January 2024

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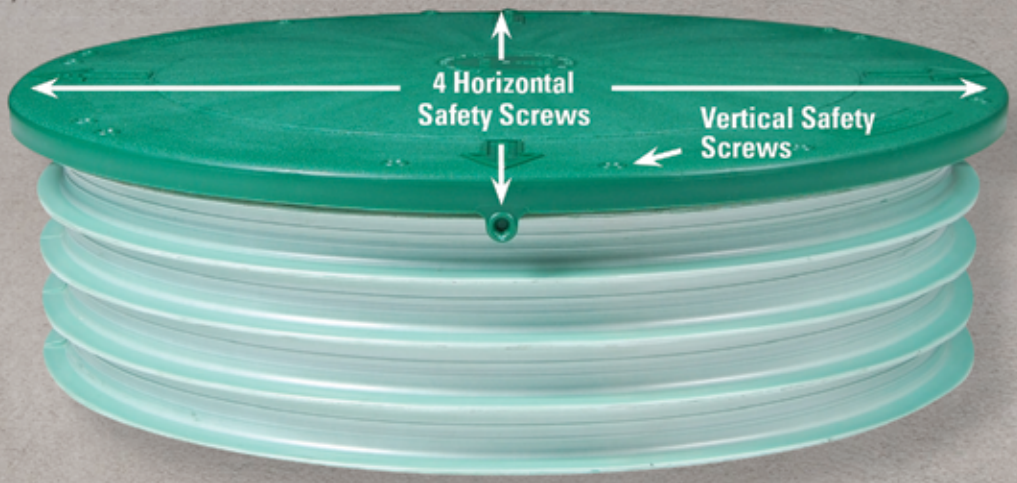

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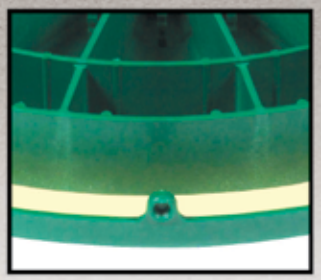

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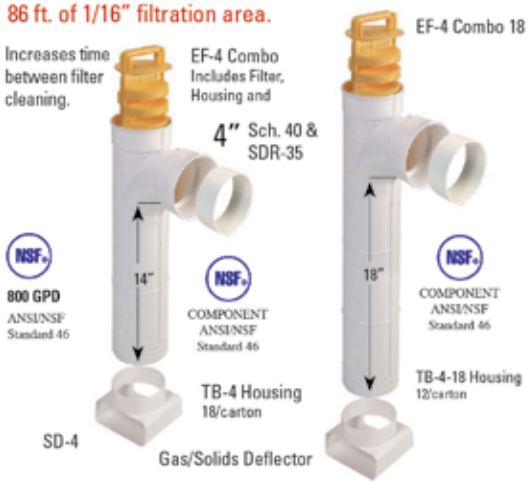

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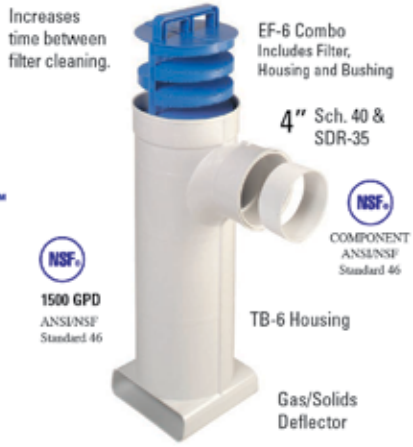

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Go Big or Go Home
By Ted J. Rulseh

ON THE COVER:
Large-scale systems serving vineyards and parks are the bread and butter for A-Affordable Septic Service located in Oregon's Willamette Valley. Owner Rick Jonas is shown on a work site with a crew operating John Deere excavators in the background. (Photo by Dan Hawk)

Coming Next Month

ISSUE FOCUS: Drainfield Media and Design

System Profile: Arkansas day care solution

Contractor Profile: Island work out west

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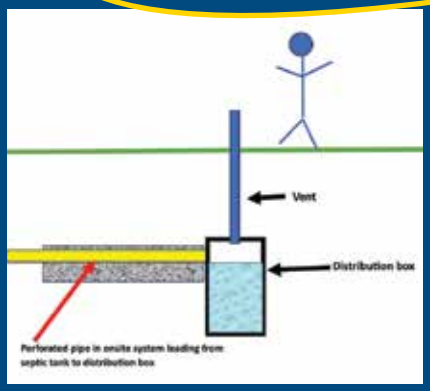

TOP TIPS
Locating Tanks

Finding buried septic tanks can pose issues, especially if there are no records nor any obvious clean-outs to use for locating purposes. This online article from columnist Todd Stair details some methods to locate tanks.
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ARE YOU MAKING THIS MISTAKE?
Evaluating Onsite Systems

A lot of people evaluate existing onsite systems for real estate transactions. The methods used vary in number equal to those performing the evaluations. However, making this one common mistake will often result in misdiagnosing system failure. Check out this online story to learn more.
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Overheard Online

AI-powered recommendations may allow you to provide a truly custom-tailored service package to each homeowner, allowing them to save money and eliminate hassle from their home maintenance needs.

– *Take Advantage of the Benefits of AI*
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LEADING WITH CONFIDENCE
How to Fight Imposter Syndrome

The reasons might be deeply ingrained but if you feel like an imposter at work, it's time to reframe your mindset. This article explains imposter syndrome, how to combat it, and why managers need to lead the way in overcoming this feeling of inadequacy.
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Visit the WWETT Show to Enhance Your Wastewater Education

The national trade show is early this year, offering installers a glimpse of the latest equipment, valuable learning and networking opportunities

Recently I was having a wide-ranging conversation with an *Onsite Installer* reader about challenges facing contractors in the decentralized wastewater treatment industry. Many trends in septic system design and installation will make for an exciting — and in some ways uncertain — future for our trade.

A couple of points we discussed:

• **The onsite landscape is changing.** Available lots for development are less advantageous for onsite systems, with smaller property size, difficult topography and substandard soils. As the best land has already been built on, our understanding of new technologies will play a greater role in success for installers.

• **The graying of our workforce.** As many installers age out of the industry, we need to do all we can to show younger people that septic system design and installing provides excellent opportunities for growth and to earn a good living. Excavation, design, inspections and the regulator side of the business provide great career paths. The sky is the limit, really.

• **The environment needs our help.** Much of America's onsite infrastructure is quickly reaching the end of its useful life and failing systems are more and more seen as an environmental nuisance. There are many dynamic changes being made by our industry product manufacturers to allow us to offer new and much better solutions to providing clean effluent.

About the time of this conversation, I was starting to look forward to the 2024 WWETT Show, scheduled for Jan. 24-27 at the Indiana Convention Center in Indianapolis. And I was reminded that the biggest annual trade show for the wastewater industry offers a great opportunity to start to tackle the major challenges facing all of you in the years ahead.

> When you take along a new crew member or someone from your office staff, **they gain a greater appreciation for what it means to work in the onsite installing industry.**

GET WITH THE PROGRAM

Just as the WWETT Show (which many of you remember in the past as the Pumper & Cleaner Environmental Expo) has always been an important event in my education and industry networking, so it has been for thousands of installers. Many of you attend the show every year, or at least every few years, to keep pace with industry advancements.

<< Hands-on demonstrations at the WWETT Show offer a huge advantage for installers shopping for their next valuable piece of equipment. (file photo)

>> Networking opportunities abound on the WWETT Show exhibit floor, as installers can establish relationships with other contractors and vendors serving the industry. (file photo)

You find it important to view the latest new pumps, tanks, components and other products you employ in the field as part of the huge expo hall display. Many of you also take part in education offerings at the show, some of which provide continuing education credits required from your state or local health departments.

But I will make an additional pitch for you to attend the WWETT Show. It offers a great boost to the younger members of your team! When you take along a new crew member or someone from your office staff, they gain a greater appreciation for what it means to work in the onsite installing industry. They see the most sophisticated equipment available to installers — and realize the skills necessary to get the job done right these days. They network with other professionals and take more pride in the essential service they provide back home in your community. The learning opportunities will set them up for career advancement and a bigger paycheck down the road.

The WWETT Show continues to grow. Last year, under the management of Informamarkets, the show had more than 12,000 attendees from 46 countries and more than 500 exhibitors. It will have an estimated 600 exhibitors this year. The show is earlier this year — it has been traditionally held in February. The first day of the WWETT Show, Wednesday, Jan. 24, is for education only. The exhibit hall opens 9 a.m.-5 p.m. on Thursday and Friday, and 9 a.m.-1 p.m. on Saturday.

SO MUCH TO DO

One thing that will interest installers is the return of the National Backhoe Roe-D-Hoe Championship competition sponsored by the National Onsite Wastewater Recycling Association (NOWRA). The three-day (Jan. 25-27) machine operator skills competition allows attendees to compete for belt buckles, bragging rights and up to $1,000 in prize money.

This year there will be almost 100 education seminars covering a broad range of wastewater and business-building topics. I've read the entire course book so you don't necessarily have to — though I encourage you to review it carefully to choose the classes that would best serve you and your crew. Here are nine sessions I would recommend for installers:

How Are OWTS Contaminants Transported and Treated Beneath the Soil Treatment Area, Wednesday, Jan. 24, 9-10 a.m.

Learn about the negative effects of key pollutants in septic system effluent, followed by a discussion about nitrogen, phosphorus, pathogenic bacteria and emerging contaminants in the soil treatment area. Recognize the importance of ideal soil properties for effective treatment in a septic system and discuss the mechanisms involved in retention or mobility of dissolved contaminants found in effluent. The speaker is Sergio Abit, PhD., the state specialist for onsite wastewater treatment systems in Oklahoma and a faculty member in the Department of Plant and Soil Sciences at Oklahoma State University.

Wood Chips and Chamber Systems – Canadian Examples of Installation Best Practices, Wednesday, Jan. 24, 9-10 a.m.

The presentation focuses on designing systems that use shallow-based recycled plastic chambers in combination with wood chip covering to produce high-quality effluent and preserve a natural landscape. Learn how to design systems to complement natural landscapes and woodlands and what types of climate and terrain work best with these systems. The LFH at-grade systems were extensively researched at the University of Calgary and the University of Alberta. The presenters are Ben Kele, project manager at Arris Water, and Lesley Desjardins, executive director at the Western Canada Onsite Wastewater Management Association.

Design Considerations For Multiple Tank Wastewater Treatment Systems, Wednesday, Jan. 24, 10:30 a.m.-noon.

Explore best practices for positioning and layout of multiple-tank systems to handle larger flows, reduce downstream surges and incorporate additional treatment systems. Learn how to consider installation and maintenance factors in system designs with tanks in close proximity. Other topics include measures to counter buoyancy for underground tanks and key considerations when installing tanks in close proximity. The session will be led by Claude Goguen, director of outreach and technical education at the National Precast Concrete Association, and Dennis Hallahan, technical director at Infiltrator Water Technologies.

Troubleshooting and Repairing Onsite and Decentralized Systems, Wednesday, Jan. 24, 10:30 a.m.-noon.

Learn steps to properly diagnose a failing septic system that someone else installed and when customers prefer a repair to replacement. Topics to be covered include common failure issues, how to bring a system back into compliance, the practicality of partial replacement, and when a repair is not feasible and replacement is necessary. The presenter is Ben Kele, project manager at Arris Water.

Commercial System Design Considerations, Wednesday, Jan 24, 1-2:30 p.m.

This is an overview of design options for systems treating commercial and high-strength wastes. Learn how to design for systems that have varying usage patterns, waste strength and waste stream characteristics. Topics include recognizing businesses most likely to generate challenging wastewater streams, calculating the organic loading from a facility, and the benefit of obtaining flow and waste-strength data. The speaker is Sara Heger, PhD, instructor and researcher at the Onsite Sewage Treatment Program in the Water Resources Center at the University of Minnesota.

Designing With Constructability and Ease of Operation in Mind, Wednesday, Jan. 24. 4:30-5:30 p.m.

Learn to set priorities for an onsite system during the design stage based on site conditions and available system components. Exploring a supplied example site, determine the level of treatment required, the tanks and other components needed and the impacts of a complex system on the installer, operator, inspector and owner. Presenters are Danna Revis, master alternative onsite sewage evaluator at Old Dominion Onsite, and Kevin Sherman, director of engineering and regulatory Affairs for SeptiTech.

Troubleshooting Septic System Issues and Standard Practice on Installing Septic Systems, Thursday, Jan. 25, 11 a.m.-noon.

Learn tips for working effectively with customers from the first troubleshooting call to a finished system repair or replacement. Review will cover standard practices from diagnosis to installing a new septic tank or drainfield. Topics to be covered include helping customers over the phone to save time and money, determining if the system has a serious issue and explaining the proper techniques for installation. The speaker is Travis Gemmell, owner of Walnut Grove Excavating.

General Session – Trade Associations in the Wastewater Industry, Thursday, Jan. 25, 12:30-1:30 p.m.

A panel discussion involving representatives of several industry trade associations will cover topics including advocacy, raising industry standards, education and workforce issues. A Q&A session will follow. Panelists include Kim Seipp, of the National Association of Wastewater Technicians; Sheila Joy, executive director at the National Association of Sewer Service Companies; Tom Groves, executive director of NOWRA; and Veronica Crosier, executive director of the Portable Sanitation Association International.

Preparation, Response and Prevention of Injuries in the Field, Friday, Jan. 26, noon-1 p.m.

Explore ways to reduce on-the-job worker injuries that average 2.3 million cases annually. The seminar will cover knowing each working environment, scene safety protocols and best practices in response to prevent future accidents. Discussed will be OSHA regulations, becoming an effective first responder, responding to common injuries with first aid and CPR training, and ways to analyze and isolate accidents. The presenter is Kaitlyn Polowy, a health and safety coordinator for the U.S. Navy.

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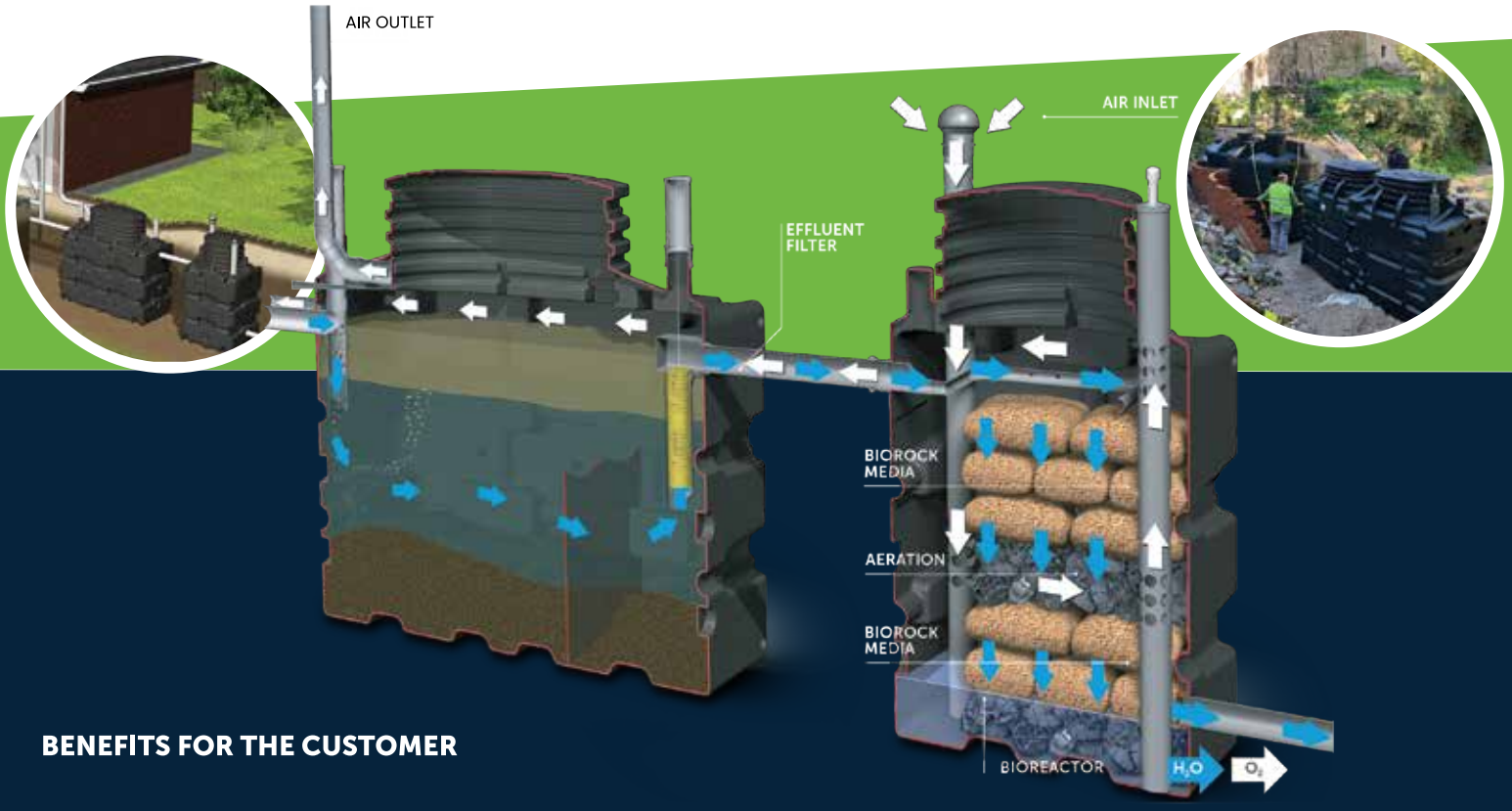

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GO BIG OR GO HOME

Large-scale treatment systems for parks and vineyards are the focus of business for an installer in Oregon's Willamette Valley

By Ted J. Rulseh

Rick Jonas and his team install about 80 onsite treatment systems a year and pump up to 800 septic tanks for homes in Oregon's Willamette Valley, stretching 150 miles south from Portland and where 70% of the state's residents live.

But residential systems are not the main focus of the business. A-Affordable Septic Service in Canby concentrates on two to three large-scale systems per year, mostly for county and state parks and vineyards. The company also digs reservoirs from which vineyards draw water for irrigation.

"We somewhat specialize in the bigger systems in Oregon," says Jonas, who started A-Affordable in 1998. "There are just a few of us who do them, and we typically get a shot at building every one. Over the years we've built up our crews to where it's easier for us to work for one customer for a month than for 20 customers in a month.

"That's the business model we've drifted to. We used to do three drainfields a week, Monday through Wednesday, and then I would go back on Thursday and Friday and finish those jobs up. But permitting is getting to be slower, so that it's tougher to line those projects up to where we can be efficient. We use the residential systems to fill the gaps in between the bigger projects."

RAMPING UP

After high school, Jonas attended Central Oregon Community College for two years but decided not to pursue a four-year degree. He bought a backhoe and dump truck, went to work on his own, and in 2000 moved to

<< Jonas and worker Arny Tepole prepare to fill a new system with water for a test of its operation. (Photos by Dan Hawk)

Before installation, Jonas inspects an Orenco AdvanTex system at a residential project.

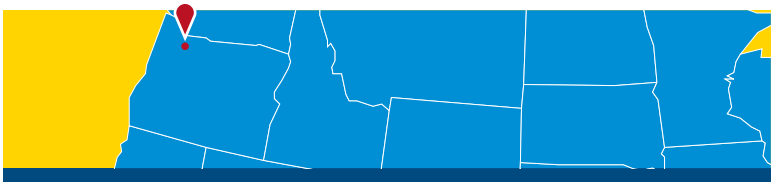
the Willamette Valley. He worked solo for a couple more years before hiring his first employee. By 2011 the company had grown to roughly its present size.

The business has come a long way since Jonas launched it, digging for drainfields and doing general excavation. He now has 21 team members, a large inventory of equipment, and a thriving rock-crushing business.

The company operates 21 excavators ranging from John Deere 17G units (about 3,500 pounds) to Hitachi 800 units (165,000 pounds). A newly delivered John Deere 470P will operate in the rock quarry and large reservoir projects.

"We rely on Bobcat and John Deere skid-steers for moving gravel to drainfield trenches and general clean-up after inspections," says Jonas. In summer we use dozers for mass grading and backfilling. GPS installed in them speeds up our production up significantly when paired with the right project.

"On projects with difficult access, either wet areas or steep slopes, we use an 8-cubic-yard Komatsu CD110 tracked dump truck with a rotating



A-Affordable Septic Service

Canby, Oregon

Owners: Rick Jonas
Founded: 1998
Employees: 21
Service area: All of Oregon
Services: Septic system installation and pumping; commercial-scale systems
Affiliations: Oregon Onsite Wastewater Association
Website: aaffordablesepticsvc.com

Jonas reviews plans for a new system. A Spectra Precision laser level is shown to the right and a John Deere excavator works in the background.

> "We somewhat specialize in the bigger systems in Oregon. There are just a few of us who do them, and we typically get a shot at building every one."
>
> Rick Jonas

carriage. On some sites due to steep terrain or other obstacles, we can directional bore utilities with our JT5 and JT20 drills manufactured by Ditch Witch. Our dump trucks are Kenworths and Peterbilts from 1998 to 2007. I like the older trucks, and we keep them well maintained."

BIG TERRITORY

Thus equipped, Jonas will take on large projects anywhere in the state, but about 75% of the work is within seven counties in the valley. Oregon's climate is diverse — snowy winters in the east, abundant rain in the west.

"We live right between the Coast Range and the Cascade Mountains," says Jonas. "Our elevation in the valley is about 150 feet. From our yard we can go about 20 miles east and be at the foothills of the Cascades, and it's really rocky with timber. We can go about 30 miles west and be in the Coast Range.

"The soils in the valley are typically silt-loam and clay, with pockets of sand. On average we have about two feet of topsoil, and then we get into heavier clays. Depending on where we are the topsoil gets deeper, but typically it's rather shallow. We have lots of clay."

Residential onsite systems fall into two basic types: 450 gpd conventionals with a concrete tank and 375 feet of rock-and-pipe drainfield and, where there are challenges with soils, water table or lot size, systems with aerobic treatment units and drainfields about one-third the conventional size. The ATUs of choice are AdvanTex AX20-RTs because the manufacturer (Orenco Systems) is nearby and provides reliable support, Jonas notes.

For drainfield media Jonas prefers crushed rock for its durability. He uses lightweight EZflow media (Infiltrator Water Technologies) on difficult-to-access sites and installs low-profile chambers (also Infiltrator) in a low-pressure distribution system using AX20-RT treatment units. Tanks up to 3,000 gallons are precast locally by Waite Concrete Products. Tanks larger than that are typically fiberglass units (Xerxes).

For system designs, Jonas relies on companies that include Cascade Earth Sciences and Environmental Management Systems, along with Aqua Resources for vineyard projects.

LARGER SCALE

The large treatment systems often are public-sector jobs won through competitive bidding; they typically take one to three months to complete. In 2020 A-Affordable rebuilt the entire treatment system for Champoeg State Heritage Area. That 20,000 gpd system used six HighStrengthFAST treatment units (BioMicrobics) with 3,600 feet of drainfield trench.

Last winter, crews installed a 10,000 gpd system for Clackamas County's Eagle Fern Park with two AdvanTex AX100 treatment units. The four 3,000-gallon concrete septic

continued >>

READY TO RIDE

Rick Jonas often caps a busy week installing onsite treatment by taking a weekend trip with his family to compete in a rodeo somewhere in Oregon or Washington.

Jonas and daughters Brooke and Elsie take part in team roping. "My kids and I all team rope, and we have since they were little," Jonas says. "I don't do it professionally. We do it for fun, and we enter the weekend jackpots around Oregon and Washington. In the winter we go to Arizona and rope."

In team roping, two riders start from boxes on each side of a chute from which a steer is released. The steer gets a head start, and then the riders pursue it. The first rider (header), ropes the steer around the horns or head, and then turns the animal to the left so that the other rider (heeler) can rope both hind legs.

Brooke Jonas, now in college, was also a rodeo barrel racer. Elsie, a junior in high school, doubles as a breakaway roper. In that event, the rider chases a calf out of the box and ropes it around the neck as fast as possible.

"We have our own horses, trucks and trailers," says Rick, whose wife Rachel accompanies the family on most trips. "We travel somewhere almost every weekend."

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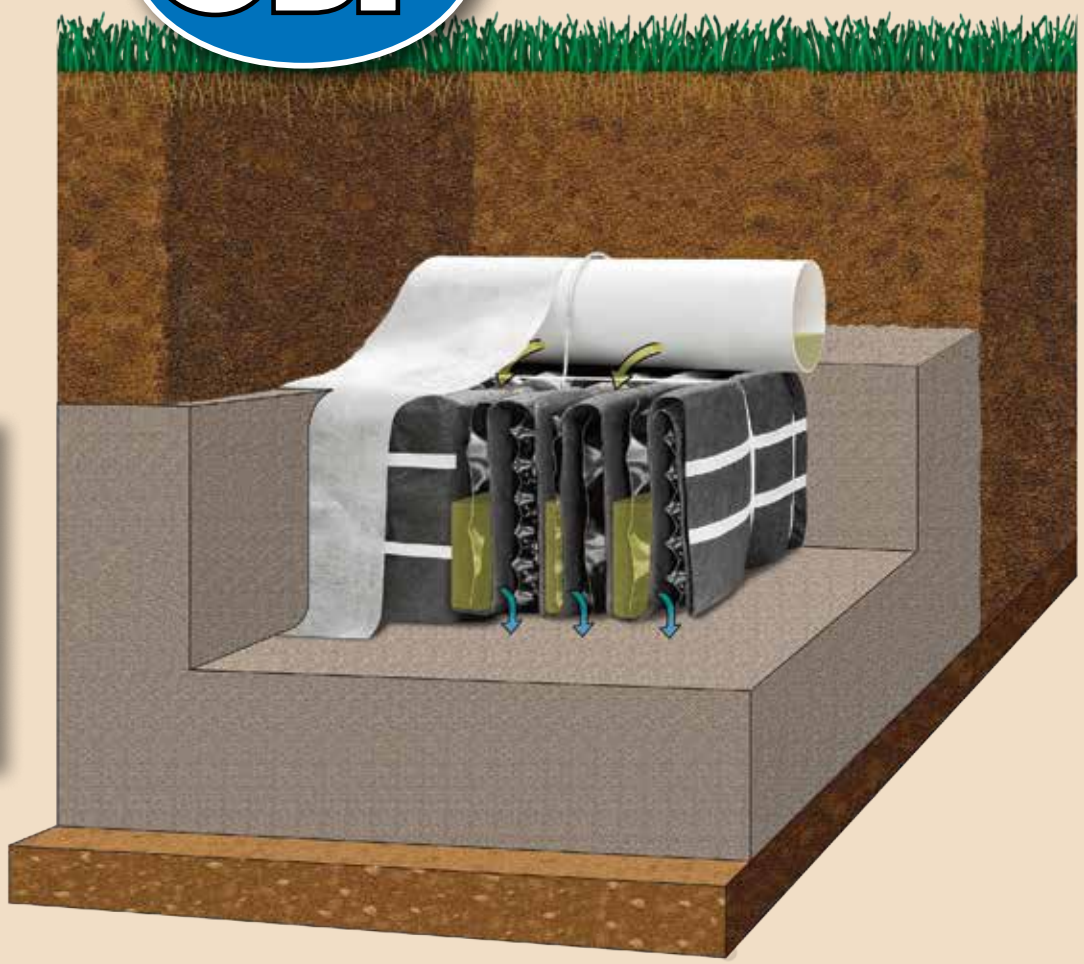

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PLATINUM AWARD

Emilio Chavez, left, and Arny Tepole, in the Deere excavator, add a layer of gravel during a system installation.

Rick Jonas, owner of A-Affordable Septic Service, visits the company's quarry.

tanks were placed below the water table; a pipeline installed by directional boring carries treated effluent about 2,000 feet and up the side of a mountain to the drainfield.

One major project for summer 2023 was a 10,500 gpd system for Clackamas County's Fischer's Forest Park with three AX100 units and some 50,000 feet of subsurface drip irrigation tubing.

Meanwhile, in the valley's booming wine industry, A-Affordable has developed relationships with vineyards leading to work that includes large-scale treatment systems. They include a 7,000 gpd system in 2019 for Stoller Family Estates with four HighStrengthFAST units.

Vineyard work also calls for process waste treatment systems. Two years ago the company installed a system with two 20,000-gallon fiberglass settling tanks (Xerxes). "All the grape skins and other waste is delivered by gravity to the first settling tank, which contains screenings baskets," says Jonas. "Duplex pumps in that tank send the liquid to another settling tank, after which it is surface-applied by a pop-up sprinkler system."

Jonas and his team learned that side of the business through on-the-job training: "I read about it, and we work with some very good designers who have helped us along the way. We found what works and what doesn't. We honed our skills by trial and error."

VINEYARD IRRIGATION

Reservoirs for vineyards are another line of business. "Oregon has been in a drought," Jonas says. "A lot of vineyards are building reservoirs that capture runoff to irrigate their young vines. That work typically keeps one or two of our crews busy in the summer."

Reservoirs generally range from 2 to 5 acres, about 10 feet deep, containing 9 to 12 acre-feet of water. "The vineyards are comfortable with what we charge. We've done projects with them before, and they just hire us to do the jobs."

continued >>

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>> Rick Jonas visits with John Deere 470 excavator operator Don Stephenson at the quarry owned by A-Affordable Septic Service.

The rock-crushing operation comes into play on those jobs, as the vineyard operators need gravel for access roads and for other development around facilities such as wine-tasting rooms and production buildings.

Jonas learned about rock crushing from his father who was in that business in eastern Oregon. He bought a portable rock-crushing plant about 13 years ago and operates under a lease with the owner of the quarry: "We own the crushing equipment but not the property. We pay a royalty for every ton of rock that leaves that property." The volume is significant — some 500,000 tons per year of blue basalt, a very hard and fine-grained igneous rock.

"We are set up in a quarry that is right in the middle of wine country," Jonas says. "We crush for the vineyards, for farmers and dairies in the area and for highway jobs. I have a very good crushing staff and a great crushing superintendent in Casey Johnson."

A-Affordable uses rock from the quarry for a significant share of its onsite work but buys from other sources when it is more cost-effective to do so.

TREATING PEOPLE RIGHT

It's quality, not price, that keeps the business thriving. Repeat customers and word of mouth keep the work schedule full. "When I started A-Affordable Septic Service in the late 1990s, everybody had a phone book and I wanted to be at the top of the listings," Jonas says. "Now nobody uses the phone book, and we hardly advertise at all.

"We can hardly do the amount of work that comes in the door. We work with a dozen or so builders who build two to five houses a year. The Willamette Valley is a pretty large area but it's a small group of people who do what we do. A reputation for doing a good job, for doing what's right, has helped us along the way."

As an example of "what's right," Jonas cites a job in which a crew installed a drainfield not knowing that it was over a spring that had dried up in summer: "We put in the drainfield; it failed. It wasn't our fault, but it certainly wasn't the customer's fault. So the next summer we put a new drainfield in."

> "Oregon has been in a drought. **A lot of vineyards are building reservoirs that capture runoff to irrigate their young vines."**
> Rick Jonas

The pumping side of the business helps feed the installation side. The vacuum truck is a 2016 Peterbilt 348 with a 3,400-gallon steel tank fabricated by Pik Rite and a 475 cfm Masport pump. Operator Marty Fuller has been with the company for 18 years and has an eye for issues that can lead to assorted repairs as well as tank and drainfield replacements. He is just one member of an experienced team that keeps the company in a solid competitive position.

Angie Besso, operations manager, handles everything from insurance to contracts and daily coordination with employees, customers and vendors. Dessa Coleman handles accounts payable, septic installation invoicing, and permitting. Michelle Gooding's duties include dispatch and fielding incoming calls.

Mike Hulett is septic installation superintendent and leader of most large installs. Joe Deloney installs most of the standard onsite systems. Fred Tice, superintendent, handles most vineyard jobs. Arny Tepole specializes in difficult and technical plumbing projects. Jake Wright, foreman and truck driver, helps with truck dispatching and gravel deliveries.

Darrel Bigelow is a truck driver and lowboy operator who hauls most of the equipment to and from projects.

Truck drivers, laborers and operators include Emilio Chavez, Miguel Ortega, Jason Ewing,

Charles Jackson, Don Stephenson, Reid Potter, Sal Corona, Scott McGlaughlin, Ron Findley and Dion Miller. Lyle Wolf is head mechanic and John Palmer is a welder and mechanic.

STAYING SHARP

Jonas makes sure all team members are well trained. "Everybody we hire who doesn't know this business first works with an older crew for a length of time that depends on their aptitude and how fast they're learning," Jonas says. "A lot of times on the install crews I personally work with new people on a few jobs to see how well they're progressing."

Jonas and team members also attend conferences sponsored by country regulators, the Oregon Onsite Wastewater Association, and others.

Looking ahead, Jonas holds out hope that his daughters Brooke (now in college) and Elsie (in high school) will take over for him one day: "We also have got some key people who will likely step up so this place will continue to run after I'm gone. Right now we don't have any concrete plans. I'm young, I'm still in good enough health, and I like what I do.

"The business has been good to us. In the bad times everybody still needs indoor plumbing, so it has been recession-proof."

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Sara Heger, Ph.D., is a researcher and instructor with the Onsite Sewage Treatment Program in the Water Resources Center at the University of Minnesota. She is also a certified designer and service provider. Send questions for Sara to editor@onsiteinstaller.com

Here's How to Employ a Siphon or Flout For Effluent Distribution

If a site offers natural elevation for uniform distribution, explore these practical techniques for dosing with non-electric devices

By Sara Heger

In a past article, I wrote about the challenges associated with gravity distribution. One of the options mentioned was using a siphon, but the research available indicated siphons commonly trickle without frequent maintenance, reducing the efficiency of these devices. Siphon technology has evolved since the research was done in the 1980s. Designers and installers should consider using a siphon, which can also be used provided the succeeding component (typically a soil treatment area) is at a lower elevation. If designed, installed and serviced appropriately, the effluent distribution will be dosed in surges, with resting being doses and evenly across the component.

Common applications for siphons include:

- Pressure-dosed gravity distribution to a soil treatment area or pre-treatment units, including aerobic treatment units, constructed wetlands and media filters.
- Low-pressure distribution to an STA or media filter.

A siphon typically consists of a dosing chamber (it cannot be placed in a septic tank), a siphon and a discharge pipe. Siphons should be placed in a vessel or chamber downgradient from the septic tank, and the effluent should be filtered before being introduced to that chamber. They can be used in demand dose systems, but not when time dosing is required.

The flow rate of the siphon is an important parameter that must be determined in the design. **When installing a siphon, ensure it can meet the required flow in gallons per minute (gpm).**

Siphon Overview

1. As liquid fills the dosing tank, the liquid level in the tank and siphon rise simultaneously. The siphon is vented to the atmosphere through the vent.
2. This rise continues until the liquid reaches the vent pipe's open side, creating an air seal.
3. As the liquid rises in the dosing tank, it rises much slower in the bell. The pressure of the water pushes the air at the top of the bell and in the vent pipe toward the invert of the trap.
4. When the effluent reaches the dosing tank's high-water line, the air volume is forced around the invert of the trap and out of the discharge pipe. When this air escapes, it releases the back pressure within the siphon; the liquid in the bell will rush up, fill the trap and start the siphon action.
5. The liquid is drawn out until the liquid in the dosing tank reaches the bottom of the bell.

The siphon only functions if the pretreatment or dispersal component receiving the dosed flow distribution is at a lower elevation than the siphon discharge, typically by several feet. The amount of fall required will relate to the length of the supply pipe and the needed head at the discharge point. The drawdown of the siphon (determined by the manufacturer) multiplied by the volume per vertical inch of the dose tank, determines the dose volume the siphon delivers. The dimensions of the dosing tank are critical and should not be altered during installation without consulting the designer.

Siphons do not require a discharge assembly like that included with pump systems. Instead, the discharge pipe delivers the dose to the next component at a lower elevation. Siphons have discharge rates ranging from 25 to over 100 gallons per minute.

Although siphons are very reliable, they occasionally can go into trickling mode. Siphon trickling typically starts when the siphon tank receives a large dose of influent while the siphon is at the end of a dose. This is a matter of bad timing. As the liquid level is close to the bell bottom, the siphon takes a gulp of air as the liquid rises, but there is not enough air to break the siphon. The dose volume is not completely delivered, and a small amount of effluent continuously trickles from the tank. As with all components, access to this unit is critical to re-establish the siphon action by injecting air under the bell.

Digital and mechanical cycle counters are recommended to help monitor flow. The counter enables the service provider to calculate the average flow to the system during operation and maintenance. The counter can also be used to troubleshoot the system for leaks, trickling or to determine if the system is hydraulically overloaded. They are typically battery-operated since electricity is not commonly available. A visual high-water alarm is also recommended on siphon systems.

There are numerous brands of siphons on the market. Finding one locally available is always a great place to start, as the supply company can assist in designing and installing them.

>> This is a siphon set up in a dosing chamber. (Photo by Doug Jatcko)

>>>> A Flout or "floating outlet" installed in a basin. (Photo by Katie Resor)

Installation Keys

The flow rate of the siphon is an important parameter that must be determined in the design. When installing a siphon, ensure it can meet the required flow in gallons per minute (gpm). This average is calculated from the maximum rate (when the siphon just started) and the minimum rate (at the end of a cycle). The siphon and components must be easily reachable from the opening. The siphon should be directly under the lid of the tank access riser.

The discharge pipe for a siphon must be properly bedded and connected to the outlet of the siphon using appropriate fittings. The diameter of the discharge pipe should be at least as large as the diameter of the siphon trap for a minimum distance of 10 feet past the overflow pipe. If it is important to maintain a flow rate as high, the discharge piping should be one size larger than the siphon to reduce friction losses (e.g., use 6-inch discharge piping with a 4-inch siphon). However, if the goal is to pressurize an LPD, the 6-inch pipe may be inappropriate. Consult the manufacturer for specific information or before making changes.

The discharge pipe from a siphon must not run uphill. It must run downhill with typical slopes of

1. Pipe diameter of 2 ½ inches or smaller, sloped at 1/4 inch per foot
2. Pipe diameter of 3 to 6 inches, sloped at 1/8 inch per foot
3. Pipe diameter of 8 inches or larger, sloped at 1/16 inch per foot

As with supply lines, an air-release valve should be included at the highest point if variations in elevation from the siphon tank to the next component might result in air becoming trapped in the line. The discharge pipe should be vented back into the dosing tank through an overflow pipe.

The siphon must be primed when installed by filling the tank with water. Testing should be done to confirm that the siphon operates as designed.

Flout Alternative

A Flout can be used in similar applications to a siphon, but is more like a tipping bucket floating in a tank. The name brand Flout stands for "floating outlet." The device starts at the bottom of the dosing chamber empty. As the effluent from the septic tank fills the dosing chamber, the Flout is empty, buoyant and floats on the surface. Flexible connectors allow the device to rise.

There is an opening in the upper side of the vessel with an attached ballast weight. A length of pipe extends far into the vessel, through the side, and attaches to a special flexible connector the same diameter as the pipe. The flexible connector acts as a hinge, allowing the vessel to float higher as the dosing chamber fills. The other end of the connector is connected to the outlet, usually via a tee fitting with a vent extending above the maximum liquid level.

When the vessel can float no higher, effluent spills into it, forcing it to sink to the floor, allowing effluent to flow through the outlet. When the liquid level drops to the top of the vessel, the flow stops when the vessel drains and re-floats in the remaining liquid. There are many options available for designing this dosing mechanism.

Due to the floating nature of this device, having an effluent filter prior is recommended, and the septic tank and dosing chamber will need regular maintenance. The bottom side can get scummy, and then you risk it getting stuck on the surface. In some applications, it may not create enough force to scrub LPP lines, and line cleaning may be needed.

Summary

These non-electricity-using dosing options have many of the benefits of a pump system. If the site offers you the option to use natural elevations to create uniform distribution, it should be considered. These devices hold a dose, allowing for resting between dosing. When dosing to a distribution box, they will more uniformly dose the system due to the larger volume, and in pressure applications, they can achieve pressurized application over the STA.

SYSTEM PROFILE

Oil Pipeline Extension Pushes a Motel/Camping Complex to a New Onsite Solution

Tight space, big tankage, aerobic treatment, UV treatment and an uphill run to the dispersal point provide many challenges for Canadian Septic

By David Steinkraus

The Bridal Falls project sits at the foot of the mountains (note the boulders at the top of the photo), and because of the rocky cobbles that made digging difficult, all tanks and pipes were kept as shallow as possible. Here the Canadian Septic crew is setting tanks for the system. (Photos courtesy James Stiksma, Canadian Septic)

Even though pipelines run underground, humans must make way on the surface, and that's what happened in Bridal Falls, British Columbia.

Trans Mountain Corp., which is expanding its crude oil pipeline from Edmonton, Alberta, to Vancouver, British Columbia, was coming through, and an onsite system was in the right of way. It had to be replaced and repositioned, so the company called in Canadian Septic to get the job done.

Because the system was being updated, it was required to meet current standards, says James Stiksma, owner of Canadian Septic based in Langley, British Columbia. Producing wastewater was an eight-room motel, two two-bedroom suites and a three-pad RV park. The motel dated to the 1960s, Stiksma says, but paperwork filed in the 1990s suggested the system had been sized for a two-room addition and 10 RV pads with a daily design flow of 1,369 gpd.

At some point, someone installed a sump pump to collect wastewater from the original eight-room motel and direct it into the system. On paper, the old system was dramatically undersized for what it was handling, Stiksma says. Calculated daily flow for the new system was 3,266 gpd, and the drainfield would be reduced by 33%.

Arien Brouwer of Canadian Septic works behind the motel at Bridal Falls to install a new collection line. Getting the Kubota mini-excavator into this space required digging down about 18 inches.

Although they were under grass, the tight space at the Bridal Falls project meant tanks might be driven over. So everything was traffic-rated. Here, Arien Brouwer, left in the Kubota mini-excavator, and Tom Daniels, right, of Canadian Septic install a concrete sleeve over a Polylok riser.

System details

Wastewater flows out of the motel building and the RV pads in 4-inch SDR 35 pipe that joins 6-inch collection lines. These run about 250 feet before entering the first of five concrete tanks connected in series.

The first two tanks collect trash and settle solids. First is a 3,000-gallon tank. Next is a 3,000-gallon two-chamber tank with a Zabel A100 filter (Polylok) in the second chamber at the outlet.

The third tank has a single chamber that holds 3,000 gallons. The fourth tank is two-chambered and holds 2,000 gallons. The 3,000-gallon tank and the first chamber of the 2,000-gallon tank each have Bionest 3000 aerobic treatment units. These use shredded PVC media and fine bubble diffusers fed by five Hiblow HP-100 blowers. The second chamber of the 2,000-gallon tank clarifies water flowing over the partition.

The fifth tank is another 3,000-gallon model that holds the Livewire three-lamp UV disinfection equipment and duplex Liberty FL200 pumps.

There is an option for a sludge return line if future wastewater strength requires it, and Stiksma said his crew plumbed in the ¾-inch line. Activating it would require only installation of a pump.

Effluent is pumped about 200 feet and up about 70 feet through 2-inch Schedule 40 pipe to a six-position Orenco indexing valve that controls dosing of the drainfield.

System Profile

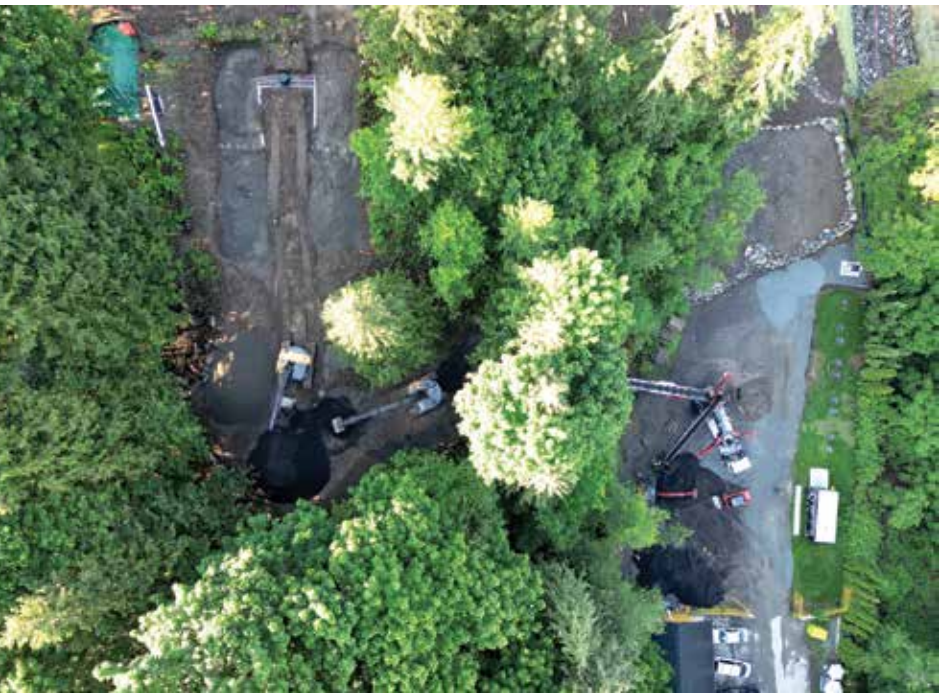
Location:	Bridal Falls, British Columbia, Canada
Facility served:	Motel and RV park
Designer:	Cleartech Consulting, Vancouver
Installer:	Canadian Septic Inc.
Type of system:	Bionest aerobic treatment with UV
Site conditions:	Gravelly sand to sandy gravel
Hydraulic capacity:	3,300 gpd

The field has two beds, each 66 feet by 15 feet, spaced 13 feet apart. Each bed has three separate zones, and each zone contains four 33-foot-long laterals made of 1-inch Schedule 40 pipe. Feed lines from the indexing valve are in the middle of each zone. Orifices (1/8-inch) are spaced at 32 inches along the laterals. Beneath the laterals are 6 inches of clean rounded drain rock. Below the rock is 24 inches of clean coarse sand. On top of the laterals is 12 inches of topsoil.

All tanks came from Galcon Precast on Vancouver Island. An Aquaworx duplex control panel and transducer run the system. Sitksma says he doesn't

Arien Brouwer and Tom Daniels from Canadian Septic work on a 6-inch collection line bringing wastewater from RV pads in Bridal Falls, British Columbia, to the treatment system.

A drone photo reveals the layout of the Bridal Falls project. At bottom right is the motel served by the system. Tank lids are visible at far right. The Telebelt conveyor at right is moving material for the drainfield up 70 feet to the spot where the Volvo excavators are working at left. The two drainfield beds are at top left, and near the top left edge is the housing for the Orenco indexing valve that doses the drainfield beds.



"At one point, I swear, you couldn't have gotten **even a sheet of paper between the roof of the excavator and the gutter of the motel."**

James Stiksma

use floats because they tend to break. Transducers provide real-time data to the panel on water levels in tanks, he says, and he added that in more than six years of installing transducers he doesn't recall needing to replace one.

Because the tanks would be under vehicle traffic, the Polylok risers and lids were sleeved with concrete risers and lids from Galcon.

Canadian Septic used its 2022 Kubota KX057-5 mini-excavator and a Kubota SVL 97-2 skid-steer. The excavator is equipped with a Topcon MC-Mobile system that ties sensors mounted on the machine into a tablet computer in the cab. This allows the operator to have a 3D map of the project and know that he is in exactly the right place and that his bucket is at exactly the right depth.

Heavy work on the drainfield and tank excavation was done by Heidelberg Contracting using a pair of Volvo 235 excavators.

Working high

The only space for a drainfield was the land about 70 feet above the tanks, Stiksma says. The new drainfield had to be 33% smaller than the old one to avoid infringing on the pipeline right of way, and that was the reason for using a Type 3 treatment system. Under British Columbia rules that's the highest level of treatment, Stiksma says. A Type 2 system would have required a drainfield roughly 50% larger.

To move drainfield sand and stone up the hill, Canadian Septic employed a conveyor from West Coast Telebelts. That was about a three-day process, Stiksma says. Because the conveyor angle was so steep, material tended to back up. One technician was stationed to push down on material to ensure the conveyor grabbed it, and a second technician cleared buildup at a hopper.

Canadian Septic's small excavators were used for digging trenches and working around the motel. Replacing the drainlines along the building put technicians in a very tight space. There was only one way in and out, and technicians had to rip out a sidewalk and dig down about 18 inches to fit machines under an overhang. "At one point, I swear, you couldn't have gotten even a sheet of paper between the roof of the excavator and the gutter of the motel," Stiksma says.

Another challenge in digging was the presence of cobbles, so everything was set as shallow as possible, Stiksma says. This is not a serious issue in a temperate climate with a shallow frost penetration.

Before installing the drainfield, Stiksma and his wife assembled the indexing valve in the shop. They used sections of clear pipe so any maintenance technician looking at the indexing valve assembly can see whether water is flowing. Lines are also color-coded lines so a maintenance technician can know which clean-out is connected to which indexing valve line.

Because the drainfield uses 2 feet of septic sand, effluent will be very clean even without the UV equipment, Stiksma says. Standards for a Type 3 system in British Columbia require less than 10 mg/L of BOD and TSS, and less than 400 CFU of fecal coliform. The new system meets those standards easily, he says.

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

National Onsite Wastewater Recycling Association; www.nowra.org; 978-496-1800

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

If you would like your wastewater trade association added to this list, send contact information to editor@onsiteinstaller.com

Geomatrix loses appeal in antitrust suit against NSF

By David Steinkraus

The 6th U.S. Circuit Court of Appeals ruled against Geomatrix LLC in its antitrust lawsuit with the wastewater standards organization NSF International. A federal trial judge in Port Huron, Michigan, had dismissed the lawsuit. Geomatrix appealed, and a three-judge panel of the appeals court said the dismissal was justified.

In its original 2020 lawsuit, Geomatrix claimed there was a conspiracy at NSF to create doubt about its GeoMat leaching system, and it said this conspiracy led to a reduced market for its product. In addition to NSF, Geomatrix sued BioMicrobics of Lenexa, Kansas, Hoot Systems LLC of Lake Charles, Louisiana, and an employee of BioMicrobics who led an NSF subcommittee considering a new standard for high-strength wastewater.

Geomatrix, said the appeals court opinion, obtained NSF Standard 40 certification for its GeoMat product in July 2014. In September 2017, Geomatrix asserted, an NSF paper presented to the NSF committee on wastewater technology suggested that products like GeoMat, which treat and disperse water in the same place, should be placed under a new standard yet to be developed. Since that paper was presented, products like GeoMat were disparaged at NSF meetings, Geomatrix asserted in its suit.

The appeals court decision noted that at least 37 states have adopted NSF Standard 40 in their regulations, and other states rely on the standard in making decisions. But because the proposed NSF separate standard has not been formulated, Geomatrix suffered no harm, wrote the appeals court. In addition, the appeals court said, Geomatrix did not renew its NSF certification for GeoMat, which made any action by NSF irrelevant. And the appeals judges agreed with the trial judge who said that under the First Amendment right to free speech, people or companies may ask for special consideration in rules and laws. Any problems that Geomatrix had in selling its product resulted from the independent decisions of state regulators, not from the actions of NSF, the appeals court said.

Alabama

The U.S. Environmental Protection Agency has opened a civil rights investigation to determine whether the state discriminated against Black residents when it handed out billions of dollars in federal infrastructure funding.

The investigation grows out of a complaint filed this spring by environmental justice activists who claim that policies adopted by the Alabama Department of Environmental Management make it nearly impossible for Black residents to access money in the state's Clean Water Revolving Fund. Hundreds of homes in the state's Black Belt – named for its rich black soil – don't have functioning septic tanks, news reports said.

In a statement, Aaron Colangelo, chief litigation counsel for the Natural Resources Defense Council, said, "Alabama disburses tens of millions of dollars every year through the state revolving fund, but they have never awarded a single dollar of that money to people with onsite sanitation needs. We know they can do better." The NRDC is one of the parties that filed the complaint.

ADEM said in a statement that it disagrees with the complaint, and it said federal audits have consistently found the department to be in compliance with rules. ADEM has until Nov. 2 to send a written response to the EPA.

This spring, after an 18-month investigation, the U.S. Justice Department reached an agreement with the state over environmental discrimination in Lowndes County. The state agreed to stop imposing fines, penalties, and threats of liens on people who couldn't afford functioning onsite systems. The state also promised to collect data and develop a long-term sanitation plan.

California

People whose wells or onsite systems were damaged by severe weather this year may be eligible for assistance under a program of the Federal Emergency Management Agency.

Damage must have occurred between Feb. 21, 2023, and July 10, 2023, and must have been caused by severe storms, straight-line winds, floods, landslides, or mudslides, according to news reports. FEMA may provide assistance or reimbursement for the cost of a professional repair estimate, and FEMA may provide assistance for repairs or replacements not typically covered by home insurance.

Counties included in this program are: Butte, Kern, Madera, Mariposa, Mendocino, Mono, Monterey, Nevada, San Benito, San Bernardino, San Luis Obispo, Santa Cruz, Tulare and Tuolumne.

To request a FEMA inspection, or to follow-up on an inspection already done, call the FEMA helpline 800-621-3362. Calls are answered between 4 a.m. and 10 p.m. Pacific Time.

Oregon

Onsite professionals now have the ability to handle wastewater permits online in Clackmas County. The Development Direct portal — already used for building, electrical, plumbing, and other permits — can now handle wastewater permits, reports and other business. Project status is available in real time, and the website can collect fees, and provide copies of approved plans and post-construction forms, according to a news release from the county.

For more information, the county Septic and Onsite Wastewater Program can be reached at 503-742-4740 or by email at soilsconcern@clackamas.us.

continued >>

RULES AND REGS

Vermont

The Agency of Natural Resources announced a $5 million third round of funding to help low- and moderate-income homeowners with repairs or replacements of onsite systems. The agency will select about 200 projects to receive money based on household income and demographics, environmental impact, and the severity of the system failure. Eligible recipients must: own and live on a residential property with either a single-family home or a multifamily home with no more than four units, have a failed or inadequate onsite wastewater system, and have an annual household income of less than $80,835.

Massachusetts

The Tisbury Board of Health on Martha's Vineyard expanded the requirement for installation of advanced nitrogen-removing wastewater systems.

The new rules took effect Jan. 1 and apply only to properties in the Lagoon Pond and Lake Tashmoo watersheds, reported the Vineyard Gazette. These rules require advanced systems when an existing septic system is upgraded, repaired or replaced.

Previous rules required advanced treatment only for new construction, for replacement of a failed system, for increased use of a property, or when the health board deemed it necessary if a property changed ownership.

Scott Horsley, a water resources biologist who consulted for the town, said the new rules will help the community meet the state's tighter nitrogen limits for sensitive areas.

Nevada

A $5 million grant from the Nevada Department of Conservation and Natural Resources will boost the septic system conversion program of the Southern Nevada Water Authority.

Funding is for the voluntary conversion program the authority created this year, according to the Las Vegas Sun. Septic system owners can receive assistance to connect to municipal sewer systems.

Bronson Mack, spokesperson for the water authority, said annual connection fees will likely be between $200 and $250. Property owners interested in switching from septic to sewer must contribute 15% of the total cost. The conversion program covers the other 85%, up to $40,000.

"Rules and Regs" is a monthly feature in *Onsite Installer*™. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to editor@onsiteinstaller.com.

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SNAPSHOT

FOG So Thick I Could Stand On It!

Education and "utility-style" regulation of septic systems are needed for Canadian wastewater pros to avoid this scenario

Compiled by Betty Dageforde

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

Craig Sapriken
owner/operator

Business: **All Around Septic Services,** Slocan Park, British Columbia, Canada

Age: 47

Services we offer: Septic pumping, maintenance, repair, installation and evaluations

Years in the industry: 13 years as a subcontractor, 9 years as an owner/operator

Association involvement:

I've been a member of the Western Canada Onsite Wastewater Management Association of British Columbia since 2015. I've been on the board of directors since 2021.

Benefits of belonging to the association:

WCOWMA is a "call upon the collective" of experienced minds and people dedicated to the wastewater industry. The annual convention and trade show become a domino effect of people sharing their own experiences or advising others where to go for answers to questions. Key topics from the previous season are brought forth during roundtable discussions. Questions and concerns brought forth by one member become answers for the entire membership. There is no better resource for those starting out. We may all be competing with each other during the weekday but an association puts the competition aside to ensure we are all striving and succeeding for the common practice.

Biggest issue facing your association right now:

It's an issue around every corner in most trades these days — seeking out and introducing new minds and bodies to the industry. Education is a solid second. There is an incredible turnover of residents moving from municipalities onto rural onsite wastewater systems with little or no knowledge of how these sewage systems function. A wastewater association could be the unbiased link between Realtors and new homeowners to deliver the message, "Do you know what's hooked to the end of your sink and toilet?" Another issue is improving the eye-to-eye relationships between accreditation authorities, local health authorities and registered onsite wastewater practitioners. But communication has been improving.

Our crew includes:

Lisa Poznikoff, office administrator, is our "overseer of the nerve center." Brian Kroeker, a registered onsite wastewater practitioner, planner/designer and maintenance provider, has invested considerable time developing maintenance forms and design templates. Alex Kinakin, pumper technician, is the youngest and longest-serving operator and we are grateful for his years of dedication. Sheldon Hicks, installer/pumper — when he's not traveling the wonders of the world he returns in the spring to put in the time and has an interest in becoming a registered wastewater practitioner. Kent Robbins, shop/utility/pumper, gets bounced around and takes it in stride, filling whatever role is needed that day — including being a busy grandfather. Chris Coleman, installer/machine operator, is the newest member of the team and has a goal to become a registered wastewater practitioner.

Typical day on the job:

The day begins between 5 and 5:30 a.m. I start receiving text messages or phone calls by 6 a.m. Some mornings are quiet and allow me to read emails or complete paperwork; other mornings are hectic. Pumper operators leave the shop at 6 a.m. and installation crews start between 7 and 8 a.m. The crews have developed their own routines in the mornings so the check-ins are brief and keep me in the know. By 9 a.m. it's finally my time to leave the shop and carry out an evaluation, site visit or repair for the day.

The job I'll never forget:

A local resident called about his septic system backing up into the house. He was entertaining a large number of family members during the week. Upon arrival we noticed the septic tank was solid top to bottom. The tank was much too small for the size of the home and the level of entertaining the homeowner enjoyed providing. We headed back to the shop and returned with our little Hydro-Spade truck, as a vacuum truck would have

>> Craig Sapriken (left) standing on the crust layer of a neglected septic tank, with Alex Kinakin. (Photo courtesy of All Around Septic Services)

had a difficult time pulling on the thick waste. The FOG layer was solid enough that I took a chance and stepped onto the crust — and the contents held the weight of my body.

My favorite piece of equipment:

We have been investing a lot into equipment the last few years, including purchasing the Hydro-Spade, developed by Jesse Bouwman, owner of Hazeland Manufacturing. It's a compact single-axle hydrovac truck with an onboard boiler and jetting system, a 600-gallon freshwater tank and a six-yard collection tank.

Most challenging site I've worked on:

I designed a system for a resident with silt loam soil, poor permeability and high calcium content. During the site and soils test, we got extremely lucky and found a 27-centimeter seam of loamy sand. Several other test holes indicated this seam existed throughout the extent of the proposed drainfield, which would be our infiltrative surface area. Fast forward 22 months, the homeowner took it upon himself to grade and level the area for the proposed drainfield. Rather than consulting before moving ahead, he finished stripping off the only good seam of permeable soil that was available to construct the drainfield. This is why we plan and design. This is why site and soils worksheets are so valuable for noting our soil horizons. This is why it is so important to study the drawings and note the excavation depths.

Oops, I wish I could take this one back:

We went out of our way to help a homeowner with a problem STEP (septic tank effluent pumping) system. It appeared some of the calculations to overcome the head pressures were overlooked or miscalculated. The system was changed from a Flout (Rissy Plastics) to a conventional pump system.

The designer and contractor previous to our involvement are reputable individuals who I know personally. It was difficult moving forward with our fix without feeling like we were stepping on their toes. The homeowner had nothing good to say about them and I chose to simply dismiss that and move ahead with our alteration. I was very confident the fix would work, and it did.

The same homeowner, eight months later, chose to share those same no-good feelings about us. A split box attached to the pump chamber had been damaged sometime later and they blamed us, so we were categorized in that same "corrupt wastewater contractors" group. I replaced the damaged splice box and installed a new rise at no additional charge but, at the end of the day, I did not protect myself or my wastewater brothers from a client who was impossible to please.

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

We were on a job that consisted of groundwater backflowing through the drainfield into the septic tank. The homeowner, who was having a difficult time understanding why water would enter the drainfield and fill the tank, asked, "Could we not just 'cork' the groundwater off from the drainfield?"

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

To enforce mandatory maintenance visits and compliance evaluations on all onsite wastewater systems within 100 meters of a body of water. I'd also like to change the term "recreational water" as it's currently implied in our wastewater standards and application forms to "essential water" or "protected water."

Best piece of small business advice I've heard:

It's based on the letters found in the word "wealth." W-work hard. E-elevate your mind. A-all in. L-love what you do. T-think outside the box. H-have heart.

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

Become a motivational speaker.

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

I'd like to see onsite wastewater systems classed more like a utility. When you don't pay your utility bills, your electricity is cut off, the phone is disconnected, the gas meter is turned off. Onsite systems are never forgotten when the toilet can't flush. This would give respect to the industry and clean up our understanding of how wastewater is to be properly treated. ◻

PRODUCT SPOTLIGHT

System specializes in converting nitrates

By Tim Dobbins

It's no secret that nitrates not converted into nitrogen gas can contaminate groundwater. To facilitate the conversion process in onsite systems, Infiltrator Water Technologies manufactures the Delta ECOPOD-N, a solution for total nitrogen removal in residential systems.

ECOPOD units feature a fixed-film process, providing a solution for continuous or intermittent use and are specifically designed to reduce BOD, TSS, fecal coliforms and nutrients in wastewater.

To make this happen, effluent first enters a pretreatment chamber to allow for normal solids settling. The pretreatment chamber is followed by a treatment chamber which contains the ECOPOD-N plastic media sheets contained in a reactor box. Under the reactor box is an aeration grid from which coarse air bubbles emerge and rise up through the media.

"The combination of wastewater flowing in over the top and air coming up from the bottom allows the formation of bacteria colonies on the media surface that treat the wastewater," says Joseph Fayan, business development manager for Infiltrator. "The organisms primarily responsible for the degradation of the organic matter are aerobic bacteria. As such, the transfer of oxygen into the wastewater by an aeration system is a critical component of the treatment process."

The ECOPOD-N line can be installed in Infiltrator tanks or concrete tanks. "Installation is similar to installing a traditional septic tank with the addition of an external aerator and control panel," Fayan says. "An air supply line must also be installed between the aerator and the air inlet line inside of the treatment tank."

With multiple models in the series, installers will find treatment and flow options ranging from 500 to 1,500 gpd. According to the company, ECOPOD technology has been tested under NSF/ANSI 40 and 245 standards and with an average nitrogen reduction of greater than 50% and average effluent quality of 9 mg/L and 8 mg/L TSS, they exceed Class 1 requirements.

Fayan says installers commented that the ease of installing the ECOPOD line into Infiltrator tanks has made it possible to transition into the advanced treatment market. He also says they appreciate the ease of maintenance. "With no internal moving parts, maintenance consists of checking sludge levels, pumping and then focusing on the aerator and control panel which are both external to the system."
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