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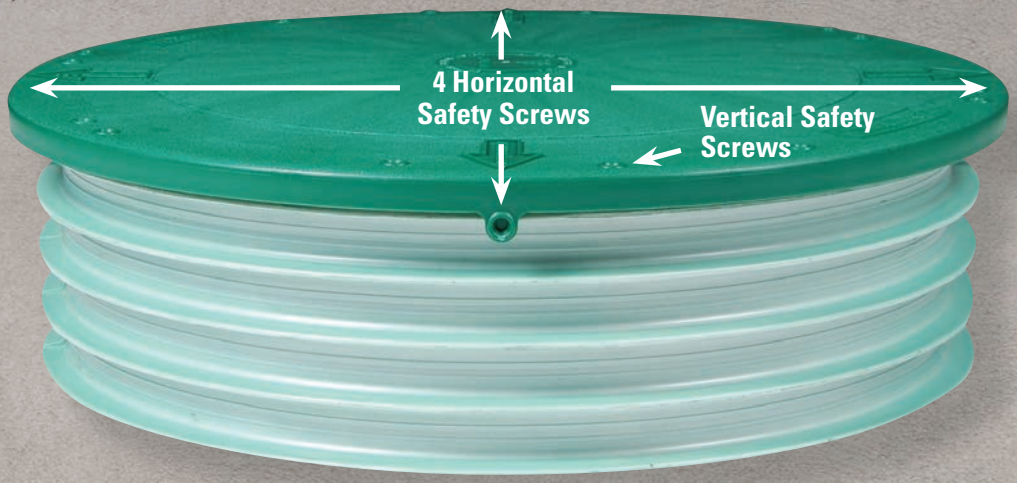

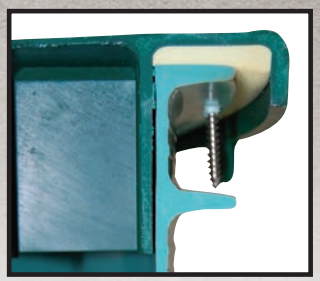

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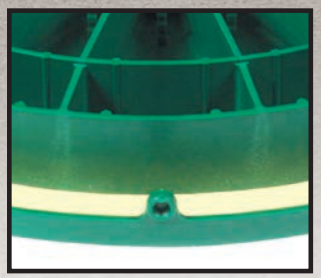

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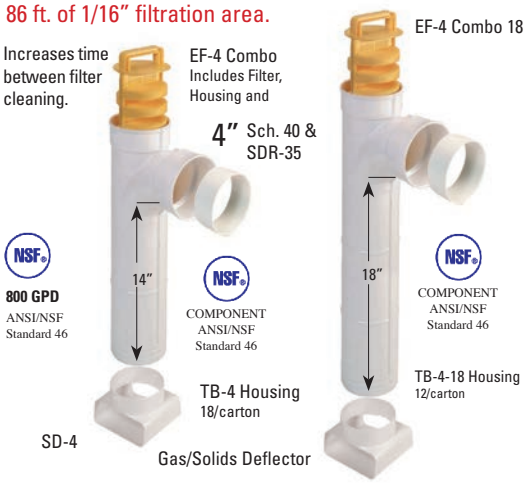

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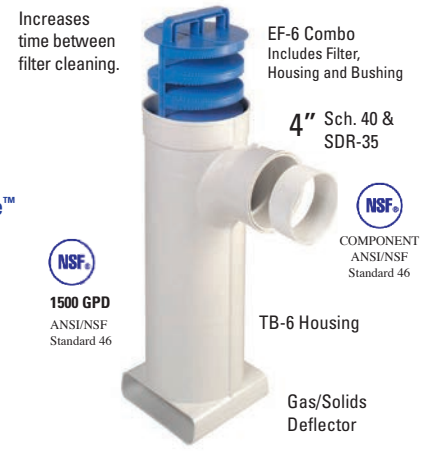

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Contractor Profile: Coping with new regs in Alberta

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December 2020

Enjoy this issue!

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

Jim Kneiszel

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

New Onsite Installers Will Never Lack For Work

Folks in every region in the U.S. and Canada demand clean water. Now is the time for government and industry action.

Every so often I see a statistic that reminds me of the enormous demand for onsite installing services. It happened again recently, and as we look toward a new year, this story reinforces your decision to invest in an onsite business or steer your career toward the wastewater industry.

The city of Jacksonville, Florida, is grappling with a hodgepodge of wastewater solutions that — in addition to its municipal sewer system — includes 65,000 septic systems in an urban community. Facing a clean-water crisis and algal blooms caused by nitrogen overloading in sensitive waterways, the city wants to phase out aging and inadequate septic systems and gain control of the problem.

It's an estimated $2 billion project, and to say it won't happen overnight is huge understatement. News accounts point out about two-thirds of the septic systems are still working properly, while a priority must be set to replace the failing systems first. That's reasonable.

But how does this happen? And what is the timetable?

This is when Jacksonville City Councilman Ron Salem made a telling statement that should encourage installers about the future of the industry.

"It is my personal feeling that this is not an issue that's going to be solved in five years or 10 years," Salem said. "This is a 30- to 50-year issue. But you have to start somewhere."

Think about that. In one city in the U.S., the changeover from septic to sewer will take 30 to 50 years to complete. That means that a 20-year-old installer crewmember who starts his career today could still be building, maintaining and decommissioning septic systems in Jacksonville for the rest of his or her working life.

And that's nothing to be said for the rest of Florida, much of which will never convert to a metropolitan sewer line. Outside of the popular coastal cities, millions of homeowners and businesses will continue to rely on decentralized wastewater treatment. All new construction in these areas will need a system, and millions of aging systems in Florida will have to be replaced with new and improved technologies that will better protect a region with extremely high groundwater tables and ample protected environments.

As communities confront the reality of wastewater systems that have been long ignored and continue to deteriorate, two questions come to mind that will drive the discussions: Who's going to pay for these improvements? And who is going to do all the work?

Additionally, pretty much every installer I know could take on more jobs if they could find more quality workers. Workforce development will be the biggest issue facing installers in 2021.

DOLLARS AND SENSE

It's often said to "follow the money" when you want to unravel a mystery of any kind. So let's start there first. New systems can be costly, and home and business owners will have to step up to the plate and invest in a critical private utility — wastewater treatment. I always argue that septic systems provide a great value to users over time. If you take into account the initial construction costs, required maintenance and pumping, onsite systems will often cost less over, say, a 20-year system life compared to a sewer hookup and monthly user fees.

When explained that way, most septic system users will understand that the expenditure is necessary. However, onsite improvements are one of the only areas where the government has indicated a willingness to invest in a private utility for which the homeowner draws the benefit.

U.S. counties and states are looking at the need to improve wastewater treatment to protect the environment, and are pledging funds to aid homeowners facing these large bills. Every year I see more governments announce cost-sharing programs for septic system replacements, routine pumping and periodic system maintenance.

In Jacksonville, one official estimated each household in one neighborhood would face $53,000 in costs to replace failing systems, presumably to provide effective treatment as they wait for the municipal system to grow. The city is looking at ways to help out.

"Grants, federal grants, state grants. Those are great sources of potential revenue, but I think it's going to take something much larger than that," Salem says.

Think about the retirees living on fixed incomes being presented with a bill for $30,000 to upgrade the conventional box-and-rocks system they built at their home when they were newlyweds 40 year ago. Look at the dwindling savings accounts of working families and imagine how they can cope with an invoice like that. They won't be able to do it on their own.

So I expect the government aid programs to continue to broaden their scope across the country and find public acceptance because A) everyone can relate to getting a hefty, unexpected bill and B) ultimately folks want clean drinking water and lakes and rivers safe for recreation including swimming, boating and fishing. The help in funding will drive the building of millions of new systems over the next few decades.

DIGGING THE INDUSTRY

That leads back to a predicted bright future for installers. With so much work expected to materialize in the coming years, every one of you will be needed to get the job done. Look around your service territory. How many contractors like you do you see? It's probably only a handful, and some of them see retirement on the horizon.

Now look at the growth of suburban and exurban (the ring or territory just beyond the suburbs) areas. New houses are going up all the time and often they will utilize decentralized wastewater treatment. That's because many of the big municipal sewer providers are not favoring expansion at this time. And because the U.S. EPA now considers onsite systems as a valid permanent treatment solution in many cases.

Add to the new-construction demand the need for replacement systems and there is more than enough growth potential for all onsite installers. Additionally, pretty much every installer I know could take on more jobs if they could find more quality workers. Workforce development will be the biggest issue facing installers in 2021 and beyond.

So as you prepare next year's calendar, take the time now to explore how you can attract new workers to this industry. We need to share the promising outlook for young people willing to operate equipment and get their hands dirty. A lot has been said recently about the benefits of trade school education and students choosing a trade over pursuing a four-year degree. The onsite industry needs to trumpet that message, and back it up by offering high wages, good benefits and an obvious path to success for these workers.

We'll see you in the new year!

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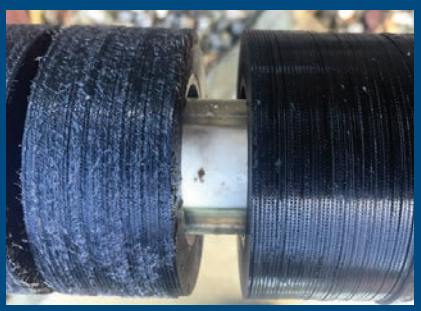
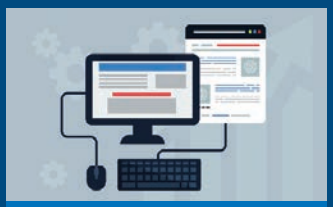


DELIVERING THE DOSE
Drip Distribution O&M

Without the right filtering system and proper maintenance, a drip system will have plugging problems. Maintenance is important for drip dispersal systems, especially in areas where rodents are prone to burrow into valve boxes and chew through driplines. This review of drip distribution system O&M will help keep things flowing. onsiteinstaller.com/featured



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BACK TO BASICS
7 Overlooked Safety Issues

Your tailgate safety meetings probably focus mainly on the major hazards involved with septic installation work like operating heavy equipment and trench shoring. It's easy to dismiss more basic safety reminders, but failing to keep them in mind can result in injury and derail a workday quickly. Don't forget about these more basic safety issues that are easily overlooked. onsiteinstaller.com/featured

MONEYMAKING MACHINE
Efficient Drain Snake Tops the List

Bulldog Contractors, featured in this month's issue, does onsite system installation and repair, but also provides residential plumbing and drain cleaning services. As such, one of general manager Jeff Keller's favorite tools is a battery-powered drain snake. Read this exclusive online story about Keller's favorite moneymaker. onsiteinstaller.com/featured

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WE FIX EVERYTHING

The onsite pros at Bulldog Contractors take a cradle-to-grave approach to wastewater —installing, maintaining and repairing systems for their happy customers

By Ken Wysocky

Several years after Bulldog Contractors left the home-remodeling business to concentrate on more lucrative plumbing and drain-cleaning work, the Jefferson, Texas-based company steered into yet another market: Repairing and installing septic systems and pumping septic tanks.

The rational for the move was simple: In Jefferson — located in rural East Texas, about 15 miles west of the Texas-Louisiana state line — most homes have septic systems. And if a customer calls with a plumbing problem, there's a good chance a septic-system issue is the cause, says Jeff Keller, general manager.

"When someone calls us for a backed-up drain, there's a 50-50 chance it's a septic issue," says Keller, who runs the company for his semiretired father, Carl. The elder Keller established the company in 1978 and named it after the mascot of the local school system sports teams.

"Everything is 'bulldog' around here, so we decided to jump on the bandwagon," he says. "Plus we had a bulldog at the time."

The move into the septic repairs and installations underscores two valuable lessons for small business owners. First of all, it pays to be aware of new opportunities — especially ones that complement existing services and skills offered. Second, providing a range of diversified services makes companies more attractive to customers who'd rather not deal with multiple contractors.

"We wanted to be a one-stop shop for our customers," says Keller. "No matter what the problem is, we want to be able to take care of it, right then and there."

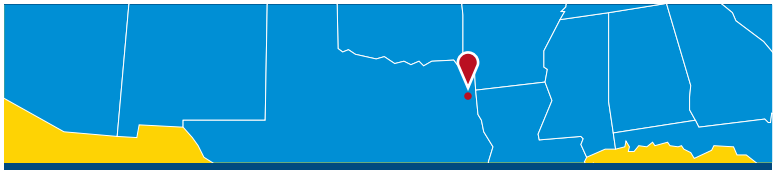
Today, system installations, repairs and pumping account for about 35% of the company's revenue. Plumbing and drain cleaning still dominate with 65% of the company's revenue, Keller says.

DUAL-TRUCK SERVICE

To provide faster and more efficient service, the company typically sends a vacuum truck and a plumbing vehicle to rural job sites, just to avoid making customers wait for service. Keller charges customers more to bring both vehicles, but he gives them the option of bringing just one truck or both.

"If people tell me it's been a long time since their tank was pumped, I can pretty much predict what the problem is," he explains. "We usually take both trucks with us so we don't have to backtrack and cost customers time.

"If they haven't had the tank pumped in, say, 10 years or more, they're going to need that done anyway," he continues. "I usually try to pump the tank first, and if that doesn't fix the problem, then we've got a plumbing truck parked right there."



Bulldog Contractors LLC
Jefferson, Texas

Owner:	Carl Keller
Founded:	1978
Employees:	3
Service area:	60-mile radius
Services:	Onsite system installation and repair, pumping, residential plumbing and drain cleaning
Service area:	40-mile radius around Jefferson

« Jeff Keller, in the foreground, is shown with technician Cameron Corpier. The truck is an International outfitted with a 1,650-gallon steel tank from Lely Tank & Waste Solutions and a National Vacuum Equipment vacuum pump. (Craig D. Blackmon photo)

» Technician Cameron Corpier drags hoses to reach a residential septic system. For Bulldog Contractors, pumping, installing and inspection work are complementary services. (Craig D. Blackmon photo)

The company relies on a 1996 International truck outfitted with a 1,650-gallon steel tank made by Lely Tank & Waste Solutions and a vacuum pump from National Vacuum Equipment. To perform repairs and system installations, as well as replace water and sewer lines, the company also owns a JCB North America backhoe, a trencher made by Ditch Witch (Charles Machine Works) and a 35-foot flatbed trailer made by McLendon Trailers.

On the plumbing side of the business, the company owns a 2017 Chevrolet Express cutaway van with a 12-foot box body from Supreme Corp. (owned by Wabash National Corp.) and storage and shelving units built by Hackney. The company also relies on power tools from RIDGID and Milwaukee Tool.

For cleaning pipelines, the company invested in a RIDGID standard SeeSnake pipeline-inspection camera; a SeeSnake microReel camera; a RIDGID SR-60 SeekTech pipeline locator; and a cart-mounted JM-2900 water jetter (4 gpm at 3,000 psi), built by General Pipe Cleaners, div. of General Wire Spring.

In addition, the company owns a RIDGID K-6200 drum machine (for 3- to 6-inch-diameter pipes) and an M18 Drain Snake, manufactured by Milwaukee Tool.

PRICED RIGHT

How is a smaller company able to afford so much equipment? By charging prices high enough to cover overhead costs, as well as generate sufficient profit margins to keep reinvesting in more tools and equipment that boost efficiency and productivity.

A good example is pipeline-inspection cameras, which Keller says are among the smartest investments he's ever made. The main benefit: The ability to see and diagnose problems without digging up customers' yards to find the problem, he notes.

"We don't want to just go out to customers' yards and dig them up for no reason," he says. "An inspection camera assures customers that you're a professional who can locate problems without tearing up their yards like a gopher."

The cameras also can help sell jobs because skeptical customers can actually see what's causing a problem. To recover the cost of expensive video equipment, Keller charges an add-on fee to camera lines, which he offers as an option. As he puts it, "There's nothing free in this world."

But Keller gives customers a free one-year warranty on his work if a post-cleaning camera inspection shows a line is running free and clear and the pipeline system is in good working order.

But in the end, it's hard to make equipment investments by charging just below or about what competitors charge. "I charge based on what a job is worth and how long it'll take me to finish it," he says.

PLEASING CUSTOMERS

The way Keller sees it, investing in reliable, advanced technology that enhances productivity and efficiency is a form of customer service. It's hard to be a one-stop shop for customers and fix a variety of plumbing and septic issues without a full complement of reliable equipment.

> "Installing that system required septic, plumbing and electrical skills. It showed the value of being a one-stop shop … it would've been a real headache for the customer to deal with three different contractors."
> **Jeff Keller**

<< Jeff Keller inspects the control panel of an older septic system. (Craig D. Blackmon photo)

PUMPING THE BRAKES ON GROWTH

For many business owners, growth is the be-all and end-all objective after starting a business —the ultimate benchmark for measuring success. After all, bigger is better, right?

Not always, as Carl Keller, the owner of Bulldog Contractors, and his son, Jeff, can attest. Carl established Bulldog in 1978. And by 1985, the company grew to 22 employees and was running three plumbing service trucks, plus a vacuum truck used to pump out septic tanks.

But while growth can be great, it also can spur hassles and headaches, too, including mounting overhead costs and increased personnel and managerial responsibilities that suck up that most precious of commodities: time.

So when all those factors combined with the growing difficulty of finding qualified technicians, the company started downsizing about a decade ago, Jeff Keller explains.

"It got harder and harder to find good, reliable workers who you can trust with your company name and brand," he says. "In fact, nowadays it's hard to find someone who'll just show up to work. We just got tired of all the babysitting — just wasn't worth all the headaches.

"You reach a breaking point when you spend so much more time managing people and your overhead costs just keep getting bigger and bigger," he adds. "And even though you're bigger, you aren't making any more money than when you were smaller."

Today, the company has just three employees: the two Kellers (Carl is semiretired) and Cameron Corpier, a technician who's been with the firm for six years.

"We have a lot fewer headaches because now there's no need to always be checking up on everyone out in the field," explains the younger Keller, who grew up in the business and always planned on working for his father. "And my father could finally step away from working out in the field."

From left, Carl Keller, Sandy Keller, Jeff Keller and Cameron Corpier are shown in the Bulldog Contractors shop. (Ben Daily photo)

As part of a septic inspection, Cameron Corpier sprays off components held by Jeff Keller. (Craig D. Blackmon photo)

EMERGENCY SERVICE

Most of the septic-related work Bulldog performs centers on emergency repairs to fix backed-up tanks. Usually the problem is a broken pump or a failed leachfield. "So we either replace the lines or upgrade to a different system," he says. "Each situation is different."

Keller is manufacturer-certified to repair and service aerobic systems made by the following companies: Clearstream Wastewater Systems, Hydro-Action, Jet Inc., Norweco, Hoot Systems, Socia Septic Systems (Cajun Aire), Centex Hydro-Flo, Ecological Tanks, Consolidated Treatment System and Delta Treatment Systems (Infiltrator Water Technologies).

The company only installs about a half dozen new systems a year, primarily because an influx of competitors bent on competing on price has made it difficult for Bulldog to turn a profit.

"They're doing it for pennies on the dollar and I can't compete because I'm charging plumbing rates for septic work," he explains.

When the company does install a new system, Keller says he prefers aerobic systems made by Clearstream, with either concrete or fiberglass tanks made by Clearstream.

"We have a lot of red clay around here with poor percolation, so we usually have to use aerobic systems," he says.

ONE TOUGH JOB

One of the toughest jobs Keller ever encountered occurred in 2011. It involved a failed septic system on a lakefront home, so the water table was

"We've built a reputation for having the right machine for the job, which is a necessity to provide great customer service," he says. "The industry is constantly changing, so if you don't adapt and change with the way it's evolving, then you're going to get left behind, plain and simple. So we try to keep up with most innovative tools and technology."

Projecting a professional image is important, too; uniforms and clean, well-maintained trucks go a long way toward assuring customers they're in good hands. It's also important to do the simple things well, such as arriving at jobs on time and doing what you say you're going to do — and doing it when you said you were going to do it, he notes.

Educating customers — especially those that haven't ever owned a home with a septic system — is also part of the customer-service equation. "An uneducated customer is the worst kind of customer," Keller says. "They get upset about prices because they don't understand what you did.

"We take time to explain everything — go over the process step by step," he continues. "Sometimes customers are stressed out and frustrated because they're taking time off work to be at home, which is a huge hurdle to overcome. But if you can take the time to show them you're going to do a professional job, it can help minimize price objections."

"We don't want to just go out to customers' yards and dig them up for no reason. An inspection camera assures customers that you're a professional who can locate problems without tearing up their yards like a gopher."
Jeff Keller

high. Bulldog started excavating for a new aerobic system in March — and didn't finish until early October. The culprit? An unusually rainy summer that continually ruined repeated excavation efforts, Keller says.

"We shot the grade and made sure the water table was below the excavation ditch," he explains. "Then we dug the hole. But that night, a huge storm blew in and the lake rose three feet and flooded.

"Our excavation flooded and the walls collapsed," he says. "We ended up digging it out five times … and the lot was so small that we couldn't dig in another location. And water just kept coming in because it rained every couple days. It was a total freak of nature because it never rains that much during summers in Texas."

The situation was even more complicated because an addition to the home had been built over the existing tank, which made it impossible to disconnect it. The solution? Keller installed a grinder pump in the old tank, which served as both a holding tank and a lift station from which septage was pumped uphill through a 2-inch PVC line to the new system, some 80 feet away, Keller explains.

"Installing that system required septic, plumbing and electrical skills. It showed the value of being a one-stop shop … it would've been a real headache for the customer to deal with three different contractors on a job like that."

After seven months of fighting the weather, Keller knew he had to complete the installation because the normal fall rainy season was looming. So he used the company's vacuum truck to pump water from the excavation while setting the new concrete tanks. (The roughly 4,000- to 5,000-square-foot home required three 1,000-gallon tanks.)

"We didn't have any other choice," he says. "At one point, water came in so fast that one of the tanks we were trying to set was actually floating.

"It was crazy — a real nightmare," he adds. "I hope I never have to do that again."

WORK-LIFE BALANCE

Looking ahead, Keller says he eventually will buy the company from his father. But that won't change the company's less-is-more business strategy, which prompted a gradual downsizing during the last 10 years. Growing smaller instead of larger allowed the company to operate at a saner pace and pay even more attention to customer service, he says.

"I'm not looking for the headaches that come from more growth," he says. "There was a time when I was married to the business, with no life and no family time. But now I place more value on time with my family and friends and spending time doing things I want to do. And that's the way it's going to stay."

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

Pay Attention to These Pressure Distribution Basics

Dosing options, the right pump for the job and other important factors will keep the system operating properly and the customer happy

By Jim Anderson and Dave Gustafson

Last month we discussed how, in gravity systems, effluent distribution over the area of a sewage treatment trench is accomplished by the biomat. Full treatment efficiency is not obtained until the biomat has developed over the infiltrative surface of the trench; the entire area is used throughout the day. If pressure distribution is used to deliver effluent to the trench or bed, effluent is spread across the entire system area from Day 1 of system operation.

Pressure distribution involves the use of a pump to pressurize the distribution network and ensure equal amounts of effluent are delivered throughout the network. The pump controls the amount and time effluent is applied to the soil infiltrative surface. There are two ways effluent can be applied under pressure: on-demand or time dose.

On-demand dosing occurs periodically during the day and is determined to a large extent on when water is used in the house. The pump runs and delivers a set amount of effluent to the system whenever effluent fills the pump tank to a level typically based by some fraction of the estimated daily sewage flow.

The amount is often set at one-quarter the estimated daily sewage flow. For a four-bedroom house with an estimated sewage flow of 600 gpd, each dose would be set to deliver 150 gallons. Demand-dose floats are used to set the amount of dose to be delivered. The reasoning behind this is the pump would run on average four times a day and the flow would be spread out during the day. In between each dose, effluent would have time to run through the soil by unsaturated flow across the entire system, providing both acceptance and treatment.

This does provide better distribution of effluent through the day than gravity flow, where effluent is delivered every time water is used in the house; it does not spread flow out during the day. Each time the pump runs it delivers 150 gallons regardless of the time of day. We know water is not used evenly during the day; with higher use in the morning before everyone goes to school or work and then again later in the day for dinner and baths.

LOOK FOR OVERLOAD

There is potential to overload the ability of the soil to accept and treat effluent in vicinity the orifices where effluent is delivered, which can result over time in excess development of a biomat and reduced treatment. In a worst-case scenario, the system could be consistently overloaded with more than 600 gpd.

The only way the homeowner would know this was happening is when the service provider would check a cycle counter to determine how many times the pump ran, or more likely, when the system begins to have hydraulic problems evidenced by surfacing of effluent in the soil treatment area.

Orifices do not deliver equal amounts of effluent unless the entire piping system is fully pressurized. Until the pump fully pressurizes, the system flow will not be even across the distribution system.

To improve distribution of effluent over time and to have some additional controls and alarms built in, a timer can be used in conjunction with a high-water alarm to spread the flow out more evenly during the day. In time-dose, an adjustable timer is used to control pump run time (pump delivers a certain amount per minute), pump-rest interval and specific dosing amounts based on overall flow. Water until the specified time to deliver effluent. This eliminates variations in flow by applying equal amounts over time.

If additional water is being added to the system, either intentionally (family using more water than estimated) or unintentionally (leaky fixtures, water infiltration), this system that requires storage of water would trip the high-water alarm consistently. This would cause the homeowner to recognize more water is going out for some reason and hopefully adjust overall use or fix any leaks before damage was done to the soil part of the system.

THE RIGHT PUMP MATTERS

Additional comments about pressure distribution: Orifices do not deliver equal amounts of effluent unless the entire piping system is fully pressurized. Until the pump fully pressurizes, the system flow will not be even across the distribution system. Similarly, when the pump shuts off it takes time for the flow to stop, which provides potential for uneven distribution.

After flow out of the pipe stops, effluent moves by gravity through the soil under unsaturated flow. Time between doses is important to allow effluent to move into and through the soil to provide treatment. Matching the pump to the pressure distribution network is critical. The pump needs to fill the piping quickly, then deliver the dose under pressure and shut off quickly, allowing the pipe to empty. Not any old pump will do when the pump needs to be replaced; it needs to be compatible with system design.

A final word about pressure distribution: If the trench or bed in a pressure distribution system has effluent ponded, it is broken! For it to work properly requires effluent to have moved into and through the soil before the next dose. If there is standing water, the cause needs to be determined and rectified.

SYSTEM PROFILE

More than 30 volunteers, contractors and industry suppliers donated time, equipment and materials to construct the onsite system for the Susan and Jack Davis Nature Pavilion. (Photos courtesy of Stephens Consulting Services)

Michigan Onsite Professionals Set an Example For Water Recycling

Volunteers come together to install an innovative wastewater treatment and reuse system for an educational nature pavilion

By Scottie Dayton

The Fenner Conservancy wanted to build an addition for expanded programming at the Fenner Nature Center in Lansing, Michigan.

An onsite system served the environmental educational facility and organizers wanted the same for the Susan and Jack Davis Nature Pavilion. On recommendations, they hired Larry Stephens, P.E., owner of Stephens Consulting Services in Haslett, Michigan, to design the system.

"The pavilion seats 100 people," Stephens says. "I saw a unique opportunity to teach visitors the benefits of treating wastewater with everyday onsite components, then using the effluent to flush lavatory fixtures."

He had the experience. In 1997, Stephens designed the first water recycling system in the state for a carpet store. Water meters documented the reuse of 80% of treated effluent. "With the pavilion's modern fixtures, the percentage should be even higher," Stephens says.

Many hands make light work to move one of three AdvanTex AX20 units into position.

System Profile

Location:	Lansing, Michigan
Facility served:	Educational nature pavilion
Designer-installation coordinator:	Larry Stephens, P.E., Stephens Consulting Services
Type of system:	Treated effluent reuse
Site conditions:	Loamy sand to sandy clay loam, loading rate 6.70 gpd per square foot
Hydraulic capacity:	1,000 gpd

Officials liked the concept, but were concerned about cost and finding financing. Stephens, an officer with the Michigan Onsite Wastewater Recycling Association, presented the project as a training event and an opportunity to offer matching funds using proceeds from their annual conference.

The board agreed and members and manufacturers quickly donated materials, labor and equipment. "Except for the weather, the install went as smoothly as any project could go," Stephens says.

Site conditions

Soils are loamy sand to sandy clay loam with a loading rate of 6.70 gpd per square foot.

System components

Stephens designed the system to treat 1,000 gpd. Major components are:

- 1,500-gallon polyethylene dual-compartment septic tank (Roth North America) with Biotube effluent filter (Orenco Systems)
- 1,500-gallon fiberglass dual-compartment recirculation tank with Biotube pump vault (tank and vault from Orenco)
- Two AdvanTex AX20 textile treatment modules (Orenco)
- 500-gallon Infiltrator polyethylene dose tank with 1/2 hp high-head pump (Orenco)
- Four multimedia HDPE sand filter containers with GSF modules (Eljen Corporation)
- Four Infiltrator ARC 24 chambers
- UV disinfection unit (SALCOR) and tablet chlorinator (Norweco)
- 1,000-gallon Infiltrator treated water storage tank with 1/2 hp high-head pump (Orenco)
- Three 3-by-12-inch-diameter Infiltrator Water Technologies EZflow drainage bundles
- Custom TCOM control panel (Orenco)
- Two water meters (Badger Meter)

System operation

Wastewater from the pavilion flows 75 feet through a 4-inch sewer (all piping Schedule 40 PVC) to the septic tank, then to the recirculation tank. The 50 gpm pump in the vault discharges through a 2-inch line to the treatment modules. Effluent from the modules drains back through 3-inch lines to a splitter valve in the front of the recirculation tank. When the buoy is seated, the valve sends the flow 30 feet through a 3-inch pipe to the sand filter dose tank. When the buoy is open, the flow returns to the recirculation tank.

Tommie Johnson of SCS Systems mixes the epoxy used by Chris Bullion of Milan Supply and Karl Felland of KAF Sales to attach the riser to the septic tank (Roth North America).

Dan Milan of Milan Supply and Karl Felland of KAF Sales lower the Biotube pump vault (Orenco Systems) into the recirculation tank.

Fifteen times per day, the 10 gpm pump in the dose tank sends 60 to 70 gallons through a 1.25-inch manifold to each of the sand filter containers. Water trickling through the multimedia drains to the UV unit and chlorinator before entering the storage tank.

A pressure switch in the pavilion actuates the 10 gpm pump in the reclaimed water tank, sending up to 1,000 gpd 150 feet through a 1.25-inch pipe to a 30-gallon hydropneumatic bladder tank in the building. This water flushes the toilets and urinals. All other fixtures receive city water.

In case of high water in the sand filter dose tank or storage tank, a 4-inch overflow line runs 25 feet to the drainage bundles. Water enters through the tube in the center bundle, then trickles down to native soil.

Volunteers observe the crew from Pitylak Services set the fiberglass recirculation tank (Orenco Systems).

Matt Johnson of Infiltrator Water Technologies, Kenai Peterson and Jack Henderson of Pitylak Services attach the risers and anti-buoyancy measures to the 500-gallon dose tank (Infiltrator Water Technologies).

Installation

More than 30 volunteers, contractors, and industry suppliers gathered for two days in the rain to install the system. Donations came from Milan Supply Co., Valley Farms Supply, Orenco Systems, Roth North America, SALCOR, Norweco, SCS Systems and Stephens Consulting Services. MOWRA matched the center's $8,000 in out-of-pocket expenses.

"Most materials were delivered ahead of time, and we had two contractors working with us," Stephen says. "Will Pitylak, owner of Pitylak Services, brought his Bobcat E85 mini excavator, an E63 mini excavator and five laborers to dig the tank holes. Mark Manyan, owner of Family Grade & Gravel, used his Bobcat skid-steer to move material."

Laux Construction, the general contractor, oversaw job site safety. Stephens provided hard hats and coordinated installing the tanks in sequence followed by the AX20s, sand filter containers, storage tank and drainfield. Suppliers used the event to train and certify people on their products.

The sand filters drew the most attention. At the base of each 96- by 48- by 54-inch-high container was a gravelless chamber with end caps. A 4-inch pipe with rubber grommet was inserted just far enough into the downgrade end cap to drain the collected water.

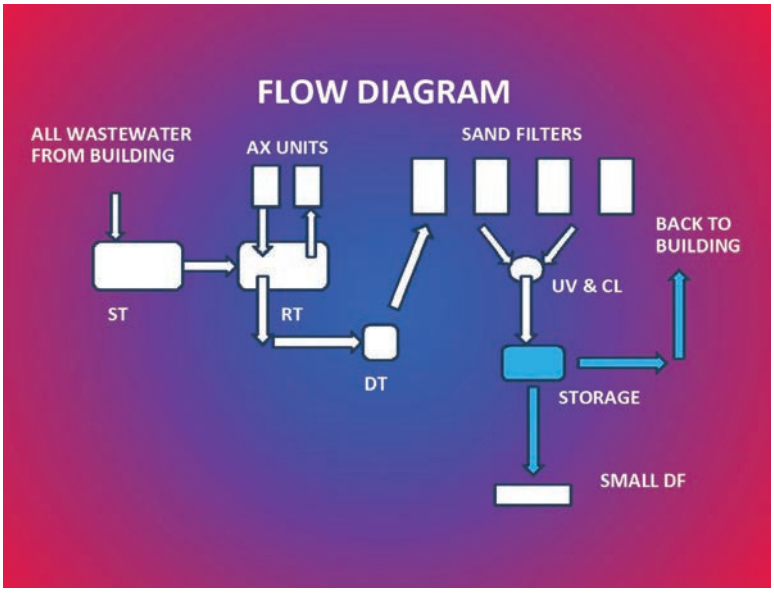
The chambers were covered with 6 inches of fine bird's-eye stone, 24 to 28 inches of medium to coarse filter sand, and topped with a geotextile filter module. The 1-inch distribution lateral on top of the module had three 1/8-inch holes with orifice covers (Sim/Tech Filter) at the 6 o'clock position. After covering the module with fabric, it was topped off with clean washed stone.

"Maximum overflow to the drainfield is 200 gpd, but peak use will be a rare occasion," Stephens says. The drainage bundles were installed in a 12-by-4-by-1-foot deep trench.

> **"I saw a unique opportunity to teach visitors the benefits of treating wastewater with everyday onsite components,** then using the effluent to flush lavatory fixtures."
>
> Larry Stephens

The pavilion opened in mid-December 2019. Tours were part of MOWRA's annual conference in January. "We've had a lot of positive feedback," Stephens says. "The Fenner Conservancy is part of a national association and other nature centers are asking Liz Roxberry, the executive director, about the system.

"Public restrooms enable us to treat wastewater at the point of use and to reuse it several times before final dispersal or discharge to a sewer,"



Stephens says. "Saving large amounts of water and energy is a concept the industry should be talking about."

Maintenance

Mike Stephens of SCS Systems donated five years of maintenance. During the first four weeks of operation, a technician took weekly samples to verify proper disinfection. From then on, the system is being inspected quarterly and sampled twice annually to create a permanent record. The telemetry panel logs system functions and monitors meters on the reclaimed and potable water supplies to quantify the water savings.

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SNAPSHOT

Promoting Professional Training and Certification in Manitoba

Installers and pumpers want to play an important role in writing new provincial wastewater policy

Compiled by Betty Dageforde

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

Randy Thomas
owner-operator

Business: **Wayne's Backhoe & Excavation,** Victoria Beach, Manitoba

Age: 55

Services we offer: Maintenance, installation and service of wastewater systems.

Years in the industry: Our family-owned company has been installing septic systems since 1980, first with Wayne Thomas, my uncle, then myself since 2006.

Association involvement:

My wife Onale and I currently hold positions with the Manitoba Onsite Wastewater Management Association, formerly Onsite Wastewater Systems Installers of Manitoba. She is the secretary and I am vice president. We have been members for 16 years.

Benefits of belonging to the association:

Our board of directors is continually working on benefits the association can provide its membership. Important benefits at present are liaison and advocacy with the government of Manitoba as our current guidelines and policies are being rewritten. Change is coming and we want to be part of that change. The association recently became a member of the Western Canada Onsite Wastewater Management Association. They offer complete training packages so we don't have to reinvent the wheel every time we try to do something. And we have a larger voice in dealing with governments.

Biggest issue facing your association right now:

The need to build a stronger membership. In our province, there is no real need for installers to belong to an association. Homeowners are allowed to install their own wastewater systems, which counters any real necessity for training, certification and association involvement. We are working to have these policies changed to stress the importance of properly installed wastewater systems through training and certification. MOWMA is currently working with the province on developing curriculum that will see a new standard of certified installers. This is a positive between government and industry.

Our crew includes:

We have six employees, three of whom are seasonal workers. Each brings a little different skill set to our company, allowing us to diversify. Onale started out driving the tandem and working on jobs, creating a healthy knowledge of the work we do from a field perspective. She now uses that knowledge to communicate with customers and manage the business, creating systems to help keep the day-to-day operations running smoothly. Onale obtained the necessary training to act as our safety coordinator and internal auditor for our COR safety program (Certificate of Recognition, a national certificate for safety), which includes writing, teaching and inspecting safety policies and procedures. I describe her as the quarterback for Wayne's Backhoe.

Typical day on the job:

Our day starts at 7 a.m. with some office time to check messages and respond to any changes from the day before. Our workers come in by 7:30 and get the trucks and equipment checked out. After a quick daily briefing on the tasks at hand, the guys get the right equipment, tools and materials

ready and loaded. We aim to get out of the gate by 8 a.m. We head back to our shop for a barbecue lunch most days. It's nice to shut the machines off for a bit and it gives us the chance to discuss our day. We find that providing lunch for our crew is an easy way to show appreciation and allows us more opportunities to communicate as a team. Operations are done Monday through Friday. On weekends we open our yard for aggregate sales and we see new customers and provide estimates.

Randy and Onale Thomas with Blue (in front) and Maggie (in the cab), a Case CX50 excavator, a 2002 Sterling tandem-axle truck with RENN dump box, and a Bobcat T770 compact track loader.

The job I'll never forget:

After a customer finished rebuilding his cottage for which we installed the septic system, we were asked to develop their yard. At the start, the yard was solid brush and large trees. The ground was uneven and it was hard to believe that the property was lakefront. We spent days working on the property taking out many loads of brush, trees and roots, leveling, installing soil and sod, a stone patio, walkways and a fire pit. We even made a custom sandbox for their grandchildren. When we were done the view of the lake was beautiful and the yard was pristine. It was a job that was very visually rewarding.

My favorite piece of equipment:

I really like our Case 580SM loader backhoe. Loader backhoes have been part of our company since 1980. Before bringing in excavators, everything was done by the loader backhoe. Its capability will never grow old.

Most challenging site I've worked on:

We had a project that was a new home construction on an old farm field. We installed a Waterloo Biofilter Systems secondary waste system. It was our first one so we were learning this new system and installing it at the same time. We took time out and double-checked everything — except the weather. It rained for days and the more we worked, the deeper we went. We were really stuck in the mud, which was mixed with grass straw and basically turned to cement. It started out well but became very challenging with the "Manitoba gumbo" we were working in. It took weeks to get that field out of our tracks.

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

A customer inquired about putting in a septic field and a graywater field — and needed them on either side of the house because he didn't want one to fill up the other.

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

To stop homeowners from installing their own systems. Current regulations allow it, but we are working on getting that changed in the best interest of our industry and the environment.

Best piece of small business advice I've heard:

Be a good listener and talk about what you know.

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

Our industry in Manitoba will endure changes for some time to come. These changes will take root with the new installers coming into the industry, and in time our industry will flourish as a profession, as will our association. Technology today is amazing and can be overwhelming for some older installers if you're not practicing it every day. Today we are working with our government to make changes and then we'll implement those changes for the better.

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.

2020 ONSITE INNOVATIONS

Competent contractors in the onsite industry demand quality products.

See how these partnerships ensure success in this special Onsite Innovations section.

Retrofit Parts Extend the Useful Life of Septic Tank

After pumping a 41-year-old septic tank, a pumper had observed that there was no inlet or outlet baffle in this old single-compartment tank. The pumper had informed the homeowner of this condition. The homeowner, stunned at the cost of a new tank and possibly a new leachfield, then asked "what is my other choice?" The pumper replied that he would not feel good about letting it go as-is. He knew Polylok had some great retrofit parts that just might work here. The pumper and homeowner decided to use the much lower cost option of extending the useful service life of both the tank and the field.

The pumper opted to use a Polylok Extend & Lok at both the inlet end and outlet end of the tank. Because the inlet pipe was made of cast iron, this made an easy decision. After breaking off the deteriorating pieces of the cast iron pipe, and somewhat cleaning the inside of the pipe, the 4-inch Extend & Lok was simply hammered inside the exposed end of the pipe. This provided a perfect PVC 4-inch Schedule 40 pipe surface to glue on a Polylok PL-68 "T" for an inlet baffle.

This same installation procedure was done on the outlet side as well; the difference being that the outlet pipe was already a 4-inch Schedule 40 pipe (as there must have been some type of previous repair done). However, it was too close to the inside of the tank wall to solidly glue on a "T" or filter housing. Fortunately, the Polylok Extend & Lok is designed for all 4-inch pipes. It was hammered into the end of the outlet pipe to extend it away from the inner wall. A PL-122 filter and housing was then glued to the Extend & Lok.

The project was finished off using Polylok adapter rings, risers to grade and covers. Typical cleaning of this septic tank and filter was performed approximately every three years. Polylok covers and risers made that a simple task. The last inspection on this tank occurred in August of 2020. Upon inspection, everything was still in perfect working order. That was 16 years later, and who knows how long the life of this tank and field have been extended for?

Tuf-Tite's New Look

Years ago, Tuf-Tite invented the first "Riser Safety Pan," allowing a concrete safety lid to be cast into a plastic riser system that could be placed anywhere in the column of risers. It's a design so innovative, it remains an industry standard.

Now the company is innovating once again. Tuf-Tite took the next step to make the first plastic internal safety lid for protection.

Tuf-Tite engineers knew that the original web design was extremely strong in the riser, but what about out of the riser? What if the internal safety lid was damaged in the field? Could it be reused? Others were using a similar web design, but Tuf-Tite moved in a new direction.

Tuf-Tite's new internal safety lids sit in the riser on four ledges. The solid safety lid features an inspection port, screw or bolt holes to fasten the lid to the riser and concrete keepers that can hold 40 pounds of concrete. This design has proved to be one of the strongest safety lids on the market, in the riser or out of the riser, according to a company spokesperson.

Tuf-Tite requires that the internal safety lid be screwed or bolted down to the ledges on the riser below. For added safety, the Tuf-Tite safety lid can be filled with concrete, adding an additional feature unique to Tuf-Tite.

Every Tuf-Tite Riser Lid and Safety Lid comes with all the screws, including the horizontal safety screws for domed and flat lids.

Tuf-Tite manufactures a full line of patented septic and drainage products, which are among the best in their respective industries. From the innovative distribution boxes that have become an industry standard, to the patented effluent filters that prolong the life of septic fields significantly, each of Tuf-Tite's products are engineered and manufactured to exceed expectations in both performance and longevity.

TUF-TITE

Tuf-Tite produced its first product in 1984. Years of polymer formulation experience and field testing have strengthened the full line of products the company produces today. Tuf-Tite is an American-owned and -operated company and all polymer products are manufactured in Lake Zurich, Illinois, where the modern and highly automated manufacturing, warehouse and shipping areas are all contained under one roof in a 165,000-square-foot facility. The company is fully capable of servicing any and all demand for Tuf-Tite products. Its automated supply chain capabilities provide customers with seamless on-time deliveries.

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Committed to Innovation, Sustainability, Social Responsibility and Industry Engagement

For more than 30 years, Infiltrator Water Technologies has offered innovative solutions for wastewater and water management. Since the 1980s, Infiltrator has expanded and diversified our offerings to the onsite wastewater industry with the development and acquisition of multiple product lines including potable water tanks and decentralized wastewater treatment solutions.

We work to improve existing products and create new ones that provide valuable solutions needed by the wastewater industry and that are both sustainable and affordable for our customers. With over 140 granted or pending patents, Infiltrator has repeatedly demonstrated its commitment to providing leading-edge products to the onsite wastewater industry.

Innovation and sustainability

Reducing the environmental footprint of materials, manufacturing and transportation is a global movement, and Infiltrator is committed to sustainability in our manufacturing and product development. Most of Infiltrator's products are made of 95% recycled material.

Each year we purchase 75,000 tons of post-consumer and post-industrial thermoplastics that might have otherwise been landfilled and use those materials in the production of Infiltrator products at our ISO 9001:2015 registered manufacturing facilities. Additionally, reducing our carbon footprint and energy usage extends beyond our manufacturing operations to the installation and operation of our wastewater treatment systems.

To understand more about the carbon footprint of the wastewater treatment industry, Infiltrator recently funded a quantitative research study. The study evaluated the environmental impacts of both conventional septic systems consisting of a concrete septic tank and stone/pipe drainfield and systems using recycled thermoplastics tanks and chambers. The research found that even when transporting the recycled thermoplastic system 1,030 miles and conventional systems only 30 miles, the recycled systems reduced electricity consumption by 88%, fuel consumption by 67%, water consumption by 97%, and carbon emissions by 44%. This information has been valuable in our ongoing effort to provide products that perform and contribute to a sustainable future for the planet.

Social responsibility

Infiltrator is proud to be a corporate partner of Habitat for Humanity International. Through this partnership, Infiltrator donates materials for 50 septic systems to local affiliates of Habitat for Humanity throughout the United States each year. Along with product donations, Infiltrator employees volunteer time at local Habitat for Humanity affiliate "build days" where employees participate in the construction or renovation of homes.

Industry engagement

Supporting the onsite wastewater industry is part of our culture. Infiltrator is proud to be a part of this industry and to support the organizations at the local, state and national level that help to bring wastewater innovation and best practices to the forefront of the water conservation and wastewater management discussion. We believe that the best solutions for people and the planet come from constructive collaboration and information sharing.

Salcor 3G UV Disinfection Solves Duke's Oceanfront Restaurant Wastewater Problem, Enabling Direct Discharge Into Beach Sand

Duke's – a popular restaurant in Malibu, California – was named after Duke Kahanamoku, who is considered the "Father of Surfing." Wastewater from the restaurant averages 6,000 gpd and must be treated on site and directly discharged into a sensitive beach environment.

After numerous water quality and discharge violations, the facility began upgrading its treatment system in 2011, selecting an upflow sludge blanket filtration system and Salcor disinfection consisting of four 3G units in two parallel tracks. The design was approved by the California Regional Water Quality Board and City of Malibu, and construction was completed in April 2012.

Outstanding results

The new treatment system for Duke's immediately produced high-quality effluent, which has met the stringent disinfection requirement of California Title 22. Results have been consistent over six years of operation, according to the plant operator.

Effluent total coliform count has been non-detectable, and DO concentration has averaged 6 mg/L. The high-quality discharge has reduced coliform levels in the groundwater lens under the site and adjacent beach from greater than 1,600 MPN to less than 2 MPN.

Because of the restaurant wastewater's fat, oil and grease content, the Salcor UV units were initially inspected weekly for possible fouling of the unique Teflon barrier. No fouling occurred, and operation has been trouble-free and efficient, according to the plant operator.

About the unit

Salcor's unit is UL listed and meets the NEMA 6P successful 30-day underwater test. It survives most catastrophic weather disasters (hurricanes, floods and lightning). It has been tested extensively by several third-party testing sites, including 21 separate times by NSF. It has been used in residential, commercial and municipal projects, and can be clustered to treat up to 100,000-plus gpd.

Because its lamp has a Teflon cover, it resists fouling and reduces maintenance, which is limited to simply wiping it down every six months and replacing the lamp every two years. The unit can be installed in-ground or in a pump tank, so the footprint is minimal and includes an alarm circuit for reliable, continuous performance monitoring.

SALCOR UV DISINFECTION

Salcor Inc. has revolutionized UV disinfection since 1978. The scalable 3G unit disinfects residential, commercial and municipal systems from 9,000 to 100,000-plus gpd. Salcor's technology protects shellfish (oysters, clams, crabs) and other marine life from wastewater microbial contamination. It also is helping to defeat life-threatening superbugs.

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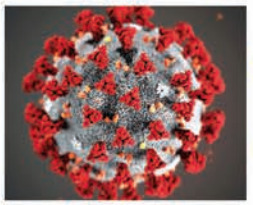
DESTROYS DEADLY "SUPERBUGS"/VIRUSES

DUKE'S OCEANFRONT RESTAURANT, Malibu, CA
4 UV Unit Array
Effluent Discharges into Ocean Beach Sand



CORONA VIRUS
COVID-19

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- Expanded Arrays (from 9,000 GPD to over 100,000 GPD) Reduce Spare Parts Inventory & Increase Effluent Flow
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- 2-Year Warranty, Unit & *"Long-Life"* Lamp
- Most 3rd Party Successfully Tested (since 1997): UL Listed; NSF/WA State Fecal Coliform Tests, 6-Mo Each with 21 ATU's; Tested and approved in BNQ Quebec, Canada; University Studies - U of Washington, Ohio State U, UC Davis, & U of Rhode Island

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SUCCESSFULLY TREATS: *Single & Cluster Homes, Small Sewage Plants, Schools, Hospitals/Nursing Homes, Churches, Restaurants, Mobile Home Parks, Campgrounds, Nurseries/Cut Flowers, Houseboats, Food Processing Wastewater, Etc.*

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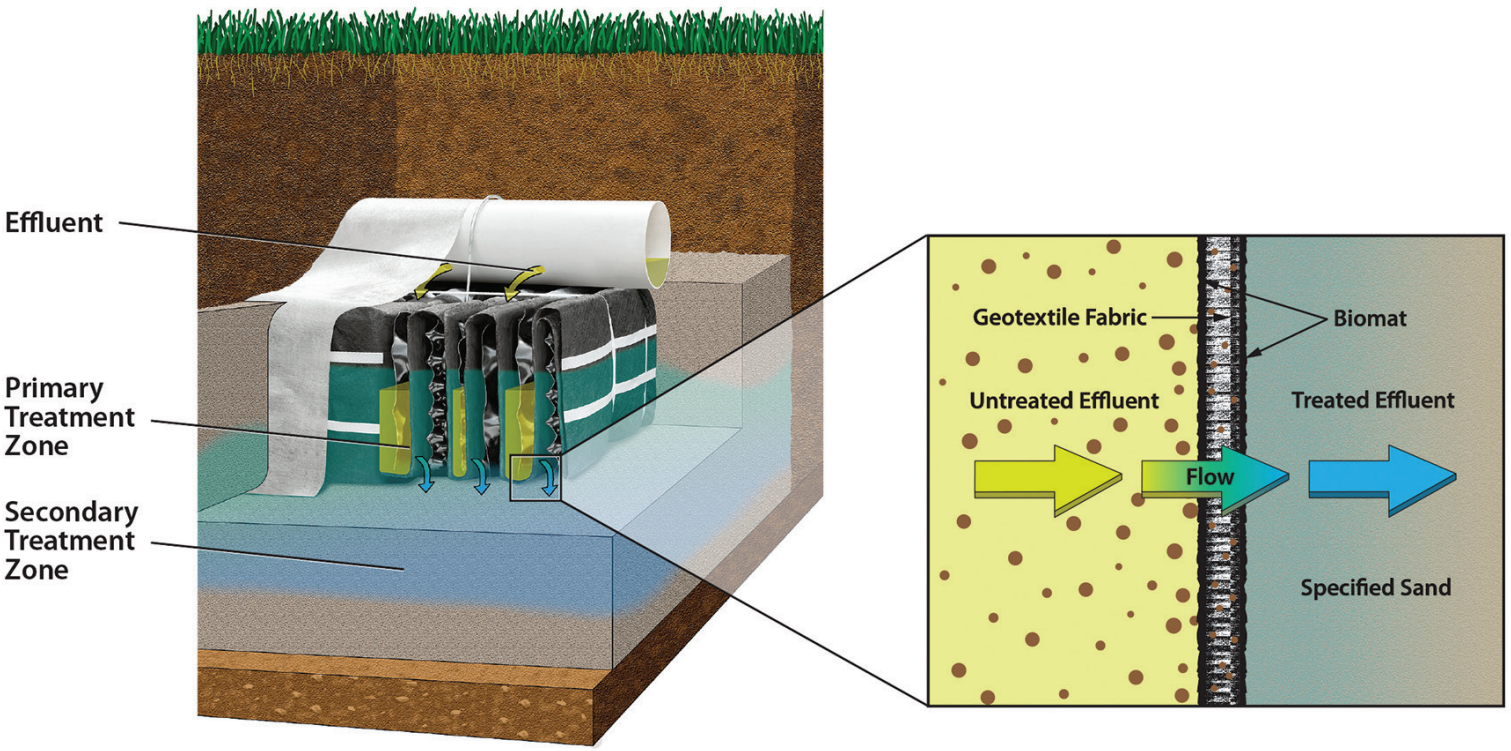

A Treatment Option For Tight Lots

The Geotextile Sand Filter is distributed from Australia to Europe, with greater use in the United States. Since the first installations, this product is versatile and proven. It is 100% passive in gravity dosed designs. However, more complicated sites employ a pump for pump-to-gravity and pressure dosed configurations.

Designers enjoy the high flexibility of the system. Capable of use in trenches, beds and mounds, there is a system configuration that fits whether you find yourself on a sloping site or a site with a high-water table.

The GSF system is your tight lot, high water table, and poor soil solution. Due to its flexible design, tight repair lots become dream lots, high water tables become gentle sloping lots, and poor soils are just another soil. The system excels in intermittent-use sites like campgrounds and seasonal homes, as there are no startup procedures needed. Third-party testing shows treatment begins on day one.

The GSF's unique design provides treatment and dispersal in the same footprint, while keeping installations easy and maintenance minimal. Open air channels within each module support aerobic bacterial growth on the module's geotextile fabric, which provides increased surface area for biological treatment that greatly exceeds the module's footprint. The secondary treatment zone supports unsaturated flow into the soil and works to minimize clogging from anaerobic bacteria. It also protects the soil from compaction and helps maintain cracks and crevices in the soil, preserving the soil's natural infiltration capacity, which is especially important for fine textured soils where these channels are critical for long term performance.

Eljen provides product training year round, in classrooms, on the job site or virtually. Call or visit the website to set up a training that fits your schedule.

eljen CORPORATION

Established in 1970, **Eljen Corporation** created the world's first prefabricated drainage system for foundation drainage and erosion control applications. In 1982, the company introduced its Geotextile Sand Filter products for the passive advanced treatment of onsite wastewater in both residential and commercial applications.

800-444-1359 | info@eljen.com | www.eljen.com

GSF®

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eljen CORPORATION

Innovative Onsite Products and Solutions Since 1970

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CELEBRATING 1970 50 2020 YEARS OF ELJEN INNOVATION

U.S. DEPARTMENT OF LABOR HIRE Vets 2020 PLATINUM AWARD

Homeowners Benefit from Durable Tanks Paired with Advanced Filtration

Driving through Heritage Lake Estates in Puslinch, Ontario, it's hard to imagine it previously was home to a steady stream of heavy equipment and dump trucks. Today, well-manicured lawns and homes torn straight from the pages of magazines dot the shoreline and area surrounding a lake that – not that long ago – was a quarry.

Part of this new housing development is the infrastructure buildout needed to supply water and power and to treat waste. These components must be designed to meet the demands of future homeowners, as well as the needs of the land, while complying with all applicable codes.

Each home in the development is privately serviced for wastewater treatment. With homes maximizing the 20% allowable building coverage area per lot, each lot's disposal area is limited. A professional land surveying and engineering company takes the architectural house plans and sites them on the properties to ensure that they comply with the zoning requirements and to determine the drainage characteristics of the soil.

A hydrogeological study for Heritage Lakes set the target effluent nitrate concentration at 14 mg/L. Most systems typically achieve a 30-50% nitrate reduction. In this development, however, the engineering team determined that each system needed to reduce the effluent nitrate concentration by 65%.

The soils in the Heritage Lakes development vary greatly, as well, ranging from native gravel that allows for a small filter bed to much less permeable native soil that requires an area bed or a shallow buried trench bed. As a result, each lot's dispersal system is unique.

Fortunately, precast concrete treatment systems may be custom-engineered to meet all codes, standards and unique site conditions. Each home's onsite system consists of a series of three precast tanks. To save space on site, the precast concrete manufacturer reduced the tank's standard footprint by 40%. Being able to produce unique tanks for the job, while providing durable, resilient structures to house the advanced treatment components, were key factors for the job.

Inside the first tank is an advanced treatment system featuring an anaerobic digester with a long tube that runs from the inlet to the outlet back to the inlet. Next, the effluent is transferred to a basket tank, which contains foam cubes that harbor microorganisms. The wastewater is pumped from the digester tank and is sprayed onto the foam cubes. The pump in the basket tank transfers the effluent to the last tank for denitrification and discharges the wastewater to the disposal bed.

By using precast concrete tanks in combination with the advanced treatment system, homeowners can rest easy knowing that their systems meet local requirements, protect soil and groundwater, and stand the test of time thanks to precast concrete's durability and resilience.

NPCA
National Precast Concrete Association

National Precast Concrete Association has represented manufacturers of industrial plant-produced precast concrete products and the suppliers of products and services for the industry since 1965. It is dedicated to expanding the use of quality precast concrete and providing members with the programs and information required to operate a successful precast plant. NPCA represents 950 member companies in 12 countries, all 50 states and eight Canadian provinces, and provides the industry's largest and most comprehensive plant certification program.

800-366-7731 | technical@precast.org | www.precast.org/onsite

Precast Tanks Provide Resilient Solution

Photos courtesy of Gainey's Concrete Products Inc.

Challenge: Find a wastewater treatment solution that will stand the test of time in an area notorious for aging, deteriorating tanks.

Solution: Officials chose a durable, 13-tank custom precast concrete wastewater treatment system. The system can treat 50,000 gallons-per-day and is able to resist flotation in the area's high flood zone. The tanks were installed and internally plumbed in just three days, whereas an alternative option would have taken longer than two weeks.

Quality-Engineered: Precast tanks are designed and engineered to the latest industry standards, use quality raw materials and are manufactured in accordance with strict QA/QC programs.

Resilient: Precast concrete's exceptional strength and durability enhance the longevity of each treatment system and help protect this valuable infrastructure from the effects of both natural and man-made disasters.

Watertight: Precast tanks are designed, manufactured and assembled to be watertight. Additional watertightness testing ensures proper wastewater treatment inside the tank while protecting the surrounding environment.

Find local precasters at **precast.org/find**
Learn more at **precast.org/onsite**

PRECAST PROUD

NPCA
National Precast Concrete Association

Dewatering Methods and Solutions

Selecting the right dewatering method is a crucial step to controlling groundwater in almost any construction project. The variety of methods used are numerous and therefore must be carefully assessed depending on the job conditions.

Typically, a sump pump, self-priming pump, borehole pump or submersible pump is preferred to remove or lower groundwater levels. Techniques can vary from simple sump pumps to more complex wellpoints, deepwells and educator wells.

- Sump Pumps – allow for groundwater to be collected and pumped away, often used in shallow excavation areas.
- Wellpoints – use closely-spaced wells around the excavation area. These wellpoints are connected to a header pipe and pumped away.
- Deepwells – this technique uses a bored well and lowers the groundwater level below the level of excavation by submersible pumps. They're best for deep excavations or where high volumes of water need to be discharged.
- Educator Wells – control pore water pressure in low permeability soils like sand, silt or clay. Typically used to help stabilize the side slopes and base of excavations in soils that would be difficult to dewater with wellpoints or deep wells.

In a recent project for a construction company, Mitchell Lewis & Staver application specialists helped to design three different robust systems for the removal of groundwater using WS D3 and D4 Series submersible sewage pumps from Goulds Water Technology. These pumps were carefully selected based on project scope and with consideration for the local geology and soil types commonly found at their southern California project sites.

Goulds WS D3/D4 sewage pumps feature two-vane semi-open impellers and a non-clog design with ejector vanes for mechanical seal protection. Our solution became a series of economical plug-and-play simplex systems with control panel and premium solids handling capabilities – particle debris up to 2.5 inches. Designed with durability in mind for construction's challenging environments, this economical dewatering solution helps ensure a safer worksite and avoid costly project delays.

Mitchell Lewis & Staver est 1882

Since 1882, **Mitchell Lewis & Staver** has focused on technical expertise, superior service, quality products and dependable delivery, making them today a leading distributor of value-added pumps, motors, controls, packaged systems and custom engineered solutions for residential water, wastewater, agriculture, irrigation, commercial and industrial applications. From 16 locations across 13 states and a state-of-the-art UL 508A manufacturing facility where in-house engineers design and build quality standard and custom control panels and packaged systems, Mitchell Lewis & Staver develops innovative solutions in collaboration with customers that help save energy and conserve natural resources.

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THE RIGHT SOLUTION, EVERY TIME

PUMPS • MOTORS • CONTROLS

Mitchell's offers an assortment of quality products and the technical expertise to help you select and size the right components or packaged system for your next wastewater project. Mitchell's innovative team of engineers design for efficiency and build to meet your unique requirements.

Whether you need a specific pump, quick access to inventory, or a plug-n-play system, our product specialists will help you determine the right solution for the job.

Mitchell's is a national distributor of pumps, motors, and controls from quality brands including: **Goulds, Myers, Barnes, Keen, Landia, Danfoss and more!**

GOULDS WATER TECHNOLOGY a xylem brand

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Mitchell Lewis & Staver est 1882

833-MLS-PUMP | mitchellewis.com | productinfo@mitchellewis.com

Wide Selection of Onsite Treatment Options Available

Norweco is passionate about our products, committed to our customers and focused on the future. Our vision for innovation and strategic growth are reflected in our superior treatment options and our new building addition.

This summer we completed a 105,000 square foot expansion which more than doubled our current space, totaling over 180,000 square feet. This very special project is an investment in our customers, the onsite industry and the future.

We are recognized around the world for providing today's answer for the protection of tomorrow's environment. With our talented team of engineers, scientists and distributors, we cultivate the critical skills necessary to perfect forward-thinking treatment solutions.

Norweco's legacy represents a longstanding tradition of ingenuity. Our innovative systems and products provide the complete solution for engineers, designers, installers and regulatory officials. Our partners trust us to provide superior treatment options to meet their application needs both now and in the years ahead. We developed patented and certified advanced wastewater treatment technologies to provide a complete solution to the strictest environmental regulations.

Our broad selection includes:

- Nitrogen treatment
- Phosphorus removal
- Water reuse
- Solar technology
- UV disinfection
- Chemical treatment products

The Singulair Model TNT (Total Nitrogen Treatment) system biologically oxidizes nitrogen compounds without requiring complicated and expensive equipment. The TNT system does not require the addition of chemicals or the recirculation of effluent.

The Phos-4-Fade phosphorus removal filter is a simple gravity flow device that reduces effluent phosphorus to well below regulatory limits.

The Singulair R3 system features innovative water reuse treatment technology that reduces water consumption, reuses treated effluent and recycles water to conserve and recharge our water resources.

The Singulair Solar system delivers an environmentally friendly solution for onsite wastewater treatment by utilizing renewable solar energy to generate electricity.

The Model AT 1500 UV disinfection system is highly engineered and constructed to provide reliable disinfection and superior operational life.

Norweco manufactures a wide range of chemical products for the treatment of water and wastewater. Whether you are a homeowner needing chlorine for a residential wastewater system, an engineer in need of dosage equipment for a municipal project, or a city struggling to lower phosphorus levels, we have the solution for you.

Benefits include:

Certified performance: Tested and certified to the highest standards.

Superior results: Performance exceeds the effluent requirements of NSF/ANSI Standards 40, 245 and 350.

Ease of installation and maintenance: Norweco systems are designed to be easily installed and maintained.

Industry leading manufacturer's warranty: Norweco products are backed by a comprehensive warranty against defects in materials and workmanship.

NORWECO, INC.

YOUR BUSINESS PARTNER

norweco®

Engineering the future of water and wastewater treatment

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YEARS OF GROWTH

LIMITLESS OPPORTUNITIES

SOLID FOUNDATION

GROW YOUR BUSINESS

Norweco has expanded! We are pleased to announce the completion of our building addition. Norweco is passionate about our industry, committed to providing the best service to our customers and focused on the future. We look forward to exceeding your expectations as we grow together!

Scan to view the expansion video or check it out at Norweco.com

800.667.9326

www.norweco.com

Get Rewarded for Purchasing SJE Rhombus Products

SJE Rhombus and Contractor Rewards have partnered up to make sure you get the biggest bang for your buck. It is free to join and open to contractors, plumbers, septic system installers and trade contractors in the U.S.

How does it work? Simply register online, start submitting invoices and see the reward points build up. Spend them in the Contractor Rewards online shop on prizes that you actually want, like name-brand merchandise, vacations, events and charitable donations.

For a limited time, contractors can earn double points on eligible SJE Rhombus products when they submit their first invoice. This offer is valid even for existing Contractor Rewards members. For more information, visit www.sjerhombus.com/contractor-rewards.

You can also earn points and receive prizes by visiting participating trade show booths and answering trivia questions on social media. Follow Contractor Rewards and SJE Rhombus on Facebook, Twitter or LinkedIn to see the latest contests.

Invoices must be submitted on www.contractorrewards.com or emailed to invoice@contractorrewards.com within 60 days to earn points. For questions, email contractorsupport@contractorrewards.com or call 877-286-7064 between 8 a.m. and 4:30 p.m. CST, Monday-Friday.

SJE RHOMBUS

SJE Rhombus is a leading brand of water and wastewater controls solutions with over 40 years of expertise. SJE Rhombus is marketed by SJE, a 100% employee-owned, privately held company. With corporate headquarters located in Detroit Lakes, Minnesota, SJE does business globally from multiple locations across the United States and Asia.

218-847-1317 | **info@sjeinc.com** | **www.sjerhombus.com**

Effluent Pumps Available in Multiple Horsepower Sizes

Heavy-duty effluent pumps from Ashland Pump are available in multiple horsepower sizes for various performance requirements, and feature efficient permanent split-capacitor motors. The oil-filled pumps have an upper and lower ball-bearing design and handle solids up to 3/4 of an inch.

They are made of heavy cast iron, with cast-iron impellers and equipped with a piggyback switch (20-foot standard cord) or in manual configurations. They are offered in 3/10, 4/10, 1/2, 3/4, 1 and 1 1/2 hp models.

Ashland PUMP

Ashland Pump is located in Ashland, Ohio, and manufactures a complete line of pump products for the residential wholesale market. Ashland Pump is a family-owned business with over 35 years of experience manufacturing pumps. The company stocks thousands of pumps in its 130,000-square-foot warehouse to ensure there's inventory on hand for customers.

855-281-6830
customerservice@ashlandpump.com
www.ashlandpump.com

Delivering Clean Air and Water

Our mission at Anua is to "Own the Responsibility" for preserving our planet from environmental and human impacts. We strive to partner with the industry to provide high quality treatment products for the odor control markets. Anua is better positioned than ever to live up to that mission and meet the needs of customers nationwide. Recent company milestones include:

- Introduced AiraCarb odor control systems, providing municipal- and industrial-strength odor control for onsite applications.
- Introduction of the AiraHybrid two-stage biological treatment odor control system.
- Exclusive distribution rights to Sung Il Co., LTD (Korea) fiberglass panels for large air treatment systems tanks.
- Launch of a new combo odor control/irrigation water treatment system incorporating first-of-its-kind onsite treatment from mined sewer effluent which provides water source for the odor control system. No clean drinking water is used in the process!

It's an exciting time at Anua as we find ourselves in an environment where our products and services are needed now more than ever to deliver clean air and clean water. Our team of dedicated engineers, technical salespeople, government relations specialists and knowledgeable field support staff are ready to support your project needs. Join us in "Owning the Responsibility."

ANUA

Anua is an American manufacturer of Clean Water and Clean Air solutions serving the wastewater and odor control industries. Through the symbiosis of technology, design and collaboration, we strive to be industry leaders in championing a sustainable future for all.

336-547-9338 | info@anuainternational.com | www.anuainternational.com

Join Us in 'Owning the Responsibility'

Our mission at Anua is to "Own the Responsibility" for preserving our planet from environmental and human impacts. We strive to partner with the industry to provide high quality treatment products for the onsite markets and odor control communities. Anua is better positioned than ever to live up to that mission and meet the needs of onsite installers and service providers nationwide. Recent company milestones include:

- Acquisition of Quanics expands commercial and residential treatment options (May 2019).
- Expanded manufacturing, warehousing and research and development facility by over 140% (December 2019).
- New high-strength treatment options for restaurants and convenience stores
- Introduced AiraCarb Odor Control Systems, providing municipal- and industrial-strength odor control for onsite applications.
- Introduction of EffluaSTEP line of STEP collection systems for decentralized and municipal needs.

It's an exciting time at Anua as we find ourselves in an environment where our products and services are needed now more than ever to deliver clean water and clean air. Our team of dedicated engineers, technical salespeople, government relations specialists, and knowledgeable field support staff are ready to support your project needs. Join us in "Owning the Responsibility."

ANUA

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336-547-9338 | info@anuainternational.com | www.anuainternational.com

Keep Customers' Septic Tanks Secure and Safe with Seal-R Septic Products

Seal-R products from BrenLin Co. are designed to be installed as part of the inspection/maintenance opening to sewer tanks. These products were developed by experienced onsite installers who strove for a product that was not only simple to install, but also provided flexibility and safety.

The products were designed using corrugated dual-wall pipe for the riser material due to the benefits of limited joints and the ability to cut to the exact length in the field. Made from HDPE, Seal-R products offer both durability and longevity. The Seal-R septic ring is designed to attach the riser to the septic tank while creating a watertight seal to prevent infiltration.

The Seal-R septic lid is designed to be mounted on top of the riser at ground surface to provide an access point to the septic tank. Lids are green in color and are provided with the stainless steel hardware needed to securely fasten to the riser pipe. Lids can be customized to include company information.

Seal-R products also come with a few add-on options, including a hinge system as well as lids that can be installed on the inside of the riser for additional safety.

BrenLin Co. Inc. is a family owned and operated manufacturing business established in 1998. Specializing in heavy-duty plastic septic system products, the company designs all products in house and manufactures them in the USA.

888-606-1998 | brenlin@frontiernet.net | www.seal-r.com

MBR System Saves Illinois Business More Than $100,000 Compared to City Sewer Connection

Faced with a 1,320-foot distance to connect to the centralized wastewater treatment system, the owner of a commercial storage facility in the center of Bradley, Illinois, began exploring decentralized options. To gain decentralized system approval, the town required installation of a NSF/ANSI Standard 350 certified water recycling system to accommodate the flow from restrooms and other facilities for office workers.

The approved wastewater treatment system was the BioMicrobics BioBarrier membrane bioreactor as an ideal alternative to the hookup infrastructure that was nonexistent for this property. Designed and installed as a complete wastewater treatment system, it also featured a separate SaniLIFT station, followed by a BioMicrobics SaniTEE 416 (4-inch diameter and 1/16-inch screening slots) effluent filter installed in the primary tank for solids retention.

The modular BioMicrobics BioBarrier 0.5 (500 gpd) MBR system was pre-installed in a plastic septic tank with structurally reinforced access ports for easy drop-in installation. In the treatment tank, the BioBarrier MBR uses advanced technology to produce recycled water, cleaner than rainwater. The plastic tanks used in this project offered exceptional strength in a lightweight and easy-to-transport design.

The BioBarrier 0.5 MBR was followed by a 2- by 10-foot reduced drainfield. The field was installed at the precise location where a double-ring infiltrometer tested the hydrologic conductivity of the soil. The recycled water is then dispersed at .5 gpm rate for high-quality process control. An IPC Duplex Control Panel controls the pumps. The total footprint of the system is 8 by 40 feet.

Installation of the BioBarrier system provides effective wastewater treatment, meets town regulations, and resulted in more than $100,000 savings for the property owner as compared to the centralized sewer connection.

BioMicrobics, Inc. – BETTER WATER. BETTER WORLD. We're celebrating 25 years of providing simple, low-cost, robust water, wastewater, greywater and stormwater treatment technologies on April 19, 2021. BioMicrobics received the 2020 Global Decentralized Water & Wastewater Treatment Company of the Year award from Frost & Sullivan Institute; and is a recipient of 2019 Top 10 WasteWater Management Solutions Provider recognition from *Utilities Outlook* Magazine.

800-753-3278 | sales@biomicrobics.com | www.biomicrobics.com

Advanced Enviro-Septic Provides Low Maintenance, Passive Onsite Wastewater Treatment

The Advanced Enviro-Septic (AES) combined treatment and dispersal system from Presby Environmental provides passive onsite wastewater treatment that reduces or eliminates energy usage for residential, community and commercial wastewater applications. The system is a low maintenance alternative to traditional onsite wastewater treatment systems and requires no replacement media or electricity to operate.

A powerful ecosystem of aerobic and anaerobic bacteria, the system digests up to 99% of wastewater contaminants, recycling clean water into the environment. Exceeding NSF/ANSI 40 standards, the system treats and disperses wastewater in the same small footprint, costs less than other treatment options, and is ideal for challenging sites without space for a traditional septic system and drainfield. These features create a low carbon footprint wastewater treatment alternative for sustainable developments.

Each unit is 10 feet long with an outside diameter of 12 inches. Snap-lock couplings, offset adapters and PVC piping make assembly easy. Ideal for sloped or curved sites, the AES pipe features Bio-Accelerator fabric to speed biomat development promoting even distribution of wastewater. PEI is a subsidiary of Infiltrator Water Technologies.

Project Example - The University of Wyoming - National Park Service Research Station at AMK Ranch in Grand Teton National Park. A 6,500 gpd passive Presby AES system with 3,120 linear feet of AES pipe was selected to upgrade the existing onsite sanitary sewer systems for the lodge, houses and cabins. The small footprint system complied with federal regulations and close environmental scrutiny, minimized disturbance of the pristine area, and was suitable for the extreme winter cold and frost depths. The system removes nearly all wastewater contaminants without electricity.

Presby Environmental, Inc.

Presby Environmental is a wholly owned subsidiary of Infiltrator Water Technologies, a leading manufacturer of products for the decentralized water and wastewater industries. Presby Environmental manufactures the Enviro-Septic, Advanced Enviro-Septic and other wastewater treatment technologies.

800-473-5298 | info@infiltratorwater.com
www.infiltratorwater.com/products/presby-environmental

ONSITE INNOVATIONS

Replacing an Overboard Discharge on a Microscopic Site

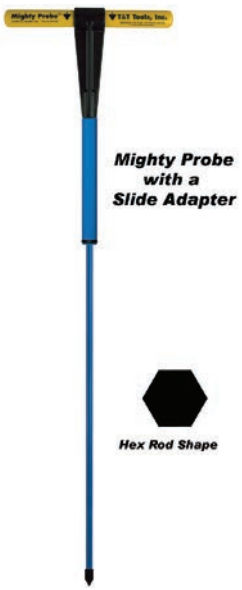
Problem: Matt Page LSE, of Maine Septic Solution was charged with squeezing an onsite treatment system onto a tight difficult site, while ensuring seamless functionality and preserving the aesthetic of a remarkable ocean property on the Maine coast. The lot was 7,000 square feet, with 34 feet to the owner's well, and 53 feet to the neighbor's well. The system needed to fit in a footprint of 10 by 28 feet.

Answer: The Fuji Clean Model CEN7 (design capacity 700 gpd) answered the call. It offers one-tank treatment with a tiny footprint and low profile (99 by 57 by 73 inches). At-grade access ports do not hinder the world class view. Its whisper-quiet blower (<50 dB) is in sync with serene surroundings, while the lightweight tank (705 pounds) was easy to maneuver into location. One simple 3/4-inch airline hookup minimizes excavation requirements.

Fuji Clean USA is a wholly owned subsidiary of Fuji Clean Co., Ltd. headquartered in Nagoya, Japan; a leading manufacturer of onsite treatment systems. Fuji Clean USA offers a selection of one-tank treatment systems for both residential and commercial applications ranging in size from 500 up to 6,000 gpd, including its high-performing CEN denitrification models.
207-406-2927 | info@fujicleanusa.com | www.fujicleanusa.com

ONSITE INNOVATIONS

Avoiding the Jolt



The Mighty Probe from T&T Tools is an insulated probe that provides protection against electrical shocks. A steel shaft and hardened replaceable tip make these probes safer, more rigid and easier to use.

Adding a Slide Adapter creates an integrated mini slide hammer probe. This allows you to pound your way through those extremely difficult spots. Hex rods are available in either a 3/8- or 7/16-inch profile to increase the probe stiffness. Probes are available in lengths from 3 to 6 feet in 6-inch increments.

T&T Tools Inc. is a small family owned business based out of Holland, Michigan, specializing in the design, manufacture and sale of subsurface hand tools. T&T Tools was started in 1989 by two friends who had experience in the pumper/cleaner market and with manufacturing. They made the first tools for their own personal use, but more and more people kept "borrowing" their tools. They realized they had a tool that filled a market need and the Smart Stick probe was born.
800-521-6893 | sales@mightyprobe.com | www.mightyprobe.com

PRODUCT SPOTLIGHT

The SeptiSurge Dynamic Fluid Manifold provides even purging action

By Tim Dobbins

Evenly distributing fluid throughout the drainfield is crucial to maintaining the longevity of an onsite system. Poor distribution causes localized saturation, where organic matter will build up faster than it can be broken down, causing premature failure of the system. The SeptiSurge Dynamic Fluid Manifold was designed to ensure all outlet ports receive effluent evenly.

One of the most common reasons for distribution box failure is clogging of one or more of the outflow ports. SeptiSurge aimed to address that by engineering a distribution system that uses a purging action. This action occurs when the fluid entering the distribution box accumulates within the tub liner to deploy or pop up the center float valve assembly. When the float valve opens, the fluid within the tub liner rapidly flows out the outlet ports with more pressure. As the fluid empties out, the float lowers and resets itself onto a seal stopping the flow.

The purging system was designed to create equal flow through all ports, even if the box develops an out-of-level condition over time. Releasing the volume of effflluent in one push ensures it will travel through all outlet ports instead of a steady flow coming in and going out a single outlet.

SeptiSurge tests indicate the purging device is capable of operating under surge flows up to 25 gpm, and while the basic version of the device purges 2 to 10 gallons at a time, higher purge volumes may be achieved using a simple arrangement of 4-inch pipes installed in parallel with the inflow of the septic tank. During tests, systems with this array yielded a 35-gallon purge.

Even in case of float valve failure, the box will still disperse effluent from the box like a conventional distribution box. If the float valve gets stuck in a down cycle, effluent will spill over the sides of the tub liner and out of the box. If stuck in an up cycle, effluent will pass through the valve in the bottom of the tub liner and exit the box through the outlet ports. 812-322-0789; www.septisurge.com.

Serving the Industry

Visit your state and provincial trade associations

ALABAMA

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

ARIZONA

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

ARKANSAS

Arkansas Onsite Wastewater Association; www.arkowa.com

CALIFORNIA

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

COLORADO

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

CONNECTICUT

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

DELAWARE

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

FLORIDA

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

GEORGIA

Georgia Onsite Wastewater Association; www.georgiaonsitewastewater.com; 706-407-2552

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

IDAHO

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

ILLINOIS

Onsite Wastewater Professionals of Illinois; www.owpi.org

INDIANA

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

IOWA

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

KANSAS

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

KENTUCKY

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

MAINE

Maine Association of Site Evaluators; www.mainese.com

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

MARYLAND

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

MASSACHUSETTS

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

MICHIGAN

Michigan Onsite Wastewater Recycling Association; www.mowra.org

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

MINNESOTA

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

MISSISSIPPI

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

MISSOURI

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

NEBRASKA

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

NEW HAMPSHIRE

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

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

NEW MEXICO

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

NEW YORK

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

NORTH CAROLINA

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

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

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

OHIO

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

OREGON

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

PENNSYLVANIA

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

Pennsylvania Onsite Wastewater Recycling Association; www.powra.org

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

TENNESSEE

Tennessee Onsite Wastewater Association; www.tnonsite.org

TEXAS

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

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

VIRGINIA

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

WASHINGTON

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

WISCONSIN

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

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

NATIONAL

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

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

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

CANADA

ALBERTA

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

BRITISH COLUMBIA

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

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

MANITOBA

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

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

NEW BRUNSWICK

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

NOVA SCOTIA

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

ONTARIO

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

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

SASKATCHEWAN

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

CANADIAN REGIONAL

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

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Colorado residents concerned less stringent development rules will harm water quality

By David Steinkraus

A proposal to increase residential development in the Dolores River Valley has residents of Montezuma County, Colorado, concerned about water quality and housing density.

The county Planning Commission is recommending a decrease in the minimum lot size for a single-family home from 10 acres to 1 acre, according to *The Journal* of Cortez, Colorado. Setback rules would also change. Instead of 100 feet, septic systems would have to be only 50 feet from the river, which is the state standard. The county forms the Colorado portion of the Four Corners area.

A 10-acre minimum lot size was established to help protect the quality of the region's main water source, and when *The Journal* reviewed public comments it found most in favor of keeping the current density limit.

When he presented the recommended change, the commission chairman said modern engineered onsite systems provide sufficient protection for water. Those are already required for new construction, and that standard would remain in place for the Dolores River Valley.

New York

In its latest move to fight water pollution, the Suffolk County legislature is considering a requirement for nitrogen-reducing onsite systems for every new home. If approved, the rule would take effect next year.

In addition, the rule would require an advanced treatment unit (ATU) for other buildings such as condominiums, multifamily housing, and commercial or industrial centers. Any expansion of a home or other project would also have to include an ATU if the expansion required an addition to, or modification of, the wastewater system.

Suffolk County, which occupies the eastern end of Long Island, has been working for several years to reduce pollution along its Atlantic Ocean shore. In 2017 the county banned cesspools, which were a common method of wastewater treatment, and some municipalities in the county also began requiring ATUs.

Indiana

A new wastewater ordinance for DeKalb County is having its first test as a few residents face a requirement to abandon their onsite systems and connect to a municipal sewer line.

Seven homes may be required to connect because the line is now within 300 feet of their properties. If a lift station is needed, the cost could reach $35,000 to $40,000, reported *The Star* of Kendalville, Indiana. County commissioners voted to halt enforcement of the ordinance until the city finishes studying whether a lift station is necessary.

Commissioners will also consider changing the cost limit for connecting to sewer. Currently the ordinance requires a connection if sewer service would be less than 150% of the cost of new onsite treatment, but commissioners are thinking about decreasing that to 125%.

Wisconsin

A court of appeals ruled against a man who sued a pumper because he fell through a septic tank lid.

In October 2016, David Steinke, who lives in the northern Wisconsin community of Hayward, stepped on a rusted tank lid and fell through it into the steel tank. He said he was in septage up to his chest, couldn't climb out of the tank for five hours, and suffered from recurring nightmares. He sued Scott's Septic Pumping and its insurers for failing to warn him about the lid when they pumped his tank a month before.

But the pumper had warned Steinke about the lid three years previously, and about a month before the incident tried to warn him again, but Steinke did not respond to a knock on his door, said news reports. The Third District Court of Appeals sided with a district court judge and found the pumping company was hired only to pump the tank and not to inspect or repair it.

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