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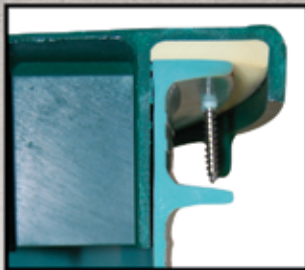
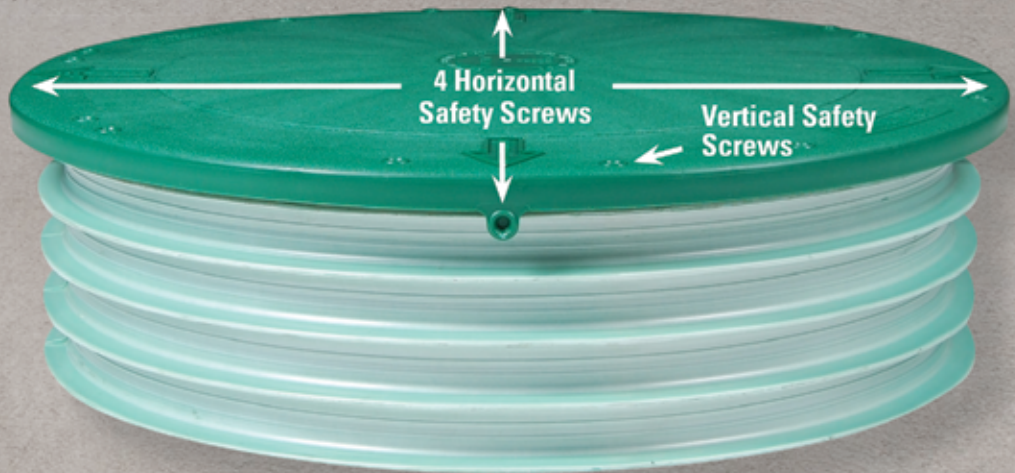
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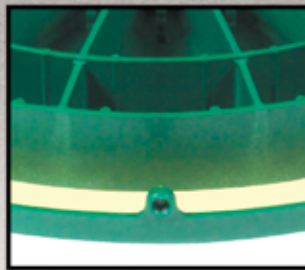
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Digger's Hotline

By Peter Kenter

ON THE COVER:

With years of desert-specific experience, George Allen and his team bring quality craftsmanship and professionalism to every install. (Photo By Mark Hente)

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Tim Dobbins



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Carrying on the Legacy

From one editor to another, the goal of providing for installers remains intact

It's an honor to be the latest editor of *Onsite Installer*. These are big shoes to fill, but I'm up for the task and happy to do so. First things first, though. I'd like to acknowledge and thank Jim Kneiszel for his 11 years of making this such a high-quality and valued publication.

As you read in last month's column, Jim took over the reins from Ted Rulseh, another longtime and active editor for COLE Publishing. Both Jim and Ted have been instrumental in my development here, and I'd be remiss to not express my gratitude.

Before taking on this role, I spent my time with the company as a writer tackling any assignment that was thrown my way. Many years ago, it was Jim who assigned the first big story of my writing career. He told me, "When interviewing and writing for these publications, always ask yourself how the story can best help the reader. Always think about how we can serve the industry."

I've kept that simple advice in mind over the years with every article I write, and I am committed to continuing the "people first" legacy that has been established with *Onsite Installer*.

Initiation

Since that first story, I've written a number of profiles and system profiles for this publication. Though the systems, biology and technological advancements in the industry are fascinating to me, by far my favorite part is learning about installers and how they got to where they are and why they stayed.

For example, in this month's contractor profile, you'll read about George Allen, a former corrections officer that turned to pumping, which led to owning his own business pumping and carrying out septic system installs.

I've learned quickly that the installer's paths to the pages of this magazine are as interesting as the work they do. For some it starts by following the footsteps laid down by family, while others find their way to system installation and design after years in another career field.

I can relate to both of those as my mother has been working as a graphic designer for COLE Publishing for over 20 years, and that I left a different career to start fresh in an industry I had limited experience with. My journey to the Editor's Notebook was a little unorthodox, but I've come to realize my resume strangely aligns.

Bio background

As editor, I'll have the privilege of getting to know a lot of great people in this industry over the years. I'd like to share a bit of my background so you all can get to know me a little.

I started working for COLE Publishing in late 2019. Prior to that, a biology degree led me to a job in aquaponics — a form of agriculture that combines farming fish and soilless plant culture in one integrated system.

In a very basic description, fish are farmed in large tanks where they are fed and create waste. The waste travels through PVC pipes via gravity to baffled settling tanks. From there, water containing fine suspended solids flows to further filtration tanks that house a form of synthetic material to create high surface area and anaerobic conditions. Water then moves to a tank filled with another media and heavily aerated before flowing into a tank designed for off-gassing. At this point, the water is free of all solids, clean and nutrient rich, so it flows into large beds where food crops float on foam rafts absorbing the nutrients. Water is pumped from the plant beds back into the fish tanks, creating a recirculating system. When designed properly, these systems run for years with minimal cleaning, thanks to the natural bacteria breaking down the fish waste.

Parts of this process probably sound somewhat familiar to you. Throughout my work writing for this magazine, I have been pleasantly surprised at some of the biological similarities. From the very beginning, I took to the pages of *Installer*.

Recognizing the role

The opportunity to be editor of this magazine is not something I take lightly.

I'll leave you with a quote from Jim's first Editor's Notebook in 2013 because I want to deliver the same message and don't think I can say it any better. "You deserve compelling profile stories, information-packed system profiles and detailed stories about new equipment and techniques. I'll do my best to make sure you continue to get content of value, and I welcome your feedback, suggestions for stories, ideas for small business building columns, comments and questions about what you see in the magazine."

I'm excited for the years to come of getting to know you and learning from you. Enjoy the issue and thanks for reading. □

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DIGGER'S HOTLINE

As people flock to sunny Arizona, the Desert Septic phone lines are burning up with customers looking for new onsite systems

By Peter Kenter

For George Allen, hard work is a cornerstone of success — that's what helped him build Desert Septic of Casa Grande, Arizona, into a multi-service contracting business. However, a “widowmaker” heart attack in 2023 has helped him place greater focus on his health, which is more important than any business.

The Casa Grande, Arizona-based business's wide range of services, including septic system design, installation, repairs, inspection and pumping, started out as a side operation while Allen was working in another industry. After leaving his job as a corrections officer in 2005, Allen started a new job as a cement truck driver. In 2006 he took on weekend work driving a septic service truck for a friend who was operating a commercial pumping business.

“We would pump out a subdivision that wasn't connected to municipal sewer service seven days a week,” Allen recalls. “But every day, he would turn down septic tank pumping work. I told him I would take on those jobs if he didn't want them. He planned to retire, so I bought one of his trucks and started my own business. I told him I wasn't just going to pump, I was going to do septic system installs and repairs.”

WORKING DOUBLE DUTY

Allen founded Desert Septic in 2007 and worked double duty until 2009.

“I would park my pump truck at the parking lot, work my cement truck shift, then get back to work in the pump truck before coming home,” he says. “I started out with pumping and inspections but I got online every night to read, study and learn anything about septic systems, how they worked and what the business was like — including looking at issues of *Pumper* magazine.”

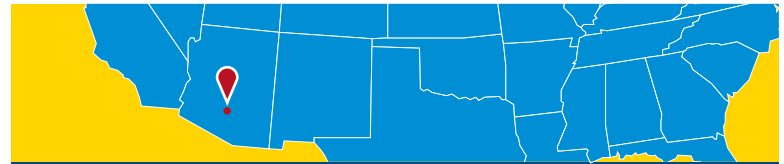
Desert Septic hired its first employee in 2012. The business now employs eight people, including Allen and his daughter, Nikki Arias, who runs the office. Allen typically works in the field on the septic side, while two crew members handle pumping duties.

The company fields three vacuum trucks, including a 2008 Mack with 3,500-gallon waste/300-gallon freshwater carbon steel tank and Jurup pump built out by Tank World Corporation, and a 2000 International with a 3,500-gallon steel tank with a National Vacuum Equipment pump. Desert Septic is currently building out in-house a 1991 International with a 3,200-gallon steel tank and Masport pump. A Crust Busters septic tank agitator rides along for tough jobs.

The summer days are hot in Arizona and work typically begins at 5 a.m., and ends — where possible — at 2 p.m. All of the company’s equipment features heavily tinted windows and ice-cold air.

◀◀ Jeff Covino from Hurricane Holes works with Allen and his crew drilling a seepage pit for a 1,500-gallon septic system. (Photos By Mark Henle)

▼ Cristian Cusillas works on an installation site in San Tan Valley, Arizona.



Desert Septic LLC Casa Grande, Arizona

Owner: George Allen
Founded: 2007
Employees: 8
Service area: Pinal County, Maricopa County
Services: Septic system design, installation, repair, pumping and inspections
Affiliations: National Association of Wastewater Technicians
Website: www.desertseptic.com

EQUIPMENT CORNER

All of the excavators are CASE-branded: a 2011 CX17C, a 2018 CX37C and a 2020 CX60C alongside a 2005 580M backhoe. A pair of CASE skid-steers, a 2017 SR175 and 2022 TR270, round out the earth-moving fleet.

“My dad sold mining equipment and I grew up on CASE,” Allen says. “I find their products to be the most affordable and dependable.”

A range of four Ford trucks — a 2006 F-250, a 2001 F-450, and a 2007 and 2008 F-550 — haul trailers and equipment.

Desert Septic also keeps a pair of RIDGID drain snakes handy as well as two cameras, one by Spartan Tool and another by General Pipe Cleaners.

BUSY WITH INSTALLS

With a growing Arizona population relying on decentralized wastewater treatment, the company currently installs about 250 systems per year and pumps 15 to 20 tanks a week.

“After COVID, people have been looking for acreage — they want to be somewhat self-sufficient,” Allen says. “There are plenty of one-acre properties on the outskirts of town, and there isn’t a sewer pipe within miles. There’s such a rush that people are giving us a deposit, putting their houses up for sale and selling in two days before they have a new floor poured. They need to move a

“My dad sold mining equipment and I grew up on CASE. I find their products to be the most affordable and dependable.”

George Allen



« A full day's work means early mornings for the crew as trucks are fired up and ready to head out to a job site at first light.

trailer onto the new property since they have nowhere else to live.”

Desert Septic designs a range of septic systems for clients, in both Pinal County and neighboring Maricopa County. Allen prefers to design septic systems, provide drawings and perform soil tests himself, so there's no delay in getting to an install. However, in Maricopa County, an engineer or registered sanitarian must conduct soil tests on behalf of the designer.

Many of the systems are conventional designs featuring concrete or poly tanks. For concrete, the company uses local suppliers Arizona Septic Precast Products and Neece Precast Products. However, with precast products in high local demand, the company often utilizes Infiltrator Water Technologies poly tanks from Ferguson Enterprises.

SEEPAGE PITS

The company has taken on some commercial work, but the size of the tanks in the luxury residential markets — as large as 4,500 gallons — rivals those projects.

One of the most common designs in Arizona is the seepage pit.

“They're not common in other parts of the country except Southern California,” Allen says. “We come in with an auger 4 to 6 feet in diameter and we'll drill straight down 40 to 50 feet. We then push a perforated pipe into the center of the excavation and surround it with gravel so it acts like a vertical leach line. It operates on a very compact footprint, so you can take a lot of 120 feet by 80 feet and still fit a mobile home on it.”

Desert Septic also installs gravel trench systems and chamber systems from Infiltrator.

For rocky soils, the contractor often installs alternative systems, including Norweco drip and Jet drip systems (Desert Septic is a distributor), biomat systems from Presby Environmental Products (Infiltrator Water Technologies), and Eljen geotextile sand filter systems. Desert Septic also uses products by TUF-TITE.

PAY ATTENTION TO HEART ATTACK SYMPTOMS

Leah Kelly-Allen has been in health care for more than 30 years, including seven years as a cardiac care nurse. When her husband, George Allen, owner of Desert Septic, began to exhibit symptoms consistent with a heart attack, she was immediately concerned.

“He had been complaining about shoulder pain and said it was caused by digging,” she recalls. “On a Friday I checked his blood pressure, which was normal, and he said that this meant he couldn't be having a heart attack. That's not correct. Heart attacks affect people differently, and high blood pressure is not necessarily a symptom of a heart attack.”

When Allen insisted on going to work on Saturday, his symptoms worsened, and he began to experience shortness of breath and right-side chest pain.

“The shortness of breath is what tipped me off,” Kelly-Allen says. “Right-sided chest pain is very unusual, but he's a Type II diabetic and diabetics feel pain differently. Sometimes they don't feel a heart attack at all.”

When Allen returned home, his face was swollen, consistent with symptoms of a heart attack. Taken to a hospital, doctors confirmed Allen's massive heart attack, which was followed by a triple bypass operation that saved his life.

Why are people reluctant to seek medical attention? In some cases, they're worried about high insurance deductibles for a trip to the emergency department that may not reveal any serious health problems, she says. In other cases, it's personality type.

“People like George, and probably many septic guys, work 12 to 16 hours every day and they're hustling, especially when they own the business,” Kelly-Allen says. “As long as they can get up and go to work, they keep going. When they have warning signs like shoulder pain, chest pain and what seems like indigestion, they try to explain it away. Unless they feel like they're dying, they're not going to get help.”

She says her husband's experiences have convinced some of his associates in the construction field to make appointments with their doctors.

“They look at George, who appeared so healthy, and wonder how he was the one that had the heart attack,” Kelly-Allen says. “So many of his friends went in and got checkups, and I certainly encourage other installers to do the same — whether or not they're experiencing any symptoms of heart problems.”



"I don't want my employees to be obsessed about meeting unrealistic deadlines either. We always have enough work to keep us busy for the next three months, so I am not going to lose sleep over one job."

George Allen

◀◀ George Allen getting some seat time in one of Desert Septic's many CASE excavators.

▼ A large diameter auger is used to bore seepage pits, a common design in the Arizona area.

System repairs generally run from drainfield replacement to tank repairs. Many tanks in the area are damaged by the roots of desert-hardy trees that homeowners plant in their yards.

HEALTH CONCERNS

Allen kept up a steady pace of work until April 2023, when he suffered a massive heart attack.

"It was a Friday and I was installing a leach line and I felt nauseated and had pain in my shoulders," he recalls. "I took ibuprofen and told everyone I'd be fine and that stuff needed to be done. My wife, Leah, a nurse, told me I needed to get checked out, but I didn't take her seriously."

Allen returned to work on Saturday, but felt far worse by midday.

"I was having trouble breathing, which wasn't like me," he says. "I'm an active guy — I hike, I hunt and I work out at the gym. I called my daughter and she encouraged me to come home, but I finished digging the trenches before I told the guys something was wrong and I was going to leave."

Leah Kelly-Allen drove him to the hospital where a blood test revealed that he was having a massive heart attack, which had begun Friday morning and extended to Saturday.

"The doctor told me that I had three blockages, one of them 100% — a widowmaker — and that I should not have made it to the hospital," he says.

The heart attack had crept up on him. In 2017 he weighed almost 300 lbs. and started to go to the gym, lose weight and eat healthier.

"I'm now healthy, active and never been a smoker," he says. "But I've been a Type II diabetic since I was in my 20s."



After his overall health and diabetes improved, Allen had gone off his diabetic medications and stopped monitoring his blood sugar. But the silent symptoms of diabetes worsened at some point, damaging blood vessels and causing a rapid buildup of plaque in his arteries.

Following triple-bypass surgery, Allen was out of commission for several weeks, then slowly returned to paperwork and handing out assignments each morning. He returned to regular duty about seven weeks after the bypass procedure. He credits a dedicated and well-trained crew for maintaining the business during his convalescence.

"All of the employees stepped up, took over, and handled what needed to be handled," he says. "They were answering the phones, they were taking care of the customers, my foreman was dealing with the superintendents at the job sites, and my daughter was with me in my home every day."



« A good crew makes good business, and the team at Desert Septic is no exception. From left: Dauan Mejia, Zach Pantoja, George Allen, Seth Allen, Robert Bartelson and Cristian Cusillas.

» As important as good work in the field is, it's the behind the scenes work in the office that keeps the company running. Here, Allen discusses business with his daughter, Nikki Arias in the Desert Septic home office.

“There’s such a rush that people are giving us a deposit, putting their houses up for sale and selling in two days before they have a new floor poured. They need to move a trailer onto the new property since they have nowhere else to live.”

George Allen

NEW LEASE ON LIFE

At age 52, Allen now lives his life differently. He carries a blood sugar monitor that operates at all times and reports to an app on both his and his wife’s cellphone if his blood sugar is either low or high.

He recalls texting customers while still in the hospital on a gurney. But the message eventually filtered through — working hard is good, working too hard is not. He’s now committed to reducing stress levels in his work life, and the lives of his crew.

“If someone calls me now and wants a job done tomorrow, I tell them



I’m not their guy,” he says. “I don’t want my employees to be obsessed about meeting unrealistic deadlines either. We always have enough work to keep us busy for the next three months, so I am not going to lose sleep over one job.”

Allen continues to operate Desert Septic from his home acreage, but has recently purchased a one-acre industrial property where he plans to build an office and 4,500-square-foot shade awning to protect workers and equipment from the hot Arizona sun.

“Having a business run from your home, you never get away from it,” he says. “This will give me some space between work and home life.” □

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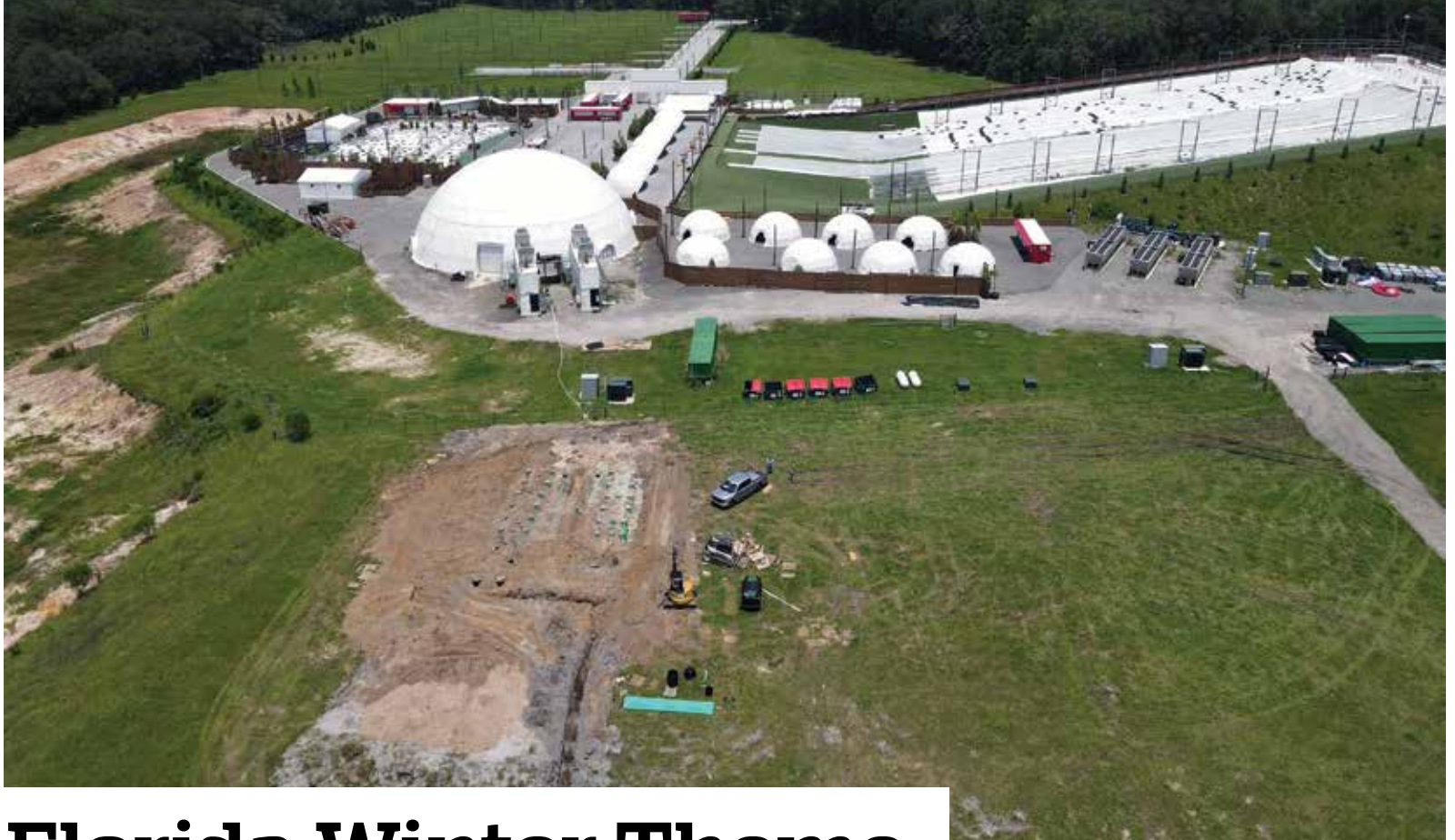
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Florida Winter Theme Park Adds a Complex Onsite System

18 tanks and thousands of feet of Geoflow dripline are employed to provide improved service for visitors to Snowcat Ridge

By **Scottie Dayton**

▲ Snowcat Ridge theme park with the 60-foot tall, 400-foot-long snow tubing hill to the right followed by eight Eskimo Outlet Igloos and the Arctic Igloo. The Crystal Ribbon skating rink is in front of the dome on the left and Alpine Village is on the right. The retention pond is to the left of the onsite system with the Geoflow dripline drainfield in the foreground and tanks behind. (Photos courtesy of Southern Water and Soil)

Two six-station specialty restroom trailers with low-flow fixtures and 40 portable standard units served 80 employees and an average 1,200 daily visitors to two seasonal theme parks in Dade City, Florida.

Scream-A-Geddon, a cluster of haunted houses, opens September through October, followed by adjoining snow park Snowcat Ridge, which opens from November through March. It has a concession stand with seating for 50 people.

In 2022, Pasco County officials required Benjamin Nagengast, owner of the attractions, to build permanent restrooms including 18 bathroom stalls. He contacted Greg Mayfield, president of Southern Water and Soil in Dade City. Mayfield had designed and installed an onsite system for another of Nagengast's theme parks.

“Scream-A-Geddon opened in 2015 and Snowcat Ridge in November 2021,” says Mayfield. “Using portable sanitation enabled Ben to open for business and prepare financially for this expansive project.”

Mayfield replaced the existing 2,000 gpd system with 18 tanks and 8,784 square feet of Geoflow dripline. He subcontracted the installation, which spanned two months.

The portable sanitation elements remain in use to augment the permanent facilities.

Site conditions

Soils are fine sand with a loading rate of 0.80 gpd per square foot. Depth to limiting factor on the combined 118-acre lot is 17 inches.

➤ Jarrod Chancey, Integrated Septic Solutions, holds the laser rod while Gaston Montes, Montes Trucks and Septic, excavates the hole for a dose tank.

▼ Montes operates the Bobcat E85 tracked compact excavator.



Snowmelt and stormwater runoff divert through a pipe to a massive 25-foot-deep retention pond.

System components

Mayfield designed the system to treat 7,000 gpd. Major components include the following:

Snowcat Ridge Existing Tanks

- Two 1,090-gallon IM-1060 grease traps. IM-Series tanks from Infiltrator Water Technologies.
- 1,500-gallon IM-1530 trash tank with two Omnivore 1 hp grinder pumps (Liberty Pumps)

Set in series:

- 1,500-gallon concrete trash tank. Precast tanks are from Gunter's Septic Tank Mfg.
- 525-gallon concrete trash tank
- 1,050-gallon concrete dose tank

Scream-A-Geddon Existing Tanks

- Two 1,090-gallon IM-1060 grease traps

Two series of:

- 1,500-gallon concrete trash tanks with two Omnivore 1 hp grinder pumps
- 525-gallon concrete trash tanks
- 1,050-gallon concrete dose tanks

Two parallel treatment trains each with:

- 1,090-gallon IM-1060 grease trap
- 1,500-gallon concrete equalization tank
- Six Singular Green 600 gpd ATUs (Norweco)
- Two 1,500-gallon IM-1530 dose tanks, each with a PVU57-1819 Biotube pump vault (Orenco) and 1/2 hp HB105 effluent pump (Norweco)
- Four 1,098-square-foot zones WaterflowPRO 16-4-24 dripline (Geoflow)
- Six ZIW-PLCD1 control panels (Orenco)

System Profile

Location: Dade City, Florida

Facility served: Two seasonal theme parks

Designer: Greg Mayfield, Southern Water and Soil, Dade City, Florida

Installer: Jarrod Chancey, Integrated Septic Solutions, Plant City, Florida; Matt Walker, Skywalker Septic, Dade City, Florida; Gaston and Devin Montes, Montes Trucks and Septic, Tampa, Florida.

Type of system: Low-pressure dosing with drip irrigation

Site conditions: Fine sand, loading rate 0.80 gpd per square foot, depth to limiting factor 17 inches

Hydraulic capacity: 7,000 gpd

System operation

Piping is PVC Schedule 40.

Wastewater from the restroom trailers flows through a 4-inch sewer to the pretreatment tanks. Originally, effluent discharged to a 3,600-square-foot drainfield of Septic Stack units (Advanced Drainage Systems). (The standard restroom units reduced flow to the bed and remain in use.)

Now pretreated effluent is time-dosed from the tanks to a 2-inch force main. From Scream-A-Geddon, the force main run 3,300 feet to the first distribution box and 300 feet from Snowcat Ridge to the box, which splits the flow to the equalization tanks. A grease trap was added at the head of the treatment trains to accommodate additional seating at the Alpine Village concession stand.

SYSTEM PROFILE



▲ Gaston Montes (left), Montes Trucks and Septic, installs Norweco Bio-Kinetic filters, while Matt Walker, Skywalker Septic, observes.

►► The 8,784-square-foot drainfield with eight zones of nine Geoflow driplines 61 feet long.

Effluent from the equalization tank passes through the ATUs to a second distribution box that splits the flow between the dose tanks. Dedicated alternating pumps in the tanks feed eight drainfield zones, each with nine 61-foot-long driplines on 25-inch centers. Every two hours, a pump runs 15 minutes sending 73 gallons to its zone, or 875 gpd. “Florida requires time-dosing for drip irrigation,” explains Mayfield.

Installation

Mayfield led the team that included Gaston Montes, president of Montes Trucks and Septic; Jarrod Chancey, proprietor of Integrated Septic Solutions; and Matt Walker, owner of Skywalker Septic. Chancey and Walker excavated the force main trenches and tank holes using a Bobcat T76 compact track loader, E85 tracked compact excavator, and a Caterpillar 305 excavator. Elevations were shot with a LL400 Laser Level (Spectra Precision/Trimble).

“I used to specify a large dose tank with two large pumps for commercial systems, but algae eventually gummed up the indexing valve and it needed maintenance,” says Mayfield. “I learned that it’s easier for contractors to install smaller pump tanks and more of them. They don’t need a crane company or large excavator to set them up, they’re simpler to maintain, and if one or two go down, the others are still operating. Redundancy works so much better.”

The existing drainfield was decommissioned. Crews discarded the 10-foot-long bundles of nine 4-inch HDPE pipes and excavated 12 inches of absorption bed to remove any biomat, then added 6 inches of septic sand delivered by Gaston and Devin Montes. Reestablishing the 24-inch-deep mound with one side sloping 15 feet required 60 loads of sand. Driplines were laid 18 inches above grade, then covered.

Maintenance

Southern Water and Soil maintains the system, submitting semiannual effluent samples and looking for ponding. □

“I used to specify a large dose tank with two large pumps for commercial systems, but algae eventually gummed up the indexing valve and it needed maintenance. **I learned that it’s easier for contractors to install smaller pump tanks and more of them.**”

Greg Mayfield



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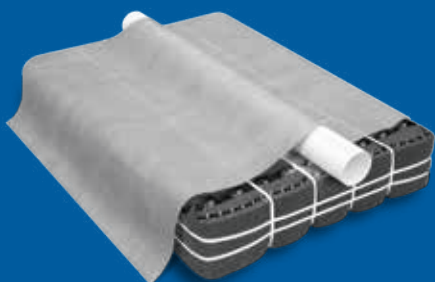
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Three Big Challenges: Forever Chemicals, Disposal, Recruiting Members

The head of the Wisconsin Liquid Waste Carriers maintains the wastewater industry will continue to provide a vital service to septic system users

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 Wisconsin Liquid Waste Carriers Association.



Lance Petrasek
owner
 Business: Associates Septic Service, Elkhorn, Wisconsin
 Age: 51
 Services we offer: Septic system design, inspection and pumping; soil testing
 Years in the industry: I started doing soil testing in 1998 and septic pumping in 2009

Association involvement:

I've been a member of the Wisconsin Liquid Waste Carriers Association (WLWCA) since 1998, and I'm the current president. I'm also a member of the Wisconsin Onsite Water Recycling Association.

Benefits of belonging to the association:

Together our voice carries a lot more weight than individually. As a group, we have a say in how we are governed. As an example, the members of the Wisconsin Liquid Waste Carriers Association were intimately involved in the latest code changes.

Biggest issue facing your association right now:

We are concerned about the forever chemicals and how the U.S. Environmental Protection Agency will mandate their handling. Beyond that, disposal will always be an issue. More people and less land makes it harder to get rid of waste. Lastly, recruiting new members is a challenge. Until you become a part of the association, it is hard to understand the value it offers.

Our crew includes:

We have eight employees — myself, one foreman/pumper, three pumpers, one soil tester and two part-time office personnel. And in the summers we hire a couple of seasonal helpers.

Typical day on the job:

My day starts around 4 a.m. with paperwork. From there it could be anything — more paperwork, meeting customers, helping in the field, returning calls, doing inspections, designing septic systems, or performing soil testing. My day typically ends after dinner, returning emails or calls and setting schedules for upcoming days.

The job I'll never forget:

On Feb. 20, 2018, we had several inches of snow on the ground in southeast Wisconsin and the ground was frozen. Warm rains came in and dropped about five inches in a short period of time. Our phones rang off the hook with flooded homes. One homeowner called with water leaking into his home. A large pond had formed next to his home because the water was trapped and the ground was frozen. I went with the pump truck to see if I could help. When I pulled up, I saw an enormous lake of water I knew I could not move. I went into the lowest level of the tri-level home and the outside water was halfway up the basement window. The homeowner was "keeping up" with two sump pumps and towels around the windows. I sadly explained there was nothing I could do unless the water accumulated inside and needed to be pumped out. He called the next day. They were able to keep up and eventually the water receded.

My favorite piece of equipment:

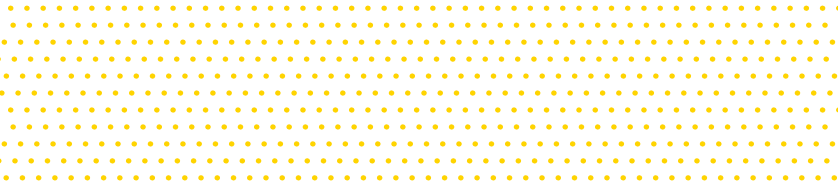
The computer — I can't think of anything else that improves efficiency more.

Most challenging site I've worked on:

We do a lot of lake lots where the tank is way down the hill. Our trucks can't lift the liquid so we carry pumps down to lift the waste up to the truck. This often takes three people and is very time-consuming.

Oops, this didn't work out as planned:

We pump the tanks at a fish processing plant. Normally we can land-pump the waste but one time we needed to take it to the treatment plant.



▲ In a job Petrasek will never forget, he responded to a home being inundated by floodwaters. Water was ponding halfway up the windows of this room, but Petrasek told the customer no amount of pumping would help the situation.

After the plant tested the waste, the price to dispose quadrupled. This was an expensive lesson learned.

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

On a septic inspection for a home sale, the customer said what most people always say — “The septic has been working great, never had any problems.” I pulled the cover off the tank and found an aftermarket aeration unit in the tank. The tank was riding high and liquid was coming out the top of the vent pipe on the drainfield. Of course, the owner was shocked when it didn't pass.

Best piece of small business advice I've heard:

At the WWETT Show in 2010, I attended a class on profitability, and it made me realize that I needed to think differently about my pricing. The advice was not to worry about your competitors, and to charge what you need to charge to make a profit.

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

Be doing something related to hunting. I love to hunt. That's what I'm going to do if I retire — go hunting and enjoy life.

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

This industry is made up of the hardest working and nicest people I have ever been around and I think it's headed in a great direction. □

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

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



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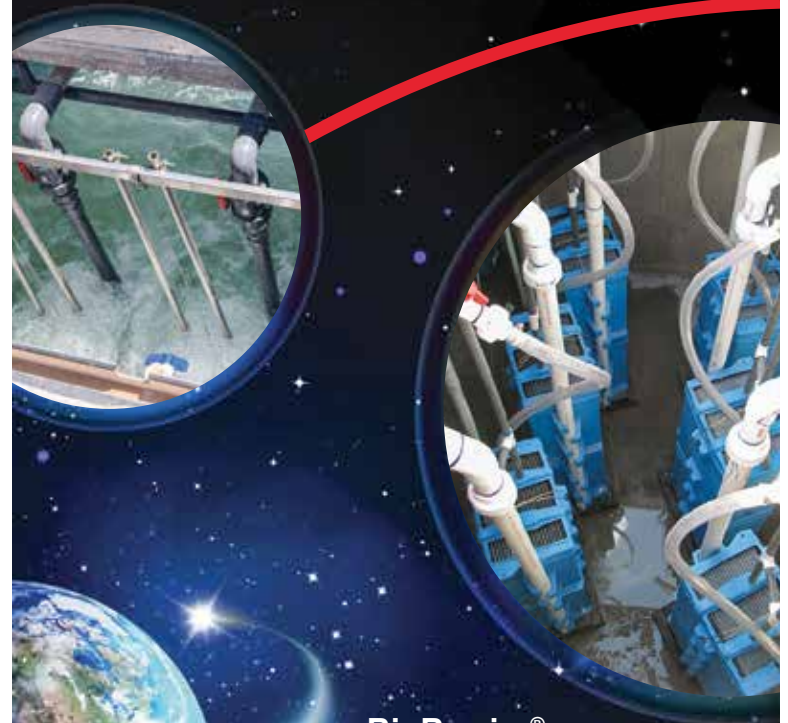
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Installation of Flow Equalization Systems With Time Dosing

Efficiently manage peak flows for enhanced system performance and cost savings

By Sara Heger

Flow equalization is a design and management concept that can help reduce stress on system performance due to high peak flows. In flow equalization; the peak flows are stored for a period of time to be delivered to downstream components, including the soil treatment unit, over a longer period of time.

Flow equalization systems are more commonly found in systems with advanced pretreatment and in facilities with variations in flows, which are found in many commercial systems. With commercial systems, the septic tanks are still sized based on the peak flow, but the downstream components can be sized based on the equalized flow, allowing for more appropriate sizing of advanced treated effluent and soil treatment areas. For many jobs this will result in a cost savings that far exceeds the cost of a larger dosing tank and control panel.

Residentially, it is common for the flow over one day to be equalized over 24 hours, but it can be done for longer periods, especially if peak flows last longer than one full day such as with commercial properties. For this to be accomplished, the tank must be large enough to handle these flows, and a timer instead of a float should control the pump operation.

The pump tank capacity for a single-family residence using flow equalization is a minimum of 1,000 gallons or two times the daily design flow, whichever is largest. Commercial systems must calculate two values to determine storage requirements, design flow and required storage (plus a 20% safety factor). The sum of these values is used to determine the required capacity. To use these values, real flow data (daily flow values) is necessary for the system's design. The average flow is the calculated average for the daily flow reading for a certain time period. Typically, 45-90 days of data will give a clear idea of the use at the site. Regular events should be factored into the flow equalization design. Annual events can be handled using other flow control methods, such as portable toilets or pumping. The storage is calculated as the sum of the flows above the average that needs to be held in the system.

Gaining control

Flow equalization systems must have a control panel. The control panel can be quite simple or more complex based on the functions it must perform. Electrical components in the panel respond to water level sensors in the tank. The sensors are adjustable, and each is set to operate specific components in the tank. The sensors trigger the operation of system components to:

- Activate and deactivate a pump
- Activate an audible/visible alarm to indicate malfunction
- Monitor and record events (counters) and time of operation (meters)
- Initiate telemetric notification of system malfunction
- Activate remote system equipment operation

A single sensor may trigger multiple dosing functions. Examples of combinations triggered by a single sensor include, but are not limited to:

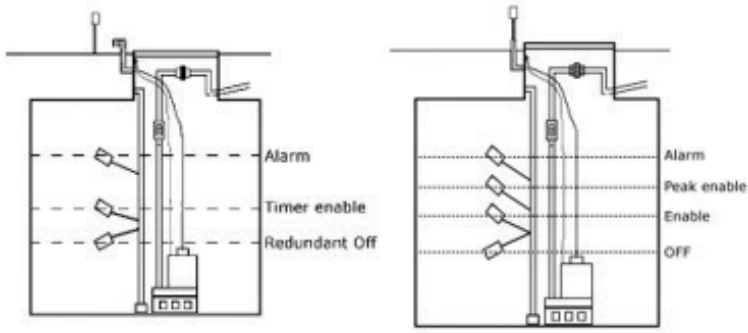
- Timer enable and redundant off
- Peak enable and alarm
- Lag pump and alarm (duplex systems)

Configure correctly

Many different configurations are possible in timed dosing. The figure illustrates the inclusion of a separate redundant off-float. When this float is in the off position (indicating a low effluent level in the tank), it protects the pump by not allowing it to operate, regardless of the pumping schedule set on the timer. “Timer enable” and “redundant off” functions may be controlled by the same float.



▲ A closeup look at the interface of an Installer Friendly Series of dosing system by SJE Rhombus. (Photos provided by Sara Heger)



▲ Profile view of potential float configurations for timed dosing.

The illustration shows a configuration with a peak enable float installed between the timer enable float and the alarm float. When activated during high-flow events, a peak enable float shortens the rest period between normal doses. As a result, more dosing events occur each day and reduce the effluent level in the tank more quickly. “Peak enable” and alarm function may be controlled by a single float. Note that systems that include peak enable floats must be set so that forward flow does not exceed the capacity of the next component or the design flow of the system. Again, a cycle counter should be included to track the number of times the peak enable float is activated.

If a timer override float is included, it essentially (and temporarily) changes the system’s function to a demand-dosed regime until the effluent in the tank is reduced to a normal operating level. Using an override float can defeat the purpose of the timer system, but it may prevent the backup of wastewater into the residence. Certainly, a counter must be included to track how often a timer override float is activated. Once the system is in use, the counter will track how often the system is hydraulically overloaded.

An alarm float should always be included in a float configuration. The alarm should consist of an audible device and an easily visible light. It should be wired on an electrical circuit separate from the pump. If the mutual circuit trips, the alarm will not function. Including a counter in the panel allows for the tracking of alarm events.

Float and Timer Setting

1. The pump OFF elevation must be set to ensure pump submergence.
2. The dose volume will need to be determined based on the design flow, requirements of the advanced treatment system, and regulatory requirements. A drawdown test must be performed to determine the actual PDR of the system, and it should not be taken from a design or pump curve but validated in the field. For new installations, clean water must be put into the dose tank to calibrate the pump, and the gallons per inch or dimensions of the tank are needed. The drawdown should be measured. The drawdown can be measured from when the pump activates to the moment the pump ceases. The PDR can then be calculated using this equation:

$$\text{PDR} = \text{inches of drawdown} \times \text{gallons per inch of the tank} \div \text{minutes in operation}$$



▲ Another installed SJE Rhombus system. These time-dose panels are for a septic system at a summer camp including a dining hall.

Then the timer setting can be determined by the pump run time and its pump delivery rate (PDR):

$$\text{Timer ON} = \text{PDR (gpm)} \div \text{dose volume (DV)}$$

$$\text{Timer OFF} = 1440 \text{ minutes in a day} \div \text{by likely or typical doses per day and subtract the Timer On.}$$

This will establish the amount of time between doses in minutes. This time may need to be adjusted over time if current usage per day is unknown.

You will need to enter the ON and OFF cycle settings in the panel. The technique for doing this varies by panel manufacturer.

3. If there is a timer-enabled float, the setting is determined by the projected flow from the system, the tank geometry, and the requirements of the succeeding component.
4. The alarm float is typically set at 90% of the total dosing tank depth. Verify that the alarm test switch activates both the audible and visible alarms. If there is a control switch (hand-off-auto), verify that it operates correctly in all positions. After a startup, the switch should be left in the auto position.

Ensure that the panel is watertight and that all openings are properly sealed (both in the panel and in the tank riser) to prevent moisture and corrosive gases from entering. All panel enclosures should be NEMA 4X rated (watertight, moisture-tight, and corrosion-resistant, among other requirements).

Confirm that an elapsed time meter and cycle counters are present and operate when the pump is activated. (Note that water is required for this.) Record the current meter and cycle readings found during startup. These records will serve as baseline data for the systems service provider.



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www.lilwa.org; 631-585-0448

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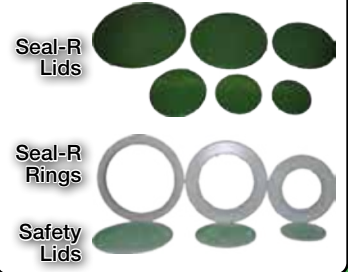
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Montana treatment plant is overcome by septage waste; cuts off some pumpers

By Betty Dageforde

Pumpers in Ravalli County, Montana, have long relied on the wastewater treatment plant in nearby Missoula to dump their septage as there are no in-county facilities that can handle it. But in 2022, the Missoula treatment plant reduced the amount of septage it would take from Ravalli County.

Ravalli County officials are now trying to address the problems this has caused, reported the Ravalli Republic. Some pumpers now have weeks-long backlogs of septage, and one pumper says he drives 300 miles to dump in Helena.

Septage taken to the Missoula treatment plant by Ravalli County pumpers rose from 410,000 gallons to 1.45 million over a four-year period, placing a strain on the facility. “With the limits, we’re once again at a comfortable limit,” said lab and pretreatment manager Nate Gordon. “It’s a city facility paid for by the taxpayers of the city of Missoula.”

The county formed a wastewater working group. The group of pumpers, wastewater treatment specialists, county and health officials have discussed options such as developing their own treatment plant or using county-owned land for land application. The group plans to issue recommendations to the county.

Colorado

Lake County had a moratorium on new short-term rental licenses since September 2022 to assess the positive and negative impacts of such rentals and allowing time to create recommendations for the Board of County Commissioners to consider. The moratorium expired earlier this year.

The main environmental concern over these short-term rentals, expressed by Lake County Community Planning and Development and Economic and Planning Systems, is overuse of septic tanks, according to a report in the local *Herald Democrat*.

Recommendations include not allowing short-term rental licenses for properties with seepage pits, setting occupancy limits based on a septic system report to avoid system failures, and requiring owners to show proof of inspection every three years.

Massachusetts

To address ongoing water quality issues on Cape Cod, Barnstable County commissioners are promoting a program to help homeowners qualify for loans to create and upgrade septic systems. The program is called Aquifund, which is a rebranding of a program the county has had for years, provided by the Barnstable County Department of Health and Environment, says Mark Forest, county commission board member.

“The Department of Environmental Protection has come out with new regulations, and in some cases homeowners are going to have to upgrade their septic systems or eventually tie in to a sewer connection to a sewer line that will be coming by their homes,” Forest said in a report in CapeCod.com.

By rebranding to the Aquifund, the program will be able to provide more than just upgrades to septic systems, but also help homeowners with connections to sewer lines, Forest explained.

Ohio

Many homeowners in Lorain County were upset recently to receive a bill from the Lorain County Public Health Department for their septic systems, reported News5Cleveland. Ryan Tristano, an environmental health supervisor for the department, said residents now need a permit for their system. The cost is \$120 for three years, with an annual fee of \$40 thereafter. Systems installed in 2015 or later have been automatically enrolled in the program.

Although the invoice caught some homeowners off guard, the permit fees were approved by the Lorain County Board of Health after three public readings in 2023 and the city has been trying to get the word out since then, Tristano said.

In 2015, Ohio law changed to require all county health departments to run an O&M program for home septic systems. There are an estimated 20,000 septic systems in the county, half of which were installed before 1970.

Oregon

The Eugene Water and Electric Board has more than \$1 million in the septic system repair grants program from federal funding. To distribute the money by the September 2024 deadline, they are broadening the eligibility requirements, reported KMTR-TV.

Previously, the grants were eligible only for properties that sustained damage in the Holiday Farm Fire, but now include all properties in the Holiday Farm Fire region and the McKenzie Watershed above Hayden Bridge.

To qualify, repairs must be made by the property owner or a licensed and certified installer and inspected by Lane County.

Everyone is being encouraged to apply, said Misty Fisher, EWEB’s customer programs coordinator. “Once you apply, we can match your request to the funds we have available. If we can’t match you with these grants, we can recommend other sources of funding and still help you along.”

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Improperly maintained septic systems pose a threat to the McKenzie River, the sole source of drinking water for the nearly 200,000 people in the Eugene area.

Washington

Members of the Island County Marine Resources Committee presented a white paper outlining climate trends in the Pacific Northwest toward warmer and drier summers, storm surges and extreme high tides, reports the *Whidbey News-Times*.

Sea level rise increases risks to coastal communities, including impacts on septic drainfields, utilities, water systems and marine wildlife.

Preparation is key, said Patrick Havel, one of the authors of the paper.

“After an inundation event is not the time to find that insurance does not cover the damage or that the government can’t pick up the tab,” he said. “Ensure emergency response plans anticipate septic system exposure.”

Commissioner Janet St. Clair encouraged residents to make good choices and build solutions. “Your gravity fed septic system that you put in in 1968 ain’t gonna cut it in 2030,” she said.

Commissioners were encouraged to incorporate this information into the county’s comprehensive planning process. □

“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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PRODUCT SPOTLIGHT

Promoting bacterial growth in new system installs


By Craig Mandli

A new septic system treatment needs a healthy population of bacteria to perform correctly. That's why one company believes it's a good idea for a high dose of bacteria to be applied at the time a new system is installed to ensure that the septic tank and drainfield is fully activated with healthy bacteria from the start.

Cape Cod Biochemical created Jump Start to accelerate bacterial growth immediately after a new system has been installed or after the disruption of a septic system or cesspool being pumped. But the product is also effective when applied to new systems needing to perform immediately.

"We surveyed many septic installation companies and found out many companies doing the installation do not offer pumping, system maintenance or even educate the homeowner on how a septic system works and how to maintain it with healthy bacteria," says Justin Johnson, vice president of Cape Cod Biochemical. "It benefits the installation contractor because it creates an additional service they can provide and sell to the homeowner. It benefits the homeowner because they are getting additional value from the installer, both in education as well as a fully activated tank that ensures their system is healthy from the inception of use. Lastly, it benefits the pumping/maintenance contractor because the system will be easier on their equipment at the first pumpout and the homeowner is already educated on why they should continue to use healthy bacteria as part of a routine maintenance program."

Cape Cod says the formula prevents clogging, sewage backups and odor drafts from septic tanks. It also reduces organic sludge, grease buildup and slime layers beneath drainfields. It is designed to be applied in septic tanks at a rate of 1 pound per 500 gallons of tank capacity. According to Johnson, installers that offer the product as an added benefit to homeowners as a follow-up maintenance solution have reaped the benefits.

"Our installation contractor customers love it," he says. "They've found that most homeowners are genuinely curious about how to properly maintain their new system. By including Jump Start into their service offering and educating their customers, they are separating themselves from other companies who are simply providing a bid on a piece of paper." **800-343-8007; www.capecodbiochemical.com** 



An advertisement for SPI septic products. It features a large "SPI" logo at the top. Below the logo, it says "THE MOST COMPLETE LINE OF" followed by a list of products: "SYSTEM ALARMS", "FLOAT SWITCHES", "ON-SITE ACCESSORIES", and "CONTROL PANELS". To the right, it says "CALL TODAY 419.282.5933" and "SEPTICPRODUCTS.COM SALES@SEPTICPRODUCTS.COM". At the bottom, there are images of several control panels and a cartoon character with large eyes and a wide smile. A small icon of a shipping box is next to the text "24 HOUR SHIPPING ON ALL CATALOG ORDERS!".

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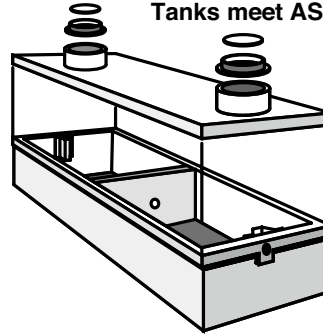
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INDUSTRY NEWS

Polylok team pays tribute to Bruce Houser

Polylok announced the passing of esteemed colleague, Bruce Houser, who passed away on Jan. 21. He was a valued member of the Polylok team and made significant contributions to the company. Houser was a part of the Polylok family for 15 years as regional sales manager for his home state of New York, New England, and many states along the eastern seaboard. He was known for his dedication, hard work and positive attitude and was respected by colleagues for his professionalism and teamwork.



Bruce Houser

Hitachi Construction Machinery opens new regional headquarters

Hitachi Construction Machinery Americas opened a sustainable headquarters in Newnan, Georgia.



Since taking the lead for the brand's construction and mining equipment in the Americas, the company has more than tripled its employee count. Encompassing 88,128 square feet of office space and 27,686 square feet dedicated to conference, ConSite command center and training space, the headquarters has been designed to enhance creativity and inspire future growth. In addition to the new regional headquarters facility, Hitachi is also creating operating bases for parts remanufacturing and expansion of the rental business that will also provide the customer with additional support and options.

Zoeller names Bill Zoeller as chief executive officer

Zoeller Co. announced that Bill Zoeller became CEO May 1. Zoeller's board of directors, with the support of executive search firm Kensington International, selected Zoeller, previously chief operating officer, to lead the company as CEO upon the retirement of John Zoeller, who has served for 22 years.



Bill Zoeller

"As the chief operating officer at Zoeller Company, Bill Zoeller has shepherded the company through several acquisitions, significant growth and the COVID-19 pandemic, cementing the company's position as a leader in the water solutions industry," says Christopher Carmicle, chair of the board of Zoeller Co. Prior to this role, Bill Zoeller served as the president of Louisville Operations and director of risk management of Zoeller Co. Before joining Zoeller Company in 2011, Zoeller spent more than a decade at LG&E and KU Energy and KPMG.

University of Minnesota completes first year of KIGG Scholarship awards

The University of Minnesota's Onsite Sewage Treatment Program announced it completed the first year of its Keep It Going scholarship program. The U of M OSTP was founded to support and strengthen the onsite wastewater industry across Minnesota through excellence in education. The KIGG scholarship program began last December and received 23 applications from across Minnesota. Seventeen scholarships were awarded to 14 applicants across seven certification areas including installing, maintaining, designing and inspecting. □

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