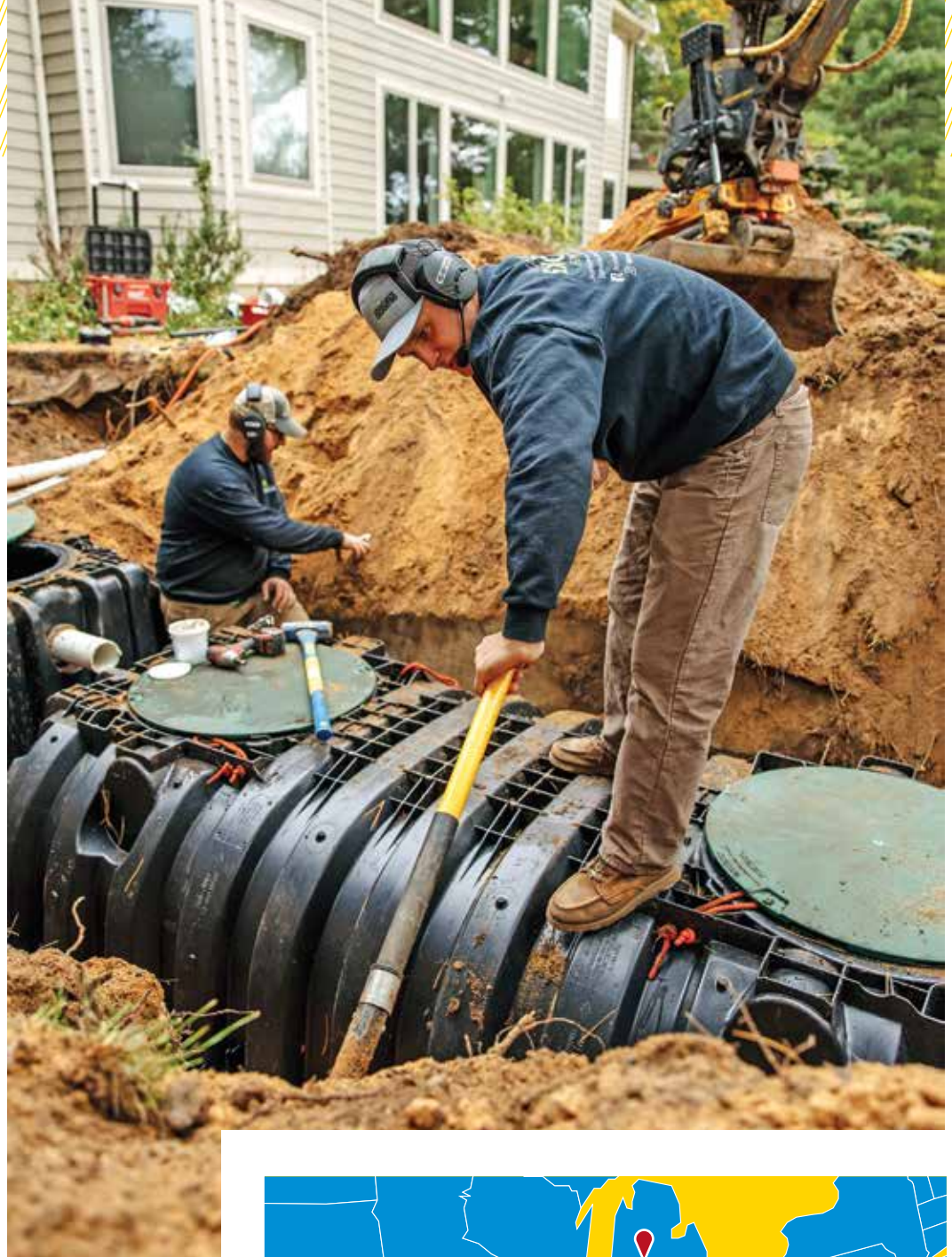
Customer service and quality workmanship are the company’s calling cards. Team members in addition to Gemmell are Stacy Gemmell, finance and co-owner; Lisa Zandstra, office manager; Len Mol, estimator; operators Kelvin Anderson, Ethan Vanderwark, TJ Bradly, Matt Grieves and Jake Gauthier; and Chuck Johnson, mechanic/operator.

Gemmell observes, “We answer the phone almost no matter what. If we have multiple phone calls going and a call happens to go to voicemail, we’re calling back within five minutes.

“We have trusting relationships with a lot of people. Customers call because they’ve been told by friends to call us. We show up the same day and deliver quotes to them within 12 hours of our visit. We pull permits for them. We coordinate everything from beginning to end.” Ninety percent of the company’s business comes by way of referrals.

Crews install Schedule 40 pipe no matter what the minimum standards call for. They install 6-inch filters and risers, required or not. When jobs are complete they rake the property at the bare minimum and, if the customer so wishes, bring in topsoil and hydroseed the site. (Gemmell’s son Brock has his own hydroseeding business.) Pictures of recent jobs are posted on Instagram.

“We quote a base package and list additions such as topsoil and hydroseeding,” says Gemmell. “People love it.” Customers who say they are getting other estimates are encouraged to check out those companies’ websites, social media and reviews. “And we tell them, ‘By the way, this job we’re quoting, we did this three times last week. If you want to see what it looks like when we bring in topsoil, look at the job we did Wednesday. You’ll see how the yard looked before, how bad it looked during and how good it looked at the end.’”



## Walnut Grove Excavating Clarksville, Michigan

**Owners:** Travis and Stacy Gemmell

**Founded:** 2017

**Employees:** 9

**Service area:** 40-mile radius encompassing five counties

**Services:** Onsite system installation and repair, general excavation

**Business Volume:** 150 tank replacements per year, 50 drainfields, 50 new system

**Website:** walnutgroveexcavating.com



◀ Ethan Vanderwarf operates the excavator while Travis Gemmell locates the drain area.

The company maintains an extensive equipment inventory that includes:

- 2017 Volvo ECR145EL excavator with engcon and Leica 2D system
- 2022 Volvo ECR88 excavator with engcon and 2D Trimble system
- 2020 Takeuchi TB210R compact excavator
- Three Kubota SVL75 skid-steers (2023, 2019, 2017)
- 2018 John Deere 450K Dozer
- 2002 Oshkosh stone slinger
- 2005 T800 Kenworth dump truck
- 2006 International TT 5500 dump truck with tandem lowboy trailer
- Two 2020 Towmaster tri-axle trailers

### TACKLING TOUGH SITES

Tank and drainfield replacements are common in the area. The Grand Rapids region had a growth surge from 30 to 50 years ago, and many septic systems are reaching end of life. The area's groundwater quality is generally poor; discharges from residents' reverse osmosis treatment systems are relatively corrosive and in time take a toll on concrete septic tanks.

Soils are highly variable and sometimes challenging. "It's either beautiful sand or heavy, smeary clay," Gemmell says. "You can have the best soil in some places, and then one neighborhood over, you have a high water table."

## LIKE CLOCKWORK

As business grew at Walnut Grove Excavating, owner Travis Gemmell found it hard to keep everything organized. Files went missing. Folders were misplaced. Keeping projects on schedule became a challenge. Something had to change.

Two years ago the company adopted a project management software package. "It has been a game changer," Gemmell says. The Housecall Pro software combines scheduling, dispatching, invoicing and comprehensive communication in a package the team finds easy to use.

"The software communicates nonstop," says Gemmell. "The customer gets a text that says our estimator is coming out and will be there between 9:30 and 10:30. When he's done at the property, he generates a text saying that if he has questions he'll call; otherwise he'll deliver the estimate. When the customer receives the estimate and hits 'approve,' we drag it to the schedule. They get a text saying they're scheduled for this date, this time."

The software keeps the customer and everyone on the project informed every step of the way.

The choice of software wasn't made lightly. One of Gemmell's roles during two decades of employment with a major food company was testing software. He tested five programs before choosing Housecall Pro. Gemmell believes the tight organization of projects and the close communication with customers is one reason Walnut Grove boasts hundreds of five-star ratings on social media.

"I tell our people: Do every job like it's for your grandparents. You really want to do what's right because this is someone's grandma, mom or dad, brother or sister."

**Travis Gemmell**

Sites requiring an advanced treatment system or a major reduction in drainfield size have to be designed by an engineer. Walnut Grove installs Norweco aerobic treatment units and some Eljen geotextile sand filter systems, but his favorite is the SludgeHammer system, which uses aeration and inoculation with special microorganisms to clean septic tank effluent.

"They are so simple, but yet they work so well," Gemmell says. The first installation was for a homeowner with a challenging site who faced a \$55,000 full system replacement. After reading up on the technology and getting county regulators' consent to proceed, he installed the SludgeHammer unit for about one-tenth the new system's price: "We put it in three years ago and it brought the system back. It's the bacteria blend that makes the difference."

continued >>

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**Travis Gemmell**

➤ Estimator Len Mol (left) checks in at the job site and discusses progress with Travis Gemmell.

▼ Kelvin Anderson drills inlet access using a Milwaukee drill while crew members finish backfilling tanks.



For conventional drainfields, rock is Gemmell's first choice, but he uses EZflow or Advanced Treatment Leachfield, both from Infiltrator Water Technologies, where affordable and where hauling rock into a site would excessively disturb a homeowner's landscape.

### **BOOSTING THE PROFESSION**

No matter the type of system or the nature of the site, Gemmell strives to boost the onsite industry's image. "All of our trucks match," he says. "All of our people wear uniforms. In everything we do, we try to bring another level of professionalism."

That includes taking time to educate customers about their systems: "When we're installing and the customer is there, we're saying, 'Here's how the pipe comes out of your house. This is how your tank holds sewage. This is how an effluent filter works. This is why we install risers. Here's how your drainfield works.'" He's looking to hire a videographer to create YouTube videos.

When customers call with system problems, office manager Zandstra often provides over-the-phone troubleshooting and can send estimator Mol to take a firsthand look and offer advice. The education extends to industry practitioners: Gemmell gave a presentation on basic installation and system troubleshooting at the 2024 WWETT show in Indianapolis.

### **STRATEGIC PARTNERSHIP**

Gemmell decided early on to focus on what he does best. In the early days the company pumped septic tanks, but that wasn't profitable, especially after the nearest wastewater treatment plant stopped accepting septage. He sold out to Plummer's Septic Tank Service, which had a fleet of a dozen trucks.

continued >>



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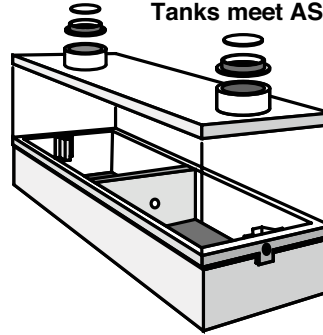
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It takes the whole team at Walnut Grove to keep the fleet maintained and business running smoothly.

“We did a handshake agreement that he gets all my pumping, and I get referrals for drainfields,” says Gemmell. “We built a really good relationship with them over the years. Then they got away from tank replacement. They didn’t want to do troubleshooting, earthwork or risers. They said, ‘We want you to do that.’”

“We give some business away because we’re not the right fit for it. You have to know that sometimes you’re not the one who can help.” If a customer wants someone to pour concrete, install a sprinkler system, or do other work outside Walnut Grove’s expertise, Gemmell is happy to give referrals to contractors he knows and trusts.

He advises people new to the industry, and even those with experience, not to be shy about reaching out for help: “There are five big septic guys I talk to out of Michigan, South Carolina, and Canada who are phenomenal

“We give some business away because we’re not the right fit for it. You have to know that sometimes you’re not the one who can help.”

**Travis Gemmell**

and do great work. I can call them and pick their brain. That makes all of us so much better.”

It’s a formula that has worked well and promises a bright future for Walnut Grove Excavating. □



» Travis Gemmell

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# Identifying Soil Problems and Rebuilding Structure

Negatively impacted soils create challenges, but remediation techniques used in agriculture may be able to help

By Sara Heger

**W**hile texture describes the percent of each sand, silt and clay, soil structure is the organization of these individual soil particles into a larger arrangement. The size and orientation of the particles affect acceptance and treatment of wastewater in the soil.

Soil structure develops over time, typically many hundreds to thousands of years, through physical and chemical weathering. Examples of forces forming soil structure include freeze and thaw cycles, wetting and drying, plant rooting and invertebrate activity. Some of these processes are physical or chemical such as the binding of materials to clay particles, freezing and thawing, wetting and drying, and root pressure. Other forces are biological such as the organic glues that are excreted by fungi and bacteria while decomposing organic material and by polymers and sugars excreted from roots. Larger organisms, such as insects and earthworms, enhance soil structure when they burrow through the soil and deposit waste which assists in structure formation. These forces are concentrated in the upper portion of the soil generally within three to five feet of the surface.



▲ A field showing serious soil compaction resulting in drainage issues and standing water. (Photos provided by Sara Heger)

## Making an impact

Areas where the soil has been disturbed commonly have impacted soil structure. This includes areas that have been cut, filled, compacted or disturbed in any way. When severe these sites will have difficulty in accepting effluent. These areas can sometimes be identified by wheel tracks, hummocks, stunted vegetative growth or incorporated debris. Normal agricultural and forestry uses do not constitute disturbed areas unless they are high-traffic areas or severely eroded areas.

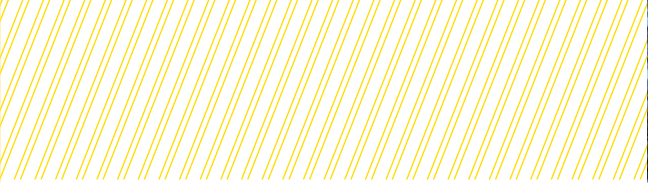
Compacted soils have less space for air and water movement, which impacts microorganism presence, oxygen levels, pore space and moisture levels. The space for air and water to travel between the particles is referred to as the porosity of the soil. When the amount of pore space is reduced, or low-porosity, it becomes difficult for the soil to function properly. Low-porosity leads to improper water drainage and overall, less mobility for things like air, water and soil organisms underground.

Fill soils are soils that have been moved by mechanical means and deposited in a new location. Fill soils commonly have stratified layers or different colored and textured materials. These layers have abrupt boundaries. If you are concerned you may have fill soils, be sure to check the soil survey report as they are often, but certainly not always, mapped as urban land.

When soils with textures other than clean sand (like for a mound or combined treatment and dispersal) are moved to a new location, the soil structure is impacted, which allows the silts and clays to migrate when water is added. This loss of pore space and restricted water movement between the different layers ultimately results in water movement problems in the soil, which can be severe. This also creates challenges in determining water table depth. With fill soil, the soil color cannot be used as an indication of the water table depth. Fill soil colors are characteristic of where it was excavated



▲ Soil profiles at a dig site can tell you a lot about the structure and if compaction will be an issue.



» Exposed soil and the lack of vegetative growth suggest compacted soil near this mound system.



from, not that of its present location. Carefully considering the natural soils, landscapes and vegetation is key to correctly identifying the limiting conditions on these sites.

## Moving forward

What should you do if the soil treatment area structure was damaged prior to installation?

1. Determine if another area exists on the property with undamaged structure. Placing the new septic system in this location is typically the easiest and most cost-effective solution.
2. Determine the severity of the damage — Is it just at the surface or does the damage go deep into the soil profile? Several soil pits should be dug across the site to evaluate the extent and depth of the problem. Run percolation or other similar hydraulic tests to determine the impact of the structure damage.

Once the structure is negatively impacted, it can never be “natural.” There is little that can be done to artificially recreate good structure. There are techniques used in agriculture to rebuild soil structure that could potentially be utilized for septic systems. The challenge is these practices take time which is not something we often have with septic systems installation.

## Bringing it back

Overcoming soil compaction starts with breaking up the compacted zone with shearing under dry soil conditions. If the problem is compaction in the upper 12 inches of the site breaking that layer up by subsoiling such as with a chisel plow (when the soil is dry) may alleviate some of the challenges particularly for above-grade systems but deeper depths may be needed depending on the depth of compaction or fill.

Mechanical processes work to physically aerate the soil and return it to its pre-impact porosity. Soil structure is enhanced with flocculation which brings the soil mineral particles together. Flocculation is enhanced by polyvalent cations on the exchange sites. So divalent cations like calcium and magnesium are good for this first stage and can be found in calcite, dolomite lime or gypsum.

Structural stability can be improved by adding a substance that serves as a binding agent. Commonly a source of organic material is added or naturally occurs from farming. The organic material assists with retaining more water and nutrients for plant uptake. Compost, the most common soil amendment, contains a mixture of organic matter that enhances soil structure, infiltration rate, plant root growth and water-holding capacity and reduces soil compaction. Iron and aluminum oxides can also be added as binding agents.

Structural stability can also be improved through biological (worms and other soil organisms) and mechanical aeration, mechanical loosening (tilling) and planting dense vegetation. Methods include aeration, mechanical loosening (tilling) and densely planting vegetation. Vegetation has been used to break up compaction and assist with structure formation primarily in

farming applications. Examples of crops that can be used to break compacted soil layers include forage radish, annual ryegrass, canola, sunflower, sorghum-sudan and turnip. Similarly, rotations where crops with shallow rooting follow crops with deeper rooting systems or rotating annuals with perennials (for example, alfalfa after annual vegetables) is another tool for managing soil compaction and improving soil health.

Soil structure is easy to damage and hard to repair. Care should be taken to choose sights that have good soil structure and protect that during the installation process. When the only location to build a septic system has damaged soil structure, experimental methods can be tried to build back soil structure but they take a plan and time to achieve results. □

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To feed the dispersal field at the Skyline School project, technicians from Gulley Construction set up an 11-outlet Orenco Hydrosplitter so each row of chambers has its own effluent feed. (Photos courtesy of Gulley Construction)



# Spectacularly Failed K-12 School System Challenges an Alabama Installer

Long pipe runs, insufficient equipment access and a delay getting materials are just a few problems that plagued the team at Gulley Construction

By David Steinkraus

A school in rural Alabama needed a new onsite system, and the project proved to be a bigger challenge than expected for the team at Gulley Construction of Stevenson, Alabama. “Anything that could go wrong with this system went wrong,” says Chris Gulley, the company president.

Gulley’s work was the endpoint of years of complaints from neighbors about septage escaping from the school’s former onsite system. Neighbor Mitchel Stubblefield told WHNT-TV News of Huntsville, Alabama, that septage had been leaking onto his property for years. His land abutted the old dispersal field. After a grandchild reached the septage, Stubblefield said his son-in-law complained to the Alabama Onsite Wastewater Board, which sent a letter to the school district ordering it to fix the problem.

That’s about where Gulley came into the project.

## The system

To build the new system, Gulley’s crew tied into an existing lift station system set up around the school. Wastewater comes out of the lift station in a 3-inch force main and travels about a half-mile to the treatment and dispersal area.

First is a 3,000-gallon trash tank. Next is a 3,000-gallon equalization tank, and wastewater flows by gravity into a 3,000-gallon tank holding a Delta ECOPOD (Infiltrator Water Technologies). Tanks were spaced about 5 feet apart. Wastewater flows next into a 1,500-gallon pump tank with two Champion pumps that came from Delta with the ECOPOD package.

A 2-inch pipe conveys water to an Orenco Hydrosplitter with 11 discharge points for 1-inch pipe. About 900 feet of pipe in total takes water to 11 120-foot-long rows of Infiltrator chambers set 10 feet apart. Each row of chambers has its own charging line. Adapters convert the 1-inch pipe to 4-inch just before pipe enters the chambers.

All tanks were concrete and came from Mitchell Concrete Specialities in Alabaster, Alabama. All tanks also have Infiltrator EZset risers and lids. The Hydrosplitter was housed in a 24-inch TUF-TITE riser with a heavy-duty flat lid.



◀ Technicians set tanks for the Skyline School system in Scottsboro, Alabama.

▼ A technician lays a row of Infiltrator chambers for the Skyline School system in Alabama. The system required 1,320 linear feet of chambers.

## System Profile

**Location:** Scottsboro, Alabama  
**Facility served:** K-12 school  
**Designer:** Greg Richard, Engineering and Surveying Inc., Scottsboro, Alabama  
**Installer:** Gully Construction, Stevenson, Alabama  
**Type of system:** Delta ECOPOD, Orenco Hydrosplitter, Infiltrator chambers  
**Site conditions:** Heavy clay  
**Hydraulic capacity:** 6,000 gpd

To do the work, the Gully team used a John Deere 700J bulldozer, a Komatsu PC88 excavator, a John Deere 333G skid-steer and a Komatsu D39 bulldozer.

### Pipes but no wastewater

The project moved slowly because there was a period of evaluating the existing system, Gully says. The old system used chambers, and it had been worked on several times through the years, he says. When he excavated the old system, Gully found the laterals were full of sludge. “The reason the system had failed is because the original system did not have any tankage, did not have any storage for the solids,” he says. All the laterals filled up with sludge.

Then COVID came along and delayed material delivery. “We probably had this thing under contract for almost a year before we were able to get out there and do the work because, first, it didn’t perk.” School was in session, and so much wastewater was flowing to the drainfield that it wasn’t clear how good the soil was, he said. “Another thing is, we had to build a road to get the material in there because the existing road was not suitable for heavy construction traffic.”

Then one of the tanks showed up out of design spec and required modifications both to the tank and the process of setting it in the ground. Part of that work involved core-drilling a new outlet.



## SYSTEM PROFILE

» Using the Gulley Construction Komatsu PC88, a technician digs trenches for the Infiltrator chambers at the Skyline School job.

“There’s just sewage ankle-deep all around, so that tells me all this school year the sewage has just been running out on the ground. So we had to come back and do a lift station repair: dig that up and repair the pipes coming out of the lift station.”

**Chris Gulley**

“I ordered a brand-new \$3,000 Milwaukee core drill to do the outlet,” Gulley says. He has smaller core drills, he says, but nothing that could put the required 5-inch hole through thick concrete. Because of rocky soil, the tanks are set shallow, he says, so to use the core drill his team excavated a pit outside the tank to accommodate the drill.

“So when we put the system in, and we were waiting on Delta to come and do the startup with us, we never got any sewage,” Gulley says. School began, and still there was no wastewater. “So we thought we had a rupture in the force main, but we couldn’t find any sewage on top of the ground.” He and his team dug down through the road they’d built to check the force main, and there was nothing wrong. They traced back along the force main, and still they couldn’t find any evidence of a fault in the pipe.

Next, Gulley says, he went to the school grounds. He found wastewater in the tall grass around the lift station. “There’s just sewage ankle-deep all around this, so that tells me all this school year the sewage has just been running out on the ground there,” he says.

About 5 feet below grade, two 2-inch discharge pipes had broken where they combined into a 3-inch force main, he said. “So we had to come back and do a lift station repair: dig that up and repair the pipes coming out of the lift station.”

Despite all the challenges, Gulley says, he couldn’t have asked for a better group of people to work with than the people at the school district. They were patient about having work done, he says, and they didn’t hesitate to order necessary repairs as the job progressed. □



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# Wilmington officials discuss septic system overuse in short-term rentals

By Betty Dageforde

Changes to Wilmington, New York's land use code regarding short-term rentals are being considered, reported the *Lake Placid News*.

Section 3J requires a building owner to include a septic inspection report in their application for an STR permit and subsequent renewals. Permits currently expire after two years. The proposed change would shorten the permit length to one year.

The proposed change came out of concerns about the number of occupants commonly found in short-term rentals. Bedrooms are often overcrowded and living rooms are used for sleeping. This results in more people using the septic system than it was designed for, which is based on the number of bedrooms.

The issue is in preliminary stages of the process, and the STR 12-member citizens committee is seeking input from City Council and the public.

## Indiana

Two bills limiting inspections on residential septic systems have passed in Indiana's House of Representatives and will go before the senate later in the year, as reported by the *Indiana Capital Chronicle*.

Under House Bill 1352, septic system inspections are allowed after installation only if required by the manufacturer, requested by the owner, or if a complaint is filed with the Indiana Department of Health.

House Bill 1329 prevents a government entity from requiring inspections upon sale of a property. The author of the bill, Rep. Jim Pressel, R-Rolling Prairie, believes it's the homeowner's responsibility, not the government's, to maintain and inspect their septic system, while David Bottorff, executive director of the Association of Indiana Counties, argues it's important for the public to know that septic systems are working correctly.

Critics worry fewer inspections would increase the number of failing systems. The Indiana Department of Health estimates 200,000, or about one-fourth of septic systems in the state, are in conditions ranging from inadequate to failure, possibly creating risks to humans and the environment.

## Minnesota

Residents in Polk County, Minnesota who have noncompliant septic systems can now apply for funds from a cost-share program to help finance repairs or the cost of replacement, reported KROX-Radio. The county has received a grant from the Minnesota Clean Water Legacy Act for this purpose.

Funds are limited, so preference will be given based on income status, condition of the septic system, and proximity to surface water. In addition, funds are only for primary residences, not second homes, rentals or new construction. Funds will cover up to 80% of installation costs up to a maximum of \$12,000.

## New York

After discovery in 2020 of a potentially harmful algal bloom in Lake George in the Adirondack region of New York, the Lake George Park Commission began a two-year planning process and in 2023 a septic inspection program was put into place, allowing the Commission to inspect the 2,458 properties in a designated area nearest the lake every five years in a rotating schedule of approximately 500 properties each year.

The first year's data, which covered 332 properties, has now been released and indicates more than 50% of the septic systems need attention, reported the *Post-Star*. This breaks out as 16% need simple repairs, 15% are substandard or undersized, and 23% need to be replaced.

Dave Wick, executive director of the Commission, told the *Post-Star* that the design life for most septic systems is 30 to 40 years, while many of the systems in Lake George Park are 50 years old or older. The problem is not that septage is leaking into the lake, but rather nutrients such as phosphorus and nitrogen from the filtration process end up in the water causing algae growth. In septic systems that have exceeded their design life, the soil is no longer able to take up all of the phosphorus and nitrogen it needs to, Wick said.

Systems must be brought into compliance before the next inspection cycle. Homeowners may apply for grant money to help with 50% of the cost of repairs, up to \$10,000.

## New York

Greene County legislators in New York have authorized participation in Round 4 of the New York State Septic System Repair Program, reported *The Mountain Eagle*. Eligible residents may apply for grants for up to 50% of the cost of replacing a system.

A goal of the grant program is to protect and improve the quality of water resources by helping homeowners replace failing septic systems near those resources. The Department of Environmental Conservation has a priority list of bodies of water in Greene County.

## Texas

The Bastrop, Texas, city council has approved changes to the city code reducing the minimum lot size to install a septic tank from one acre to half an acre, reported *BNN Breaking*. The amendment is in response to increasing population density that many urban areas are experiencing across the country.

## Washington

Clark Regional Wastewater District in Vancouver, Washington, has been expanding its public sewer system and is making its way through the 40



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neighborhoods not currently on the system.

The Sunset Strip neighborhood was the most recent. Homeowners there now have the option of decommissioning their septic tanks and connecting to the sewer, reported *The Columbian*.

As part of the Septic Elimination Program, eligible homeowners are given help with the process. They pay a \$13,000 connection fee instead of the normal \$30,000. The monthly service fee is \$45.

Many septic systems in the area are 30 to 50 years old, causing a concern for potential health risks.

**India**

The Indian government's Ministry of Science and Technology announced that septic-cleaning robots are being introduced in India in an effort to better manage municipal solid waste, reported *Republic World*. The device, called Homosep Atom, was developed by Solinas, a startup company, working through the Indian Institute of Technology-Madras in its business incubator program.

The robots are equipped with artificial intelligence. They have been used in 16 cities to date, cleaning septic tanks and sewers. Functions include blade cleaning, solid waste desilting, suction and storage. Authorities believe the units provide improved safety for sanitation workers and an efficient cleaning process. □

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# Courtesy Is Never Outdated – and Other Advice From Industry Veteran

Oregon's Pat McVay wants to link wastewater professionals, homeowners and Realtors for effective septic systems on more challenging sites

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 Oregon Onsite Wastewater Association.*

## Association involvement:

I believe I have been involved with the Oregon Onsite Wastewater Association since its beginning in 1994, serving on the board as the “Industry at Large” person for the last seven years. I have also served on the Curry County planning commission and the Oregon Department of Environmental Quality external advisory committee, which both provided valuable insight and knowledge of the industry.

## Benefits of belonging to the association:

Prior to becoming involved with the association, septic installation was just a necessary portion of getting that homesite job. I have gained a deeper knowledge of, and exposure to, other industry professionals that share a common interest and goal. This relationship keeps me up to date on regulations and rule changes to the newest technology.

## Biggest issue facing your association right now:

Something that concerns me is the DIY installers/developers and startup excavators who are not familiar with what a septic system is or how much real estate is required. A septic tank is not “a septic system.” I don’t like coming in behind a bad excavation and being the bearer of bad news that takes a site from a standard system to hopefully an alternative treatment system, and the homeowner has to begin adjusting his “dream homesite” to what we can make work.

## Our crew includes:

In 48 years of operation, we have employed over three dozen young men, including sons and nephews, and some not-so-young men. Only three left at my request. I was told that summer employment with Sporthaven was the best incentive to stay in college. My best operators started as groundmen and ditch line technicians. I have been extremely fortunate to have employed respectful, eager-to-learn, hardworking individuals. The constant in our company is my office manager, payroll clerk, safety officer, head flagger and the foundation of my support team — Patty, my wife of 46 years.

## The job I’ll never forget:

We built a system at the Salmon Run Golf Course consisting of a



Pat and Patty McVay

## Pat McVay president/owner

**Business:** Sporthaven Inc., Brookings, Oregon

**Age:** 68

**Services we offer:** Septic installations, excavation services

**Years in the industry:** Sporthaven was started in 1958 by my father, Archie McVay, a dairy farmer, at the mouth of the Chetco River. It was primarily to develop a port facility for the fishing and timber industries. It was a family affair, dredging the mouth of the river, constructing docks for lumber shipping, and receiving fish and crab from the commercial fishermen. The company evolved from that to land and homesite development in 1974. That is when I began installing septic systems on sites my dad, my brother Rocky and I were developing for residential homes.

3,000-gallon trap tank, a 2,000-gallon septic tank and a 1,500-gallon dosing tank pumping up to a 10-line Orenco Hydrosplitter to equalize 1,200 feet of an Infiltrator drainfield system. Tanks were from Willamette Graystone, pumps and controls from Orenco Systems.

» An Orenco Systems AdvanTex AX-RT unit being installed by Kevin Cain (left) and Johnes Winn.

» Installation of sand filter in a local development, with Pat McVay operating a Caterpillar 416C backhoe and Jay Hopkins assisting. A Case 450 dozer is shown in the background.



### My favorite piece of equipment:

The industry has come a long way from steel tanks, four-inch ADS “squiggly pipe,” washed drain rock and drainfield paper. Our first systems were installed with a CASE 450 track hoe which we soon traded in for the speed and mobility of a rubber-tired CASE 580B backhoe.

With that upgrade I began trenching for Coos-Curry Electric Co-Op, a relationship which spanned 45-plus years. It filled out my workload and paid the bills between development projects and land sales. I would begin early, trenching as much footage before the power crew showed up in the afternoons to string the new, improved underground cable affectionately called “lifetime wire.” Little did I know that 15 years later we would be trenching and installing 4-inch conduit to replace that same wire when our acidic soils compromised its longevity.

In 2004, we took a leap of faith and purchased a used 7X11 Vermeer horizontal drill, which allowed us to install conduit under roadways, eliminating nearly 90% of cleanup from open trenching. This gamble really paid off during the downturn of the housing market in 2008 when we were putting in underground conduits for the electric co-op.

Along the way we have run the wheels off of one Caterpillar and six CASE backhoes, three excavators, six dump trucks, and three Vermeer directional drills. But I’d say my favorite piece of equipment, my go-to-machine, is a CASE 580-M Extendahoe with four-wheel drive and four-in-one bucket, probably due more to our CASE dealer that has taken care of us for over 40-plus years, Central Equipment in Medford, Oregon.

### The craziest customer situation encountered:

There was a site along the Winchuck River where a single gal was having trouble with her plumbing backing up and flooding her shower. The local pumping company asked for assistance to locate the septic tank. Once we found it and removed the concrete lid, we discovered a huge ball of wipes. Stuck in the inlet pipe was the wipe wrapper that read: “Septic safe/flushable,” so she had flushed the wrapper too.

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

After school, I worked for a man who operated a preventive maintenance shop, everything from welding to painting. We often discussed business. His nuggets of wisdom included the “do” theory — Find something no one else wants to do and do it better than anyone else. He taught me it’s important to answer the phone and return calls, even if you can’t do the job or don’t have time for it. Courtesy is never outdated.

### If I wasn’t working in the wastewater industry, I would like to:

My last systems were installed in 2022, so that’s a span of 48 years and I’m thinking it’s time to climb out of the ditch, let the younger generation take a turn, and watch my cows eat grass.

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

I envision in the years to come that one of our biggest issues will be educating those new to the industry and the public on the effects of poorly installed, failed and compromised sites. Sites are becoming more and more challenging, requiring all parties to be on board to ensure the best outcome. I would like to see more unity with the regulators, industry professionals, homeowners and Realtors. Homeowners and Realtors need to learn what is realistic to expect from a site and the system that serves it. □

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

Send your suggestions to [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com)

# Septic Tanks and Components

By Craig Mandli

## SEPTIC TANKS

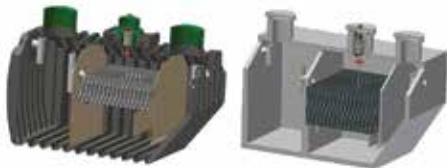
### Infiltrator Water Technologies IM-1250

The IM-1250 septic tank from Infiltrator Water Technologies offers long-term strength and watertightness in a lightweight, strong plastic tank design. Like other IM-Series tanks, it is an injection-molded, two-piece mid-seam polypropylene tank compatible with Infiltrator's line of custom-fit risers. It is designed for use as a single or in-series septic tank with a total volume of 1,271 gallons. Sized between Infiltrator's existing tank offering of 1,000- and 1,500-gallon capacity tanks, it offers installation flexibility requested by customers. Structurally reinforced access ports eliminate distortion during pumpouts and reinforced structural ribbing and fiberglass bulkheads offer additional strength. It accommodates the Safety Star secondary safety lid system and can be used as a septic tank, pump tank or rainwater (nonpotable) tank. No special installation, backfill nor water-filling procedures are necessary. **800-221-4436; [www.infiltratorwater.com](http://www.infiltratorwater.com)**



### Jet Inc. J-1500CF Series

The J-1500CF Series nitrogen-reducing BAT media plant from Jet Inc. offers variable capacity in a NSF 245-tested treatment system. It provides complete effluent treatment from 500 to 1,500 gpd. The 500 and 800 gpd PLT Series tanks are the lightweight, rotational molded alternative to the concrete J-1500CF Series. The seamless polyethylene tanks are easy to transport and install in difficult site conditions. The system uses a 700++ aerator, effluent filter and the Jet 197 control panel, which cycles the aerator to reduce the nitrogen by more than 60%. **800-321-6960; [www.jetincorp.com](http://www.jetincorp.com)**



## EFFLUENT FILTERS

### Polylok PL-250

The PL-250 effluent filter from Polylok is designed to handle up to 3,000 gpd with 250 linear feet 1/16-inch linear filtration. It is easy to install and designed for functionality and longevity, according to the maker. The cartridge cannot be installed incorrectly, with no direct bypass, and will fit any standard 6-inch tee. Its W design prevents solids from settling. **877-765-9565; [www.polylok.com](http://www.polylok.com)**



### Sim/Tech Filter pleated filter units

Pleated filter units from Sim/Tech Filter provide gravity effluent filtration in septic tanks and turbine pump filtration in pump tanks. The filtration size is 3/32-inch in two dimensions. Flow channels in the pleated material increase longevity. All filter types start at over 2,000 square inches of filtration area. The 45% open area (over 900 square inches) is equivalent to 800 linear feet of 3/32-inch slots. Various configurations and larger units are available. **888-999-3290; [www.simtechfilter.com](http://www.simtechfilter.com)**



## LID

### BrenLin Seal-R

Seal-R septic tank covers from BrenLin create a strong seal between the septic tank and surrounding elements. The covers are made of durable LDPE, and range in size from 12 up to 42 inches, as larger covers are becoming more common as required equipment continues to expand in size. They can be personalized with customer or company information using a CNC machine to engrave directly

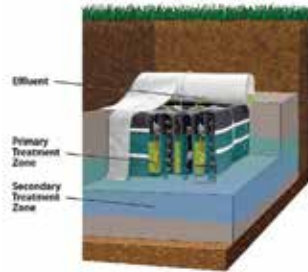


into the cover. All come with mounting supplies, including stainless steel lag bolts, and are designed to work with N12 dual wall pipe. **888-606-1998; [www.brenlincompany.com](http://www.brenlincompany.com)**

## ONSITE SEPTIC SYSTEMS

### Eljen Geotextile Sand Filter

The Eljen GSF, or Geotextile Sand Filter system, is designed to provide treatment and dispersal in the same footprint with easy installation and minimal maintenance. It is used for 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 effluent and increase the long-term acceptance rate. Its design provides increased surface area for biological treatment that greatly exceeds the module's absorption area. Open-air channels within the module support aerobic bacterial growth on the module's geotextile fabric interface, surpassing the surface area required for traditional absorption systems. The system is tested and certified by NSF to NSF/ANSI Standard 40. 800-444-1359; [www.eljen.com](http://www.eljen.com)



### Norweco Singulair Green

Norweco's Singulair Green with integrated pump chamber offers a single-tank solution for small lots and restrictive soil conditions. The system with a 520-gallon integrated pump chamber arrives at the site ready to install. This lightweight, easy-to-install tank provides superior structural integrity. Systems and packages are always in stock and ready to ship. Nitrogen treatment packages are available on all systems. They can be ordered with 6- and 12-inch threaded riser extensions to allow for at-grade installation. 800-667-9326; [www.norweco.com](http://www.norweco.com)



### SeptiTech STAAR

SeptiTech STAAR is a PLC-controlled onsite wastewater treatment system for residential and commercial applications 500 to 200,000 gpd. All below-grade components can be installed in almost any plastic, concrete or fiberglass tank with a drop-in liner or custom built options. Customized treatment programming is designed to meet individual site needs, assuring robust, consistent, reliable treatment. Certified to ETV, NSF-40 and NSF-245 standards, conventional treatment achieves 98% BOD and TSS removal and for the nitrogen reduction option, nitrogen can be reduced by 75 to 85%. All systems include internal discharge pumps and options for remote diagnostics and monitoring. 800-753-3278; [www.biomicrobics.com](http://www.biomicrobics.com)



## RISER

### TUF-TITE tank risers

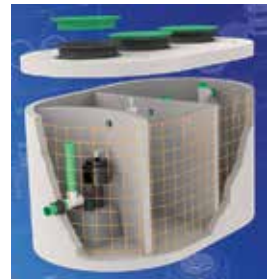
Tank risers from TUF-TITE have internal supports or ledges to reinforce internal plastic safety lids. The ledges will strengthen the company's plastic internal safety lids or a variety of internal safety devices made by others, such as concrete, fiberglass or rope netting. The riser lids come with necessary mounting hardware, including safety screws. 800-382-7009; [www.tuf-tite.com](http://www.tuf-tite.com)



## SEPTIC SYSTEM COMPONENTS

### Front Range Precast automatic siphon system

The automatic siphon system available on FLXX watertight septic tanks from Front Range Precast is an effective technological addition. As the liquid rises in the dosing tank or chamber, it covers the siphon bell. When the liquid in the tank reaches the high-water line, a quantity of air is forced around the trap, escapes through the discharge siphon, and is passively carried to the drainfield, where it is naturally treated and returned to the water table. It's an operation so quiet, natural, and energy-free that it's easy to forget the vital function it serves. 800-783-3207; [www.flxx.com](http://www.flxx.com)



### Orenco Systems Tank Shield

The Tank Shield from Orenco Systems is a secondary safety barrier designed to prevent unintended entry and accidental falls into tanks and pump basins. It's easy to install and remove, and it can be installed in new or existing risers, as well as over pumping equipment. It is molded of co-polymer polypropylene for exceptional durability and handles a load rating of 250 pounds. It ships in a kit with mounting brackets and hardware and is compatible with Orenco's 24- and 30-inch FRP pipe and 24-inch PVC ribbed pipe. 800-348-9843; [www.orenco.com](http://www.orenco.com)



## PRODUCT FOCUS

### Zoeller Pump Turbine STEP Systems

Turbine STEP (Septic Tank Effluent Pump) Systems from Zoeller Pump are designed for use in a septic tank or pump tank. With a turbine effluent pump, float system and effluent filter set packaged in a polyethylene vault, it is suitable for use on new construction or repair sites when gravity flow is not an option and higher total dynamic head is required. The system is also useful in cluster systems, low-pressure pipe applications, gravel/sand filters, drip irrigation systems and other high head applications. Each system can be equipped with a control panel for use in either demand dose or timed dose applications. They are available in 1/2 through 3 hp sizes, in 1 1/4- or 2-inch discharges and flows up to 85 gpm. Alarm box or control panel packages are available. 800-928-7867; [www.zoeller.com](http://www.zoeller.com)



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Decorative Pagoda Vents come in 16-, 24- and 36-inch sizes. The original vents are bark (brown) or moss (green) color to blend into the landscape. The newest copper offering will add patina over time or can be maintained as a pristine copper landscape feature. All versions support the long life of system components by providing septic field microbes the oxygen they need to thrive, concrete tank gas release to mitigate microbial-induced corrosion, and pressure relief for pumps. An optional odor filter cartridge uses concentrated media for years of odor control, according to the maker. 888-864-1468; [www.pagodavent.com](http://www.pagodavent.com)



#### Simple Solutions Distributing WVI Inline

The WVI Inline activated carbon filter from Simple Solutions Distributing is installed in an attic or crawl space in line of the current vent to remove septic odor. The filter comes in 4- and 6-inch sizes, with the smaller unit able to be bushed down to 1.5-, 2- and 3-inch sizes. It comes with 2 pounds of Sulfursorb Plus activated carbon, which is poured into the 2-inch fill port. The unit accepts an optional screw-in saturation indicator that changes color to indicate when carbon needs to be changed. It is suitable for extreme, cold climates as it is enclosed in an attic or crawl space. It can be installed in any climate where septic or sewer vent odor exists and the roof vent filter needs to be hidden. 973-846-7817; [www.industrialodorcontrol.com](http://www.industrialodorcontrol.com)



#### The Dirty Bird septic vent

The Dirty Bird provides an alternative to the standard septic vent required by many municipalities for new residential and commercial construction. It is an easy-to-install septic vent shaped like a birdbath. Meeting U.S. Environmental Protection Agency septic-venting regulations, it controls odors through a replaceable charcoal filter and vents gases through holes at the bottom of the pedestal so nothing enters the septic system. Fade-resistant (UV-stabilized), lightweight and recyclable, it is available in granite, sandstone and terracotta colors. It is constructed of 100% low-density polyethylene and stainless hardware. It is 32 inches high with a basin width of 23 inches and footprint of 12 1/4 inches. 866-968-9668; [www.thedirtybird.com](http://www.thedirtybird.com)





**PRODUCT NEWS**

**PRODUCT SPOTLIGHT**

**Additional size options make popular tank series more versatile**

By Craig Mandli

When customers want more of a good thing, it's good business to deliver. That's exactly what Infiltrator Water Technologies is doing with the expansion of its popular IM-Series product line — adding the IM-300 and IM-1250 septic tanks.

Like other IM-Series tanks, the new IM-300 and IM-1250 tanks are injection-molded, two-piece mid-seam polypropylene tanks compatible with the EZsnap riser system. The IM-300 is designed for use in pump tank applications with a total volume of 314 gallons. The IM-1250 is designed for use as a single or in-series septic tank with a total volume of 1,512 gallons.



“The IM-1250 and the IM-300 offer the same popular features as the Infiltrator CM-1060 Tank. It's a lightweight structural polypropylene tank that makes installation and transportation easier on the installing contractor,” says Jim Bransfield, marketing director for Infiltrator. “The two-piece construction gives it the unique ability of shipping very economically. The newly available variety of sizes allows a septic installer multiple options for every application and will conserve valuable space on today's tight building lots.”

The polypropylene construction is corrosion resistant in a wastewater environment. According to Bransfield, the IM-1250 in particular fills a need in the industry.

“The IM-1250 is primarily intended as a septic tank, but can be used in pump tank applications,” he says. “It will fill out the Infiltrator product line between a CM-1060 and an IM-1530. In most markets, it will be used on houses of three bedrooms or more. The 1,250-gallon septic tank is commonly used in Northeastern and Midwestern states.”

According to Bransfield, a big selling point to the company's IM-Series tanks is the stringent testing they face before hitting the open market. “Infiltrator tanks are subject to all certification testing and evaluation under IAPMO Z1000 and CSA B66 certification testing protocols,” he says. “Both tank models were developed following the stringent design parameters of Infiltrator's previous tank models and benefit from their in-ground experience.”

While the tanks are fresh on the market, initial feedback has been positive. “Based on initial beta test installations there is a great deal of customer excitement for the IM-1250 tank model,” says Bransfield. “Installers were surprised at how robust the tank was in the ground and how easy it was to handle. The IM-300 has also been very well received, selling through the initial production run much sooner than expected.” **800-221-4436; www.infiltratorwater.com** □

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# Septic Tanks and Components

By Craig Mandli

## Advanced treatment system used for challenging lake site repair



**Problem:** An existing two-bedroom house built in 1920 on a small island in Oscawana Lake, New York, needed a septic repair. The house was built on piers partially overhanging the lake. A typical system repair permit would not be approved due to site size constraints and a lack of separation from groundwater.

**Solution:** Pat Tyndall of Tyndall Septic Systems working with Mike Doebbler of Mastromonaco Consulting Engineers were able to design a system using a FujiClean CE5 advanced treatment system and GeoMat 39-inch wide pressure-dosed shallow drainfield. FujiClean's lightweight single tank aerobic treatment system weighs under 400 pounds. This made transport to the island possible using only a mini-excavator. The system has a small footprint of less than 4 by 8 feet to conserve as much room as possible for the drainfield. "No other system would have worked on this site," says Tyndall. "The road to the island was made in 1920 and would not withstand the abuse of any heavy equipment." The FujiClean and field-dosing chamber were installed only two feet into the existing soil. Tanks were backfill covered for ascetics and ground-insulating properties. The GeoMat field consists of four 25-foot long pressure-dosed beds to load the soil with treated effluent as evenly as possible.


**Result:** Combining the technologies of FujiClean and GeoMat all lake, groundwater, and water-well setbacks were able to be met. The health department issued a permit for repair. The existing dwelling, built by the current owner's grandfather, was able to be saved and enjoyed by generations to come. 207-406-2927; [www.fujicleanusa.com](http://www.fujicleanusa.com)

## Onsite system effective on lake property with small setback



**Problem:** A tiny lot on Hess Lake in Michigan was well within the 100-foot setback normal for properties on the lake. The property needed a new onsite system that would not threaten lake water quality.

**Solution:** Newaygo County Health had sufficient experience with SludgeHammer technology to know it would increase the quality of the effluent. They issued a waiver to permit construction of a patio consisting of a large cinderblock box filled with 10 feet deep sand. A 1,500-gallon septic tank was put on one side and an Eljen GSF filter filled the rest, and the patio was covered with an attractive astroturf.

**Result:** Samples from the tank showed BOD less than 7 mg/L, and total nitrogen of 12 mg/L. A soil lysimeter immediately below showed nondetectable phosphate. The system is protecting the lake even at a setback of only 15 feet. 231-348-5866; [www.sludgehammer.net](http://www.sludgehammer.net) 



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